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:

- Acceptance by our customers of products manufactured at our China-based manufacturing facility;
- Strict customer "copy exact" requirements which may delay or prevent acceptance of lower-cost components from Tier 1 Asian suppliers;
- 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;
- Significant fluctuations in our quarterly operating results that are difficult to predict;
- Timing and nature of orders placed by our customers, including their product acceptance criteria;
- Changes in our customers' inventory management practices;
- Customer cancellations of previously placed orders and shipment delays;
- Pricing competition from our competitors as well as pricing pressure from our customers;
- The introduction of new products by us or our competitors;
- Component shortages or allocations or other factors that change our levels of inventory or substantially increase our spending on inventory;
- Costs incurred and judgments resulting from patent or other litigation;
- Timing and challenges of integrating recent and potential future acquisitions and strategic alliances;
- Periodic charges for excess and obsolete inventory; and
- Future warranty costs in excess of anticipated levels.

For a discussion of these and other factors that may impact our realization of our forward-looking statements, see "Cautionary Statements — Risk Factors" in our Form 10-K for the year ended December 31, 2003.

OVERVIEW

We design, manufacture and support a group of key components and subsystems primarily for vacuum process systems. Our primary products are complex power conversion and control systems. Our products also control the flow of fluids into the process chambers, provide thermal control and sensing within the chamber, deposit thin-films of diamond-like carbon and clean the chamber. Our customers use our products in plasma-based thin-film processing equipment that is essential to the manufacture of, among other things:

- Semiconductor devices for electronics applications;
- Flat-panel displays for hand-held devices, computer and television screens;
- Compact discs, DVDs and other digital storage media;
- Optical coatings for architectural glass, eyeglasses and solar panels; and
- Industrial laser and medical applications.

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 2003, 68% of our sales in 2002 and 64% in 2001. 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 industry cycles. Our sales to customers outside the United States represented approximately 53%, 40% and 36% of our sales in 2003, 2002 and 2001, respectively. We expect our international sales to continue to grow as a percentage of our total sales as more customers build or have their products built in lower-cost regions outside of the United States.

In 2001, 2002 and much of 2003 the semiconductor capital equipment industry experienced the steepest cutback in capital equipment purchases in industry history. As a result, demand for our products from the semiconductor capital equipment industry declined substantially from the peak in 2000, and we have incurred significant operating losses each quarter from the second quarter of 2001 through the third quarter of 2003. In mid 2003, the semiconductor capital equipment industry entered the early stages of what appears to be a return to higher product demand and in the fourth quarter of 2003, we generated positive operating income of approximately $300,000. We are focused on returning to sustained profitability and achieving operating cash flow breakeven. To achieve this goal, we are in the process of developing a more variable operating model to allow us to remain profitable during industry downturns and continue to be successful during periods of expansion. We are taking the following actions:

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- Establishing a China-based manufacturing facility;
- Transitioning a portion of our supply base to Tier 1 Asian suppliers;
- Closing certain facilities and reducing our permanent headcount; and
- Engaging contract manufacturers to manufacture certain products and components which were previously manufactured by us.

In April 2003, we opened our 88,000 square-foot China-based manufacturing facility in Shenzhen, China. At the end of 2003, approximately 11% of our worldwide production was manufactured in China. By the end of 2004, we expect to have transitioned approximately 70% of our Power and Flow Control manufacturing production to China. During the transition period we are running duplicate manufacturing facilities, which is placing pressure on our gross margin. We expect our gross margin to improve throughout 2004 if industry conditions continue to improve.

We plan to transition approximately 50% of our raw material purchasing to Tier 1 Asian suppliers. As of December 31, 2003, approximately 27% of our purchasing has been successfully transitioned and we expect to transition the remaining 23% by December 31, 2004. Our biggest obstacle in our Tier 1 supplier initiative is complying with certain major customers' stringent "copy exact" requirements. We are working closely with our largest original equipment manufacturers, or OEM's, to ensure the transition proceeds on schedule. However, our transition goals may prove difficult to realize because of customer needs.

During 2003, we closed manufacturing facilities in Longmont, Colorado; Matthews, North Carolina; and Austin, Texas. In the first half of 2004, we plan to close our manufacturing facility in Voorhees, New Jersey. We expect to incur between $500,000 and $700,000 in restructuring charges in 2004, however, this estimate is subject to change based upon changes in the demand for our products and potential changes to our operating model. We also closed various sales and services locations throughout the world in an effort to rationalize our manufacturing capacity and sales force with the current industry environment.

In the second quarter of 2003, as part of our ongoing cost reduction measures, we engaged a contract manufacturer to manufacture printed circuit boards for our direct current, radio frequency and computer workstation products. In the third quarter of 2003, we sold our Longmont, Colorado manufacturing facility to a contract manufacturer who continues to use this facility to manufacture our industrial flow products.

CRITICAL ACCOUNTING POLICIES AND ESTIMATES

The following 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 $88.9 million of intangible assets and goodwill as of December 31, 2003, including approximately $19.4 million related to amortizable intangibles and $69.5 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 and impairment charges, as well as foreign currency fluctuations.

Due to our cost reduction initiatives we have restructured our business. As a result we have eliminated certain duplicative facilities and consolidated the operational and administrative activities of our reporting units. Based on our similar production characteristics, shared manufacturing facilities and blended financial reporting environment, our management reviews our results of operations as a single reporting unit.

