

# ADVANCED ENERGY INDUSTRIES INC

## FORM S-3

(Securities Registration Statement (simplified form))

Filed 8/21/1997

Address	1625 SHARP POINT DR FT COLLINS, Colorado 80525
Telephone	970-221-4670
CIK	0000927003
Industry	Electronic Instr. & Controls
Sector	Technology
Fiscal Year	12/31

**SECURITIES AND EXCHANGE COMMISSION**  
**WASHINGTON, D.C. 20549**

**FORM S-3**

**REGISTRATION STATEMENT  
UNDER**

**THE SECURITIES ACT OF 1933**

**ADVANCED ENERGY INDUSTRIES, INC.**

(Exact name of registrant as specified in its charter)

DELAWARE	84-0846841
(State or other jurisdiction	(I.R.S. Employer
of	Identification
incorporation or organization)	Number)

**1625 SHARP POINT DRIVE  
FORT COLLINS, COLORADO 80525**  
(970) 221-4670

(Address, including zip code, and telephone number, including area code, of registrant's principal executive offices)

**RICHARD P. BECK  
ADVANCED ENERGY INDUSTRIES, INC.  
1625 SHARP POINT DRIVE  
FORT COLLINS, COLORADO 80525**  
(970) 221-4670

(Name, address, including zip code, and telephone number, including area code, of agent for service)

**WITH COPIES TO:**

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**APPROXIMATE DATE OF COMMENCEMENT OF PROPOSED SALE TO THE PUBLIC:  
AS SOON AS PRACTICABLE AFTER THE EFFECTIVE DATE OF THIS REGISTRATION STATEMENT.**

If the only securities being registered on this Form are being offered pursuant to dividend or interest reinvestment plans, please check the following box. //

If any of the securities being registered on this Form are to be offered on a delayed or continuous basis pursuant to Rule 415 under the Securities Act of 1933, other than securities offered only in connection with dividend or interest reinvestment plans, check the following box. //

If this Form is filed to register additional securities for an offering pursuant to Rule 462(b) under the Securities Act, please check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering. //

If this Form is a post-effective amendment filed pursuant to Rule 462(c) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering. //

If delivery of the prospectus is expected to be made pursuant to Rule 434, please check the following box. //

CALCULATION OF REGISTRATION FEE

TITLE OF EACH CLASS OF SECURITIES TO BE REGISTERED	AMOUNT TO BE REGISTERED(1)	PROPOSED MAXIMUM OFFERING PRICE PER UNIT(2)	PROPOSED MAXIMUM AGGREGATE OFFERING PRICE(1)(2)	AMOUNT OF REGISTRATION FEE
Common Stock, \$0.001 par value.....	2,875,000 shares	\$27.6875	\$79,601,562.50	\$24,121.69

(1) Includes 375,000 shares that the Underwriters have the option to purchase to cover over-allotments, if any.

(2) Estimated solely for the purpose of determining the registration fee in accordance with Rule 457(c) under the Securities Act of 1933, as amended. The above calculation is based on the average of the reported high and low prices of the Common Stock on the Nasdaq National Market on August 19, 1997. THE REGISTRANT HEREBY AMENDS THIS REGISTRATION STATEMENT ON SUCH DATE OR DATES AS MAY BE NECESSARY TO DELAY ITS EFFECTIVE DATE UNTIL THE REGISTRANT SHALL FILE A FURTHER AMENDMENT WHICH SPECIFICALLY STATES THAT THIS REGISTRATION STATEMENT SHALL THEREAFTER BECOME EFFECTIVE IN ACCORDANCE WITH SECTION 8(a) OF THE SECURITIES ACT OF 1933 OR UNTIL THE REGISTRATION STATEMENT SHALL BECOME EFFECTIVE ON SUCH DATE AS THE COMMISSION, ACTING PURSUANT TO SAID SECTION 8(a), MAY DETERMINE.

Information contained herein is subject to completion or amendment. A registration statement relating to these securities has been filed with the Securities and Exchange Commission. These securities may not be sold nor may offers to buy be accepted prior to the time the registration statement becomes effective. This Prospectus shall not constitute an offer to sell or the solicitation of an offer to buy nor shall there be any sale of these securities in any state in which such offer, solicitation or sale would be unlawful prior to registration or qualification under the securities laws of any such state.

2,500,000 Shares

[LOGO]

Common Stock

Of the 2,500,000 shares of Common Stock, \$0.001 par value ("Common Stock"), of Advanced Energy Industries, Inc. ("Advanced Energy" or the "Company") offered hereby, 1,000,000 shares are being offered by the Company and 1,500,000 shares are being offered by certain stockholders of the Company (the "Selling Stockholders"). The Company will not receive any of the proceeds from the sale of shares by the Selling Stockholders. See "Principal and Selling Stockholders."

The Common Stock is quoted on the Nasdaq National Market under the symbol "AEIS." On August 19, 1997, the last reported sale price of the Common Stock on the Nasdaq National Market was \$27.50 per share. See "Price Range of Common Stock."

THE COMMON STOCK OFFERED HEREBY INVOLVES A HIGH DEGREE OF RISK.  
SEE "RISK FACTORS" BEGINNING ON PAGE 5.

THESE SECURITIES HAVE NOT BEEN APPROVED OR DISAPPROVED BY THE SECURITIES AND EXCHANGE COMMISSION OR ANY STATE SECURITIES COMMISSION NOR HAS THE SECURITIES AND EXCHANGE COMMISSION OR ANY STATE SECURITIES COMMISSION PASSED UPON THE ACCURACY OR ADEQUACY OF THIS PROSPECTUS. ANY REPRESENTATION TO THE CONTRARY IS A CRIMINAL OFFENSE.

	Price to Public	Underwriting Discounts and Commissions (1)	Proceeds to Company (2)	Proceeds to Selling Stockholders
Per Share.....				
Total (3).....				

- (1) For information regarding indemnification of the Underwriters, see "Underwriting."
- (2) Before deducting estimated expenses of the Offering payable by the Company, estimated at \$600,000.
- (3) The Company and the Selling Stockholders have granted the Underwriters an option, exercisable within 30 days from the date hereof, to purchase up to 375,000 additional shares of Common Stock on the same terms set forth above, solely to cover over-allotments, if any. If such option is exercised in full, the total Price to Public will be \$ , the Underwriting Discounts and Commissions will be \$ , the Proceeds to Company will be \$ and the Proceeds to Selling Stockholders will be \$ . See "Underwriting."

The shares of Common Stock are offered by the Underwriters, subject to prior sale, receipt and acceptance by them and subject to the right of the Underwriters to reject any order in whole or in part and to certain other conditions. It is expected that delivery of the shares of Common Stock will be made through the office of UBS Securities LLC, 299 Park Avenue, New York, New York, on or about , 1997.

UBS SECURITIES

LEHMAN BROTHERS

PAINWEBBER INCORPORATED

ROBERTSON STEPHENS & COMPANY

## INCORPORATION OF CERTAIN INFORMATION BY REFERENCE

The following documents heretofore filed with the Securities and Exchange Commission (the "Commission") by Advanced Energy are hereby specifically incorporated by reference into this Prospectus:

- (a) Annual Report on Form 10-K for the fiscal year ended December 31, 1996;
- (b) Quarterly Reports on Form 10-Q for the quarters ended March 31, 1997 and June 30, 1997;
- (c) Current Report on Form 8-K dated August 15, 1997; and
- (d) The description of the Common Stock contained in Advanced Energy's Registration Statement on Form 8-A filed on October 12, 1995, and any amendment or report filed for the purpose of updating such description.

All reports and other documents subsequently filed by Advanced Energy with the Commission pursuant to Sections 13(a), 13(c), 14 or 15(d) of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), after the date of this Prospectus and prior to the termination of this Offering, shall be deemed to be incorporated by reference herein and to be a part hereof from the date of filing of such reports and other documents.

Any statement contained herein or in a document incorporated or deemed to be incorporated by reference in this Prospectus will be deemed to be modified or superseded for the purposes of this Prospectus to the extent that a statement contained herein, or in any subsequently filed document which also is or is deemed to be incorporated by reference herein, modifies or supersedes that statement. Any statement so modified or superseded will not be deemed, except as so modified or superseded, to constitute a part of this Prospectus.

ADVANCED ENERGY WILL PROVIDE WITHOUT CHARGE TO EACH PERSON TO WHOM THIS PROSPECTUS IS DELIVERED, UPON WRITTEN OR ORAL REQUEST OF SUCH PERSON, A COPY OF ANY OR ALL OF THE FOREGOING DOCUMENTS INCORPORATED BY REFERENCE HEREIN (OTHER THAN EXHIBITS TO SUCH DOCUMENTS, UNLESS SUCH EXHIBITS ARE SPECIFICALLY

INCORPORATED BY REFERENCE INTO SUCH DOCUMENT). REQUESTS FOR SUCH DOCUMENTS SHOULD BE DIRECTED TO RICHARD P. BECK OF ADVANCED ENERGY, 1625 SHARP POINT DRIVE, FORT COLLINS, COLORADO 80525; TELEPHONE NUMBER: (970) 221-4670.

Advanced Energy, Microsweep, Sparc and Sparc-LE and the Advanced Energy logo are registered trademarks of the Company. Arc-Check, Arc-Out, Astral, Fixed-Match, GenCal, Matchless, Pinnacle, Sparc-VS and Starburst are unregistered trademarks of the Company. Other brand names and trademarks appearing in this Prospectus are the properties of their respective holders.

In this Prospectus, unless the context otherwise requires (i) "Consolidated Financial Statements" refers to the Company's audited consolidated financial statements for the years ended December 31, 1996, 1995 and 1994, (ii) "Unaudited Consolidated Financial Statements" refers to the Company's unaudited consolidated financial statements for the quarters and six month periods ended June 30, 1997 and 1996, and (iii) "Pro Forma Condensed Consolidated Balance Sheet" refers to the Company's pro forma condensed consolidated balance sheet at June 30, 1997, which gives pro forma effect to the Company's acquisition of Tower Electronics, Inc. ("Tower"), the allocation of the purchase price therefor and certain transactions occurring in connection therewith, including the borrowing by the Company of \$12 million under a term loan, as if all of such transactions had occurred on June 30, 1997, all of which financial statements are included elsewhere in this Prospectus. Except as otherwise noted herein, financial and other information with respect to the Company in this Prospectus does not include information with respect to Tower and assumes no exercise of the Underwriters' over-allotment option.

CERTAIN PERSONS PARTICIPATING IN THIS OFFERING MAY ENGAGE IN TRANSACTIONS THAT STABILIZE, MAINTAIN OR OTHERWISE AFFECT THE PRICE OF THE COMMON STOCK, INCLUDING STABILIZING BIDS, SYNDICATE COVERING TRANSACTIONS AND THE IMPOSITION OF PENALTY BIDS. FOR A DESCRIPTION OF THESE ACTIVITIES, SEE "UNDERWRITING."

IN CONNECTION WITH THIS OFFERING, CERTAIN UNDERWRITERS MAY ENGAGE IN PASSIVE MARKET MAKING TRANSACTIONS IN THE COMMON STOCK ON THE NASDAQ NATIONAL MARKET IN ACCORDANCE WITH RULE 103 OF REGULATION M. SEE "UNDERWRITING."

## PROSPECTUS SUMMARY

THE FOLLOWING SUMMARY IS QUALIFIED IN ITS ENTIRETY BY THE MORE DETAILED INFORMATION, INCLUDING "RISK FACTORS" AND THE CONSOLIDATED FINANCIAL STATEMENTS AND NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS AND THE UNAUDITED

CONSOLIDATED FINANCIAL STATEMENTS AND NOTES TO UNAUDITED CONSOLIDATED FINANCIAL STATEMENTS, APPEARING ELSEWHERE IN THIS PROSPECTUS. THIS PROSPECTUS CONTAINS

FORWARD-LOOKING STATEMENTS WHICH INVOLVE RISKS AND UNCERTAINTIES. THE COMPANY'S ACTUAL RESULTS MAY DIFFER MATERIALLY FROM THE RESULTS DISCUSSED IN THE FORWARD-LOOKING STATEMENTS. FACTORS THAT MIGHT CAUSE SUCH A DIFFERENCE INCLUDE, BUT ARE NOT LIMITED TO, THOSE DISCUSSED IN "RISK FACTORS."

### THE COMPANY

Advanced Energy is a leading supplier of power conversion and control systems incorporated in plasma-based thin film production equipment. The Company's systems are key elements of semiconductor, data storage, flat panel display, and a range of other industrial manufacturing equipment that utilize gaseous plasmas to deposit or etch thin film layers on materials or substrates such as silicon, glass and metals. The effectiveness of plasma-based production processes depends in large part on the quality of the electrical power used to ignite and manipulate the plasma. The Company's power conversion and control systems refine, modify and control the raw power from a utility and produce power which is uniform, predictable and precisely repeatable to permit the production of identical films of unvarying thickness on a mass scale. The Company's systems are used in an array of thin film processes such as physical vapor deposition, etch, chemical vapor deposition, plasma enhanced chemical vapor deposition and ion implantation, as well as a broad range of thin film applications such as the production of semiconductors, magnetic hard disks, CD-ROMs, audio and video discs, thin film heads, liquid crystal displays and optical, glass and automobile coatings. The Company's customers include Applied Materials, Lam Research, Balzers/Leybold, Eaton, Intevac, Multi-Arc, Novellus, Singulus Technologies, Sputtered Films and ULVAC Technologies.

In recent years, significant technological advances in thin film processes have enabled the manipulation of materials on the atomic and molecular level. Manufacturers can now both deposit and etch layers of materials that are less than one hundredth of a micron in thickness. By using modern thin film production processes, manufacturers are better able to control and alter the electrical, magnetic, optical and mechanical characteristics of materials. Thin film processes have been employed most extensively in the semiconductor industry, where multiple thin film layers of insulating or conductive material are deposited on a wafer or substrate. These processes are now used in a growing range of diverse industries. Thin film production was initially accomplished using either liquid chemical or thermal processes. Plasma-based process technology was developed to address the limitations of wet chemistry and thermal technologies in certain applications requiring thinner, more precise film, and to enable new applications.

The Company has achieved its market leadership position by providing systems which convert externally supplied power, operate over a wide range of power levels, control utility instabilities such as brownouts and surges created by raw utility power sources, control intense localized electrical discharges known as arcs and control system instabilities which arise from the use of exotic gases and inherently unstable electrode arrangements. All of the Company's products employ sophisticated switchmode technology that affords plasma-based systems a greater ability to prevent arcs, which can slow down the throughput of a plasma process and may even destroy the substrate or the power conversion and control system. The Company believes the combination of its in-depth knowledge of plasma physics, its unique approach to product customization and its reusable engineering product design methodology have enabled it to develop the widest range of power conversion and control systems in the industry.

Since inception, the Company has produced over 90,000 power conversion and control systems. Approximately 61%, 64% and 65% of the Company's sales in 1995, 1996 and the first six months of 1997, respectively, were to customers in the semiconductor equipment industry. Advanced Energy sells its systems primarily through direct sales personnel to customers in the United States, Japan and Europe. The Company also sells through distributors to customers in Japan, Korea, Australia, France, Hong Kong, Italy, Mexico, Singapore, Sweden and Taiwan. International sales represented 29%, 24% and 24% of the Company's sales in 1995, 1996 and the first six months of 1997, respectively. The Company maintains sales and service offices in the United States in Fort Collins, Colorado; Austin, Texas; Concord, Massachusetts; and Milpitas, California; and outside the United States in Tokyo, Japan; Filderstadt, Germany; and Bicester, United Kingdom.

The Company was incorporated in Colorado in 1981 and reincorporated in Delaware in September 1995. As used in this Prospectus, references to "Advanced Energy" or the "Company" refer to Advanced Energy Industries, Inc. and its consolidated subsidiaries. The Company's executive offices are located at 1625 Sharp Point Drive, Fort Collins, Colorado 80525, and its telephone number is (970) 221-4670.

The Company.....	1,000,000 shares
The Selling Stockholders.....	1,500,000 shares
Total Common Stock offered.....	2,500,000 shares
Common Stock to be outstanding after the Offering....	22,414,575 shares (1)
Use of proceeds.....	Repayment of debt and general corporate purposes, including working capital and potential strategic acquisitions. See "Use of Proceeds."
Nasdaq National Market Symbol.....	AEIS

	Years Ended December 31,					Six Months Ended June 30,	
	1992	1993	1994	1995	1996	1996	1997
STATEMENT OF OPERATIONS DATA:							
Sales.....	\$23,950	\$31,577	\$51,857	\$94,708	\$98,852	\$56,997	\$53,358
Gross profit.....	11,609	15,248	25,814	45,394	36,814	22,758	20,060
Income from operations.....	575	3,701	10,003	21,478	8,211	7,229	6,641
Net income.....	\$ 301	\$ 3,417	\$ 5,963	\$13,281	\$ 5,144	\$ 4,335	\$ 4,055
Net income per share (2).....	--	--	\$ 0.32	\$ 0.69	\$ 0.24	\$ 0.20	\$ 0.19
Weighted average number of common and common equivalent shares outstanding.....	17,315	17,894	18,605	19,310	21,666	21,657	21,906

Cash and cash equivalents.....	\$ 11,231	\$ 11,183	\$ 10,859	\$
Working capital.....	35,179	40,757	39,481	
Total assets.....	56,031	66,051	79,152	
Total debt.....	2,051	1,534	14,923	
Stockholders' equity.....	46,496	50,625	48,715	

(4) As adjusted to reflect the sale by the Company of 1,000,000 shares of Common Stock offered hereby at the public offering price of \$ per

share, after deduction of underwriting discounts and commissions and estimated expenses payable by the Company, and the application of the estimated net proceeds therefrom. See "Use of Proceeds" and "Capitalization."

## **RISK FACTORS**

IN ADDITION TO THE OTHER INFORMATION CONTAINED IN THIS PROSPECTUS, THE FOLLOWING RISK FACTORS SHOULD BE CONSIDERED CAREFULLY IN EVALUATING THE COMPANY AND ITS BUSINESS BEFORE PURCHASING THE COMMON STOCK OFFERED HEREBY. THIS PROSPECTUS CONTAINS FORWARD-LOOKING STATEMENTS WHICH INVOLVE RISKS AND UNCERTAINTIES. THE COMPANY'S ACTUAL RESULTS MAY DIFFER SIGNIFICANTLY FROM THE RESULTS DISCUSSED IN THE FORWARD-LOOKING STATEMENTS. FACTORS THAT MIGHT CAUSE SUCH A DIFFERENCE INCLUDE, BUT ARE NOT LIMITED TO, THOSE DISCUSSED BELOW.

### **QUARTERLY OPERATING RESULTS ARE SUBJECT TO SIGNIFICANT FLUCTUATIONS**

The Company has experienced and expects to continue to experience significant fluctuations in its quarterly operating results. As a supplier of subsystems to equipment manufacturers, the Company's sales often are subject to its customers' production schedules. A substantial and increasing proportion of the Company's shipments are made on a just-in-time basis in which the shipment of systems occurs within a few days or hours after an order is received. Due to the short time between receipt of orders and shipments, the Company operates with a low level of backlog. Moreover, this backlog at any point in time is not sufficient to meet the Company's revenue expectations for a particular quarter and orders generally are subject to cancellation or delay at the customer's option without penalty. As a result of these factors, it is difficult for the Company to predict accurately the timing and level of revenues for a particular quarter. The Company's quarterly revenues are also affected by a variety of other factors, including specific economic conditions in the industries in which the Company's customers operate, particularly the semiconductor industry; the timing of the receipt of orders from major customers; customer cancellations or shipment delays; pricing competition; component shortages resulting in manufacturing delays; exchange rate fluctuations and the introduction of new products by the Company or its competitors. In addition, electronics companies, including companies in the semiconductor capital equipment industry, are subject to ongoing pressure to reduce costs. This has in the past caused and is continuing to cause the Company's current and prospective customers to exert pricing pressure and make other demands on the Company, which could lead to significant changes in revenue and operating margins from quarter to quarter.

The Company's gross profit and operating income in a particular quarter are affected by a number of factors, including product mix, price changes, outsourcing costs, manufacturing efficiencies and costs incurred to respond to specific feature requests by customers. Generally, the Company's gross profit and operating income have fluctuated significantly as a result of these factors in the past, and such fluctuations are expected to continue. In particular, as the Company expands manufacturing capacity, manufacturing overhead and other costs may be incurred prior to full utilization of the additional facilities. Further, production of the Company's systems, particularly new systems, often requires long lead times, during which time the Company must expend substantial funds and management effort. As a result, the Company may incur significant development and other expenses without realizing corresponding revenue in the same quarter. In addition, many of the Company's expenses, which are based in part on expectations of future revenue, are fixed. Accordingly, if revenue levels in a particular quarter do not meet expectations, operating results will be disproportionately adversely affected. Currently, the Company is in the process of rapidly increasing production and capacity to meet current and anticipated demand for its products, which has involved substantial expenditures and commitments by the Company. If the Company does not generate the revenue it anticipated when it began these production and capacity increases, its operating results will be adversely affected. This dynamic negatively impacted the Company throughout 1996 and the first quarter of 1997. In late 1995, the Company was in a growth mode similar to that which it is experiencing today, and when the semiconductor capital equipment market went through the major downturn of 1996, the Company's operating results were severely impacted, which in turn had a material adverse effect on the market price of the Company's Common Stock. Further fluctuations in operating results on a quarterly basis could have a material adverse effect on the market price of the Common Stock. See "--The Semiconductor and Semiconductor Equipment Industries Are Highly Volatile" and "Management's Discussion and Analysis of Financial Condition and Results of Operations--Quarterly Results of Operations."

## **CURRENT QUARTER RESULTS AFFECTED BY WATER-RELATED DAMAGE AND ACQUISITION OF TOWER**

The Company sustained substantial water-related damage to its manufacturing facilities and certain equipment and inventory during a severe rainstorm on July 29, 1997, which interrupted production and shipments. The Company was able to resume some production within a few days and has been increasing production as repairs are made and equipment and inventory are replaced. The Company expects that its revenues and operating results in the current quarter ending September 30, 1997 will be affected by the production interruption. The Company is working closely with suppliers to accelerate deliveries of key components which were lost or damaged and are required to meet production schedules for the current quarter. Actual results for the current quarter will depend on continued success in increasing production and the ability to obtain in a timely manner the necessary key components from suppliers to meet current production goals, as to which there can be no assurance. The problem of inventory shortages has been compounded by delays in shipments related to the recent UPS strike. The Company's insurance policies may not cover any or all of the costs incurred by the Company in connection with the rainstorm. As a result, the Company expects that it will be required to record a one-time charge in the third quarter of 1997 for such losses, which charge is currently estimated to be between \$2.5 million and \$3.0 million. The final charge, which cannot presently be determined, could be larger. In addition, the Company will record a one-time charge of \$3.1 million for in-process research and development costs in connection with the acquisition of Tower. See "Management's Discussion and Analysis of Financial Condition and Results of Operations" and "Business--Recent Acquisition."

## **THE SEMICONDUCTOR AND SEMICONDUCTOR EQUIPMENT INDUSTRIES ARE HIGHLY VOLATILE**

Approximately 61%, 64% and 65% of the Company's sales in 1995, 1996, and the first six months of 1997, respectively, were made to customers in the semiconductor equipment industry. The Company expects that its business will continue to depend in significant part on the semiconductor and semiconductor equipment industries for the foreseeable future. The Company's business depends in large part upon capital expenditures by manufacturers of semiconductor devices, which in turn depend upon the current and anticipated market demand for semiconductor devices and products utilizing such devices. The semiconductor industry historically has been highly volatile and has experienced periods of oversupply, resulting in significantly reduced demand for semiconductor fabrication equipment. In 1996, the semiconductor industry experienced a significant downturn, which caused a number of the Company's customers, including Applied Materials and Lam Research, to drastically reduce and, in some cases cancel, their orders from the Company. Applied Materials and Lam Research together accounted for approximately 47% and 45% of the Company's revenues during 1996 and the first six months of 1997, respectively. Because the Company is a supplier of subsystems to equipment manufacturers and a substantial and increasing proportion of the Company's shipments are made on a just-in-time basis, events such as a rapid drop in demand for the Company's products from a particular customer that may occur with limited advance notice can have an adverse impact on the Company. Failure to respond promptly to such reductions in revenue has had in the past and in the future could have a material adverse effect on the Company's operating results. In addition, the Company has observed that semiconductor capital equipment manufacturers and their suppliers have often been more negatively affected by downturns in the semiconductor industry than device manufacturers. Although there have been indications that the semiconductor and semiconductor equipment industries have begun to recover from the 1996 downturn, there can be no assurance that such industries will continue to improve or that there will not be further downturns or slowdowns in any of the markets that the Company serves, any or all of which could have a material adverse effect on the Company's business, financial condition and results of operations. See "Business--Markets, Applications and Customers."

## **SIGNIFICANT SALES ARE CONCENTRATED AMONG A FEW CUSTOMERS**

The Company's sales generally are concentrated among a small number of customers. Sales to the Company's ten largest customers accounted for approximately 73% and 77% of the Company's sales in 1996 and the first six months of 1997, respectively. Sales to Applied Materials and Lam Research, the two leading domestic manufacturers of semiconductor fabrication equipment, together accounted for approximately 47% and 45% of the Company's sales during 1996 and the first six months of 1997, respectively. The Company expects that sales of its systems to Applied Materials and Lam Research will continue to account for a high

percentage of its sales in the foreseeable future. The loss of any of its major customers, particularly Applied Materials or Lam Research, or a reduction in orders from any of such customers, including reductions caused by changes in a customer's competitive position or economic conditions in the industries in which the Company's customers compete, could have a material adverse effect on the Company's business, financial condition and results of operations. None of the Company's customers has entered into a long-term agreement requiring it to purchase the Company's systems. Similarly, Tower's sales historically have been concentrated among a small number of customers. Tower's sales to U.S. Robotics accounted for approximately 78% of Tower's total sales in the first six months of 1997. Accordingly, the success of the Company's acquisition of Tower will depend in large part on retention of Tower's customers, particularly U.S. Robotics. See "--The Semiconductor and Semiconductor Equipment Industries Are Highly Volatile," "--Risks Associated with Recent and Potential Future Acquisitions," "Business--Markets, Applications and Customers" and Note 14 to the Consolidated Financial Statements.

## **RISKS ASSOCIATED WITH MANUFACTURING FACILITY**

All of the Company's manufacturing is conducted at its facility in Fort Collins, Colorado. In July 1997, the Company sustained substantial damage to its facilities and certain equipment and inventory due to excess surface water caused by a severe rainstorm in Fort Collins. The Company was forced to cease manufacturing temporarily and has not resumed full production capacity. The Company's insurance policies may not cover any or all of the costs incurred by the Company in connection with the rainstorm. As a result, the Company expects that it will be required to record a one-time charge in the third quarter of 1997 for such losses, which charge is currently estimated to be between \$2.5 million and \$3.0 million. The final charge, which cannot presently be determined, could be larger. Such charge will have a material adverse effect on the Company's results for such quarter. Because all of the Company's manufacturing is conducted in one location, there can be no assurance that future natural or other occurrences, out of the Company's control, will not have a material adverse effect on the Company's operations. Cessation of manufacturing or the Company's inability to operate the Fort Collins facility at full capacity for any extended period could have a material adverse effect on the Company's business, financial condition and results of operations. See "Business--Manufacturing."

## **RISKS ASSOCIATED WITH RECENT AND POTENTIAL FUTURE ACQUISITIONS**

The Company intends to expand its product offerings and customer base in part by acquiring other businesses, products and technologies that are complementary to those of the Company. In 1997, the Company acquired Tower and, in a separate transaction, acquired all of the assets of MIK Physics, Inc. ("MIK"). The assets acquired from MIK consisted predominantly of inventory, and the purchase price paid by the Company was immaterial. Tower designs and manufactures custom, high performance switchmode power supplies for use principally in the telecommunications, medical and non-impact printing industries, and MIK has developed technology to design and manufacture high power systems for certain industrial uses. The Company has limited experience in the markets served by Tower and MIK, and there can be no assurance that the Company will be able to compete in these markets successfully or that it will be able to operate the acquired businesses profitably. Acquisitions generally involve a number of risks related to integration, including difficulties associated with assimilating the personnel and operations of an acquired business, the Company's inability to achieve expected financial results or strategic goals for an acquired business, the potential disruption of the Company's ongoing business, the diversion of significant management and other resources and the maintenance of uniform standards, controls, procedures and policies. The Company intends to continue to operate Tower's business out of Tower's existing facilities in Fridley, Minnesota, and, accordingly, will be required to manage two geographically separated manufacturing locations. Failure to integrate Tower and MIK, or any future acquisitions, without substantial costs, delays or other operational or financial problems could have a material adverse effect on the Company's business, financial condition and results of operations. Further, future acquisitions by the Company may result in dilutive issuances of equity securities, the incurrence of debt, large one-time expenses and the creation of goodwill or other intangible assets that could result in significant amortization expense. In addition, there can be no assurance that the Company will be able to identify, negotiate and consummate acquisitions that it considers advantageous to its business plans. See "Business--Recent Acquisition."

## **MANAGEMENT OF GROWTH**

The Company is experiencing a period of rapid growth and expansion which has placed, and is expected to continue to place, significant demands on the Company's resources. The management of such growth will require the Company to continue to improve and expand its management, operational and financial systems, procedures and controls, including accounting and other internal management systems, quality control, delivery and service capabilities. In early 1997, the Company began implementation of an integrated information management system that incorporates substantially all of the Company's internal financial and business systems, procedures and controls. The new system has been fully implemented in the United States, but the Company has postponed implementation of the new system at its international locations, due primarily to a shortage of trained personnel and other resources. In addition, the Company intends to continue to operate Tower's business out of Tower's existing facilities in Fridley, Minnesota and has retained all of Tower's employees. The failure to manage growth effectively, including delays or difficulties implementing new systems, procedures and controls or integrating acquisitions in a timely manner and without disruption of the Company's operations, could have a material adverse effect on the Company's business, financial condition and results of operations.

The recent growth in many of the Company's product lines has required the Company to invest in additional equipment, personnel, physical facilities and other infrastructure to meet current and anticipated manufacturing demands. The Company has hired, and expects that it will need to continue to hire, a significant number of new employees, particularly personnel with technical backgrounds for the Company's engineering and technical support staffs. The market for such personnel has become increasingly competitive, particularly in Northern Colorado where there has been a significant increase in the business activities of other companies in the electronics and manufacturing sectors. Because of this competition for qualified labor, the Company has occasionally experienced delays in meeting its staffing requirements. There can be no assurance that the Company will be able to recruit, train and retain a sufficient number of technical employees. Protracted inability of the Company to recruit and train adequate numbers of qualified personnel on a timely basis could adversely affect the Company's ability to manufacture, sell and support its systems. To expand its internal manufacturing capacity and to accommodate the continuing expansion of its employee base, the Company increased its physical facilities in Fort Collins, Colorado by approximately 31,000 square feet in August 1997. The new facilities are expected to be in production in October 1997. The Company also depends on outsourced suppliers for the manufacturing of certain components and subassemblies of its systems. There can be no assurance that the Company will be able to adequately increase its manufacturing facilities and capacity to meet demand for its products or that, in the event of a downturn or slowdown in such demand, the Company will be able to reduce its production activities or absorb its increased overhead and outsourcing costs. The Company expects that its operating expenses will continue to increase. There can be no assurance that the Company's future sales will increase in an amount necessary to cover planned increases in operating expenses. Continued expansion of the Company could significantly strain the Company's management, financial and other resources. The Company also may seek to enhance its growth by acquiring other businesses, products and technologies that are complementary to those of the Company. See "--Risks Associated with Recent and Potential Future Acquisitions" and "Business--Recent Acquisition."

## **SUPPLY CONSTRAINTS AND DEPENDENCE ON SOLE AND LIMITED SOURCE SUPPLIERS**

Manufacture of the Company's power conversion and control systems requires numerous electronic components. Dramatic growth in the electronics industry has significantly increased demand for such components. This demand can result in periodic shortages and allocations, which the Company has experienced from time to time. The Company expects that shortages and allocations of electronic components and subassemblies will continue in the foreseeable future and could result in shipment delays. Such delays could damage the Company's relationships with current and prospective customers, which in turn could have a material adverse effect on the Company's business, financial condition and results of operations. In this regard, the Company's revenues and operating results in the current quarter ending September 30, 1997 will be affected by the Company's ability to accelerate deliveries of, and obtain in a timely manner, certain key components needed to replace inventory lost in the water-related damage to the Company's manufacturing facilities in late July 1997. See "Management's Discussion and Analysis of Financial Condition and Results of Operations--Quarterly Results of Operations."

The Company relies on sole and limited source suppliers for certain parts and subassemblies. Such reliance involves several risks, including a potential inability to obtain an adequate supply of required components, reduced control over pricing and timing of delivery of components and suppliers' potential inability to develop technologically advanced products to support the Company's growth and development of new systems. The Company believes that alternative sources could be obtained and qualified, if necessary, for most sole and limited source parts. However, if the Company were forced to seek alternative sources of supply or to manufacture such components or subassemblies internally, it may be required to redesign its systems, which could prevent the Company from shipping its systems to its customers on a timely basis. This could damage the Company's relationships with current and potential customers, which could have a material adverse effect on the Company's business, financial condition and results of operations. See "Business--Manufacturing."

## **DEPENDENCE ON DESIGN WINS; BARRIERS TO OBTAINING NEW CUSTOMERS; HIGH LEVEL OF CUSTOMIZED SYSTEMS**

The Company believes that design wins are critical to retaining existing customers and to obtaining new customers. Generally, an equipment manufacturer selects a power conversion and control system for each of its systems and products. Because power conversion and control systems vary in characteristics such as power dimensions and modes of interfacing with the customer's equipment, once a power conversion and control system is selected for use in a particular system or product, it is unlikely that it will be displaced during the life of that system or product. As a result, the Company's failure to achieve design wins for semiconductor fabrication and other equipment could have a material and prolonged adverse effect on the Company's sales and growth. The Company also believes that equipment manufacturers often select their suppliers based on factors such as long-term relationships. Accordingly, the Company may be at a disadvantage in achieving design wins from equipment manufacturers who are not currently customers. There can be no assurance that the Company's systems will be selected by existing or potential customers for new products.

In order to achieve design wins, the Company typically must customize its systems for use in particular equipment and for particular customers. Such customization increases the Company's research and development expenses and can strain its engineering and management resources. In addition, there can be no assurance that such investment will result in design wins for the Company. Because a substantial proportion of the Company's business involves the just-in-time shipment of systems, the Company must keep a relatively large number and variety of customized systems in inventory. As the Company develops new systems and as its customers develop new products, systems in inventory may become obsolete. There can be no assurance that such inventory obsolescence will not have a material adverse effect on the Company's business, financial condition and results of operations. See "Business--Strategy."

## **RAPID TECHNOLOGICAL CHANGE AND DEPENDENCE ON NEW SYSTEM INTRODUCTIONS**

The market for power conversion and control systems is characterized by ongoing technological developments and changing customer requirements. The markets in which the Company's customers compete are also characterized by continually evolving technology. The Company's success depends upon its ability to continue to improve existing systems and to develop and introduce new systems that keep pace with technological advances and adapt to support its customers' changing needs. There can be no assurance that the Company will continue to be able to improve its existing systems or develop new systems that will adequately address the changing needs of its customers and the marketplace. Even if the Company is able to develop improved or new systems, there can be no assurance that such systems will be cost-effective or introduced in a timely manner. Development and introduction of new systems may involve significant costs that are difficult to forecast. Failure of the Company to develop or introduce improved systems and new systems in a timely manner could have a material adverse effect on the Company's business, financial condition and results of operations, as well as on its customer relationships. See "Business--Technology" and "Business--Products."

## **COMPETITION**

The Company faces substantial competition, primarily from established companies, some of which have greater financial, marketing and technical resources than the Company. The trend toward consolidation in the semiconductor equipment industry has made it increasingly important to have the resources necessary to compete effectively across a broad range of product offerings, to fund customer service and support on a

worldwide basis and to invest in research and development. The Company expects its competitors to continue to develop new products aimed at applications currently served by the Company, to continue to improve the design and performance of their systems, and to introduce new systems with competitive performance characteristics. To remain competitive, the Company believes it will be required to maintain a high level of investment in research and development and sales and marketing. There can be no assurance that the Company will have sufficient resources to continue to make such investments or that the Company will be able to make the technological advances necessary to maintain its competitive position. In addition, new products developed by competitors could make pricing more competitive, which may necessitate significant price reductions by the Company or result in lost orders, either of which could have a material adverse effect on the Company's business, financial condition and results of operations. In addition, electronics companies, including companies in the semiconductor capital equipment industry, have been characterized by ongoing pressure to reduce costs. This has in the past caused and is continuing to cause the Company's current and prospective customers to exert pricing pressure and make other demands on the Company, which could lead to significant changes in revenue and operating margins from quarter to quarter. Failure to adequately respond to such pressure and demands could result in loss of customers, which could have a material adverse effect on the Company. See "Business--Competition."

## **DEPENDENCE ON THE JAPANESE MARKET AND JAPANESE DISTRIBUTOR**

The future performance of the Company will depend, in part, upon its ability to compete successfully in Japan, one of the largest markets for semiconductor fabrication equipment and flat panel display equipment, and a major market for data storage and other industrial equipment utilizing the Company's systems. The Japanese market has historically been difficult for non-Japanese companies to penetrate. Because the Company's success in a market depends on having its products designed into existing and future equipment, the Company believes that it may be at a competitive disadvantage with respect to its Japanese competitors who have had the opportunity to develop strong relationships with Japanese equipment manufacturers and whose systems are currently designed into such potential customers' equipment. The Company also believes that its future performance will depend on its non-Japanese customers' ability to compete successfully in the Japanese market. The Company's non-Japanese customers compete directly with Japanese equipment manufacturers who may have a competitive advantage over such customers for the same reasons that Japanese manufacturers of power conversion and control systems may have a competitive advantage over the Company. Although the Company and a number of its significant non-Japanese customers have begun to establish operations in Japan, there can be no assurance that the Company or its customers will be able to maintain or improve their competitive positions in Japan.

The Company sells its systems in Japan both directly and through a single distributor, Landmark Technology Corporation. Sales in Japan through Landmark Technology Corporation represented approximately 3% and 2% of the Company's total sales in 1996 and the first six months of 1997. Although the Company believes that it maintains a good relationship with Landmark Technology Corporation, there can be no assurance that the relationship will continue. Termination of such relationship or a reduction of sales through Landmark Technology Corporation could have a material adverse effect on the Company's ability to compete in the Japanese market. See "Business--Competition" and Note 12 to the Consolidated Financial Statements.

## **RISKS ASSOCIATED WITH INTERNATIONAL SALES**

The markets in which the Company competes are becoming increasingly globalized. As a result, the Company's customers increasingly require service and support on a worldwide basis. The Company has invested substantial financial and management resources to develop an international infrastructure to meet the needs of its customers worldwide. The Company maintains sales and service offices outside the United States in Tokyo, Japan; Filderstadt, Germany; and Bicester, United Kingdom. The Company also plans to open offices in Seoul, South Korea and Taiwan. There can be no assurance that the Company's investments will enable it to compete successfully in the international market or to meet the service and support needs of such customers. Approximately 29%, 24% and 24% of the Company's sales in 1995, 1996 and the first six months of 1997, respectively, were attributable to customers outside the United States. The Company expects sales outside the United States to continue to represent a significant portion of future sales. Sales to customers outside the

United States are subject to various risks, including exposure to currency fluctuations, the imposition of governmental controls, political and economic instability, trade restrictions, changes in tariffs and taxes, and longer payment cycles typically associated with international sales. The Company's international activities are also subject to the difficulties of managing overseas distributors and representatives, and difficulties of staffing and managing foreign subsidiary operations.

The Company's systems are subject to numerous foreign government standards and regulations that are continually being amended. For example, the Company has invested significant resources to re-design its systems to meet European standards for electromagnetic compatibility which came into effect in 1996 and for safety that came into effect in 1997. Although the Company endeavors to meet foreign technical and regulatory standards, there can be no assurance that the Company's products will continue to comply with foreign government standards and regulations, or changes thereto, or that it will be cost effective for the Company to redesign its products to comply with such standards and regulations. The inability of the Company to design or redesign products to comply with foreign standards or any significant or prolonged decline in the Company's international operations could have a material adverse effect on the Company's business, financial condition and results of operations.

## **INTELLECTUAL PROPERTY RIGHTS**

The Company's success depends in large part on the technical innovation of its products. While the Company attempts to protect its intellectual property rights through patents and non-disclosure agreements, it believes that its success will depend to a greater degree upon innovation, technological expertise and its ability to adapt its products to new technology. There can be no assurance that the Company will be able to protect its technology or that competitors will not be able to develop similar technology independently. In addition, the laws of certain foreign countries may not protect the Company's intellectual property to the same extent as do the laws of the United States. No assurance can be given that the Company's patents will be sufficiently broad to protect the Company's technology, nor that any existing or future patents will not be challenged, invalidated or circumvented, or that the rights granted thereunder will provide meaningful competitive advantages to the Company. Any of such events could have a material adverse effect on the Company's business, financial condition and results of operations.

Although the Company is not aware of any infringement by its products of any patents or proprietary rights of others, there can be no assurance that such infringements do not exist or will not occur in the future. Litigation may be necessary in the future to enforce patents issued to the Company, to protect trade secrets or know how owned by the Company, to defend the Company against claimed infringement of the rights of others or to determine the scope and validity of the proprietary rights of others. Any such litigation could result in substantial cost and diversion of effort by the Company, which could have a material adverse effect on the Company's business, financial condition and results of operations. Moreover, adverse determinations in such litigation could result in the Company's loss of proprietary rights, subject the Company to significant liabilities to third parties, require the Company to seek licenses from third parties or prevent the Company from manufacturing or selling its products, any of which could have a material adverse effect on the Company's business, financial condition and results of operations. See "Business--Intellectual Property."

## **DEPENDENCE ON KEY PERSONNEL**

The Company's success depends to a large extent upon the efforts and abilities of Douglas S. Schatz, President and Chief Executive Officer, and other key managerial and technical employees. Although the Company recently has made significant additions to its management team, the loss of Mr. Schatz or other key employees could have a material adverse effect on the Company's business, financial condition and results of operations. Furthermore, the Company does not maintain key-man life insurance on Mr. Schatz or any other employee. The Company has not entered, and in the foreseeable future does not intend to enter, into written employment agreements, other than confidentiality and non-compete agreements, with any of its employees. In addition, the Company's future operating results depend in part upon its ability to attract and retain qualified employees, particularly highly-skilled engineers for the development of new systems and products. The competition for such personnel is intense. There can be no assurance that the Company will be successful in attracting and retaining qualified engineers and other employees. See "--Management of Growth" and "Management."

## **CONTROL BY MANAGEMENT AND PRINCIPAL STOCKHOLDERS**

Upon completion of the Offering, all of the officers and directors of the Company as a group, and Douglas S. Schatz individually, will hold or will be deemed to beneficially own approximately 68.6% and 54.2% of the outstanding Common Stock of the Company, respectively (67.1% and 53.1% if the Underwriters' over-allotment option is exercised in full). Accordingly, existing management will continue to hold sufficient voting power to enable it to elect all of the directors and to continue to control the business and affairs of the Company for the foreseeable future. Such concentration of ownership may have the effect of delaying, deferring or preventing a change in control of the Company. In addition, substantially all of the facilities leased by the Company are owned by entities in which certain of the Company's officers and directors have a financial interest. See "Management" and "Principal and Selling Stockholders."

## **ANTI-TAKEOVER PROVISIONS**

Certain provisions of the Company's Certificate of Incorporation and By-laws could have the effect of making it more difficult for a third party to acquire, or of discouraging a third party from attempting to acquire, control of the Company. Such provisions could limit the price that certain investors might be willing to pay in the future for shares of the Company's Common Stock. Certain of these provisions (i) allow the Company to issue Preferred Stock with rights senior to those of the Common Stock without any further vote or action by the stockholders, (ii) limit the right of the stockholders to call a special meeting of stockholders, and (iii) allow the Company to impose various procedural and other requirements that could make it more difficult for stockholders to effect certain corporate actions. See "Description of Capital Stock."

## **VOLATILITY OF MARKET PRICE OF COMMON STOCK**

The stock market generally, and the market for technology stocks in particular, have experienced significant price and volume fluctuations, which have often been unrelated or disproportionate to the operating performance of such companies. From the initial public offering of the Common Stock in November 1995 through August 19, 1997, the closing price of the Common Stock on the Nasdaq National Market has ranged from \$3.50 to \$32.25. There can be no assurance that the market for the Common Stock will not be subject to similar fluctuations. Many factors, including future announcements concerning the Company or its competitors, variations in operating results, announcements of technological innovations, the introduction of new products or changes in product pricing policies by the Company or its competitors, changes in earnings estimates by securities analysts and general stock market trends, could cause the market price of the Common Stock to fluctuate substantially. See "Price Range of Common Stock."

## USE OF PROCEEDS

The net proceeds to the Company from the sale of the 1,000,000 shares of Common Stock offered by the Company hereby are estimated to be approximately \$ (\$ if the Underwriters' over-allotment option is exercised in full), after deduction of underwriting discounts and commissions and estimated expenses payable by the Company in connection with the Offering. The Company will not receive any of the proceeds from the sale of the shares of Common Stock offered by the Selling Stockholders.

The Company intends to use approximately \$12 million of the proceeds to fully repay indebtedness under a term loan obtained in August 1997 from Silicon Valley Bank and the Bank of Hawaii in connection with the Tower acquisition (the "Term Loan"). The Term Loan matures in August 2002 and bears interest at the Prime Rate (8.5% at August 15, 1997) less 0.25%, adjustable to the Prime Rate minus 0.50% if certain financial ratios are achieved. Prepayment of the Term Loan prior to August 1998 will result in a penalty of 0.75% of the amount prepaid, or approximately \$90,000, which amount also will be paid with a portion of the net proceeds from this Offering. The Company intends to use the remainder of the proceeds for general corporate purposes, including working capital. The Company intends to expand its product offerings and customer base in part by acquiring other businesses, products and technologies that are complementary to those of the Company. Accordingly, a portion of the net proceeds may be used for acquisitions, although the Company has no present agreements or commitments with respect to any such transaction. Pending such uses, the Company will invest the net proceeds in short-term, investment-grade, interest-bearing marketable securities.

## DIVIDEND POLICY

The Company intends to retain future earnings to finance its business. Accordingly, the Company does not anticipate paying cash or other dividends on the Common Stock in the foreseeable future. Furthermore, the Company's credit facilities prohibit the declaration or payment of any cash dividends on the Common Stock.

## PRICE RANGE OF COMMON STOCK

The Common Stock was approved for quotation on the Nasdaq National Market beginning November 22, 1995 under the symbol "AEIS." The following table sets forth, for the periods indicated, the range of intra-day high and low sales prices, as reported by the Nasdaq National Market:

	High -----	Low -----
1995		
Fourth Quarter (beginning November 22).....	\$11	\$8 1/4
1996		
First Quarter.....	10	6 1/2
Second Quarter.....	9 1/8	5 3/4
Third Quarter.....	7 3/4	4 1/2
Fourth Quarter.....	7 1/4	2 7/8
1997		
First Quarter.....	8 3/8	5 1/4
Second Quarter.....	15 3/8	7 1/8
Third Quarter (through August 19).....	32 5/8	14 1/2

On August 19, 1997, the last reported sale price for the Common Stock, as reported by the Nasdaq National Market, was \$27.50. As of August 19, 1997, the Company had approximately 445 holders of record of the Common Stock.

