

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

The following discussion contains, in addition to historical information, forward-looking statements, within the meaning of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended. Statements that are other than historical information are forward-looking statements. For example, statements relating to our beliefs, expectations and plans are forward-looking statements, as are statements that certain actions, conditions or circumstances will continue. Forward-looking statements involve risks and uncertainties. As a result, our actual results may differ materially from the results discussed in the forward-looking statements. Factors that could cause or contribute to such differences or prove any forward-looking statements, by hindsight to be overly optimistic or unachievable, include, but are not limited to the following:

- changes or slowdowns in general economic conditions or conditions in the semiconductor and semiconductor capital equipment industries and other industries in which our customers operate;
- the timing and nature of orders placed by major customers, including their product acceptance criteria;
- changes in customers' inventory management practices;
- customer cancellations of previously placed orders and shipment delays;
- pricing competition from our competitors;
- component shortages or allocations or other factors that change our levels of inventory or substantially increase our spending on inventory;
- the introduction of new products by us or our competitors;
- costs incurred and judgments resulting from patent or other litigation;
- costs incurred by responding to specific feature requests by customers;
- timing and challenges of integrating recent and potential future acquisitions and strategic alliances;
- our ability to attract and retain key personnel; and
- our exposure to currency exchange rate fluctuations between the several functional currencies in foreign locations in which we have operations.

For a discussion of these and other factors that may impact our realization of our forward-looking statements, see Part I "Cautionary Statements – Risk Factors" in our Form 10-K for the year ended December 31, 2002.

### Overview

We design, manufacture and support a group of key components and subsystems for vacuum process systems. Our primary products are complex power conversion and control systems. Our products also control the flow of gases into the process chambers and provide thermal control and sensing within the chamber. Our customers use our products in plasma-based thin-film processing equipment that is essential to the manufacture of semiconductors; compact disks, DVDs and other digital storage media; flat-panel computer and television screens; coatings for architectural glass and optics; and a power supply for advanced technology computer workstations. We also sell spare parts and repair services worldwide through our customer service and technical support organization.

We provide solutions to a diversity of markets and geographic regions. However, we are focused on the semiconductor capital equipment industry, which accounted for approximately 62% of our sales in 2002, 59% in 2001 and 70% in 2000. In 2000, the semiconductor capital equipment industry was at its historical peak for sales. Conversely, the years 2001 and 2002 saw the steepest cutback in capital equipment purchases in industry history. These cyclical changes accounted for the 55% reduction in our sales to the semiconductor capital equipment industry between 2000 and 2001 and the further reduction of 6% in 2002 to this industry excluding the effect of our acquisitions in 2002 of Aera Japan Limited, or Aera and Dressler HF Technik GmbH, or Dressler. We expect future sales to the semiconductor capital equipment industry to represent approximately 55% to 70% of our total revenue, depending upon the strength or weakness of the industry cycles. Additionally, two of the other major industry groups which use our products, data storage and flat panel display, are also highly cyclical and have experienced significant reductions in demand during the 2000 through 2002 period.

We have incurred significant losses over the past two years primarily as a result of lower revenues. Our results in 2002 include revenues from two companies acquired during the year, Aera and Dressler. Had the acquisitions not occurred, 2002 and 2001 revenues would have been relatively flat. To date, we have been unable to achieve profitability at current revenue levels and do not have confidence of an industry recovery in the short-term. We have established a goal of reducing our operating breakeven point to an annual revenue level of approximately \$220 million to \$240 million by the end of 2003, but cannot provide any assurance that such goals or revenue level are achievable in 2003.

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

Our losses during 2001 and 2002 were impacted by high product costs and other expenses, primarily research and development, sales and marketing, and general and administrative expenses. To address product costs we are in the process of shifting a significant portion of our manufacturing to China and rebalancing our supply chain to tier one Asian suppliers, and relocating certain domestic operations to our headquarters in Fort Collins, Colorado. We will also attempt to reduce research and development expenses without significantly impacting our future competitive position in the rapidly changing industry in which we operate.

Our operating results during 2002 and 2001 were also affected by high inventory reserves and warranty expenses. As the industry downturn became longer and deeper than expected, a significant portion of our inventory became slow moving or obsolete based on reduced sales forecasts and the discontinuance of slower moving, older products. Warranty costs have been unusually high because of the shipment of some of our newer, more complex products developed in 1999 and 2000, which required substantial rework, repair and in some cases, replacement in accordance with the terms of our warranties. We believe the current generation of these products have much higher reliability.

We believe the semiconductor capital equipment industry is in the midst of significant consolidation. To help insure our continued growth and maintain our competitive advantage, by being able to supply an increased proportion of the key components and subsystems used in plasma-based manufacturing we have done the following:

- In March 2002, we acquired Dressler HF Technik GmbH, which supplies radio frequency, or RF power solutions.
- In January 2002, we acquired Aera Japan Limited. Aera primarily supplies the semiconductor capital equipment industry with product lines that include digital mass flow controllers, pressure-based mass flow controllers, liquid mass flow controllers, ultrasonic liquid flow meters and liquid vapor delivery systems.
- In January 2001, we acquired Engineering Measurements Company, or EMCO, which manufactures electronic and electromechanical precision instruments for measuring and controlling the flow of liquids, steam and gases for the semiconductor and other industries.
- In August 2000, we acquired Sekidenko, Inc., which supplies optical fiber thermometers to measure temperature in the semiconductor process chamber.
- In April 2000, we acquired Noah Holdings, Inc., which manufactures solid-state temperature control systems to control process temperatures during semiconductor manufacturing.

These product offerings complement our position as a global leader for complex power conversion and control systems, and process instruments, allowing us to provide best-of-breed components and develop systems to increase the precision and productivity of our customers' products. It is also possible that we will acquire other companies or form strategic alliances.

### Results of Operations

#### SALES

Sales were \$238.9 million in 2002, \$193.6 million in 2001 and \$359.8 million in 2000, representing an increase of 23% from 2001 to 2002, and a decrease of 46% from 2000 to 2001. Excluding the acquisitions of Aera and Dressler, our sales would have been relatively flat from 2001 to 2002. The decrease in the level of our sales in 2002 and 2001 from 2000 was primarily due to changes in demand for our products from semiconductor capital equipment manufacturers, including many of our largest customers, and data storage and flat panel display customers. The historical volatility in the semiconductor industry impacted overall investment activities, which led to semiconductor manufacturers purchasing less capital equipment while the other industries were more impacted by general economic conditions.

While sales of semiconductor capital equipment have grown at a compounded annual growth rate in excess of 15% since 1960, the industry is highly cyclical and is impacted by changes in the macroeconomic environment, changes in semiconductor supply and demand, and rapid technological advances in both semiconductor devices and wafer fabrication processes. Rapid growth and expansion during 2000 was followed by the most sudden and pronounced slump in industry history, with year-to-year revenues falling approximately 40% throughout the industry from 2000 to 2001 and declining nominally from 2001 to 2002. Our sales over the last three years illustrate this cyclicity.