We review our intangible assets and goodwill for impairment annually and whenever events or changes in circumstances indicate that the carrying amount of these assets may not be recoverable. Factors we consider important which could indicate impairment include under performance relative to historical or expected future operating results, changes in the manner of our use of the asset or the strategy for our overall business and negative industry or general economic trends.

In the fourth quarter of 2003, we engaged a third party valuation firm to perform the annual impairment analysis of our non-amortizable intangible assets and goodwill, which indicated that no charge for impairment was currently required. This assessment required 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. These projections of future results are by their nature subjective, and while they represent management's current best assessment of the future, they may be materially different than actual future results. We will continue to perform impairment analyses of our 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 would have a material adverse impact on our 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 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 estimated discount rates, and may differ from actual cash flows. 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, and volatility of the industries in which we serve, 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 excess and obsolete inventory. For the years ended December 31, 2003, 2002 and 2001, we recorded charges of $3.0 million, $5.8 million and $6.4 million, respectively, for excess and obsolete inventory. As of December 31, 2003, we had inventory balances of approximately $65.7 million. A significant decrease in the demand for our products, technological change, or new product development could result in charges for excess and obsolete inventory that are material to our financial condition and results of operations.

RESERVE FOR WARRANTY — We provide warranty coverage for our products, ranging from 12 to 60 months, with the majority of our products ranging from 18 to 24 months, and estimate the anticipated cost of repairing our products under such warranties based on the historical cost 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. We recorded warranty charges of $8.1 million, $13.2 million and $7.6 million in 2003, 2002 and 2001, respectively.

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 generally 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 collectability is reasonably assured. Generally, we do not have obligations to our customers after our products are shipped other than pursuant to warranty obligations. In limited instances we provide installation of our products. In accordance with Emerging Issues Task Force Issue 00-21 “Accounting for Revenue Arrangements With Multiple Deliverables”, we allocate revenue based on the fair value of the delivered item, generally the product, and the undelivered item, installation, based on their respective fair values. Revenue related to the undelivered item is deferred until the services have been completed. In certain limited instances, some of our customers have negotiated product acceptance provisions relative to specific orders. Under these circumstances we defer revenue recognition until the related acceptance provisions have been satisfied. Revenue deferrals are reported as customer deposits and deferred revenue.

In certain instances, we require our customers to pay for a portion or all of their purchases prior to our building or shipping these products. Cash payments received prior to shipment are recorded as customer deposits and deferred revenue in the accompanying balance sheets, and then recognized as 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 may also 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 products are reported on our balance sheet at an estimated value based on the lower of cost or market, and are included in the amount for demonstration and customer service equipment, net of accumulated amortization.

STOCK-BASED COMPENSATION — In accordance with Statement of Financial Accounting Standards Nos. 123 and 148, 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. In future periods the Financial Accounting Standards Board will likely require companies to expense the fair value of their stock-based compensation over the respective vesting period. Such new accounting guidance is expected to have a material effect upon our results of operations.

DEFERRED INCOME TAXES — We account for income taxes in accordance with SFAS No. 109, "Accounting for Income Taxes." SFAS No. 109 requires deferred tax assets and liabilities to be recognized for temporary differences between the tax basis and financial reporting basis of assets and liabilities, computed at current tax rates, as well as for the expected tax benefit of net operating loss and tax credit carryforwards. During 2003, we recorded valuation allowances against certain of our United States and foreign net deferred tax assets in jurisdictions where we have incurred significant losses in 2001, 2002 and 2003. Given such experience, management could not conclude that it was more likely than not that these net deferred tax assets would be realized. While there are indications that the markets in which we operate may improve in 2004 and 2005, these indications have not yet resulted in substantial taxable income. Accordingly, our management, in accordance with SFAS No. 109, in evaluating the recoverability of these net deferred tax assets, was required to place greater weight on our historical results as compared to projections regarding future taxable income. If we generate future taxable income, or should we be able to conclude that sufficient taxable income is reasonably assured based on profitable operations, in the appropriate tax jurisdictions, against which these tax attributes may be applied, some portion or all of the valuation allowance will be reversed and a corresponding reduction in income tax expense will be reported in future periods. A portion of the valuation allowance relates to the benefit from stock-based compensation. Any reversal of valuation allowance from this item will be reflected as a component of stockholders' equity.

When recording acquisitions, we have recorded valuation allowances due to the uncertainty related to the realization of certain deferred tax assets existing at the acquisition dates. The amount of deferred tax assets considered realizable is subject to adjustment in future periods if estimates of future taxable income are changed. Any reversals of valuation allowances recorded in purchase accounting will be reflected as a reduction of goodwill in the period of reversal.

RECENT ACQUISITIONS

On March 28, 2002, we completed the acquisition of Dressler HF Technik GmbH, or Dressler, a privately owned Stolberg, Germany-based provider of power supplies and matching networks. We acquired Dressler to expand our product offerings to customers in the semiconductor, data storage and flat panel equipment markets with Dressler's power product portfolio that includes a wide range of power levels and radio frequencies. In addition, with inroads already made into the laser and medical markets, Dressler enables us to explore new market opportunities. Dressler also strengthens our presence in the European marketplace and has well-established relationships with many European customers, who look to Dressler for innovative technical capability, high quality products, and highly responsive customer service.