## CAPITALIZATION

The following table sets forth the capitalization of the Company as of June 30, 1997 and as adjusted as of such date to reflect the sale of the Common Stock offered by the Company hereby and application of the estimated net proceeds therefrom.

	June 30, 1997		
	Actual	Pro Forma (1)	Pro Forma As Adjusted (1)(2)
		(in thousands)	
Short-term debt (including current portion of long-term debt).....	\$ 745	\$ 4,534	\$ 2,134
Long-term debt (excluding current portion).....	\$ 789	\$ 10,389	\$ 789
Stockholders' equity:			
Preferred stock, \$0.001 par value, 1,000,000 shares authorized; none issued and outstanding.....	--	--	--
Common stock, \$0.001 par value, 30,000,000 shares authorized; 21,289,962 shares issued and outstanding and pro forma; and 22,414,575 shares issued and outstanding pro forma as adjusted (3)..	21	21	22
Additional paid-in capital.....	23,102	23,102	
Retained earnings.....	29,120	27,210	27,120
Stockholders' notes receivable.....	(1,083)	(1,083)	(1,083)
Deferred compensation.....	(58)	(58)	(58)
Cumulative translation adjustment.....	(477)	(477)	(477)
Total stockholders' equity.....	50,625	48,715	
Total capitalization.....	\$ 52,159	\$ 63,638	\$

(1) Gives pro forma effect to the Tower acquisition, allocation of the purchase price therefor and transactions occurring in connection therewith, including the borrowing by the Company of \$12,000,000 under the Term Loan, as if all of such transactions had occurred on June 30, 1997. See the Pro Forma Condensed Consolidated Balance Sheet. For a description of the Tower acquisition, see "Business--Recent Acquisition."

(2) As adjusted to reflect the sale by the Company of 1,000,000 shares of Common Stock offered hereby at the public offering price of \$ per share, after deduction of underwriting discounts and commissions and estimated expenses payable by the Company, and the application of the estimated net proceeds therefrom. See "Use of Proceeds" and "Capitalization."

(3) Includes 31,500 shares issued and outstanding pro forma as adjusted to be acquired by certain Selling Stockholders pursuant to the exercise of stock options and sold in the Offering by such Selling Stockholders. See "Principal and Selling Stockholders." Excludes 1,343,114 shares of Common Stock issuable under the Option Plan at a weighted average exercise price of approximately \$6.52 per share; 25,000 shares issuable under the Director Plan at a weighted average exercise price of \$12.59 per share; and 26,736 shares issuable under the Purchase Plan. Options to purchase an additional 262,251 shares and 25,000 shares are eligible to be granted under the Option Plan and the Director Plan, respectively.

## SELECTED CONSOLIDATED FINANCIAL STATEMENTS

The following selected consolidated financial data is qualified by reference to, and should be read in conjunction with the Consolidated Financial Statements and Notes to Consolidated Financial Statements and the discussion thereof included elsewhere in this Prospectus. The selected consolidated financial data as of and for each of the years in the five-year period ended December 31, 1996, are derived from consolidated financial statements that have been audited by Arthur Andersen LLP, independent accountants, whose report with respect thereto is included elsewhere in this Prospectus. The data for the six months ended June 30, 1997 and 1996 are derived from the Unaudited Consolidated Financial Statements, which have been prepared on the same basis as the audited Consolidated Financial Statements and, in the opinion of the Company, include all adjustments, consisting only of normal recurring adjustments necessary for a fair statement of the results for the unaudited periods. Operating results for the six months ended June 30, 1997 are not necessarily indicative of the results that may be expected for the entire year ending December 31, 1997.

	Years Ended December 31,					Six Months Ended June 30,	
	1992	1993	1994	1995	1996	1996	1997
(in thousands, except share data)							
STATEMENT OF OPERATIONS DATA:							
Sales.....	\$ 23,950	\$ 31,577	\$ 51,857	\$ 94,708	\$ 98,852	\$ 56,997	\$ 53,358
Cost of sales.....	12,341	16,329	26,043	49,314	62,038	34,239	33,298
Gross profit.....	11,609	15,248	25,814	45,394	36,814	22,758	20,060
Operating expenses:							
Research and development.....	3,606	4,716	5,849	10,522	13,760	7,143	6,334
Sales and marketing.....	3,258	3,414	4,658	6,201	8,590	4,331	4,135
General and administrative.....	4,170	3,417	5,304	7,193	6,253	4,055	2,950
Total operating expenses.....	11,034	11,547	15,811	23,916	28,603	15,529	13,419
Income from operations.....	575	3,701	10,003	21,478	8,211	7,229	6,641
Other income (expense).....	(270)	(278)	(300)	(393)	93	(236)	(101)
Income before income taxes.....	305	3,423	9,703	21,085	8,304	6,993	6,540
Provision for income taxes.....	4	6	3,740	7,804	3,160	2,658	2,485
Net income.....	\$ 301	\$ 3,417	\$ 5,963	\$ 13,281	\$ 5,144	\$ 4,335	\$ 4,055
Net income per share (1).....	--	--	\$ 0.32	\$ 0.69	\$ 0.24	\$ 0.20	\$ 0.19
Weighted average common and common equivalent shares outstanding....	17,315	17,894	18,605	19,310	21,666	21,657	21,906
	December 31,					June 30,	
	1992	1993	1994	1995	1996	1996	1997
(in thousands)							
BALANCE SHEET DATA:							
Cash and cash equivalents.....	\$ 346	\$ 378	\$ 368	\$ 13,332	\$ 11,231	\$ 11,183	
Working capital.....	2,849	3,587	7,773	33,749	35,179	40,757	
Total assets.....	9,310	13,389	23,149	55,319	56,031	66,051	
Total debt.....	2,680	8,459	9,946	2,484	2,051	1,534	
Stockholders' equity.....	4,025	1,011	7,218	41,087	46,496	50,625	

(1) Prior to January 1, 1994, the Company was treated as an S corporation for tax purposes and, accordingly, net income per share for the years ended December 31, 1992 and 1993 has not been calculated. On a pro forma basis, assuming federal, state and foreign income tax rates aggregating 40.0%, net income and net income per share for the year ended December 31, 1992 would have been \$181,000 and \$0.01, respectively, and for the year ended December 31, 1993 would have been \$2,047,000 and \$0.11, respectively.

## **MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS**

THIS PROSPECTUS CONTAINS FORWARD-LOOKING STATEMENTS THAT INVOLVE RISKS AND UNCERTAINTIES. THE COMPANY'S ACTUAL RESULTS MAY VARY SIGNIFICANTLY FROM THE RESULTS DISCUSSED IN THE FORWARD-LOOKING STATEMENTS. FACTORS THAT MIGHT CAUSE SUCH DIFFERENCES INCLUDE, BUT ARE NOT LIMITED TO, THOSE DISCUSSED IN "RISK FACTORS."

### **OVERVIEW**

The Company designs, manufactures, markets and supports power conversion and control systems used in industrial processes. The Company's systems are key elements in products that utilize gaseous plasmas to deposit or etch thin film layers on materials or substrates such as silicon, glass and metals. The Company commenced operations in 1981 and has been profitable each year since its inception. The Company markets and sells its systems primarily to original equipment manufacturers (OEMs) of semiconductor, flat panel display, data storage and other industrial thin film manufacturing equipment. A substantial and increasing proportion of the Company's sales are made on a just-in-time basis in which the shipment of systems occurs within a few days or hours after an order is received. The Company recognizes revenues, which are derived from the sales of power conversion and control systems, upon shipment of its systems.

The semiconductor equipment industry accounted for approximately 61%, 64% and 65% of the Company's sales in 1995, 1996 and the first six months of 1997, respectively. The Company had benefited from strong growth in the semiconductor industry until the downturn in the semiconductor and semiconductor equipment industries in 1996. The two largest customers of the Company are also the largest domestic semiconductor equipment manufacturers. The Company has also experienced growth in sales to the other industries it serves during the last three years, with the exception of a decline in sales to the flat panel display industry in 1996, primarily in Japan. The future success of the Company depends on continued growth of the semiconductor equipment industry, data storage industry, flat panel display industry, and other industries requiring thin film manufacturing processes. To date, the Company has been successful in achieving a number of "design wins" which have resulted in the Company obtaining new customers and solidifying relationships with its existing customers. The Company believes that its ability to continue to achieve design wins with existing and new customers will be critical to its future success. See "Risk Factors--The Semiconductor and Semiconductor Industries Are Highly Volatile" and "Risk Factors--Dependence on Design Wins; Barriers to Obtaining New Customers; High Level of Customized Systems."

The Company sustained substantial water-related damage to its manufacturing facilities and certain equipment and inventory during a severe rainstorm on July 29, 1997, which interrupted production and shipments. The Company was able to resume some production within a few days and has been increasing production as repairs are made and equipment and inventory are replaced. The Company expects that its revenues and operating results in the current quarter ending September 30, 1997 will be affected by the production interruption. Actual results for the current quarter will depend on continued success in increasing production and the ability to obtain in a timely manner the necessary key components from suppliers to meet current production goals, as to which there can be no assurance. The Company expects that it will record a one-time charge of \$2.5 million to \$3.0 million in the third quarter of 1997 for losses incurred as a result of the water-related damage. The final charge, which cannot presently be determined, could be larger. The extent of insurance coverage, if any, is unresolved. In addition, the Company will record a one-time charge of \$3.1 million for in-process research and development costs in connection with the acquisition of Tower. See "Risk Factors--Current Quarter Results Affected by Water-Related Damage and Acquisition of Tower."

### **RECENT ACQUISITION**

In August 1997, the Company acquired Tower Electronics, Inc., a designer and manufacturer of custom, high performance switchmode power supplies. Tower's power supplies have an average selling price of approximately \$350 and are used principally in the telecommunications, medical and non-impact printing industries. Its principal customers include U.S. Robotics, a subsidiary of 3Com Corporation, VideoJet Systems International, Medtronic and Intermedics. Tower had revenues of \$13.4 million for its fiscal year ended September 30, 1996. The purchase price consisted of \$14.5 million in cash, which was financed in part by the \$12.0 million Term Loan, and a promissory note to the seller in the original principal amount of \$1.5 million,

which were delivered by the Company at closing, as well as an earn out provision, pursuant to which the seller will be entitled to additional consideration if Tower's sales achieve certain levels in 1998. The promissory note matures in August 1998 and is non-interest bearing. The acquisition will be accounted for using the purchase method of accounting. The Company will record a one-time charge of \$3.1 million in the third quarter of 1997 for in-process research and development costs in connection with the acquisition. The Company currently estimates that its depreciation and amortization expense will increase by approximately \$1.3 million annually for the next several years. See the Pro Forma Condensed Consolidated Balance Sheet and "Risk Factors-- Current Quarter Results Affected by Water-Related Damage and Acquisition of Tower."

## RESULTS OF OPERATIONS

The following table sets forth certain statement of operations data of the Company expressed as a percentage of sales:

	Year Ended December 31,			Six Months Ended June 30,	
	1994	1995	1996	1996	1997
Sales.....	100.0%	100.0%	100.0%	100.0%	100.0%
Cost of sales.....	50.2	52.1	62.8	60.1	62.4
Gross margin.....	49.8	47.9	37.2	39.9	37.6
Operating expenses:					
Research and development.....	11.3	11.1	13.9	12.5	11.9
Sales and marketing.....	9.0	6.5	8.7	7.6	7.7
General and administrative.....	10.2	7.6	6.3	7.1	5.5
Total operating expenses.....	30.5	25.2	28.9	27.2	25.1
Income from operations.....	19.3	22.7	8.3	12.7	12.5
Other income (expense).....	(0.6)	(0.4)	0.1	(0.4)	(0.2)
Income before income taxes.....	18.7	22.3	8.4	12.3	12.3
Provision for income taxes.....	7.2	8.3	3.2	4.7	4.7
Net income.....	11.5%	14.0%	5.2%	7.6%	7.6%

## SIX MONTH PERIODS ENDED JUNE 30, 1997 AND 1996

**SALES.** Sales for the first six months of 1997 were \$53.4 million, a decrease of 6.0% from sales of \$57.0 million in the comparable period in 1996. The Company's decrease in sales between the periods presented has resulted from decreased unit sales of the Company's systems. A significant part of the sales decrease is attributable to decreased demand by domestic semiconductor equipment customers, primarily the Company's two largest customers, reflecting the downturn in the entire semiconductor equipment industry that affected the Company's results throughout 1996 and during the first quarter of 1997. Partially offsetting these decreases, sales in Japan were up 156% from the comparable period in 1996 due to increased unit sales.

**GROSS MARGIN.** The Company's gross margin for the first six months of 1997 was 37.6%, down from 39.9% in the comparable period in 1996. The 2.3% decline in gross margin between the periods was due primarily to underabsorption of manufacturing overhead costs resulting from the lower sales base.

**RESEARCH AND DEVELOPMENT.** Research and development expenses for the first six months of 1997 were \$6.3 million, down from \$7.1 million in the comparable period of 1996, representing a decrease of 11%. This decrease resulted from a reduction in allocation of infrastructure costs to research and development. As a percentage of sales, research and development expenses decreased to 11.9% in the first six months of 1997 from 12.5% in the comparable period in 1996.

The Company believes that continued research and development investment is essential to ongoing development of new products. Since inception, all research and development costs have been internally funded and expensed.

**SALES AND MARKETING.** Sales and marketing expenses for the first six months of 1997 were \$4.1 million, down from \$4.3 million in the comparable period in 1996, representing a decrease of 5%. As a percentage of sales, sales and marketing expenses increased to 7.7% in the first six months of 1997 from 7.6% in the comparable period in 1996.

The Company is in the process of reorganizing its sales and marketing team to better address the specific needs of its customers. In March 1996, the Company hired a vice president of sales, marketing and customer support. The Company intends to open a new support office in South Korea in 1997. As a result of these and other factors, sales and marketing expenses are expected to continue to increase in future periods.

**GENERAL AND ADMINISTRATIVE.** General and administrative expenses for the first six months of 1997 were \$3.0 million, down from \$4.1 million in the comparable period in 1996, representing a decrease of 27%. This decrease was primarily a reduction in payroll and benefits expenses. As a percentage of sales, general and administrative expenses decreased to 5.5% in the first six months of 1997 from 7.1% in the comparable period in 1996.

**OTHER INCOME (EXPENSE).** Other expense was \$0.1 million for the first six months of 1997, compared to other expense of \$0.2 million in the comparable period in 1996.

**PROVISION FOR INCOME TAXES.** The income tax provision of \$2.5 million for the first six months of 1997 represented an estimated effective rate of 38.0%.

#### **YEARS ENDED DECEMBER 31, 1994, 1995 AND 1996**

**SALES.** Sales were \$51.9 million, \$94.7 million and \$98.9 million in 1994, 1995 and 1996, respectively, representing an increase of 82% from 1994 to 1995 and 4% from 1995 to 1996. The Company's sales growth during all periods presented resulted from the increased unit sales of the Company's systems. A substantial portion of the Company's sales growth since 1994 is attributable to higher system sales to the Company's two largest customers, both of whom are primarily semiconductor equipment OEMs. The relatively slow sales growth from 1995 to 1996 was primarily attributable to the downturn in the semiconductor equipment industry in 1996.

Sales to international customers, primarily in Japan, Asia and Europe, were approximately \$16.7 million, \$27.3 million, and \$24.0 million in 1994, 1995 and 1996, respectively. These amounts represented 32%, 29% and 24% of sales for those periods. During these periods, sales in Japan were primarily to flat panel display and data storage equipment manufacturers and sales in Europe were primarily to data storage equipment manufacturers.

**GROSS MARGIN.** The Company's gross margin was 49.8%, 47.9% and 37.2% in 1994, 1995 and 1996, respectively. The decreases in gross margin from 1994 to 1995 and to a much greater extent from 1995 to 1996 were generally due to higher material costs and other costs associated with the Company's outsourcing efforts. In addition, gross margin in 1996 was negatively affected due to underabsorption of manufacturing overhead as a result of substantially lower sales in the second half of 1996. Further, gross margin was negatively impacted throughout 1996 by a shift in product mix toward products with higher materials cost as a percentage of sales and by customer service costs which increased as a percentage of sales due to the lower sales base.

From 1994 to 1996, the average selling price per unit has remained relatively constant. Historically, price competition has not had a material effect on margins. However, competitive pressures on the Company and its customers may produce a decline in average selling prices for certain products. Any material decline in average selling prices not offset by reduced costs could result in a material decline in the Company's gross margins.

The Company provides warranty coverage for its systems ranging from 12 to 24 months. The Company estimates the anticipated costs of repairing its systems under such warranties based on the historical average costs of the repairs. To date, the Company has not experienced significant warranty costs in excess of its recorded reserves.

**RESEARCH AND DEVELOPMENT.** The Company's research and development costs are associated with researching new technologies, developing new products and improving existing product designs. Research and development expenses were \$5.8 million, \$10.5 million and \$13.8 million for 1994, 1995 and 1996, respectively, representing an increase of 81% from 1994 to 1995 and 31% from 1995 to 1996. As a percentage of sales, research and development expenses decreased from 11.3% in 1994 to 11.1% in 1995 and increased to

13.9% in 1996. The increase in expenses from 1995 to 1996 is primarily associated with increases in payroll costs and outside service costs incurred to support new product development and standards compliance certification.

The Company believes that continued research and development investment is essential to ongoing development of new products and does not expect any significant decline in spending. Since inception, all research and development costs have been internally funded and expensed.

**SALES AND MARKETING.** Sales and marketing expenses support domestic and international sales and marketing activities which include personnel, trade shows, advertising, and other marketing activities. Sales and marketing expenses were \$4.7 million, \$6.2 million and \$8.6 million for 1994, 1995 and 1996, respectively. This represented a 32% increase from 1994 to 1995 and a 39% increase from 1995 to 1996. The increases are attributable to increases in payroll, promotional materials, advertising, commissions and travel costs associated with expansion to support the increase in sales volume. As a percentage of sales, these expenses decreased from 9.0% in 1994 to 6.5% in 1995 and increased to 8.7% in 1996. The increase of sales and marketing as a percentage of sales during 1996 was attributed to a lower than anticipated sales base achieved during the period.

**GENERAL AND ADMINISTRATIVE.** General and administrative expenses support the worldwide financial, administrative, information systems and human resources functions of the Company. General and administrative expenses were \$5.3 million, \$7.2 million and \$6.3 million which represented 10.2%, 7.6% and 6.3% of sales for 1994, 1995 and 1996, respectively. The overall decrease as a percentage of sales from 1994 to 1996 is attributable to the Company's effort to maintain a level of general and administrative costs that do not increase at the same rate as sales. Most of the decreases in these costs were recognized in payroll, recruitment fees, and travel.

**OTHER INCOME (EXPENSE).** Other income consists primarily of foreign exchange gains and losses and other miscellaneous income and expense items. The majority of the Company's foreign sales are denominated in local currencies. The Company recognized a foreign exchange gain of \$0.4 million in 1994, primarily due to increases in the values of both the German Deutsch Mark and the Japanese Yen. An increase in the value of the Deutsch Mark of 7% and a decrease in the value of the Yen of 4% resulted in essentially no foreign exchange gain or loss in 1995. During 1996 the Company recorded a net foreign exchange loss of \$0.4 million primarily as a result of a 12% decrease in the value of the Yen. During the second half of 1996, the Company entered into various forward foreign exchange contracts to mitigate the effect of depreciation in the Yen. The Company continues to evaluate various policies to minimize the effect of currency fluctuations.

Interest expense consists principally of borrowings under the Company's bank credit and capital lease facilities and was approximately \$0.6 million, \$0.6 million and \$0.2 million for the years 1994, 1995 and 1996, respectively. Interest expense decreased from 1995 to 1996 primarily as a result of repayments of equipment loans and less borrowing due to the availability of working capital provided from the proceeds of the Company's initial public offering in November 1995.

Interest income was approximately \$0.1 million, \$0.1 million and \$0.5 million for the years 1994, 1995 and 1996, respectively. The increase in 1996 was due primarily to earnings on investments made from the proceeds of the initial public offering in November 1995.

**PROVISION FOR INCOME TAXES.** The income tax provision of \$7.8 million in 1995 represented a 37.0% effective tax rate. The income tax provision of \$3.2 million for 1996 represented an effective rate of 38.1%. The increase in the Company's tax rate from 1995 to 1996 is primarily attributed to a higher effective state tax rate resulting from a larger proportion of the Company's sales being shipped to higher tax rate jurisdictions, particularly California. Changes in the relative earnings of the Company and its foreign subsidiaries affect the Company's consolidated effective tax rate. To the extent that a larger percentage of taxable earnings are derived from the Company's foreign subsidiaries whose tax rates are higher than domestic tax rates, the Company could experience a higher consolidated effective tax rate.

## QUARTERLY RESULTS OF OPERATIONS

The following table presents unaudited quarterly results in dollars and as a percentage of sales for the eight quarters ended June 30, 1997. The Company believes that all necessary adjustments, consisting only of normal recurring adjustments, have been included in the amounts stated below to present fairly such quarterly information. The operating results for any quarter are not necessarily indicative of results for any subsequent period.

	Quarters Ended							
	Sept. 30 1995	Dec. 31 1995	Mar. 31 1996	June 30 1996	Sept. 30 1996	Dec. 31 1996	Mar. 31 1997	June 30 1997
	(in thousands, except per share data)							
Sales.....	\$ 25,554	\$ 26,170	\$ 27,166	\$ 29,831	\$ 21,639	\$ 20,216	\$ 20,667	\$ 32,690
Cost of sales.....	12,734	14,842	17,035	17,204	15,047	12,752	13,158	20,139
Gross profit.....	12,820	11,328	10,131	12,627	6,592	7,464	7,509	12,551
Operating expenses:								
Research and development.....	2,711	3,416	3,498	3,645	3,349	3,268	2,821	3,513
Sales and marketing.....	1,571	1,908	2,083	2,248	2,201	2,058	1,799	2,336
General and administrative.....	1,801	1,778	1,725	2,330	933	1,265	1,248	1,702
Total operating expenses.....	6,083	7,102	7,306	8,223	6,483	6,591	5,868	7,551
Income from operations.....	6,737	4,226	2,825	4,404	109	873	1,641	5,000
Other income (expense).....	(562)	73	(170)	(66)	97	232	(387)	286
Income before income taxes.....	6,175	4,299	2,655	4,338	206	1,105	1,254	5,286
Provision for income taxes.....	2,116	1,583	982	1,676	83	419	489	1,996
Net income.....	\$ 4,059	\$ 2,716	\$ 1,673	\$ 2,662	\$ 123	\$ 686	\$ 765	\$ 3,290
Net income per share.....	\$ 0.21	\$ 0.13	\$ 0.08	\$ 0.12	\$ 0.01	\$ 0.03	\$ 0.04	\$ 0.15
Weighted average common and common equivalent shares outstanding.....	19,170	20,577	21,794	21,653	21,622	21,728	21,821	21,991

	Quarters Ended							
	Sept. 30 1995	Dec. 31 1995	Mar. 31 1996	June 30 1996	Sept. 30 1996	Dec. 31 1996	Mar. 31 1997	June 30 1997
PERCENTAGE OF SALES:								
Sales.....	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Cost of sales.....	49.8	56.7	62.7	57.7	69.5	63.1	63.7	61.6
Gross profit.....	50.2	43.3	37.3	42.3	30.5	36.9	36.3	38.4
Operating expenses:								
Research and development.....	10.6	13.1	12.9	12.2	15.5	16.2	13.6	10.8
Sales and marketing.....	6.1	7.3	7.7	7.5	10.2	10.2	8.7	7.1
General and administrative.....	7.0	6.8	6.3	7.8	4.3	6.2	6.0	5.2
Total operating expenses.....	23.7	27.2	26.9	27.5	30.0	32.6	28.3	23.1
Income from operations.....	26.5	16.1	10.4	14.8	0.5	4.3	8.0	15.3
Other income (expense).....	(2.3)	.3	(0.6)	(0.3)	0.5	1.2	(1.9)	0.9
Income before income taxes.....	24.2	16.4	9.8	14.5	1.0	5.5	6.1	16.2
Provision for income taxes.....	8.3	6.0	3.6	5.6	0.4	2.1	2.4	6.1
Net income.....	15.9%	10.4%	6.2%	8.9%	0.6%	3.4%	3.7%	10.1%

The Company has experienced and expects to continue to experience significant fluctuations in its quarterly operating results. The Company's expense levels are based, in part, on expectations of future revenues. If revenue levels in a particular quarter do not meet expectations, operating results may be adversely

affected. A variety of factors have an influence on the level of the Company's revenues in a particular quarter. These factors include general economic conditions, specific economic conditions in the industries the Company serves, the timing of the receipt of orders from major customers, customer cancellations or delay of shipments, specific feature requests by customers, production delays or manufacturing inefficiencies, exchange rate fluctuations, management decisions to commence or discontinue product lines, the Company's ability to design, introduce and manufacture new products on a cost effective and timely basis, the introduction of new products by the Company or its competitors, pricing pressures exerted by the Company's customers, the timing of research and development expenditures, and expenses related to acquisitions, strategic alliances, and the further development of marketing and service capabilities.

A substantial portion of the Company's shipments are made on a just-in-time basis in which shipment of systems occurs within a few days or hours after an order is received. The Company's backlog is not meaningful because of the level of just-in-time shipments. The Company is dependent on obtaining orders for shipment in a particular quarter to achieve its revenue objectives for that quarter. Accordingly, it is difficult for the Company to predict accurately the timing and level of sales in a particular quarter. Due to its just-in-time program, the Company anticipates quarterly fluctuations in sales will continue to occur. The Company's quarterly operating results in 1995, 1996 and 1997 to date reflect primarily the changing demand for the Company's products during this period, principally from manufacturers of semiconductor equipment, and the Company's ability to quickly adjust its manufacturing capacity to meet this demand. Demand from the semiconductor equipment companies, reflecting an overall industry slowdown, dropped significantly in the third and fourth quarters of 1996 and the first quarter of 1997, and demand from the data storage market dropped in the fourth quarter of 1996. Segments of the data storage industry are cyclical as new manufacturing lines are installed. Additionally, sales to the flat panel display industry, primarily in Japan, were significantly lower throughout 1996 compared to 1995.

The Company's gross margin fluctuated significantly on a quarterly basis in 1995, 1996 and 1997 to date, primarily reflecting utilization of manufacturing capacity. While average selling prices remained relatively constant throughout the periods presented, beginning in the fourth quarter 1995 gross margins were significantly lower than historical levels due primarily to the substantial drop in unit shipments that resulted from the semiconductor downturn. Additionally, gross margin in the fourth quarter of 1995 was negatively impacted by increased costs associated with small quantity purchases for parts required for a design change required by the Company's customers selling to European users; an increase in personnel to support anticipated demand; increased costs for outsourced subassemblies; an increase in the manufacturing organizations' portion of facilities and information systems; and increased costs associated with the expansion of the customer service organization. The decrease of gross margin to 37.3% in the first quarter of 1996 was primarily attributable to higher costs associated with outsourcing assemblies, changes in product mix, and costs associated with expanding into additional manufacturing facilities. The increase in gross margin to 42.3% in the second quarter of 1996 resulted from price reductions achieved through negotiations with the Company's supplier base, a reduction in consigned labor outsourcing, lower pricing as a result of purchasing negotiations, and a decision to produce high labor content printed circuit boards in-house. Additionally, gross margin was positively impacted by higher revenues than in the first quarter which resulted in more favorable absorption of manufacturing overhead. The reduction in gross margin to 30.5% in the third quarter of 1996 was primarily the result of underabsorbed fixed manufacturing costs from reduced revenue, as revenues in the third quarter of 1996 were \$8.2 million lower than in the second quarter of 1996, and from higher fixed overhead expenses from expanded physical capacity. Additionally, gross margin was negatively impacted by a shift in product mix toward products on which material costs as a percentage of sales were higher than the previous quarter. Increased customer service costs, as a percentage of sales also contributed to the lower gross margin. The improvement of gross margin to 36.9% in the fourth quarter of 1996 was attributable to a favorable product mix, decreased direct material costs and decreased customer service costs, each of which decreased as a percentage of sales, and favorable adjustments resulting from a review of inventory reserves for excess, obsolete, and revaluation. Gross margin remained relatively stable during the first quarter of 1997, when compared to the fourth quarter of 1996. The improvement of gross margin to 38.4% in the second quarter of 1997 was primarily attributable to more favorable absorption of manufacturing overhead resulting from a 58% increase in sales compared to the first quarter of 1997.

The Company's operating expenses increased on a quarterly basis through the first half of 1996. Since the fourth quarter of 1995, operating expenses have included additional legal and administrative expenses as a result of being a publicly held company. Additionally, the Company has expensed costs incurred for consultants used in the implementation of a new information management system software. The Company expects expenses related to the implementation of the software to continue through 1998 as additional phases are implemented, including integration of the information systems of the Company's international subsidiaries. Decreases in the second half of 1996 reflect a company-wide restructuring and the implementation of cost containment measures in the third quarter. In general, operating expenses as a percentage of sales have declined during periods of rapid sales growth, when sales have increased at a rate faster than the Company's ability to add personnel and facilities to support the growth. At the same time, operating expenses as a percentage of sales has increased during periods of flat or declining sales, when the Company has invested in operating infrastructure to support anticipated future growth. This was essentially the case from the fourth quarter of 1995 through the fourth quarter of 1996, when the Company continued to invest in research and development, sales and marketing and general and administrative functions despite experiencing the slow to declining sales growth during the capital equipment industry slowdown. Operating expenses in the first quarter of 1997 decreased in dollars and as a percentage of sales as a result of cost containment measures instituted in response to relatively flat sales growth resulting from the downturn. In the second quarter of 1997, operating expenses increased in anticipation of increased sales to semiconductor equipment manufacturing customers and decreased as a percentage of sales as a result of the 58% increase in sales during that quarter.

## **LIQUIDITY AND CAPITAL RESOURCES**

Since its inception, the Company has financed its operations, acquired equipment and met its working capital requirements through borrowings under its revolving line of credit, long-term loans secured by property and equipment and cash flow from operations, and, from November 1995, proceeds from its initial public offering.

Cash provided by operations totaled \$1.2 million for the first six months of 1997 compared to \$0.2 million for the same period in 1996. Cash provided in the first six months of 1997 was primarily a result of net income and increases in accounts payable offset by increases in accounts receivable and inventories. Cash provided in the comparable period in 1996 was primarily a result of net income offset by increases in accounts receivable and inventories and decreases in accounts payable.

Investing activities, consisting primarily of equipment acquisitions, used cash of \$0.8 million in the first six months of 1997, versus \$4.4 million in the comparable period in 1996. In the first quarter of 1996 the Company equipped and moved into a new 56,000 square foot building. Financing activities in the first six months of 1997 used cash of \$0.5 million and consisted primarily of repayment of notes payable and capital lease obligations. In the comparable period in 1996, financing activities used cash of \$0.4 million and consisted primarily of repayment of notes payable and capital lease obligations, partially offset by proceeds from the sale of Common Stock. The Company has updated its capital spending outlook and plans to spend approximately \$5.0 million through the remainder of 1997 for the acquisition of manufacturing and test equipment and furnishings.

As of June 30, 1997, the Company had working capital of \$40.8 million. The Company's principal sources of liquidity consisted of \$11.2 million of cash and cash equivalents and \$10.0 million available under a \$10.0 million revolving line of credit (the "Prior Line of Credit") that bore interest at the Prime Rate. In August 1997, the Company entered into a new credit facility consisting of (i) a \$10.0 million revolving line of credit which replaces the Prior Line of Credit, (ii) the \$12.0 million Term Loan and (iii) a \$4.0 million line of credit to acquire or refinance borrowings for equipment. Advances under the new revolving line of credit bear interest at either the Prime Rate (8.5% at August 15, 1997) minus 0.75% or the LIBOR Rate (6.0% at August 15, 1997) plus 175 basis points, at the Company's option. All advances under the revolving line of credit will be due and payable in August 1999. The Term Loan bears interest at the Prime Rate minus 0.25%, adjustable to the Prime Rate minus 0.50% if certain financial ratios are achieved, with principal due in 20 equal quarterly installments commencing October 1, 1997. Mandatory annual prepayments are required on the Term Loan based on the lesser of \$3 million or the amount by which fiscal earnings before interest, taxes, debt and amortization exceeds \$20 million. The Company will repay the Term Loan with a portion of the net proceeds from this Offering, which will cause the Company to incur a prepayment penalty of 0.75% of the

amount of the prepayment, or approximately \$90,000, which amount also will be paid with a portion of the net proceeds from this Offering. Advances under the equipment line of credit bear interest at the Prime Rate minus 0.5% and interest will be payable monthly through August 1998 and quarterly thereafter until fully paid. The Company also has a pre-existing term loan, under which the Company had borrowed approximately \$1.5 million in October 1996, for equipment financing for its United States operations. At August 15, 1997, approximately \$1.1 million was outstanding under such term loan, which bears interest at the Prime Rate minus 0.25%, and will be due and payable in November 1999.

The Company believes that its cash and cash equivalents, cash flow from operations, available borrowings and the proceeds of this Offering will be sufficient to meet the Company's working capital needs through mid-1998. After that time, the Company may require additional equity or debt financing to address its working capital, capital equipment or expansion needs. In addition, any significant acquisitions by the Company may require additional equity or debt financings to fund the purchase price, if paid in cash. There can be no assurance that additional funding will be available when required or that it will be available on terms acceptable to the Company.

## **BUSINESS**

THIS PROSPECTUS CONTAINS FORWARD-LOOKING STATEMENTS THAT INVOLVE RISKS AND UNCERTAINTIES. THE COMPANY'S ACTUAL RESULTS MAY VARY SIGNIFICANTLY FROM THE RESULTS DISCUSSED IN THE FORWARD-LOOKING STATEMENTS. FACTORS THAT MIGHT CAUSE SUCH A DIFFERENCE INCLUDE, BUT ARE NOT LIMITED TO, THOSE DISCUSSED IN "RISK FACTORS."

### **GENERAL**

Advanced Energy is a leading supplier of power conversion and control systems incorporated in plasma-based thin film production equipment. The Company's systems are key elements of semiconductor, data storage, flat panel display, and a range of other industrial manufacturing equipment that utilize gaseous plasmas to deposit or etch thin film layers on materials or substrates such as silicon, glass and metals. The effectiveness of plasma-based production processes depends in large part on the quality of the electrical power used to ignite and manipulate the plasma. The Company's power conversion and control systems refine, modify and control the raw power from a utility and produce power which is uniform, predictable and precisely repeatable to permit the production of identical films of unvarying thickness on a mass scale. The Company's systems are used in an array of thin film processes such as physical vapor deposition, etch, chemical vapor deposition, plasma enhanced chemical vapor deposition and ion implantation, as well as a broad range of thin film applications such as the production of semiconductors, magnetic hard disks, CD-ROMs, audio and video discs, thin film heads, liquid crystal displays and optical, glass and automobile coatings. The Company's customers include Applied Materials, Lam Research, Balzers/Leybold, Eaton, Intevac, Multi-Arc, Novellus, Singulus Technologies, Sputtered Films and ULVAC Technologies.

Since inception, the Company has produced over 90,000 power conversion and control systems. Approximately 61%, 64% and 65% of the Company's sales in 1995, 1996 and the first six months of 1997, respectively, were to customers in the semiconductor equipment industry. Advanced Energy sells its systems primarily through direct sales personnel to customers in the United States, Japan and Europe. The Company also sells through distributors to customers in Japan, Korea, Australia, France, Hong Kong, Italy, Mexico, Singapore, Sweden and Taiwan. International sales represented 29%, 24% and 24% of the Company's sales in 1995, 1996 and the first six months of 1997, respectively. The Company maintains sales and service offices in the United States in Fort Collins, Colorado; Austin, Texas; Concord, Massachusetts; and Milpitas, California; and outside the United States in Tokyo, Japan; Filderstadt, Germany; and Bicester, United Kingdom.

### **BACKGROUND**

#### **THE MARKET FOR PLASMA-BASED THIN FILM PRODUCTION PROCESSES**

Manufacturing processes in use today employ thin film technology to deposit, etch and modify thin layers of materials on substrates such as silicon, glass and metals. In recent years significant technological advances in thin film processes have enabled the manipulation of materials on the atomic and molecular level. Manufacturers can now both deposit and etch layers of materials in films that are less than a hundredth of a micron in thickness. By using modern thin film production processes, manufacturers are able to control and alter the electrical, magnetic, optical and mechanical characteristics of materials. The ongoing demand for improvements in the performance, capacity and speed of products produced by thin film processing, such as integrated circuits, flat panel displays, and magnetic media, is driving the development of more advanced thin film technology to permit the production of increasingly thinner, more consistent and more precise layers of film.

Thin film production processes are now used in a broad and rapidly growing range of industrial manufacturing processes. Thin film processes have been employed most extensively in the semiconductor industry. In the fabrication of integrated circuits, multiple thin film layers of insulating or conductive materials, each becoming an integral part of microscopic device and circuitry features, are deposited on a wafer or substrate. For example, the current generation dynamic random access memory chips (DRAMs) are manufactured with ten to thirty layers of film and an overall thickness of no more than 0.5 microns. Thin film manufacturing processes similar to those employed in the semiconductor industry are increasingly being used in the production of flat panel displays such as the monitors in portable computers. Such processes are also used extensively in the data storage industry in the production of compact discs, video discs and computer hard disks. Thin film processes for data storage products are employed to create the optical and magnetic storage mediums, as well as to deposit protective wear surfaces on the finished products. In addition, industrial

manufacturers have begun to use thin film processes to apply coatings or films to a wide range of products, including solar panels, architectural glass, eyeglasses, tools, bar-code readers, lenses, automotive parts, front surface mirrors, decorative wrappings and food product packaging.

The primary applications for thin film manufacturing include deposition (in which a layer of material is deposited on a surface) and etch (in which unneeded portions of a layer are removed). Thin film production was initially accomplished with liquid chemical (wet chemistry processing) or thermal processes. Over time, those processes became inadequate for many applications as the demand for products requiring thinner, more precise films increased. Plasma-based process technology was developed to address the limitations of wet chemistry and thermal technologies in certain applications and to enable new applications.

Today plasma processing is broadly used by thin film manufacturers. A plasma is commonly created by applying enough electrical force to a gas at reduced pressure to separate electrons from their parent atoms. Although the distance of separation is small, the atom is transformed to a highly energetic state. In plasma-based thin film processing, the material to be altered (the substrate) and one or more specific gases are inserted into a vacuum chamber. The plasma created from the gases is then manipulated by electrical forces to alter the molecular characteristics of the substrate surface. Due to its electrical character, plasma is an inherently more controllable and accurate production process for many applications than thermal or wet chemistry processes. Using electrical forces it is possible to more precisely control the arrival rate, angle and energy of molecules at the surface being modified. Because of the precision provided by plasma's electrical character, plasma process technology is expected to continue evolving to meet the worldwide growth in demand for smaller, more versatile electronics, finer visual resolution products and denser data storage mediums.

Below is an illustration of a plasma-based production process:

[Illustration titled "Plasma Process Illustration" depicting in diagram form the flow of utility power to a power conversion and control system, with arrows identifying the plasma, ions, electric field and substrate in the vacuum process system.]

### **POWER CONVERSION AND CONTROL SYSTEM REQUIREMENTS**

The effectiveness of plasma-based production processes depends in large part on the quality of the electrical power used to ignite and manipulate the plasma. A power conversion and control system used in a plasma process must refine, modify and control the raw power from a utility and produce power which is uniform, predictable and precisely repeatable to permit the production of identical thin films of unvarying thickness on a mass scale. Instability of electrical forces in the plasma may damage or destroy the substrate under production, as well as the power conversion and control system. To avoid instabilities, a power conversion and control system must react within microseconds (millionths of a second) to changes in the level of the utility supplied power, the electrical characteristics of the plasma and process control settings. The key requirements for plasma processing power conversion and control systems are:

**CONVERSION AND CONTROL OF HIGH POWER.** Plasma production requires the generation of extremely high levels of electrical power, usually in the range of 500 to 25,000 watts. In contrast, the power level required to operate most home and office electrical equipment is generally far below 500 watts. A power conversion and control system must include the ability to properly convert the externally supplied power, and must also make accurate and fast measurements so the system can be dynamically controlled. These measurements are difficult because of the strong electrical fields and electrical noise that result from the high power concentration of the nature of the plasma itself. Additionally, a power conversion and control system must meet the small footprint requirements of a clean room environment while minimizing the impact of the concentration of electrical radiation and heat caused by tightly packed high power circuitry.

**CONTROL OVER A WIDE RANGE OF POWER LEVELS.** Power conversion and control systems for plasma processes must operate over a wide range of power levels in order to support a variety of plasma processes and applications. For example, a power conversion and control system may need to operate at power levels which vary by a factor of one thousand. In contrast, the power supplies used in most home and office electrical equipment generally only need to operate at power levels which vary by no more than a factor of two. One of the most challenging requirements for plasma process power conversion and control systems is the need for

system instrumentation to make rapid measurements, at both low and high levels of power, of many electrical characteristics, including current, voltage, power and impedance levels, with precision, speed and accuracy at every level.

**CONTROL OF UTILITY INSTABILITIES.** Incoming power from a utility supplier is subject to brownouts, surges, voltage transients and general voltage variations. A power conversion and control system must serve as a buffer from the variability of raw utility power sources. Under normal operating conditions (excluding brownouts), voltage from the utility source may vary by as much as +/-10%. In comparison, even a 1% variance in the power supply to a plasma chamber may cause significant defects in the film under production.

**CONTROL OF ARCS.** One of the most critical problems that arise from a failure to control power in a plasma process is arcing, intense localized electrical discharges which act like lightning. Arcs often cause serious damage to both the substrate and the power conversion and control equipment. A power conversion and control system must not only be rugged enough to withstand the impact of abrupt electrical changes in the plasma, but must also contain circuitry to extinguish arcs as they occur. In order to effectively control arcs, the power system must act to control the power levels within less than a microsecond.

**CONTROL OF SYSTEM INSTABILITIES.** In some advanced plasma processes using exotic gases and electrode arrangements, the current and voltage in the plasma may fluctuate causing system instabilities. The power conversion and control system must promptly detect the changing electrical characteristics of the plasma and adjust the power supply to prevent such instabilities. If such system instabilities are not properly controlled, the thin films will lack uniformity, which may seriously impair the yield and performance of the products being manufactured.

## **CHARACTERISTICS OF THE POWER CONVERSION AND CONTROL SYSTEM MARKET**

The plasma processing industry requires a wide range of power frequencies for plasma-based thin film processes, from zero frequency direct current (DC) to alternating current (AC) at frequencies of several gigahertz. Frequency influences the type of physical and chemical activity which will occur in the plasma. Power conversion and control systems change the frequency of raw utility power, as required for particular applications. For example, DC is typically used in physical vapor deposition (PVD) processes, including sputtering, while high frequency AC such as radio frequencies (RF) are typically used in etch and chemical vapor deposition (CVD) processes.

Power conversion and control systems for plasma processes often need to be highly customized to meet application and customer requirements. This customization involves developing unique design and component configurations to permit specific variations in power, voltage, current and frequency levels, modification for interfacing with customer equipment, and adjustments to controls and external packaging requirements. The long term challenge facing manufacturers of power conversion and control systems is to efficiently produce these complex, highly customized systems in a cost effective manner. Moreover, power conversion and control systems must be continuously adapted to address the requirements of the growing number of applications using thin film production processes.

## **THE ADVANCED ENERGY SOLUTION**

Advanced Energy has been a pioneer in the development of power conversion and control systems for advanced plasma production processes. The Company believes that it introduced the first switchmode sputtering power conversion and control system for PVD applications, the first switchmode based AC power conversion and control system for plasma-enhanced chemical vapor deposition (PECVD) and the first compact general switchmode radio frequency system for plasma applications. In addition, the Company was the first to introduce products incorporating active arc prevention capability, the first ultra-compact high power radio frequency switchmode power conversion and control systems for semiconductor etch applications, and the first Matchless RF power conversion and control system eliminating the need for a tuner or matching network.

The following diagram provides a representation of the architecture incorporated in Advanced Energy's power conversion and control systems. The specific example below illustrates the architecture of the Company's DC systems. Although the Company's AC systems differ slightly in certain respects, the architecture pictured in the diagram is generally representative of all of the Company's AC power conversion and control systems.

[Block diagram titled "AE Product Architecture" depicting the flow of utility power to a plasma through a DC power conversion and control system. The diagram of the power conversion and control system consists of seven blocks: Rectifier AC-->DC, Inverter DC-->AC, Output Filter, Controls, Customer Interface, Instrumentation and Logic.]

Key elements of the Advanced Energy solution include:

**KNOWLEDGE OF PLASMA PROCESSES.** Since its inception, the Company has built a large base of expertise in the interaction between plasma processes and power conversion and control systems. This knowledge allows the Company to develop systems that optimize the customer's plasma processes and applications, and to assist customers in developing new process applications. A core competency of the Company is its ability to advise customers of design advantages which may be achieved in both plasma production processes for specific applications and in the power conversion and control systems. The Company has placed Company scientists and engineers within customer sites to support customers in their process development. The Company believes this application of knowledge and resources is unique in the industry and represents a key competitive strength.

**UTILIZATION OF SWITCHMODE TECHNOLOGY.** The Company believes that it developed the first switchmode power conversion and control systems for plasma processing. Switchmode power conversion is a digitally based solution to power conversion that represents an improvement over previously employed alternatives. Switchmode based systems are smaller, lighter and faster due to the use of high speed switching. Switchmode technology also enables rapid control of the high power required in plasma production processes and improves the response time to random variables in the system. In addition, switchmode has the benefit of significantly reducing the stored energy in a system, a major cause of arcing. The Company's first switchmode PVD system, the MDX, introduced in 1983, reduced the amount of stored energy by a factor of 100 to 1,000 times compared to the technology then in use and fostered the development and widespread use of PVD sputtering processes.

**MEASUREMENT AND CONTROL SOLUTIONS.** The Company has designed its systems to incorporate high speed, highly precise electronic measurement and system controls. Multiple sensors continually measure current, voltage and other electrical properties of the plasma. These measurements are converted into signals, processed with digital signal processors, and the results then converted to input signals for the power conversion and control systems. The Company's power conversion and control systems thus dynamically control the flow of power delivered, minimize stored energy, make precise system adjustments, compensate for random variabilities and notify the user of out-of-range conditions. These dynamic in-system controls enable the Company's systems to prevent or eliminate arc and other system or utility related instabilities.

## **STRATEGY**

The Company is a leading provider of power conversion and control systems for plasma processing equipment. The Company's initial focus has been on building a leadership position in the semiconductor, flat panel display and data storage markets, which presently constitute the predominant markets for plasma-based thin film processing equipment. To continue its penetration of these markets and to pursue opportunities in a broad range of emerging industrial markets, the Company has adopted the following strategies:

**PROVIDE UNIQUE SOLUTION FOR CUSTOMERS.** The Company pursues a product development strategy based on providing solutions optimized to meet specific application and customer requirements. The Company works closely with its customer's present and future power conversion and control needs. The Company intends to continue investing to enhance its applications expertise. By offering customized power conversion and control solutions early in the customer's development process and then making the solutions available on a timely basis, the Company increases its chances of obtaining design wins necessary for volume production.

**OFFER COMPREHENSIVE PRODUCT PORTFOLIO.** The Company offers products in all of the major frequencies used in plasma processes and in the full spectrum of required power levels. The Company offers products or

technologies which address the power conversion and control requirements for all of the predominant plasma-based processes employed in the semiconductor industry, and for the PVD sputtering requirements of the flat panel, data storage and industrial markets. The Company also has products for non-plasma semiconductor processes such as ion implantation. By offering a full range of systems, the Company seeks to provide responsive and comprehensive solutions for all of a customer's power conversion and control needs.