The following tables summarize annual net sales, and percentages of net sales, by customer type for each of the three years in the period ended December 31, 2002. Sales for the year ended December 31, 2002, include combined sales from Aera and Dressler, subsequent to their acquisitions of approximately \$47.0 million:

(In thousands)	Years Ended December 31,		
	2002	2001	2000
Semiconductor capital equipment	\$148,410	\$114,273	\$252,889
Data storage	12,409	10,043	24,751
Flat panel display	17,850	18,145	29,273
Advanced product applications	38,467	35,698	37,726
Customer service technical support	21,762	15,441	15,143
	<b>\$238,898</b>	\$193,600	\$359,782

	Years Ended December 31,		
	2002	2001	2000
Semiconductor capital equipment	62%	59%	70%
Data storage	5	5	7
Flat panel display	8	10	8
Advanced product applications	16	18	11
Customer service technical support	9	8	4
	<b>100%</b>	100%	100%

The following table summarizes annual percentage changes in net sales by customer type for us from 2001 to 2002, including the effects of our acquisitions of Aera and Dressler, and from 2000 to 2001:

	2002 change from 2001	2001 change from 2000
Semiconductor capital equipment	30% <sup>1</sup>	(55)%
Data storage	24	(59)
Flat panel display	(2)	(38)
Advanced product applications	8	(5)
Customer service technical support	41	2
Total sales	23% <sup>2</sup>	(46)%

<sup>1</sup> (6)% excluding Aera and Dressler

<sup>2</sup> Unchanged excluding Aera and Dressler

The following tables summarize annual net sales, and percentages of net sales, by geographic region for each of the three years in the period ended December 31, 2002:

(In thousands)	Years Ended December 31,		
	2002	2001	2000
United States and Canada	\$143,698	\$124,746	\$260,596
Europe	32,791	28,957	52,893
Asia Pacific	61,327	39,038	45,874
Rest of world	1,082	859	419
	<b>\$238,898</b>	\$193,600	\$359,782

	Years Ended December 31,		
	2002	2001	2000
United States and Canada	60%	64%	72%
Europe	14	15	15
Asia Pacific	26	21	13
Rest of world	—	—	—
	<b>100%</b>	100%	100%

## GROSS MARGIN

Our gross margin was 28.8% in 2002, 29.7% in 2001 and 49.0% in 2000. Our gross margin remained relatively consistent between 2002 and 2001. The major items affecting the reduction in our 2002 and 2001 margins from our 2000 margin were:

- During 2000, the semiconductor industry and Advanced Energy experienced unprecedented new order and revenue growth. However, in 2001 and 2002 we experienced the most severe downturn in the semiconductor industry's history. As a result our sales declined significantly which impacted our absorption of fixed costs.
- The semiconductor industry is moving to 300mm wafers and smaller line widths. These technology changes require new products that we have developed or are developing. Typical of products early in their life cycle and at low production levels, these products have lower margins than our established products. Margins on these products should improve over the next 12 to 36 months.
- Although we have reduced our fixed overhead through reductions in force of some of our manufacturing staff in 2001 and 2002, to coincide with our sales decline, we retained certain knowledgeable employees with specific skill sets, to be ready for unexpected industry ramp-ups.
- Our cost of sales has also been adversely affected by periodic writedowns of excess and obsolete inventory, particularly in the fourth quarter of 2002, when our management made a strategic decision to discontinue certain product offerings, which resulted in an increase in excess and obsolete inventory expense.
- In 2001 and 2002, we incurred warranty expense in excess of historical rates and our expectations related to certain products, which required substantial rework, repair, and in some cases, replacement. The development of these products in 1999 and 2000 was accelerated to meet pressing customer needs in the midst of historically high product demand. We believe the current generation of these products have much higher reliability.

Given the rapid change in technology, we monitor and forecast expected inventory needs based on our constantly changing sales forecast. Inventory is written down or written off when it becomes obsolete, generally because of engineering changes to a product or discontinuance of a product

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

line, or when it is deemed excess. These determinations involve the exercise of significant judgment, and as demonstrated in recent periods, demand for our products is volatile and changes in expectations regarding the level of future sales can result in substantial charges against earnings for obsolete and excess inventory. Charges for obsolete and excess inventory were \$5.8 million in 2002, \$6.4 million in 2001 and \$654,000 in 2000, which affected gross margins by 2.4%, 3.3% and 0.2% in these years, respectively. The amount of inventory written down in 2002 is primarily attributable to a strategic management decision we made in the fourth quarter to discontinue certain product offerings, coupled with the 19% decline in sales from the third quarter of 2002 to the fourth quarter of 2002. The inventory write-down in 2001 is primarily attributable to the severe decrease in product sales, which caused a larger than normal amount of inventory to become excess based on our sales forecasts.

We provide warranty coverage for our products ranging from 12 to 36 months, with the majority of our products ranging from 18 to 24 months, and estimate the anticipated costs of repairing our products under such warranties based on the historical costs of the repairs and expected product failure rates. The assumptions we use to estimate warranty accruals are reevaluated periodically in light of actual experience, and when appropriate, the accruals are adjusted. Our determination of the appropriate level of warranty accrual is subjective and based on estimates. Should product failure rates differ from our estimates, actual costs could vary significantly from our expectations. We recognized charges for warranty expense of \$13.2 million in 2002, \$7.6 million in 2001 and \$4.6 million in 2000. The following summarizes the activity in our warranty reserve during 2002:

(In thousands)	Balance at Beginning of Period	Additions Charged to Expense	Deductions	Balance at End of Period
Reserve for warranty obligations	\$ 4,471	\$13,150	\$(8,219)	\$9,402

Historically, price competition has not had a material effect on margins. However, as a result of the prolonged downturn in the semiconductor industry, OEMs and semiconductor capital equipment manufacturers are striving to reduce their costs. Any cost reduction programs initiated by OEMs and semiconductor capital equipment manufacturers could have a significant impact on our future gross margins.

### RESEARCH AND DEVELOPMENT

We believe continued investment in the research and development of new products and subsystems is critical to our ability to serve new and existing markets, develop new products and improve existing product designs. However,

we cannot provide assurance that the products we develop will meet customer requirements when those products are introduced to the market. To be advantageously positioned for a turnaround in demand we continue to invest heavily in new product development even during industry downturns, which allows us to compete for ongoing design wins on our customers' new production tools. Since our inception, all of our research and development costs have been expensed as incurred.

Our research and development expenses were \$49.0 million in 2002, \$45.2 million in 2001 and \$37.0 million in 2000. As a percentage of sales, research and development expenses decreased from 23.3% in 2001 to 20.5% in 2002, because of the higher sales base achieved through our acquisitions of Aera and Dressler. Research and development expenses, as a percentage of sales, increased from 10.2% in 2000 to 23.3% in 2001 because of the lower sales base. The 8.5% increase in research and development expenses from 2001 to 2002 was primarily due to the acquisitions of Aera and Dressler and expenditures to launch new RF and direct current, or DC products. Our 22.0% increase in research and development expenses from 2000 to 2001 was primarily caused by increases in payroll, materials and supplies and depreciation of equipment used for new product development as well as the acquisition of EMCO in 2001.

### SALES AND MARKETING EXPENSES

As we continue to expand our product offerings and sales channels through acquisitions, our sales and marketing efforts have become increasingly complex. We continue to refine our sales and marketing functions as we acquire and integrate new companies. We have continued the effort to market directly to end users of our products, in addition to our traditional marketing to manufacturers of semiconductor capital equipment and other industries. Our sales and marketing expenses support domestic and international sales and marketing activities that include personnel, trade shows, advertising, and other selling and marketing activities.