On January 18, 2002, we completed the acquisition of Aera Japan Limited, or Aera, a privately held Japanese corporation. Aera supplies the semiconductor capital equipment industry with product lines that include digital mass flow controllers, thermal-based mass flow controllers, pressure-based mass flow controllers, liquid mass flow controllers and liquid vapor delivery systems. Aera provides us with a key leadership position in the gas delivery market. In addition, Aera's products expand our offering of critical subsystem solutions that enable the plasma-based manufacturing processes used in the manufacture of semiconductors.

The results of operations of these acquired companies are included in our consolidated statements of operations as of and since the date of acquisition.

RESULTS OF OPERATIONS

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

	Years Ended December 31,		
	2003	2002	2001
Sales	**100.0%**	100.0%	100.0%
Cost of sales	**66.5**	71.2	70.3
Gross profit	**33.5**	28.8	29.7
Operating expenses:			
Research and development	**19.7**	20.5	23.3
Sales and marketing	**11.8**	14.6	12.3
General and administrative	**8.7**	12.8	11.1
Litigation damages and expenses (recovery)	**—**	2.2	(0.8)
Restructuring charges	**1.7**	3.8	1.6
Impairment of goodwill and other intangible assets	**0.4**	0.8	2.8
Impairment of investments and advances	**—**	—	3.6
Total operating expenses	**42.3**	54.7	53.9
Loss from operations	**(8.8)**	(25.9)	(24.2)
Other expense	**(3.6)**	(0.7)	(1.1)
Net loss before income taxes and minority interest	**(12.4)**	(26.6)	(25.3)
(Provision) benefit for income taxes	**(4.5)**	9.3	9.0
Minority interest in net loss	**—**	—	0.1
Net loss	**(16.9)%**	(17.3)%	(16.2)%

SALES

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, 2003. Sales for the years ended December 31, 2003 and 2002 include combined sales from Aera and Dressler, subsequent to their acquisitions of approximately $51.5 million and $47.0 million, respectively:

	Years Ended December 31,		
(In thousands)	**2003**	2002	2001
Semiconductor capital equipment	**$155,153**	$163,108	$123,869
Data storage	**26,397**	13,570	10,974
Flat panel display	**28,953**	19,826	19,772
Advanced product applications	**51,899**	42,394	38,985
	$262,402	$238,898	$193,600

	Years Ended December 31,		
	2003	2002	2001
Semiconductor capital equipment	**59%**	68%	64%
Data storage	**10**	6	6
Flat panel display	**11**	8	10
Advanced product applications	**20**	18	20
	100%	100%	100%

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, 2003:

	Years Ended December 31,		
(In thousands)	**2003**	2002	2001
United States and Canada	**$124,185**	$143,698	$124,746
Europe	**48,185**	32,791	28,957
Asia Pacific	**88,919**	61,327	39,038
Rest of world	**1,113**	1,082	859
	$262,402	$238,898	$193,600

	Years Ended December 31,		
	2003	2002	2001
United States and Canada	**47%**	60%	64%
Europe	**19**	14	15
Asia Pacific	**34**	26	21
Rest of world	**—**	—	—
	100%	100%	100%

Sales were $262.4 million in 2003, $238.9 million in 2002 and $193.6 million in 2001, representing an increase of 10% from 2002 to 2003 and 23% from 2001 to 2002. Excluding the acquisitions of Aera and Dressler, our sales would have increased approximately 10% from 2002 to 2003 and would have been relatively flat from 2001 to 2002.

According to a leading industry research firm sales of semiconductor capital equipment have grown at a compounded annual growth rate in excess of 11% over the past 30 years. However, we believe the industry is highly cyclical and is impacted by changes in the macroeconomic environment, changes in semi-

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conductor 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 pronounced slump in industry history, with year-to-year revenues falling approximately 40% throughout the industry from 2000 to 2001 and declining nominally thereafter. Our sales over the last three years illustrate this cyclicality. Our sales to the semiconductor capital equipment industry declined by approximately 2% from 2001 to 2002, excluding the effect of the acquisitions of Aera and Dressler; and by approximately 5% from 2002 to 2003.

Our sales to the data storage, flat panel display and advanced product applications markets, increased each year from 2001 through 2003. This growth is primarily attributed to market share gains, order trends and the general expansion of end customer products including large flat panel displays, liquid crystal displays, DVD applications and applications dependent upon industrial coatings.

Looking forward to 2004, our revenue may increase due to the recovery of the semiconductor capital equipment industry. Our other markets are also expected to grow in 2004. However, our average selling prices are likely to decline across all of our markets due to cost reduction initiatives by our major customers.

GROSS MARGIN

Our gross margin was 33.5% in 2003, 28.8% in 2002 and 29.7% in 2001. Our gross margin improved from 2002 to 2003 primarily due to our cost reduction measures, including our ongoing efforts to transition a portion of our manufacturing capacity to China and our supply base to Tier 1 Asian suppliers, as well as improved absorption due to the higher sales base; however, the transition of a portion of our manufacturing capacity to China has required us to operate duplicative manufacturing facilities which during 2003 impacted our gross margin. While we expect the transition of a portion of our production to China and our move to Tier 1 Asian suppliers will improve our gross margins in future periods, factors that could cause our gross margins to be negatively impacted include, but are not limited to the following:

- Continued pricing pressure from our major customers;
- Costs associated with transitioning a portion of our production to our new China facility, including costs incurred to operate duplicate manufacturing facilities;
- Unanticipated costs to comply with our customers' "copy exact" requirements, especially related to our China transition and move to Tier 1 Asian suppliers;
- Cost reduction programs initiated by semiconductor manufacturers and semiconductor capital equipment manufacturers that negatively impact our average selling price;
- Warranty costs in excess of historical rates and our expectations;
- Increased levels of excess and obsolete inventory, either due to market conditions, the introduction of new products by our competitors, or our decision to discontinue certain product lines; and
- Changes in foreign currency exchange rates that might affect our costs.

