

SOUTHWALL TECHNOLOGIES INC /DE/
Form 424B3
July 03, 2002

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Filed Pursuant to Rule 424(b)(3)
Registration No. 333-85576

Prospectus

3,500,000 Shares

Common Stock

We are offering 3,500,000 shares of our common stock. Our common stock is listed on the Nasdaq National Market under the symbol "SWTX." On July 1, 2002, the last reported sale price of our common stock on the Nasdaq National Market was \$4.76 per share.

Investing in our common stock involves certain risks. See "Risk Factors" beginning on page 7.

	Per Share	Total
Public Offering Price	\$ 4.50	\$ 15,750,000
Underwriting Discount	\$ 0.27	\$ 945,000
Proceeds, before expenses, to Southwall	\$ 4.23	\$ 14,805,000

We have granted the underwriters the right to purchase up to an additional 507,300 shares and the selling stockholders have granted the underwriters the right to purchase up to an additional 17,700 shares of our common stock to cover over-allotments.

The Securities and Exchange Commission and state securities regulators have not approved or disapproved of these securities or determined if this prospectus is truthful or complete. It is illegal for any person to tell you otherwise.

Needham & Company, Inc.

Adams, Harkness & Hill, Inc.

Wells Fargo Securities, LLC

The date of this prospectus is July 1, 2002.

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We have not authorized anyone to provide you with information different than that contained in this document. This document may only be used where it is legal to sell these securities. The information in this document is given as of the date of this document regardless of the time of delivery of this prospectus or of any sale of our common stock.

PROSPECTUS SUMMARY

This summary highlights information contained elsewhere in this prospectus. This summary does not contain all of the information that you should consider before investing in our common stock. References in this prospectus to "Southwall Technologies," "Southwall," "we," "us," or "our" are to Southwall Technologies Inc. and its subsidiaries. You should read this entire prospectus carefully. Unless otherwise indicated, all information in this prospectus assumes that the underwriters have not exercised their option to purchase additional shares.

Southwall Technologies Inc.

We are a global developer, manufacturer and marketer of thin film coatings for the automotive glass, electronic display and architectural markets. We have developed a variety of products that selectively absorb, reflect or transmit light and control the flow of energy. Our products consist of transparent insulation and solar-control films for automotive and architectural glass, and anti-reflective films for computer and television screens, including flat panel and plasma displays. They also include transparent conductive films for use in touch screen and liquid crystal displays. Based upon our production capacity, we believe we are one of the world's largest producers of rolls of clear plastic, or substrates, coated with thin films.

Recent advances in manufacturing processes and techniques are reducing our production costs. These reductions allow our thin film coated substrates to more cost-effectively address the following markets:

Automotive glass. The thin film coated substrates we sell in this market reflect infrared heat and reduce the transmission of ultra-violet light. These coatings allow carmakers to use more glass and to increase the energy efficiency and comfort of their vehicles. We sell thin film coated substrates in this market primarily to original equipment manufacturers that produce glass for sale to European manufacturers of new cars. Our products are used in cars manufactured by Mercedes Benz, Renault, Audi, BMW, Volvo, Volkswagen and the PSA Group, among other companies. According to the Freedonia Group, the worldwide demand for new and replacement glass sold for the motor vehicle market is expected to increase from approximately 7.2 billion square feet in 1999 to approximately 8.7 billion square feet in 2009.

Electronic displays. The thin film coated substrates we sell in this market primarily reduce glare caused by reflection from glass surfaces, improve contrast and image quality, and reduce energy emission from and the build up of static charge on computer display screens. Our thin film coated substrates are used in computer display tubes, or CDTs, liquid crystal and plasma displays, and in applications such as touch screens, wireless telephones and automated teller machines. The combined worldwide market for 17 inch and 19 inch flat screen computer display tubes and active matrix liquid crystal displays used for computer and handheld applications is anticipated to grow from approximately 75 million units in 2000 to approximately 155 million units in 2005, according to a 2001 Stanford Resources, Inc. research study.