**UTILIZE REUSABLE ENGINEERING AND MODULAR DESIGN METHODOLOGY.** The Company's strategy is to provide customers with fast-time-to-market solutions through "reusable engineering" and modular design approaches. By utilizing reusable engineering and programmable software based architectures, the Company is able to modify its basic platforms to create solutions that are tailored for specific applications and customer requirements. The Company achieves efficiencies by designing its products to have an open architecture and common features, standard components and interfaces across a variety of processes. As a result, the Company believes it has the capability to deliver a broad range of customized products within short lead times and on a competitively priced basis.

**TARGET EMERGING INDUSTRIAL OPPORTUNITIES.** The Company is focusing its marketing activities to capitalize on emerging industrial applications having the potential to use plasma-based production processes. Some of these new applications require power levels significantly greater than those required in the semiconductor, flat panel display and data storage markets. The Company has been making increasing investments in technologies for these very high power levels, including development of new DC and AC power systems and high power pulsed systems. The emerging industrial opportunities include applications in the manufacturing of automobiles, tools, architectural glass and other products where thin film sputtering processes are now being adopted.

**DIVERSIFY MARKETS AND PRODUCT OFFERINGS.** The Company's power conversion and control systems generally range in price from \$3,000 to \$100,000, with an average price of approximately \$9,000, and are sold principally to semiconductor equipment manufacturers. The Company intends to diversify its markets and product offerings through research and development, as well as through acquisitions of other businesses, products and technologies. The Tower and MIK acquisitions provide the Company with additional product lines and entry into other markets, such as telecommunications, medical and non-impact printing.

## **TECHNOLOGY**

The Company believes it has developed particular expertise in the following technologies which distinguish its power conversion and control systems.

**SWITCHMODE TECHNOLOGY.** All of the Company's power conversion and control systems utilize switchmode power conversion technology. Switchmode power conversion is a technique which takes the raw utility power supply (AC power), and first converts the AC current to direct current (DC) by a rectifier. Special high speed semiconductor switches then convert the uncontrolled direct current power to increased frequency power which is much higher (1,000 to 20,000 times greater) than the frequency of raw utility power. The high frequency power is passed through a transformer to electrically isolate the system from the raw utility power, and for impedance matching to the plasma impedance requirements. The AC power is then reconverted to DC power by a second high speed rectifier. The converted DC power is used to ignite and manipulate the plasma.

Instrumentation circuits measure the output, and this information is fed back to control circuits which vary the switch elements to maintain the inputs to the plasma at the level requested by the user, regardless of the incoming line voltage. The higher frequency voltage produced by the switchmode action can be transformed and further processed with components that are tens to hundreds of times smaller than competing "linear" and "line frequency" designs. The switchmode technique has been extensively used in low power applications such as personal computers, but the power levels required by plasmas are much greater and require significantly different techniques and components. In addition, the unstable nature of the plasma places unusually harsh demands on the fragile high speed semiconductor switches used for switchmode operation.

**ARC PREVENTION TECHNOLOGY.** Even though a plasma is electrically neutral, the momentarily separated ions and electrons in a plasma may not be uniformly distributed. This uneven distribution can produce miniature lightning bolts, known as arcs, which slow down the throughput of a plasma process, and may even destroy the substrate or the power conversion and control system. The Company has introduced several products that actually prevent the formation of arcs by controlling the distribution of electrons. For the many situations where arcs cannot be prevented, the Company's systems contain circuitry that detects the onset of an arc, controls the extinguishing of the arc and then reapplies power in a manner that avoids damage or delays in the

plasma production process. The system responses for the prevention and suppression of arcs are initiated in less than a microsecond.

**MINIMIZATION OF STORED ENERGY.** Stored energy is the amount of energy in a power conversion and control system that is available to flow into the plasma during an arc, and cannot be stopped without diversion or interruption circuitry. Stored energy must be minimized for advanced plasma processes, because the desired characteristics of the thin film can be ruined by uncontrolled energy within the plasma. One of the Company's first switchmode products, the MDX, which was introduced in 1983, reduced the amount of stored energy by a factor of 100 to 1,000 times compared to existing power conversion and control systems. In 1995 the Company introduced the MDX-Pinnacle system which incorporates new proprietary technology that allows a further dramatic reduction in stored energy (by as much as 1,000 times) over other systems currently in use.

**DIGITAL DESIGNS.** The Company's products contain sophisticated sensor technology and high speed digital circuitry, including embedded microcontrollers, general and programmable array logic elements, field programmable gate arrays and digital signal processors. A substantial portion of the intelligence of the Company's power conversion and control systems is incorporated in Company-designed software that runs on digital circuitry. The use of industry standard components and proprietary software has provided the Company with faster and more stable operation of feedback loops in the products, greater flexibility in its manufacturing processes, as well as greater product reliability.

**HYBRID DESIGN TECHNOLOGY.** The Company has developed substantial internal hybrid microelectronic design expertise that has enabled it to develop components that are smaller, more rugged, more reliable and create less heat than commercially available components. Hybrid microcircuits involve the packaging of integrated circuits and other electrical circuitry on a smaller substrate than is possible with printed circuit boards. Using its expertise with hybrid microelectronics, the Company pioneered the use of printed inductors and hybrid-based high frequency switches in plasma-based power conversion and control systems, which allowed significant improvements in the precision and performance of the Company's measurement instrumentation.

**PULSING TECHNOLOGY.** The Company is incorporating pulsed power technology in an increasing number of its systems for use in certain industrial applications. In these applications, the power is momentarily interrupted and then reapplied. Pulsed power is now used with frequencies ranging from 10Hz to 250Khz. In certain applications, pulsed power is allowing substantial improvements in process capability, including significant improvements in arc prevention. Pulsing technology requires complex techniques that require skills in a broad range of power conversion and control technologies.

**PRODUCTS**

The Company's use of switchmode power conversion and control technology has enabled it to develop a line of products which has permitted the development of new plasma processing applications. In 1982, the Company introduced its first low frequency switchmode power conversion and control system specifically designed for use in plasma processes. In 1983, the Company introduced its first DC system designed for use in PVD sputtering applications. This DC based system is a compact, cost-effective power solution, which greatly reduced stored energy, a major limitation in the use of PVD systems. In the early 1990s, the Company introduced the first fully switchmode radio frequency (RF) power conversion and control systems for use in semiconductor etch applications. This product achieved significant design wins because of its smaller size and precise control attributes. The Company has recently introduced a family of accessories which provide major improvements in arc prevention and suppression. The Company is currently extending the power range of its systems to much higher power levels to enable it to supply products for emerging industrial applications. The Company's products generally range in price from \$3,000 to \$100,000, with an average price of approximately \$9,000.

The following chart sets forth the Company's principal product lines and related basic information:

	PRODUCT PLATFORM	DESCRIPTION	POWER/CURRENT LEVEL	MAJOR PROCESS APPLICATIONS
Direct Current Products	MDX	Power Control and conversion system	500W-80kW	PVD - Metal sputtering - Reactive sputtering

Low and Mid Frequency Products	MDX-II	Power control and conversion system	15kW-120kW	PVD - Metal sputtering - Reactive sputtering
	Pinnacle	Power control and conversion system	6kW-120kW	PVD - Metal sputtering
	Sparc-LE	Arc management accessory	1kW-60kW	For use with MDX systems
	PE	Low frequency power control and conversion system	1.25kW-30kW	CVD PVD - Reactive sputtering Surface modification
	PD	Mid frequency power control and conversion system	1.25kW-3.5kW	CVD PVD - Reactive sputtering Surface modification
	RFX	Power control and conversion system	600W	General R&D
	RFG	Power control and conversion system	600W-5.5kW	Etch CVD
	RFXII	Power control and conversion system	600W-5.5kW	Etch CVD
	ID	Ion-beam conversion and control system	500W-5kW	Ion-beam deposition Ion implantation Ion-beam etching/milling
	AZX	Tuner	100W-5kW	Impedance matching network
Radio Frequency	RFZ	Probe	50W-5kW	Impedance measurement tool

## **DIRECT CURRENT PRODUCTS**

**THE MDX SERIES.** The Company's MDX series of products was introduced in 1983. These products are most commonly used as DC power supplies for PVD sputtering where precise control, superior arc prevention and suppression and low stored energy characteristics are required. They are also used as bias supplies for RF sputtering, tool coating and some etching systems. The MDX series consists of six different product lines that provide a range of power levels from 500 W to 120 kW. The Company's second generation product, the MDX II, was introduced in 1991 to support higher power levels and to meet strict European regulatory requirements. A lower cost model in the MDX series, the MDX-L, was introduced in 1992.

**THE PINNACLE SERIES.** The Pinnacle series, introduced in 1995, is the most recent product line in the MDX series. Pinnacle was developed primarily for use in DC PVD sputtering processes and provides substantial improvements in arc prevention, arc suppression capability, reduced size, higher precision and expanded control capability.

**SPARC-LE ACCESSORIES.** The Company's Sparc-LE line of DC accessories, introduced in 1993, is designed both to reduce the number of arcs that occur in plasma-based processes and to reduce the arc energy if arcs do occur. The Sparc-LE accessories are especially effective in applications involving the deposition of insulative materials where the reaction between the plasma and target is likely to produce more severe arc conditions. The Sparc-LE accessories are most commonly used with the MDX product lines. The Sparc-LE arc prevention and suppression technology has been incorporated directly into the Pinnacle systems.

## **LOW AND MID-FREQUENCY PRODUCTS**

**THE PE AND PD SERIES.** The PE low frequency power systems were introduced in 1982. The PE series systems are air cooled and primarily intended for use in certain PVD, CVD and industrial surface modification applications, including dual cathode sputtering and printed circuit board de-smearing. The PE series systems range in frequency from 25kHz to 100kHz. The low frequency PE systems and the PD series of mid-frequency power conversion and control systems, introduced in 1990, represented significant technological advancements by applying switchmode techniques to higher frequencies. The water-cooled PD systems are used primarily in semiconductor etch and CVD applications. The PD series range in frequency from 275kHz to 400kHz. Both the PE and PD series systems have single-stage power generation, and include systems that incorporate pulsed power technology.

## **RADIO FREQUENCY PRODUCTS**

**THE RF SERIES.** The RFX system is a 13.56MHz, 600W, air-cooled platform introduced in 1985. This system is used primarily in research and development applications. The RFG and RFXII, introduced in 1991 and 1992, respectively, are water-cooled power conversion and control systems utilizing a new hybrid-based switchmode technology. The RFG and RFXII systems operate at frequencies ranging from 4MHz to 13.56MHz. These systems were the first entirely switchmode-based RF designs. The RF systems are most commonly used in semiconductor processes, including RF sputtering, plasma etching/deposition, and reactive ion etching applications. The RFXII is a compact system which incorporates new impedance matching technology. This technology eliminates certain previously required motors, gear trains, variable capacitors and inductors and servomechanism circuitry, which results in cost savings and improvements in reliability.

**THE ID SERIES.** The ID power conversion and control systems, introduced in 1981, were the first products designed by the Company. These systems were specifically designed to power broad beam ion-sources. ID series systems are composed of a coordinated set of multiple special purpose power supplies that are used for ion-beam deposition and sputtering, ion implantation and ion-beam etching and milling.

**THE AZX SERIES.** The AZX series tuners are RF matching networks designed as accessories to match the complex electrical characteristics of a plasma to the requirements of the Company's RF series of power conversion and control systems. AZX tuners, introduced in 1989, are also sold separately for incorporation into other vendors' power conversion and control systems. The AZX tuners typically operate at a 13.56MHz frequency range. The need for these tuner products is reduced with the advent of the Matchless technology designed into the RFXII system.

**THE RFZ IMPEDANCE PROBE.** The RF impedance probe, introduced in 1993, is used for measuring the RF properties of a plasma. The sensing technology incorporated in the RF impedance probe allows accurate, real-time measurement of power, voltage, current and impedance levels under actual powered process conditions.

## **MARKETS, APPLICATIONS AND CUSTOMERS**

### **MARKETS**

Approximately 61%, 64% and 65% of the Company's sales in 1995, 1996 and the first six months of 1997, respectively, were made to customers in the semiconductor equipment industry. Increasingly, the Company's power conversion and control systems are also being used in other markets, including flat panel display, data storage and various industrial applications. The following is a discussion of the major markets for the Company's systems:

**SEMICONDUCTOR MANUFACTURING EQUIPMENT MARKET.** The Company's products are sold primarily to semiconductor equipment manufacturers for incorporation into equipment used to make integrated circuits. The Company's products are currently employed in a variety of applications, including deposition, etch, ion implantation and megasonic cleaning. The precision control over plasma processes afforded by the use of the Company's power conversion and control systems allows its customers to manufacture semiconductor fabrication systems that produce integrated circuits with reduced feature size and increased speed and performance. The Company anticipates that the semiconductor industry will continue to be a substantial part of its business for the foreseeable future.

**FLAT PANEL DISPLAY MANUFACTURING EQUIPMENT MARKET.** The Company also sells its systems to manufacturers of flat panel displays (FPDs) and flat panel projection devices (FPPs), both of which have fabrication processes similar to those employed in manufacturing integrated circuits. FPDs produce bright, sharp, large, color-rich images on flat, lightweight screens, such as notebook computer monitors. Currently, there are three major types of FPDs: liquid crystal displays, field emitter displays and gas plasma displays. Two types of FPP, another emerging display technology, are currently in production: liquid crystal projection and digital micro-mirror displays. The Company sells its products to all three of the active FPD markets, as well as to each of the FPP markets.

**DATA STORAGE MANUFACTURING EQUIPMENT MARKETS.** The Company's products are sold both to data storage equipment manufacturers and to data storage device manufacturers for use in producing a variety of products, including compact discs, computer hard disks (both media and thin film heads), CD-ROMs and digital video discs. These products use a PVD sputtering process to produce optical and magnetic thin film layers, as well as a protective wear layer. In this market the trend towards higher recording densities is driving the demand for increasingly dense, thinner and more precise films. The use of equipment incorporating magnetic media to store analog and digital data continues to expand with the growth of the laptop, desktop, and workstation computer markets.

**INDUSTRIAL MARKETS.** The Company sells its products to both OEMs and producers of end products in a variety of industrial markets. Thin films for optical purposes are used in the manufacture of many industrial products, including solar panels, architectural glass, eyeglasses, lens coatings, bar-code readers and front surface mirrors. Thin films of diamond coatings and other materials are now being applied to products in plasma-based processes to strengthen and harden surfaces on such diverse products as tools, automotive parts and hip joint replacements. A variety of industrial packaging applications, such as decorative wrapping and food packaging, are also enabled by thin film processes utilizing the Company's products. The advanced thin film production processes allow precise control of various optical and physical properties, including color, transparency and electrical and thermal conductivity. The improved adhesion and high film quality resulting from plasma processing makes it the preferred method of applying the thin films. Many of these industrial applications require power levels substantially greater than those used in the Company's other markets.

## APPLICATIONS

The Company's products have been sold for use in connection with the following processes and applications:

Semiconductor	Data Storage	Flat Panel Display	Industrial/Research
PVD (Metal)	Thin film heads	Liquid crystal displays	Optical coatings
Etch	CD-ROMs	Active matrix LCDs	Automobile coatings
PECVD (Metal)	Audio discs	Digital micro-mirror	Food package coatings
Ion implantation	Recordable CDs	Plasma displays	Glass coatings
CVD	Hard disk magnetic layers	Large flat panel displays	Consumer products coatings
PECVD (dielectrics)	Hard disk carbon wear coatings	Field emission displays	Circuit board etch-back and de-smear
Magnet field controls	Magneto-optic CDs	LCD projection	Photo voltaics
Photo resist stripping	Digital video discs (DVD)		Medical applications
Megasonic cleaning			Superconductors
Etch (post-treatment)			Diamond-like coatings
Electrostatic Chuck			Chemical, physical and materials research
Epitaxy			Cutting tool hard coatings

## CUSTOMERS

The Company has sold its systems worldwide to more than 100 OEMs and directly to more than 500 end-user customers. Since inception, the Company has produced more than 90,000 power conversion and control systems. The Company's largest customers are involved principally in the semiconductor market. The Company also has significant customers in the data storage, flat panel display and industrial markets. Sales to Applied Materials and Lam Research in 1996 and the first six months of 1997 together accounted for approximately 47% and 45% of the Company's total sales, respectively. The Company expects that sales of its products to Applied Materials and Lam Research will continue to account for a high percentage of its sales in the foreseeable future. Following is a representative list of the Company's customers, each of which generated at least \$250,000 in revenues for the Company in the first six months of 1997:

Applied Materials	Multi-Arc
Balzers/Leybold	Novellus
Eaton Corporation	Shibaura
Fujitsu	Singulus Technologies
Intevac	Sputtered Films
Komag	ULVAC Technologies
Lam Research	VERTEQ

## RECENT ACQUISITION

In August 1997, the Company acquired Tower Electronics, Inc., a designer and manufacturer of custom, high performance switchmode power supplies. Tower's principal customers are in the telecommunications, medical and non-impact printing industries and include U.S. Robotics, a subsidiary of 3Com Corporation, VideoJet Systems International, Medtronic and Intermedics. Tower had revenues of approximately \$13.4 million for its fiscal year ended September 30, 1996. The purchase price consisted of \$16 million paid at closing plus an additional contingent payment to be based on Tower's sales in 1998. The acquisition of Tower is part of the Company's strategy to diversify its product offerings and expand its customer base. See the Pro Forma Condensed Consolidated Balance Sheet.

The Company intends to retain Tower as a direct subsidiary and to continue Tower's manufacturing operations out of Tower's existing facilities, which consist of approximately 21,000 square feet of leased space in Fridley, Minnesota. The Company also has retained all of Tower's approximately 95 full-time and approximately 25 temporary employees. See "Risk Factors--Risks Associated with Recent and Potential Future Acquisitions."

## **MARKETING, SALES AND SERVICE**

The Company sells its systems primarily through direct sales personnel to customers in the United States, Japan and Europe. In the United States, the Company's sales personnel are located at the Company's headquarters in Fort Collins, Colorado, and in regional sales offices in Austin, Texas; Concord, Massachusetts; and Milpitas, California. To serve customers in Asia and Europe, the Company has sales offices in Tokyo, Japan; Bicester, United Kingdom; and Filderstadt, Germany which have primary responsibility for sales in their respective markets. The Company also sells to customers in Japan through Landmark Technology Corporation and has distributors and sales representatives in France, Italy, Israel, Korea, Singapore, Sweden, Taiwan and Hong Kong.

Sales outside the United States represented approximately 29%, 24% and 24% of the Company's total sales during 1995, 1996 and the first six months of 1997, respectively. The Company expects sales outside the United States to continue to represent a significant portion of future sales. Although the Company has not experienced any significant difficulties in connection with its international sales, such sales are subject to certain risks, including exposure to currency fluctuations, the imposition of governmental controls, political and economic instability, trade restrictions, changes in tariffs and taxes, and longer payment cycles typically associated with international sales. The future performance of the Company will depend, in part, upon its ability to compete successfully in Japan, one of the largest markets for semiconductor fabrication equipment and flat panel display equipment, and a major market for data storage and other industrial equipment utilizing the Company's systems. The Japanese market has historically been difficult for non-Japanese companies to penetrate. Although the Company and a number of its significant non-Japanese customers have begun to establish operations in Japan, there can be no assurance that the Company or its customers will be able to maintain or improve their competitive positions in Japan.

The Company believes that customer service and technical support are important competitive factors and are essential to building and maintaining close, long-term relationships with its customers. The Company maintains service offices in the United States in Fort Collins, Colorado; Austin, Texas; and Milpitas, California; and outside the United States in Tokyo, Japan; Filderstadt, Germany; and Bicester, United Kingdom.

The Company offers warranty coverage for its systems for periods ranging from 12 to 24 months after shipment against defects in design, materials and workmanship.

## **BACKLOG**

A substantial and increasing portion of the Company's shipments are made on a just-in-time basis, which requires the shipment of systems by the Company within a few days or hours after an order is received. The Company schedules production for just-in-time customers based on forecasts provided by such customers. Due to the short time between the receipt of orders from such just-in-time customers and shipments, the Company operates with a level of backlog which is not at any point in time sufficient to meet the Company's revenue expectations for a particular quarter. In addition, orders from the Company's other customers are subject to cancellation or delay by the customer without penalty. Due to these factors, the Company does not believe that backlog is a meaningful or accurate indicator of its future sales and performance.

## **RESEARCH AND DEVELOPMENT**

The market for power conversion and control systems and related accessories is characterized by rapid technological changes. The Company believes that continued and timely development of new products and enhancements to existing products to support OEM requirements is necessary for the Company to maintain a competitive position in the markets the Company serves. Accordingly, the Company devotes a significant portion of its personnel and financial resources to research and development projects and seeks to maintain close relationships with its customers and other industry leaders to remain responsive to their product requirements.

Research and development expenses were approximately \$13.8 million and \$6.3 million in 1996 and the first six months of 1997, respectively. These amounts represented 14% and 12% of total sales for those periods. From 1994 to 1996, the Company introduced more than sixty-five new products. The Company believes that

continued research and development investment is essential to ongoing development of new products and does not expect any significant decline in spending as a percentage of sales.

## **MANUFACTURING**

The Company's manufacturing facility is located in Fort Collins, Colorado. The Company's manufacturing activities consist of the assembly and testing of components and subassemblies which are then integrated into final products. Once final testing of all electrical and electro-mechanical subassemblies is completed, the final product is tested in a burn-in process to identify product failures, and some products are subjected to a highly accelerated stress screen (HASS) test. The Company purchases a wide range of electronic, mechanical, and electrical components, some of which are designed to the Company's specifications. The Company does outsource some of its subassembly work.

The Company sustained substantial water-related damage to its manufacturing facilities, equipment and inventory in late July 1997, which interrupted production and shipment. The Company was able to resume some production within a few days and has been increasing production as repairs are made and equipment and inventory are replaced. See "Risk Factors--Risks Associated with Manufacturing Facility."

The Company relies on sole and limited source suppliers for certain parts and subassemblies. Such reliance involves several risks, including a potential inability to obtain an adequate supply of required components, reduced control over pricing and timing of delivery of components and suppliers' potential inability to develop technologically advanced products to support the Company's growth and development of new systems. The Company believes that alternative sources could be obtained and qualified, if necessary, for most sole and limited source parts. However, if the Company were forced to seek alternative sources of supply or to manufacture such components or subassemblies internally, it may be required to redesign its systems, which could prevent the Company from shipping its systems to its customers on a timely basis. This could damage the Company's relationships with current and potential customers. See "Risk Factors--Supply Constraints and Dependence on Sole and Limited Source Suppliers."

## **INTELLECTUAL PROPERTY**

The Company's success depends in large part on the technical innovation of its products. While the Company attempts to protect its intellectual property rights through patents and non-disclosure agreements, it believes that its success will depend to a greater degree upon innovation, technological expertise and its ability to adapt its products to new technology. There can be no assurance that the Company will be able to protect its technology or that competitors will not be able to develop similar technology independently. In addition, the laws of certain foreign countries may not protect the Company's intellectual property to the same extent as do the laws of the United States. No assurance can be given that the Company's patents will be sufficiently broad to protect the Company's technology, nor that any existing or future patents will not be challenged, invalidated or circumvented, or that the rights granted thereunder will provide meaningful competitive advantages to the Company.

Although the Company is not aware of any infringement by its products of any patents or proprietary rights of others, there can be no assurance that such infringements do not exist or will not occur in the future. Litigation may be necessary in the future to enforce patents issued to the Company, to protect trade secrets or know how owned by the Company, to defend the Company against claimed infringement of the rights of others or to determine the scope and validity of the proprietary rights of others. Any such litigation could result in substantial cost and diversion of effort by the Company, which could have a material adverse effect on the Company's business, financial condition and results of operations. Moreover, adverse determinations in such litigation could result in the Company's loss of proprietary rights, subject the Company to significant liabilities to third parties, require the Company to seek licenses from third parties or prevent the Company from manufacturing or selling its products. See "Risk Factors--Intellectual Property Rights."

## **COMPETITION**

The markets the Company serves are highly competitive and characterized by rapidly evolving technology. Significant competitive factors in the Company's markets include product performance, price, quality and reliability and level of customer service and support. The Company believes that it currently competes

effectively with respect to these factors, although there can be no assurance that the Company will be able to compete effectively in the future.

The markets in which the Company competes have seen an increase in global competition, especially from Japanese-based and European-based equipment vendors. The Company has several foreign and domestic competitors for each of the DC, low-frequency and mid-frequency AC, and radio frequency AC lines of products. Some of these competitors are larger and have greater resources than the Company. The Company's ability to continue to compete successfully in these markets will depend upon its ability to introduce product enhancements and new products on a timely basis. The Company's primary competitors are ENI, a subsidiary of Astec (BSR) PLC, RF Power Products, Huttinger, Shindingen, Kyosan, Comdel and Daihen. In addition, the Company from time to time faces competition from smaller companies for specific products. The Company's competitors in each product area are expected to continue to improve the design and performance of their systems and to introduce new systems with competitive performance characteristics. To remain competitive, the Company believes it will be required to maintain a high level of investment in research and development and sales and marketing. No assurance can be given that the Company will continue to be competitive in the future. See "Risk Factors--Competition."

## **EMPLOYEES**

At August 15, 1997, the Company had a total of 883 employees, of whom 672 are full-time continuous employees. None of the Company's employees is represented by a union, and the Company has never experienced a work stoppage. The Company utilizes temporary employees as a means to provide additional staff while reviewing the performance of the temporary employee. The Company considers its employee relations to be good.

## **FACILITIES**

The Company's headquarters are located in Fort Collins, Colorado, in approximately 170,000 square feet of leased space. The Company believes that additional space will be available if necessary for expansion. The Company maintains sales and service offices in the United States in Fort Collins, Colorado; Austin, Texas; Concord, Massachusetts; and Milpitas, California; and outside the United States in Tokyo, Japan; Filderstadt, Germany; and Bicester, United Kingdom. All of the Company's facilities are leased.

## MANAGEMENT

### DIRECTORS AND EXECUTIVE OFFICERS

The directors and executive officers of the Company and their ages as of the date of this Prospectus are as follows:

Name	Age	Position
-----	---	-----
Douglas S. Schatz.....	51	President, Chief Executive Officer and Chairman of the Board
Hollis L. Caswell.....	66	Chief Operating Officer and Director
G. Brent Backman.....	56	Vice President, Special Projects, Assistant Secretary and Director
Eric A. Balzer.....	48	Vice President, Operations
Richard P. Beck.....	64	Vice President, Chief Financial Officer and Director
James F. Gentilcore.....	45	Vice President, Sales and Marketing
Timothy A. Kerr.....	36	Vice President, Engineering
Susan C. Schell.....	48	Vice President, Human Resources and Corporate Quality
Richard A. Scholl.....	58	Vice President and Chief Technology Officer
Elwood Spedden (1)(2).....	60	Director
Arthur A. Noeth (1)(2).....	61	Director

(1) Member of the Audit Committee

(2) Member of the Compensation Committee

DOUGLAS S. SCHATZ is a co-founder of the Company and has been its President and Chief Executive Officer and a director since its incorporation in 1981. Mr. Schatz also co-founded Energy Research Associates, Inc. and served as its Vice President of Engineering from 1977 through 1980. Prior to co-founding Energy Research Associates, Mr. Schatz held various engineering and management positions at Applied Materials.

HOLLIS L. CASWELL joined Advanced Energy in February 1997 as a Director and, in June 1997, became Chief Operating Officer of the Company. From February 1990 to January 1994, Dr. Caswell was Chairman of the Board and Chief Executive Officer of HYPRES, Inc., a manufacturer of superconducting electronics. From 1984 to 1990, Dr. Caswell served as Senior Vice President of Unisys Corporation and President of such company's Computer Systems Group. Dr. Caswell is a director of Thomas Group, Inc., a publicly-held consulting company, since August 1991.

G. BRENT BACKMAN is a co-founder of the Company and has been a Vice President and a director of the Company since its incorporation in 1981. Mr. Backman became Vice President, Special Projects in 1994. Prior to co-founding Advanced Energy, Mr. Backman was a Business Manager at Ion Tech, Inc. and a Laboratory Administrator at Hughes Aircraft Company.

ERIC A. BALZER joined Advanced Energy in 1990 as Vice President, Operations. Prior to joining the Company, Mr. Balzer was Materials and Manufacturing Manager for the Systems Technology Division of IBM Corporation.

RICHARD P. BECK joined Advanced Energy in 1992 as Vice President and Chief Financial Officer. He became a director of the Company in 1995. From 1987 to 1992, Mr. Beck served as Executive Vice President and Chief Financial Officer of Cimage Corporation, a computer software company. Mr. Beck is also a director of Target Computer, Inc., a privately-held computer rental company.

JAMES F. GENTILCORE joined the Company in 1996 as Vice President, Sales and Marketing. Prior to joining the Company, Mr. Gentilcore was Vice President, Marketing at MKS Instruments.

TIMOTHY A. KERR joined the Company in 1987 as an engineer in the DC products group. In 1995, Mr. Kerr became Director of Engineering and became Vice President, Engineering in August 1996. Prior to joining the Company, Mr. Kerr was a member of the technical staff at Hughes Aircraft Company.

SUSAN C. SCHELL joined Advanced Energy in 1984 as Human Resources Manager and became Vice President, Human Resources and Corporate Quality in 1991. Prior to joining the Company, Ms. Schell was a Management Advisory Services Consultant with Cady and Company, P.C.

RICHARD A. SCHOLL joined Advanced Energy in 1988 as Vice President, Engineering. Mr. Scholl became Chief Technology Officer of the Company in 1995. Prior to joining the Company, Mr. Scholl was General Manager, Vacuum Products Division at Varian Associates, Inc.

ELWOOD SPEDDEN joined the Board of Directors of Advanced Energy in September 1995. Mr. Spedden has been a Senior Vice President of Tencor Instruments, a manufacturer of automatic test equipment used in the fabrication of semiconductors, since July 1996. From 1990 through March 1996, Mr. Spedden held various management positions, including President, Chief Executive Officer and Vice-Chairman of the Board of Directors, at Credence Systems Corporation, also a manufacturer of automatic test equipment. Mr. Spedden has also held various marketing and management positions at Teradyne, Inc., an automatic test equipment manufacturer.

ARTHUR NOETH joined the Board of Directors of Advanced Energy in August 1997. Mr. Noeth has been Chief Executive Officer of Implant Center, Inc., an ion implantation services company, since April 1996. Prior to that time, Mr. Noeth was a consultant to several companies in the semiconductor equipment industry, including Implant Center, Inc.

## PRINCIPAL AND SELLING STOCKHOLDERS

The following table sets forth certain information regarding the beneficial ownership of the Company's Common Stock as of August 18, 1997, and as adjusted as of such date, to reflect the sale by the Company and the Selling Stockholders of the shares offered hereby (i) by each person who is known by the Company to own beneficially more than five percent (5%) of the outstanding shares of Common Stock, (ii) by each of the Company's directors, (iii) by each of the executive officers, (iv) by all directors and executive officers as a group, and (v) by the other Selling Stockholders. Except as otherwise indicated, the Company believes that the beneficial owners of the Common Stock listed below, based on information provided by such owners, have sole investment and voting power with respect to the Common Stock shown below as being beneficially owned by them, subject to community property laws where applicable.

Name (1)	Shares Beneficially Owned Prior to Offering (2)(3)(4)		Shares to be Sold (3)(4)	Shares Beneficially Owned After Offering (2)(3)(4)	
	Number	Percent		Number	Percent
Douglas S. Schatz (5).....	13,162,300	61.6	1,022,500	12,139,800	54.2
Hollis L. Caswell.....	52,500	*	27,500	25,000	*
G. Brent Backman (5)(6).....	2,383,000	11.1	146,000	2,237,000	10.0
Eric A. Balzer.....	260,238	1.2	--	260,238	1.2
Richard P. Beck.....	313,285	1.5	150,000	163,285	*
Susan C. Schell.....	208,354	1.0	50,000	158,354	*
Richard A. Scholl (7).....	520,159	2.4	100,000	420,159	1.9
Timothy A. Kerr.....	4,987	*	4,000	987	*
Elwood Spedden.....	5,000	*	--	5,000	*
Arthur A. Noeth.....	2,500	*	--	2,500	*
All directors and executive officers as a group (10 persons) (5)(6)(7).....	16,912,323	78.7	1,500,000	15,412,323	68.6

(1) The following is a list of the positions, offices or other material relationships which the Selling Stockholders have held with the Company in the past three years: Mr. Schatz--co-founder of the Company, President, Chief Executive Officer and director; Mr. Caswell-- Chief Operating Officer and director; Mr. Backman--co-founder of the Company, Vice President, Special Projects and director; Mr. Beck--Vice President, Chief Financial Officer and director; Ms. Schell--Vice President, Human Resources and Corporate Quality; Mr. Scholl--Vice President, Engineering, Chief Technology Officer; Mr. Kerr--Vice President, Engineering.

(2) Shares of Common Stock that a person has the right to acquire within 60 days of August 18, 1997 are deemed to be beneficially owned by such persons as of such date. The number of shares of Common Stock that the directors and executive officers of the Company have the right to acquire within 60 days of August 18, 1997 are as follows: Mr. Caswell--52,500; Mr. Beck--27,184; Mr. Scholl--4,687 (held by his wife, Brenda Scholl); Mr. Kerr--4,687; Mr. Spedden--5,000; Mr. Noeth--2,500; all directors and executive officers as a group--96,558.

(3) Based on 21,383,075 shares of voting Common Stock outstanding as of August 18, 1997 and 22,414,575 shares of voting Common Stock outstanding after the Offering. Shares of Common Stock that a person has the right to acquire within 60 days of August 18, 1997 are deemed outstanding for purposes of computing the percentage ownership of the person holding such options, but are not deemed outstanding for computing the percentage ownership of any other person, except with respect to the percentage ownership of all directors and executive officers as a group.

(4) Assumes no exercise of the Underwriters' over-allotment option. If the over-allotment is exercised in full, Mr. Schatz, Mr. Caswell, Mr. Backman, Mr. Beck, Ms. Schell, Mr. Scholl and Mr. Kerr will sell an additional 153,375, 4,125, 21,900, 22,500, 7,500, 15,000 and 600 shares of Common Stock, respectively.

(5) Messrs. Schatz and Backman, 1625 Sharp Point Drive, Fort Collins, Colorado 80525, are 5% stockholders.

(6) Includes 546,000 shares held by his wife, Karen Backman. Excludes 108,000 shares held in two trusts, each with an independent third-party trustee, for the benefit of Mr. Backman's two sons who are both at the age of majority.

(7) Includes 300 shares held by Mrs. Scholl and 4,687 shares that she has the right to acquire within 60 days of August 18, 1997. Mrs. Scholl is a product manager for the Company.

\* Less than one percent.

## DESCRIPTION OF CAPITAL STOCK

### GENERAL

Upon completion of the Offering, the Company will have authorized capital stock of shares consisting of 30,000,000 shares of Common Stock, \$0.001 par value, and 1,000,000 shares of Preferred Stock, \$0.001 par value. As of August 18, 1997, 21,383,075 shares of Common Stock were outstanding, held by approximately 445 holders of record, and no shares of Preferred Stock were outstanding. In addition, 1,605,365 shares, 50,000 shares and 26,736 shares, were reserved for issuance at that date under the Option Plan, Director Plan and Purchase Plan, respectively.

### COMMON STOCK

The holders of Common Stock are entitled to one vote for each share held of record on all matters submitted to a vote of stockholders, except that upon giving the legally required notice, stockholders may cumulate their votes in the election of directors. Subject to preferences that may be applicable to any outstanding shares of Preferred Stock that may be issued, the holders of Common Stock are entitled to receive ratably such dividends, if any, as may be declared from time to time by the Board of Directors out of funds legally available for the payment of dividends. See "Dividend Policy." In the event of a liquidation, dissolution or winding up of the Company, the holders of Common Stock are entitled to share ratably in all assets remaining after payment of liabilities and liquidation preferences of any outstanding shares of Preferred Stock. Holders of Common Stock have no preemptive rights or rights to convert their Common Stock into any other securities. There are no redemption or sinking fund provisions applicable to the Common Stock. All outstanding shares of Common Stock are fully paid and non-assessable, and the shares of Common Stock to be issued upon completion of this offering will be fully paid and non-assessable.

### PREFERRED STOCK

The Board of Directors has the authority, without action by the stockholders, to designate and issue up to 1,000,000 shares of Preferred Stock in one or more series and to designate the dividend rate, voting rights and other rights, preferences and restrictions of each series any or all of which may be greater than the rights of the Common Stock. It is not possible to state the actual effect of the issuance of any shares of Preferred Stock upon the rights of holders of the Common Stock until the Board of Directors determines the specific rights of the holders of such Preferred Stock. However, the effects might include, among other things, restricting dividends on the Common Stock, diluting the voting power of the Common Stock, impairing the liquidation rights of the Common Stock and delaying or preventing a change in control of the Company without further action by the stockholders. The Company has no present plans to issue any shares of Preferred Stock.

### DELAWARE LAW AND CERTAIN CHARTER PROVISIONS

The Company is a Delaware corporation and subject to Section 203 of the Delaware General Corporation Law (the "Delaware Law"), an anti-takeover law. In general, Section 203 of the Delaware Law prevents an "interested stockholder" (defined generally as a person owning 15% or more of a corporation's outstanding voting stock) from engaging in a "business combination" (as defined) with a Delaware corporation for three years following the date such person became an interested stockholder, subject to certain exceptions such as the approval of the board of directors and of the holders of at least two-thirds of the outstanding shares of voting stock not owned by the interested stockholder. The existence of this provision would be expected to have an anti-takeover effect, including attempts that might result in a premium over the market price for the shares of Common Stock held by stockholders.

The Company's Certificate of Incorporation and By-laws include certain provisions that (i) allow the Company to issue Preferred Stock with rights senior to those of the Common Stock without any further vote or action by the stockholders, (ii) limit the right of the stockholders to call a special meeting of stockholders, and (iii) allow the Company to impose various procedural and other requirements that could make it more difficult for stockholders to effect certain corporate actions. Such provisions could have the effect of making it more difficult for a third party to acquire, or of discouraging a third party from attempting to acquire, control of the Company. Such provisions could limit the price that certain investors might be willing to pay in the future for shares of the Company's Common Stock. See "Risk Factors--Anti-takeover Provisions."

### TRANSFER AGENT

The Company's transfer agent and registrar for its Common Stock is Bank of Boston.

## UNDERWRITING

Subject to the terms and conditions of the Underwriting Agreement, the underwriters named below (the "Underwriters") have agreed to purchase from the Company and the Selling Stockholders the following respective number of shares of Common Stock:

Underwriter	Number of Shares
UBS Securities LLC.....	
Lehman Brothers Inc.....	
PaineWebber Incorporated.....	
Robertson, Stephens & Company LLC.....	
Total.....	2,500,000

The Underwriting Agreement provides that the Underwriters' obligations are subject to certain conditions precedent, including the absence of any material adverse change in the Company's business and the receipt of certain certificates, opinions and letters from the Company and its counsel. The nature of the Underwriters' obligation is such that they are committed to purchase all shares of Common Stock offered hereby (other than those covered by the over-allotment option described below) if any of such shares are purchased.

The Underwriters have advised the Company that they propose to offer the shares of Common Stock directly to the public at the offering price set forth on the cover page of this Prospectus and to certain dealers at such price less a commission not exceeding per share. The Underwriters may allow, and such dealers may reallow, a concession not in excess of per share to certain other dealers. After the Offering, the offering price and other selling terms may be changed by the Underwriters.

The Company and the Selling Stockholders have granted to the Underwriters an option, exercisable no later than 30 days after the date of this Prospectus, to purchase up to 375,000 additional shares of Common Stock to cover over-allotments, if any, at the public offering price set forth on the cover page of this Prospectus. To the extent that the Underwriters exercise this option, each of the Underwriters will have a firm commitment to purchase approximately the same percentage thereof which the number of shares of Common Stock to be purchased by it shown in the above table bears to the total number of shares of Common Stock offered hereby. The Company and the Selling Stockholders will each be obligated, pursuant to the option, to sell such shares to the Underwriters to the extent the option is exercised.

The Company and the Selling Stockholders have agreed to indemnify the Underwriters against certain liabilities, including liabilities under the Securities Act of 1933, as amended (the "Securities Act"), and to contribute to payments the Underwriters may be required to make in respect thereof.

All executive officers and directors of the Company and all Selling Stockholders have entered into lock-up agreements (the "Lock-Up Agreements") pursuant to which they have agreed not to sell, offer or agree to sell, contract to sell, grant any option to purchase, make any short sale or otherwise dispose of any shares of Common Stock, or any securities convertible into or exercisable or exchangeable for Common Stock, for a period of 90 days after the date of this Prospectus without the prior written consent of UBS Securities LLC, except for (i) transfers as a BONA FIDE gift or gifts, provided that the donee or donees thereof agree to be bound by the restrictions set forth in the Lock-Up Agreement and (ii) transfers without value by a shareholder to one or more trusts established for the benefit of the shareholder or members of such shareholder's immediate family. In addition, the Company has agreed that it will not, until 90 days following the date of this Prospectus, without the prior written consent of UBS Securities LLC, issue, sell, offer or agree to sell, grant, distribute or otherwise dispose of, directly or indirectly, any shares of Common Stock, except that the Company may grant additional options and issue stock under the stock option and stock purchase plans in effect on the date of this Prospectus or issue shares of Common Stock upon the exercise of outstanding stock options and warrants.

The Underwriters have advised the Company that, pursuant to Regulation M under the Securities Act, certain persons participating in the Offering may engage in transactions, including stabilizing bids, syndicate covering transactions or the imposition of penalty bids, which may have the effect of stabilizing or maintaining the market price of the Common Stock at a level above that which might otherwise prevail in the open market.

A "stabilizing bid" is a bid for the purchase of Common Stock on behalf of the Underwriters for the purpose of fixing or maintaining the price of the Common Stock. A "syndicate covering transaction" is the bid for or the purchase of the Common Stock on behalf of the Underwriters to reduce a short position incurred by the Underwriters in connection with the Offering. A "penalty bid" is an arrangement permitting UBS Securities LLC, as managing underwriter, to reclaim the selling concession otherwise accruing to a syndicate member in connection with the Offering if the Common Stock originally sold by such syndicate member is purchased in a syndicate covering transaction and has therefore not been effectively placed by such syndicate member. The Underwriters have advised the Company that such transactions may be effected on the Nasdaq National Market or otherwise and, if commenced, may be discontinued at any time.

## **LEGAL MATTERS**

The validity of the shares of Common Stock offered by the Company hereby will be passed upon for the Company by Thelen, Marrin, Johnson & Bridges LLP, San Francisco, California, who have acted as counsel to the Company and the Selling Stockholders in connection with the Offering. Certain legal matters in connection with the Offering will be passed upon for the Underwriters by Wilson Sonsini Goodrich & Rosati, Professional Corporation, Palo Alto, California.

## **EXPERTS**

The consolidated financial statements of the Company as of December 31, 1996, 1995 and 1994, included elsewhere in this Prospectus, have been included in reliance on the report of Arthur Andersen LLP, independent accountants, given on the authority of said firm as experts in accounting and auditing.

## **AVAILABLE INFORMATION**

The Company has filed with the Securities and Exchange Commission, Washington, D.C. 20549, a Registration Statement on Form S-3 under the Securities Act, with respect to the Common Stock offered hereby. This Prospectus does not contain all of the information set forth in the Registration Statement and the exhibits and schedules thereto, to which reference is hereby made. Statements made in this Prospectus as to the contents of any contract, agreement or other document referred to are not necessarily complete. With respect to each such contract, agreement or other document filed as an exhibit to the Registration Statement, reference is made to the exhibit for a more complete description of the matter involved, and each such statement shall be deemed to be qualified in its entirety by such reference.

Advanced Energy is subject to the informational requirements of the Exchange Act and, in accordance therewith, files reports, proxy statements and other information with the Commission. Such reports, proxy statements and other information filed by Advanced Energy may be inspected and copied at the public reference facilities maintained by the Commission at Room 1024, Judiciary Plaza, 450 Fifth Street, N.W., Washington, D.C. 20549, and at the Commission's regional offices located at Seven World Trade Center, Suite 1300, New York, New York 10048, and Citicorp Center, 500 West Madison Street, Suite 1400, Chicago, Illinois 60661-2511. Copies of such material can be obtained by mail from the Public Reference section of the Commission at Judiciary Plaza, 450 Fifth Street, N.W., Washington, D.C. 20549, at prescribed rates. In addition, reports, proxy statements and other information that Advanced Energy files with the Commission electronically are contained in the Internet Web site maintained by the Commission. The Commission's Web sit address is <http://www.sec.gov>. The Common Stock is quoted on the Nasdaq National Market. Reports, proxy statements and other information concerning the Company may be inspected at the offices of the National Association of Securities Dealers, Inc. at 1735 K Street, N.W., Washington, D.C. 20006.

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## **REPORT OF INDEPENDENT PUBLIC ACCOUNTANTS**

**To the Stockholders and Board of Directors of**

**Advanced Energy Industries, Inc.:**

We have audited the accompanying consolidated balance sheets of Advanced Energy Industries, Inc. (a Delaware corporation) and subsidiaries as of December 31, 1996 and 1995, and the related consolidated statements of income, stockholders' equity, and cash flows for each of the three years in the period ended December 31, 1996. These consolidated financial statements and the schedule referred to below are the responsibility of the Company's management. Our responsibility is to express an opinion on these consolidated financial statements and schedule based on our audits.

We conducted our audits in accordance with generally accepted auditing standards. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audits provide a reasonable basis for our opinion.

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the financial position of Advanced Energy Industries, Inc. and subsidiaries as of December 31, 1996 and 1995, and the results of their operations and their cash flows for each of the three years in the period ended December 31, 1996, in conformity with generally accepted accounting principles.

