# 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;
- changes in customers'inventory management practices;
- customer cancellations of previously placed orders and shipment delays;
- pricing competition from our competitors;
- costs incurred by responding to specific feature requests by customers;
- declines in macroeconomic conditions;
- timing and challenges of integrating recent and potential future acquisitions and strategic alliances; and
- our ability to attract and retain key personnel.

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, 2001.

## OVERVIEW

We design, manufacture and support a group of key subsystems for vacuum process systems. Our primary subsystems include 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 59% of our sales in 2001, 70% in 2000 and 65% in 1999. In 1999 and 2000, the semiconductor capital equipment industry was at its historical peak for sales.Conversely, the year 2001 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. However, during this period, we continued to achieve significant design wins on new equipment at manufacturers, which have resulted in solidifying relationships with our existing customers. 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.

In order to provide higher-value products,the semiconductor capital equipment industry is in the midst of significant consolidation. To help insure our continued growth and maintain our competitive advantage, we have done the following:

- In April 2000, we acquired Noah Holdings,Inc., which manufactures solid-state temperature control systems to control process temperatures during semiconductor manufacturing.
- In August 2000, we acquired Sekidenko,Inc., which supplies optical fiber thermometers to the semiconductor capital equipment industry.
- 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 January 2002, we acquired Aera Japan Limited.Aera primarily supplies the semiconductor capital equipment industry with product lines that include digitial mass flow controllers, pressure-based mass flow controllers, liquid mass flow controllers,ultrasonic liquid flow meters and liquid vapor delivery systems.

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 as the industry consolidation continues.

We have taken strategic financing actions to enable us to pursue these investments. In November 1999, we completed two public offerings, one for $135 million of convertible subordinated notes with a conversion price of $49.53, due in 2006, and one for 1,000,000 shares of our common stock, at a price of $39 per share.These offerings provided aggregate net proceeds of approximately $167.1 million.In the fourth quarter of 2000, we repurchased $53.4 million of these notes on the open market, leaving us with $81.6 million outstanding.These purchases resulted in an after-tax net extraordinary gain of $7.6 million. In August 2001, we completed an additional offering of convertible subordinated notes, providing aggregate net proceeds of approximately $121.25 million with a conversion price of $29.83, also due in 2006.These financings are discussed in more detail in the "Liquidity and Capital Resources"section.

We have also taken strategic marketing actions to provide for improved distribution channels.In December 1999, we completed formation of our wholly owned sales and service subsidiary in Taiwan. In October 2000, we opened a representative office in Shenzhen, China,to be responsible for market development,sales and technical support in China. We have also begun developing a sales force focused on selling to end users of our products.

Historically, our sales have primarily been to OEM manufacturers of semiconductor manufacturing equipment,but many of our newer products can be marketed directly to the end user for new or previously installed equipment. In some cases,the end user can direct the OEM to utilize our subsystems rather than our competitors.

## RESULTS OF OPERATIONS

### Sales

Sales were $193.6 million in 2001, $359.8 million in 2000 and $202.8 million in 1999, representing a decrease of 46% from 2000 to 2001 and an increase of 77% from 1999 to 2000.The changes in the level of our sales were primarily due to changes in demand for our systems from semiconductor capital equipment manufacturers, including many of our largest customers.The volatility in the semiconductor industry impacted overall investment activities, which led to semiconductor manufacturers purchasing less capital equipment.

While sales of semiconductor capital equipment have grown at a compounded annual growth rate of approximately 19% 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 1999 and part of 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. Our sales over the last three years illustrate this cyclicality.

Sales in 1999 and 2000 reflected the recovery in the semiconductor capital equipment industry from the severe downturn of 1998, and resulted from capacity expansion and increased investment in advanced technology by the semiconductor industry. This two-year recovery resulted in record sales for us,driven by sales to the semiconductor capital equipment industry. The decrease in sales in 2001 was due to a worldwide slowdown in demand for semiconductors, which resulted in a sudden and rapid decline in demand for semiconductor manufacturing equipment. Inventory buildups, slower than expected personal computer sales and slower global economic growth resulted in reduced capital investment by semiconductor manufacturers and their suppliers.