We recognized charges for excess and obsolete inventory of approximately $3.0 million, $5.8 million and $6.4 million in 2003, 2002 and 2001, respectively. Our warranty charges in 2003, 2002 and 2001 were approximately $8.1 million, $13.2 million and $7.6 million. Taken together, these charges represented approximately 4.2%, 8.0% and 7.2% of sales during 2003, 2002 and 2001, respectively.

The major items affecting our gross margin in these years follow:

- 2003, 2002 and 2001 represent 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. Typical of products early in their life cycle and at low production levels, these products have lower margins than our established products.
- Our cost of sales was adversely affected by periodic write-downs 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.
- We incurred warranty expense in excess of both 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. During 2002 and 2003 a significant portion of our warranty reserves were used to address these products.

The following summarizes the activity in our warranty reserve during 2003 and 2002:

(In thousands)	Balance at Beginning of Period	Additions Charged To Expense	Deductions	Balance at End of Period
2003	**$9,402**	**$ 8,105**	**$(10,895)**	**$6,612**
2002	$4,471	$13,150	$ (8,219)	$9,402

RESEARCH AND DEVELOPMENT

The market for our subsystems for vacuum process systems and related accessories is characterized by ongoing technological changes. We believe that continued and timely development of new products and enhancements to existing products to support OEM requirements is necessary for us to maintain a competitive position in the markets we serve. Accordingly, we devote a significant portion of our personnel and financial resources to research and development projects and seek to maintain close relationships with our customers and other industry leaders in order to remain responsive to their product requirements. We believe that the continued investment in research and development and ongoing development of new products are essential to the expansion of our markets, and expect to continue to make significant investments in research and development activities. Since our inception, all of our research and development costs have been expensed as incurred.

Our research and development expenses were $51.6 million in 2003, $49.0 million in 2002 and $45.2 million in 2001. As a percentage of sales, research and development expenses decreased from 23.3% in 2001 to 20.5% in 2002 and 19.7% in 2003, due to the higher sales base. The 5.3% increase in research and development expenses from 2002 to 2003 was primarily due to increases in payroll and depreciation of equipment used for new product development. 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 products. Combined research and development expenses for Aera and Dressler were approximately $2.7 million in 2002. We expect our 2004 research and development expenses, in dollar terms, to be in line with 2003.

SALES AND MARKETING EXPENSES

Due, in part, to our recent acquisitions, our sales and marketing efforts have become increasingly complex. We continue to rationalize our sales and marketing functions with current industry conditions, while at the same time striving to increase market share and net sales. We have continued the effort to market directly to end users of our products, in addition to our traditional marketing to manufacturers of plasma-based equipment. 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 $31.0 million in 2003, $34.9 million in 2002 and $23.8 million in 2001. The 11.1% decrease in sales and marketing expenses from 2002 to 2003 was primarily due to the closing of certain sales and service locations. See Restructuring Charges below for further discussion on these site closures. As a percentage of sales, sales and marketing expenses decreased from 14.6% in 2002 to 11.8% in 2003 due to our cost reduction measures and the higher sales base. Sales and marketing expenses increased from 12.3% of sales in 2001 to 14.6% in 2002 primarily due to our acquisitions of Aera and Dressler in 2002. Combined sales and marketing expenses for these companies were approximately $9.6 million in 2002. We expect sales and marketing expenses to increase in 2004, due to our higher anticipated sales level.

GENERAL AND ADMINISTRATIVE EXPENSES

Our general and administrative expenses support our worldwide corporate, legal, patent, tax, financial, corporate governance, administrative, information systems and human resource functions in addition to our general management. General and administrative expenses were $22.9 million in 2003, $30.5 million in 2002 and $21.5 million in 2001. The 24.9% decrease in general and administrative expense from 2002 to 2003 was due to our ongoing cost reduction measures as discussed in Restructuring Charges. As a percentage of sales, general and administrative expenses decreased from 12.8% in 2002 to 8.7% in 2003 due to our cost reduction measures and the higher sales base. The 41.9% increase in general and administrative expenses from 2001 to 2002 was primarily due to the absorption of additional headcount as a result of our acquisitions of Aera and Dressler, which contributed approximately $8.8 million to our general and administrative expenses in 2002. As a percentage of sales, general and administrative expenses increased from 11.1% in 2001 to 12.8% in 2002. We expect our general and administrative expenses in 2004 to be in line with 2003.

LITIGATION DAMAGES AND EXPENSES (RECOVERY)

During 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 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 five percent of our total sales each year since the product's introduction. We have entered into a settlement agreement with MKS allowing us to sell the infringing product to one of our customers subsequent to the date of the jury award. Under the settlement agreement, royalties payable to MKS from sales of the infringing product were not material in 2003.

During 2003, litigation with MKS recommenced involving claims that one of our new products infringed certain patents held by MKS. The current patent case has been set for trial in

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July 2004 and we anticipate significantly increased spending for legal and other trial related expenses in 2004.