Sales and marketing expenses were \$34.9 million in 2002, \$23.8 million in 2001 and \$24.1 million in 2000. The 46.9% increase in sales and marketing expenses from 2001 to 2002 was primarily caused by the acquisitions of Aera and Dressler, which contributed approximately \$9.6 million to our sales and marketing expenses. As a percentage of sales, sales and marketing expenses increased from 12.3% in 2001 to 14.6% in 2002. Sales and marketing expenses increased from 6.7% in 2000 to 12.3% of sales in 2001 due to the lower sales base in 2001.

### GENERAL AND ADMINISTRATIVE EXPENSES

Our general and administrative expenses support our worldwide corporate, legal, patent, tax, financial, administrative,

information systems and human resources functions in addition to our general management. General and administrative expenses were \$30.5 million in 2002, \$21.5 million in 2001 and \$24.6 million in 2000. The 42% increase in general and administrative expenses from 2001 to 2002 was primarily caused by our acquisitions of Aera and Dressler, which contributed approximately \$8.8 million to our general and administrative expenses. The 12% decrease from 2000 to 2001 was primarily due to lower spending for payroll, primarily employee bonuses, which were eliminated in 2001 due to the decline in operating profitability. Due to the cost reduction measures we initiated in the third and fourth quarters of 2002, we expect our general and administrative expenses to decline in 2003. See restructuring charges below for a discussion of these cost reduction measures.

#### **GOODWILL AND OTHER INTANGIBLE ASSET IMPAIRMENTS**

Beginning in April 2000, we made periodic advances to and investments totaling approximately \$8 million in Symphony Systems, Inc., a privately held, early-stage developer of equipment productivity management software. Some of our advances were secured by Symphony's intellectual property. In 2000, we obtained an exclusive license, for which we paid \$1.5 million, to use Symphony's products in the semiconductor industry. Beginning in the third quarter of 2001, and continuing through the end of the year, Symphony's financial situation began to deteriorate significantly, and we determined that due to Symphony's need for immediate liquidity, its declining business prospects, including the indefinite postponement of a significant order for its products from a major semiconductor capital equipment manufacturer, and other factors, the value of our investment in and advances to Symphony had substantially declined. We therefore valued our investments in and advances to Symphony at December 31, 2001, at approximately \$1 million, which reflected our assessment of the value of the Symphony technology license, which we believed had continuing value to us. The amount of the impairment related to Symphony was \$6.8 million, all of which was recorded in 2001 as an operating expense.

Symphony effectively ceased operations in February 2002, and we hired Symphony's key employees, and acquired Symphony's remaining assets in a foreclosure and liquidation sale of such assets on April 2, 2002. We recorded the assets acquired at their estimated fair values, based on information available at the time. The excess purchase price over the estimated fair value of tangible assets acquired of approximately \$2.5 million was allocated to amortizable intangibles, with a weighted-average estimated useful life of approximately 5 years.

In the fourth quarter of 2002, the semiconductor industry declined substantially from its levels in the third quarter of

2002, which caused a decrease in our sales level of approximately 19%. As a result, we determined there would be a significant delay by the semiconductor capital equipment industry in adopting advanced connectivity technology, and due to these industry conditions as well as our future strategic priorities, these intangible assets were likely impaired. We evaluated the carrying amount of assets acquired from Symphony by comparing its estimated future cash flows to its carrying value. This analysis indicated that our investment was impaired and we recorded an intangible impairment charge of \$1.9 million for 2002, which was the remaining book value of Symphony's intangible assets.

During the second quarter of 2001, we terminated the operations of our Tower Electronics, Inc. subsidiary and our Fourth State Technology, or FST, product line due to significant softening in the projected demand for these products. Revenue contributed by Tower and FST operations for 2001 and 2000 represented less than 5% of our total revenue in each of these years. As a result of these actions, estimated related future cash flows no longer supported the carrying amounts of related goodwill, and we recorded goodwill impairment charges of \$5.4 million in 2001 related to Tower and FST.

#### **RESTRUCTURING, MERGER COSTS AND LITIGATION COSTS**

In April 2000, we acquired Noah in a pooling of interests under the previous rules of Accounting Principles Board, or APB, Opinion No. 16. The merger involved the exchange of 687,000 shares of Advanced Energy common stock for the privately held common stock of Noah. As part of the business combination, we recorded a charge of \$2.3 million in the second quarter of 2000 for merger costs, which could not be capitalized and which in certain cases were nondeductible for income tax purposes.

In July 2000, we announced the consolidation of our Tower facility in Fridley, Minnesota, into our existing facility in Voorhees, New Jersey. We recorded a restructuring charge of \$1.0 million in the third quarter of 2000 related to the consolidation, which was completed during the fourth quarter of 2000.

In August 2000, we acquired Sekidenko in a merger that was accounted for as a pooling of interests. This merger involved the exchange of 2.1 million shares of Advanced Energy common stock for the privately held common stock of Sekidenko. As part of the business combination, we recorded a charge of \$2.3 million in the third quarter of 2000 for merger costs, which could not be capitalized and which in certain cases were nondeductible for income tax purposes.

In July 2001, the Financial Accounting Standards Board issued SFAS No. 141, which required that the purchase

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

method of accounting be used for all business combinations initiated after June 30, 2001.

In the first quarter of 2001, we received a \$1.5 million settlement for recovery of legal expenses pertaining to a patent infringement suit in which we were the plaintiff.

During the second quarter of 2001, in response to the downturn in the semiconductor capital equipment industry, we implemented two reductions in force totaling approximately 135 regular employees and 90 temporary employees and recorded a charge of \$614,000 for restructuring and severance costs, including fringe benefits.

During the fourth quarter of 2001, in response to the sustained downturn in the semiconductor capital equipment industry and global economy, we announced and implemented additional cost-reduction measures, and recorded a charge of \$2.5 million. Such measures included a reduction in force of approximately 105 employees and the closure of two facilities.

During the second quarter of 2002, we recorded a charge of \$5.3 million pertaining to damages awarded by a jury in a patent infringement case in which we were the defendant, and legal expenses related to the judgment. The Applied Science and Technology, or ASTeX, division of MKS Instruments, Inc. was the plaintiff in the case, which was tried in a Delaware court. Sales of the product in question have accounted for less than 5% of total sales since the product's introduction, and approximately 1.4% of our consolidated sales for the year ended December 31, 2002. We have entered into a settlement agreement with MKS allowing us to sell the infringing product to our customer subsequent to the date of the jury award. Under the settlement agreement, royalties payable to MKS from the sales of the related product were approximately \$530,000 in 2002, and are recorded as a component of cost of sales.

In the third quarter of 2002, we began a program to gradually reduce our quarterly operating breakeven level from revenue of approximately \$80 million without impacting our long-term viability. Our objective is to have a variable operating model by the end of 2003 that will allow us to achieve approximate breakeven operating results at a quarterly revenue level of \$55 million to \$60 million. We recorded a restructuring charge of approximately \$3.2 million to close two facilities and implement headcount reductions of approximately 100 employees, or approximately 7% of our workforce.

In the fourth quarter of 2002, we recorded an additional restructuring charge of \$5.8 million. This charge included a reduction in force of 123 employees, or approximately 8% of our workforce and the closure of all or a portion of five facilities in the United States.

As a result of our decisions in the fourth quarter to consolidate certain operations, we performed an analysis of the fair value of EMCO's long-lived assets. This analysis included

an appraisal of EMCO's land and building, which indicated an impairment of approximately \$560,000, which has been reflected as restructuring charges in the accompanying statement of operations.