**Arthur Andersen LLP**

Denver, Colorado  
January 31, 1997

# ADVANCED ENERGY INDUSTRIES, INC. AND SUBSIDIARIES

## CONSOLIDATED BALANCE SHEETS

(IN THOUSANDS)

	DECEMBER 31,	
	1996	1995
<b>ASSETS</b>		
<b>CURRENT ASSETS:</b>		
Cash and cash equivalents.....	\$ 11,231	\$ 13,332
Accounts receivable--		
Trade (less allowances for doubtful accounts of approximately \$242 and \$210 at December 31, 1996 and 1995, respectively).....	15,287	13,540
Related parties.....	541	979
Other.....	288	653
Inventories.....	13,976	16,104
Other current assets.....	1,013	663
Deferred income tax assets, net current	1,223	1,031
	-----	-----
Total current assets.....	43,559	46,302
	-----	-----
PROPERTY AND EQUIPMENT, at cost, net of accumulated depreciation of \$5,779 and \$3,634 at December 31, 1996 and 1995, respectively.....	9,500	6,639
	-----	-----
<b>OTHER ASSETS:</b>		
Deposits and other.....	1,139	815
Demonstration and customer service equipment, net of accumulated depreciation of \$1,276 and \$902 at December 31, 1996 and 1995, respectively.....	1,833	1,563
	-----	-----
	2,972	2,378
	-----	-----
Total assets.....	\$ 56,031	\$ 55,319
	-----	-----
<b>LIABILITIES AND STOCKHOLDERS' EQUITY</b>		
<b>CURRENT LIABILITIES:</b>		
Accounts payable--		
Trade.....	\$ 2,253	\$ 6,665
Accrued payroll and employee benefits.....	2,396	2,763
Other accrued expenses.....	1,156	749
Customer deposits.....	166	113
Accrued income taxes payable.....	1,485	1,336
Capital lease obligations, current portion.....	315	363
Notes payable, current portion.....	609	564
	-----	-----
Total current liabilities.....	8,380	12,553
	-----	-----
<b>LONG-TERM LIABILITIES:</b>		
Capital lease obligations, net of current portion.....	169	494
Notes payable, net of current portion.....	958	1,063
Deferred income taxes.....	28	122
	-----	-----
	1,155	1,679
	-----	-----
Total liabilities.....	9,535	14,232
	-----	-----
<b>COMMITMENTS AND CONTINGENCIES (Note 11)</b>		
<b>STOCKHOLDERS' EQUITY (Note 1):</b>		
Preferred stock, \$0.001 par value, 1,000 shares authorized, none issued and outstanding.....	--	--
Common stock, \$0.001 par value, 30,000 shares authorized; 21,268 and 21,069 shares issued and outstanding, respectively.....	21	21
Additional paid-in capital.....	23,075	22,925
Retained earnings.....	25,065	19,921
Stockholders' notes receivable.....	(1,083)	(1,083)
Deferred compensation.....	(82)	(130)
Cumulative translation adjustment.....	(500)	(567)
	-----	-----
Total stockholders' equity.....	46,496	41,087
	-----	-----
Total liabilities and stockholders' equity.....	\$ 56,031	\$ 55,319

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**THE ACCOMPANYING NOTES TO CONSOLIDATED FINANCIAL STATEMENTS ARE AN INTEGRAL PART  
OF THESE CONSOLIDATED BALANCE SHEETS.**

**ADVANCED ENERGY INDUSTRIES, INC. AND SUBSIDIARIES**

**CONSOLIDATED STATEMENTS OF INCOME**

(IN THOUSANDS, EXCEPT PER SHARE AMOUNTS)

	YEARS ENDED DECEMBER 31,		
	1996	1995	1994
Sales.....	\$ 98,852	\$ 94,708	\$ 51,857
Cost of sales.....	62,038	49,314	26,043
Gross profit.....	36,814	45,394	25,814
Operating expenses:			
Research and development.....	13,760	10,522	5,849
Sales and marketing.....	8,590	6,201	4,658
General and administrative.....	6,253	7,193	5,304
Total operating expenses.....	28,603	23,916	15,811
Income from operations.....	8,211	21,478	10,003
Other income (expense):			
Interest income.....	455	71	86
Interest expense.....	(168)	(612)	(643)
Foreign currency (loss) gain.....	(351)	(7)	389
Other income (expense), net.....	157	155	(132)
	93	(393)	(300)
Income before income taxes.....	8,304	21,085	9,703
Provision for income taxes.....	3,160	7,804	3,740
Net income.....	\$ 5,144	\$ 13,281	\$ 5,963
Net income per share.....	\$ 0.24	\$ 0.69	\$ 0.32
Weighted average common and common equivalent shares outstanding.....	21,666	19,310	18,605

	COMMON STOCK		ADDITIONAL		STOCKHOLDERS'		CUMULATIVE
	SHARES	AMOUNT	PAID-IN CAPITAL	RETAINED EARNINGS	NOTES RECEIVABLE	DEFERRED COMPENSATION	TRANSLATION ADJUSTMENT
BALANCES, December 31, 1993.....	17,091	\$ 17	\$ 119	\$ 805	\$ --	\$ --	\$ 70
Election of C corporation status.....	--	--	58	(58)	--	--	--
Warrants issued.....	--	--	1	--	--	--	--
Exercise of stock options for cash.....	202	--	167	--	--	--	--
Equity adjustment from foreign currency translation.....	--	--	--	--	--	--	124
Acquisition of minority interest.....	--	--	22	(70)	--	--	--
Net income.....	--	--	--	5,963	--	--	--
	-----	--	-----	-----	-----	-----	-----
BALANCES, December 31, 1994.....	17,293	17	367	6,640	--	--	194
Equity adjustment from foreign currency translation.....	--	--	--	--	--	--	(761)
Exercise of stock options for cash.....	140	1	124	--	--	--	--
Exercise of stock options in exchange for stockholders' notes receivable.....	1,236	1	1,082	--	(1,083)	--	--
Deferred compensation on stock options issued.....	--	--	142	--	--	(142)	--
Amortization of deferred compensation.....	--	--	--	--	--	12	--
Sale of common stock through public offering, net of approximately \$2,790 of expenses.....	2,400	2	21,210	--	--	--	--
Net income.....	--	--	--	13,281	--	--	--
	-----	--	-----	-----	-----	-----	-----
BALANCES, December 31, 1995.....	21,069	21	22,925	19,921	(1,083)	(130)	(567)
Equity adjustment from foreign currency translation.....	--	--	--	--	--	--	67
Exercise of stock options for cash.....	199	--	150	--	--	--	--
Amortization of deferred compensation.....	--	--	--	--	--	48	--
Net income.....	--	--	--	5,144	--	--	--
	-----	--	-----	-----	-----	-----	-----
BALANCES, December 31, 1996.....	21,268	\$ 21	\$ 23,075	\$ 25,065	\$ (1,083)	\$ (82)	\$ (500)
	-----	--	-----	-----	-----	-----	-----
	-----	--	-----	-----	-----	-----	-----
	TOTAL						
	-----						
BALANCES, December 31, 1993.....	\$ 1,011						
Election of C corporation status.....	--						
Warrants issued.....	1						
Exercise of stock options for cash.....	167						
Equity adjustment from foreign currency translation.....	124						
Acquisition of minority interest.....	(48)						
Net income.....	5,963						
	-----						
BALANCES, December 31, 1994.....	7,218						
Equity adjustment from foreign currency translation.....	(761)						
Exercise of stock options for cash.....	125						
Exercise of stock options in exchange for stockholders' notes receivable.....	--						
Deferred compensation on stock options issued.....	--						
Amortization of deferred compensation.....	12						
Sale of common stock through public offering, net of							

approximately \$2,790 of	
expenses.....	21,212
Net income.....	13,281
	-----
BALANCES, December 31, 1995.....	41,087
Equity adjustment from foreign	
currency translation.....	67
Exercise of stock options for	
cash.....	150
Amortization of deferred	
compensation.....	48
Net income.....	5,144
	-----
BALANCES, December 31, 1996.....	\$ 46,496
	-----
	-----

**THE ACCOMPANYING NOTES TO CONSOLIDATED FINANCIAL STATEMENTS ARE AN INTEGRAL PART  
OF THESE CONSOLIDATED STATEMENTS.**

**ADVANCED ENERGY INDUSTRIES, INC. AND SUBSIDIARIES**

**CONSOLIDATED STATEMENTS OF CASH FLOWS**

(IN THOUSANDS, EXCEPT PER SHARE AMOUNTS)

	YEARS ENDED DECEMBER 31,		
	1996	1995	1994
CASH FLOWS FROM OPERATING ACTIVITIES:			
Net income.....	\$ 5,144	\$ 13,281	\$ 5,963
Adjustments to reconcile net income to net cash provided by operating activities --			
Depreciation and amortization.....	2,609	1,543	1,052
Provision for deferred income taxes.....	(286)	(252)	(657)
Amortization of deferred compensation.....	48	12	--
Minority interest.....	--	--	(15)
Loss on disposal of property and equipment.....	41	66	113
Changes in operating assets and liabilities --			
Accounts receivable-trade, net.....	(1,747)	(5,477)	(3,291)
Related parties and other receivables.....	803	(889)	147
Inventories.....	2,128	(8,907)	(3,419)
Other current assets.....	(350)	(371)	(149)
Deposits and other.....	(324)	(225)	(316)
Demonstration and customer service equipment.....	(644)	(937)	(154)
Accounts payable, trade.....	(4,412)	3,568	1,210
Accrued payroll and employee benefits.....	(367)	725	937
Customer deposits and other accrued expenses.....	460	149	275
Income taxes payable.....	149	1,388	(52)
Accrued payments to S corporation stockholders for income taxes.....	--	--	(477)
Net cash provided by operating activities.....	3,252	3,674	1,167
CASH FLOWS FROM INVESTING ACTIVITIES:			
Purchase of property and equipment, net.....	(5,137)	(3,824)	(2,763)
Net cash used in investing activities.....	(5,137)	(3,824)	(2,763)
CASH FLOWS FROM FINANCING ACTIVITIES:			
Proceeds from notes payable.....	1,606	31,179	23,185
Repayment of notes payable and capital lease obligations.....	(2,039)	(34,103)	(21,581)
Repayment of subordinated notes to stockholders.....	--	(4,538)	(262)
Sale of common stock, net of expenses.....	--	21,212	--
Proceeds from exercise of stock options and warrants.....	150	125	168
Acquisition of minority interest.....	--	--	(48)
Net cash (used in) provided by financing activities.....	(283)	13,875	1,462
EFFECT OF CUMULATIVE TRANSLATION ADJUSTMENT.....	67	(761)	124
(DECREASE) INCREASE IN CASH AND CASH EQUIVALENTS.....	(2,101)	12,964	(10)
CASH AND CASH EQUIVALENTS, beginning of period.....	13,332	368	378
CASH AND CASH EQUIVALENTS, end of period.....	\$ 11,231	\$ 13,332	\$ 368
SUPPLEMENTAL DISCLOSURE OF NON-CASH INVESTING AND FINANCING ACTIVITIES:			
Deferred compensation on stock options issued.....	\$ --	\$ 142	\$ --
Assets acquired with capital lease.....	\$ --	\$ --	\$ 145
Exercise of stock options in exchange for stockholders' notes receivable.....	\$ --	\$ 1,083	\$ --
SUPPLEMENTAL DISCLOSURE OF CASH FLOW INFORMATION:			
Cash paid for interest.....	\$ 168	\$ 604	\$ 618
Cash paid for income taxes.....	\$ 3,940	\$ 6,668	\$ 4,415

**THE ACCOMPANYING NOTES TO CONSOLIDATED FINANCIAL STATEMENTS ARE AN INTEGRAL PART  
OF THESE CONSOLIDATED STATEMENTS.**



# ADVANCED ENERGY INDUSTRIES, INC. AND SUBSIDIARIES

## NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

### (1) COMPANY OPERATIONS

Advanced Energy Industries, Inc. (the "Company") was incorporated in Colorado in 1981 and reincorporated in Delaware in 1995. The Company is primarily engaged in the development and production of power conversion and control systems which are used by manufacturers of semiconductors and in industrial thin film manufacturing processes. The Company owns 100% of each of the following subsidiaries: Advanced Energy Japan, K.K. ("AE-Japan"), Advanced Energy, GmbH ("AE-Germany") and Advanced Energy U.K. Limited ("AE-UK"). Effective January 1, 1994, the Company converted its tax status from being an S corporation to a C corporation, and acquired the remaining minority interest in each of these subsidiaries. Additionally, the Company formed Advanced Energy Industries, FSC ("AE-FSC") in 1994.

In September 1995, the Company reincorporated in Delaware with an authorized capitalization of 30,000,000 shares of common stock, \$0.001 par value. Also in September 1995, the Company approved a three for one share common stock split. All share and per share data have been retroactively adjusted in the accompanying consolidated financial statements for the effect of the stock split. Additionally, the Company also authorized 1,000,000 shares of \$0.001 par value preferred stock.

The Company continues to be subject to certain risks similar to other companies in its industry. These risks include the volatility of the semiconductor industry, customer concentration within the industry, technological changes, dependence on the Japanese market, foreign currency risk and competition. A significant change in any of these risk factors could have a material impact on the Company's business.

### (2) SIGNIFICANT ACCOUNTING POLICIES

**BASIS OF PRESENTATION** -- The consolidated financial statements include the accounts of the Company and its subsidiaries. All significant intercompany accounts and transactions have been eliminated in consolidation.

**CASH AND CASH EQUIVALENTS** -- For cash flow purposes, the Company considers all cash and investments with an original maturity of 90 days or less to be cash and cash equivalents.

**INVENTORIES** -- Inventories include costs of materials, direct labor and manufacturing overhead. Inventories are valued at the lower of cost or market, computed on a first-in, first-out basis.

**DEMONSTRATION AND CUSTOMER SERVICE EQUIPMENT** -- Demonstration and customer service equipment are manufactured products utilized for sales demonstration and evaluation purposes. The Company also utilizes this equipment in its customer service function as replacement and loaner equipment to existing customers. All equipment is held for sale.

The Company depreciates the equipment based on its estimated useful life in the sales and customer service functions. The depreciation is computed based upon a 3-year life.

**PROPERTY AND EQUIPMENT** -- Property and equipment is stated at cost. Additions, improvements, and major renewals are capitalized. Maintenance, repairs, and minor renewals are expensed as incurred.

Depreciation is provided using straight-line and accelerated methods over three to ten years for machinery and equipment. Amortization of leasehold improvements and leased equipment is provided using the straight-line method over the life of the lease term or the life of the assets, whichever is shorter.

**CONCENTRATIONS OF CREDIT RISK** -- The Company's revenues generally are concentrated among a small number of customers, the majority of which are in the semiconductor industry. The Company establishes an allowance for doubtful accounts based upon factors surrounding the credit risk of specific customers, historical trends and other information.

## ADVANCED ENERGY INDUSTRIES, INC. AND SUBSIDIARIES

### NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (CONTINUED)

(2) SIGNIFICANT ACCOUNTING POLICIES (CONTINUED) WARRANTY POLICY -- The Company estimates the anticipated costs of repairing products under warranty based on the historical average cost of the repairs. The Company offers warranty coverage for its systems for periods ranging from 12 to 24 months after shipment.

CUMULATIVE TRANSLATION ADJUSTMENT -- The functional currency for the Company's foreign operations is the applicable local currency.

The Company records a cumulative translation adjustment from translation of the financial statements of AE-Japan, AE-Germany and AE-UK. This equity account includes the results of translating all balance sheet assets and liabilities at current exchange rates as of the balance sheet date, and the statements of operations at the average exchange rates during the respective year.

The Company recognizes gain or loss on foreign currency transactions which are not considered to be of a long-term investment nature. The Company recognized a (loss) gain on foreign currency transactions of \$(351,000), \$(7,000) and \$389,000 for the years ended December 31, 1996, 1995 and 1994, respectively.

REVENUE RECOGNITION -- The Company recognizes revenue when products are shipped.

INCOME TAXES -- The Company accounts for income taxes in accordance with Statement of Financial Accounting Standards ("SFAS") No. 109, "Accounting for Income Taxes." In accordance with SFAS No. 109, deferred tax assets and liabilities are recognized for temporary differences between the tax basis and financial reporting basis of assets and liabilities, computed at current tax rates.

NET INCOME PER COMMON AND COMMON EQUIVALENT SHARE -- Net income per share is computed based on net income attributable to common stock and the weighted average number of common and common equivalent shares outstanding during each of the periods since the Company became a C corporation.

All share and income per share data have been adjusted for all periods to reflect the three for one split of common shares approved by the Company's stockholders in September 1995 (Note 1).

ESTIMATES AND ASSUMPTIONS -- The preparation of the Company's consolidated financial statements in conformity with generally accepted accounting principles requires the Company's management to make estimates and assumptions that affect the amounts reported and disclosed in the consolidated financial statements and accompanying notes. Actual results could differ from those estimates.

ACCOUNTING PRONOUNCEMENT -- In March 1995, the Financial Accounting Standards Board ("FASB") issued SFAS No. 121, "Accounting for the Impairment of Long-Lived Assets and for Long-Lived Assets to be Disposed Of." SFAS No. 121 requires that long-lived assets and certain identifiable intangibles to be held and used by an entity be reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount of an asset may not be recoverable. The adoption of SFAS No. 121 in 1996 did not have a significant impact on the Company's consolidated financial condition and results of operations.

### (3) INITIAL PUBLIC OFFERING

In November 1995, the Company closed on the initial public offering of its common stock. In connection with the offering, 2,400,000 shares of previously unissued common shares were sold at a price of \$10 per share, providing gross proceeds of \$24,000,000, less \$2,790,000 in offering costs.

# **ADVANCED ENERGY INDUSTRIES, INC. AND SUBSIDIARIES**

## **NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (CONTINUED)**

### **(4) ACCOUNTS RECEIVABLE, TRADE**

Accounts receivable, trade consisted of the following:

	December 31,	
	1996	1995
	(in thousands)	
Domestic.....	\$ 9,944	\$ 8,825
Foreign.....	5,585	4,925
Allowance for doubtful accounts.....	(242)	(210)
	\$ 15,287	\$ 13,540

### **(5) INVENTORIES**

Inventories consisted of the following:

	December 31,	
	1996	1995
	(in thousands)	
Parts and raw materials.....	\$ 11,149	\$ 11,104
Work in process.....	1,122	1,936
Finished goods.....	1,705	3,064
	\$ 13,976	\$ 16,104

### **(6) PROPERTY AND EQUIPMENT**

Property and equipment consisted of the following:

	December 31,	
	1996	1995
	(in thousands)	
Machinery and equipment.....	\$ 5,708	\$ 3,974
Computers and communication.....	4,793	3,693
Furniture and fixtures.....	1,996	1,211
Vehicles.....	140	154
Leasehold improvements.....	2,642	1,241
	15,279	10,273
Less -- accumulated depreciation.....	(5,779)	(3,634)
	\$ 9,500	\$ 6,639

# ADVANCED ENERGY INDUSTRIES, INC. AND SUBSIDIARIES

## NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (CONTINUED)

(6) PROPERTY AND EQUIPMENT (CONTINUED) Included in the cost of property and equipment above is equipment obtained through capitalized leases. The net book value of capitalized leased equipment included in property and equipment above was as follows at December 31, 1996 and 1995:

	December 31,	
	1996	1995
	(in thousands)	
Machinery and equipment.....	\$ 243	\$ 426
Computers and communication.....	62	245
Furniture and fixtures.....	14	29
	---	---
	\$ 319	\$ 700
	---	---
	---	---

Depreciation of assets acquired under capitalized leases is included in depreciation expense.

### (7) NOTES PAYABLE

	December 31,	
	1996	1995
	(in thousands)	
Term loan of \$1,500,000, commencing December 5, 1996, principal is due monthly in thirty-six equal payments of \$41,667 plus accrued interest at bank's prime rate plus 0.25% (8.5% at December 31, 1996). Collateralized by all corporate fixed assets except those leased. (a)....	\$ 1,458	\$ --
Revolving line of credit of \$10,000,000, maturing November 5, 1997. Interest at bank's prime rate or the LIBOR rate plus 0.25%. Loan covenants provide certain financial restrictions related to working capital, leverage, net worth and profitability. (b).....	--	--
Line of credit to purchase equipment of \$2,000,000. Interest was due monthly at the bank's prime rate plus 0.75% (9.25% at December 31, 1995). The final draw period for this line expired on July 31, 1995.....	--	1,560
Other.....	109	67
	1,567	1,627
Less -- current portion.....	(609)	(564)
	\$ 958	\$ 1,063
	-----	-----

(a) The Company entered into an agreement effective October 31, 1996, providing a \$2.5 million line of credit to purchase equipment. The Company has the option to convert borrowings to a three year term loan bearing interest at the bank's prime rate plus 0.25%. During 1996, the Company borrowed \$1,500,000 under the line of credit and converted this amount to a term loan with a balance of \$1,458,000 as of December 31, 1996.

(b) The Company has the option to convert up to \$3 million of borrowings under its \$10 million line of credit to a three year term loan bearing interest at prime plus 0.5%.

# ADVANCED ENERGY INDUSTRIES, INC. AND SUBSIDIARIES

## NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (CONTINUED)

(7) NOTES PAYABLE (CONTINUED) Annual maturities of notes payable outstanding at December 31, 1996, described above are as follows:

	(in thousands)
Years ended December 31 --	
1997.....	\$ 609
1998.....	500
1999.....	458
	-----
	\$ 1,567
	-----
	-----

## (8) SUBORDINATED NOTES PAYABLE TO STOCKHOLDERS

Effective December 31, 1993, the Company distributed \$4,800,000 of accumulated earnings of the Company to its majority stockholders in the form of notes payable. During 1995, the Company repaid the subordinated notes payable through proceeds received from its initial public offering (Note 3).

## (9) INCOME TAXES

Effective January 1, 1994, the Company terminated its status as an S corporation, electing to be taxed as a C corporation. As of that date, the Company was required to recognize in income from continuing operations the net deferred tax assets and liabilities for temporary differences at the date it became a taxable enterprise. The resulting net deferred tax asset recognized in income from continuing operations as part of the provision for income taxes for 1994 in the accompanying consolidated financial statements at January 1, 1994 was approximately \$446,000.

For the years ended December 31, 1996 and 1995, the provision for income taxes consists of an amount for taxes currently payable and a provision for taxes deferred to future periods.

The provision (benefit) for income taxes for the years ended December 31, 1996, 1995 and 1994, is as follows:

	December 31,		
	1996	1995	1994
	(in thousands)		
Federal.....	\$ 2,744	\$ 5,827	\$ 2,534
State and local.....	568	918	646
Foreign taxes.....	(152)	1,059	560
	-----	-----	-----
	\$ 3,160	\$ 7,804	\$ 3,740
	-----	-----	-----
Current.....	\$ 3,446	\$ 8,056	\$ 4,397
Deferred.....	(286)	(252)	(657)
	-----	-----	-----
	\$ 3,160	\$ 7,804	\$ 3,740
	-----	-----	-----
	-----	-----	-----

# ADVANCED ENERGY INDUSTRIES, INC. AND SUBSIDIARIES

## NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (CONTINUED)

(9) INCOME TAXES (CONTINUED) The following reconciles the Company's effective tax rate to the federal statutory rate for the years ended December 31, 1996, 1995 and 1994:

	December 31,		
	1996	1995	1994
	(in thousands)		
Income tax expense per federal statutory rate.....	\$ 2,823	\$ 7,397	\$ 3,299
State income taxes, net of federal deduction.....	375	596	427
Foreign sales corporation.....	(108)	(208)	(23)
Nondeductible expenses.....	77	49	43
Effect of foreign taxes.....	(168)	316	444
Change in tax status from S to C corporation.....	--	--	(446)
Tax credits.....	(182)	(260)	--
Other.....	343	(86)	(4)
	\$ 3,160	\$ 7,804	\$ 3,740

The Company's deferred income taxes are summarized as follows:

	December 31, 1996	Change	December 31, 1995
	(in thousands)		
Deferred tax assets:			
Employee bonuses.....	\$ --	\$ (218)	\$ 218
Warranty reserve.....	175	98	77
Bad debt reserve.....	75	17	58
Vacation accrual.....	326	(34)	360
Obsolete and excess inventory.....	574	270	304
Other.....	73	59	14
	1,223	192	1,031
Deferred tax liabilities:			
Accumulated depreciation.....	(28)	94	(122)
Net deferred income tax assets.....	\$ 1,195	\$ 286	\$ 909

The domestic versus foreign component of the Company's net income before income taxes at December 31, 1996, 1995 and 1994, was as follows:

	December 31,		
	1996	1995	1994
	(in thousands)		
Domestic.....	\$ 8,255	\$ 18,969	\$ 8,920
Foreign.....	49	2,116	783
	\$ 8,304	\$ 21,085	\$ 9,703

## (10) RETIREMENT PLAN

The Company has a 401(k) Profit Sharing Plan which covers all full-time employees who have completed six months of full-time continuous service and are age eighteen or older. Participants may defer up to 20% of

# ADVANCED ENERGY INDUSTRIES, INC. AND SUBSIDIARIES

## NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (CONTINUED)

(10) RETIREMENT PLAN (CONTINUED) their gross pay up to a maximum limit determined by law (\$9,500 during 1996). Participants are immediately vested in their contributions.

The Company may make discretionary contributions based on corporate financial results for the fiscal year. The Company may also make discretionary matching contributions to employee accounts up to \$100 per employee annually. The Company's total contributions to the plan were approximately \$45,000, \$537,000 and \$325,000 for the years ended December 31, 1996, 1995 and 1994, respectively. Vesting in the profit sharing contribution account (company contribution) is based on years of service, with a participant fully vested after five years of credited service.

## (11) COMMITMENTS AND CONTINGENCIES

### CAPITAL LEASES

The Company finances a substantial portion of its property and equipment (Note 6) under capital lease obligations at interest rates ranging from 7.63% to 8.66%. The future minimum lease payments under capitalized lease obligations as of December 31, 1996, are as follows:

	(in thousands)
1997.....	\$ 344
1998.....	154
1999.....	24
	-----
Total minimum lease payments.....	522
Less -- amount representing interest.....	(38)
Less -- current portion.....	(315)
	-----
	\$ 169
	-----
	-----

### OPERATING LEASES

The Company has various operating leases for automobiles, equipment, and office and production space (Note 13). Lease expense under operating leases was approximately \$1,788,000, \$1,184,000 and \$858,000 for the years ended December 31, 1996, 1995 and 1994, respectively.

The future minimum rental payments required under noncancelable operating leases as of December 31, 1996, are as follows:

	(in thousands)
1997.....	\$ 1,776
1998.....	1,620
1999.....	1,562
2000.....	1,406
2001.....	1,341
Thereafter.....	8,766
	-----
	\$ 16,471
	-----
	-----

### GUARANTEE

In September 1996, the Company extended a guarantee for a \$1,000,000 bank term loan for an additional year, entered into by an entity that serves as a supplier to the Company. An officer of the Company serves as a director of such entity.

# ADVANCED ENERGY INDUSTRIES, INC. AND SUBSIDIARIES

## NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (CONTINUED)

### (12) FOREIGN OPERATIONS

The Company operates in a single industry segment with operations in the U.S., Japan and Europe. The following is a summary of the Company's foreign operations:

	Years Ended December 31,		
	1996	1995	1994
	(in thousands)		
Sales:			
Originating in Japan to unaffiliated customers.....	\$ 6,467	\$ 11,997	\$ 7,803
Originating in Europe to unaffiliated customers.....	8,023	6,237	3,950
Originating in U.S. and sold to unaffiliated foreign customers.....	9,506	9,018	5,467
Originating in U.S. and sold to domestic customers.....	74,856	67,456	34,637
Transfers between geographic areas.....	10,496	11,524	8,226
Intercompany eliminations.....	(10,496)	(11,524)	(8,226)
	\$ 98,852	\$ 94,708	\$ 51,857
Income (loss) from operations:			
Japan.....	\$ (920)	\$ 1,094	\$ 554
Europe.....	1,056	953	(51)
U.S.....	8,383	19,448	10,075
Intercompany eliminations.....	(308)	(17)	(575)
	\$ 8,211	\$ 21,478	\$ 10,003
Identifiable assets:			
Japan.....	\$ 6,445	\$ 6,342	\$ 4,286
Europe.....	3,788	2,502	1,813
U.S.....	54,736	54,415	22,984
Intercompany eliminations.....	(8,938)	(7,940)	(5,934)
	\$ 56,031	\$ 55,319	\$ 23,149

Intercompany sales among the Company's geographic areas are recorded on the basis of intercompany prices established by the Company.

### (13) RELATED PARTY TRANSACTIONS

During 1994, a limited liability partnership consisting of certain officers of the Company and other individuals entered into an agreement to purchase an office and manufacturing facility. The partnership remodeled the office and manufacturing facility and leased the facility to the Company under an operating lease. During 1994, the Company provided "bridge" financing in the amount of \$3,000,000 to the partnership to purchase and remodel the building. The Company moved into this facility during 1994. The Company recognized \$86,000 of interest income related to this transaction during 1994. The partnership repaid the bridge loan in the third quarter 1994 when it obtained permanent financing for the facility. This lease expires in 2009 with a monthly payment of approximately \$39,000. In September 1995, the Company entered into a new lease agreement with this partnership for a building being constructed adjacent to the Company's executive offices. The lease relating to this facility expires in February 2011 with monthly rent expense of approximately \$46,000.

The Company also leases other office and production space from another limited liability partnership consisting of certain officers of the Company and other individuals. The lease relating to this space expires in 2002 with a monthly payment of approximately \$23,000.

# ADVANCED ENERGY INDUSTRIES, INC. AND SUBSIDIARIES

## NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (CONTINUED)

(13) RELATED PARTY TRANSACTIONS (CONTINUED) Approximately \$1,364,000, \$800,000 and \$600,000 was charged to rent expense attributable to these leases for the years ended December 31, 1996, 1995 and 1994, respectively.

The Company leases, for business purposes, a condominium owned by a partnership of certain stockholders. The Company paid the partnership \$36,000 for each of the years ended December 31, 1996, 1995 and 1994, relating to this lease.

Included in AE-Japan's accounts receivable at December 31, 1996, 1995 and 1994, is approximately \$394,000, \$953,000 and \$500,000, respectively, due from an entity that is controlled by the president of AE-Japan. This entity also accounted for approximately 3%, 3% and 4% of consolidated sales during 1996, 1995 and 1994, respectively.

On June 29, 1995, certain stockholders of the Company exercised options to purchase shares of the Company's common stock for an aggregate exercise price of \$1,083,000. In exchange for the stock the Company received notes receivable in the amount of the exercise price. These notes receivable bear interest at 6.83% which is payable annually and the principal balance is due in June 2000. As of December 31, 1996, the Company has approximately \$110,000 of accrued interest income related to these notes included in receivables from related parties.

### (14) MAJOR CUSTOMERS

The Company's sales to major customers (purchases in excess of 10% of total sales) are to entities which are primarily manufacturers of semiconductor equipment and, for the years ended December 31, 1996, 1995 and 1994 are as follows:

	December 31,		
	1996	1995	1994
Customer A.....	27%	24%	21%
Customer B.....	20%	17%	17%
	---	---	---
	47%	41%	38%
	---	---	---
	---	---	---

### (15) STOCK PLANS

EMPLOYEE STOCK OPTION PLAN -- During 1993, the Company adopted an Employee Stock Option Plan (the "Employee Option Plan") which was amended and restated in January and September 1995. The Employee Option Plan allows issuance of incentive stock options, nonstatutory options, and stock purchase rights. The exercise price of incentive stock options shall not be less than 100% of the stock's fair market value on the date of grant. The exercise price of nonstatutory stock options shall not be less than 50% of the stock's fair market value on the date of grant. Options issued in 1996, 1995 and 1994 were issued at 100% of fair market value, as determined by the Company, with typical vesting of one-third at the end of one year, and quarterly thereafter until fully vested after three years. Under the Employee Option Plan, the Company has the discretion to accelerate the vesting period. The options are exercisable for ten years from the date of grant. The Company has reserved 3,500,000 shares of common stock for the issuance of stock under the Employee Option Plan which terminates in June 2003.

In connection with the grant of certain stock options on June 30, 1995, the Company recorded \$142,000 of deferred compensation for the difference between the deemed fair value for accounting purposes and the option price as determined by the Company at the date of grant. This amount is presented as a reduction of stockholders' equity and will be amortized over the 3 year vesting period of the related stock options.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (CONTINUED)

(15) STOCK PLANS (CONTINUED) In addition, the Company offered to employees the right to purchase 11,000 warrants for approximately \$0.02 each in fiscal 1994. Each warrant permitted employees to purchase one share of common stock at fair market value, as determined by the Company, at the time the warrant was granted. The warrants were exercised during 1994. There are no warrants outstanding as of December 31, 1996 and 1995.

EMPLOYEE STOCK PURCHASE PLAN -- In September 1995, stockholders approved an Employee Stock Purchase Plan (the "Stock Purchase Plan") covering an aggregate of 200,000 shares of common stock. Employees are eligible to participate in the Stock Purchase Plan if employed by the Company for at least 20 hours per week during at least five months per calendar year. Participating employees may have up to 15% (subject to a 5% limitation set by the Company's board of directors for fiscal 1996) of their earnings or a maximum of \$1,250 per six month period withheld pursuant to the Stock Purchase Plan. Common stock purchased under the Stock Purchase Plan will be equal to 85% of the lower of the fair market value on the commencement date of each offering period or the relevant purchase date. During 1996, employees purchased an aggregate of 11,572 shares under the Stock Purchase Plan and the Company recognized approximately \$11,000 in compensation expense.

OUTSIDE DIRECTOR STOCK OPTION PLAN -- In September 1995, the Company adopted the 1995 Non-Employee Directors Stock Option Plan (the "Directors Plan") covering 50,000 shares of common stock. The Directors Plan provides for automatic grants of nonstatutory stock options to directors of the Company who are not employees of the Company ("Outside Directors"). Pursuant to the Directors Plan, upon becoming a director of the Company, each Outside Director will be granted an option to purchase 7,500 shares of common stock. Such options will be immediately exercisable as to 2,500 shares of common stock, and will vest as to 2,500 shares of common stock on each of the second and third anniversaries of the grant date. On each anniversary of the date on which a person became an Outside Director, an option for an additional 2,500 shares is granted. Such additional options vest on the third anniversary of the date of grant. Options will expire ten years after the grant date, and the exercise price of the options will be equal to the fair market value of the common stock on the grant date. The Directors Plan terminates September 2005.

**ADVANCED ENERGY INDUSTRIES, INC. AND SUBSIDIARIES**

**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (CONTINUED)**

(15) STOCK PLANS (CONTINUED) The following summarizes the activity relating to options and warrants for the years ended December 31, 1996, 1995 and 1994:

	1996		1995		1994	
	Shares	Weighted-Average Exercise Price	Shares	Weighted-Average Exercise Price	Shares	Weighted-Average Exercise Price
	-----	-----	-----	-----	-----	-----
	(in thousands, except per share amounts)					
Stock options:						
Incentive stock options --						
Options outstanding at beginning of period.....	729	\$ 2.62	1,904	\$ 0.95	1,778	\$ 0.83
Granted.....	751	5.10	212	6.40	138	2.36
Exercised.....	(199)	8.51	(1,371)	3.53	(3)	2.23
Terminated.....	(440)	6.92	(16)	1.69	(9)	0.99
	-----		-----		-----	
Options outstanding at end of period.....	841	3.02	729	2.62	1,904	0.95
	-----		-----		-----	
Options exercisable at end of period.....	326	1.51	391	0.88	1,616	0.83
	-----		-----		-----	
Weighted-average fair value of options granted during the period.....	\$3.14		\$1.84		N/A	
	-----		-----		-----	
Price range of outstanding options.....	\$0.83-\$11.05		\$0.83-\$11.05		\$0.83-\$2.53	
	-----		-----		-----	
Price range of options terminated...	\$0.83-\$11.05		\$0.83-\$ 3.11		\$0.83-\$2.19	
	-----		-----		-----	
Outside directors stock options --						
Options outstanding at beginning of period.....	15	\$11.05	--	\$--	--	\$--
	-----		-----		-----	
Granted.....	5	6.13	15	11.05	--	--
	-----		-----		-----	
Options outstanding at end of period.....	20	9.82	15	11.05	--	--
	-----		-----		-----	
Options exercisable at end of period.....	5	11.05	5	11.05	--	--
	-----		-----		-----	
Weighted-average fair value of options granted during the period.....	\$4.68		\$3.19		N/A	
	-----		-----		-----	
Price range of outstanding options....	\$6.13-\$11.05		\$11.05		--	
	-----		-----		-----	
Warrants --						
Warrants outstanding at beginning of period.....	--		7	\$ 3.48	200	\$ 0.83
Granted.....	--		--	--	11	2.22
Exercised.....	--		(6)	2.27	(198)	1.82
Terminated.....	--		(1)	3.99	(6)	0.88
	-----		-----		-----	
Warrants outstanding at end of period.....	--		--	--	7	3.48
	-----		-----		-----	
Price range of stock issuable under warrants.....	\$--		\$--		\$0.83-\$2.53	
	-----		-----		-----	
Price range of warrants terminated....	\$--		\$1.41-\$2.53		\$0.83-\$2.19	
	-----		-----		-----	



# ADVANCED ENERGY INDUSTRIES, INC. AND SUBSIDIARIES

## NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (CONTINUED)

### (15) STOCK PLANS (CONTINUED)

Statement of Financial Accounting Standards No. 123, "Accounting for Stock-Based Compensation" ("SFAS No. 123"), defines a fair value based method of accounting for employee stock options or similar equity instruments. However, SFAS No. 123 allows the continued measurement of compensation cost for such plans using the intrinsic value based method prescribed by APB Opinion No. 25, "Accounting for Stock Issued to Employees" ("APB No. 25"), provided that pro forma disclosures are made of net income or loss and net income or loss per share, assuming the fair value based method of SFAS No. 123 had been applied. The Company has elected to account for stock-based compensation plans under APB No. 25, under which no compensation expense is recognized.

For SFAS No. 123 purposes, the fair value of each option grant is estimated on the date of grant using the Black-Scholes option pricing model with the following weighted-average assumptions:

	1996	1995
Risk-free interest rates.....	6.57%	6.16%
Expected dividend yield rates.....	0.00%	0.00%
Expected lives.....	4 years	4 years
Expected volatility.....	110.16%	22.57%

The total fair value of options granted was computed to be approximately \$1,317,000 and \$420,000 for the years ended December 31, 1996 and 1995, respectively. These amounts are amortized ratably over the vesting period of the options. Cumulative compensation cost recognized in pro forma net income or loss with respect to options that are forfeited prior to vesting is adjusted as a reduction of pro forma compensation expense in the period of forfeiture. Pro forma stock-based compensation, net of the effect of forfeitures and tax, was approximately \$47,000 and \$19,000 for 1996 and 1995, respectively.

Had compensation cost for these plans been determined consistent with SFAS No 123, the Company's net income would have been reduced to the following pro forma amounts:

	1996	1995
	(in thousands, except per share data)	
Net Income:		
As reported.....	\$ 5,144	\$ 13,281
Pro forma.....	5,097	13,262
Earnings Per Share:		
As reported.....	\$ 0.24	\$ 0.69
Pro forma.....	0.24	0.69

Because the SFAS No. 123 method of accounting has not been applied to options granted prior to January 1, 1995, the resulting pro forma compensation cost may not be representative of that to be expected in future years.

The following table summarizes information about the stock options outstanding at December 31, 1996:

Year Granted	Range of Exercise Prices	Number Outstanding	Options Outstanding		Options Exercisable	
			Weighted-Average Remaining Contractual Life	Weighted-Average Exercise Price	Number Exercisable	Weighted-Average Exercise Price
1993-1994.....	\$0.83 to \$2.53	320,000	6.9 years	\$ 1.30	279,000	\$ 1.13
1995.....	\$2.57 to \$11.05	108,000	8.5 years	\$ 5.03	51,000	\$ 4.54
1996.....	\$3.88 to \$8.75	433,000	9.8 years	\$ 4.11	1,000	\$ 3.88
		861,000	8.5 years	\$ 3.18	331,000	\$ 1.66

**ADVANCED ENERGY INDUSTRIES, INC. AND SUBSIDIARIES**

**CONSOLIDATED BALANCE SHEETS**

(IN THOUSANDS)

	JUNE 30, 1997 (UNAUDITED)	DECEMBER 31, 1996
	-----	-----
<b>ASSETS</b>		
Current Assets:		
Cash and cash equivalents.....	\$ 11,183	\$ 11,231
Accounts receivable.....	26,154	16,116
Inventories.....	16,169	13,976
Prepaid expenses and other current assets.....	637	1,013
Deferred income tax benefit.....	1,223	1,223
	-----	-----
Total current assets.....	55,366	43,559
	-----	-----
Property and equipment, net.....	9,028	9,500
Other assets.....	1,657	2,972
	-----	-----
Total assets.....	\$ 66,051	\$ 56,031
	-----	-----
<b>LIABILITIES AND STOCKHOLDERS' EQUITY</b>		
Current Liabilities:		
Accounts payable.....	\$ 6,296	\$ 2,253
Accrued payroll and employee benefits.....	3,687	2,396
Other accrued expenses.....	764	1,156
Customer deposits.....	1,071	166
Accrued income tax payable.....	2,046	1,485
Current portion of long-term debt.....	745	924
	-----	-----
Total current liabilities.....	14,609	8,380
	-----	-----
Long-term debt.....	789	1,127
Deferred income tax liability.....	28	28
	-----	-----
Total liabilities.....	15,426	9,535
	-----	-----
Stockholders' equity.....	50,625	46,496
	-----	-----
Total liabilities and stockholders' equity.....	\$ 66,051	\$ 56,031
	-----	-----

The accompanying notes to consolidated financial statements are an integral part of these consolidated balance sheets.

**ADVANCED ENERGY INDUSTRIES, INC. AND SUBSIDIARIES**

**CONSOLIDATED STATEMENTS OF OPERATIONS**

(IN THOUSANDS, EXCEPT PER SHARE AMOUNTS)

	QUARTER ENDED JUNE 30,	
	1997 (UNAUDITED)	1996 (UNAUDITED)
Sales.....	\$ 32,690	\$ 29,831
Cost of sales.....	20,139	17,204
Gross profit.....	12,551	12,627
Operating expenses:		
Research and development.....	3,513	3,645
Sales and marketing.....	2,336	2,248
General and administrative.....	1,702	2,330
Income from operations.....	5,000	4,404
Other income (expense), net.....	286	(66)
Income before income taxes.....	5,286	4,338
Provision for income taxes.....	1,996	1,676
Net income.....	\$ 3,290	\$ 2,662
Net income per share.....	\$ 0.15	\$ 0.12
Weighted average common and common equivalent shares outstanding.....	21,991	21,653
	SIX MONTHS ENDED JUNE 30,	
	1997 (UNAUDITED)	1996 (UNAUDITED)
Sales.....	\$ 53,358	\$ 56,997
Cost of sales.....	33,298	34,239
Gross profit.....	20,060	22,758
Operating expenses:		
Research and development.....	6,334	7,143
Sales and marketing.....	4,135	4,331
General and administrative.....	2,950	4,055
Income from operations.....	6,641	7,229
Other expense, net.....	(101)	(236)
Income before income taxes.....	6,540	6,993
Provision for income taxes.....	2,485	2,658
Net income.....	\$ 4,055	\$ 4,335
Net income per share.....	\$ 0.19	\$ 0.20
Weighted average common and common equivalent shares outstanding.....	21,906	21,657

The accompanying notes to consolidated financial statements are an integral part of these consolidated statements.

**ADVANCED ENERGY INDUSTRIES, INC. AND SUBSIDIARIES**

**CONSOLIDATED STATEMENTS OF CASH FLOWS**

(IN THOUSANDS)

	SIX MONTHS ENDED JUNE 30,	
	1997 (UNAUDITED)	1996 (UNAUDITED)
CASH FLOWS FROM OPERATING ACTIVITIES:		
Net income.....	\$ 4,055	\$ 4,335
Adjustments to reconcile net income to net cash provided by operating activities --		
Depreciation and amortization.....	1,673	1,146
Amortization of deferred compensation.....	24	24
Loss on disposal of property and equipment.....	--	20
Changes in operating assets and liabilities --		
Accounts receivable, trade.....	(8,854)	(3,203)
Related parties and other receivables.....	(1,184)	(209)
Inventories.....	(2,193)	(1,062)
Income taxes.....	561	1,041
Other current assets.....	376	83
Deposits and other.....	634	34
Demonstration and customer service equipment.....	250	(411)
Accounts payable.....	4,043	(2,172)
Accrued payroll and employee benefits.....	1,291	677
Customer deposits and other accrued expenses.....	513	(126)
Net cash provided by operating activities.....	1,189	177
CASH FLOWS FROM INVESTING ACTIVITIES:		
Purchase of property and equipment, net.....	(770)	(4,352)
Net cash used in investing activities.....	(770)	(4,352)
CASH FLOWS FROM FINANCING ACTIVITIES:		
Repayment of notes payable and capital lease obligations.....	(517)	(492)
Proceeds from sale of common stock.....	27	118
Net cash used in financing activities.....	(490)	(374)
EFFECT OF CUMULATIVE TRANSLATION ADJUSTMENT.....	23	(19)
DECREASE IN CASH AND CASH EQUIVALENTS.....	(48)	(4,568)
CASH AND CASH EQUIVALENTS, beginning of period.....	11,231	13,332
CASH AND CASH EQUIVALENTS, end of period.....	\$ 11,183	\$ 8,764
SUPPLEMENTAL DISCLOSURE OF CASH FLOW INFORMATION:		
Cash paid for interest.....	\$ 76	\$ 100
Cash paid for income taxes.....	\$ 905	\$ 1,697

The accompanying notes to consolidated financial statements are an integral part of these consolidated statements.

# ADVANCED ENERGY INDUSTRIES, INC. AND SUBSIDIARIES

## NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

### (1) BASIS OF PRESENTATION AND MANAGEMENT OPINION

In the opinion of management, the accompanying unaudited consolidated balance sheets and statements of operations and cash flows contain all adjustments, consisting only of normal recurring items, necessary to present fairly the financial position of Advanced Energy Industries, Inc., a Delaware corporation, and its wholly owned subsidiaries (the "Company") at June 30, 1997, and the results of their operations and cash flows for the three and six month periods ended June 30, 1997 and June 30, 1996.

### (2) INITIAL PUBLIC OFFERING

In November 1995, the Company closed on the initial public offering of its common stock. In connection with the offering, 2,400,000 shares of previously unissued common shares were sold at a price of \$10 per share, providing gross proceeds of \$24,000,000, less \$2,790,000 in offering costs.

### (3) ACCOUNTS RECEIVABLE

Accounts receivable consisted of the following:

	JUNE 30, 1997 (UNAUDITED)	DECEMBER 31, 1996
	-----	-----
	(IN THOUSANDS)	
Domestic.....	\$ 14,404	\$ 9,944
Foreign.....	9,979	5,585
Allowance for doubtful accounts.....	(242)	(242)
	-----	-----
Trade accounts receivable.....	\$ 24,141	\$ 15,287
Related parties.....	1,218	541
Other.....	795	288
	-----	-----
Total accounts receivable.....	\$ 26,154	\$ 16,116
	-----	-----

### (4) INVENTORIES

Inventories consisted of the following:

	JUNE 30, 1997 (UNAUDITED)	DECEMBER 31, 1996
	-----	-----
	(IN THOUSANDS)	
Parts and raw materials.....	\$ 11,361	\$ 11,149
Work in process.....	1,859	1,122
Finished goods.....	2,949	1,705
	-----	-----
	\$ 16,169	\$ 13,976
	-----	-----

### (5) NET INCOME PER COMMON SHARE

Net income per share is computed based on results of operations attributable to common stock and weighted average number of common and common equivalent shares outstanding during each of the periods. Earnings per share are calculated by dividing the net earnings by the weighted average of common and common equivalent shares outstanding during each of the periods.

# ADVANCED ENERGY INDUSTRIES, INC. AND SUBSIDIARIES

## NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (CONTINUED)

### (6) STOCKHOLDERS' EQUITY

Stockholders' equity consisted of the following:

	JUNE 30, 1997 (UNAUDITED)	DECEMBER 31, 1996
	-----	-----
	(IN THOUSANDS, EXCEPT PAR VALUE)	
Common stock, \$0.001 par value, 30,000 shares authorized; 21,290 and 21,268 shares issued and outstanding.....	\$ 21	\$ 21
Additional paid-in capital.....	23,102	23,075
Retained earnings.....	29,120	25,065
Stockholders' notes receivable.....	(1,083)	(1,083)
Deferred compensation.....	(58)	(82)
Cumulative translation adjustment.....	(477)	(500)
	-----	-----
Total stockholders' equity.....	\$ 50,625	\$ 46,496
	-----	-----

### (7) SUBSEQUENT EVENT

The Company sustained substantial water-related damage to its manufacturing facilities and certain equipment and inventory during a severe rainstorm on July 29, 1997, which interrupted production and shipments. The Company was able to resume some production within a few days and has been increasing production as repairs are made and equipment and inventory are replaced. The Company expects that its revenues and operating results in the quarter ending September 30, 1997 will be affected by the production interruption. Actual results for the third quarter will depend on continued success in increasing production and the ability to obtain in a timely manner the necessary key components from suppliers to meet current production goals, as to which there can be no assurance. The Company expects that it will record a one-time charge of \$2.5 million to \$3.0 million in the third quarter of 1997 for losses incurred as a result of the water-related damage. The final charge, which cannot presently be determined, could be larger. The extent of insurance coverage, if any, is unresolved. Any recoveries from insurance will be recorded when received.