Architectural. The thin film coated substrates we sell in this market are primarily used to control the transmission of heat through window glass and to limit ultra-violet light damage. Glass windows are significantly responsible for heat build-up and loss in buildings. According to the Freedonia Group, the worldwide market for new and replacement glass sold for use in residential buildings is expected to increase from approximately 5.2 billion square feet in 1999 to approximately 8.0 billion square feet in 2009. Also according to Freedonia, the market for new and replacement glass for use in commercial buildings is expected to increase from approximately 16.2 billion square feet in 1999 to approximately 25.4 billion square feet in 2009.

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To address market demands, we have expanded our operations. We began manufacturing in a new facility in Dresden, Germany in January 2001. The facility presently contains two production machines. We expect that our third production machine in Dresden will begin commercial production by the first quarter of 2003. In 2000, we also increased our commercial production capacity in Tempe, Arizona by adding a second production machine.

Our Competitive Advantages

We believe we are well positioned for continued growth in sales of thin film coatings for the automotive glass, electronic display and architectural markets, and that our competitive advantages include:

Proprietary thin film manufacturing process knowledge and control systems;

Extensive thin film materials expertise and optical design capabilities;

Over twenty years' experience providing large quantities of sophisticated coatings on flexible film for demanding applications and customers;

The world's largest installed base of coating machinery for application of sputter coatings to flexible film; and

Substantial expertise and technical support in the areas of product testing, reliability and applications.

Our Strategy

Our objective is to enhance our position as a global developer, manufacturer and marketer of thin film coatings on flexible substrates for the automotive glass, electronic display and architectural markets. The following are key elements of our strategy:

Increase penetration and expand customer base in the automotive glass market;

Increase production capacity in the automotive glass and architectural market;

Use expanded production capacity and new products to increase sales in the architectural markets;

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Capitalize on expanding flat panel display markets; and

Continue to advance thin film production technology.

We were incorporated in 1979 as a Delaware corporation. Our principal executive offices are located at 1029 Corporation Way, Palo Alto, California 94303, and our telephone number is (650) 962-9111. Our corporate web site is located at www.southwall.com. The information contained in our web site is not a part of this prospectus.

Recent Development

On June 24, 2002, we disclosed preliminary estimates of our financial results for the quarter ended June 30, 2002, indicating that we expected revenues for the quarter to be between \$19.5 million and \$20.5 million and net income for the quarter to be between \$1.2 million and \$1.4 million. We also disclosed preliminary estimates of our financial results for the fiscal year ended December 31, 2002, indicating that we expected revenues for 2002 to be between \$78.0 million and \$82.0 million and net income for 2002 to be between \$4.8 million and \$5.2 million before including any adjustments from the sale of common stock that we are offering by means of this prospectus. These estimates are, however, subject to certain assumptions, risks and uncertainties that could cause actual revenues or net income for our second quarter or 2002 to be different than the estimates presented.

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We expect the remainder of 2002 to continue to be affected by a slowdown in sales by European automobile manufacturers. We do not anticipate a significant improvement, if any, over our first quarter sales to the automotive market for any of the remaining quarters of 2002. However, we recently announced a new ten-year distribution agreement with Globamatrix Holdings Pte. Ltd., or Globamatrix, which includes commitments by Globamatrix to purchase an annually increasing amount, subject to volume and quality standards, of our solar control products for retrofit applications to the automotive and residential and commercial architectural glass markets. As a result, we believe that we will have somewhat greater revenues from Globamatrix in 2002 than in 2001, and that this growth will continue through 2003.

Our revenues from the CDT portion of our electronic display business have declined during 2002 as compared to 2001 primarily due to lower prices. During the same period, however, sales to the liquid crystal and plasma display portions of this market have increased. We recently started shipping production quantities and sizes of new films specifically designed for the liquid crystal display and plasma display panel markets that maintain optical clarity while reducing the reflection of ambient light to improve image quality. We expect the decline of the CDT portion of our electronic display business and the growth in sales of our new electronic display films to continue through 2003.

Due to production capacity constraints, in the past we have not allocated resources to expanding revenues from our architectural products. Additional production capacity for architectural products has recently been created, in part, by the addition of our new Dresden facility. Our revenues from our architectural business have increased during 2002 as compared to 2001, and we expect that the availability of production capacity in 2003 will allow for continued growth in this business. However, we can give no assurances that availability of production capacity will increase our revenues from architectural products.