We may incur additional restructuring charges in 2003 of \$3 to \$5 million as we continue to take actions to reduce our operating costs.

### OTHER INCOME (EXPENSE)

Other income (expense) consists primarily of interest income and expense, foreign exchange gains and losses and other miscellaneous gains, losses, income and expense items.

Interest income was approximately \$3.3 million in 2002, \$6.6 million in 2001 and \$10.7 million in 2000. Our interest income in 2002 was lower than in 2001 due to our use of cash and marketable securities to finance the acquisitions of Aera in January 2002 and Dressler in March 2002, and to repurchase a portion of our 5.25% and 5.00% convertible subordinated notes in the open market in the fourth quarter of 2002. Interest income in 2001 was lower than in 2000 due to our use of cash and marketable securities to repurchase a portion of our 5.25% convertible subordinated notes in the fourth quarter of 2000 and due to our purchase of EMCO in January 2001. Interest income also declined throughout 2002 and 2001 due to the Federal Reserve lowering interest rates throughout the period. The prime rate declined from 9.5% in January 2001 to 4.25% in December 2002 and our yield declined from a high of 8.7% to approximately 2% on a pre-tax basis.

Interest expense consists principally of accruals of interest on our convertible subordinated notes; amortization of our deferred offering costs on these notes; and bank loans and capital leases assumed in the acquisition of Aera. Interest expense was approximately \$12.5 million in 2002, \$7.4 million in 2001 and \$7.7 million in 2000. The increase in interest expense from 2001 to 2002 was primarily due to the issuance of our 5.00% convertible subordinated notes in August 2001 and the debt and capital leases assumed in the acquisition of Aera in January 2002. Interest expense was relatively unchanged from 2000 to 2001.

Our foreign subsidiaries' sales are primarily denominated in currencies other than the U.S. dollar. We recorded a net foreign currency gain of \$5.3 million in 2002, and losses of \$235,000 in 2001 and \$196,000 in 2000.

Our foreign currency gain in 2002 was primarily related to an intercompany loan of Japanese yen, which was settled subsequent to December 31, 2002, that we made to our wholly owned subsidiary Advanced Energy Japan K.K., or AE-Japan, which has a functional currency of yen, for the purpose of effecting the acquisition of Aera. The loan was transacted in the first quarter of 2002, for approximately 5.7 billion yen, approximately \$44 million based upon an

exchange rate of approximately 130:1. During the first half of the year, the U.S. dollar weakened significantly against the yen to approximately 119:1, resulting in a gain of \$4.9 million. In July and September 2002, we entered into various foreign currency forward contracts with our primary banks to mitigate the effects of potential future currency fluctuations between the dollar and the yen until the associated intercompany obligations are settled.

Miscellaneous expense items were \$2.1 million in 2002 and \$1.0 million in 2001. The increase in miscellaneous expense in 2002 from 2001, was primarily related to the impairment of certain marketable equity securities. During the fourth quarter of 2002, the fair value of these securities continued a substantial decline and we determined the decline was other than temporary as defined by the Financial Accounting Standards Board. As a result we recorded an impairment of approximately \$1.5 million. As of February 11, 2003, the value of this investment has declined an additional \$675,000. If the fair value of this investment does not return to its December 31, 2002 carrying value by the end of the first quarter of 2003, we will record an additional impairment in the first quarter of 2003. Our remaining carrying balance at December 31, 2002 was approximately \$2.0 million. Miscellaneous income of \$4.7 million in 2000 was primarily due to a \$4.8 million gain on a sale of an investment.

#### (BENEFIT) PROVISION FOR INCOME TAXES

The income tax benefit of \$22.3 million for 2002, which included a provision of \$1.6 million for an extraordinary item, represented an effective tax rate of 35%. The income tax benefit of \$17.4 million for 2001 represented an effective rate of 36%. The income tax provision of \$36.8 million in 2000, which included a \$4.6 million provision for an extraordinary item, represented an effective rate of 35%. Changes in our relative earnings and the earnings of our foreign subsidiaries affect our consolidated effective tax rate. We adjust our income taxes periodically based upon the anticipated tax status of all foreign and domestic entities, and have adopted income tax planning strategies to reduce our worldwide income tax expense.

Realization of our net deferred tax asset is dependent upon our generating sufficient taxable income in the appropriate tax jurisdictions in future years to obtain benefit from the reversal of net deductible temporary differences and from tax credit carryforwards. When recording acquisitions, we have recorded valuation allowances due to the uncertainty related to the realization of certain deferred tax assets existing at December 31, 2002. The amount of deferred tax assets considered realizable is subject to adjustment in future periods if estimates of future taxable income are changed. We believe that it is more likely than not that we will realize the benefits of our deferred tax asset, net of valu-

ation allowance, as of December 31, 2002. Reversals of valuation allowances recorded in purchase accounting will be reflected as a reduction of goodwill in the period of reversal.

#### EXTRAORDINARY GAIN

In the fourth quarter of 2002, we repurchased approximately \$15.4 million of our 5.25% convertible subordinated notes and \$3.5 million of our 5.00% convertible subordinated notes in the open market at an aggregate cost of approximately \$14.5 million. These purchases resulted in a pretax extraordinary gain of \$4.2 million, or \$2.6 million after tax. In the fourth quarter of 2000, we repurchased an aggregate of approximately \$53.4 million principal amount of our 5.25% convertible subordinated notes in the open market, for a cost of approximately \$40.8 million. These purchases resulted in a pretax extraordinary gain of \$12.2 million, or \$7.6 million after tax.

#### Summary Results of Operations

The following table summarizes certain data as a percentage of sales extracted from our statement of operations:

	Years Ended December 31,		
	2002	2001	2000
Sales	100.0%	100.0%	100.0%
Cost of sales	71.2	70.3	51.0
Gross margin	28.8	29.7	49.0
Operating expenses:			
Research and development	20.5	23.3	10.2
Sales and marketing	14.6	12.3	6.7
General and administrative	12.8	11.1	6.8
Litigation damages and expenses (recovery)	2.2	(0.8)	—
Restructuring charges	3.8	1.6	0.3
Impairment of goodwill and other intangible assets	0.8	2.8	—
Impairment of investments and advances	—	3.6	—
Merger costs	—	—	1.3
Total operating expenses	54.7	53.9	25.3
(Loss) income from operations	(25.9)	(24.2)	23.7
Other (expense) income	(2.5)	(1.1)	2.1
Net (loss) income before income taxes, minority interest and extraordinary item	(28.4)	(25.3)	25.8
(Benefit) provision for income taxes	(10.0)	(9.0)	9.0
Minority interest in net loss	—	(0.1)	—
Net (loss) income before extraordinary item (net of applicable taxes)	(18.4)	(16.2)	16.8
Extraordinary item	1.1	—	2.1
Net (loss) income	(17.3)%	(16.2)%	18.9%

**MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS****Quarterly Results of Operations**

The following tables present unaudited quarterly results in dollars and as a percentage of sales for each of the eight quarters in the period ended December 31, 2002. We believe that all necessary 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							
	Mar. 31, 2001	June 30, 2001	Sept. 30, 2001	Dec. 31, 2001	Mar. 31, 2002	June 30, 2002	Sept. 30, 2002	Dec. 31, 2002
(In thousands, except per share data)								
Sales	\$74,714	\$46,171	\$38,722	\$ 33,993	<b>\$42,887</b>	<b>\$67,893</b>	<b>\$70,674</b>	<b>\$ 57,444</b>
Gross profit	31,223	7,781	11,036	7,392	<b>13,374</b>	<b>24,312</b>	<b>26,600</b>	<b>4,474</b>
Income (loss) from operations	7,531	(20,927)	(11,663)	(21,828)	<b>(11,423)</b>	<b>(9,330)</b>	<b>(5,788)</b>	<b>(35,444)</b>
Other income (expense)	187	(70)	(711)	(1,484)	<b>(1,997)</b>	<b>1,424</b>	<b>(2,797)</b>	<b>(2,560)</b>
Extraordinary item (net of income taxes)	—	—	—	—	—	—	—	<b>2,639</b>
Net income (loss)	\$ 5,094	\$ (14,549)	\$ (7,482)	\$ (14,442)	<b>\$ (8,723)</b>	<b>\$ (5,139)</b>	<b>\$ (5,580)</b>	<b>\$ (21,957)</b>
Basic and diluted earnings (loss) per share	\$ 0.16	\$ (0.46)	\$ (0.24)	\$ (0.45)	<b>\$ (0.27)</b>	<b>\$ (0.16)</b>	<b>\$ (0.17)</b>	<b>\$ (0.68)</b>

	Quarters Ended							
	Mar. 31, 2001	June 30, 2001	Sept. 30, 2001	Dec. 31, 2001	Mar. 31, 2002	June 30, 2002	Sept. 30, 2002	Dec. 31, 2002
Percentage of Sales:								
Sales	100.0%	100.0%	100.0%	100.0%	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>
Gross margin	41.8	16.9	28.5	21.7	<b>31.2</b>	<b>35.8</b>	<b>37.6</b>	<b>7.8</b>
Income (loss) from operations	10.1	(45.3)	(30.1)	(64.2)	<b>(26.6)</b>	<b>(13.7)</b>	<b>(8.2)</b>	<b>(61.7)</b>
Other income (expense)	0.2	(0.2)	(1.9)	(4.4)	<b>(4.7)</b>	<b>2.1</b>	<b>(3.9)</b>	<b>(4.4)</b>
Extraordinary item (net of income taxes)	—	—	—	—	—	—	—	<b>4.6</b>
Net income (loss)	6.8%	(31.5)%	(19.3)%	(42.5)%	<b>(20.3)%</b>	<b>(7.6)%</b>	<b>(7.9)%</b>	<b>(38.2)%</b>

Due to the cyclical nature of the semiconductor capital equipment industry, and the sudden changes resulting in severe downturns and upturns, we have experienced and expect to continue to experience significant fluctuations in our quarterly operating results. Our levels of operating expenditures are based, in part, on expectations of future revenues that such expenses support. If revenue levels in a particular quarter do not meet expectations, operating results may be adversely affected.

Our quarterly operating results in 2001 and 2002 reflect the fluctuating demand for our products during this period, principally from manufacturers of semiconductor capital equipment, data storage equipment and flat panel displays, and our ability to adjust our manufacturing capacity and infrastructure to meet this demand. Sales to the semiconductor capital equipment industry decreased each quarter throughout 2001 then increased 21% in the first quarter of 2002 and 58% in the second quarter of 2002. Sales to the semiconductor capital equipment industry then declined 8% in the third quarter of 2002 and a further 27% in the fourth quarter of 2002, due to the market conditions discussed above. These percentage changes in 2002 exclude the effects of our acquisitions of Aera and Dressler. Data storage sales fluctuated significantly throughout both years. Flat panel

sales declined throughout 2001, then increased substantially in the third and fourth quarters of 2002. Our revenue from all sectors is heavily influenced by general economic conditions and consumer spending patterns in each of the industries we serve.

We added new facilities in Fort Collins, Colorado in the first quarter of 2001 to increase our manufacturing capacity to continue to meet the growth that was expected throughout 2001, which substantially increased our fixed costs. Then, as we entered the sudden and steep decline in volume from the semiconductor capital equipment industry in that quarter, the combination of declining sales and higher fixed costs resulted in lower absorption of fixed overhead and greatly reduced our gross margins throughout 2001. In addition, the industry slowdown caused more inventory to be deemed excess or obsolete, and warranty costs associated with certain products in excess of historical experience also adversely affected margins, particularly in the second quarter of 2001 and fourth quarter of 2002.

In 2002, gross margins improved each quarter through the third quarter, primarily due to better absorption from our increasing sales base. In the fourth quarter of 2002, our gross margin declined substantially as the sudden decline in our sales base of 19% hampered our fixed cost absorption and

caused us to adjust our excess and obsolete inventory reserves to reflect our revised sales outlook.

Research and development, selling and marketing, and general and administrative expenses declined each quarter throughout 2001, due to certain cost cutting measures we implemented in 2000 and 2001. Research and development, selling and marketing, and general and administrative expenses increased in the second quarter of 2002, due to our acquisitions of Aera and Dressler. Sales and marketing expenses increased in the third and fourth quarters of 2002, due to general merit increases and trade show promotions. General and administrative expenses increased in the fourth quarter of 2002, primarily due to an increase in our allowance for doubtful accounts of approximately \$1.6 million due to the extended economic downturn. As a percentage of sales, operating expenses have generally declined during periods of rapid sales growth, when sales increased at a rate faster than our need or ability to add personnel and facilities to support the growth. These operating expenses as a percentage of sales have generally increased during periods of flat or decreased sales, when our infrastructure is retained to support strong customer relationships and anticipated future growth.

Other income (expense) consists primarily of interest income and expense, foreign currency gains and losses, and miscellaneous gains, losses, income and expense items. Changes in interest rates and changes in our level of investments in marketable securities drive the quarterly fluctuations in our interest income. Because the interest rates we pay on the majority of our long-term debt are fixed, our levels of such debt determine our quarterly interest expense, which decrease when we repurchase such debt and which increase when we make new offerings. Our variable rate debt was assumed in our acquisition of Aera. At December 31, 2002, this debt had variable interest rates ranging from 1.28% to 3.1%. Changes in exchange rates and our ability to manage foreign currency exposure determine the quarterly fluctuations in our foreign currency gains and losses. In the second quarter of 2002, we recognized a foreign currency gain of approximately \$4.6 million related to an intercompany loan of Japanese yen we made to our AE-Japan subsidiary, which has a functional currency of yen. This loan was settled subsequent to December 31, 2002. Miscellaneous expense items vary according to the frequency of non-operating events. The largest single item in this category was in the fourth quarter of 2002 when we recorded a \$1.5 million impairment of a marketable equity security that continued a substantial decline in value during the fourth quarter. Subsequent to December 31, 2002 this investment has continued to decline in value and we will record an additional impairment in the first quarter of 2003 if the value of this

investment does not return to its December 31, 2002 carrying value by March 31, 2003.

Our effective rate for income tax provision and benefit fluctuated on a quarterly basis throughout 2001 and 2002, varying from 31% to 38%. The fluctuations were due to the timing of certain nondeductible expenses including goodwill impairment, and due to initiatives we implemented in 2000 to reduce our overall rate as well as changes in our relative earnings and the earnings of our foreign subsidiaries.