## **ADVANCED ENERGY INDUSTRIES, INC. AND SUBSIDIARIES**

### **PRO FORMA CONDENSED CONSOLIDATED BALANCE SHEET**

The following unaudited Pro Forma Condensed Consolidated Balance Sheet as of June 30, 1997 is based on the unaudited historical financial data of the Company and has been prepared as if the acquisition of Tower had occurred on June 30, 1997. The estimated fair values presented for the assets acquired pursuant to the terms of the acquisition are based upon an independent appraisal. The pro forma information is not necessarily indicative of what the Company's financial position would have been had the acquisition of Tower occurred on June 30, 1997, nor does it purport to project the Company's financial position at any future date.

On August 15, 1997, the Company acquired Tower pursuant to a Share Purchase Agreement dated as of August 11, 1997. Tower is a designer and manufacturer of custom, high performance switchmode power supplies that are used principally in the telecommunications, medical and non-impact printing industries. Tower had revenues of \$13.4 million for its fiscal year ended September 30, 1996. The purchase price consisted of \$14.5 million in cash and a promissory note to the seller in the original principal amount of \$1.5 million, which were delivered by the Company at closing, as well as an earn out provision, pursuant to which the seller will be entitled to additional consideration if Tower's sales achieve certain levels in 1998. The promissory note matures in August 1998 and is non-interest bearing. The acquisition will be accounted for using the purchase method of accounting. The Company will record a one-time charge of \$3.1 million in the third quarter of 1997 for in-process research and development costs in connection with the acquisition. The Company currently estimates that its depreciation and amortization expense will increase by approximately \$1.3 million annually for the next several years. The following unaudited Pro Forma Condensed Consolidated Balance Sheet gives pro forma effect to the Tower acquisition, the allocation of the purchase price therefor and certain transactions occurring in connection therewith, including the borrowing by the Company of \$12 million under a term loan, as if all of such transactions had occurred on June 30, 1997.

**ADVANCED ENERGY INDUSTRIES, INC. AND SUBSIDIARIES**

**PRO FORMA CONDENSED CONSOLIDATED BALANCE SHEET (CONTINUED)**

	JUNE 30, 1997		
	ACTUAL	PRO FORMA ADJUSTMENTS	PRO FORMA
	(IN THOUSANDS) (UNAUDITED)		
ASSETS			
CURRENT ASSETS:			
Cash and cash equivalents.....	\$ 11,183	\$ (324)(A)	\$ 10,859
Accounts receivable.....	26,154	1,664(B)	27,818
Inventories.....	16,169	2,737(B)	18,906
Other current assets.....	1,860	58(B)	1,918
Total current assets.....	55,366	4,135	59,501
PROPERTY AND EQUIPMENT, net.....	9,028	292(B)	9,320
OTHER ASSETS.....	1,657	8,674(C)	10,331
Total assets.....	\$ 66,051	\$ 13,101	\$ 79,152
LIABILITIES AND STOCKHOLDERS' EQUITY			
CURRENT LIABILITIES:			
Accounts payable.....	\$ 6,296	\$ 1,252(B)	\$ 7,548
Accrued liabilities and expenses.....	7,568	370(B)	7,938
Current portion of long-term debt.....	745	3,789(D)	4,534
Total current liabilities.....	14,609	5,411	20,020
LONG-TERM DEBT.....	789	9,600(D)	10,389
DEFERRED INCOME TAXES.....	28	--	28
Total liabilities.....	15,426	15,011	30,437
STOCKHOLDERS' EQUITY			
Common stock.....	21	--	21
Additional paid-in capital.....	23,102	--	23,102
Retained earnings.....	29,120	(1,910)(E)	27,210
Other.....	(1,618)	--	(1,618)
Total stockholders' equity.....	50,625	(1,910)	48,715
Total liabilities and stockholders' equity.....	\$ 66,051	\$ 13,101	\$ 79,152

(A) Reflects \$2,500,000 cash paid to the selling stockholder of Tower, \$1,971,000 cash acquired from Tower, and \$205,000 cash received from the selling stockholder of Tower in connection with certain transactions concurrent with the acquisition.

(B) Represents assets or liabilities aquired from Tower.

(C) Adjusted to reflect \$7,000 in assets acquired from Tower, the excess of purchase price over the fair value of net assets acquired, or goodwill, of \$7,497,000, and a \$1,170,000 deferred tax asset established for purchased research and development in process of \$3,080,000 and expensed immediately for book purposes.

(D) Reflects a \$1,500,000 non-interest bearing promissory note to the selling stockholder of Tower less imputed interest at \$111,000, and a \$12,000,000 term loan borrowed by the Company to effect the acquisition.

(E) Represents \$3,080,000 of purchased research and development in process which is expensed immediately with a related deferred tax benefit of \$1,170,000.

NO PERSON IS AUTHORIZED IN CONNECTION WITH ANY OFFERING MADE HEREBY TO GIVE ANY INFORMATION OR TO MAKE ANY REPRESENTATION NOT CONTAINED HEREIN AND, IF GIVEN OR MADE, SUCH INFORMATION OR REPRESENTATIONS MUST NOT BE RELIED UPON AS HAVING BEEN AUTHORIZED BY THE COMPANY, ANY SELLING STOCKHOLDER OR THE UNDERWRITERS. THIS PROSPECTUS DOES NOT CONSTITUTE AN OFFER TO SELL OR A SOLICITATION OF AN OFFER TO BUY ANY SECURITY OTHER THAN THE COMMON STOCK OFFERED HEREBY, NOR DOES IT CONSTITUTE AN OFFER TO SELL OR A SOLICITATION OF AN OFFER TO BUY ANY OF THE COMMON STOCK OFFERED HEREBY, TO ANY PERSON IN ANY JURISDICTION IN WHICH IT IS UNLAWFUL TO MAKE ANY SUCH OFFER OR SOLICITATION. NEITHER THE DELIVERY OF THIS PROSPECTUS NOR ANY SALE MADE HEREUNDER SHALL, UNDER ANY CIRCUMSTANCES, CREATE ANY IMPLICATION THAT THERE HAS BEEN NO CHANGE IN THE AFFAIRS OF THE COMPANY SINCE THE DATE HEREOF OR THAT THE INFORMATION CONTAINED HEREIN IS CORRECT AS OF ANY DATE SUBSEQUENT TO THE DATE HEREOF.

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**2,500,000 SHARES**

[LOGO]

**COMMON STOCK**

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**PROSPECTUS**  
, 1997

**UBS SECURITIES**

**LEHMAN BROTHERS**

**PAINWEBBER INCORPORATED**

**ROBERTSON STEPHENS & COMPANY**

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## PART II

### INFORMATION NOT REQUIRED IN PROSPECTUS

#### ITEM 14. OTHER EXPENSES OF ISSUANCE AND DISTRIBUTION

The following table sets forth the costs and expenses, other than underwriting discounts and commissions, payable by the Company and the Selling Stockholders in connection with the sale of the Common Stock being registered. All amounts are estimates except the SEC registration fee, the NASD filing fee and the Nasdaq listing fee.

	AMOUNT TO BE PAID
SEC Registration Fee.....	\$ 24,121.69
NASD Filing Fee.....	8,460.16
Nasdaq Listing Fee.....	17,500.00
Printing.....	125,000.00
Legal Fees and Expenses.....	175,000.00
Accounting Fees and Expenses.....	40,000.00
Blue Sky Fees and Expenses.....	5,000.00
Transfer Agent and Registrar Fees.....	10,000.00
Miscellaneous.....	194,918.15
Total.....	\$ 600,000.00

#### ITEM 15. INDEMNIFICATION OF DIRECTORS AND OFFICERS.

As permitted by the Delaware General Corporation Law ("GCL"), the Company's Certificate of Incorporation and the amendments to the Company's Certificate of Incorporation (collectively, the "Certificate") provide that no Director shall be personally liable to the Company or any stockholder for monetary damages for breach of fiduciary duty as a Director, except for liability: (i) for any breach of the duty of loyalty to the Company or its stockholders; (ii) for acts or omissions not in good faith or involving intentional misconduct or a knowing violation of the law; (iii) arising from payment of dividends or approval of a stock purchase in violation of Section 174 of the GCL; or (iv) for any action from which the Director derived an improper personal benefit. While the Certificate provides protection from awards for monetary damages for breaches of the duty of care, it does not eliminate the Director's duty of care. Accordingly, the Certificate will not affect the availability of equitable remedies, such as an injunction, based on a Director's breach of the duty of care. The provisions of the Certificate described above apply to officers of the Company only if they are Directors of the Company and are acting in their capacity as Directors, and does not apply to officers of the Company who are not Directors.

In addition, the Company's By-laws provide that the Company shall indemnify its Executive Officers (as defined in Rule 3b-7 promulgated under the Exchange Act) and Directors, and any employee who serves as an Executive Officer or Director of any corporation at the Company's request, to the fullest extent permitted under and in accordance with the GCL; provided, however, that the Company may modify the extent of such indemnification by individual contracts with its Executive Officers and Directors; and, provided further, that the Company shall not be required to indemnify any Executive Officer or Director in connection with any proceeding (or part thereof) initiated by such person unless: (i) such indemnification is expressly required to be made by law; (ii) the proceeding was authorized by the Directors of the Company; (iii) such indemnification is provided by the Company, in its sole discretion, pursuant to the powers vested in the Company under the GCL; or (iv) such indemnification is required to be made under Article XI, Section 43, Subsection (d) of the By-Laws. Under the GCL, directors and officers as well as employees and individuals may be indemnified against expenses (including attorneys' fees), judgments, fines and amounts paid in settlement in connection with specified actions, suits or proceedings, whether civil, criminal, administrative or investigative (other than an action by or in the right of the corporation as a derivative action) if they acted in good faith and in a manner they reasonably believed to be in or not opposed to the best interests of the corporation, and with respect to any criminal action or proceeding, had no reasonable cause to believe their conduct was unlawful.

The Registrant maintains a policy of directors' and officers' liability insurance that insures the Registrant's directors and officers against the cost of defense, settlement or payment of a judgement under certain circumstances.

Reference is made to Section 10 of the Underwriting Agreement between the Company and the Representatives (filed as Exhibit 1.1 to this Registration Statement), which provides for indemnification of the Company's officers, directors and controlling persons by the Underwriters against certain civil liabilities, including liabilities under the Securities Act of 1933, as amended.

## ITEM 16. EXHIBITS AND FINANCIAL STATEMENT SCHEDULES

### (A) EXHIBITS

EXHIBIT NUMBER	DESCRIPTION
1.1	Form of Underwriting Agreement
2.1	Share Purchase Agreement, dated as of August 11, 1997, among the Company, Roger C. Hertel and Tower Electronics, Inc.(1)
3.1	The Registrant's Restated Certificate of Incorporation(2)
3.2	The Registrant's By-laws(2)
4.1	Form of Specimen Certificate for Registrant's Common Stock(2)
4.2	The Registrant hereby agrees to furnish to the Commission, upon request a copy of the instruments which define the rights of holders of long-term debt of the Company. None of such instruments not included as exhibits herein represents long-term debt in excess of 10% of the consolidated total assets of the Registrant
5.1	Opinion of Thelen, Marrin, Johnson & Bridges LLP regarding the legality of the securities being issued
10.1	Master Purchase Order and Sales Agreement, dated January 1, 1990, between Applied Materials Inc. and Registrant(2)+
10.2	Purchase Order and Sales Agreement, dated July 1, 1993, amended September 16, 1995 between Lam Research Corporation and Registrant(2)+
10.3	Purchase Agreement, dated November 1, 1995, between Eaton Corporation and Registrant(3)+
10.4	Silicon Valley Bank Business Loan Agreement, dated May 19, 1992, as amended, between Silicon Valley Bank and Registrant(2)
10.5	Amended and Restated Loan and Security Agreement, dated as of November 17, 1995, between Silicon Valley Bank and Registrant(2)
10.6	Loan and Security Agreement, dated August 15, 1997, among Silicon Valley Bank, Bank of Hawaii and Registrant
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10.8	Form of Indemnification Agreement(2)
10.9	Lease, dated June 12, 1984, amended June 11, 1992, between Prospect Park East Partnership and Registrant for property in Fort Collins, Colorado(2)
10.10	Master Lease Purchase Agreement, dated January 20, 1989, as amended, between MetLife Capital Corporation and Registrant(2)
10.11	Lease Purchase Agreement, dated June 11, 1992, between MetLife Capital Corporation and Registrant(2)
10.12	Master Equipment Lease, dated July 15, 1993, as amended, between KeyCorp Leasing Ltd. and Registrant(2)
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EXHIBIT  
NUMBER DESCRIPTION

10.15	1995 Stock Option Plan, as amended and restated on September 20, 1995(2)
10.16	Employee Stock Purchase Plan(2)
10.17	1995 Non-Employee Directors' Stock Option Plan(2)
21.1	Subsidiaries of the Registrant
23.1	Consent of Arthur Andersen LLP, Independent Accountants
23.2	Consent of Thelen, Marrin, Johnson & Bridges LLP (included in Exhibit 5.1)
24.1	Power of attorney (See Page II-4)

+ Confidential treatment has been granted for portions of this agreement

- (1) Incorporated by reference to Registrant's Current Report on Form 8-K (File No. 0-26966), dated August 15, 1997, filed August 19, 1997
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- (3) Incorporated by reference to Registrant's Annual Report on Form 10-K (File No. 0-26966), for the period ended December 31, 1996

**(B) FINANCIAL STATEMENT SCHEDULES**

Schedules not listed above have been omitted because the information required to be set forth therein is not applicable or is shown in the financial statements or notes thereto.

**ITEM 17. UNDERTAKINGS**

(a) The undersigned registrant hereby undertakes that, for purposes of determining any liability under the Securities Act of 1933, each filing of the Registrant's annual report pursuant to Section 13(a) or Section 15(d) of the Securities Exchange Act of 1934 (and, where applicable, each filing of an employee benefit plan's annual report pursuant to Section 15(d) of the Securities Exchange Act of 1934) that is incorporated by reference in the Registration Statement shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.

(b) Insofar as indemnification for liabilities arising under the Securities Act of 1933 may be permitted to directors, officers and controlling persons of the Registrant pursuant to the foregoing provisions, or otherwise, the registrant has been advised that in the opinion of the Securities and Exchange Commission such indemnification is against public policy as expressed in the Act and is, therefore, unenforceable. In the event that a claim for indemnification against such liabilities (other than the payment by the Registrant of expenses incurred or paid by a director, officer or controlling person of the Registrant in the successful defense of any action, suit or proceeding) is asserted by such director, officer or controlling person in connection with the securities being registered, the Registrant will, unless in the opinion of its counsel the matter has been settled by controlling precedent, submit to a court of appropriate jurisdiction the question whether such indemnification by it is against public policy as expressed in the Act and will be governed by the final adjudication of such issue.

(c) The undersigned Registrant hereby undertakes that:

(1) For purposes of determining any liability under the Securities Act of 1933, the information omitted from the form of prospectus filed as part of this Registration Statement in reliance upon Rule 430A and contained in a form of prospectus filed by the Registrant pursuant to Rule 424(b) (1) or (4) or 497(h) under the Securities Act shall be deemed to be part of this Registration Statement as of the time it was declared effective.

(2) For the purpose of determining any liability under the Securities Act of 1933, each post-effective amendment that contains a form of prospectus shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.

## SIGNATURES

Pursuant to the requirements of the Securities Act of 1933, the Registrant certifies that it has reasonable grounds to believe that it meets all of the requirements for filing on Form S-3 and has duly caused this registration statement to be signed on its behalf by the undersigned, thereunto duly authorized, in the City of Fort Collins, State of Colorado, on the 19th day of August, 1997.

Advanced Energy Industries, Inc.,  
a Delaware corporation

By: /s/ DOUGLAS S. SCHATZ  
-----

Name: Douglas S. Schatz  
-----

Title: President and Chief Executive Officer  
-----

## POWER OF ATTORNEY

Each person whose signature appears below hereby appoints Douglas S. Schatz and Richard P. Beck, and each of them severally, acting alone and without the other, as his true and lawful attorney-in-fact with authority to execute in the name of each such person, and to file with the Securities and Exchange Commission, together with any exhibits thereto and other documents therewith, any and all amendments (including without limitation post-effective amendments) to this Registration Statement necessary or advisable to enable the Registrant to comply with the Securities Act and any rules, regulations and requirements of the Securities and Exchange Commission in respect thereof, which amendments may make such changes in this Registration Statement as the aforesaid attorney-in-fact deems appropriate, and to so execute and file a registration statement and any post-effective amendment thereto for the same offering covered by this Registration Statement that is to be effective upon filing pursuant to Rule 462(b) under the Securities Act.

Pursuant to the requirements of the Securities Act of 1933, this registration statement has been signed by the following persons in the capacities and on the dates indicated.

August 19, 1997 ----- Date	/s/ DOUGLAS S. SCHATZ ----- Douglas S. Schatz President and Chief Executive Officer and Director (Principal Executive Officer)
August 19, 1997 ----- Date	/s/ RICHARD P. BECK ----- Richard P. Beck Vice President and Chief Financial Officer and Director (Principal Financial Officer and Principal Accounting Officer)
August 19, 1997 ----- Date	/s/ HOLLIS CASWELL ----- Hollis Caswell Chief Operating Officer and Director
----- Date	----- G. Brent Backman Vice President, Special Projects and Director
----- Date	----- Arthur Noeth Director
August 19, 1997 ----- Date	/s/ ELWOOD SPEDDEN ----- Elwood Spedden Director

# EXHIBIT INDEX

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**EXHIBIT 1.1**

**2,500,000 Shares**

**ADVANCED ENERGY INDUSTRIES, INC.**

**Common Stock**

**FORM OF UNDERWRITING AGREEMENT**

September \_\_, 1997

UBS Securities LLC  
Lehman Brothers Inc.  
PaineWebber Incorporated  
Robertson Stephens & Company LLC  
**C/O UBS SECURITIES LLC**  
299 Park Avenue  
New York, NY 10171

Ladies and Gentlemen:

Advanced Energy Industries, Inc., a Delaware corporation (the "Company"), proposes to issue and sell 1,000,000 shares of Advanced Energy Industries, Inc. authorized but unissued Common Stock, \$0.001 par value per share (the "Common Stock"), and the stockholders of the Company listed on Schedule B hereto (collectively the "Selling Securityholders") propose to sell an aggregate of 1,500,000 shares of Common Stock (collectively, such 2,500,000 shares of Common Stock are hereinafter referred to as the "Firm Shares") to the several underwriters listed on SCHEDULE A to this Agreement (collectively, the "Underwriters"). The Company and the Selling Securityholders also propose to grant to the Underwriters an option to purchase up to 375,000 additional shares (the "Option Shares") of Common Stock on the terms and for the purposes set forth in Section 3(c). The Firm Shares and the Option Shares are hereinafter collectively referred to as the "Shares."

The Company and the Selling Securityholders severally wish to confirm as follows their agreements with you (the "Representatives") and the other Underwriters on whose behalf you are acting in connection with the several purchases by the Underwriters of the Shares.

1. REGISTRATION STATEMENT. A registration statement on Form S-3 (File No. 333-[ ]) including a prospectus relating to the Shares and each amendment thereto has been prepared by the Company in conformity with the requirements of the Securities Act of 1933, as amended (the "Act"), and the rules and regulations (the "Rules and Regulations") of the Securities and Exchange Commission

(the "Commission") thereunder, and has been filed with the Commission. There have been delivered to you three signed copies of such registration statement and amendments, together with three copies of each exhibit filed therewith. Copies of such registration statement and amendments (but without exhibits) and of the related preliminary prospectus have been delivered to you in such reasonable quantities as you have requested for each of the Underwriters. If such registration statement has not become effective, a further amendment to such registration statement, including a form of final prospectus, necessary to permit such registration statement to become effective will be filed promptly by the Company with the Commission. If such registration statement has become effective, a final prospectus containing all Rule 430A Information (as hereinafter defined) will be filed by the Company with the Commission in accordance with Rule 424(b) of the Rules and Regulations on or before the second business day after the date hereof (or such earlier time as may be required by the Rules and Regulations).

The term "Registration Statement" as used in this Agreement shall mean such registration statement (including all exhibits and financial statements and all documents incorporated by reference therein) at the time such registration statement becomes or became effective and, in the event any post-effective amendment thereto becomes effective prior to the Closing Date (as hereinafter defined), shall also mean such registration statement as so amended; provided, however, that such term shall include all Rule 430A Information deemed to be included in such registration statement at the time such registration statement becomes effective as provided by Rule 430A of the Rules and Regulations and shall also mean any registration statement filed pursuant to Rule 462(b) of the Rules and Regulations with respect to the Shares. The term "Preliminary Prospectus" shall mean any preliminary prospectus referred to in the preceding paragraph and any preliminary prospectus included in the Registration Statement at the time it becomes effective that omits Rule 430A Information. The term "Prospectus" as used in this Agreement shall mean the prospectus relating to the Shares in the form in which it is first filed with the Commission pursuant to Rule 424(b) of the Rules and Regulations or, if no filing pursuant to Rule 424(b) of the Rules and Regulations is required, shall mean the form of final prospectus included in the Registration Statement at the time such registration statement becomes effective. The term "Rule 430A Information" means information with respect to the Shares and the offering thereof permitted to be omitted from the Registration Statement when it becomes effective pursuant to Rule 430A of the Rules and Regulations.

## 2. REPRESENTATIONS AND WARRANTIES OF THE COMPANY AND THE SELLING SECURITYHOLDERS.

(a) The Company and Douglas S. Schatz jointly and severally hereby represent and warrant as follows:

(i) The Company has not received, and has no notice of, any order of the Commission preventing or suspending the use of any Preliminary Prospectus, or instituted proceedings for that purpose, and each Preliminary Prospectus, at the time of filing thereof, conformed in all material respects to the requirements of the Act and the Rules and Regulations. When the Registration Statement became or becomes, as the case may be, effective (the "Effective Date") and at all times subsequent thereto up to and at the Closing Date (as hereinafter defined), any later date on which Option Shares are

to be purchased (the "Option Closing Date") and when any post-effective amendment to the Registration Statement becomes effective or any amendment or supplement to the Prospectus is filed with the Commission, (i) the Registration Statement and Prospectus, and any amendments or supplements thereto, will contain all statements which are required to be stated therein by, and will comply with the requirements of, the Act and the Rules and Regulations, and

(ii) neither the Registration Statement nor the Prospectus, nor any amendment or supplement thereto, will include any untrue statement of a material fact or omit to state any material fact required to be stated therein or necessary to make the statements therein not misleading. The foregoing representations and warranties in this section 2(a)(i) do not apply to any statements or omissions made in reliance on and in conformity with the information contained in third and seventh paragraphs under the section of the Prospectus entitled "Underwriting" and the information in the last paragraph on the front cover page of the Prospectus. The Company has not distributed any offering material in connection with the offering or sale of the Shares other than the Registration Statement, the Preliminary Prospectus, the Prospectus or any other materials, if any, permitted by the Act.

(ii) The Company has been duly incorporated and is validly existing as a corporation in good standing under the laws of the State of Delaware, with full corporate power and authority to own, lease and operate its properties and conduct its business as described in the Registration Statement. The Company is duly qualified to do business as a foreign corporation in good standing in each jurisdiction where the ownership or leasing of its properties or the conduct of its business requires such qualification, except where the failure to so qualify would not have a material adverse effect on the business, properties, financial condition or results of operations of the Company and its Subsidiaries (as hereinafter defined) taken as a whole (a "Material Adverse Effect"). The Company has no subsidiaries (as defined in the Rules and Regulations) other than \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_ and \_\_\_\_\_ (collectively, the "Subsidiaries"). The Company owns 100% of the outstanding capital stock of each of the Subsidiaries. Other than the Subsidiaries, the Company does not own, directly or indirectly, any shares of stock or any other equity or long-term debt securities of any corporation or have any equity interest in any firm, partnership, joint venture, association or other entity. Complete and correct copies of the certificates of incorporation and of the bylaws of the Company and the Subsidiaries and all amendments thereto have been delivered to the Representatives, and except as set forth in the exhibits to the Registration Statement no changes therein will be made subsequent to the date hereof and prior to the Closing Date or, if later, the Option Closing Date. Each Subsidiary has been duly incorporated and is validly existing as a corporation in good standing under the laws of the jurisdiction of its incorporation, with full corporate power and authority to own, lease and operate its properties and to conduct its business as described in the Registration Statement. Each Subsidiary is duly qualified to do business as a foreign corporation in good standing in each jurisdiction where the ownership or leasing of the properties or the conduct of its business requires such qualification, except where the failure to so qualify would not have a Material Adverse Effect. All of the outstanding shares of capital stock of each of the Subsidiaries have been duly authorized and validly issued, are fully paid and non-assessable and (except as otherwise described in this Section 2(a)) are owned by the Company subject to no security interest, other encumbrance or adverse claims. No options, warrants or other rights to purchase, agreements or other obligation to issue

or other rights to convert any obligation into shares of capital stock or ownership interests in the Subsidiaries are outstanding.

(iii) The Company has full power and authority (corporate and otherwise) to enter into this Agreement and to perform the transactions contemplated hereby. This Agreement has been duly authorized, executed and delivered by the Company and is a valid and binding agreement on the part of the Company, enforceable against the Company in accordance with its terms, except as rights to indemnity and contribution hereunder may be limited by applicable laws or equitable principles and except as enforcement hereof may be limited by applicable bankruptcy, insolvency, reorganization or other similar laws relating to or affecting creditors' rights generally or by general equitable principles. The performance of this Agreement by the Company and the consummation by the Company of the transactions herein contemplated will not result in a breach or violation of any of the terms and provisions of, or constitute a default under,

(i) any indenture, mortgage, deed of trust, loan agreement, bond, debenture, note agreement or other evidence of indebtedness, or any lease, contract or other agreement or instrument to which the Company or any Subsidiary is a party or by which its properties are bound, or (ii) the certificate of incorporation or bylaws of the Company or any Subsidiary or (iii) any law, order, rule, regulation, writ, injunction or decree of any court or governmental agency or body to which the Company or any Subsidiary is subject. The Company is not required to obtain or make (as the case may be) any consent, approval, authorization, order, designation or filing by or with any court or regulatory, administrative or other governmental agency or body as a requirement for the consummation by the Company of the transactions herein contemplated, except such as may be required under the Act, the Securities Exchange Act of 1934, as amended (the "Exchange Act") or under state securities or blue sky ("Blue Sky") laws or under the rules and regulations of the National Association of Securities Dealers, Inc. ("NASD").

(iv) There is not pending or, to the Company's knowledge, threatened, any action, suit, claim, proceeding or investigation against the Company or its Subsidiaries or any of their respective officers or any of their respective properties, assets or rights before any court or governmental agency or body or otherwise which might result in a Material Adverse Effect or have a material adverse effect on the Company's properties, assets or rights, or prevent consummation of the transactions contemplated hereby. There are no statutes, rules, regulations, agreements, contracts, leases or documents that are required to be described in the Prospectus, or to be filed as exhibits to the Registration Statement by the Act or by the Rules and Regulations that have not been accurately described in all material respects in the Prospectus or filed as exhibits to the Registration Statement.

(v) All outstanding shares of capital stock of the Company have been duly authorized and validly issued and are fully paid and nonassessable, have been issued in compliance with all federal and state securities laws, were not issued in violation of any preemptive right, resale right, right of first refusal or similar right. The authorized and outstanding capital stock of the Company conforms in all material respects to the description thereof contained in the Registration Statement and the Prospectus (and such description correctly states the substance of the provisions of the instruments defining the capital stock of the Company).

(vi) The Shares to be sold by the Company have been duly authorized for issuance and sale to the Underwriters pursuant to this Agreement and, when issued and delivered by the Company against payment therefor in accordance with the terms of this Agreement, will be duly and validly issued and fully paid and nonassessable. The Shares to be sold by the Selling Securityholders are duly authorized, are duly and validly issued, fully paid and nonassessable. The Shares conform to the description thereof in the Prospectus. Except as set forth in the Prospectus, no preemptive right, co-sale right, right of first refusal or other similar rights of securityholders exists with respect to any of the Shares or the issue and sale thereof other than those that have been expressly waived prior to the date hereof. With the exception of the Selling Securityholders,] no holder of securities of the Company has the right to cause the Company to include such holder's securities in the Registration Statement. No further approval or authorization of any security holder, the Board of Directors or any duly appointed committee thereof or others is required for the issuance and sale or transfer of the Shares, either by the Company or the Selling Securityholders, except as may be required under the Act, the Exchange Act or under state securities or Blue Sky laws. Except as disclosed in or contemplated by the Prospectus and the financial statements of the Company, and the related notes thereto, included in the Prospectus the Company does not have outstanding any options or warrants to purchase, or any preemptive rights or other rights to subscribe for or to purchase, any securities or obligations convertible into, or any contracts or commitments to issue or sell, shares of its capital stock or any such options, rights, convertible securities or obligations. The description of the Company's stock option and other plans or arrangements, and the options or other rights granted and exercised thereunder, set forth in the Prospectus accurately and fairly presents, in all material respects, the information required to be shown with respect to such plans, arrangements, options and rights.

(vii) The Shares to be sold by the Selling Securityholders and the Shares to be issued and sold by the Company have been approved for quotation on the Nasdaq National Market.

(viii) Arthur Andersen LLP (the "Accountants") who have examined the financial statements, together with the related schedules and notes, of the Company filed with the Commission as a part of the Registration Statement, which are included in the Prospectus, are independent public accountants within the meaning of the Act and the Rules and Regulations. The financial statements of the Company, together with the related schedules and notes, forming part of the Registration Statement and the Prospectus, fairly present the financial position and the results of operations of the Company at the respective dates and for the respective periods to which they apply. All financial statements, together with the related schedules and notes, filed with the Commission as part of the Registration Statement have been prepared in accordance with generally accepted accounting principles as in effect in the United States consistently applied throughout the periods involved except as may be otherwise stated in the Registration Statement. The selected and summary financial and statistical data included in the Registration Statement present fairly the information shown therein and have been compiled on a basis consistent with the financial statements presented therein. No other financial statements or schedules are required by the Act or the Rules and Regulations to be included in the Registration Statement.

(ix) Subsequent to the respective dates as of which information is given in the Registration Statement and the Prospectus, there has not been (i) any material adverse change, or any development which, in the Company's reasonable judgment, is likely to cause a material adverse change, in the business, properties or assets described or referred to in the Registration Statement, or the results of operations, condition (financial or otherwise), business or operations of the Company and its Subsidiaries taken as a whole, (ii) any transaction which is material to the Company or its Subsidiaries, except transactions in the ordinary course of business, (iii) any obligation, direct or contingent, which is material to the Company and its Subsidiaries taken as a whole, incurred by the Company or its Subsidiaries, except obligations incurred in the ordinary course of business, (iv) any change in the capital stock or outstanding indebtedness of the Company or its Subsidiaries or (v) any dividend or distribution of any kind declared, paid or made on the capital stock of the Company. Neither the Company nor its Subsidiaries has any material contingent obligation which is not disclosed in the Registration Statement.

(x) Except as set forth in the Prospectus, (i) the Company and each Subsidiary have good and marketable title to all material properties and assets described in the Prospectus as owned by them, free and clear of any pledge, lien, security interest, charge, encumbrance, claim, equitable interest, or restriction, (ii) the agreements to which the Company or any Subsidiary is a party described in the Prospectus are valid agreements, enforceable against the Company or such Subsidiary in accordance with their terms, except as enforcement may be limited by applicable bankruptcy, insolvency, reorganization, moratorium or other similar laws relating to or affecting creditors' rights generally or by general equitable principles, and, to the Company's knowledge, the other contracting party or parties thereto are not in material breach or default under any of such agreements and (iii) the Company and each Subsidiary have valid and enforceable leases for the properties described in the Prospectus as leased by it, and such leases conform in all material respects to the description thereof, if any, set forth in the Registration Statement.

(xi) The Company and each Subsidiary now hold and at the Closing Date and any later Option Closing Date, as the case may be, will hold, all licenses, certificates, approvals and permits from all state, United States, foreign and other regulatory authorities, that are material to the conduct of the business of the Company (as such business is currently conducted), except for such licenses, certificates, approvals and permits the failure of which to hold would not have a Material Adverse Effect, all of which are valid and in full force and effect (and there is no proceeding pending or, to the knowledge of the Company, threatened which may cause any such license, certificate, approval or permit to be withdrawn, cancelled, suspended or not renewed). Neither the Company nor any Subsidiary is in violation of its certificate of incorporation or bylaws, or, except for defaults or violations which would not have a Material Adverse Effect, in default in the performance or observance of any obligation, agreement, covenant or condition contained in any bond, debenture, note or other evidence of indebtedness or in any contract, indenture, mortgage, loan agreement, joint venture or other agreement or instrument to which it is a party or by which it or any of its properties are bound, or in violation of any law, order, rule, regulation, writ, injunction or decree of any court or governmental agency or body.

(xii) The Company and each Subsidiary have filed on a timely basis all necessary federal, state and foreign income, franchise and other tax returns and has paid all taxes shown

thereon as due, and the Company has no knowledge of any tax deficiency which has been or might be asserted against the Company or any Subsidiary which might have a Material Adverse Effect. All material tax liabilities are adequately provided for within the financial statements of the Company.

(xiii) The Company and its Subsidiaries maintain insurance of the types and in the amounts adequate for their business and consistent with insurance coverage maintained by similar companies in similar businesses, including, but not limited to, insurance covering product liability and real and personal property owned or leased against theft, damage, destruction, acts of vandalism and all other risks customarily insured against, all of which insurance is in full force and effect.

(xiv) Neither the Company nor its Subsidiaries are involved in any labor dispute or disturbance nor, to the knowledge of the Company, is any such dispute or disturbance threatened.

(xv) Except as described in the Prospectus, the Company and each Subsidiary own or possess adequate licenses or other rights to use all patents, patent applications, trademarks, trademark applications, service marks, service mark applications, trade names, copyrights, manufacturing processes, formulae, trade secrets, know-how, franchises, and other material intangible property and assets (collectively, "Intellectual Property") necessary to the conduct of their businesses as conducted and as proposed to be conducted as described in the Prospectus. The Company has no knowledge of any facts which would preclude it from having rights to its patent applications referenced in the Prospectus. The Company has no knowledge that it or any Subsidiary lacks or will be unable to obtain any rights or licenses to use any of the Intellectual Property necessary to conduct the business now conducted or proposed to be conducted by it as described in the Prospectus, except as described in the Prospectus. The Prospectus fairly and accurately describes the Company's rights with respect to the Intellectual Property. The Company has not received any notice of infringement or of conflict with rights or claims of others with respect to any Intellectual Property. The Company is not aware of any patents of others which are infringed upon by potential products or processes referred to in the Prospectus in such a manner as to materially and adversely affect the Company and its Subsidiaries taken as a whole, except as described in the Prospectus.

(xvi) The Company and each Subsidiary are conducting their businesses in compliance with all of the laws, rules and regulations of the jurisdictions in which it is conducting business, except for such laws, rules and regulations with respect to which the failure to be in compliance not have a Material Adverse Effect.

(xvii) The Company is not an "investment company," or a "promoter" or "principal underwriter" for a registered investment company, as such terms are defined in the Investment Company Act of 1940, as amended.

(xviii) Neither the Company nor any of its Subsidiaries has incurred any liability for a fee, commission, or other compensation on account of the employment of a broker or finder in connection with the transactions contemplated by this Agreement other than the underwriting discounts and commissions contemplated hereby.

(xix) The Company and each of its Subsidiaries is (i) in compliance with any and all applicable United States, state and local environmental laws, rules, regulations, treaties, statutes and codes promulgated by any and all governmental authorities relating to the protection of human health and safety, the environment or toxic substances or wastes, pollutants or contaminants ("Environmental Laws"), (ii) has received all permits, licenses or other approvals required of it under applicable Environmental Laws to conduct its business as currently conducted, and (iii) is in compliance with all terms and conditions of any such permit, license or approval, except where such noncompliance with Environmental Laws, failure to receive required permit licenses or other approvals would not, individually or in the aggregate, have a Material Adverse Effect. No action, proceeding, revocation proceeding, writ, injunction or claim is pending or threatened relating to the Environmental Laws or to the Company's or its Subsidiaries' activities involving Hazardous Materials. "Hazardous Materials" means any material or substance (i) that is prohibited or regulated by any environmental law, rule, regulation, order, treaty, statute or code promulgated by any governmental authority, or any amendment or modification thereto, or (ii) that has been designated or regulated by any governmental authority as radioactive, toxic, hazardous or otherwise a danger to health, reproduction or the environment.

(xx) Neither the Company nor any of its Subsidiaries has engaged in the generation, use, manufacture, transportation or storage of any Hazardous Materials on any of the Company's or its Subsidiaries' properties or former properties, except where such use, manufacture, transportation or storage is in compliance with Environmental Laws. No Hazardous Materials have been treated or disposed of on any of the Company's or its Subsidiaries' properties or on properties formerly owned or leased by the Company or any Subsidiary during the time of such ownership or lease, except in compliance with Environmental Laws. No spills, discharges, releases, deposits, emplacements, leaks or disposal of any Hazardous Materials have occurred on or under or have emanated from any of the Company's or its Subsidiaries' properties or former properties.

(xxi) Neither the Company nor any of its Subsidiaries has at any time during the last five years (i) made any unlawful contribution to any candidate for foreign office, or failed to disclose fully any contribution in violation of law, or (ii) made any payment to any foreign, United States or state governmental officer or official, or other person charged with similar public or quasi-public duties, other than payments required or permitted by the laws of the United States.

(xxii) The Common Stock is registered pursuant to Section 12(g) of the Exchange Act. The Shares have been duly authorized for quotation on the National Association of Securities Dealers, Inc. Automated Quotation System National Market ("Nasdaq National Market"). The Company has taken no action designed to, or likely to have the effect of, terminating the registration of the Common Stock under the Exchange Act or delisting the Common Stock from the Nasdaq National Market, nor has the Company received any notification that the Commission or the Nasdaq National Market is contemplating terminating such registration or listing.

(xxiii) Neither the Company nor any of the Company's officers, directors or affiliates has taken, and at the Closing Date and at any later Option Closing Date, neither the Company nor any of the Company's officers, directors or affiliates will have taken, directly or indirectly, any action

which has constituted, or might reasonably be expected to constitute, the stabilization or manipulation of the price of sale or resale of the Shares.

(xxiv) The Company has timely and properly filed with the Commission all reports and other documents required to have been filed by it with the Commission pursuant to the Act and the Rules and Regulations. True and complete copies of all such reports and other documents have been delivered to you.

(b) Each of the Selling Securityholders hereby represents and warrants as follows:

(i) Such Selling Securityholder has good and marketable title to all of the Shares to be sold by such Selling Securityholder hereunder, free and clear of all liens, encumbrances, equities, security interests and claims whatsoever, with full right and authority to deliver the same hereunder, subject, in the case of each Selling Securityholder, to the rights of The First National Bank of Boston, as Custodian (herein called the Custodian), and that upon the delivery of and payment for such Shares hereunder, the several Underwriters will receive good and marketable title thereto, free and clear of all liens, encumbrances, equities, security interests and claims whatsoever.

(ii) Certificates in negotiable form for the Shares to be sold by such Selling Securityholder have been placed in custody under a Custody Agreement for delivery under this Agreement with the Custodian; such Selling Securityholder specifically agrees that the Shares represented by the certificates so held in custody for such Selling Securityholder are subject to the interests of the several Underwriters and the Company, that the arrangements made by such Selling Securityholder for such custody, including the Power of Attorney provided for in such Custody Agreement, are to that extent irrevocable, and that the obligations of such Selling Securityholder shall not be terminated by any act of such Selling Securityholder or by operation of law, whether by the death or incapacity of such Selling Securityholder (or, in the case of a Selling Securityholder that is not an individual, the dissolution or liquidation of such Selling Securityholder) or the occurrence of any other event; if any such death, incapacity, dissolution, liquidation or other such event should occur before the delivery of such Shares hereunder, certificates for such Shares shall be delivered by the Custodian in accordance with the terms and conditions of this Agreement as if such death, incapacity, dissolution, liquidation or other event had not occurred, regardless of whether the Custodian shall have received notice of such death, incapacity, dissolution, liquidation or other event.

(iii) Such Selling Securityholder has reviewed the Registration Statement and Prospectus and, although such Selling Securityholder has not independently verified the accuracy or completeness of all the information contained therein, nothing has come to the attention of such Selling Securityholder that would lead such Selling Securityholder to believe that (i) on the Effective Date, the Registration Statement contained any untrue statement of a material fact or omitted to state any material fact required to be stated therein or necessary in order to make the statements therein not misleading or

(ii) on the Effective Date the Prospectus contained and, on the Closing Date and any later date on which Option Stock is to be purchased, contains any untrue statement of a material fact or omitted or omits to

state any material fact necessary in order to make the statements therein, in the light of the circumstances under which they were made, not misleading.

(iv) The Selling Securityholders have no reason to believe that the representations and warranties contained in Section 2(a) hereof are not materially true and correct, are familiar with the Registration Statement (as amended or supplemented) and have no knowledge of any material fact, condition or information not disclosed in the Registration Statement, as of the Effective Date (or any amendment or supplement thereto), as of the applicable filing date, which has adversely affected or may adversely affect the business of the Company and is not prompted to sell shares of Common Stock by any information concerning the Company which is not set forth in the Registration Statement.

(v) The Selling Securityholders have not taken and will not take, directly or indirectly, any action which is designed to or which has constituted or which might reasonably be expected to cause or result in the stabilization or manipulation of the price of any security of the Company to facilitate the sale or resale of the Shares.

### 3. PURCHASE OF THE SHARES BY THE UNDERWRITERS.

(a) On the basis of the representations and warranties and subject to the terms and conditions herein set forth, the Company agrees to issue and sell the Firm Shares to the several Underwriters, each Selling Securityholder agrees to sell to the several Underwriters the number of Firm Shares set forth in Schedule B opposite the name of such Selling Securityholder, and each of the Underwriters agrees to purchase from the Company and the Selling Securityholders the respective aggregate number of Firm Shares set forth opposite its name on SCHEDULE A, plus such additional number of Firm Shares which such Underwriter may become obligated to purchase pursuant to Section 3(b) hereof. The price at which such Firm Shares shall be sold by the Company and the Selling Securityholders and purchased by the several Underwriters shall be \$\_\_\_\_\_ per share. The obligation of each Underwriter to the Company and each of the Selling Securityholders shall be to purchase from the Company and the Selling Securityholders that number of the Firm Shares which represents the same proportion of the total number of the Firm Shares to be sold by each of the Company and the Selling Securityholders pursuant to this Agreement as the number of the Firm Shares set forth opposite the name of such Underwriter in Schedule A hereto represents of the total number of the Firm Shares to be purchased by all Underwriters pursuant to this Agreement, as adjusted by you in such manner as you deem advisable to avoid fractional shares. In making this Agreement, each Underwriter is contracting severally and not jointly; except as provided in paragraphs (b) and (c) of this Section 3, the agreement of each Underwriter is to purchase only the respective number of Firm Shares specified on SCHEDULE A.

(b) If for any reason one or more of the Underwriters shall fail or refuse (otherwise than for a reason sufficient to justify the termination of this Agreement under the provisions of Section 11 hereof) to purchase and pay for the number of Shares agreed to be purchased by such Underwriter or Underwriters, the Company or the Selling Securityholders shall immediately give notice thereof to you and the non-defaulting Underwriters shall have the right within twenty-four (24) hours after such

default to purchase, or procure one or more other Underwriters to purchase, in such proportions as may be agreed upon between you and such purchasing Underwriter or Underwriters and upon the terms herein set forth, all or any part of the Shares which such defaulting Underwriter or Underwriters agreed to purchase. If the non-defaulting Underwriters fail so to make such arrangements with respect to all such Shares and portion, the number of Shares which each non-defaulting Underwriter is otherwise obligated to purchase under this Agreement shall be automatically increased on a pro rata basis (as adjusted by you in such manner as you deem advisable to avoid fractional shares) to absorb the remaining shares and portion which the defaulting Underwriter or Underwriters agreed to purchase; provided, however, that the non-defaulting Underwriters shall not be obligated to purchase the Shares and portion which the defaulting Underwriter or Underwriters agreed to purchase if the aggregate number of such Shares exceeds 10% of the total number of Shares which all Underwriters agreed to purchase hereunder. If the total number of Shares which the defaulting Underwriter or Underwriters agreed to purchase shall not be purchased or absorbed in accordance with the two preceding sentences, the Company and the Selling Securityholders shall have the right, within twenty-four (24) hours next succeeding the 24-hour period referred to above, to make arrangements with other underwriters or purchasers reasonably satisfactory to you for purchase of such Shares and portion on the terms herein set forth. In any such case, either you or the Company and the Selling Securityholders shall have the right to postpone the Closing Date determined as provided in Section 5 hereof for not more than seven business days after the date originally fixed as the Closing Date pursuant to said Section 5 in order that any necessary changes in the Registration Statement, the Prospectus or any other documents or arrangements may be made. If the aggregate number of Shares which the defaulting Underwriter or Underwriters agreed to purchase exceeds 10% of the total number of Shares which all Underwriters agreed to purchase hereunder, and if neither the non-defaulting Underwriters nor the Company and the Selling Securityholders shall make arrangements within the 24-hour periods stated above for the purchase of all the Shares which the defaulting Underwriter or Underwriters agreed to purchase hereunder, this Agreement shall be terminated without further act or deed and without any liability on the part of the Company or the Selling Securityholders to any non-defaulting Underwriter and without any liability on the part of any non-defaulting Underwriter to the Company or the Selling Securityholders. Nothing in this paragraph (b), and no action taken hereunder, shall relieve any defaulting Underwriter from liability in respect of any default of such Underwriter under this Agreement.

(c) On the basis of the representations, warranties and covenants herein contained, and subject to the terms and conditions herein set forth, the Company and the Selling Securityholders grant an option to the several Underwriters to purchase all or any portion of the Option Shares from the Company and the Selling Securityholders at the same price per share as the Underwriters shall pay for the Firm Shares. Said option may be exercised only to cover over-allotments in the sale of the Firm Shares by the Underwriters and may be exercised in whole or in part at any time (but not more than once) on or before the 30th day after the date of this Agreement upon written or telegraphic notice by you to the Company setting forth the aggregate number of the Option Shares as to which the several Underwriters are exercising the option. Delivery of certificates for the Option Shares, and payment therefor, shall be made as provided in Section 5 hereof. Each Underwriter will purchase such percentage of the Option Shares from the Company and the Selling Securityholders as is equal to the percentage of Firm Shares that such Underwriter is purchasing from the Company and the Selling Securityholders,

the exact number of shares to be adjusted by you in such manner as you deem advisable to avoid fractional shares.

#### 4. OFFERING BY UNDERWRITERS.

(a) The terms of the initial public offering of the Shares by the Underwriters shall be as set forth in the Prospectus. The Underwriters may from time to time change the public offering price after the closing of the public offering and increase or decrease the concessions and discounts to dealers as they may determine.