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The Offering

Common stock offered by us	3,500,000 shares
Common stock to be outstanding after this offering	12,086,278 shares
Over-allotment option:	
Common stock offered by us	507,300 shares
Common stock offered by selling stockholders	17,700 shares
Use of proceeds	To pay down existing indebtedness, capital expenditures including purchasing a new production machine, replacing our enterprise resource planning system and updating our Palo Alto and Tempe facilities, and for working capital and general corporate purposes, including possible acquisitions.

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Nasdaq National Market symbol

SWTX

The number of shares of our common stock to be outstanding after this offering is based on our shares outstanding as of May 23, 2002 and excludes 2,096,204 shares which consist of:

1,401,859 shares subject to outstanding options under our 1997 stock incentive plan with a weighted average exercise price of \$5.24 per share; and

694,345 shares subject to outstanding options under our 1998 stock option plan for employees and consultants with a weighted average exercise price of \$6.61 per share.

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Summary Consolidated Financial Data

The following tables summarize consolidated statements of operations and consolidated balance sheet data for our business. You should read this information together with "Management's Discussion and Analysis of Financial Condition and Results of Operations" and our consolidated financial statements and the related notes included elsewhere in this prospectus. The pro forma as adjusted consolidated balance sheet data reflects the sale of 3,500,000 shares of common stock offered by us at the public offering price of \$4.50, after deducting estimated underwriting discounts and commissions and estimated offering expenses.

The consolidated statements of operations data for the five years ended December 31, 2001 are derived from our audited consolidated financial statements. The consolidated statements of operations data for the three months ended April 1, 2001 and March 31, 2002 and the consolidated balance sheet data as of March 31, 2002 have not been audited. In the opinion of management, such unaudited financial statements have been prepared on the same basis as the audited financial statements referred to above and include all adjustments, consisting only of normal recurring adjustments, necessary for a fair presentation of results of operations for the indicated periods when read in conjunction with our audited financial statements and notes. Results of operations for the three months ended March 31, 2002 are not necessarily indicative of the results that may be expected for the full year.

	Year Ended December 31,					Three Months Ended	
	1997	1998	1999	2000	2001	April 1, 2001	March 31, 2002

(In thousands, except per share data)

Consolidated Statements of Operations Data:

Net revenues by product:

Automotive glass	\$ 6,629	\$ 12,845	\$ 19,477	\$ 20,198	\$ 37,385	\$ 8,007	\$ 7,003
Electronic display	21,957	16,954	16,014	47,734	29,691	6,724	7,925
Architectural	21,503	20,234	19,107	17,416	15,900	2,982	4,341

Net revenues	50,089	50,033	54,598	85,348	82,976	17,713	19,269
Gross profit	14,779	5,780	13,892	16,288	22,828	2,864	6,844
Income (loss) from operations	2,446	(7,130)	(527)	(3,594)	6,336	(1,217)	1,322
Net income (loss)	\$ 2,281	\$ (7,869)	\$ (1,865)	\$ (6,180)	\$ 4,635	\$ (1,131)	\$ 1,181
Net income (loss) per share:							
Basic	\$ 0.32	\$ (1.03)	\$ (0.25)	\$ (0.81)	\$ 0.58	\$ (0.15)	\$ 0.14
Diluted	\$ 0.29	\$ (1.03)	\$ (0.25)	\$ (0.81)	\$ 0.57	\$ (0.15)	\$ 0.13

Weighted average number of common stock and dilutive common stock equivalents:

Basic	7,107	7,608	7,421	7,642	8,032	7,743	8,417
Diluted	7,799	7,608	7,421	7,642	8,186	7,743	9,277

	March 31, 2002	
	Actual	Pro Forma As Adjusted
	(In thousands)	
Consolidated Balance Sheet Data:		
Cash and cash equivalents	\$ 2,713	\$ 3,001
Working capital (deficit)	(4,987)	(93)
Property, plant and equipment, net	47,326	53,326
Total assets	73,067	78,605
Term debt	13,800	9,800
Total liabilities	44,781	36,175
Total stockholders' equity	28,286	42,430

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RISK FACTORS

An investment in our common stock involves a high degree of risk. You should consider carefully the following risks, together with all other information included in this prospectus, before you decide to buy our common stock. If any of the following risks actually occur, our business, prospects, financial condition or results of operations would likely suffer materially. As a result, the trading price of our common stock may decline, and you could lose all or part of the money you paid to buy our common stock.