### **Liquidity and Capital Resources**

Our financing strategy has been to raise capital from debt and equity markets to provide liquidity to enable our investments in acquisitions and alliances, which support our strategic vision of being a single source provider of high value subsystems. We maintain substantial levels of cash and marketable securities to have funding readily available for such investment opportunities when they arise. Since 1995, to better enable such strategic investments, we have attained this liquidity with proceeds from underwritten public offerings of our common stock and, since 1999, offerings of convertible subordinated debt.

Operating activities used cash of \$15.3 million in 2002, reflecting our net loss of \$41.4 million partially offset by non-cash items of \$20.8 million and net working capital changes of approximately \$5.3 million. Non-cash items primarily consisted of a \$4.2 million pretax gain on the retirement of a portion of our convertible notes; a \$4.9 million gain on an intercompany foreign currency loan; a \$6.9 million benefit for deferred income taxes; depreciation of property and equipment of \$13.4 million; amortization of intangible assets and demonstration and customer service equipment of \$8.0 million; provision for excess and obsolete inventory of \$5.8 million; provision for doubtful accounts of \$1.9 million; and impairments of \$5.1 million. Our impairments consisted of intangible assets of \$1.9 million, property and equipment of \$1.6 million and marketable securities of \$1.5 million. Net working capital changes provided cash of \$5.3 million and primarily consisted of a \$5.1 million increase in accounts receivable; a \$2.9 million increase in demonstration and customer service equipment; a \$4.9 million increase in accrued warranty costs; and a \$4.6 million increase in accrued restructuring charges.

Operating activities generated cash of \$7.9 million in 2001, reflecting our net loss of \$31.4 million adjusted for non-cash items of \$32.6 million and changes in working capital of \$6.7 million. Non-cash items primarily consisted of a \$3.6 million benefit for deferred income taxes; depreciation of

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

property and equipment of \$10.0 million; amortization of intangible assets and demonstration equipment of \$5.9 million; provision for excess and obsolete inventory of \$6.4 million; and impairments of \$12.3 million. Our impairments consisted of goodwill of \$5.4 million and an investment of \$6.9 million. Net working capital changes provided cash of \$6.7 million and primarily consisted of a \$45.0 million decrease in accounts receivable; a \$5.5 million increase in inventory; a \$5.5 million decrease in accounts payable; and a \$22.0 million increase in net income taxes receivable.

Operating activities provided cash of \$34.7 million in 2000, primarily as a result of net income of \$68.0 million, offset by non-cash items of \$6.0 million and net working capital changes of \$27.3 million. Non-cash items primarily consisted of a \$3.7 million benefit for deferred income taxes; depreciation of property and equipment of \$7.6 million; amortization of intangible assets and demonstration equipment of \$2.9 million; a gain on the sale of an investment of \$4.8 million; and a \$12.2 million pretax gain on the retirement of a portion of our convertible notes. Net working capital changes used cash of \$27.3 million and primarily consisted of a \$28.2 million increase in accounts receivable; a \$17.5 million increase in inventory; and a \$14.6 million decrease in net income taxes receivable.

We expect near-term future operating activities to continue to use cash. Any future decline in the industries in which we operate could substantially affect our ability to collect payments from our customers, could cause us to initiate future reductions in force requiring substantial severance payments, and other cash payments to exit certain operating activities, among other uses of cash. Conversely, as receivable and inventory balances tend to fluctuate with net sales any future upturn in the industries we serve, primarily the semiconductor industry, may result in an increase in our net receivables and inventory balances. We are typically required to use our cash reserves to finance our inventory purchases and extend credit to our customers to finance their purchases from us. We are unable to provide any assurance regarding our future cash flow from operations.

Investing activities provided cash of \$24.3 million in 2002 and consisted of cash generated by the net sale of marketable securities of \$87.9 million; partially offset by cash used for the acquisition of Aera for \$35.7 million net of \$8.3 million of cash acquired; the acquisition of Dressler for \$14.4 million net of \$680,000 of cash acquired; the acquisition of the minority interest of LITMAS for \$400,000 in addition to our common stock valued at approximately \$4.2 million; the purchase of property and equipment of \$10.7 million and the purchase of other investments of \$2.8 million. Although

investing activities provided cash of \$24.3 million in 2002, our total cash and marketable securities declined approximately \$99.6 million during 2002. Our marketable securities are not considered cash equivalents, and a significant portion of these securities were sold during 2002, to finance the above transactions as well as to fund our operating activities. Investing activities used cash of \$81.2 million in 2001, and consisted of the acquisition of EMCO for \$29.9 million net of \$459,000 of cash acquired, the net purchase of marketable securities of \$31.6 million, the purchase of investments and advances of \$7.2 million and the purchase of property and equipment of \$12.4 million. Investing activities provided cash of \$15.5 million in 2000, and consisted primarily of the purchase of property and equipment of \$14.1 million and the purchase of investments of \$3.5 million, offset by proceeds from the sale of investments and marketable securities of \$33.1 million.

Investing cash flows experience significant fluctuations from year to year as we buy and sell marketable securities, which we convert to cash to fund strategic investments and our operating cash flow, and as we transfer cash into marketable securities when we attain levels of cash that are greater than needed for current operations. However, we do not expect to generate levels of cash that are greater than needed for our current operations in the near term.

Financing activities used cash of \$22.6 million in 2002, and consisted primarily of open market repurchases of our convertible notes of \$14.5 million, the repayment of notes payable and capital lease obligations of \$10.2 million, partially offset by proceeds from the exercise of employee stock options and sale of common stock through our employee stock purchase plan or ESPP of \$2.1 million.

The main uses of cash from financing activities in 2002 were open market repurchases of our convertible notes and payments for capital lease obligations and notes payable. We expect our financing activities to continue to fluctuate in the future. If market conditions and our financial position are deemed appropriate, we may repurchase additional convertible notes in the open market. Our payments under capital lease obligations and notes payable may also increase in the future if we enter into additional capital lease obligations or change the level of our bank financing. Our estimated payments under capital lease obligations and bank debt during 2003 will be approximately \$15.2 million. However, a significant portion of these obligations are held in countries other than the United States, therefore future foreign currency fluctuations, especially between the dollar and the yen, could cause significant fluctuations in our estimated 2003 payment obligations.

Financing activities provided cash of \$124.1 million in 2001, and consisted primarily of proceeds from convertible debt of \$121.25 million and proceeds from the exercise of employee stock options and sale of common stock through our ESPP of \$4.0 million. Financing activities used cash of \$37.5 million in 2000, and consisted primarily of open market repurchases of our convertible notes of \$40.8 million, offset by proceeds from the exercise of employee stock options and sale of common stock through our ESPP of \$4.9 million.

We plan to spend approximately \$10 million to \$12 million in 2003 for the acquisition of equipment, leasehold improvements and furnishings, with depreciation expense for 2003 projected to be \$13 million to \$14 million. Our planned level of capital expenditures is subject to frequent revisions because our business experiences sudden changes as we move into industry upturns and downturns and expected sales levels change. In addition, changes in foreign currency may significantly impact our capital expenditures and depreciation expense recognized in a particular period.