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, 2001:

| | Years Ended December 31, | | |
|---|---|---|---|
| (In thousands) | **2001** | 2000 | 1999 |
| Semiconductor capital equipment | **$114,273** | $252,889 | $131,395 |
| Data storage | **10,043** | 24,751 | 21,823 |
| Flat panel display | **18,145** | 29,273 | 11,171 |
| Advanced product applications | **35,698** | 37,726 | 28,563 |
| Customer service technical support | **15,441** | 15,143 | 9,897 |
| | **$193,600** | $359,782 | $202,849 |

| | Years Ended December 31, | | |
|---|---|---|---|
| | **2001** | 2000 | 1999 |
| Semiconductor capital equipment | **59%** | 70% | 65% |
| Data storage | **5** | 7 | 11 |
| Flat panel display | **10** | 8 | 5 |
| Advanced product applications | **18** | 11 | 14 |
| Customer service technical support | **8** | 4 | 5 |
| | **100%** | 100% | 100% |

The following table summarizes annual percentage changes in net sales by customer type for us from 2000 to 2001 and from 1999 to 2000:

| | **2001 change from 2000** | 2000 change from 1999 |
|---|---|---|
| Semiconductor capital equipment | **(55)%** | 92% |
| Data storage | **(59)%** | 13% |
| Flat panel display | **(38)%** | 162% |
| Advanced product applications | **(5)%** | 32% |
| Customer service technical support | **2%** | 53% |
| Total sales | **(46)%** | 77% |

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, 2001:

| | Years Ended December 31, | | |
|---|---|---|---|
| (In thousands) | **2001** | 2000 | 1999 |
| United States and Canada | **$124,746** | $260,596 | $148,424 |
| Europe | **28,957** | 52,893 | 32,344 |
| Asia Pacific | **39,038** | 45,874 | 21,583 |
| Rest of world | **859** | 419 | 498 |
| | **$193,600** | $359,782 | $202,849 |

| | Years Ended December 31, | | |
|---|---|---|---|
| | **2001** | 2000 | 1999 |
| United States and Canada | **64%** | 72% | 73% |
| Europe | **15** | 15 | 16 |
| Asia Pacific | **21** | 13 | 11 |
| Rest of world | **–** | – | – |
| | **100%** | 100% | 100% |

## Gross Margin

Our gross margin was 29.7% in 2001, 49.0% in 2000 and 45.5% in 1999.

The major items affecting the reduction in our margin in 2001 were:

- The adverse impact of much lower sales on the absorption of higher year-over-year fixed overhead. Historically, the rapid changes in industry demand have resulted in significant increases in manufacturing capacity during upturns followed by severe underutilization of these facilities in subsequent downturns.As the semiconductor capital equipment market's expansion of 1999 and 2000 was forecasted to continue into 2001,we increased our manufacturing capacity in Fort Collins, Colorado to meet this continued expected growth.This facility was completed in the first quarter of 2001 when the industry downturn was just beginning. While we understood that there was a risk of opening up a new facility after eight quarters of industry growth, the new facility was necessary to ensure our continued ability to meet demand and maintain our reputation as a leading supplier to the semiconductor capital equipment industry. This new facility also positions us to take advantage of the next up cycle in a much more efficient manner, which should have a positive impact on future operating results.
- The industry is moving to 300mm equipment 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 months.
- We reduced our fixed overhead through headcount reductions in force of some of our manufacturing staff when we saw our level of sales decline in 2001, though we do retain 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, often exacerbated by industry cycles and recent warranty expenses in excess of historical rates related to certain products, which required substantial rework, repair, and in some cases, replacement.

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. Charges for obsolete and excess inventory were $6.4 million in 2001, $654,000 in 2000 and $1.5 million in 1999, which affected gross margins by 3.3%, 0.2% and 0.8% in these years. The amount of inventory written 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 recent sales forecasts.

We provide warranty coverage for our systems 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 systems under such warranties based on the historical average costs of the repairs. We recognized charges for warranty expense of $7.6 million in 2001, $4.6 million in 2000 and $3.1 million in 1999.

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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,and actual experience can be different than our expectations.