RESTRUCTURING CHARGES

During 2001, in response to the downturn in the semiconductor capital equipment industry, we implemented several reductions in force totaling 240 regular employees and 90 temporary employees and closed our manufacturing facilities in Austin, Texas and San Jose, California. Total restructuring charges for 2001 were approximately $3.1 million.

We recorded restructuring charges totaling $9.1 million in 2002, primarily associated with changes in operations designed to reduce redundancies and better align Aera's mass flow controller business within its operating framework. Our restructuring plans and associated costs consisted of $6.0 million to close and consolidate certain manufacturing facilities, and $3.1 million for related headcount reductions of approximately 223 employees.

At the end of 2002, we announced major changes in our operations to occur through 2003. These included establishing a manufacturing location in China; consolidating worldwide sales forces; a move to Tier 1 suppliers, primarily in Asia; and the intention to close or sell certain facilities.

Associated with the above plan, we recognized restructuring charges of approximately $4.3 million during 2003. These charges consisted of the recognition of expense for involuntary employee termination benefits for 109 employees in our United States operations and voluntary employee termination benefits, primarily in our Japanese operations for 36 employees, and asset impairments incurred as a result of closing our Longmont, CO manufacturing facilities.

GOODWILL AND OTHER INTANGIBLE ASSET IMPAIRMENTS

During 2003, we determined that one of our mass flow controller products would not conform to changing customer requirements, and as such would no longer be accepted by our customers. As a result, we performed an assessment of the carrying value of the related intangible asset. This assessment consisted of estimating the intangible asset's fair value and comparing the estimated fair value to the carrying value of the asset. We estimated the intangible asset's fair value by applying a hypothetical royalty rate to the projected revenue stream and using a cash flow model discounted at discount rates consistent with the risk of the related cash flows. Based on this analysis we determined that the fair value of the intangible asset was minimal and recorded an impairment of the carrying value of approximately $1.2 million. Sales of this product represented less than 1% of our total sales during 2001, 2002 and 2003.

During 2000, we made periodic advances and investments totaling approximately $9.5 million to Symphony Systems, Inc. In 2001, 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, the value of our investment in and advances to Symphony had substantially declined. We 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.

Symphony effectively ceased operations in February 2002. We hired Symphony's key employees, and acquired Symphony's remaining assets in a foreclosure and liquidation sale of such assets in April 2002. We recorded the assets acquired at their estimated fair values. 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, our sales to the semiconductor capital equipment industry declined substantially from the third quarter of 2002. As a result 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, which was the remaining book value of Symphony's intangible assets.

During 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 represented less than five percent of our total revenue. 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 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 $1.7 million in 2003, $3.3 million in 2002 and $6.6 million in 2001. The decline in interest income from 2002 to 2003 was due to our lower level of investment in marketable securities and the overall lower rate of interest paid on our investments which resulted from the Federal Reserve lowering interest rates during the period. The prime rate declined by 0.75% from January 2002 to December 2003. Additionally, during 2003 we used approximately $37.1 million of cash and marketable securities to fund our operations.

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 also declined throughout 2002 and 2001 due to the Federal Reserve lowering interest rates during the period. The prime rate declined from 9.5% in January 2001 to 4.25% in December 2002.

Interest expense consists principally 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 $11.3 million in 2003, $12.5 million in 2002 and $7.4 million in 2001. Interest expense decreased from 2002 to 2003 due to the repurchase of approximately $15.4 million and $3.5 million of our 5.25% and 5.00% convertible subordinated notes in the fourth quarter of 2002 and due to the repayment of approximately $12.8 million of notes payable and capital lease obligations during 2003.

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 debt and capital leases assumed in the acquisition of Aera in January 2002.

Our foreign subsidiaries' sales are primarily denominated in currencies other than the U.S. dollar. We recorded net foreign currency gains of $869,000 in 2003, $5.3 million in 2002 and a loss of $235,000 in 2001.

Our foreign currency gain in 2002 was primarily related to an intercompany loan of Japanese yen, which was settled in January 2003, 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 130:1. During the first half of that 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 were settled.

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 gain of $4.2 million. In prior financial statements this gain was reflected as an extraordinary item. In April 2002 the Financial Accounting Standards Board issued Statement of Financial Accounting Standards No. 145, "Rescission of FASB Statements No. 4, 44, and 64, Amendment of FASB Statement No. 13, and Technical Corrections." We adopted the provisions of SFAS No. 145 on January 1, 2003. The adoption of this Statement required us to reclassify our pretax extraordinary gain of $4.2 million recorded during 2002 to other (expense) income in these financial statements.

Miscellaneous expense items were $644,000 in 2003, $2.1 million in 2002 and $1.0 million in 2001. Miscellaneous expense in 2003 and 2002 was primarily related to the impairment of a marketable equity security. During the fourth quarter of 2002, the fair value of this security 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 charge of approximately $1.5 million. In the first quarter of 2003, this security continued to decline in value, and we recorded an additional impairment charge of $175,000. Since the first quarter of 2003, the value of this security has appreciated from $1.8 million to $3.3 million at December 31, 2003. However the increase in the fair value of this security will not be reflected in income until the security is sold.