As of December 31, 2002, we had working capital of \$247.9 million, a decrease of \$101.7 million from December 31, 2001. The principal causes of this decrease during 2002 were the use of cash to finance our operating activities, the purchase of certain investments and acquisitions, the repurchase of our convertible subordinated notes, and payments under our capital lease obligations and bank debt as discussed above. Our principal sources of liquidity consisted of \$70.2 million of cash and cash equivalents, \$102.2 million of marketable securities, and a credit facility consisting of a \$25.0 million revolving line of credit, none of which was outstanding at December 31, 2002. Advances under the revolving line of credit bear interest at the prime rate (4.25% at March 12, 2003) minus 1%. Any advances under this revolving line of credit will be due and payable in May 2003. In July and September 2002, we reduced our borrowing base by \$6.4 million in connection with foreign currency forward contracts we entered into, providing us with net borrowing availability of approximately \$18.6 million at December 31, 2002. Subsequent to December 31, 2002, these foreign currency forward contracts matured. We are subject to covenants on our line of credit that provide certain restrictions related to working capital, net worth, acquisitions and payment and declaration of dividends. We were in compliance with all such covenants at December 31, 2002.

We have committed to advance \$2.3 million to several privately held companies over the next two years. We finance the majority of our facilities under operating leases, which are not reflected as an asset or liability in our accompanying balance sheets. At December 31, 2002, we had the following future minimum commitments under noncancelable operating leases:

	(In thousands)
2003	\$ 5,468
2004	4,464
2005	3,869
2006	3,507
2007	2,990
Thereafter	12,055
	\$32,353

In addition to operating leases, we also have a contingent purchase price adjustment relating to our acquisition of Dressler, which may require us to pay an additional \$3.0 million to the former shareholder of Dressler, if Dressler achieves certain key business objectives by March 30, 2003.

To finance the facilities for our headquarters and main U.S. manufacturing location, we lease our executive offices and manufacturing facilities in Fort Collins, Colorado from two limited liability partnerships consisting of one of our directors, who is also an officer, a former director and other individuals unrelated to us. The leases relating to these spaces expire in 2009, 2011 and 2016 and contain monthly payments of approximately \$67,000, \$55,000 and \$64,000, respectively.

Approximately \$2.7 million, \$2.2 million and \$1.6 million was paid and charged to rent expense attributable to these leases for the years ended December 31, 2002, 2001 and 2000, respectively.

We believe that our cash and cash equivalents, marketable securities, cash flow from operations and available borrowings, will be sufficient to meet our working capital needs for at least the next twelve months. After that time, we may require additional equity or debt financing to address our working capital, capital equipment or expansion needs. In addition, any significant acquisitions we make may require additional equity or debt financing 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 us. In 2006, when our convertible subordinated notes become due, it is possible we may need substantial funds to repay such debt, which was \$187.7 million at December 31, 2002. Our 5.00% convertible subordinated notes of \$121.5 million are due September 1, 2006, and our 5.25% convertible subordinated notes of \$66.2 million are due November 15, 2006. Payment would be required if our common stock price remains at low levels throughout this period, the prices at which we can effect conversion are not met in the market in which our stock is traded, and the holders of our notes choose not to otherwise convert. In such a situation there can be no assurance that we will be able to refinance the debt. We may continue to repurchase additional notes in the open market from time to

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

time, if market conditions and our financial position are deemed favorable for such purposes.

### Critical Accounting Policies

The preceding discussion and analysis of our financial condition and results of operations is based upon our consolidated financial statements, which have been prepared in accordance with accounting principles generally accepted in the United States. In preparing our financial statements, we must make estimates and judgments that affect the reported amounts of assets and liabilities, revenues and expenses, and related disclosure of contingent assets and liabilities at the date of our financial statements. Actual results may differ from these estimates under different assumptions or conditions. We believe that the following critical accounting policies, among others, affect our more significant judgments and estimates used in the preparation of our consolidated financial statements.

#### VALUATION OF INTANGIBLE ASSETS AND GOODWILL—

We have approximately \$86.6 million of intangible assets and goodwill as of December 31, 2002, including approximately \$22.4 million related to amortizable intangibles and \$64.2 million in goodwill. In addition to the original cost of these assets, their recorded value is impacted by a number of our policy elections, including estimated useful lives, foreign currency fluctuations and impairment charges, if any. In accordance with SFAS 142, "Goodwill and Other Intangible Assets", we identified three reporting units. Generally, we allocated goodwill to the reporting unit that created goodwill upon its acquisition. However, we believe that our recently acquired companies provide future growth opportunities to our core business and as a result we allocated approximately 25% of the goodwill created upon the acquisitions of Aera and EMCO to our core business. We performed an annual impairment analysis of our non-amortizable intangible assets and goodwill during the fourth quarter of 2002, which indicated that no impairment was required. This assessment requires estimates of future revenue, operating results and cash flows, as well as estimates of critical valuation inputs such as discount rates, terminal values and similar data. We will continue to perform periodic and annual impairment analyses of the non-amortizable intangible assets and goodwill resulting from our acquisitions. As a result of future periodic, at least annual, impairment analyses we may record impairment charges that have a material adverse impact on our financial position and operating results. Additionally, we may make strategic business decisions in future periods which impact the fair value of our intangible assets and goodwill, which could result in significant impairment charges.

**LONG-LIVED ASSETS INCLUDING INTANGIBLES SUBJECT TO AMORTIZATION—** Depreciation and amortization of our long-lived assets is provided using the straight-line method over their estimated useful lives. Changes in circumstances such as the passage of new laws or changes in regulations, technological advances, changes to our business model or changes in our capital strategy could result in the actual useful lives differing from initial estimates. In those cases where we determine that the useful life of a long-lived asset should be revised, we will depreciate the net book value in excess of the estimated residual value over its revised remaining useful life. Factors such as changes in the planned use of equipment, customer attrition, contractual amendments or mandated regulatory requirements could result in shortened useful lives.

Long-lived assets and asset groups are evaluated for impairment whenever events or changes in circumstances indicate that the carrying amount of such assets may not be recoverable. The estimated future cash flows are based upon, among other things, assumptions about expected future operating performance and may differ from actual cash flows. Long-lived assets evaluated for impairment are grouped with other assets to the lowest level for which identifiable cash flows are largely independent of the cash flows of other groups of assets and liabilities. If the sum of the projected undiscounted cash flows excluding interest is less than the carrying value of the assets, the assets will be written down to the estimated fair value in the period in which the determination is made. Impairments will also be assessed when assets are determined to be held-for-sale, as opposed to held and used in operations.

#### RESERVE FOR EXCESS AND OBSOLETE INVENTORY—

Inventory is valued at the lower of cost or market. Given the rapid change in technology, we monitor and forecast expected inventory needs based on our constantly changing sales forecast. Inventory is written down or written off when it becomes obsolete, generally because of engineering changes to a product or discontinuance of a product line, or when it is deemed excess. These determinations involve the exercise of significant judgment by management, and as demonstrated in recent periods demand for our products is volatile and changes in expectations regarding the level of future sales can result in substantial charges against earnings for obsolete and excess inventory. Following the above, we recorded charges of \$5.8 million in 2002, the majority of which occurred during the fourth quarter.

**RESERVE FOR WARRANTY—** We provide warranty coverage for our products, ranging from 12 to 36 months, with the majority of our products ranging from 18 to 24 months, and estimate the anticipated costs of repairing our products under such warranties based on the historical costs of the

repairs and expected product failure rates. The assumptions we use to estimate warranty accruals are reevaluated periodically in light of actual experience and, when appropriate, the accruals are adjusted. Our determination of the appropriate level of warranty accrual is subjective, and based on estimates. The industries in which we operate are subject to rapid technological change. As a result, we periodically introduce newer, more complex products, which tend to result in increased warranty costs. We expect the industries in which we operate to continue to require the introduction of new technologies, which could cause our warranty costs to increase in the future. Should product failure rates differ from our estimates, actual costs could vary significantly from our expectations.