The improvement in gross margin from 1999 to 2000 was primarily a result of a more favorable absorption of manufacturing costs, which resulted from the higher sales base.

Historically, price competition has not had a material effect on margins.However, competitive pressures may produce a decline in average selling prices for certain products.Any decline in average selling prices not offset by reduced costs could result in declines in our gross margins.

## Research and Development

We believe continued investment in the research and development of new systems is critical to our ability to serve new and existing markets, develop new products and improve existing product designs to achieve our vision of convergent technologies. We continue to invest heavily in new product development even during industry downturns,to be advantageously positioned for turnaround in demand for old and new products, which often occurs during sudden and unpredictable industry upturns. Since our inception, all of our research and development costs have been expensed as incurred.

Our research and development expenses were $45.2 million in 2001, $37.0 million in 2000 and $28.3 million in 1999, representing an increase of 22% from 2000 to 2001 and 31% from 1999 to 2000.As a percentage of sales, research and development expenses increased from 10.2% in 2000 to 23.3 % in 2001 because of the lower sales base, but decreased from 14.0% in 1999 to 10.2% in 2000 because of increased levels of revenue in 2000.The annual increases in expenditures from 1999 to 2001 are primarily due to increases in payroll, materials and supplies and depreciation of equipment used for new product development and partially due to the acquisition of EMCO in 2001.

## Sales and Marketing Expenses

As we continue our worldwide expansion, and expand our product offerings 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 begun an effort to market directly to end users of our systems,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 $23.8 million in 2001, $24.1 million in 2000 and $18.3 million in 1999.This represents a 32% increase from 1999 to 2000,and essentially no change from 2000 to 2001.The increase in expenses from 1999 to 2000 was to support the sales growth during the 2000 upturn in the semiconductor capital equipment industry. As a percentage of sales, sales and marketing expenses increased from 6.7% to 12.3% in 2001 due to the lower sales base in 2001, but decreased from 9.0% in 1999 to 6.7% in 2000 because of the higher sales base in 2000, even while dollars spent increased.

## 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 $21.5 million in 2001, $24.6 million in 2000 and $16.2 million in 1999.The 12% decrease from 2000 to 2001 is primarily due to lower spending for payroll, primarily employee bonuses, which were eliminated in 2001 due to the decline in operating profitability. The 51% increase from 1999 to 2000 is primarily due to higher spending for payroll, including employee bonuses, and purchased services.As a percentage of sales, general and administrative expenses increased from 6.8% in 2000 to 11.1% in 2001 because of the lower sales base in 2001, and decreased from 8.0% in 1999 to 6.8% in 2000 because of the higher sales base in 2000. General and administrative expenses in 2001 also included approximately $500,000 of legal costs in connection with patent infringement litigation.

## Goodwill Impairment

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 2001,2000 and 1999 represented less than five percent 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.

### Other Operating Expenses

Beginning in April 2000, we made periodic advances to or investments in Symphony Systems, Inc.,a privately held, early-stage developer of equipment productivity management software. In addition to the approximately $8 million received from us as investments, advances and license payments, Symphony received investments of $7 million from other parties.In 2000, we obtained an exclusive license, for which we paid $1.5 million, to use Symphony's products in the semiconductor industry. In connection with certain of our 2001 advances, we obtained a security interest in all of Symphony's intellectual and proprietary property.

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 its need for immediate liquidity, its declining business prospects (including the indefinite postponement of a significant order for its products from a major semiconductor equipment manufacturer) and other factors, the value of our investment in and advances to Symphony had substantially declined.Given the precarious financial condition of Symphony, we valued our investments in and advances to Symphony at December 31, 2001,at approximately $1 million, which reflects our assessment of the value of the Symphony technology license,which has continuing value to us. The amount of the writedown related to Symphony was $6.8 million, all of which was recorded in 2001 as an operating expense.

Since Symphony effectively ceased operations in February 2002, we have hired its key employees and we intend to purchase Symphony's remaining assets in a foreclosure, liquidation or bankruptcy sale in the near future.At no time did our percentage ownership in the voting stock of Symphony exceed approximately 1.7%, and we have never had the ability to exercise significant influence over Symphony.