(PROVISION) BENEFIT FOR INCOME TAXES

We account for income taxes in accordance with SFAS No. 109, "Accounting for Income Taxes." SFAS No. 109 requires deferred tax assets and liabilities to be recognized for temporary differences between the tax basis and financial reporting basis of assets and liabilities, computed at current tax rates, as well as for the expected tax benefit of net operating loss and tax credit carryforwards. During 2003, we recorded valuation allowances against certain of our United States and foreign net deferred tax assets in jurisdictions where we have incurred significant losses in 2001, 2002 and 2003. Given such experience, management could not conclude that it was more likely than not that these net deferred tax assets would be realized. While there are indications that the markets in which we operate may improve in 2004 and 2005, we have not yet been able to generate significant taxable income in the jurisdictions in which we operate. Accordingly, our management, in accordance with SFAS No. 109, in evaluating the recoverability of these net deferred tax assets, was required to place greater weight on our historical results as compared to projections regarding future taxable income.

Due to the valuation allowances we recorded in 2003, we expect our 2004 effective tax rate to be approximately 15% to 25%, subject to variations in the relative earnings or losses in the tax jurisdictions in which we have operations. If we generate future taxable income, or should we be able to conclude that sufficient

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taxable income is reasonably assured based on profitable operations, in the appropriate tax jurisdictions, against which these tax attributes may be applied, some portion or all of the valuation allowance will be reversed and a corresponding reduction in income tax expense will be reported in future periods. A portion of the valuation allowance relates to the benefit from stock-based compensation. Any reversal of valuation allowance from this item will be reflected as a component of stockholders' equity.

The income tax provision of $11.8 million for 2003 represented a negative effective tax rate of 36%. The income tax benefit of $22.3 million for 2002 represented an effective tax rate of 35%. The income tax benefit of $17.4 million for 2001 represented an effective rate of 36%.

When recording acquisitions, we have recorded valuation allowances due to the uncertainty related to the realization of certain deferred tax assets existing at the acquisition dates. The amount of deferred tax assets considered realizable is subject to adjustment in future periods if estimates of future taxable income are changed. Reversals of valuation allowances recorded in purchase accounting will be reflected as a reduction of goodwill in the period of reversal.

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, 2003. We believe that all necessary adjustments have been included in the amounts stated below to present fairly such quarterly information. Due to the volatility of the industries in which our customers operate 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, 2002	June 30, 2002	Sept. 30, 2002	Dec. 31, 2002	**Mar. 31, 2003**	**June 30, 2003**	**Sept. 30, 2003**	**Dec. 31, 2003**
Sales	$42,887	$67,893	$70,674	$ 57,444	**$56,158**	**$62,946**	**$ 68,567**	**$ 74,731**
Gross profit	13,374	24,312	26,600	4,474	**17,950**	**20,273**	**23,093**	**26,631**
(Loss) income from operations	(11,423)	(9,330)	(5,788)	(35,444)	**(10,885)**	**(6,825)**	**(5,741)**	**319**
Other (expense) income	(1,997)	1,424	(2,797)	1,663	**(2,750)**	**(2,340)**	**(2,261)**	**(1,957)**
Net loss	$(8,723)	$(5,139)	$(5,580)	$(21,957)	**$(8,590)**	**$(5,774)**	**$(27,438)**	**$(2,439)**
Basic and diluted loss per share	$ (0.27)	$ (0.16)	$ (0.17)	$ (0.68)	**$ (0.27)**	**$ (0.18)**	**$ (0.85)**	**$ (0.08)**

	Quarters Ended							
	Mar. 31, 2002	June 30, 2002	Sept. 30, 2002	Dec. 31, 2002	**Mar. 31, 2003**	**June 30, 2003**	**Sept. 30, 2003**	**Dec. 31, 2003**
Percentage of Sales:								
Sales	100.0%	100.0%	100.0%	100.0%	**100.0%**	**100.0%**	**100.0%**	**100.0%**
Gross margin	31.2	35.8	37.6	7.8	**32.0**	**32.2**	**33.7**	**35.6**
(Loss) income from operations	(26.6)	(13.7)	(8.2)	(61.7)	**(19.4)**	**(10.8)**	**(8.4)**	**0.4**
Other (expense) income	(4.7)	2.1	(4.0)	2.9	**(4.9)**	**(3.7)**	**(3.3)**	**(2.6)**
Net loss	(20.3)%	(7.6)%	(7.9)%	(38.2)%	**(15.3)%**	**(9.2)%**	**(40.0)%**	**(3.3)%**

Due to the cyclical nature of the semiconductor capital equipment industry as well as the other industries in which our customers operate, 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 2002 and 2003 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. Additionally our average selling prices across all markets declined approximately 2% during 2003.

Sales to the semiconductor capital equipment industry increased 66% in the second quarter of 2002 from the prior quarter, then declined 5% in the third quarter of 2002 from the second quarter of 2002, and a further 42% in the fourth quarter of 2002 from the third quarter of 2002, due to the market conditions discussed above. In the first quarter of 2003 sales to the semiconductor capital equipment industry decreased another 3%. In the second, third and fourth quarters, sales to this industry increased 14%, 1% and 22%, respectively, quarter over quarter.

Data storage sales fluctuated significantly throughout 2002. Flat panel sales increased substantially in the third and fourth quarters of 2002 due to seasonal fluctuations. Data storage sales increased by 128%, 113% and 11% during the first, second and third quarters of 2003. In the fourth quarter of 2003, data storage sales declined 44%. The improvement in data storage sales through the third quarter of 2003, was primarily caused by the growth of DVD applications which are demanding more capacity, density and refined power. The decline in the fourth quarter of 2003 was due to the seasonal demand for end consumer products. Flat panel sales declined by 26% and 22% in the first and second quarters of 2003, then increased by 36% and 38% in the third and fourth quarters of 2003. The volatility of the flat panel market was partially caused by seasonal factors and the increased demand for products utilizing this technology as well as the increasing size and resolution of displays associated with consumer electronic products. Our revenue from all sectors is heavily influenced by general economic conditions and consumer spending patterns in each of the industries we serve.