**FAIR VALUE OF DERIVATIVE INSTRUMENTS**— We have entered into various foreign currency forward contracts to mitigate our foreign currency exposure from foreign currency denominated trade purchases and intercompany receivables and payables. These derivative instruments are not held for trading or speculative purposes. The valuation of derivative instruments under SFAS No. 133 requires us to make estimates and judgments that affect the fair value of the instruments. Fair value of our derivatives is determined relative to changes in the forward yield curves and discount rates. Such amounts are subject to significant estimates which may change in the future.

**COMMITMENTS AND CONTINGENCIES**— We are involved in disputes and legal actions arising in the normal course of our business. While we currently believe that the amount of any ultimate potential loss would not be material to our financial position, the outcome of these actions is inherently difficult to predict. In the event of an adverse outcome, the ultimate potential loss could have a material adverse effect on our financial position or reported results of operations in a particular quarter. An unfavorable decision, particularly in patent litigation, could require material changes in production processes and products or result in our inability to ship products or components found to have violated third-party patent rights. We accrue loss contingencies in connection with our litigation when it is probable that a loss has occurred and the amount of the loss can be reasonably estimated.

**REVENUE RECOGNITION**— We recognize revenue upon shipment of our products and spare parts, at which time title passes to the customer, as our shipping terms are FOB shipping point, the price is fixed and collectibility is reasonably assured. We do not generate revenue from the installation of our products.

In certain instances we require our customers to pay for a portion or all of their purchases prior to our building or

shipping the products. We record cash payments received prior to shipment as customer deposits in the accompanying balance sheets, then recognize revenue upon shipment of the products. We do not offer price protections to our customers or allow returns, unless covered by our normal policy for repair of defective products.

We have an arrangement with one of our major customers, a semiconductor capital equipment manufacturer, in which completed products are shipped to the customer and held by them in their warehouse. The customer draws products from this inventory as needed, at which time title passes to the customer and we recognize revenue. The customer is subject to our normal warranty policy for repair of defective products.

In certain instances we deliver products to customers for evaluation purposes. In these arrangements, the customer retains the products for specified periods of time without commitment to purchase. On or before the expiration of the evaluation period, the customer either rejects the product, and returns it to us, or accepts the product. Upon acceptance, title passes to the customer, we invoice the customer for the product, and revenue is recognized. Pending acceptance by the customer, such systems are reported on our balance sheet at an estimated value based on the lower of cost or market, and are included in the amounts for demonstration and customer service equipment, net of accumulated depreciation.

While we maintain a stringent credit approval process, significant judgments are made by management in connection with assessing our customers' ability to pay at the time of shipment. Despite this assessment, from time to time, our customers are unable to meet their payment obligations. We continue to monitor our customers' credit worthiness, and use our judgment in establishing the estimated amounts of customer receivables which will ultimately not be collected. A significant change in the liquidity or financial position of our customers could have a material adverse impact on the collectibility of our accounts receivable and our future operating results.

**STOCK-BASED COMPENSATION**— As allowed by SFAS No. 123, we have elected to continue to account for our employee stock-based compensation plans using the intrinsic value method in accordance with Accounting Principles Board Opinion No. 25, "Accounting for Stock Issued to Employees," and related Interpretations, which do not require compensation expense to be recorded if the consideration to be received is at least equal to the fair value of the common stock to be received at the measurement date. We provide information as to what our earnings and earnings per share would have been had we used the fair value method prescribed by SFAS No. 123.

## QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

### Interest Rate Risk

Our exposure to market risk for changes in interest rates relates primarily to our investment portfolio and long-term debt obligations. We generally place our investments with high credit quality issuers and by policy are averse to principal loss and seek to protect and preserve our invested funds by limiting default risk, market risk and reinvestment risk. As of December 31, 2002, our investments in marketable securities consisted primarily of commercial paper, municipal and state bonds and notes and institutional money markets. These securities are highly liquid. Earnings on our marketable securities are typically invested into similar securities. In 2002, the rates we earned on our marketable securities approximated 2.0% on a before tax equivalent basis. Because the Federal Reserve repeatedly lowered interest rates throughout 2001 and 2002, the interest rates we earn on our investments likewise decreased substantially. This, in conjunction with using our available cash and cash reserves for acquisitions, including the EMCO acquisition in January 2001, the Aera acquisition in January 2002, the Dressler acquisition in March 2002, and the repurchase of a portion of our convertible subordinated notes in the fourth quarter of 2002, has greatly reduced our recent and anticipated interest income. The impact on interest income of a 10% decrease in the average interest rate would have resulted in approximately \$300,000 less interest income in 2002, \$700,000 in 2001 and \$1.1 million in 2000.

The interest rates on our subordinated debt are fixed, specifically, at 5.25% for the \$66.2 million of our debt due November 2006, and at 5.00% for the \$121.5 million of our debt that is due September 2006. Our offerings of subordinated debt in 1999 and 2001 increased our fixed interest expense upon each issuance, though interest expense was partially reduced by the repurchase of a portion of these offerings in 2000 and 2002. Because these rates are fixed, we believe there is no risk of increased interest expense.

The interest rates on our Aera Japan subsidiary's \$34 million credit lines are variable and currently range from 1.28% to 3.1%. We believe a 10% increase in the average interest rate on these instruments would not have a material effect on our financial position or results of operations.

### Foreign Currency Exchange Rate Risk

We transact business in various foreign countries. Our primary foreign currency cash flows are generated in countries in Asia and Europe. During 2002, the U.S. dollar weakened approximately 10% against the Japanese yen and 15% against the euro. It is highly uncertain how currency exchange rates will fluctuate in the future. We have entered into various forward foreign currency exchange contracts to

mitigate against currency fluctuations in the Japanese yen. We will continue to evaluate various methods to minimize the effects of currency fluctuations when we translate the financial statements of our foreign subsidiaries into U.S. dollars. At December 31, 2002, we held a foreign currency forward exchange contract in the U.S. to mitigate the currency fluctuations from our 5.7 billion yen intercompany receivable due from our subsidiary, AE-Japan. Under this contract we will sell Japanese yen with dollar equivalent notional amounts of approximately \$48.4 million, which at December 31, 2002 had market settlement amounts of approximately \$48.3 million for an unrealized gain position of approximately \$0.1 million. In Japan, we held foreign currency forward exchange contracts to sell U.S. dollars with notional amounts of \$15.0 million and market settlement amounts of approximately \$15.3 million for an unrealized loss position of approximately \$0.3 million and contracts to purchase U.S. dollars with notional amounts of \$6.5 million and market settlement amounts of approximately \$6.7 million for an unrealized loss position of approximately \$0.2 million.

### Other Risk

We have invested in start-up companies and strategic alliances and may in the future make additional investments in such companies that develop products which we believe may provide future benefits. We have written down the cost of one such investment in 2001 and 2002, related to a strategic alliance we started in 2000. Such current investments and any future investments will be subject to all of the risks inherent in investing in companies that are not established, or in which, due to our level of investment, we do not exercise significant management control.