Financial Risks

Our negative working capital position, leverage and historical performance may prevent us from obtaining additional loans.

We have a working capital deficit, significant debt and substantial ongoing debt service obligations. These and other factors related to our business during recent years, including the restatement in 2000 of our financial statements for prior periods, operating losses in 1998, 1999 and 2000, our failure to comply with covenants in our financing agreements and suspension of trading of our common stock on Nasdaq in 2000, may make it difficult for us to secure additional borrowings on favorable terms or at all. We intend to seek additional borrowings, and difficulties in borrowing money could have a material adverse effect on our operations, planned capital expenditures, ability to comply with the terms of government grants and future growth.

Covenants or defaults under our credit agreements may prevent us from borrowing or force us to curtail our operations.

As of March 31, 2002, we had total outstanding obligations under our credit agreements of \$21.6 million. Following the application of the proceeds from this offering, approximately \$23.1 million of our assets will remain as collateral to secure loans under our credit facilities. Our inability to make timely payments of interest or principal under these facilities could materially adversely affect our ability to borrow money under existing credit facilities, to secure additional borrowings or to function as a going concern. Our current credit facilities contain financial covenants that will require us to meet certain financial performance targets and operating covenants that limit our discretion with respect to business matters. Among other things, these covenants restrict our ability to borrow additional money, create liens or other encumbrances, and make certain payments including dividends and capital expenditures. Many of these loans contain provisions that permit the lender to declare the loans immediately due if there is a material adverse change in our business. These credit facilities also contain events of default that could require us to pay off indebtedness before its maturity. The restrictions imposed by these credit facilities or the failure of lenders to advance funds under these facilities could force us to curtail our operations or have a material adverse effect on our liquidity.

Our ability to borrow is limited by the nature of our equipment and some of our accounts receivable.

Our equipment is custom designed for a special purpose. In addition, a large portion of our accounts receivable are from foreign sales, which are often more difficult to collect than domestic accounts receivable. As a result of the nature of our equipment and accounts receivable, lenders will generally allow us to borrow less against these items as collateral than they would for other types of equipment or domestic accounts receivable.

If we default under our secured credit facilities and financing arrangements, the lenders could foreclose on the assets we have pledged to them requiring us to significantly curtail or even cease our operations.

In connection with our current borrowing facilities and financing arrangements, we have granted security interests in and liens on substantially all of our assets, including our production machines and our Dresden facility, to secure the loans. We are currently being sued under a master sale-leaseback agreement with respect to two of our production machines because we have withheld lease payments in

connection with a dispute with the leasing company. The leasing company holds a security interest in the production machines and may be able to repossess those machines. If the leasing company were to repossess one or more of those machines, our ability to produce product would be materially impaired. Our revenues, gross margins and operating efficiency would also be materially adversely affected. Our obligations under our secured credit facilities contain cross-default and cross-acceleration provisions and provisions that allow the lenders to declare the loans immediately due if there is a material adverse change in our business. If we default under the credit facilities or financing arrangements the lenders could declare all of the funds borrowed thereunder, together with all accrued interest, immediately due and payable. If we are unable to repay such indebtedness, the lenders could foreclose on the pledged assets. If the lenders foreclose on our assets, we would be forced to significantly curtail or even cease our operations.

Our first quarter revenues are generally lower than revenues in the following quarters due to seasonal demand for our products.