### Restructuring and Merger Costs and One-time Credit

In April 2000, we acquired Noah in a pooling of interests under the previous rules of Accounting Principles Board (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 took a charge of $2.3 million in the second quarter of 2000 for merger costs, which cannot 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 took a charge of $2.3 million in the third quarter of 2000 for merger costs, which cannot 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 requires that the purchase 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. We paid cash to the affected employees in this amount during the second quarter of 2001, and at December 31, 2001 the remaining liability was not significant.

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 107 employees; phasing out our Austin, Texas manufacturing facility to begin outsourcing the assembly of certain DC power products; the transition of our Voorhees,New Jersey facility from a manufacturing site to a design center; and the closure of Noah's manufacturing and office facilities in San Jose,California, due to the transfer of Noah's manufcturing to Vancouver, Washington, to be co-located with Sekidenko.These costs included payments required under operating lease contracts and costs for writing down related leasehold improvements for facilities.At December 31,2001, approximately $1.3 million related to the fourth quarter of 2001 restructuring and severance actions was accrued as a current liability.

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### Other (Expense) Income

Other (expense) income 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 $6.6 million in 2001, $10.7 million in 2000 and $2.2 million in 1999.Our 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 because of our purchase of EMCO in January 2001.The lower interest income in 2001 was also due to the decline in interest rates throughout 2001 resulting from the Federal Reserve's lowering of interest rates. In 1999, interest income was earned primarily from earnings on investments made from the proceeds of our initial public offering in 1995 and our underwritten public offering in 1997.In November 1999, our cash and marketable securities increased substantially from the proceeds of additional offerings of convertible subordinated notes and common stock, resulting in higher interest income in 2000.

Interest expense consists principally of accruals of interest on our convertible subordinated notes, on borrowings under our bank credit and capital lease facilities and a state government loan, the latter of which has been repaid. Interest expense was approximately $7.4 million in 2001, $7.7 million in 2000 and $1.4 million in 1999. The increase of interest expense from 1999 to 2000 was primarily due to interest on the convertible subordinated notes.

Our foreign subsidiaries' sales are primarily denominated in currencies other than the U.S. dollar. We recorded net foreign currency losses of $235,000 in 2001 and $196,000 in 2000, and a net foreign currency gain of $1.5 million in 1999. The losses in 2000 and 2001 were due to a weakening of the exchange rate of the Japanese yen to the U.S. dollar, partially offset by the effect of our use of forward foreign exchange contracts. The gain in 1999 was primarily due to strengthening of the exchange rate of the Japanese yen to the U.S. dollar. Since 1997, we have entered into various forward foreign exchange contracts to mitigate currency fluctuations in the Japanese yen. We continue to evaluate various policies to minimize the effect of foreign currency fluctuations. At December 31, 2001, we had $6.5 million of foreign currency forward contracts outstanding.

Miscellaneous expense items were $1.0 million in 2001 and $698,000 in 1999. 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 $17.4 million for 2001 represented an effective rate of 36%. The income tax provision of $36.8 million in 2000, which included $4.6 million of provision for an extraordinary item, represented an effective rate of 35%. The income tax provision of $11.7 million for 1999 represented an effective rate of 38%. 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.

### Extraordinary Gain

In the fourth quarter of 2000, we repurchased an aggregate of approximately $53.4 million principal amount of our 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, and reduced the level of our fixed cost interest expense until we acquired additional subordinated debt in the third quarter of 2001.