As a result of the semiconductor capital equipment industry slowdown which started in 2001, we periodically evaluated our reserves for excess and obsolete inventory and income tax valuation allowances, as well as assessed the carrying value of our long-lived assets. As a result of these periodic assessments, our management deemed increased amounts of our inventory to be excess or obsolete particularly in the fourth quarter of 2002; certain intangible assets' fair values did not support their carrying value in the fourth quarter of 2002 and third quarter of 2003; warranty costs associated with certain products were in excess of historical experience and our expectations which also adversely affected margins, particularly in the fourth quarter of 2002; and in the third quarter of 2003, due to our continued losses, we recorded a significant valuation allowance against certain of our United States and foreign net deferred tax assets.

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 of 19% in our sales base hampered our fixed cost absorption and caused us to adjust our excess and obsolete inventory reserves to reflect our revised sales outlook.

During 2003, as we began the implementation of our China-based manufacturing facility and transition of a portion of our supply base to Tier 1 Asian suppliers, our gross margin was negatively affected due to the costs of running duplicative facilities and new supplier qualification efforts.

OFF-BALANCE SHEET ARRANGEMENTS

The following table sets forth our significant off-balance sheet arrangements, long-term debt and capital lease obligations as of December 31, 2003.

Payments Due by Period (In thousands)

Contractual obligations	2004	2005	2006	2007	2008	Thereafter	Total
Convertible subordinated notes	$ —	$ —	$187,718	$ —	$ —	$ —	$187,718
Senior borrowings	8,028	3,484	2,098	323	—	—	13,933
Capital lease obligations	571	157	87	22	5	—	842
Operating lease obligations	6,570	5,560	4,690	3,927	3,384	11,959	36,090
Inventory purchase obligations	13,263	—	—	—	—	—	13,263
Total obligations	$28,432	$9,201	$194,593	$4,272	$3,389	$11,959	$251,846

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Please refer to Footnote 7 Notes Payable, Footnote 8 Convertible Subordinated Notes Payable, Footnote 11 Commitments And Contingencies and Footnote 13 Related Party Transactions included in this annual report for further discussion regarding our significant off-balance sheet arrangements, long-term debt and capital lease obligations.

Our inventory purchase obligations consist of minimum purchase commitments we entered into with various suppliers to ensure we have an adequate supply of critical components to meet the demand of our customers. We believe that these purchase commitments will be consumed in our on-going operations during 2004.

We have also committed to advance up to $1.5 million to a privately held company in exchange for an exclusive intellectual property license. At December 31, 2003, approximately $500,000 has been advanced under this agreement and expensed as research and development costs. The amount and timing of this advance is dependent upon the privately held company achieving certain business development milestones.

LIQUIDITY AND CAPITAL RESOURCES

At December 31, 2003, our principle sources of liquidity consisted of cash, cash equivalents and marketable securities of $135.2 million, and a credit facility consisting of a $25.0 million revolving line of credit, none of which was outstanding at December 31, 2003. Advances under the revolving line of credit would bear interest at the prime rate (4.00% at February 17, 2004) minus 1%. Any advances under this revolving line of credit will be due and payable in May 2004. 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, 2003.

During 2003, our cash, cash equivalents and marketable securities decreased $37.1 million from $172.3 million at December 31, 2002. In 2006, when our convertible subordinated notes become due, it is possible we may need substantial funds to repay such debt, which totaled $187.7 million at December 31, 2003. Our 5.00% convertible subordinated notes with a principal balance of $121.5 million are due September 1, 2006, and our 5.25% convertible subordinated notes with a principal balance of $66.2 million are due November 15, 2006. Payment would be required if our common stock price remains below approximately $30 per share for the 5.00% convertible subordinated notes and approximately $50 per share for the 5.25% convertible subordinated notes. In such a situation, there can be no assurance that we will be able to refinance the debt.

To address our liquidity requirements, we have set a goal to move to a more variable operating model where we will reduce our operating cash flow breakeven point. Additionally, we may raise capital through the public markets during 2004 by issuing common stock or convertible debt securities, or a combination of the two. Such proceeds will be used to realign our capital structure and provide liquidity for the next semiconductor capital equipment up-cycle. However, we cannot provide assurance that such sources of liquidity will be available to us on acceptable terms.

We have historically financed our operations and capital requirements through a combination of cash provided by operations, the issuance of long-term debt and common stock, bank loans, capital lease obligations and operating leases. However, we have not generated positive cash flow from operations since 2001.