Our revenue from the electronic display and architectural markets are affected by seasonality patterns with the highest sales occurring during the second, third and fourth fiscal quarters. During the past three fiscal years, 21% of our sales have occurred during the first quarter with 25%, 29% and 25% occurring during the second, third and fourth quarters, respectively. Demand in the electronic display market is generally at its highest before the holiday season, in our second and third quarters, when production of electronic goods is at its highest. Demand for architectural glass generally increases when the weather is warmer in northern climates and construction activity increases. To a lesser extent, demand for our after-market automotive glass products generally increases when weather is warmer in northern climates and the replacement of glass windows in motor vehicles increases. Lower demand for our products during the first quarter generally results in lower sales, margins and operating results during that quarter. We believe this seasonality in the demand for our products will continue to affect our results in the future.

Our quarterly revenue and operating results are volatile and difficult to predict. If we fail to meet the expectations of public market analysts or investors, the market price of our common stock may decrease significantly.

Our quarterly revenue and operating results have varied significantly in the past and will likely vary significantly in the future. Our revenue and operating results may fall below the expectations of securities analysts or investors in future periods. Our failure to meet these expectations would likely adversely affect the market price of our common stock.

Our quarterly revenue and operating results may vary depending on a number of factors, including:

fluctuating customer demand, which is influenced by a number of factors, including market acceptance of our products and the products of our customers and end-users, changes in product mix, and the timing, cancellation or delay of customer orders and shipments;

the timing of shipments of our products by us and by independent subcontractors to our customers;

manufacturing and operational difficulties that may arise due to, among other things, quality control, capacity utilization of our production machines, unscheduled equipment maintenance, and the hiring and training of additional staff;

our ability to introduce new products on a timely basis; and

competition, including the introduction or announcement of new products by competitors, the adoption of competitive technologies by our customers, the addition of new production capacity by competitors and competitive pressures on prices of our products and those of our customers.

We expect to be subject to increased foreign currency risk in our international operations.

In 2002, we expect that 10% to 15% of our revenues will be denominated in euros, primarily related to sales from our Dresden operation, including sales to one of our largest customers, a European automotive glass manufacturer. As a result, our operating results and cash flows may

vary due to fluctuations of the euro against the dollar. In addition, other customers may also make payments in foreign currencies. Also, certain transactions with foreign suppliers are denominated in foreign currencies, primarily yen.

The majority of our international sales are currently invoiced and collected in U.S. dollars. A strengthening in the dollar relative to the currencies of those countries in which we do business would increase the prices of our products as stated in those currencies and could hurt our sales in those countries. Significant fluctuations in the exchange rates between the U.S. dollar and foreign currencies could cause us to lower our prices and thus reduce our profitability. These fluctuations could also cause prospective customers to cancel or delay orders because of the increased relative cost of our products.

Operational Risks

We depend on a small number of customers for nearly all of our sales, and the loss of a large customer could materially adversely affect our revenues or operating results.

Our ten largest customers accounted for approximately 69%, 85%, 85% and 85% of net sales in 1999, 2000, 2001 and the first quarter of 2002, respectively. We have contracts extending past 2002 with only two of these customers. We expect to continue to derive a significant portion of our net sales from this relatively small number of customers. Accordingly, the loss of a large customer could materially hurt our business, and the deferral or loss of anticipated orders from a large customer or a small number of customers could materially reduce our revenue and operating results in any period.

We must continue to develop new products or enhance existing products on a timely basis to compete successfully in a rapidly changing marketplace.

Our future success depends upon our ability to introduce new products, improve existing products and processes to keep pace with technological and market developments, and to address the increasingly sophisticated and demanding needs of our customers, especially in the electronic display and automotive markets. Technological changes, process improvements, or operating improvements that could adversely affect us include:

the development of competing technologies to our anti-reflective and silver reflector films for liquid crystal displays in the flat panel display industry;

changes in the way coatings are applied to alternative substrates such as tetra acetate cellulose, or TAC;

the development of new technologies that improve the manufacturing efficiency of our competitors;

the development of new materials that improve the performance of products that could compete with our products; and

improvements in the alternatives to the sputtering technology we use to produce our products, such as plasma enhanced chemical vapor deposition, or PECVD.

Our research and development efforts may not be successful in developing products in the time, or with the characteristics, necessary to meet customer needs. If we do not adapt to technological changes, or process or operating improvements, our competitive position, operations and prospects would be materially adversely affected.