## 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, | | |
|---|---|---|---|
| | **2001** | 2000 | 1999 |
| Sales | **100.0%** | 100.0% | 100.0% |
| Cost of sales | **70.3** | 51.0 | 54.5 |
| Gross margin | **29.7** | 49.0 | 45.5 |
| Operating expenses: | | | |
| Research and development | **23.3** | 10.2 | 14.0 |
| Sales and marketing | **12.3** | 6.7 | 9.0 |
| General and administrative | **11.1** | 6.8 | 8.0 |
| Goodwill impairment | **2.8** | – | – |
| Other impairments | **3.6** | – | – |
| Restructuring charges | **1.6** | 0.3 | – |
| Merger costs | **–** | 1.3 | – |
| Litigation recovery | **(0.8)** | – | – |
| Total operating expenses | **53.9** | 25.3 | 31.0 |
| (Loss) income from operations | **(24.2)** | 23.7 | 14.5 |
| Other (expense) income | **(1.1)** | 2.1 | 0.7 |
| Net (loss) income before income taxes,minority interest and extraordinary item | **(25.3)** | 25.8 | 15.2 |
| (Benefit) provision for income taxes | **(9.0)** | 9.0 | 5.8 |
| Minority interest in net (loss) income | **(0.1)** | – | – |
| Net (loss) income before extraordinary item | **(16.2)** | 16.8 | 9.4 |
| Extraordinary item (net of applicable taxes) | **–** | 2.1 | – |
| Net (loss) income | **(16.2)%** | 18.9% | 9.4% |

## 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, 2001. 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 | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| (In thousands,except per share data) | Mar. 31, 2000 | June 30, 2000 | Sept.30, 2000 | Dec.31, 2000 | **Mar. 31, 2001** | **June 30, 2001** | **Sept.30, 2001** | **Dec. 31, 2001** |
| Sales | $75,028 | $85,701 | $96,317 | $102,736 | **$74,714** | **$46,171** | **$38,722** | **$33,993** |
| Cost of sales | 38,361 | 43,338 | 49,492 | 52,138 | **43,491** | **38,390** | **27,686** | **26,601** |
| Gross profit | 36,667 | 42,363 | 46,825 | 50,598 | **31,223** | **7,781** | **11,036** | **7,392** |
| Operating expenses: | | | | | | | | |
| Research and development | 8,113 | 8,504 | 9,711 | 10,668 | **12,389** | **11,040** | **10,967** | **10,755** |
| Sales and marketing | 5,867 | 5,373 | 6,232 | 6,629 | **6,629** | **5,963** | **5,694** | **5,498** |
| General and administrative | 5,639 | 5,810 | 6,748 | 6,376 | **6,174** | **5,645** | **4,817** | **4,886** |
| Goodwill impairment | – | – | – | – | **–** | **5,446** | **–** | **–** |
| Other impairments | – | – | – | – | **–** | **–** | **1,221** | **5,625** |
| Restructuring charges | – | – | 1,000 | – | **–** | **614** | **–** | **2,456** |
| Merger costs | – | 2,333 | 2,250 | – | **–** | **–** | **–** | **–** |
| Litigation recovery | – | – | – | – | **(1,500)** | **–** | **–** | **–** |
| Total operating expenses | 19,619 | 22,020 | 25,941 | 23,673 | **23,692** | **28,708** | **22,699** | **29,220** |
| Income (loss) from operations | 17,048 | 20,343 | 20,884 | 26,925 | **7,531** | **(20,927)** | **(11,663)** | **(21,828)** |
| Other income (expense) | 120 | 731 | 5,598 | 1,036 | **187** | **(70)** | **(711)** | **(1,484)** |
| Net income (loss) before income taxes,minority interest and extraordinary item | 17,168 | 21,074 | 26,482 | 27,961 | **7,718** | **(20,997)** | **(12,374)** | **(23,312)** |
| Provision (benefit) for income taxes | 5,947 | 8,023 | 10,195 | 8,076 | **2,689** | **(6,553)** | **(4,704)** | **(8,873)** |
| Minority interest in net (loss) income | (17) | (67) | (2) | 106 | **(65)** | **105** | **(188)** | **3** |
| Net income (loss) before extraordinary item | 11,238 | 13,118 | 16,289 | 19,779 | **5,094** | **(14,549)** | **(7,482)** | **(14,442)** |
| Extraordinary item (net of income taxes) | – | – | – | 7,610 | **–** | **–** | **–** | **–** |
| Net income (loss) | $11,238 | $13,118 | $16,289 | $27,389 | **$ 5,094** | **$(14,549)** | **$ (7,482)** | **$(14,442)** |
| Basic earnings (loss) per share before extraordinary item | $ 0.36 | $ 0.42 | $ 0.52 | $ 0.63 | **$ 0.16** | **$ (0.46)** | **$ (0.24)** | **$ (0.45)** |
| Diluted earnings (loss) per share before extraordinary item | $ 0.35 | $ 0.40 | $ 0.50 | $ 0.61 | **$ 0.16** | **$ (0.46)** | **$ (0.24)** | **$ (0.45)** |
| Basic earnings per share from extraordinary item | $ – | $ – | $ – | $ 0.24 | **$ –** | **$ –** | **$ –** | **$ –** |
| Diluted earnings per share from extraordinary item | $ – | $ – | $ – | $ 0.22 | **$ –** | **$ –** | **$ –** | **$ –** |
| Basic earnings (loss) per share | $ 0.36 | $ 0.42 | $ 0.52 | $ 0.87 | **$ 0.16** | **$ (0.46)** | **$ (0.24)** | **$ (0.45)** |
| Diluted earnings (loss) per share | $ 0.35 | $ 0.40 | $ 0.50 | $ 0.83 | **$ 0.16** | **$ (0.46)** | **$ (0.24)** | **$ (0.45)** |
| Basic weighted-average common shares outstanding | 31,161 | 31,314 | 31,339 | 31,517 | **31,547** | **31,698** | **31,784** | **31,821** |
| Diluted weighted-average common shares outstanding | 32,512 | 32,543 | 32,417 | 34,078 * | **32,187** | **31,698** | **31,784** | **31,821** |