Operating activities used cash of $13.0 million in 2003, reflecting our net loss of $44.2 million partially offset by non-cash items of $35.2 million and increased by net working capital changes of approximately $4.0 million. Non-cash items primarily consisted of the following:

- Depreciation of property and equipment of $12.7 million. We expect depreciation expense to increase to a range of $15.0 million to $16.0 million in 2004. This increase is primarily due to capital expenditures incurred in 2003 to launch our China-based manufacturing facility and information technology systems expenditures in 2003 and 2004;
- Amortization of intangible assets and demonstration and customer service equipment of $7.5 million;
- Amortization of deferred debt issuance costs of $1.1 million;
- Provision for excess and obsolete inventory of $3.0 million;
- Provision for deferred income taxes of $6.4 million. In 2003, we recorded valuation allowances against certain of our United States and foreign deferred income tax assets. We may generate taxable income in 2004, enabling us to reverse a portion of our valuation allowance. This reversal would create a use of cash from operations as the benefit from deferred income taxes is a non-cash item;
- A loss on the disposal of property and equipment of $2.8 million. During 2003, we closed multiple facilities resulting in the disposal of certain property and equipment. We plan to close our Voorhees, New Jersey manufacturing facility in the first half of 2004. Such closure may result in additional capital equipment disposals, if the related equipment cannot be utilized elsewhere in our organization; and
- Intangible asset impairment of $1.2 million. In the third quarter of 2003, the fair value of one of our intangible assets did not support its carrying value and an impairment loss was recognized. Based on our forecasts, we do not expect to incur additional intangible asset impairments in 2004.

However, our forecast is subject to numerous factors that are beyond our control, therefore we can provide no assurance regarding the future recoverability of our intangible assets.

Net working capital changes used cash of $5.3 million and primarily consisted of the following:

- Collection of $16.5 million of net income tax receivables during 2003;
- An increase in accounts receivable of $14.6 million. We expect our accounts receivable to remain high during 2004 if industry conditions continue to improve;
- An $11.3 million increase in inventory. Due to the establishment of our China-based manufacturing facility and increased sales orders we have built our inventory level to mitigate the risk of not being able to meet increasing customer demand for our products;
- A $5.9 million increase in trade accounts payable, which was primarily incurred to finance our inventory purchases;
- A $5.0 million increase in customer deposits and other accrued expenses;
- A $2.8 million decrease in accrued warranty; and
- A $2.8 million decrease in accrued restructuring.

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 the following:

- A $4.2 million pretax gain on the retirement of a portion of our convertible notes, repurchased at a discount below face value;
- A $4.9 million gain on an intercompany foreign currency loan. We do not expect to realize significant gains from intercompany indebtedness in the future as a result of a change in our currency risk management policy;
- 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 $8.1 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 consisting 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 the following:

- 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 the following:

- A $3.6 million benefit for deferred income taxes;
- Depreciation of property and equipment of $10.0 million;
- Amortization of intangible assets and demonstration equipment of $5.9 million;
- A 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 $6.8 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;
- A $5.1 million decrease in accrued payroll and employee benefits; and
- A $22.0 million increase in net income taxes receivable.

Our near-term future operating activities may continue to use cash. Periods of rapidly increasing sales may cause increased working capital requirements, thereby requiring the use of cash to fund our operations.

Investing activities used cash of $8.6 million in 2003 and primarily consisted of the purchase of equipment for $20.5 million and the settlement of the escrow deposit liability related to our acquisition of Dressler in 2002 of $1.7 million, partially offset by proceeds from the sale of assets of $5.2 million and the net sale of marketable securities of $8.8 million. We expect to spend between $12.5 million and $14.0 million for the purchase of property and equipment in 2004. 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 exchange rates may significantly impact our capital expenditures and depreciation expense recognized in a particular period.

Investing activities provided cash of $24.3 million in 2002 and consisted of cash generated by the net sale of marketable securi-

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ties 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 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 significant levels of cash that are greater than needed for our current operations in the near term.

Financing activities used cash of $8.6 million in 2003, and consisted of payments on our senior borrowings and capital lease obligations of $12.8 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 $4.2 million.

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 2004 will be approximately $8.6 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 2004 payment obligations.

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 our senior borrowings 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 ESPP of $2.1 million.

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.

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, 2003, 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 2003, the rates we earned on our marketable securities approximated 1.8% on a before tax equivalent basis. Because the Federal Reserve repeatedly lowered interest rates throughout 2001, 2002 and 2003, the interest rates we earned on our investments likewise decreased substantially. This, in conjunction with using our available cash and cash reserves to fund our operations and 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 $170,000 less interest income in 2003, $300,000 in 2002 and $700,000 in 2001.

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. Because these rates are fixed, we believe there is no risk of increased interest expense with regard to these instruments.

The interest rates on our Aera Japan subsidiary's credit lines are variable and currently range from 1.5% 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 2003, the U.S. dollar weakened approximately 10% against the Japanese yen and 17% against the euro. It is highly uncertain how currency exchange rates will fluctuate in the future. We have entered into various foreign currency forward exchange contracts to mitigate against currency fluctuations in the Japanese yen, euro, Taiwanese dollar and Chinese yuan. The notional amount of our foreign currency contracts at December 31, 2003 was $10.2 million. The potential fair value loss for a hypothetical 10% adverse change in foreign currency exchange rates at December 31, 2003, would be approximately $1.0 million, which would be essentially offset by corresponding gains related to the underlying assets. 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, 2003 we held foreign currency forward exchange contracts, maturing through March 2004, to purchase U.S. dollars and sell various foreign currencies. The following table summarizes our outstanding contracts as of December 31, 2003:

	Notional Amounts	Market Settlement Amounts	Unrealized (Loss)/Gain
Japanese yen contracts	$ 3,500,000	$ 3,650,000	$(150,000)
Euro contract	200,000	222,000	(22,000)
Taiwanese dollar contract	4,000,000	3,992,000	8,000
Chinese yuan contract	2,500,000	2,496,000	4,000
Balance at December 31, 2003	$10,200,000	$10,360,000	$(160,000)