Our ability to successfully identify suitable target companies and integrate acquired companies or technologies may affect our future growth.

A potential part of our continuing business strategy is to consider acquiring companies, products, and technologies that complement our current products, enhance our market coverage, technical capabilities or production capacity, or offer other growth opportunities. Our ability to successfully complete acquisitions requires that we identify suitable target companies, agree on acceptable terms, and obtain acquisition financing on acceptable terms. In connection with these acquisitions, we could incur debt, amortization expenses relating to identified intangibles, impairment charges relating to goodwill, or merger related charges, or could issue stock that would dilute our current shareholders' percentage of ownership. The success of any acquisitions will depend upon our ability to integrate acquired operations, retain and motivate acquired personnel, and increase the customer base of the combined businesses. We cannot assure you that we will be able to accomplish all of these goals. Any future acquisitions would involve certain additional risks, including:

difficulty integrating the purchased operations, technologies, or products;

unanticipated costs, which would reduce our profitability;

diversion of management's attention from our core business;

potential entrance into markets in which we have limited or no prior experience; and

potential loss of key employees, particularly those of the acquired business.

Failure to meet the volume requirements of our customers may result in a loss of business or contractual penalties.

Our long-term competitive position will depend to a significant extent on our manufacturing capacity. The failure to have sufficient capacity, to fully utilize capacity when needed or to successfully integrate and manage additional capacity in the future could adversely affect our relationships with customers and cause customers to buy similar products from our competitors if we are unable to meet their needs. For example, we believe that we lost substantial potential architectural products sales in 2001 because we did not have the capacity to manufacture the required amounts of products. Also, our failure to produce required amounts of products under some of our contracts will result in price reductions on future sales under such contracts or penalties under which we would be required to reimburse the customer for the full cost of any product not delivered in a timely manner, either of which would reduce our gross margins.

We depend on our OEM customers for the sale of our products.

We sell a substantial portion of our products to a relatively small number of original equipment manufacturers, or OEMs. The timing and amount of sales to these customers ultimately depend on sales levels and shipping schedules for the OEM products into which our products are incorporated. We have no control over the volume of products shipped by our OEM customers or shipping dates, and we cannot be certain that our OEM customers will continue to ship products that incorporate our products at current levels or at all. We currently have a long-term contract with only one of our OEM customers. Failure of our OEM customers to achieve significant sales of products incorporating our products and fluctuations in the timing and volume of such sales could be harmful to our business. Failure of these customers to inform us of changes in their production needs in a timely manner could also hinder our ability to effectively manage our business.

We rely upon our OEM customers for information relating to the development of new products so that we are able to meet end-user demands.

We rely on our OEM customers to inform us of opportunities to develop new products that serve end-user demands. If our OEM customers do not present us with market opportunities early enough

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for us to develop products to meet end-user needs in a timely fashion, or if the OEMs fail to anticipate end-user needs at all, we may fail to develop new products or modify our existing products for the end-user markets for our products. In addition, if our OEM customers fail to accurately anticipate end-user demands, we may spend resources on products that are not commercially successful.

We depend on a distributor for the sale of our after-market products.

We primarily use one independent distributor to sell our after-market products. We have a distribution agreement with Globamatrix Holdings Pte. Ltd., or Globamatrix, under which we granted an exclusive worldwide license to distribute our after-market applied film in the automotive and architectural glass markets. Failure of Globamatrix to achieve significant sales of products incorporating our products and fluctuations in the timing and volume of such sales could be harmful to our business. We believe that the success of our after-market products will continue to depend upon this distributor.

We face intense competition, which could affect our ability to increase our revenue, maintain our margins and increase our market share.

The market for each of our products is intensely competitive and we expect competition to increase in the future. Competitors vary in size and in the scope and breadth of the products they offer. We compete both with companies using technology similar to ours and companies using other technologies or developing improved technologies. Many of our current and potential competitors have significantly greater financial, technical, marketing and other resources than we have. In addition, many of our competitors have well-established relationships with our current

and potential customers and have extensive knowledge of our industry. In fact, some of our current and potential customers currently produce, or are capable of creating, products that compete with our products.