* Includes dilution from subordinated notes

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| | Quarters Ended | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Mar. 31, 2000 | June 30, 2000 | Sept.30, 2000 | Dec.31, 2000 | **Mar. 31, 2001** | **June 30, 2001** | **Sept.30, 2001** | **Dec. 31, 2001** |
| Percentage of Sales: | | | | | | | | |
| Sales | 100.0% | 100.0% | 100.0% | 100.0% | **100.0%** | **100.0%** | **100.0%** | **100.0%** |
| Cost of sales | 51.1 | 50.7 | 51.4 | 50.7 | **58.2** | **83.1** | **71.5** | **78.3** |
| Gross margin | 48.9 | 49.3 | 48.6 | 49.3 | **41.8** | **16.9** | **28.5** | **21.7** |
| Operating expenses: | | | | | | | | |
| Research and development | 10.8 | 9.9 | 10.0 | 10.4 | **16.6** | **23.9** | **28.3** | **31.6** |
| Sales and marketing | 7.9 | 6.2 | 6.5 | 6.5 | **8.9** | **12.9** | **14.7** | **16.2** |
| General and administrative | 7.5 | 6.8 | 7.0 | 6.2 | **8.3** | **12.2** | **12.4** | **14.4** |
| Goodwill impairment | – | – | – | – | **–** | **11.8** | **–** | **–** |
| Other impairments | – | – | – | – | **–** | **–** | **3.2** | **16.5** |
| Restructuring charges | – | – | 1.0 | – | **–** | **1.4** | **–** | **7.2** |
| Merger costs | – | 2.7 | 2.4 | – | **–** | **–** | **–** | **–** |
| Litigation recovery | – | – | – | – | **(2.1)** | **–** | **–** | **–** |
| Total operating expenses | 26.2 | 25.6 | 26.9 | 23.1 | **31.7** | **62.2** | **58.6** | **85.9** |
| Income (loss) from operations | 22.7 | 23.7 | 21.7 | 26.2 | **10.1** | **(45.3)** | **(30.1)** | **(64.2)** |
| Other income (expense) | 0.2 | 0.9 | 5.8 | 1.0 | **0.2** | **(0.2)** | **(1.9)** | **(4.4)** |
| Net income (loss) before income taxes,minority interest and extraordinary item | 22.9 | 24.6 | 27.5 | 27.2 | **10.3** | **(45.5)** | **(32.0)** | **(68.6)** |
| Provision (benefit) for income taxes | 7.9 | 9.4 | 10.6 | 7.8 | **3.6** | **(14.2)** | **(12.2)** | **(26.1)** |
| Minority interest in net (loss) income | – | (0.1) | – | 0.1 | **(0.1)** | **0.2** | **(0.5)** | **–** |
| Net income (loss) before extraordinary item | 15.0 | 15.3 | 16.9 | 19.3 | **6.8** | **(31.5)** | **(19.3)** | **(42.5)** |
| Extraordinary item (net of income taxes) | – | – | – | 7.4 | **–** | **–** | **–** | **–** |
| Net income (loss) | 15.0% | 15.3% | 16.9% | 26.7% | **6.8%** | **(31.5)%** | **(19.3)%** | **(42.5)%** |

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.A variety of factors have an influence on the level of our revenues in a particular quarter, which include the risk factors listed above in the opening section of this management discussion and analysis.