(b) You, on behalf of the Underwriters, represent and warrant that

(i) the information set forth in the last paragraph on the front cover page and the third and seventh paragraphs under the caption "Underwriting" in the Registration Statement, any Preliminary Prospectus and the Prospectus relating to the Shares (insofar as such information relates to the Underwriters) constitutes the only information furnished by the Underwriters to the Company for inclusion in the Registration Statement, any Preliminary Prospectus, and the Prospectus, and that the statements made therein are correct and do not omit to state any material fact required to be stated therein or necessary to make the statements made therein in light of the circumstances under which they were made not misleading, and (ii) the Underwriters have not distributed and will not distribute prior to the Closing Date or on any Option Closing Date, as the case may be, any of offering material in connection with the offering and sale of the shares other than the Preliminary Prospectus, the Prospectus, the Registration Statement and other materials permitted by the Act.

#### 5. DELIVERY OF AND PAYMENT FOR THE SHARES.

(a) Delivery of certificates for the Firm Shares and the Option Shares (if the option granted pursuant to Section 3(c) hereof shall have been exercised not later than 1:00 p.m., New York time, on the date at least two business days preceding the Closing Date), and payment therefor, shall be made at the office of Thelen, Marrin, Johnson & Bridges LLP, counsel to the Company, Two Embarcadero Center, Suite 2100, San Francisco, California 94111 at 9:00

a.m., New York time, on the fourth business day after the date of this Agreement, or at such time on such other day, not later than seven full business days after such fourth business day, as shall be agreed upon in writing by the Company, the Selling Securityholders and you (the "Closing Date").

(b) If the option granted pursuant to Section 3(c) hereof shall be exercised after 1:00 p.m., New York time, on the date two business days preceding the Closing Date, and on or before the 30th day after the date of this Agreement, delivery of certificates for the Option Shares, and payment therefor, shall be made at the office of Thelen, Marrin, Johnson & Bridges LLP, counsel to the Company, Two Embarcadero Center, Suite 2100, San Francisco, California 94111 at 9:00 a.m., New York time, on the third business day after the exercise of such option.

(c) Payment for the Shares purchased from the Company shall be made to the Company or its order and payment for the Shares purchased from the Selling Securityholders shall be

made to the Custodian, for the account of the Selling Securityholders, in each case by wire transfer or other same day funds. Such payment shall be made upon delivery of certificates for the Shares to you for the respective accounts of the several Underwriters against receipt therefor signed by you. Certificates for the Shares to be delivered to you shall be registered in such name or names and shall be in such denominations as you may request at least three business days before the Closing Date, in the case of Firm Shares, and at least two business days prior to the Option Closing Date, in the case of the Option Shares. Such certificates will be made available to the Underwriters for inspection, checking and packaging at a location in New York, New York, designated by the Underwriters not less than one full business day prior to the Closing Date or, in the case of the Option Shares, by 3:00 p.m., New York time, on the business day preceding the Option Closing Date.

It is understood that you, individually and not on behalf of the Underwriters, may (but shall not be obligated to) make payment to the Company and the Selling Securityholders for shares to be purchased by any Underwriter whose funds shall not have been received by you on the Closing Date or any later Option Closing Date. Any such payment by you shall not relieve such Underwriter from any of its obligations hereunder.

**6. FURTHER AGREEMENTS OF THE COMPANY AND THE SELLING SECURITYHOLDERS.** Each of the Company and the Selling Securityholders respectively covenants and agrees as follows:

(a) The Company will use its best efforts to cause the Registration Statement and any amendment thereof, if not effective at the time and date that this Agreement is executed and delivered by the parties hereto, to become effective as promptly as possible; it will notify you, promptly after it shall receive notice thereof, of the time when the Registration Statement or any subsequent amendment to the Registration Statement has become effective or any supplement to the Prospectus has been filed. If the Company omitted information from the Registration Statement at the time it was originally declared effective in reliance upon Rule 430A(a), the Company will provide evidence satisfactory to you that the Prospectus contains such information and has been filed, within the time period prescribed, with the Commission pursuant to subparagraph (1) or (4) of Rule 424(b) of the Rules and Regulations or as part of a post-effective amendment to such Registration Statement as originally declared effective which is declared effective by the Commission. If for any reason the filing of the final form of Prospectus is required under Rule 424(b)(3) of the Rules and Regulations, it will provide evidence satisfactory to you that the Prospectus contains such information and has been filed with the Commission within the time period prescribed. The Company will notify you promptly of any request by the Commission for the amending or supplementing of the Registration Statement or the Prospectus or for additional information. Promptly upon your request, it will prepare and file with the Commission any amendments or supplements to the Registration Statement or Prospectus which, in the reasonable opinion of counsel to the several Underwriters ("Underwriters' Counsel"), may be necessary or advisable in connection with the distribution of the Shares by the Underwriters. The Company will promptly prepare and file with the Commission, and promptly notify you of the filing of, any amendments or supplements to the Registration Statement or Prospectus which may be necessary to correct any statements or omissions, if, at any time when a prospectus relating to the

Shares is required to be delivered under the Act, any event shall have occurred as a result of which the Prospectus or any other prospectus relating to the Shares as then in effect would include an untrue statement of a material fact or omit to state any material fact necessary to make the statements therein, in light of the circumstances under which they were made, not misleading. In case any Underwriter is required to deliver a prospectus within the nine-month period referred to in Section 10(a)(3) of the Act in connection with the sale of the Shares, the Company will prepare promptly upon request, but at the expense of such Underwriter, such amendment or amendments to the Registration Statement and such prospectus or prospectuses as may be necessary to permit compliance with the requirements of Section 10(a)(3) of the Act. The Company will file no amendment or supplement to the Registration Statement or Prospectus that shall not previously have been submitted to you a reasonable time prior to the proposed filing thereof or to which you shall reasonably object in writing or which is not in compliance with the Act and Rules and Regulations or the provisions of this Agreement.

(b) The Company will advise you, promptly after it shall receive notice or obtain knowledge thereof of the issuance of any stop order by the Commission suspending the effectiveness of the Registration Statement or the use of the Prospectus or of the initiation or threat of any proceeding for that purpose; and the Company and the Selling Securityholders will promptly use their best efforts to prevent the issuance of any such stop order or to obtain its withdrawal at the earliest possible moment if such stop order should be issued.

(c) The Company will cooperate with you in endeavoring to qualify the Shares for offering and sale under the securities laws of such jurisdictions as you may designate and to continue such qualifications in effect for so long as may be required for purposes of the distribution of the Shares, except that the Company shall not be required in connection therewith or as a condition thereof to qualify as a foreign corporation, or to execute a general consent to service of process in any jurisdiction, or to make any undertaking with respect to the conduct of its business. In each jurisdiction in which the Shares shall have been qualified, the Company will make and file such statements, reports and other documents in each year as are or may be reasonably required by the laws of such jurisdictions so as to continue such qualifications in effect for so long a period as you may reasonably request for distribution of the Shares, or as otherwise may be required by law.

(d) The Company will furnish to you, as soon as available, copies of the Registration Statement (three of which will be signed and which will include all exhibits), each Preliminary Prospectus, the Prospectus and any amendments or supplements to such documents, including any prospectus prepared to permit compliance with Section 10(a)(3) of the Act, all in such quantities as you may from time to time reasonably request.

(e) The Company will make generally available to its stockholders as soon as practicable, but in any event not later than the 45th day following the end of the fiscal quarter first occurring after the first anniversary of the effective date of the Registration Statement, an earnings statement (which will be in reasonable detail but need not be audited) complying with the provisions of Section 11(a) of the Act and Rule 158 of the Rules and Regulations and covering a twelve-month period beginning after the effective date of the Registration Statement, and will advise you in writing when such statement has been made available.

(f) During a period of five years after the date hereof, the Company, as soon as practicable after the end of each respective period, will furnish to its stockholders annual reports (including financial statements audited by independent certified public accountants) and will furnish to its stockholders unaudited quarterly reports of operations for each of the first three quarters of the fiscal year, and will, upon request, furnish to you and the other several Underwriters hereunder (i) concurrently with making such reports available to its stockholders, statements of operations of the Company for each of the first three quarters in the form made available to the Company's stockholders; (ii) concurrently with the furnishing thereof to its stockholders, a balance sheet of the Company as of the end of such fiscal year, together with statements of operations, of stockholders' equity and of cash flow of the Company for such fiscal year, accompanied by a copy of the certificate or report thereon of nationally recognized independent certified public accountants; (iii) concurrently with the furnishing of such reports to its stockholders, copies of all reports (financial or other) mailed to stockholders; (iv) as soon as they are available, copies of all reports and financial statements furnished to or filed with the Commission, any securities exchange or the Nasdaq National Market by the Company (except for documents for which confidential treatment is requested); and (v) every material press release and every material news item or article in respect of the Company or its affairs which was generally released to stockholders or prepared for general release by the Company. During such five- year period, if the Company shall have any active Subsidiaries, the foregoing financial statements shall be on a consolidated basis to the extent that the accounts of the Company are consolidated with any Subsidiaries, and shall be accompanied by similar financial statements for any significant Subsidiary that is not so consolidated.

(g) Prior to or simultaneously with the execution and delivery of this Agreement, the Company will obtain agreement from each of the Company's executive officers and directors of the Company listed on SCHEDULE C to this Agreement providing that such person will not, for a period of 90 days after the date of the Prospectus, without the prior written consent of UBS Securities LLC, directly or indirectly, offer to sell, sell, hypothecate, contract to sell, grant any option to purchase, or otherwise dispose of, any shares of Common Stock beneficially owned as of the date such lockup agreement is executed (including, without limitation, shares of Common Stock which may be deemed to be beneficially owned in accordance with the Rules and Regulations and shares of Common Stock which may be issued upon exercise of a stock option or warrant) or any securities convertible into or exercisable or exchangeable for such Common Stock except for transfers (a) as a BONA FIDE gift or gifts to any person or other entity which agrees in writing to be bound by the restrictions set forth in such lock-up agreement, or (b) to any trust for the direct or indirect benefit of immediately family and the trustee of such trust agrees in writing to be bound by the restrictions set forth in such lock-up agreement. Each such person or entity shall also agree and consent to the entry of stop transfer instructions with the Company's transfer agent against the transfer of shares of Common Stock held by such person or entity, except in compliance with the foregoing restriction.

(h) The Company shall not, during the 90 days following the effective date of the Registration Statement, except with your prior written consent as Representatives, file a registration statement covering any of its shares of capital stock, except that one or more registration statements on Form S-8 may be filed at any time following the effective date of the Registration Statement.

(i) Neither the Company nor any Selling Securityholder (except for such Selling Securityholders who are executive officers or directors of the Company and who enter into lock-up agreements as provided in Section 6(g) above) shall, during the 90 days following the effective date of the Registration Statement, except with your prior written consent as Representatives, issue, sell, offer or agree to sell, grant, distribute or otherwise dispose of, directly or indirectly, any shares of Common Stock, or any options, rights or warrants with respect to shares of Common Stock, or any securities convertible into or exchangeable for Common Stock, other than (i) the sale of Shares hereunder, (ii) the grant of options or the issuance of shares of Common Stock under the Company's stock option plans or stock purchase plan, as the case may be, existing on the date hereof, (iii) the issuance of shares of Common Stock upon exercise of the currently outstanding options or warrants described in the Registration Statement.

(j) The Company will apply the net proceeds from the sale of the Shares being sold by it in the manner set forth under the caption "Use of Proceeds" in the Prospectus.

(k) The Company will maintain a Transfer Agent and, if necessary under the jurisdiction of incorporation of the Company, a Registrar (which may be the same entity as the Transfer Agent) for its Common Stock.

(l) The Company will use its best efforts to maintain listing of its shares of Common Stock on the Nasdaq National Market.

(m) The Company is familiar with the Investment Company Act of 1940, as amended, and the rules and regulations thereunder, and has in the past conducted its affairs, and will in the future conduct its affairs, in such a manner so as to ensure that the Company was not and will not be an "investment company" within the meaning of the Investment Company Act of 1940, as amended, and the rules and regulations thereunder.

(n) If at any time during the 90-day period after the Registration Statement becomes effective, any rumor, publication or event relating to or affecting the Company shall occur as a result of which in your reasonable opinion the market price of the Common Stock has been or is likely to be materially affected (regardless of whether such rumor, publication or event necessitates a supplement to or amendment of the Prospectus), the Company will, after written notice from you advising the Company to the effect set forth above consult with you in good faith regarding the necessity of disseminating a press release or other public statement responding to or commenting on such rumor, publication or event and, if the Company in its reasonable judgment determines that such a press release or other public statement is appropriate, the substance of any press release or other public statement.

7. EXPENSES. The Company and the Selling Securityholders agree with each Underwriter that:

(a) The Company and, unless otherwise paid by the Company the Selling Securityholders will pay and bear all costs, fees and expenses in connection with the preparation,

printing and filing of the Registration Statement (including financial statements, schedules and exhibits), Preliminary Prospectuses and the Prospectus and any amendments or supplements thereto; the reproduction of this Agreement, the Agreement Among Underwriters, the Selected Dealer Agreement, the Preliminary Blue Sky Memoranda and any Supplemental Blue Sky Memoranda and any instruments related to any of the foregoing; the issuance and delivery of the Shares hereunder to the several Underwriters, including transfer taxes, if any; the cost of all stock certificates representing the Shares and Transfer Agents' and Registrars' fees; the fees and disbursements of corporate, patent and regulatory counsel for the Company; all fees and other charges of the Company's independent public accountants; the cost of furnishing to the several Underwriters copies of the Registration Statement (including appropriate exhibits), Preliminary Prospectuses and the Prospectus, and any amendments or supplements to any of the foregoing; NASD filing fees and expenses incident to securing any required review and the cost of qualifying the Shares under the laws of such jurisdictions within the United States as you may designate (including filing fees and fees and disbursements of Underwriters' Counsel in connection with such NASD filings and Blue Sky qualifications); listing application fees of the Nasdaq National Market; and all other expenses directly incurred by the Company or the Selling Securityholders in connection with the performance of their obligations hereunder. The Selling Securityholders will pay any transfer taxes incident to the transfer to the Underwriters of the Shares being sold by the Selling Securityholders.

(b) If the transactions contemplated hereby are not consummated by reason of any failure, refusal or inability on the part of the Company or the Selling Securityholders to perform any agreement on either of their part to be performed hereunder or to fulfill any condition of the Underwriters' obligations hereunder, the Company or, unless otherwise paid by the Company, the Selling Securityholders will, in addition to paying the expenses described in clause (a) above, reimburse the several Underwriters for all out-of-pocket expenses (including reasonable fees and disbursements of Underwriters' Counsel) incurred by the Underwriters in reviewing the Registration Statement and the Prospectus and in otherwise investigating, preparing to market or marketing the Shares. Neither the Company nor the Selling Securityholders will in any event be liable to any of the several Underwriters for any loss of anticipated profits from the sale by them of the Shares.

(c) The provisions of paragraphs (a) and (b) of this Section are intended to relieve the Underwriters from the payment of the expenses and costs which the Company and the Selling Securityholders hereby agree to pay and shall not affect any agreement which the Company and the Selling Securityholders make, or may have made, for the sharing of any such expenses and costs.

**8. CONDITIONS OF UNDERWRITERS' OBLIGATIONS.** The obligations of the several Underwriters to purchase and pay for the Shares, as provided herein, shall be subject to the accuracy, as of the date hereof and the Closing Date and any later Option Closing Date, as the case may be, of the representations and warranties of the Company and the Selling Securityholders herein, to the performance by the Company and the Selling Securityholders of their obligations hereunder and to the following additional conditions:

(a) The Registration Statement shall have become effective not later than 9:00 a.m., New York City time, on the date following the date of this Agreement, or such later time or date as shall

be consented to in writing by you. If the filing of the Prospectus, or any supplement thereto, is required pursuant to Rule 424(b) and Rule 430A of the Rules and Regulations, the Prospectus shall have been filed in the manner and within the time period required by Rule 424(b) and Rule 430A of the Rules and Regulations. No stop order suspending the effectiveness of the Registration Statement shall have been issued and no proceeding for that purpose shall have been initiated or, to the knowledge of the Company, the Selling Securityholders or any Underwriter, threatened by the Commission, and any request of the Commission for additional information (to be included in the Registration Statement or the Prospectus or otherwise) shall have been complied with to the reasonable satisfaction of Underwriters' Counsel.

(b) All corporate proceedings and other legal matters in connection with this Agreement, the form of Registration Statement and the Prospectus, and the registration, authorization, issue, sale and delivery of the Shares shall have been reasonably satisfactory to Underwriters' Counsel, and such counsel shall have been furnished with such papers and information as they may reasonably have requested to enable them to pass upon the matters referred to in this subsection.

(c) You shall have received, at no cost to you, on the Closing Date and on any later Option Closing Date, as the case may be, the opinion of Thelen, Marrin, Johnson & Bridges LLP, corporate counsel to the Company and the Selling Securityholders, dated the Closing Date or such later Option Closing Date, in the forms attached hereto on APPENDIX A, addressed to the Underwriters and with reproduced copies of signed counterparts thereof for each of the Representatives.

(d) You shall have received from Wilson Sonsini Goodrich & Rosati, Underwriters' Counsel, an opinion or opinions, dated the Closing Date or on any later Option Closing Date, as the case may be, in form and substance reasonably satisfactory to you, with respect to the sufficiency of all corporate proceedings undertaken by the Company and other legal matters relating to this Agreement and the transactions contemplated hereby as you may reasonably require, and the Company shall have furnished to such counsel such documents as it may have reasonably requested for the purpose of enabling it to pass upon such matters.

(e) You shall have received on the Closing Date and on any later Option Closing Date, as the case may be, a letter from the Accountants addressed to the Company and the Underwriters, dated the Closing Date or such later Option Closing Date, as the case may be, confirming that it is an independent certified public accountant with respect to the Company within the meaning of the Act and the Rules and Regulations thereunder and based upon the procedures described in its letter delivered to you concurrently with the execution of this Agreement (herein called the "Original Letter"), but carried out to a date not more than three days prior to the Closing Date or any such later Option Closing Date, as the case may be, (i) confirming that the statements and conclusions set forth in the Original Letter are accurate as of the Closing Date or such later Option Closing Date, as the case may be; and (ii) setting forth any revisions and additions to the statements and conclusions set forth in the Original Letter that are necessary to reflect any changes in the facts described in the Original Letter since the date of such letter, or to reflect the availability of more recent financial statements, data or information. The letter shall not disclose any change, or any development involving a prospective change, in or affecting the business or properties of the Company which, in your reasonable judgment, makes it impracticable or

inadvisable to proceed with the public offering of the Shares as contemplated by the Prospectus. In addition, you shall have received from the Accountants a letter addressed to the Company and made available to you for the use of the Underwriters stating that its review of the Company's system of internal accounting controls, to the extent it deemed necessary in establishing the scope of its latest examination of the Company's financial statements, did not disclose any weaknesses in internal controls that it considered to be material weaknesses. All such letters shall be in a form reasonably satisfactory to the Representatives and their counsel.

(f) You shall have received on the Closing Date and on any later Option Closing Date, as the case may be, a certificate of the President and the Chief Financial Officer of the Company, dated the Closing Date or such later date, to the effect that as of such date (and you shall be satisfied that as of such date):

(i) The representations and warranties of the Company in this Agreement are true and correct, as if made on and as of the Closing Date or any later Option Closing Date, as the case may be; and the Company has complied with all of the agreements and satisfied all of the conditions on its part to be performed or satisfied at or prior to the Closing Date or any later Option Closing Date, as the case may be;

(ii) The Registration Statement has become effective under the Act and no stop order suspending the effectiveness of the Registration Statement or preventing or suspending the use of the Prospectus has been issued, and no proceedings for that purpose have been instituted or are pending or, to the best of their knowledge, threatened under the Act;

(iii) They have carefully reviewed the Registration Statement and the Prospectus; and, when the Registration Statement became effective and at all times subsequent thereto up to the delivery of such certificate, the Registration Statement and the Prospectus and any amendments or supplements thereto contained all statements and information required to be included therein or necessary to make the statements therein not misleading; and when the Registration Statement became effective, and at all times subsequent thereto up to the delivery of such certificate, none of the Registration Statement, the Prospectus or any amendment or supplement thereto included any untrue statement of a material fact or omitted to state any material fact required to be stated therein or necessary to make the statements therein not misleading; and, since the effective date of the Registration Statement, there has occurred no event required to be set forth in an amended or supplemented Prospectus that has not been so set forth; and

(iv) Subsequent to the respective dates as of which information is given in the Registration Statement and the Prospectus, there has not been (A) any material adverse change in the properties or assets described or referred to in the Registration Statement and the Prospectus or in the condition (financial or otherwise), operations, business or prospects of the Company and its Subsidiaries, (B) any transaction which is material to the Company and its Subsidiaries, except transactions entered into in the ordinary course of business, (C) any obligation, direct or contingent, incurred by the Company or its Subsidiaries, which is material to the Company and its Subsidiaries taken as a whole,

(D) any change in the capital stock or outstanding indebtedness of the Company or its Subsidiaries which is material to the Company and its Subsidiaries taken as a whole or (E) any dividend or distribution of any kind declared, paid or made on the capital stock of the Company.

(g) The Company and the Selling Securityholders shall have furnished to you such further certificates and documents as you shall reasonably request as to the accuracy of the representations and warranties of the Company and the Selling Securityholders herein, as to the performance by the Company and the Selling Securityholders of their obligations hereunder and as to the other conditions concurrent and precedent to the obligations of the Underwriters hereunder.

(h) The Firm Shares and the Option Shares, if any, shall have been approved for quotation on the Nasdaq National Market.

All such opinions, certificates, letters and documents will be in compliance with the provisions hereof only if they are reasonably satisfactory to Underwriters' Counsel. The Company or the Selling Securityholders, as the case may be, will furnish you with such number of conformed copies of such opinions, certificates, letters and documents as you shall reasonably request.

In case any of the conditions specified in this Section 8 shall not be fulfilled, this Agreement may be terminated by you by giving notice to the Company and to the Selling Securityholders. Any such termination shall be without liability of the Company or the Selling Securityholders to the Underwriters and without liability of the Underwriters to the Company or the Selling Securityholders; provided, however, that (i) in the event of such termination, the Company and the Selling Securityholders agree to indemnify and hold harmless the Underwriters from all costs or expenses incident to the performance of the obligations of the Company and the Selling Securityholders under this Agreement, and (ii) if this Agreement is terminated by you because of any refusal, inability or failure on the part of the Company or the Selling Securityholders to perform any agreement herein, to fulfill any of the conditions herein, or to comply with any provision hereof other than by reason of a default by any of the Underwriters, the Company will reimburse the Underwriters severally upon demand for all out-of-pocket expenses (including reasonable fees and disbursements of counsel) that shall have been incurred by them in connection with the transactions contemplated hereby.

9. CONDITIONS OF THE OBLIGATION OF THE COMPANY AND THE SELLING SECURITYHOLDERS. The obligation of the Company and the Selling Securityholders to deliver the Shares shall be subject to the conditions that (a) the Registration Statement shall have become effective and (b) no stop order suspending the effectiveness thereof shall be in effect and no proceedings therefor shall be pending or threatened by the Commission.

In case either of the conditions specified in this Section 9 shall not be fulfilled, this Agreement may be terminated by the Company and the Selling

Securityholders by giving notice to you. Any such termination shall be without liability of the Company and the Selling Securityholders to the Underwriters and without liability of the Underwriters to the Company or the Selling Securityholders; PROVIDED, HOWEVER, that in the event of any such termination the Company and the Selling Securityholders jointly and severally agree to indemnify and hold harmless the Underwriters from all costs or expenses incident to the performance of the obligations of the Company and the Selling Securityholders under this Agreement.

#### 10. INDEMNIFICATION AND CONTRIBUTION.

(a) Subject to the provisions of paragraph (g) below, (i) the Company and Douglas S. Schatz (the "Principal Selling Securityholder"), jointly and severally, and the Selling Securityholders (other than the Principal Selling Securityholder), severally in proportion to the number of Shares to be sold by each of them, and not jointly, agree to indemnify and hold harmless each Underwriter and each person (including each partner or officer thereof) who controls any Underwriter within the meaning of Section 15 of the Act from and against any and all losses, claims, damages or liabilities, joint or several, to which such indemnified parties or any of them may become subject under the Act, the Exchange Act, or the common law or otherwise, and (ii) the Company and the Principal Selling Securityholder, jointly and severally, and the Selling Securityholders (other than the Principal Selling Securityholder), severally in proportion to the number of Shares to be sold by each of them, and not jointly, agree to reimburse each such Underwriter and controlling person for any legal or other out-of-pocket expenses (including, except as otherwise hereinafter provided, reasonable fees and disbursements of counsel) incurred by the respective indemnified parties in connection with defending against any such losses, claims, damages or liabilities or in connection with any investigation or inquiry of, or other proceeding which may be brought against, the respective indemnified parties, in each case of clause (i) and (ii) above, arising out of or based upon (A) any untrue statement or alleged untrue statement of a material fact contained in the Registration Statement (including the Prospectus as part thereof and any 462(b) registration statement) or any post-effective amendment thereto (including any 462(b) registration statement), or the omission or alleged omission to state therein a material fact required to be stated therein or necessary to make the statements therein not misleading, (B) any untrue statement or alleged untrue statement of a material fact contained in any Preliminary Prospectus or the Prospectus (as amended or as supplemented if the Company shall have filed with the Commission any amendment thereof or supplement thereto) or the omission or alleged omission to state therein a material fact necessary in order to make the statements therein, in the light of the circumstances under which they were made, not misleading, or (C) with respect to the Company and the Principal Selling Securityholder, any facts or events that would constitute a breach of any of the representations or warranties set forth in Section 2(a) hereof, and with respect to the Selling Securityholders, any facts or events that would constitute a breach of any of the representations or warranties of such Selling Securityholders set forth in Section 2(b) hereof; provided, however, that (1) the indemnity agreements of the Company and the Selling Securityholders contained in this paragraph (a) shall not apply to any such losses, claims, damages, liabilities or expenses if such statement or omission is contained in the third and seventh paragraphs under section of the Prospectus entitled "Underwriting" or the last paragraph of text on the cover page of the Prospectus, (2) the indemnity agreement contained in this paragraph (a) with respect to any Preliminary Prospectus shall not inure to the benefit of any Underwriter from whom the person asserting any such losses, claims, damages, liabilities or expenses purchased the Shares which is the subject thereof (or to the benefit of any person controlling such Underwriter) if at or prior to the written confirmation of the sale of such Shares a copy of the Prospectus (or the Prospectus as amended or

supplemented) was not sent or delivered to such person (excluding any documents incorporated therein by reference) and the untrue statement or omission of a material fact contained in such Preliminary Prospectus was corrected in the Prospectus (or the Prospectus as amended or supplemented) unless the failure is the result of noncompliance by the Company with paragraph (a) of Section 6 hereof, and (3) each Selling Securityholder shall not be liable under this paragraph with respect to (A) information pertaining to other Selling Securityholders furnished by or on behalf of such other Selling Securityholders expressly for use in any Preliminary Prospectus or the Registration Statement or the Prospectus or any such amendment thereof or supplement thereto or (B) breaches of any representation or warranty set forth in Section 2(b) hereof by other Selling Securityholders. The indemnity agreements of the Company and the Selling Securityholders contained in this paragraph (a) and the representations and warranties of the Company and the Selling Securityholders contained in Section 2 hereof shall remain operative and in full force and effect regardless of any investigation made by or on behalf of any indemnified party and shall survive the delivery of any payment for the Shares.

(b) Each Underwriter severally agrees to indemnify and hold harmless the Company, each of its executive officers, each of its directors, each other Underwriter and each person (including each partner or officer thereof) who controls the Company or any such other Underwriter within the meaning of Section 15 of the Act, and the Selling Securityholders from and against any and all losses, claims, damages or liabilities, joint or several, to which such indemnified parties or any of them may become subject under the Act, the Exchange Act, or the common law or otherwise and to reimburse each of them for any legal or other expenses including, except as otherwise hereinafter provided, reasonable fees and disbursements of counsel) incurred by the respective indemnified parties in connection with defending against any such losses, claims, damages or liabilities or in connection with any investigation or inquiry of, or other proceeding which may be brought against, the respective indemnified parties, in each case arising out of or based upon (i) any untrue statement or alleged untrue statement of a material fact contained in the Registration Statement (including the Prospectus as part thereof and any Rule 462(b) registration statement) or any post-effective amendment thereto (including any 462(b) registration statement) or the omission or alleged omission to state therein a material fact required to be stated therein or necessary to make the statements therein not misleading or (ii) any untrue statement or alleged untrue statement of a material fact contained in any Preliminary Prospectus or the Prospectus (as amended or as supplemented if the Company shall have filed with the Commission any amendment thereof or supplement thereto) or the omission or alleged omission to state therein a material fact necessary in order to make the statements therein, in the light of the circumstances under which they were made, not misleading; provided, however, that in the cases of clauses (i) and (ii) above, such statement or omission is contained in the Section of the Prospectus entitled "Underwriting" or the last paragraph on the cover page of the Prospectus. The indemnity agreement of each Underwriter contained in this paragraph (b) shall remain operative and in full force and effect regardless of any investigation made by or on behalf of any indemnified party and shall survive the delivery of and payment for the Shares.

(c) Each party indemnified under the provision of paragraphs (a) and (b) of this Section 10 agrees that, upon the service of a summons or other initial legal process upon it in any action or suit instituted against it or upon its receipt of written notification of the commencement of any

investigation or inquiry of, or proceeding against it, in respect of which indemnity may be sought on account of any indemnity agreement contained in such paragraphs, it will promptly give written notice (a "Notice") of such service or notification to the party or parties from whom indemnification may be sought hereunder. No indemnification provided for in such paragraphs shall be available to any party who shall fail so to give the Notice if the party to whom such Notice was not given was unaware of the action, suit, investigation, inquiry or proceeding to which the Notice would have related and was prejudiced by the failure to give the Notice, but the omission so to notify such indemnifying party or parties of any such service or notification shall not relieve such indemnifying party or parties from any liability which it or they may have to the indemnified party for contribution or otherwise than on account of such indemnity agreement. Any indemnifying party shall be entitled at its own expense to participate in the defense of any action, suit or proceeding against, or investigation or inquiry of, an indemnified party. Any indemnifying party shall be entitled, if it so elects within a reasonable time after receipt of the Notice by giving written notice (the "Notice of Defense") to the indemnified party, to assume (alone or in conjunction with any other indemnifying party or parties) the entire defense of such action, suit, investigation, inquiry or proceeding, in which event such defense shall be conducted, at the expense of the indemnifying party or parties, by counsel chosen by such indemnifying party or parties and reasonably satisfactory to the indemnified party or parties; provided, however, that (i) if the indemnified party or parties reasonably determine that there may be a conflict between the positions of the indemnifying party or parties and of the indemnified party or parties in conducting the defense of such action, suit, investigation, inquiry or proceeding or that there may be legal defenses available to such indemnified party or parties different from or in addition to those available to the indemnifying party or parties, then counsel for the indemnified party or parties shall be entitled to conduct the defense to the extent reasonably determined by such counsel to be necessary to protect the interests of the indemnified party or parties and (ii) in any event, the indemnified party or parties shall be entitled, at its or their own expense to have counsel chosen by such indemnified party or parties participate in, but not conduct, the defense. It is understood that the indemnifying parties shall not, in respect of the legal defenses of any indemnified party in connection with any proceeding or related proceedings in the same jurisdiction, be liable for (a) the fees and expenses of more than one separate firm (in addition to any local counsel) for all of the Underwriters and each person, if any, who controls any Underwriter within the meaning of Section 15 of the Act, and (b) the fees and expenses of more than one separate firm (in addition to any local counsel) for the Company, its directors, its officers who sign the Registration Statement and each person, if any, who controls the Company within the meaning of Section 15 of the Act. If, within a reasonable time after receipt of the Notice, an indemnifying party gives a Notice of Defense and the counsel chosen by the indemnifying party or parties is reasonably satisfactory to the indemnified party or parties, the indemnifying party or parties will not be liable under paragraphs (a) through (c) of this Section 10 for any legal or other expenses subsequently incurred by the indemnified party or parties in connection with the defense of the action, suit, investigation, inquiry or proceeding, except that (A) the indemnifying party or parties shall bear the legal and other expenses incurred in connection with the conduct of the defense as referred to in clause (i) of the proviso to the preceding sentence and (B) the indemnifying party or parties shall bear such other expenses as it or they have authorized to be incurred by the indemnified party or parties. If, within a reasonable time after receipt of the Notice, no Notice of Defense has been given, the indemnifying party or parties shall be responsible for any legal or other expenses incurred by the indemnified party or parties in connection

with the defense of the action, suit, investigation, inquiry or proceeding. The indemnifying party or parties shall not be liable for any settlement of any proceeding effected without its or their written consent, provided such consent has not been unreasonably withheld.

(d) If the indemnification provided for in this Section 10 is unavailable or insufficient to hold harmless an indemnified party under paragraph (a) or (b) of this Section 10, then each indemnifying party shall, in lieu of indemnifying such indemnified party, contribute to the amount paid or payable by such indemnified party as a result of the losses, claims, damages or liabilities referred to in paragraph (a) or (b) of this Section 10 (i) in such proportion as is appropriate to reflect the relative benefits received by each indemnifying party from the offering of the Shares or (ii) if the allocation provided by clause (i) above is not permitted by applicable law, in such proportion as is appropriate to reflect not only the relative benefits referred to in clause (i) above but also the relative fault of each indemnifying party in connection with the statements or omissions that resulted in such losses, claims, damages or liabilities, or actions in respect thereof, as well as any other relevant equitable considerations. The relative benefits received by the Company and the Selling Securityholders, on the one hand, and the Underwriters, on the other, shall be deemed to be in the same respective proportions as the total net proceeds from the offering of the Shares received by the Company and the Selling Securityholders and the total underwriting discount received by the Underwriters, as set forth in the table on the cover page of the Prospectus, bear to the aggregate public offering price of the Shares. Relative fault shall be determined by reference to, among other things, whether the untrue or alleged untrue statement of a material fact or the omission or alleged omission to state a material fact relates to information supplied by each indemnifying party and the parties' relative intent, knowledge, access to information and opportunity to correct or prevent such untrue statement or omission.

The parties agree that it would not be just and equitable if contributions pursuant to this paragraph (d) were to be determined by pro rata allocation (even if the Underwriters were treated as one entity for such purpose) or by any other method of allocation which does not take into account the equitable considerations referred to in the first sentence of this paragraph

(d). The amount paid by an indemnified party as a result of the losses, claims, damages or liabilities, or actions in respect thereof, referred to in the first sentence of this paragraph (d) shall be deemed to include any legal or other expenses reasonably incurred by such indemnified party in connection with investigation, preparation to defend or defense against any action or claim which is the subject of this paragraph (d). Notwithstanding the provisions of this paragraph (d), no Underwriter shall be required to contribute any amount in excess of the underwriting discount applicable to the Shares purchased by such Underwriter. No person guilty of fraudulent misrepresentation (within the meaning of Section 11(f) of the Act) shall be entitled to contribution from any person who was not guilty of such fraudulent misrepresentation. The Underwriters' obligations in this paragraph (d) to contribute are several in proportion to their respective underwriting obligations and not joint.

Each party entitled to contribution agrees that upon the service of a summons or other initial legal process upon it in any action instituted against it in respect of which contribution may be sought, it will promptly give written notice of such service to the party or parties from whom contribution may be sought, but the omission so to notify such party or parties of any such service shall

not relieve the party from whom contribution may be sought from any obligation it may have hereunder or otherwise (except as specifically provided in paragraph (c) of this Section 10).

(e) Neither Company nor the Selling Securityholders will, without the prior written consent of each Underwriter, settle or compromise or consent to the entry of any judgment in any pending or threatened claim, action, suit or proceeding in respect of which indemnification may be sought hereunder (whether or not such Underwriter or any person who controls such Underwriter within the meaning of Section 15 of the Act or Section 20 of the Exchange Act is a party to such claim, action, suit or proceeding) unless such settlement, compromise or consent includes an unconditional release of such Underwriter and each such controlling person from all liability arising out of such claim, action, suit or proceeding.

(f) The parties to this Agreement hereby acknowledge that they are sophisticated business persons who were represented by counsel during the negotiations regarding the provisions hereof, including without limitation the provisions of this Section 10 and are fully informed regarding said provisions. They further acknowledge that the provisions of this Section 10 fairly allocate the risks in light of the ability of the parties to investigate the Company and its business in order to assure that adequate disclosure is made in the Registration Statement and Prospectus as required by the Act and the Exchange Act.

(g) The liability of each Selling Securityholder under such Selling Securityholder's representations and warranties contained in Section 2 hereof and under the indemnity and reimbursement agreements contained in the provisions of this Section 10 and Section 12 hereof shall (i) be limited to an amount equal to the net proceeds of the Shares sold by such Selling Securityholder to the Underwriters and, (ii) no Selling Securityholder shall be required to provide indemnification to an Underwriter until such person seeking indemnification shall have first made a demand on the Company with respect to such loss, claim damage, liability or expense, and the Company shall have either rejected such demand or failed to make such requested payment within 60 days after receipt of such demand. The Company and the Selling Securityholders may agree, as among themselves and without limiting the rights of the Underwriters under this Agreement, as to the respective amounts of such liability for which they each shall be responsible.

11. TERMINATION. This Agreement may be terminated by you at any time on or prior to the Closing Date or on or prior to any later Option Closing Date, as the case may be, by giving written notice to the Company and the Selling Securityholders (i) if the Company or the Selling Securityholders shall have failed, refused or been unable, at or prior to the Closing Date, or on or prior to any later Option Closing Date, as the case may be, to perform any agreement on its part to be performed, or because any other condition of the Underwriters' obligations hereunder required to be fulfilled by the Company or the Selling Securityholders is not fulfilled, or (ii) if trading on the New York Stock Exchange, the American Stock Exchange or the Nasdaq National Market shall have been suspended, or minimum or maximum prices for trading shall have been fixed, or maximum ranges for prices for securities shall have been required on the New York Stock Exchange, the American Stock Exchange or the Nasdaq National Market, by such trading exchanges or by order of the Commission or any other

governmental authority having jurisdiction, or if a banking moratorium shall have been declared by federal or New York authorities, or (iii) if the Company shall have sustained a loss by strike, fire, flood, accident or other calamity of such character as to have a Material Adverse Effect regardless of whether or not such loss shall have been insured, or (iv) if there shall have been a material adverse change in the general political or economic conditions or financial markets in the United States as in the judgment of the Representatives makes it inadvisable or impracticable to proceed with the offering, sale and delivery of the Shares, or (v) if there shall have occurred an outbreak or escalation of hostilities between the United States and any foreign power or of any other insurrection or armed conflict involving the United States or other national or international calamity, hostilities or crisis or the declaration by the United States of a national emergency which, in the judgment of the Representatives, adversely affects the marketability of the Shares, or (vi) if since the respective dates as of which information is given in the Registration Statement and the Prospectus, there shall have occurred any material adverse change or any development involving a prospective material adverse change in or affecting the condition, financial or otherwise, of the Company or the business affairs, management, or business prospects of the Company, whether or not arising in the ordinary course of business, or (vii) if any foreign, federal or state statute, regulation, rule or order of any court or other governmental authority shall have been enacted, published, decreed or otherwise promulgated which in the judgment of the Representatives materially and adversely affects or will materially and adversely affect the business or operations of the Company, or trading in the Common Stock shall have been suspended, or (viii) there shall have occurred a material adverse decline in the value of securities generally on the New York Stock Exchange, the American Stock Exchange or the Nasdaq National Market or (ix) action shall be taken by any foreign, federal, state or local government or agency in respect of its monetary or fiscal affairs which, in the judgment of the Representatives, has a material adverse effect on the securities markets in the United States. If this Agreement shall be terminated in accordance with this Section 11, there shall be no liability of the Company or the Selling Securityholders to the Underwriters and no liability of the Underwriters to the Company or the Selling Securityholders; provided, however, that in the event of any such termination the Company and the Selling Securityholders agree to indemnify and hold harmless the Underwriters from all costs or expenses incident to the performance of the obligations of the Company and the Selling Securityholders under this Agreement, including all costs and expenses referred to in Section 7.

If you elect to terminate this Agreement as provided in this Section 11, the Company shall be notified promptly by you by telephone, telecopy or telegram, confirmed by letter.

## 12. REIMBURSEMENT OF CERTAIN EXPENSES.

(a) In addition to their other obligations under Section 10 of this Agreement (and subject, in the case of Selling Securityholders, to the provisions of paragraph (g) of Section 10), the Company and the Selling Securityholders hereby jointly and severally agree to reimburse on a quarterly basis the Underwriters for all reasonable legal and other expenses incurred in connection with investigating or defending any claim, action, investigation, inquiry or other proceeding arising out of or based upon any statement or omission, or any alleged statement or omission, described in paragraph (a) of

Section 10 of this Agreement, notwithstanding the absence of a judicial determination as to the propriety and enforceability of the obligations under this Section 12 and the possibility that such

payments might later be held to be improper; provided, however, that (i) to the extent any such payment is ultimately held to be improper, the persons receiving such payments shall promptly refund them and (ii) such persons shall provide to the Company, upon request, reasonable assurances of their ability to effect any refund, when and if due.

(b) In addition to their other obligations under Section 10 of this Agreement, the Underwriters hereby agree to reimburse on a quarterly basis the Company and the Selling Securityholders for all reasonable legal and other expenses incurred in connection with investigating or defending any claim, action, investigation, inquiry or other proceeding arising out of or based upon any statement or omission, or any alleged statement or omission, described in paragraph (b) of Section 10 of this Agreement, notwithstanding the absence of a judicial determination as to the propriety and enforceability of the obligations under this Section 12 and the possibility that such payments might later be held to be improper; provided, however, that (i) to the extent any such payment is ultimately held to be improper, the Company and the Selling Securityholders shall promptly refund it and (ii) the Company and the Selling Securityholders shall provide to the Underwriter, upon request, reasonable assurances of its ability to effect any refund, when and if due.

13. **PERSONS ENTITLED TO BENEFIT OF AGREEMENT.** This Agreement shall inure to the benefit of the Company, the Selling Securityholders and the several Underwriters and, with respect to the provisions of Section 10 hereof, the several parties (in addition to the Company, the Selling Securityholders and the several Underwriters) indemnified under the provisions of said Section 10, and their respective personal representatives, successors and assigns. Nothing in this Agreement is intended or shall be construed to give to any other person, firm or corporation any legal or equitable remedy or claim under or in respect of this Agreement or any provision herein contained. The term "successors and assigns" as herein used shall not include any purchaser, as such purchaser, of any of the Shares from any of the several Underwriters.

14. **NOTICES.** Except as otherwise provided herein, all communications hereunder shall be in writing or by telegraph and, if to the Underwriters, shall be mailed, telegraphed or delivered to UBS Securities LLC, 299 Park Avenue, New York, NY 10171, Attention: Mr. Richard Messina; and if to the Company or to the Selling Securityholders, shall be mailed, telegraphed or delivered to it at its office, 1625 Sharp Point Drive, Fort Collins, Colorado 80525 Attention: Richard P. Beck. All notices given by telegraph shall be promptly confirmed by letter.

15. **MISCELLANEOUS.** The reimbursement, indemnification and contribution agreements contained in this Agreement and the representations, warranties and covenants in this Agreement shall remain in full force and effect regardless of (i) any investigation made by or on behalf of any Underwriter or controlling person thereof, or by or on behalf of the Company or the Selling Securityholders or the Company's respective directors or officers, and (ii) delivery of and payment for the Shares under this Agreement.

This Agreement may be executed in two or more counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument.

You will act as Representatives of the several Underwriters in all dealings with the Company under this Agreement, and any action under or in respect of this Agreement taken by you jointly or by UBS Securities LLC, as Representatives, will be binding upon all of the Underwriters.

This Agreement shall be governed by, and construed in accordance with, the laws of the State of New York.

**[INTENTIONALLY LEFT BLANK]**

Please sign and return to the Company and to the Selling Securityholders in care of the Company the enclosed duplicates of this letter, whereupon this letter will become a binding agreement among the Company, the Selling Securityholders and the several Underwriters in accordance with its terms.

Very truly yours,

**ADVANCED ENERGY INDUSTRIES, INC.**

By:

Douglas S. Schatz, President and Chief Executive Officer

**SELLING SECURITYHOLDERS**

The Selling Securityholders named in  
Schedule B to this Agreement

By:

**Attorney-In-Fact**

The foregoing Agreement is hereby confirmed and accepted as of the date first above written.

**UBS SECURITIES LLC  
LEHMAN BROTHERS, INC.  
PAINE WEBBER INCORPORATED  
ROBERTSON STEPHENS & COMPANY LLC**

By: UBS SECURITIES LLC

By:  
Title:

Acting on behalf of the several  
Underwriters, including themselves,  
named on SCHEDULE A hereto.

**[LETTERHEAD OF THELEN, MARRIN, JOHNSON & BRIDGES LLP]**

August 20, 1997

Advanced Energy Industries, Inc.  
1625 Sharp Point Drive  
Fort Collins, CO 80525

Dear Sirs:

We have acted as counsel for Advanced Energy Industries, Inc., a Delaware corporation (the "Company"), in connection with the preparation and filing with the Securities and Exchange Commission (the "Commission") of a Registration Statement on Form S-3 (as same may be amended or supplemented from time to time, the "Registration Statement"). The Registration Statement relates to the offer and sale by the Company and certain stockholders of the Company (the "Selling Stockholders") of up to 2,875,000 shares of the Company's Common Stock, par value of \$0.001 per share (collectively, the "Shares"). We understand that up to 1,150,000 of the Shares are being offered and sold by the Company and that up to 1,725,000 of the Shares are being offered and sold by the Selling Stockholders. We further understand that 31,500 of the Shares being offered and sold by the Selling Stockholders are not currently outstanding, but will be acquired by certain Selling Stockholders, pursuant to the exercise of currently outstanding options, prior to such Selling Stockholders' sales of such Shares.

In this capacity, we have examined the Registration Statement, the Company's Certificate of Incorporation and Bylaws, as in effect as of the date hereof, and such other documents, records, certificates of officers of the Company, certificates of public officials and other instruments as we have deemed necessary or appropriate under the circumstances for purpose of giving the opinion expressed herein. In making such examinations, we have assumed (i) the genuineness of all signatures; (ii) the authenticity of all documents submitted to us as originals; (iii) the conformity to original documents of all documents submitted to us as certified copies or photocopies; and (iv) the identity and capacity of all individuals acting or purporting to act as public officials.

Based on the foregoing, we are of the opinion that the Shares, when issued and sold in accordance with the Registration Statement and the related Prospectus, will be validly issued, fully paid and nonassessable.

We are members of the bar of the State of California and we express no opinion as to the laws of any state or jurisdiction other than the State of California, the United States and the General Corporation Law of the State of Delaware.

We hereby consent to the filing of this opinion with the Commission as an exhibit to the Registration Statement. We further consent to the use of our name under the heading "Legal Matters" in the Prospectus filed with the Commission as a part of the Registration Statement.

Very truly yours,

*/s/ Thelen, Marrin, Johnson & Bridges LLP*

*THELEN, MARRIN, JOHNSON & BRIDGES LLP*

**JLM/DM**

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**ADVANCED ENERGY INDUSTRIES, INC.**

**LOAN AND SECURITY AGREEMENT**

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This LOAN AGREEMENT is entered into as of August 15, 1997 by and among SILICON VALLEY BANK ("SVB") as Servicing Agent and a Bank and BANK OF HAWAII ("BoFH;" SVB and BoFH are referred to individually herein as a "Bank," and collectively as the "Banks") and ADVANCED ENERGY INDUSTRIES, INC., a Delaware corporation ("AEI") and Tower Electronics Inc., a Minnesota corporation ("Tower") (individually a "Borrower" and collectively, the "Borrowers").