Our quarterly operating results in 2000 and 2001 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 to meet this demand. Sales to the semiconductor capital equipment industry increased each quarter throughout 2000 then decreased each quarter throughout 2001 when that industry shifted into a sudden and severe downturn. Data storage sales fluctuated significantly throughout both years. Our revenue from all sectors is heavily influenced by general economic conditions in each of the industries we serve.

Our gross margin maintained a relatively consistent level in each of the quarters in 2000, at approximately 49%. We added new facilities in Fort Collins, Colorado in the first quarter of 2001 to increase our manufacturing capacity to continue meeting this expected growth, 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 and fourth quarters of 2001.

Research and development,selling and marketing, and general and administrative expenses remained relatively stable throughout the eight quarters of 2000 and 2001,

though they generally increased in the second half of 2000.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 (expense) income 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 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. Changes in exchange rates and our ability to manage foreign currency exposure determine the quarterly fluctuations in our foreign currency gains and losses. Miscellaneous expense items vary according to the frequency of non-operating events.The largest single item in this category was in the third quarter of 2000 when we recorded a $4.8 million gain on a sale of an investment.

Our effective rate for income tax provision fluctuated on a quarterly basis throughout 2000 and 2001, varying from 29% to 39%.The fluctuations were due to the timing of certain nondeductible expenses including merger costs, and due to initiatives we implemented in 2000 to reduce our overall rate.

## 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 integrated solutions. 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 generated cash of $7.9 million in 2001, primarily reflecting the impact on net loss of non-cash items and impairments.As part of this net cash provided of $7.9 million, decreases in accounts receivable and accounts payable provided cash of $39.6 million. Operating activities provided cash of $34.7 million in 2000, primarily as a result of net income exclusive of non-cash charges and credits, reduced by a net increase in working capital other than cash.As part of this net cash provided of $34.7 million, the net increase in accounts receivable, inventories and accounts payable used cash of $45.5 million.Operating activities provided cash of $12.1 million in 1999, reflecting net income adjusted for non-cash charges, offset by approximately $27.4 million of net increases in receivables, inventories and payables. We expect future receivable and inventory balances to fluctuate with net sales.Any increase in our inventory levels may require the use of cash to finance the inventory. Additionally, we may experience changes in our ability to collect payments from our customers because most of our customers experience the same volatility of the semiconductor capital equipment industry as we.

Investing activities used cash of $81.2 million in 2001, and consisted of the acquisition of EMCO for $29.9 million, the net purchase of investments of $38.8 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 activities used cash of $177.9 million in 1999, and consisted of a net increase in marketable securities of $170.6 million and the purchase of property and equipment of $7.2 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 as we transfer cash into marketable securities when we attain levels of cash that are greater than needed for current operations.

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 employee stock purchase plan,or 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.Financing activities provided cash of $174.5 million in 1999, and consisted of net proceeds from convertible subordinated debt of $130.5 million, net proceeds from the sale of common stock of $37.8 million, proceeds from the exercise of employee stock options and sale of common stock through our ESPP of $4.5 million, and other proceeds of $1.7 million.

## Management's Discussion and Analysis of Financial Condition and Results of Operations

We plan to spend approximately $10 million in 2002 for the acquisition of equipment, leasehold improvements and furnishings, with depreciation expense for 2002 projected to be $12 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 January 2002, we used cash of approximately $44 million, in addition to assuming approximately $34 million of debt, to purchase the outstanding common stock of Aera.In February 2002, we agreed to purchase a privately owned, Germany-based provider of power supplies and matching networks, for approximately $13.5 million to $20 million. We have also agreed in principle to acquire the remaining 40.5% of LITMAS for approximately 130,000 shares of our common stock.The expected annual capital needs of these acquired companies for 2002 are less than $3 million.