## **RECITALS**

Borrowers wish to obtain credit from time to time from Banks, and Banks desire to advance credit to Borrowers. This Agreement sets forth the terms on which Banks will lend to Borrowers, and Borrowers will repay the advances to Banks.

## **AGREEMENT**

The parties agree as follows:

### **1. DEFINITIONS AND CONSTRUCTION**

1.1 DEFINITIONS. As used in this Agreement, the following terms shall have the following definitions:

"Acquisition" means the acquisition by AEI of all of the issued and outstanding capital stock of Tower pursuant to that certain Stock Purchase Agreement dated as of August 15, 1997.

"Advance" or "Advances" means a cash advance under the Revolving Facility.

"Affiliate" means, with respect to any Person, any Person that owns or controls directly or indirectly such Person, any Person that controls or is controlled by or is under common control with such Person, and each of such Person's senior executive officers, directors, and partners.

"Bank Expenses" means all: reasonable costs or expenses (including reasonable attorneys' fees and expenses) incurred in connection with the preparation, negotiation, administration, and enforcement of the Loan Documents; and each Bank's reasonable attorneys' fees and expenses incurred in amending, enforcing or defending the Loan Documents, whether or not suit is brought.

"Borrower's Books" means all of each Borrower's books and records relating to its property.

"Business Day" means a day of the year (a) that is not a Saturday, Sunday or other day on which banks in the States of California or Hawaii or the City of London are authorized or required to close and (b) on which dealings are carried on in the interbank market in which Bank customarily participates and, (c) with respect to Advances and payments in an Optional Currency or any requests or notices related thereto, that is not a day on which the BoFH branch or other banks in the country of such Optional Currency are authorized or required to close.

"Closing Date" means the date of this Agreement.

"Code" means the California Uniform Commercial Code.

"Collateral" means the property described on attached EXHIBIT A.

"Committed Line" means Ten Million Dollars (\$10,000,000).

"Contingent Obligation" means, as applied to any Person, any direct or indirect liability, contingent or otherwise, of that Person with respect to (i) any indebtedness, lease, dividend, letter of credit or other obligation of another, including, without limitation, any such obligation directly or indirectly guaranteed, endorsed, co-made or discounted or sold with recourse by that Person, or in respect of which that Person is otherwise directly or indirectly liable; (ii) any obligations with respect to undrawn letters of credit issued for the account of that

Person; and (iii) all obligations arising under any interest rate, currency or commodity swap agreement, interest rate cap agreement, interest rate collar agreement, or other agreement or arrangement designated to protect a Person against fluctuation in interest rates, currency exchange rates or commodity prices; provided, however, that the term "Contingent Obligation" shall not include endorsements for collection or deposit in the ordinary course of business. The amount of any Contingent Obligation shall be deemed to be an amount equal to the stated or determined amount of the primary obligation in respect of which such Contingent Obligation is made or, if not stated or determinable, the maximum reasonably anticipated liability in respect thereof as determined by such Person in good faith; provided, however, that such amount shall not in any event exceed the maximum amount of the obligations under the guarantee or other support arrangement.

"Credit Extension" mean an Advance, a Letter of Credit or a Foreign Exchange Contract.

"Current Liabilities" means, as of any applicable date, all amounts that should, in accordance with GAAP, be included as current liabilities on the consolidated balance sheet of Borrower and its Subsidiaries, excluding all outstanding Advances made under Section 2.1 hereof, but including all other Indebtedness that is payable upon demand or within one year from the date of determination thereof unless such Indebtedness is renewable or extendable at the option of Borrower or any Subsidiary to a date more than one year from the date of determination.

"Daily Balance" means the amount of the Obligations owed at the end of a given day.

"EBITDA" means, for any period, earnings before interest expense, taxes, depreciation and amortization.

"Equipment" means machinery, equipment, tenant improvements, furniture, fixtures, vehicles, tools, parts and attachments.

"Equivalent Amount" means the equivalent in United States Dollars of an Optional Currency, calculated at the spot rate for the purchase of such Optional Currency by BofH.

"ERISA" means the Employment Retirement Income Security Act of 1974, as amended, and the regulations thereunder.

"GAAP" means generally accepted accounting principles as in effect from time to time.

"Indebtedness" means (a) all indebtedness for borrowed money or the deferred purchase price of property or services, including without limitation reimbursement and other obligations with respect to surety bonds and letters of credit, (b) all obligations evidenced by notes, bonds, debentures or similar instruments, (c) all capital lease obligations and (d) all Contingent Obligations.

"Insolvency Proceeding" means any proceeding commenced by or against any person or entity under any provision of the United States Bankruptcy Code, as amended, or under any other bankruptcy or insolvency law, including assignments for the benefit of creditors, extension generally with all or substantially all creditors, or proceedings seeking general reorganization, arrangement, or other relief.

"Interest Period" means for each LIBOR Rate Advance, a period of approximately one, three or six months as Borrower may elect, PROVIDED that the last day of an Interest Period for a LIBOR Rate Advance shall be determined in accordance with the practices, of the LIBOR interbank market as from time to time in effect, PROVIDED, FURTHER, in all cases such period shall expire not later than the applicable Revolving Maturity Date.

"Inventory" means all present and future inventory in which Borrower has any interest, including merchandise, raw materials, parts, supplies, packing and shipping materials, work in process and finished products intended for sale or lease or to be furnished under a contract of service, of every kind and description now or at any time hereafter owned by or in the custody or possession, actual or constructive, of Borrower, including such inventory as is temporarily out of its custody or possession or in transit and including any returns upon any accounts or other proceeds, including insurance proceeds, resulting from the sale or disposition of any of the foregoing and any documents of title representing any of the above, and Borrower's Books relating to any of the foregoing.

"Investment" means any beneficial ownership of (including stock, partnership interest or other securities) any Person, or any loan, advance or capital contribution to any Person.

"IRC" means the Internal Revenue Code of 1986, as amended, and the regulations thereunder.

"Issuing Bank" means the Bank issuing a Letter of Credit pursuant to Section 2.1.1. SVB shall be the issuing bank, except that BofH shall be the Issuing Bank if (i) SVB is unable to issue a Letter of Credit or (ii) a Letter of Credit issued by SVB would require confirmation by another bank under circumstances in which a Letter of Credit issued by BofH would not require confirmation.

"Letter of Credit" means a Letter of Credit issued pursuant to Section 2.1.1.

"LIBOR Base Rate" means, for any Interest Period for a LIBOR Rate Advance, the rate of interest per annum determined by SVB to be the per annum rate of interest at which deposits in United States Dollars are offered to SVB in the London interbank market in which SVB customarily participates at 11:00 A.M. (local time in such interbank market) three (3) Business Days before the first day of such Interest Period for a period approximately equal to such Interest Period and in an amount approximately equal to the amount of such Advance.

"LIBOR Rate" shall mean, for any Interest Period for a LIBOR Rate Advance, a rate per annum (rounded upwards, if necessary, to the nearest 1/16 of 1%) equal to (i) the LIBOR Base Rate for such Interest Period divided by (ii) 1 minus the Reserve Requirement for such Interest Period.

"LIBOR Rate Advances" means any Advances made or a portion thereof on which interest is payable based on the LIBOR Rate in accordance with the terms hereof.

"Lien" means any mortgage, lien, deed of trust, security interest or other encumbrance.

"Loan Documents" means, collectively, this Agreement, any note or notes executed by Borrower, and any other agreement entered into between Borrower and Banks in connection with this Agreement, all as amended or extended from time to time.

"Material Adverse Effect" means a material adverse effect on (i) the business operations or financial condition of Borrower and its Subsidiaries taken as a whole or (ii) the ability of Borrowers, taken as a whole, to repay the Obligations.

"Maturity Date" means August 14, 2002.

"Negotiable Collateral" means all of Borrower's present and future letters of credit of which it is a beneficiary, notes, drafts, instruments, securities, documents of title, and chattel paper, and Borrower's Books relating to any of the foregoing.

"Obligations" means all debt, principal, interest, Bank Expenses and other amounts owed to the Banks by Borrower pursuant to this Agreement, whether absolute or contingent, due or to become due (including any interest accruing after the commencement of an Insolvency Proceeding and any interest that would have accrued but for the commencement of an Insolvency Proceeding), now existing or hereafter arising.

"Operating Loss" means an operating loss under GAAP, specifically excluding non-cash losses arising from business-combination activities.

"Optional Currency" means the lawful currency of Japan.

"Optional Currency Rate Advance" means an Advance in an Optional Currency, made pursuant to and in accordance with Section 2.1(c).

"Optional Currency Rate" means, with respect to Advances in Japanese Yen, the Japanese Short Term Prime Rate, as quoted by the office of BofH located in Japan.

"Optional Currency Rate Instruments" means the promissory notes and other agreements and instruments requested by Banks as a condition to making Optional Currency Rate Advances.

"Percentage Share" means, as to each Bank, the percentage calculated in accordance with Section 12.1 hereof.

"Periodic Payments" means all installments or similar recurring payments that Borrower may now or hereafter become obligated to pay to either Bank pursuant to the terms and provisions of any instrument, or agreement now or hereafter in existence between Borrower and such Bank.

"Permitted Indebtedness" means:

- (a) Indebtedness of Borrower in favor of Banks arising under this Agreement or any other Loan Document;
- (b) Subordinated Debt;
- (c) Capital leases or indebtedness incurred solely to purchase equipment, which is secured in accordance with clause (c) of "Permitted Liens" below and is not in excess of the lesser of the purchase price of such equipment or the fair market value of such equipment on the date of acquisition, provided the outstanding principal balance of such Indebtedness incurred in any fiscal year shall not exceed Two Million Five Hundred Thousand Dollars (\$2,500,000);
- (d) Indebtedness to trade creditors incurred in the ordinary course of business;
- (e) Indebtedness set forth on the Schedule;
- (f) Indebtedness of Borrower to any Subsidiary and Contingent Obligations of any Subsidiary with respect to obligations of Borrower (provided that the primary obligations are not prohibited hereby), and Indebtedness of any Subsidiary to any other Subsidiary and Contingent Obligations of any Subsidiary with respect to obligations of any other Subsidiary (provided that the primary obligations are not prohibited hereby), and Indebtedness consisting of Investments that are "Permitted Investments" under clause (l) of the definition of Permitted Investments;
- (g) Indebtedness secured by Permitted Liens;
- (h) Extensions, refinancings, modifications, amendments and restatements of any of items of Permitted Indebtedness (a), (b), (c), (e) and (g) above, PROVIDED that the principal amount thereof is not increased or the terms thereof are not modified to impose more burdensome terms upon Borrower or its Subsidiaries, as the case may be.

"Permitted Investment" means:

- (a) Investments existing on the Closing Date disclosed on the Schedule;
- (b) Investments made or obtained through either Bank that consist of (i) marketable direct obligations issued or unconditionally guaranteed by the United States of America or any agency or any State thereof maturing within one (1) year from the date of acquisition thereof, (ii) commercial paper maturing no more than one (1) year from the date of creation thereof and currently having the highest rating obtainable from either Standard & Poor's Corporation or Moody's Investors Service, Inc., (iii) certificates of deposit maturing no more than one (1) year from the date of investment therein issued by either Bank or (iv) that are permitted by Borrower's investment policy, as amended from time to time by its board of directors, provided that such investment policy (and any such amendment thereto) has been approved by the Banks, which approval shall not be unreasonably withheld; and
- (c) Investments made in connection with the merger or consolidation with another Person or the acquisition of all or substantially all of the capital stock or property of another Person where the sole consideration paid by Borrower or any Subsidiary consists of Borrower's equity securities and cash and the aggregate value of such equity securities and cash paid after the date hereof does not exceed Fifteen Percent (15%) of Borrower's Tangible Net Worth immediately prior to the date such Investment is made.

"Permitted Liens" means the following:

(a) Any liens existing as of the date hereof and disclosed on the Schedule;

(b) Liens for taxes, fees, assessments or other governmental charges or levies, either not delinquent or being contested in good faith by appropriate proceedings, PROVIDED the same have no priority over any of Banks' security interests;

(c) Liens (i) upon or in any equipment acquired by Borrower or any of its Subsidiaries after the date hereof to secure the purchase price of such equipment or indebtedness incurred solely for the purpose of financing the acquisition of such equipment, or (ii) existing on such equipment at the time of its acquisition, PROVIDED that the Lien is confined solely to the property so acquired and improvements thereon, and the proceeds of such equipment;

(d) Easements, reservations, rights-of-way, restrictions, minor defects or irregularities in title and other similar charges or encumbrances affecting real property not constituting a Material Adverse Effect;

(e) Liens incurred in connection with the extension, renewal or refinancing of the indebtedness secured by Liens of the type described in clauses (a), (c), and (d) above, PROVIDED that any extension, renewal or replacement Lien shall be limited to the property encumbered by the existing Lien and the principal amount of the indebtedness being extended, renewed or refinanced does not increase.

"Person" means any individual, sole proprietorship, partnership, joint venture, trust, unincorporated organization, association, corporation, institution, public benefit corporation, firm, joint stock company, estate, entity or governmental agency.

"Prime Rate" means the variable rate of interest, per annum, most recently announced by SVB as its "prime rate," or BofH as its "base rate," as applicable to the Advances made hereunder by each such Bank, whether or not such announced rate is the lowest rate available from such Bank.

"Prime Rate Advances" means any Advances made or a portion thereof on which interest is payable based on the Prime Rate in accordance with the terms hereof.

"Quick Assets" means, at any date as of which the amount thereof shall be determined, the consolidated cash, cash-equivalents, accounts receivable and investments, with maturities not to exceed 90 days, of Borrower determined in accordance with GAAP.

"Regulatory Change" means, with respect to Bank, any change on or after the date of this Agreement in United States federal, state or foreign laws or regulations, including Regulation D, or the adoption or making on or after such date of any written interpretations, directives or requests applying to a class of lenders including Bank of or under any United States federal or state, or any foreign, laws or regulations (whether or not having the force of law) by any court or governmental or monetary authority charged with the interpretation or administration thereof.

"Reserve Requirement" means, for any Interest Period, the average maximum rate at which reserves (including any marginal, supplemental or emergency reserves) are required to be maintained during such Interest Period under Regulation D against "Eurocurrency liabilities" (as such term is used in Regulation D) by member banks of the Federal Reserve System. Without limiting the effect of the foregoing, the Reserve Requirement shall reflect any other reserves required to be maintained by Bank by reason of any Regulatory Change against (i) any category of liabilities which includes deposits by reference to which the LIBOR Rate is to be determined as provided in the definition of "LIBOR Base Rate" or (ii) any category of extensions of credit or other assets which include Advances.

"Responsible Officer" means each of the Chief Executive Officer, the Chief Financial Officer, the Treasurer and the Controller of AEI.

"Revolving Facility" means the facility under which a Borrower may request Bank to issue cash advances, as specified in Section 2.1 hereof.

"Revolving Maturity Date" means the day before the second anniversary of the Closing Date.

"Schedule" means the schedule of exceptions attached hereto.

"Servicing Agent" means SVB or such entity as may succeed to such position.

"Shares" means the shares of capital stock of Tower.

"Subordinated Debt" means any debt incurred by a Borrower that is subordinated to the Obligations under this Agreement on terms reasonably acceptable to Banks.

"Subsidiary" means any corporation or partnership in which

(i) any general partnership interest or (ii) more than 50% of the stock of which by the terms thereof ordinary voting power to elect the Board of Directors, managers or trustees of the entity shall, at the time as of which any determination is being made, is owned by Borrower, either directly or through an Affiliate.

"Tangible Net Worth" means at any date as of which the amount thereof shall be determined, the consolidated total assets of Borrowers MINUS, without duplication, (i) the sum of any amounts attributable to (a) goodwill, (b) intangible items such as unamortized debt discount and expense, patents, trade and service marks and names, copyrights and research and development expenses except prepaid expenses, and (c) all reserves not already deducted from assets, AND (ii) Total Liabilities.

"Total Liabilities" means at any date as of which the amount thereof shall be determined, all obligations that should, in accordance with GAAP be classified as liabilities on the consolidated balance sheet of Borrowers, including in any event all Indebtedness, but specifically excluding Subordinated Debt.

1.2 ACCOUNTING TERMS. All accounting terms not specifically defined herein shall be construed in accordance with GAAP and all calculations made hereunder shall be made in accordance with GAAP. When used herein, the terms "financial statements" shall include the notes and schedules thereto.

## 2. LOAN AND TERMS OF PAYMENT

2.1 ADVANCES. Subject to the terms and conditions of this Agreement, each Bank severally will make Advances to Borrowers as set forth herein. BofH shall make all of the Advances made in an Optional Currency. Each Bank severally will make its Percentage Share of Advances such that the aggregate amount of each Bank's Advances (including Optional Rate Advances) under this Agreement shall not exceed such Bank's Percentage Share of the Committed Line minus the face amount of the outstanding Letters of Credit minus the Foreign Exchange Reserve, provided that the aggregate outstanding Advances in an Optional Currency shall not exceed Five Million Dollars (\$5,000,000). Subject to the terms and conditions of this Agreement, amounts borrowed pursuant to this Section 2.1 may be repaid and reborrowed at any time prior to the Revolving Maturity Date.

(a) REQUESTS FOR ADVANCES. Whenever Borrowers desire an Advance, AEI will notify Servicing Agent by facsimile transmission or telephone no later than 11:00 a.m. California time on the Business Day that a Prime Rate Advance is to be made, noon California time on the Business Day that is two (2) Business Days in the country of the Optional Currency prior to the Business Day on which an Optional Currency Rate Advance is to be made, and noon California time on the Business Day that is three (3) Business Days prior to the Business Day on which a LIBOR Rate Advance is to be made. Servicing Agent shall promptly deliver such notice to the Banks. Each Bank may make Advances under this Agreement, based upon instructions received by Servicing Agent from a Responsible Officer, or without instructions if in Servicing Agent's discretion such Advances are necessary to meet Obligations under this Agreement which have become due and remain unpaid. Each Bank shall be entitled to rely on any notice by telephone or otherwise given by a person who Servicing Agent reasonably believes to be a Responsible Officer, and Borrowers shall indemnify and hold such Bank harmless for any damages or loss suffered by such Bank as a result of such reliance. Such Bank will wire or credit, as appropriate, the amount of Advances in United States Dollars made under this Section 2.1 to a Borrower's deposit account held by Servicing Agent, as specified by AEI, or, as to an Advance in an Optional Currency, to a Borrower's deposit account held by BofH in the respective branch office in the country of the Optional Currency.

Each such notice shall specify:

(i) the date such Advance is to be made, which shall be a Business Day;

- (ii) the amount of such Advance;
- (iii) whether such Advance is to be a Prime Rate Advance, an Optional Currency Rate Advance, or a LIBOR Rate Advance;
- (iv) if the Advance is to be a LIBOR Rate Advance, the Interest Period for such Advance; and
- (v) if the Advance is to be in an Optional Currency, the type of currency.

Each written request for an Advance, and each confirmation of a telephone request for such an Advance, shall be in the form of a Borrowing Certificate in the form of EXHIBIT B executed by AEI on behalf of Borrowers.

(b) **PRIME RATE ADVANCES.** Each Prime Rate Advance shall be in an amount not less than Twenty Five Thousand Dollars (\$25,000). The outstanding principal balance of each Prime Rate Advance shall bear interest until principal is due (computed daily on the basis of a 360 day year and actual days elapsed), at a rate per annum equal to the Prime Rate minus Three Quarters of One Percent (0.75%). Borrower shall pay the entire outstanding principal amount of each Prime Rate Advance on the Revolving Maturity Date.

(c) **OPTIONAL CURRENCY RATE ADVANCES.** Each Optional Currency Rate Advance shall be in an Equivalent Amount of not less than Fifty Thousand Dollars (\$50,000). The outstanding principal balance of each Optional Currency Rate Advance shall bear interest until principal is due (computed daily on the basis of a 360 day year and actual days elapsed or, where required by any law or is customary in the country of the Optional Currency, a 365 day year) at a rate per annum equal to the Optional Currency Rate plus 100 basis points for such Optional Currency Rate Advance. The Optional Currency Rate Advances shall be evidenced by this Agreement and by the Optional Currency Rate Instruments. Borrower shall pay the entire outstanding principal amount of each Optional Currency Rate Advance on the Revolving Maturity Date.

(d) **LIBOR RATE ADVANCES.** Each LIBOR Rate Advance shall be in an amount or an Equivalent Amount of not less than Five Hundred Thousand Dollars (\$500,000). The outstanding principal balance of each LIBOR Rate Advance shall bear interest until principal is due (computed daily on the basis of a 360 day year and actual days elapsed) at a rate per annum equal to the LIBOR Rate plus 175 basis points for such LIBOR Rate Advance. The entire outstanding principal amount of each LIBOR Rate Advance shall be due and payable on the last day of the LIBOR Rate Interest Period for such LIBOR Rate Advance and on the Revolving Maturity Date.

(e) **PREPAYMENT OF THE ADVANCES.** Borrowers may at any time prepay any Prime Rate Advance, any Optional Currency Rate Advance, or any LIBOR Rate Advance, in full or in part. Each partial prepayment for a LIBOR Rate Advance shall be in an amount not less than Two Hundred Fifty Thousand Dollars (\$250,000). Each prepayment shall be made upon the irrevocable written or telephone notice of Borrowers received by Servicing Agent not later than 10:00 a.m. California time on the date of the prepayment of a Prime Rate Advance, not less than two Business Days in the country of the Optional Currency prior to the date of the prepayment of an Optional Currency Rate Advance, and not less than three (3) Business Days prior to the date of the prepayment of a LIBOR Rate Advance. The notice of prepayment shall specify the date of the prepayment, the amount of the prepayment, and the Advance or Advances to be prepaid. Each prepayment of an Optional Currency Rate Advance for which the term and interest rate have been fixed or LIBOR Rate Advance shall be accompanied by the payment of accrued interest on the amount prepaid and any amount required by Section 2.12.

(f) **FEES.** Borrower shall pay Servicing Agent a facility fee of Twelve Thousand Five Hundred Dollars (\$12,500) on the Closing Date. On each anniversary of the Closing Date, Borrower shall pay SVB a non-usage fee equal to One Fourth of One Percent (0.25%) of the difference between the Committed Line and the average Daily Balance during the prior year.

(g) **TERM.** The Revolving Facility shall terminate on the Revolving Maturity Date, at which time all Advances under this Section 2.1 shall be immediately due and payable.

### 2.1.1 LETTERS OF CREDIT.

(a) At AEI's written request, Issuing Bank shall issue Letters of Credit for Borrowers' account. Each Bank severally agrees to participate in Letters of Credit, in accordance with such Bank's Percentage Share.

(b) Issuing Bank shall issue the Letter of Credit upon receipt of a Borrower's written request and Issuing Bank's standard form of application, stating (a) the date such Borrower wishes to receive the Letter of Credit (which shall be a Business Day); (b) the requested amount of such Letter of Credit; (c) the aggregate amount of all Advances and Letters of Credit then outstanding; (d) if appropriate, the conditions requested by Borrower under which the Letter of Credit may be drawn upon; and (e) any other information Issuing Bank might need to issue the Letter of Credit. Issuing Bank shall promptly notify all of the Banks upon receipt of a request for a Letter of Credit.

(c) The maximum aggregate obligation at any one time for undrawn and drawn but unreimbursed Letters of Credit shall be One Million Five Hundred Thousand Dollars (\$1,500,000). Each Letter of Credit shall be issued pursuant to the terms and conditions of this Agreement and of the Issuing Bank's standard form of application and security agreement for letters of credit. Each Letter of Credit shall (a) expire no later than the Revolving Maturity Date; and

(b) be otherwise in form and substance satisfactory to Issuing Bank. Upon issuing a Letter of Credit, the Issuing Bank shall immediately notify the other Bank of such issuance and shall, on a continuing basis, keep the other Bank informed of the drawn and undrawn but unreimbursed amount of each Letter of Credit for so long as such Letter of Credit is outstanding. Borrower shall pay Issuing Bank its standard fees on account of each Letter of Credit issued hereunder, which shall be shared by Banks in accordance with their agreement. On the day on which Issuing Bank honors any drawing made by the beneficiary of a Letter of Credit, Borrowers shall pay to Issuing Bank the full amount of the drawing so honored, or at Borrowers' option, shall treat the amount of such drawing as an Advance under Section 2.1. The obligation to reimburse Issuing Bank for the amount of such drawing is absolute, unconditional, and irrevocable.

(d) Borrowers may request that Issuing Bank issue a Letter of Credit payable in a currency other than United States Dollars. If a demand for payment is made under any such Letter of Credit, Issuing Bank shall treat such demand as an advance to Borrowers of the Equivalent Amount thereof. Upon the issuance of any Letter of Credit payable in a currency other than United States Dollars, Banks shall create a reserve under the Committed Line for letters of credit against fluctuations in currency exchange rates, in an amount equal to ten percent (10%) of the face amount of such Letter of Credit. The amount of such reserve may be amended by Banks from time to time to account for fluctuations in the exchange rate. The availability of funds under the Committed Line shall be reduced by the amount of such reserve for so long as such Letter of Credit remains outstanding.

### 2.2 FOREIGN EXCHANGE CONTRACT; FOREIGN EXCHANGE SETTLEMENTS.

(a) Subject to the terms of this Agreement, Borrowers may utilize up to Five Million Dollars (\$5,000,000) for Exchange Contracts, pursuant to which a Bank shall sell to or purchase from Borrower foreign currency on a spot or future basis. All Exchange Contracts must provide for delivery of settlement on or before the Maturity Date. The limit available at any time shall be reduced by the following amounts (the "Foreign Exchange Reserve") on each day (the "Determination Date"): (i) on all outstanding Exchange Contracts on which delivery is to be effected or settlement allowed more than two business days from the Determination Date, 10% of the gross amount of the Exchange Contracts. In lieu of the Foreign Exchange Reserve for 100% of the gross amount of any Exchange Contract, Borrowers may request that Banks treat such amount as an Advance under the Committed Line.

(b) Banks may, in their discretion, terminate the Exchange Contracts at any time (a) that an Event of Default occurs or (b) that there is no sufficient availability under the Committed Line and Borrower does not have available funds in its bank account to satisfy the Foreign Exchange Reserve. If Banks terminate the Exchange Contracts, and without limitation of any applicable indemnities, Borrowers shall reimburse Banks for any and all fees, costs and expenses relating thereto or arising in connection therewith.

(c) Borrowers shall not permit the total gross amount of all Exchange Contracts on which delivery is to be effected and settlement allowed in any two business day period to be more than Five Million Dollars (\$5,000,000) nor shall Borrowers permit the total gross amount of all Exchange Contracts to which a Borrower is a party, outstanding at any one time, to exceed Five Million Dollars (\$5,000,000).

(d) As a condition to requesting any Exchange Contracts, Borrowers shall execute all standard form applications and agreements of Banks in connection with the Exchange Contracts and, without limiting any of the terms of such applications and agreements, Borrowers will pay all standard fees and charges of Banks in connection with the Exchange Contracts.

## 2.3 ACQUISITION TERM FACILITY.

(a) **TERM ADVANCE.** Subject to and upon the terms and conditions of this Agreement, and provided that Borrowers are in compliance with this Agreement, Borrowers may make one request on or prior to August 19, 1997 for a Term Advance in an aggregate principal amount of up to Twelve Million Dollars (\$12,000,000).

(b) **PROCEDURE.** To request the Term Advance on a date other than the Closing Date, AEI shall complete, execute and deliver a Loan Payment Advance Request Form to Servicing Agent on the Business Day of the requested Term Advance.

(c) **INTEREST AND PRINCIPAL.** Interest shall accrue from the date of the Term Advance at a floating rate equal to the Prime Rate minus One Quarter of One Percent (0.25%) or a fixed rate equal to Two and One Half (2.5) percentage points above the yield of 60 month Treasury Notes as reported in the Western Edition of THE WALL STREET JOURNAL on the date that is one (1) Business Day before the effective date of the Term Advance. Borrowers shall give Servicing Agent written notice of their interest rate election at the time Borrowers request the Term Advance. If Servicing Agent does not timely receive such notice, then the applicable rate shall be the floating rate specified in the first sentence of this section. Notwithstanding the foregoing, beginning the fiscal quarter immediately following Borrowers' achieving two (2) consecutive fiscal quarters of Indebtedness to EBITDA of not more than 0.50 to 1.00, the floating interest rate shall be the Prime Rate minus One Half of One Percent (0.5%), and the fixed rate shall be Two and Thirty-five Hundredths

(2.35) percentage points above the yield of 60 month Treasury Notes in effect on the effective date of the Term Advance. Borrower shall repay the Term Advance in Twenty (20) equal quarterly installments, plus accrued interest, beginning the first day of the fiscal quarter following the fiscal quarter in which the Term Advance was made, and continuing on the first day of each fiscal quarter thereafter. The Term Facility shall terminate on the Term Maturity Date, at which time all Obligations owing under this Section 2.3, and all other amounts under this Agreement, shall be immediately due and payable.

(d) **PREPAYMENT.** Borrower may prepay all or any portion of the Term Advance, provided that any prepayment made before the first anniversary of the Closing Date shall be accompanied by a prepayment fee equal to Three Quarters of One Percent (0.75%) of the amount of the prepayment, any prepayment made after the first anniversary but before the second anniversary of the Closing Date shall be accompanied by a prepayment fee equal to One Half of One Percent (0.50%) of the amount of the prepayment, and any prepayment made after the second anniversary but before the third anniversary of the Closing Date shall be accompanied by a prepayment fee equal to One Quarter of One Percent (0.25%) of the amount of the prepayment.

(e) **CASH FLOW RECAPTURE.** Beginning December 31, 1997, and continuing on the last day of each of Borrower's fiscal years, Borrower shall make a mandatory prepayment on account of the Term Advance equal to the lesser of (i) the amount by which EBITDA for such fiscal year exceeded Twenty Million Dollars (\$20,000,000) or (ii) Three Million Dollars (\$3,000,000) per year. Payments made under this section shall be applied to principal installments in the reverse order of maturity. Each such payment shall be made by not later than April 30 for the prior fiscal year.

(f) **FEE.** Borrower shall pay Servicing Agent a fee equal to Sixty Thousand Dollars (\$60,000) on the Closing Date on account of the Acquisition Term Facility.

## 2.4 EQUIPMENT ADVANCES.

(a) Subject to and upon the terms and conditions of this Agreement, at any time from the date hereof through August 14, 1998, Banks will make advances (each an "Equipment Advance" and, collectively, the "Equipment Advances") to Borrower in an aggregate outstanding amount not to exceed Four Million Dollars (\$4,000,000). To evidence the Equipment Advance or Equipment Advances, Borrower shall deliver to Servicing Agent, at the time of each Equipment Advance request, an invoice for the equipment to be purchased. The Equipment Advances shall be used only to purchase or refinance Equipment approved from time to time by

Banks that was purchased in any case on or after ninety (90) days prior to the Closing Date and shall not exceed one hundred percent (100%) of the invoice amount of such Equipment, excluding taxes, shipping, warranty charges, freight discounts and installation expense. Each Equipment Advance must be in a minimum amount of One Hundred Thousand Dollars (\$100,000).

(b) Interest shall accrue from the date of each Equipment Advance through August 14, 1998, at a floating rate equal to the Prime Rate minus One Half of One Percent (0.5%), and shall be payable monthly for each month through August 14, 1998. Any Equipment Advances that are outstanding on such date will be payable in sixteen (16) equal quarterly installments of principal, beginning on September 15, 1998, and continuing on the fifteenth calendar day preceding the last day of each fiscal quarter thereafter through August 14, 2002. Interest thereon shall be payable monthly, beginning September 15, 1998, and continuing on the fifteenth calendar day of each month until the Equipment Advances have been paid in full. The Equipment Advances that are outstanding on August 14, 1998 shall bear interest at a floating rate equal to the Prime Rate minus One Half of One Percent (0.5%); provided Borrower shall have a one-time option, on August 14, 1998 to select a fixed rate of interest equal to Two and One Half (2.50) percentage points above the yield of 48 month Treasury Notes as reported in the Western Edition of THE WALL STREET JOURNAL on August 13, 1998. If SVB does not timely receive written notice of Borrower's election of the fixed rate, the Equipment Advances shall bear interest at the floating rate specified in the first sentence of this section. Equipment Advances, once repaid, may not be reborrowed.

(c) When Borrower desires to obtain an Equipment Advance, Borrower shall notify Bank (which notice shall be irrevocable) by facsimile transmission to be received no later than 3:00 p.m. Pacific time three (3) Business Days before the day on which the Equipment Advance is to be made. Such notice shall be substantially in the form of EXHIBIT B. The notice shall be signed by a Responsible Officer or its designee and include a copy of the invoice and proof of payment for the Equipment to be financed.

(d) Borrower may prepay all or any portion of any Equipment Advance without penalty or premium, provided that any prepayment of an Equipment Advance bearing a fixed rate of interest shall be accompanied by a prepayment fee equal to the breakage costs advised by Banks at the time of such prepayment.

(e) Borrower shall pay Servicing Agent a fee equal to Ten Thousand Dollars (\$10,000) on account of the Equipment Facility.

## 2.5 EXISTING TERM LOAN.

Borrowers acknowledge that Borrowers owe a principal amount of One Million, One Hundred Twenty-Four Thousand Nine Hundred Ninety-Nine Dollars and 97/100 (\$1,124,999.97) to Banks on account of a term loan previously made to Borrower. Such term loan shall bear interest at a rate equal to the Prime Rate minus One Quarter of One Percent (0.25%). Borrower shall repay such term loan in Twenty Seven (27) equal monthly installments of principal, plus accrued interest, on the fifteenth day of each month, beginning August 15, 1997 and continuing through November 15, 1999, on which date the entire principal balance and all accrued but unpaid interest thereon shall be due and payable.

2.6 OVERADVANCES. If, at any time or for any reason, the sum of

(i) Advances owed by Borrowers to Banks pursuant to Section 2.1 of this Agreement plus (ii) the Foreign Exchange Reserve plus (iii) the face amount of any outstanding Letters of Credit is greater than the Committed Line, Borrowers shall immediately pay to SVB, in cash, the amount of such excess, for payment to the Banks according to their respective Percentage Shares. If, at any time or for any reason, the Equivalent Amount of Outstanding Optional Currency Advances exceeds Five Million Dollars (\$5,000,000), Borrowers shall immediately pay to BofH the amount of such excess.

## 2.7 INTEREST RATES, PAYMENTS, AND CALCULATIONS.

(a) INTEREST RATE. Except as set forth in Section 2.7(b), any Obligations shall bear interest, on the average Daily Balance, at the rates specified in the provisions relating to each facility under this Agreement.

(b) DEFAULT RATE. All Obligations shall bear interest, from and after the occurrence of an Event of Default, at a rate equal to the lesser of (i) three (3) percentage points above the interest rate applicable immediately prior to the occurrence of the Event of Default or (ii) the maximum rate permitted by law including, to the extent applicable to Optional Currency Advances, the law of the country of such Optional

## Currency.

(c) PAYMENTS. Accrued interest shall be due and payable in arrears upon the earlier of (i) the end of the Interest Period or (ii) any payment of principal or (iii) on the fourteenth day of each calendar month. With respect to repayments of Prime Rate Advances and LIBOR Rate Advances, Servicing Agent shall, at the option of each Bank, charge such interest, all Bank Expenses, and all Periodic Payments against a Borrower's deposit account held at SVB or against the Committed Line, in which case those amounts shall thereafter accrue interest at the rate then applicable hereunder. With respect to repayments of Optional Currency Advances, the branch of BofH in the country of the Optional Currency shall, at the option of each Bank, charge such interest and all periodic payments against a Borrower's deposit account in such country or against the Committed Line, in which case those amounts shall thereafter accrue interest at the rate then applicable hereunder. Any interest not paid when due shall be compounded by becoming a part of the Obligations, and such interest shall thereafter accrue interest at the rate then applicable hereunder.

(d) COMPUTATION. In the event the Prime Rate is changed from time to time hereafter, the applicable rate of interest hereunder shall be increased or decreased effective as of 12:01 a.m. on the day the Prime Rate is changed, by an amount equal to such change in the Prime Rate. All interest chargeable under the Loan Documents shall be computed on the basis of a three hundred sixty (360) day year for the actual number of days elapsed, except that interest chargeable on account of Optional Rate Currency Advances shall be computed on the basis of a three hundred sixty five (365) day year where such computation is required by any law or is customary in the country of the Optional Currency.

2.8 CREDITING PAYMENTS. Prior to the occurrence of an Event of Default, each Bank shall credit a wire transfer of funds, check, or other item of payment to such deposit account held at such Bank or Obligation as a Borrower specifies; provided that payments in an Optional Currency shall be made only at the branch of BofH in the country of such Optional Currency. After the occurrence and during the continuation of an Event of Default, the receipt by a Bank of any wire transfer of funds, check, or other item of payment shall be immediately applied to conditionally reduce Obligations, but shall not be considered a payment on account unless such payment is of immediately available federal funds or unless and until such check or other item of payment is honored when presented for payment. Notwithstanding anything to the contrary contained herein, any wire transfer or payment received by a Bank after noon California time (or, as to a payment in an Optional Currency, noon at the BofH branch office in the country of the Optional Currency) shall be deemed to have been received by such Bank as of the opening of business on the immediately following Business Day. Whenever any payment to a Bank under the Loan Documents would otherwise be due (except by reason of acceleration) on a date that is not a Business Day, such payment shall instead be due on the next Business Day, and additional fees or interest, as the case may be, shall accrue and be payable for the period of such extension.

2.9 BANK EXPENSES. Borrowers shall pay to Banks upon the date hereof, all Bank Expenses incurred through the date hereof, including reasonable attorneys' fees and expenses, and, within thirty (30) days of demand, other Bank Expenses as they become due from time to time hereunder.

2.10 ADDITIONAL COSTS. In case any law, regulation, treaty or official directive or the written interpretation or application thereof by any court or any governmental authority charged with the administration thereof or the compliance with any guideline or request of any central bank or other governmental authority (whether or not having the force of law):

(a) subjects any Bank to any tax with respect to payments of principal or interest or any other amounts payable hereunder by Borrower or otherwise with respect to the transactions contemplated hereby (except for taxes on the overall net income of such Bank imposed by the United States of America or any political subdivision thereof);

(b) imposes, modifies or deems applicable any deposit insurance, reserve, special deposit or similar requirement against assets held by, or deposits in or for the account of, or loans by, any Bank; or

(c) imposes upon any Bank any other material condition with respect to its performance under this Agreement,

and the result of any of the foregoing is to increase the cost to such Bank, reduce the income receivable by such Bank or impose any expense upon such Bank with respect to any loans, such Bank shall notify Borrowers thereof in writing. Borrowers shall pay to such Bank the amount of such increase in cost, reduction in income or additional

expense as and when such cost, reduction or expense is incurred or determined, upon presentation by such Bank of a statement of the amount and setting forth such Bank's calculation thereof, all in reasonable detail, which statement shall be deemed true and correct absent manifest error; PROVIDED, HOWEVER, that Borrowers shall not be liable for any such amount attributable to any period prior to 180 days prior to the date of such certificate.

## 2.11 CONVERSION/CONTINUATION OF ADVANCES.

(a) Borrowers may from time to time submit in writing a request that Prime Rate Advances be converted to LIBOR Rate Advances or that any existing LIBOR Rate Advances continue for an additional Interest Period. Such request shall specify the amount of the Prime Rate Advances which will constitute LIBOR Rate Advances (subject to the limits set forth below) and the Interest Period to be applicable to such LIBOR Rate Advances. Each written request for a conversion to a LIBOR Rate Advance or a continuation of a LIBOR Rate Advance shall be substantially in the form of an Optional Currency Rate or LIBOR Rate Conversion/Continuation Certificate as set forth on Exhibit B, which shall be duly executed by a Responsible Officer. Subject to the terms and conditions contained herein, three (3) Business Days after Servicing Agent's receipt of such a request from Borrowers, such Prime Rate Advances shall be converted to LIBOR Rate Advances or such LIBOR Rate Advances or an Optional Currency Rate Advance shall continue, as the case may be provided that:

(i) no Event of Default or event which with notice or passage of time or both would constitute an Event of Default exists;

(ii) no party hereto shall have sent any notice of termination of the Agreement;

(iii) Borrowers shall have complied with such customary procedures as Banks have established from time to time for Borrowers' requests for Optional Currency Rate Advances or LIBOR Rate Advances;

(iv) the amount of a Prime Rate Advance shall be \$25,000 or more, the amount of an Optional Currency Rate Advance shall be \$50,000 or more, and the amount of a LIBOR Rate Advance shall be \$500,000 or such greater amount which is an integral multiple of \$50,000; and

(v) Servicing Agent shall have determined that the Interest Period or LIBOR Rate or Optional Currency Rate is available to Banks as of the date of the request for such LIBOR Rate Advance or Optional Currency Rate Advance.

Any request by Borrowers to convert Prime Rate Advances to LIBOR Rate Advances or continue any existing LIBOR Rate Advances shall be irrevocable. Notwithstanding anything to the contrary contained herein, Banks shall not be required to purchase United States Dollar deposits in the London interbank market or other applicable LIBOR Rate market to fund any LIBOR Rate Advances, but the provisions hereof shall be deemed to apply as if Banks had purchased such deposits to fund the LIBOR Rate Advances.

(b) Any LIBOR Rate Advances shall automatically convert to Prime Rate Advances upon the last day of the applicable Interest Period, unless Banks have received and approved a complete and proper request to continue such LIBOR Rate Advance at least three (3) Business Days prior to such last day in accordance with the terms hereof. Any LIBOR Rate Advances or Optional Currency Rate Advances shall, at Banks' option, convert to Prime Rate Advances in the event that an Event of Default shall exist. Borrowers shall pay to Banks, upon demand by Banks (or Servicing Agent may, at its option, charge a Borrower's deposit account) any amounts required to compensate Banks for any loss (including loss of anticipated profits), cost or expense incurred by such person, as a result of the conversion of LIBOR Rate Advances or Optional Currency Rate Advances to Prime Rate Advances pursuant to any of the foregoing.

## 2.12 ADDITIONAL REQUIREMENTS/PROVISIONS REGARDING LIBOR RATE ADVANCES OR OPTIONAL CURRENCY RATE ADVANCES.

(a) If for any reason (including voluntary or mandatory prepayment or acceleration), Banks receive all or part of the principal amount of a LIBOR Rate Advance prior to the last day of the Interest Period for such LIBOR Rate Advance or the proposed term of any Optional Currency Rate Advance for which the term and the interest rate have been fixed, Borrowers shall on demand by Servicing Agent, pay Servicing

Agent the amount (if any) by which (i) the additional interest which would have been payable on the amount so received had it not been received until the last day of such Interest Period or term exceeds (ii) the interest which would have been recoverable by Banks by placing the amount so received on deposit in the certificate of deposit markets or the offshore currency interbank markets or United States Treasury investment products, as the case may be, for a period starting on the date on which it was so received and ending on the last day of such Interest Period or term at the interest rate determined by Servicing Agent in its reasonable discretion. Servicing Agent's determination as to such amount shall be conclusive absent manifest error.

(b) Borrowers shall pay to a Bank, upon demand by a Bank, from time to time such amounts as such Bank may reasonably determine to be necessary to compensate it for any costs incurred by such Bank that such Bank determines are attributable to its making or maintaining of any amount receivable by such Bank hereunder in respect of any Advances relating thereto (such increases in costs and reductions in amounts receivable being herein called "Additional Costs"), in each case resulting from any Regulatory Change which:

(i) changes the basis of taxation of any amounts payable to such Bank under this Agreement in respect of any Advances (other than changes which affect taxes measured by or imposed on the overall net income of such Bank by the jurisdiction in which such Bank has its principal office); or

(ii) imposes or modifies any reserve, special deposit or similar requirements relating to any extensions of credit or other assets of, or any deposits with or other liabilities of such Bank (including any Advances or any deposits referred to in the definition of "LIBOR Base Rate"); or

(iii) imposes any other material condition affecting this Agreement (or any of such extensions of credit or liabilities).

Such Bank will notify Borrowers of any event occurring after the date of the Agreement which will entitle such Bank to compensation pursuant to this section as promptly as practicable after it obtains knowledge thereof and determines to request such compensation. Such Bank will furnish Borrower with a statement setting forth the basis and amount of each request by such Bank for compensation under this Section 2.12. Determinations and allocations by a Bank for purposes of this Section 2.12 of the effect of any Regulatory Change on its costs of maintaining its obligations to make Advances or of making or maintaining Advances or on amounts receivable by it in respect of Advances, and of the additional amounts required to compensate such Bank in respect of any Additional Costs, shall be conclusive absent manifest error.

(c) Borrowers shall pay to a Bank, upon the request of such Bank, such amount or amounts as shall be sufficient (in the sole good faith opinion of such Bank) to compensate it for any reasonable loss, costs or expense incurred by it as a result of any failure by Borrower to borrow a LIBOR Rate Advance on the date for such borrowing specified in the relevant notice of borrowing hereunder.

(d) If a Bank shall determine that the adoption or implementation of any applicable law, rule, regulation or treaty regarding capital adequacy, or any change therein, or any change in the interpretation or administration thereof by any governmental authority, central bank or comparable agency charged with the interpretation or administration thereof, or compliance by Bank (or its applicable lending office) with any respect or directive regarding capital adequacy (whether or not having the force of law) of any such authority, central bank or comparable agency, has or would have the effect of reducing the rate of return on capital of such Bank or any person or entity controlling Bank (a "Parent") as a consequence of its obligations hereunder to a level below that which Bank (or its Parent) could have achieved but for such adoption, change or compliance (taking into consideration its policies with respect to capital adequacy) by an amount deemed by Bank to be material, then from time to time, within 15 days after demand by such Bank, Borrowers shall pay to Bank such additional amount or amounts as will compensate such Bank for such reduction. A statement of such Bank claiming compensation under this Section and setting forth the additional amount or amounts to be paid to it hereunder shall be conclusive absent manifest error.

(e) If at any time a Bank, in its sole and absolute discretion, determines that: (i) the amount of the LIBOR Rate Advances or Optional Currency Rate Advances for periods equal to the corresponding Interest Periods or any other period are not available to such Bank in the offshore currency interbank markets, or (ii) the LIBOR Rate or Optional Currency Rate does not accurately reflect the cost to Bank of lending the LIBOR Rate Advance or Optional Currency Rate Advance, then such Bank shall promptly give notice thereof to Borrowers, and upon the giving of such notice such Bank's obligation to make the LIBOR Rate Advances or Optional Currency Rate Advances shall terminate, unless Banks and Borrowers agree in writing to a different interest rate applicable to LIBOR Rate Advances or Optional Currency Rate Advances. If it shall become unlawful for a Bank to continue to fund or maintain any Advances, or to perform its obligations hereunder, upon demand by such Bank, Borrower shall prepay the Advances in full with accrued interest thereon and all other amounts payable by Borrower hereunder (including, without limitation, any amount payable in connection with such prepayment pursuant to Section 2.12(a)).

2.13 TERM. This Agreement shall become effective upon the date hereof and shall continue in full force and effect for a term ending on the Maturity Date. Notwithstanding the foregoing, Banks shall have the right to terminate any obligation to make Advances under this Agreement immediately and without notice upon the earlier of (i) the occurrence and during the continuance of an Event of Default or (ii) the Revolving Maturity Date. On the date of termination, all Obligations shall become immediately due and payable in cash or by wire transfer.

Upon satisfaction of all Obligations hereunder (including prepayment fees, if applicable) this Agreement shall, at Borrowers' request, terminate, and Banks shall execute such terminations of financing statements as Borrowers may reasonably request.

### 3. CONDITIONS OF LOANS

3.1 CONDITIONS PRECEDENT TO INITIAL ADVANCE. The obligation of either Bank to make the initial Advance is subject to the condition precedent that such Bank shall have received, in form and substance satisfactory to such Bank, the following:

- (a) this Agreement;
- (b) a certificate of the Secretary of each Borrower with respect to incumbency and resolutions authorizing the execution and delivery of this Agreement;
- (c) the Optional Currency Rate Instruments (with respect to Optional Currency Rate Advances only);
- (d) a financing statement (Form UCC-1) for each Borrower;
- (e) evidence of the consummation of the Acquisition;
- (f) solvency certificates;
- (g) an opinion of Borrower's counsel;
- (h) payment of the fees and Bank Expenses then due specified in Section 2.5 hereof, provided reasonably detailed invoices are received; and
- (i) such other documents, and completion of such other matters, as Banks may reasonably deem necessary or appropriate.

3.2 CONDITIONS PRECEDENT TO ALL ADVANCES. The obligation of any Bank to make each Advance, including the initial Advance, is further subject to the following conditions:

- (a) timely receipt by Servicing Agent of the Loan Payment/Advance Form as provided in Section 2.1;
- (b) the representations and warranties contained in Section 5 shall be true and correct in all material respects on and as of the date of such Loan Payment/Advance Form and on the effective date of each Advance as though made at and as of each such date (except to the extent they relate specifically to an

earlier date, in which case such representations and warranties shall continue to have been true and accurate as of such date), and no Event of Default shall have occurred and be continuing, or would result from such Advance; and

(c) as to each Optional Currency Rate Advance, all of the terms and conditions contained in the applicable Optional Currency Rate Instruments have been satisfied.

The making of each Advance shall be deemed to be a representation and warranty by each Borrower on the date of such Advance as to the accuracy of the facts referred to in this Section 3.2(b).

#### 4. CREATION OF SECURITY INTEREST

4.1 GRANT OF SECURITY INTEREST. Borrower grants and pledges to Banks a continuing security interest in all presently existing and hereafter acquired or arising Collateral in order to secure prompt repayment of any and all Obligations and in order to secure prompt performance by Borrower of each of its covenants and duties under the Loan Documents. Except as set forth in the Schedule, such security interest constitutes a valid, first priority security interest in the presently existing Collateral, and will constitute a valid, first priority security interest in Collateral acquired after the date hereof.

4.2 DELIVERY OF ADDITIONAL DOCUMENTATION REQUIRED. Borrower shall from time to time execute and deliver to Servicing Agent, at the request of Servicing Agent, all Negotiable Collateral, all financing statements and other documents that Servicing Agent may reasonably request, in form satisfactory to Servicing Agent, to perfect and continue perfected Banks' security interests in the Collateral and in order to fully consummate all of the transactions contemplated under the Loan Documents.

4.3 RIGHT TO INSPECT. Any Bank (through any of its officers, employees, or agents) shall have the right, upon reasonable prior notice, from time to time during Borrower's usual business hours, to inspect Borrower's Books and to make copies thereof and to check, test, and appraise the Collateral in order to verify Borrower's financial condition or the amount, condition of, or any other matter relating to, the Collateral.

#### 4.4 STOCK PLEDGE.

(a) AEI hereby pledges, assigns and delivers to Banks and grants to Banks a security interest in the Shares, together with all proceeds and substitutions thereof, all cash, stock and other moneys and property paid thereon, all rights to subscribe for securities declared or granted in connection therewith, and all other cash and noncash proceeds of the foregoing (all hereinafter called the "Pledged Collateral"), as security for the prompt performance of all of the Obligations.

(b) The term "Pledged Collateral" shall also include any securities, instruments or distributions of any kind issuable, issued or received by AEI upon conversion of, in respect of, or in exchange for any other Pledged Collateral, including, but not limited to, those arising from a stock dividend, stock split, reclassification, reorganization, merger, consolidation, sale of assets or other exchange of securities or any dividends or other distributions of any kind upon or with respect to the Pledged Collateral.

(c) The certificate or certificates for the securities included in the Pledged Collateral, accompanied by an instrument of assignment duly executed in blank by AEI, have been delivered by AEI to Bank. Tower shall cause its books to reflect the pledge of the Shares. Upon the occurrence of an Event of Default hereunder, Banks may effect the transfer of any securities included in the Pledged Collateral into the name of Banks and cause new certificates representing such securities to be issued in the name of Banks. AEI will execute and deliver such documents, and take or cause to be taken such actions, as Banks may reasonably request to perfect or continue the perfection of Banks' security interest in the Pledged Collateral.

(d) Unless an Event of Default (as defined below) shall have occurred and be continuing, AEI shall be entitled to exercise any voting rights with respect to the Pledged Collateral and to give consents, waivers and ratifications in respect thereof, PROVIDED that no vote shall be cast or consent, waiver or ratification given or action taken which would be inconsistent with any of the terms of this Agreement or which would constitute or create any violation of any of such terms. All such rights of AEI to vote and give consents, waiver and ratifications shall cease in case such an Event of Default hereunder shall occur and be continuing.

(e) AEI recognizes that Banks may be unable to effect a public sale of all or a part of the Pledged Collateral by reason of certain prohibitions contained in the Securities Act of 1933, as amended

("Act"), so that Banks may be compelled to resort to one or more private sales to a restricted group of purchasers who will be obliged to agree, among other things, to acquire the Pledged Collateral for their own account, for investment and without a view to the distribution or resale thereof. AEI understands that private sales so made may be at prices and on other terms less favorable to the seller than if the Pledged Collateral were sold at public sales, and agrees that Banks have no obligation to delay the sale of any of the Pledged Collateral for the period of time necessary (even if Banks would agree), to register such securities for sale under the Act. AEI agrees that private sales made under the foregoing circumstances shall be deemed to have been made in a commercially reasonable manner.

## 5. REPRESENTATIONS AND WARRANTIES

Each Borrower represents and warrants as follows:

**5.1 DUE ORGANIZATION AND QUALIFICATION.** Each Borrower is a corporation duly existing and in good standing under the laws of its state of incorporation and qualified and licensed to do business in, and is in good standing in, any state in which the conduct of its business or its ownership of property requires that it be so qualified except for states as to which any failure so to qualify would not have a Material Adverse Effect.

**5.2 DUE AUTHORIZATION; NO CONFLICT.** The execution, delivery, and performance of the Loan Documents are within each Borrower's powers, have been duly authorized, and are not in conflict with nor constitute a breach of any provision contained in such Borrower's Articles or Certificate of Incorporation or Bylaws, nor will they constitute an event of default under any material agreement to which such Borrower is a party or by which such Borrower is bound. No Borrower is in default under any agreement to which it is a party or by which it is bound, which default is reasonably likely to have a Material Adverse Effect.

**5.3 NO PRIOR ENCUMBRANCES.** Each Borrower has good and indefeasible title to the Collateral, free and clear of Liens, except for Permitted Liens.

**5.4 MERCHANTABLE INVENTORY.** All Inventory is in all material respects of good and marketable quality, free from all material defects.

**5.5 LITIGATION.** There are no actions or proceedings pending by or against any Borrower before any court or administrative agency in which an adverse decision is reasonably likely to have a Material Adverse Effect. No Borrower has knowledge of any such pending or threatened actions or proceedings.

**5.6 SHARES.** There are no subscriptions, warrants or other options exercisable with respect to the Shares. The Shares represent one hundred percent (100%) of the issued and outstanding stock of Tower, there are no agreements that require Tower to issue any additional shares, and there are no outstanding options to purchase such additional shares. The Shares have been duly authorized and validly issued, and are fully paid and non-assessable.

**5.7 NO MATERIAL ADVERSE CHANGE IN FINANCIAL STATEMENTS.** All consolidated financial statements related to Borrowers that have been delivered to Banks fairly present in all material respects the consolidated financial condition as of the date thereof of each such entity and consolidated results of operations for the period then ended of each such entity. There has not been a material adverse change in the consolidated financial condition of a Borrower since the date of the most recent of such financial statements submitted to Banks.

**5.8 SOLVENCY.** Each Borrower is solvent and able to pay its debts (including trade debts) as they mature.

**5.9 REGULATORY COMPLIANCE.** Each Borrower has met the minimum funding requirements of ERISA with respect to any employee benefit plans subject to ERISA. No Borrower has withdrawn from, and no termination or partial termination has occurred with respect to, any deferred compensation plan, and no Borrower has withdrawn from any multi-employer plan under ERISA. No event has occurred resulting from a Borrower's failure to comply with ERISA that is reasonably likely to result in such Borrower's incurring any liability that is reasonably likely to have a Material Adverse Effect. No Borrower is an "investment company" or a company "controlled" by an "investment company" within the meaning of the Investment Company Act of 1940. No Borrower is engaged principally, or as one of the important activities, in the business of extending credit for the purpose of purchasing or carrying margin stock (within the meaning of Regulations G, T and U of the Board of

Governors of the Federal Reserve System), and no part of the proceeds of the Advances will be used to purchase or carry any margin stock or for any purpose that would violate any of Regulations G, T and U. Each Borrower has complied with all the provisions of the Federal Fair Labor Standards Act. Each Borrower has complied with all laws and regulations to which it is subject, noncompliance with which is reasonably likely to have a Material Adverse Effect.

**5.10 ENVIRONMENTAL CONDITION.** None of any Borrower's properties or assets has ever been used by Borrower or any Subsidiary or, to each Borrower's knowledge, without any independent investigation, by previous owners or operators, in the disposal of, or to produce, store, handle, treat, release, or transport, any hazardous waste or hazardous substance other than in accordance with applicable law; to the best of Borrower's knowledge, none of Borrower's properties or assets has ever been designated or identified in any manner pursuant to any environmental protection statute as a hazardous waste or hazardous substance disposal site, or a candidate for closure pursuant to any environmental protection statute; no lien arising under any environmental protection statute has attached to any revenues or to any real or personal property owned by a Borrower or any Subsidiary; and neither Borrower nor any Subsidiary has received a summons, citation, notice, or directive from the Environmental Protection Agency or any other federal or state governmental agency concerning any action or omission by a Borrower or any Subsidiary resulting in the releasing, or otherwise disposing of hazardous waste or hazardous substances into the environment.

**5.11 TAXES.** Each Borrower and each Subsidiary have filed or caused to be filed all material tax returns required to be filed, and has paid, or have made adequate provision for the payment of, all taxes reflected therein.

**5.12 SUBSIDIARIES.** No Borrower owns any stock, partnership interest or other equity securities of any Person, except for Permitted Investments.

**5.13 GOVERNMENT CONSENTS.** Each Borrower has obtained all consents, approvals and authorizations of, made all declarations or filings with, and given all notices to, all governmental authorities that are necessary for the continued operation of their respective businesses as currently conducted.

**5.14 FULL DISCLOSURE.** The representations, warranties and other statements included in the documents, certificates and written statements furnished by each Borrower to either Bank prior to or as of the date of this Agreement for use in connection with the transactions contemplated by this Agreement, taken as a whole, do not contain any untrue statement of a material fact or omit to state a material fact (known to a Borrower, in the case of any document not furnished by it) necessary in order to make the statements contained herein or therein not misleading (it being recognized by Banks that the projections and forecasts provided by Borrowers are not to be viewed as facts and that actual results during the period or periods covered by any such projections and forecasts may differ from the projected or forecasted results).

## **6. AFFIRMATIVE COVENANTS**

Each Borrower covenants and agrees that, from and after the Closing Date until payment in full of all outstanding Obligations, and for so long as any Bank may have any commitment to make an Advance hereunder, such Borrower shall do all of the following:

**6.1 GOOD STANDING.** Maintain its and cause to be maintained each of its Subsidiaries' corporate existence and good standing in its jurisdiction of incorporation and maintain qualification in each jurisdiction in which the failure to so qualify is reasonably likely to have a Material Adverse Effect. Borrower shall maintain, and shall cause each of its Subsidiaries to maintain in force all licenses, approvals and agreements, the loss of which would have a Material Adverse Effect.

**6.2 GOVERNMENT COMPLIANCE.** Meet, and shall cause each Subsidiary to meet, the minimum funding requirements of ERISA with respect to any employee benefit plans subject to ERISA. Borrower shall comply, and shall cause each Subsidiary to comply, with all statutes, laws, ordinances and government rules and regulations to which it is subject, noncompliance with which could have a Material Adverse Effect or a material adverse effect on the Collateral or the priority of Banks' Lien on the Collateral.

**6.3 FINANCIAL STATEMENTS, REPORTS, CERTIFICATES.** AEI shall deliver to Banks: (a) upon the sooner of 45 days after the last day of each fiscal quarter as to Form 10-Q, and the sooner of 90 days after the last

day of each fiscal year as to Form 10-K, or within five (5) days upon becoming available, copies of all statements, reports and notices sent or made available generally by Borrower to its security holders or to any holders of Subordinated Debt and all reports on Form 10-K and 10-Q filed with the Securities and Exchange Commission; (b) promptly upon receipt of notice thereof, a report of any legal actions pending or threatened against Borrower or any Subsidiary that is reasonably likely to result in damages or costs to Borrower or any Subsidiary of Five Hundred Thousand Dollars (\$500,000) or which could have a Material Adverse Effect; and (c) such budgets, sales projections, operating plans or other financial information as Bank may reasonably request from time to time.

AEI shall deliver to Banks with the quarterly financial statements a Compliance Certificate signed by a Responsible Officer in substantially the form of EXHIBIT C hereto.

Any Bank shall have a right from time to time hereafter to audit Borrower's Accounts, provided that such audits will be conducted at Borrower's expense no more often than annually, unless an Event of Default has occurred and is continuing, with the auditing Bank to conduct all other audits at its own expense.

**6.4 INVENTORY; RETURNS.** Keep all Inventory in good and marketable condition, free from all material defects. Returns and allowances, if any, as between a Borrower and its account debtors shall be on the same basis and in accordance with the usual customary practices of Borrower, as they exist at the time of the execution and delivery of this Agreement. Borrower shall promptly notify Bank when any particular return, recovery, dispute or claim causes the aggregate returns for any fiscal month to exceed Ten Percent (10%) of the gross sales for such month.

**6.5 TAXES.** Make, and shall cause each Subsidiary to make, due and timely payment or deposit of all material federal, state, and local taxes, assessments, or contributions required of it by law, and will execute and deliver to Banks, on demand, appropriate certificates attesting to the payment or deposit thereof; and Borrower will make, and will cause each Subsidiary to make, timely payment or deposit of all material tax payments and withholding taxes required of it by applicable laws, including, but not limited to, those laws concerning F.I.C.A., F.U.T.A., state disability, and local, state, and federal income taxes, and will, upon request, furnish each Bank with proof satisfactory to such Bank indicating that Borrower or a Subsidiary has made such payments or deposits; provided that Borrower or a Subsidiary need not make any payment if the amount or validity of such payment is contested in good faith by appropriate proceedings and is reserved against (to the extent required by GAAP) by Borrower.

#### **6.6 INSURANCE.**

(a) Borrowers, at their expense, shall keep the Collateral insured against loss or damage by fire, theft, explosion, sprinklers, and all other hazards and risks, and in such amounts, as ordinarily insured against by other owners in similar businesses conducted in the locations where their respective businesses are conducted on the date hereof. Each Borrower shall also maintain insurance relating to Borrower's ownership and use of the Collateral in amounts and of a type that are customary to businesses similar to Borrower's.

(b) All such policies of insurance shall be in such form, with such companies, and in such amounts as are reasonably satisfactory to Banks. All such policies of property insurance shall contain a lender's loss payable endorsement, in a form satisfactory to Banks, showing Banks as additional loss payees thereof and all liability insurance policies shall show Banks as additional insureds, and shall specify that the insurer must give at least twenty (20) days notice to Bank before canceling its policy for any reason. At a Bank's request, Borrowers shall deliver to Banks certified copies of such policies of insurance and evidence of the payments of all premiums therefor. All proceeds payable under any such policy shall, at the option of Banks, be payable to Banks to be applied on account of the Obligations.

**6.7 QUICK RATIO.** Maintain, on a consolidated basis, as of the last day of each fiscal quarter, a ratio of Quick Assets to Current Liabilities of at least 1.25 to 1.00, increasing to not less than 1.50 to 1.00 as of December 31, 1997.

**6.8 DEBT-TANGIBLE NET WORTH RATIO.** Maintain, on a consolidated basis, as of the last day of each fiscal quarter, a ratio of Total Liabilities to Tangible Net Worth of not more than 1.00 to 1.00.

**6.9 TANGIBLE NET WORTH.** Maintain, on a consolidated basis, as of the last day of each fiscal quarter, a Tangible Net Worth of not less than Forty Million Dollars (\$40,000,000) plus Seventy Five Percent (75%)

of Borrowers' quarterly profits beginning December 31, 1997.

**6.10 PROFITABILITY.** On a consolidated basis, have a minimum net profit of One Dollar (\$1.00) for each fiscal quarter, provided Borrowers may suffer a loss in any one fiscal quarter per fiscal year of not more than Five Hundred Thousand Dollars (\$500,000). Non-cash charges incurred in the Acquisition shall not be included in the calculation of profitability for the fiscal quarter ending September 30, 1997.

**6.11 DEBT SERVICE COVERAGE.** Borrower shall maintain, as of the last day of each fiscal quarter, a Debt Service Coverage of at least 2.0 to 1.0 on a rolling two quarter basis, excluding capital expenditures. "Debt Service Coverage" means (a) the sum of (i) earnings after tax plus (ii) depreciation and amortization expense less (iii) capital expenditures, divided by (b) the current portion of total long term debt, excluding Advances under the Committed Line.

**6.12 FURTHER ASSURANCES.** At any time and from time to time Borrowers shall execute and deliver such further instruments and take such further action as may reasonably be requested by any Bank to effect the purposes of this Agreement.

## **7. NEGATIVE COVENANTS**

Each Borrower covenants and agrees that, from and after the Closing Date, so long as any credit hereunder shall be available and until payment in full of the outstanding Obligations or for so long as any Bank may have any commitment to make any Advances, such Borrower will not do any of the following:

**7.1 DISPOSITIONS.** Without the Banks' consent, which shall not be unreasonably withheld, convey, sell, lease, transfer or otherwise dispose of (collectively, a "Transfer"), or permit any of its Subsidiaries to Transfer, all or any part of its business or property, other than: (i) Transfers in the ordinary course of business; (ii) Transfers of non-exclusive licenses and similar arrangements for the use of the property of Borrower or its Subsidiaries; (iii) Transfers of worn-out or obsolete Equipment; or (iv) Transfers which constitute liquidation of Investments permitted under Section 7.7.

**7.2 CHANGE IN BUSINESS OR CONTROL.** Engage in any business, or permit any of its Subsidiaries to engage in any business, other than the businesses currently engaged in by Borrower and any business substantially similar or related thereto (or incidental thereto).

**7.3 MERGERS OR ACQUISITIONS.** Except in the ordinary course of Borrower's business, merge or consolidate, or permit any of its Subsidiaries to merge or consolidate, with or into any other business organization, or acquire, or permit any of its Subsidiaries to acquire, all or substantially all of the capital stock or property of another Person; provided that this Section 7.3 shall not apply to Permitted Investments or to transactions among a Borrower and its Subsidiaries in which such Borrower is the surviving entity or among its Subsidiaries.

**7.4 INDEBTEDNESS.** Create, incur, assume or be or remain liable with respect to any Indebtedness, or permit any Subsidiary so to do, other than Permitted Indebtedness.

**7.5 ENCUMBRANCES.** Create, incur, assume or suffer to exist any Lien with respect to any of its property, or assign or otherwise convey any right to receive income, including the sale of any Accounts, or permit any of its Subsidiaries so to do, except for Permitted Liens.

**7.6 DISTRIBUTIONS.** Pay any dividends or make any other distribution or payment on account of or in redemption, retirement or purchase of any capital stock, except for so long as an Event of Default has not occurred and is not continuing (and would not exist immediately after such payment), a Borrower may repurchase its stock from former employees of such Borrower in accordance with the terms of repurchase or similar agreements between such Borrower and such employees.

**7.7 INVESTMENTS.** Directly or indirectly acquire or own, or make any Investment in or to any Person, or permit any of its Subsidiaries so to do, other than Permitted Investments and except as made in the ordinary course of Borrower's business.

**7.8 TRANSACTIONS WITH AFFILIATES.** Directly or indirectly enter into or permit to exist any material transaction with any Affiliate of Borrower except for transactions that are in the ordinary course of

Borrower's business, upon fair and reasonable terms that are no less favorable to Borrower than would be obtained in an arm's length transaction with a nonaffiliated Person, and except for transactions with a Subsidiary that are upon fair and reasonable terms and transactions constituting Permitted Investments.

7.9 SUBORDINATED DEBT. Make any payment in respect of any Subordinated Debt, or permit any of its Subsidiaries to make any such payment, except in compliance with the terms of such Subordinated Debt, or amend any provision contained in any documentation relating to the Subordinated Debt without Banks' prior written consent.

7.10 COMPLIANCE. Become an "investment company" controlled by an "investment company," within the meaning of the Investment Company Act of 1940, or become principally engaged in, or undertake as one of its important activities, the business of extending credit for the purpose of purchasing or carrying margin stock, or use the proceeds of any Advance for such purpose. Fail to meet the minimum funding requirements of ERISA, permit a Reportable Event or Prohibited Transaction, as defined in ERISA, to occur, permit any condition to exist that would entitle any Person to obtain a decree adjudicating that any Plan under ERISA must be terminated, fail to comply with the Federal Fair Labor Standards Act or violate any law or regulation, which violation could have a Material Adverse Effect or a material adverse effect on the Collateral or the priority of Banks' Lien on the Collateral, or permit any of its Subsidiaries to do any of the foregoing.

## 8. EVENTS OF DEFAULT

Any one or more of the following events shall constitute an Event of Default by Borrowers under this Agreement:

8.1 PAYMENT DEFAULT. If a Borrower fails to pay the principal of, or any interest on, any Credit Extensions when due and payable; or fails to pay any portion of any other Obligations not constituting such principal or interest, including without limitation Bank Expenses, within thirty (30) days of receipt by such Borrower of a reasonably detailed invoice on account of such other Obligations;

8.2 COVENANT DEFAULT. If a Borrower fails to perform any obligation under Article 5 or violates any of the covenants contained in Article 6 of this Agreement, or fails or neglects to perform, keep, or observe any other material term, provision, condition, covenant, or agreement contained in this Agreement, in any of the Loan Documents, or in any other present or future agreement between a Borrower and any Bank and as to any default under such other term, provision, condition, covenant or agreement that can be cured, has failed to cure such default within twenty (20) days after a Borrower receives notice thereof or any Responsible Officer becomes aware thereof; provided, however, that if the default cannot by its nature be cured within the twenty (20) day period or cannot after diligent attempts by such Borrower be cured within such twenty (20) day period, and such default is likely to be cured within a reasonable time, then Borrowers shall have an additional reasonable period (which shall not in any case exceed thirty (30) days) to attempt to cure such default, and within such reasonable time period the failure to have cured such default shall not be deemed an Event of Default (provided that no Advances will be required to be made during such cure period);

8.3 MATERIAL ADVERSE CHANGE. If there occurs a material adverse change in the business or financial condition of Borrowers, taken as a whole, or if there is a material impairment of the prospect of repayment of any portion of the Obligations;

8.4 ATTACHMENT. If any material portion of a Borrower's assets is attached, seized, subjected to a writ or distress warrant, or is levied upon, or comes into the possession of any trustee, receiver or person acting in a similar capacity and such attachment, seizure, writ or distress warrant or levy has not been removed, discharged or rescinded within thirty (30) days, or if a Borrower is enjoined, restrained, or in any way prevented by court order from continuing to conduct all or any material part of its business affairs, or if a judgment or other claim becomes a lien or encumbrance upon any material portion of a Borrower's assets, or if a notice of lien, levy, or assessment is filed of record with respect to any of a Borrower's assets by the United States Government, or any department, agency, or instrumentality thereof, or by any state, county, municipal, or governmental agency, and the same is not paid within thirty (30) days after a Borrower receives notice thereof, provided that none of the foregoing shall constitute an Event of Default where such action or event is stayed or an adequate bond has been posted pending a good faith contest by such Borrower (provided that no Advances will be required to be made during such cure period);

8.5 INSOLVENCY. If a Borrower becomes insolvent, or if an Insolvency Proceeding is commenced by a Borrower, or if an Insolvency Proceeding is commenced against a Borrower and is not dismissed or stayed within thirty (30) days (provided that no Advances will be made prior to the dismissal of such Insolvency Proceeding);

8.6 OTHER AGREEMENTS. If there is a default in any agreement to which a Borrower is a party with a third party or parties resulting in a right by such third party or parties, whether or not exercised, to accelerate the maturity of any Indebtedness in an amount in excess of Five Hundred Thousand Dollars (\$500,000) or which would have a Material Adverse Effect;

8.7 JUDGMENTS. If a judgment or judgments for the payment of money in an amount, individually or in the aggregate, of at least Five Hundred Thousand Dollars (\$500,000) shall be rendered against a Borrower and shall remain unsatisfied and unstayed for a period of thirty (30) days (provided that no Advances will be made prior to the satisfaction or stay of such judgment); or

8.8 MISREPRESENTATIONS. If any material misrepresentation or material misstatement exists now or hereafter in any warranty or representation set forth herein or in any certificate delivered to any Bank by any Responsible Officer pursuant to this Agreement or to induce Bank to enter into this Agreement or any other Loan Document.

## 9. BANKS' RIGHTS AND REMEDIES

9.1 RIGHTS AND REMEDIES. Upon the occurrence and during the continuance of an Event of Default, any Bank may, at its election, do any one or more of the following, all of which are authorized by Borrowers:

(a) Declare all Obligations owing to such Bank, whether evidenced by this Agreement, by any of the other Loan Documents, or otherwise, immediately due and payable (provided that upon the occurrence of an Event of Default described in Section 8.5 all Obligations shall become immediately due and payable without any action by any Bank);

(b) Cease advancing money or extending credit to or for the benefit of Borrowers under this Agreement or under any other agreement between a Borrower and any Bank; and

(c) Set off and apply to the Obligations any and all (i) balances, deposits and investments of any Borrower held by such Bank, or (ii) indebtedness at any time owing to or for the credit or the account of a Borrower held by such Bank;

(d) Liquidate any Exchange Contracts not yet settled and demand that Borrower immediately deposit cash with Banks in an amount sufficient to cover any losses incurred by Bank due to liquidation of the Exchange Contracts at the then prevailing market price;

(e) Settle or adjust disputes and claims directly with account debtors for amounts, upon terms and in whatever order that Bank reasonably considers advisable;

(f) Without notice to or demand upon Borrower, make such payments and do such acts as Bank considers necessary or reasonable to protect its security interest in the Collateral. Borrower agrees to assemble the Collateral if Bank so requires, and to make the Collateral available to Bank as Bank may designate. Borrower authorizes Bank to enter the premises where the Collateral is located, to take and maintain possession of the Collateral, or any part of it, and to pay, purchase, contest, or compromise any encumbrance, charge, or lien which in Bank's determination appears to be prior or superior to its security interest and to pay all expenses incurred in connection therewith. With respect to any of Borrower's premises, Borrower hereby grants Bank a license to enter such premises and to occupy the same, without charge, in order to exercise any of Bank's rights or remedies provided herein, at law, in equity, or otherwise;

(g) Without notice to Borrower set off and apply to the Obligations any and all (i) balances and deposits of Borrower held by Bank, or (ii) indebtedness at any time owing to or for the credit or the account of Borrower held by Bank;

(h) Ship, reclaim, recover, store, finish, maintain, repair, prepare for sale, advertise

for sale, and sell (in the manner provided for herein) the Collateral. Bank is hereby granted a non-exclusive, royalty-free license or other right, solely pursuant to the provisions of this Section 9.1, to use, without charge, Borrower's labels, patents, copyrights, mask works, rights of use of any name, trade secrets, trade names, trademarks, service marks, and advertising matter, or any property of a similar nature, as it pertains to the Collateral, in completing production of, advertising for sale, and selling any Collateral and, in connection with Bank's exercise of its rights under this Section 9.1, Borrower's rights under all licenses and all franchise agreements shall inure to Bank's benefit;

(i) Sell the Collateral at either a public or private sale, or both, by way of one or more contracts or transactions, for cash or on terms, in such manner and at such places (including Borrower's premises) as Bank determines is commercially reasonable, and apply the proceeds thereof to the Obligations in whatever manner or order Bank deems appropriate;

(j) Bank may credit bid and purchase at any public sale, or at any private sale as permitted by law; and

(k) Any deficiency that exists after disposition of the Collateral as provided above will be paid immediately by Borrower.

**9.2 POWER OF ATTORNEY.** Effective only upon the occurrence and during the continuance of an Event of Default, Borrower hereby irrevocably appoints Bank (and any of Bank's designated officers, or employees) as Borrower's true and lawful attorney to: (a) send requests for verification of Accounts or notify account debtors of Bank's security interest in the Accounts; (b) endorse Borrower's name on any checks or other forms of payment or security that may come into Bank's possession; (c) sign Borrower's name on any invoice or bill of lading relating to any Account, drafts against account debtors, schedules and assignments of Accounts, verifications of Accounts, and notices to account debtors; (d) make, settle, and adjust all claims under and decisions with respect to Borrower's policies of insurance; (e) settle and adjust disputes and claims respecting the Accounts directly with account debtors, for amounts and upon terms which Bank determines to be reasonable; and (f) dispose of the Collateral in accordance with applicable law. The appointment of Bank as Borrower's attorney in fact, and each and every one of Bank's rights and powers, being coupled with an interest, is irrevocable until all of the Obligations have been fully repaid and Bank's obligation to provide Advances hereunder is terminated.

**9.3 BANK EXPENSES.** After the occurrence of an Event of Default, if a Borrower fails to pay any amounts or furnish any required proof of payment due to third persons or entities, as required under the terms of this Agreement, then Banks may do any or all of the following: (a) make payment of the same or any part thereof; (b) set up such reserves under the Committed Line as Banks deem necessary to protect Banks from the exposure created by such failure; or (c) obtain and maintain insurance policies of the type discussed in Section 6.6 of this Agreement, and take any action with respect to such policies as Banks reasonably deem prudent. Any amounts so paid or deposited by Banks shall constitute Bank Expenses, shall be immediately due and payable, and shall bear interest at the then applicable rate hereinabove provided. Any payments made by any Bank shall not constitute an agreement by such Bank to make similar payments in the future or a waiver by Bank of any Event of Default under this Agreement.

**9.4 REMEDIES CUMULATIVE.** Banks' rights and remedies under this Agreement, the Loan Documents, and all other agreements shall be cumulative. Banks shall have all other rights and remedies not inconsistent herewith as provided under the Code, by law, or in equity. No exercise by any Bank of one right or remedy shall be deemed an election. No waiver by any Bank of any Event of Default on a Borrower's part shall be effective unless also waived in writing by any other Bank. No waiver shall be deemed a continuing waiver. No delay by any Bank shall constitute a waiver, election, or acquiescence by it.

**9.5 DEMAND; PROTEST.** Each Borrower waives protest, notice of protest, notice of dishonor, notice of payment and nonpayment, notice of any nonpayment at maturity, release, compromise, settlement, extension, or renewal of accounts, documents, instruments, chattel paper, and guarantees at any time held by any Bank on which Borrower may in any way be liable.

## 10. NOTICES

Unless otherwise provided in this Agreement, all notices or demands by any party relating to this Agreement or any other agreement entered into in connection herewith shall be in writing and (except for financial statements and other informational documents which may be sent by first-class mail, postage prepaid) shall be personally delivered or sent by certified mail, postage prepaid, return receipt requested, or by prepaid telefacsimile to Borrowers or to each Bank, as the case may be, at its addresses set forth below:

If to AEI:                      Advanced Energy Industries, Inc.  
1625 Sharp Point Drive  
Ft. Collins, CO 80525  
Attn: Dick Beck  
FAX: (970) 221-5583

If to Tower:                      Tower Electronics, Inc.  
281 Commerce Circle South  
Fridley, MN 55432  
Attn: Duane Ness  
FAX: (612) 571-5605

If to Banks:                      Silicon Valley Bank  
4430 Arapahoe Avenue, Suite 225  
Boulder, CO 80303  
Attn: Greg Becker  
FAX: (303) 938-0483  
  
Bank of Hawaii  
1850 N. Central Avenue, Suite 400  
Phoenix, AZ 85004  
Attn: Ken Loveless  
FAX: (602) 257-2235

The parties hereto may change the address at which they are to receive notices hereunder, by notice in writing in the foregoing manner given to the other. NOTICES TO ONE BANK SHALL NOT BE DEEMED NOTICE TO THE OTHER BANK.

## 11. CHOICE OF LAW AND VENUE; JURY TRIAL WAIVER

This Agreement shall be governed by, and construed in accordance with, the internal laws of the State of California, without regard to principles of conflicts of law. Borrowers and Banks hereby submit to the exclusive jurisdiction of the state and Federal courts located in the County of Santa Clara, State of California. BORROWERS AND BANKS HEREBY WAIVE THEIR RESPECTIVE RIGHTS TO A JURY TRIAL OF ANY CLAIM OR CAUSE OF ACTION BASED UPON OR ARISING OUT OF ANY OF THE LOAN DOCUMENTS OR ANY OF THE TRANSACTIONS CONTEMPLATED THEREIN, INCLUDING CONTRACT CLAIMS, TORT CLAIMS, BREACH OF DUTY CLAIMS, AND ALL OTHER COMMON LAW OR STATUTORY CLAIMS. EACH PARTY RECOGNIZES AND AGREES THAT THE FOREGOING WAIVER CONSTITUTES A MATERIAL INDUCEMENT FOR IT TO ENTER INTO THIS AGREEMENT. EACH PARTY REPRESENTS AND WARRANTS THAT IT HAS REVIEWED THIS WAIVER WITH ITS LEGAL COUNSEL AND THAT IT KNOWINGLY AND VOLUNTARILY WAIVES ITS JURY TRIAL RIGHTS FOLLOWING CONSULTATION WITH LEGAL COUNSEL.

## 12. INTERCREDITOR PROVISIONS

12.1 PROPORTIONATE INTERESTS. Except for Optional Currency Advances, which shall be the sole responsibility of BofH, and except as otherwise provided in this Agreement, the rights, interests, and obligations of each Bank under this Agreement and the Loan Documents at any time shall be shared in the ratio of (a) the maximum amount the Bank has committed to advance as set forth on the signature page signed by the Bank to (b) the Committed Line. Any reference in this Agreement or the Loan Documents to an allocation between or sharing by the Banks of any right, interest, or duty "ratably," "proportionally," "pro rata," or in similar terms shall refer to

this ratio. No Bank is obligated to advance any funds in lieu of or for the account of the other Bank if the latter Bank fails to make such Advance.

**12.2 DESIGNATION OF SERVICE AGENT.** To facilitate the administration of this Agreement, SVB shall act as "Servicing Agent" for itself and BofH. Servicing Agent shall have only such duties as are expressly set forth in this Agreement, or as otherwise agreed in writing by the Banks. Servicing Agent shall be deemed to act on behalf of both Banks whenever Servicing Agent acts under this Agreement.

**12.3 RESIGNATION.** Servicing Agent may resign as Servicing Agent, upon thirty (30) day's written notice to the other Banks and to Borrower and appointment of a successor Servicing Agent approved by Banks. Upon receipt of notice of resignation, the Banks shall appoint a successor Servicing Agent. The resigning Servicing Agent shall cooperate fully in delivering to the successor Servicing Agent the Loan Documents and copies of all records relating to the Advances and payments made hereunder that the successor Servicing Agent reasonably requests.

**12.4 SERVICING AGENT AS BANK.** Servicing Agent shall have the same rights and powers under this Agreement as any other Bank and may exercise the same as though it were not Servicing Agent. The term "Banks" includes Servicing Agent in Servicing Agent's individual capacity. Servicing Agent and its Subsidiaries and Affiliates may accept deposits from, lend money to, act as agent or trustee for other lenders to, and generally engage in any kind of banking, trust, or other business with, any Borrower or any Subsidiary or Affiliates as if Servicing Agent were not Servicing Agent.

**12.5 NO AGENCY. EXCEPT AS SPECIFIED HEREIN, NEITHER BANK IS AN AGENT OF THE OTHER. NEITHER BANK HAS ANY AUTHORITY TO ACT OR FAIL TO ACT FOR THE OTHER. THE OBLIGATIONS OF EACH BANK HEREUNDER ARE SEVERAL. NO BANK SHALL BE LIABLE FOR THE FAILURE OF ANY OTHER BANK TO PERFORM ITS OBLIGATIONS HEREUNDER.**

**12.6 NO RELIANCE.** The provisions of this Article 12 are solely for the benefit of Banks in specifying their rights and obligations with respect to each other, and not for the benefit of any Borrower or its assigns or successors.

### **13. GENERAL PROVISIONS**

**13.1 SUCCESSORS AND ASSIGNS.** This Agreement shall bind and inure to the benefit of the respective successors and permitted assigns of each of the parties; PROVIDED, HOWEVER, that neither this Agreement nor any rights hereunder may be assigned by any Borrower without each Bank's prior written consent, which consent may be granted or withheld in each Bank's sole discretion. Subject to the terms of any agreement between Banks, each Bank shall have the right with the consent (which shall not be unreasonably withheld) of Borrower to sell, transfer, negotiate, or grant participations in all or any part of, or any interest in, Bank's obligations, rights and benefits hereunder; provided no Bank will sell, transfer, negotiate or grant participations in any part of, or any interest in, such obligations, rights and benefits in a principal amount of less than Five Million Dollars (\$5,000,000).

**13.2 INDEMNIFICATION.** Borrowers shall defend, indemnify and hold harmless each Bank and its officers, employees, and agents against: (a) all obligations, demands, claims, and liabilities claimed or asserted by any other party in connection with the transactions contemplated by this Agreement (except with regard to a dispute between the Banks); and (b) all losses or Bank Expenses in any way suffered, incurred, or paid by such Bank as a result of or in any way arising out of, following, or consequential to transactions between such Bank and Borrowers whether under this Agreement, or otherwise (including without limitation reasonable attorneys fees and expenses), except for losses caused by such Bank's gross negligence or willful misconduct and except with regard to a dispute between the Banks.

**13.3 SUBROGATION AND SIMILAR RIGHTS.** Notwithstanding any other provision of this Agreement or any other Loan Document, until all amounts that Borrowers owe to Banks have been paid in full, each Borrower irrevocably waives all rights that it may have at law or in equity (including, without limitation, any law subrogating such Borrower to the rights of Bank under the Loan Documents) to seek contribution, indemnification, or any other form of reimbursement from any other Borrower, or any other Person now or hereafter primarily or secondarily liable for any of the Obligations, for any payment made by such Borrower with respect to the Obligations in connection with the Loan Documents or otherwise and all rights that it might have to benefit from, or to participate in, any security for the Obligations as a result of any payment made by such Borrower with respect to the

Obligations in connection with the Loan Documents or otherwise. Until all amounts that Borrowers owe to Banks have been paid in full, any agreement providing for indemnification, reimbursement or any other arrangement prohibited under this Section 13.3 shall be null and void. If any payment is made to a Borrower in contravention of this Section 13.3, such Borrower shall hold such payment in trust for Bank and such payment shall be promptly delivered to Bank for application to the Obligations, whether matured or unmatured.

**13.4 WAIVERS OF NOTICE.** Each Borrower waives notice of acceptance hereof; notice of the existence, creation or acquisition of any of the Obligations; notice of an Event of Default; notice of the amount of the Obligations outstanding at any time; notice of intent to accelerate; notice of acceleration; notice of any adverse change in the financial condition of any other Borrower or of any other fact that might increase the Borrower's risk; presentment for payment; demand; protest and notice thereof as to any instrument; default; and all other notices and demands to which the Borrower would otherwise be entitled. Each Borrower waives any defense arising from any defense of any other Borrower, or by reason of the cessation from any cause whatsoever of the liability of any other Borrower. Bank's failure at any time to require strict performance by any Borrower of any provision of the Loan Documents shall not waive, alter or diminish any right of Bank thereafter to demand strict compliance and performance therewith. Nothing contained herein shall prevent Bank from foreclosing on the Lien of any deed of trust, mortgage or other security instrument, or exercising any rights available thereunder, and the exercise of any such rights shall not constitute a legal or equitable discharge of any Borrower. Each Borrower also waives any defense arising from any act or omission of Bank that changes the scope of the Borrower's risks hereunder. Each Borrower hereby waives any right to assert against Bank any defense (legal or equitable), setoff, counterclaim, or claims that such Borrower individually may now or hereafter have against another Borrower or any other Person liable to Bank with respect to the Obligations in any manner or whatsoever.

**13.5 SUBROGATION DEFENSES.** Until all amounts that Borrowers owe to Banks have been paid in full, each Borrower hereby waives any defense based on impairment or destruction of its subrogation or other rights against any other Borrower and waives all benefits which might otherwise be available to it under California Civil Code Sections 2809, 2810, 2819, 2839, 2845, 2848, 2849, 2850, 2899, and 3433 and California Code of Civil Procedure Sections 580a, 580b, 580d and 726, as those statutory provisions are now in effect and hereafter amended, and under any other similar statutes now and hereafter in effect.

**13.6 RIGHT TO SETTLE, RELEASE.**

(a) The liability of Borrowers hereunder shall not be diminished by (i) any agreement, understanding or representation that any of the Obligations is or was to be guaranteed by another Person or secured by other property, or (ii) any release or unenforceability, whether partial or total, of rights, if any, that Bank may now or hereafter have against any other Person, including another Borrower, or property with respect to any of the Obligations.

(i) Without notice to any Borrower and without affecting the liability of any Borrower hereunder, Banks may (i) compromise, settle, renew, extend the time for payment, change the manner or terms of payment, discharge the performance of, decline to enforce, or release all or any of the Obligations with respect to a Borrower, (ii) grant other indulgences to a Borrower in respect of the Obligations, (iii) modify in any manner any documents relating to the Obligations with respect to a Borrower, (iv) release, surrender or exchange any deposits or other property securing the Obligations, whether pledged by a Borrower or any other Person, or (v) compromise, settle, renew, or extend the time for payment, discharge the performance of, decline to enforce, or release all or any obligations of any guarantor, endorser or other Person who is now or may hereafter be liable with respect to any of the Obligations.

**13.7 PRIMARY OBLIGATION.** This Agreement is a primary and original obligation of each Borrower and shall remain in effect notwithstanding future changes in conditions, including any change of law or any invalidity or irregularity in the creation or acquisition of any Obligations or in the execution or delivery of any agreement between Bank and any Borrower. Each Borrower shall be liable for existing and future Obligations as fully as if all of the Loan were advanced to the Borrower. Bank may rely on any certificate or representation made by any Borrower as made on behalf of, and binding on, all Borrowers, including without limitation Borrowing Certificates, Borrowing Base Certificates and Compliance Certificates.

**13.8 SUBORDINATION.** All indebtedness of a Borrower now or hereafter arising held by another Borrower is subordinated to the Obligations and the Borrower holding the indebtedness shall take all actions reasonably requested by Bank to effect, to enforce and to give notice of such subordination.

13.9 ENFORCEMENT OF RIGHTS. Borrowers are jointly and severally liable for the Obligations and Bank may proceed against one or more of the Borrowers to enforce the Obligations without waiving its right to proceed against any of the other Borrowers.

13.10 AEI AS AGENT. Each of the Borrowers irrevocably appoints AEI as its agent to accept and deliver all notices, certificates and other documents under this Agreement on behalf of all of the Borrowers, and to request, accept and disburse all Advances, and to make payments hereunder.

13.11 TIME OF ESSENCE. Time is of the essence for the performance of all obligations set forth in this Agreement.

13.12 SEVERABILITY OF PROVISIONS. Each provision of this Agreement shall be severable from every other provision of this Agreement for the purpose of determining the legal enforceability of any specific provision.

13.13 AMENDMENTS IN WRITING, INTEGRATION. This Agreement cannot be changed or terminated orally. No amendment shall be effective without the consent of all the parties hereto, except the provisions of Article 12 may be amended by Banks without Borrower's approval. All prior agreements, understandings, representations, warranties, and negotiations between the parties hereto with respect to the subject matter of this Agreement, if any, are merged into this Agreement and the Loan Documents.

13.14 COUNTERPARTS. This Agreement may be executed in any number of counterparts and by different parties on separate counterparts, each of which, when executed and delivered, shall be deemed to be an original, and all of which, when taken together, shall constitute but one and the same Agreement.

13.15 SURVIVAL. All covenants, representations and warranties made in this Agreement shall continue in full force and effect so long as any Obligations remain outstanding. The obligations of Borrower to indemnify Bank with respect to the expenses, damages, losses, costs and liabilities described in Section 13.2 shall survive until all applicable statute of limitations periods with respect to actions that may be brought against Bank have run.

13.16 CONFIDENTIALITY. In handling any confidential information each Bank shall exercise the same degree of care that it exercises with respect to its own proprietary information of the same types to maintain the confidentiality of any non-public information thereby received or received pursuant to this Agreement except that disclosure of such information may be made (i) to the subsidiaries or affiliates of such Bank in connection with their present or prospective business relations with Borrower, (ii) to prospective transferees or purchasers of any interest in the Loans, provided that they have entered into a comparable confidentiality agreement in favor of Borrower and have delivered a copy to Borrower, (iii) as required by law, regulations, rule or order, subpoena, judicial order or similar order, (iv) as may be required in connection with the examination, audit or similar investigation of Bank, and (v) as may be appropriate in the exercise of any remedies hereunder. Confidential information hereunder shall not include information that either: (a) is in the public domain or in the knowledge or possession of Bank when disclosed to Bank, or becomes part of the public domain after disclosure to Bank through no fault of Bank; or (b) is disclosed to the Bank by a third party, provided the Bank does not have actual knowledge that such third party is prohibited from disclosing such information.

13.17 OPTIONAL CURRENCY RATE INSTRUMENTS. To the extent the terms of any Optional Currency Rate Instrument differ from the terms of this Agreement then the terms of such Optional Currency Rate Instrument shall govern the rights and obligations of the parties thereto.

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be executed as of the date first above written.

**ADVANCED ENERGY INDUSTRIES, INC.**

By:

Title:

**TOWER ELECTRONICS, INC.**

By:

Title:

**SILICON VALLEY BANK**

By:

Title:

Maximum Commitment Amount: \$13,562,499.99 (50%)

**BANK OF HAWAII**

By:

Title:

Maximum Commitment Amount: \$13,562,499.98 (50%)

## EXHIBIT 21.1

Subsidiaries of the Registrant -----	Jurisdiction of Incorporation or Organization -----
Advanced Energy Industries, Japan KK	Japan
Advanced Energy Industries, GmbH	Germany
Advanced Energy Industries, U.K. Limited	United Kingdom
Advanced Energy Industries, FSC	Virgin Islands
Tower Electronics, Inc.	Minnesota

## Exhibit 23.1

### CONSENT OF INDEPENDENT PUBLIC ACCOUNTANTS

As independent public accountants, we hereby consent to the incorporation by reference in this registration statement of our report dated January 31, 1997 included in Advanced Energy Industries, Inc.'s Form 10-K for the year ended December 31, 1996 and to all references to our Firm included in this registration statement.

*/s/ Arthur Andersen LLP*

*Denver, Colorado,  
August 20, 1997*

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**End of Filing**

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