As of December 31, 2001,we had working capital of $350.4 million. Our principal sources of liquidity consisted of $82.0 million of cash and cash equivalents,$190.0 million of marketable securities, and a credit facility consisting of a $30.0 million revolving line of credit. Advances under the revolving line of credit bear interest at either the prime rate (4.75% at February 28, 2002) minus 1% or the LIBOR 360-day rate (3.61288% at February 28, 2002) plus 175 basis points, at our option.All advances under this revolving line of credit will be due and payable June 18,2003.As of December 31, 2001, there was an advance outstanding under this line of credit of $760,000 to our Japanese subsidiary, Advanced Energy Japan K.K. We are subject to covenants on our line of credit that provide certain restrictions related to working capital, leverage, net worth,and payment and declaration of dividends. We were out of compliance with the maximum loss covenant as of December 31, 2001. We received a written waiver of the covenant and expect to be in compliance with all covenants during 2002. Currently we are restricted from further use of our credit line because the low interest debt of approximately $34 million that we assumed as part of the Aera acquisition is not subordinated to our line of credit. We are in the process of negotiating a new line of credit. Due to our very liquid balance sheet, we do not expect this restriction, which we believe to be temporary, to impact our operating or financing strategy.

To finance the facilities for our headquarters and main manufacturing, we lease our executive offices and manufacturing facilities in Fort Collins,Colorado from a limited liability partnership consisting of two of our directors,one of whom is an officer, and other individuals.The leases relating to these spaces expire in 2011, 2013 and 2016. We also lease other office and production space from another limited liability partnership consisting of certain of our directors and other individuals.

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 through at least the end of 2002.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 $206.6 million at December 31, 2001.Our 5.00% convertible subordinated notes of $125.0 million are due September 1, 2006,and our 5.25% convertible subordinated notes of $81.6 million are due November 15, 2006.This could occur if our 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.

# 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, 2001, our investments in marketable securities consisted primarily of commercial paper, municipal bonds and notes and mutual funds. These securities are highly liquid and of short maturities. Earnings on our marketable securities are typically invested into similar securities. In 2001, the rates we earned on our marketable securities ranged from as high as 8.7% to 2.0% before tax.As the Federal Reserve repeatedly lowered interest rates throughout 2001, 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 early 2001 and the Aera acquisition in early 2002, has greatly reduced our recent and anticipated interest income.The impact on interest income of a 10 percent decrease in the average interest rate would have resulted in approximately $700,000 less interest income in 2001, $1.1 million in 2000 and $200,000 in 1999.

The interest rates on our subordinated debt are at fixed rates,specifically, at 5.25% for the $81.6 million of our debt due November 2006,and at 5.00% for the $125.0 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 temporarily by the repurchase of a portion of the first offering in 2000. Because these rates are fixed,we believe there is no risk of increased interest expense.

## 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. We have entered into various forward foreign exchange contracts to hedge against currency fluctuations in the Japanese yen. We will continue to evaluate various methods to minimize the effects of currency fluctuations for when we translate the financial statements of our foreign subsidiaries into US dollars.At December 31, 2001,we held foreign forward exchange contracts in Japan with notional amounts of $6.5 million and market settlement amounts of $6.1 million for an unrealized gain position of $367,000.

## 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 majority of the cost of one such investment in 2001, 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.

We are subject to covenants on our line of credit that provide certain restrictions related to working capital, leverage, net worth, and payment and declaration of dividends. We were out of compliance with the maximum loss covenant as of December 31, 2001. We received a writtten waiver of the covenant and expect to be in compliance with all covenants during 2002. Currently we are restricted from further use of our credit line because the low interest debt of approximately $34 million that we assumed as part of the Aera acquisition is not subordinated to our line of credit. We are in the process of negotiating a new line of credit. Due to our very liquid balance sheet,we do not expect this restriction, which we believe to be temporary, to impact our operating or financing strategy.