We may not be able to expand our manufacturing capacity efficiently which could lead to lower gross margins.

We have ordered for our Dresden manufacturing facility a new machine (PM 10), which we anticipate will begin commercial production in the first quarter of 2003. In addition, we anticipate that PM 7 in our Tempe facility will begin commercial production during the third quarter of 2002. During the processes of bringing PM 7 and PM 10 up to commercial production levels, we expect to have decreased manufacturing yields and higher costs, which will lower our gross margins.

We are dependent on key suppliers of materials which may prevent us from delivering product in a timely manner.

We manufacture all of our products using materials procured from third-party suppliers. We do not have long-term contracts with our third-party suppliers, except for an agreement with a third-party supplier to purchase Indium metal through the second quarter of 2003. Certain of the materials we require are obtained from a limited number of sources. Delays or reductions in product shipments could damage our relationships with customers. Further, a significant increase in the price of one or more of the materials used in our products could have a material adverse effect on our cost of goods sold and operating results.

We are dependent on a few qualified subcontractors to add properties to some of our products.

We rely on third-party subcontractors to add properties, such as adhesives, to some of our products. There are only a limited number of qualified subcontractors that can provide some of the services we require and we do not have long-term contracts with any of those subcontractors. Qualifying alternative subcontractors could take a great deal of time or cause us to change product designs. The loss of a subcontractor could adversely affect our ability to meet our scheduled product deliveries to customers, which could damage our relationships with customers. If our subcontractors do not produce a quality product, our yield will decrease and our margins will be lower. Further, a

significant increase in the price charged by one or more of our subcontractors could force us to raise prices on our products or lower our margins, which could have a material adverse effect on our operating results.

We are dependent on key suppliers of production machines which may prevent us from delivering an acceptable product on a timely basis and limit our capacity for revenue growth.

Our production machines are large, complex and difficult to manufacture. It can take up to a year from the time we order a machine until it is delivered. Following delivery, it can take us, with the assistance of the manufacturer, up to six additional months to test and prepare the machine for commercial production. There are a very limited number of companies that are capable of manufacturing these machines. Our inability in the future to have new production machines manufactured and prepared for commercial production in a timely manner would prevent us from delivering product on a timely basis and limit our capacity for revenue growth.

Fluctuations or slowdowns in the overall electronic display industry have and may continue to adversely affect our revenues.

Our business depends in part on sales by manufacturers of products that include electronic displays. The markets for electronic display products are highly cyclical and have experienced periods of oversupply resulting in significantly reduced demand for our products. For example, due to the deteriorating economic environment, sales by flat panel cathode ray tube manufacturers decreased in 2001, contributing to our electronic display product revenues declining by 38% from 2000. If the flat panel display and other electronic display markets in which we sell our products do not recover or experience further slowdowns in the future, it could cause revenues from our electronic display products to decrease.

Performance, reliability or quality problems with our products may cause our customers to reduce or cancel their orders.

We manufacture our products based on specific, technical requirements of each of our customers. We believe that future orders of our products will depend in part on our ability to maintain the performance, reliability and quality standards required by our customers. If our products have performance, reliability or quality problems, then we may experience:

delays in collecting accounts receivable;

higher manufacturing costs;
additional warranty and service expenses; and
reduced or cancelled orders.

For example, in 1998, our operating results were materially adversely affected by quality problems associated with the electronic display film produced by us for one of our largest customers.

If we fail to recruit and retain a significant number of qualified technical personnel, we may not be able to develop, enhance and introduce our products on a timely basis, and our business will be harmed.

We require the services of a substantial number of qualified technical personnel. The market for skilled technical personnel is characterized by intense competition and aggressive recruiting, as well as a high-level of employee mobility. These characteristics make it particularly difficult for us to attract and retain the qualified technical personnel we require. We have experienced, and we expect to continue to experience, difficulty in hiring and retaining highly skilled employees with appropriate technical qualifications. It is especially difficult for us to recruit qualified personnel to move to the location of our Palo Alto, California offices because of the high-cost of living. If we are unable to recruit and retain a sufficient number of qualified technical employees, we may not be able to complete the

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development of, or enhance, our products in a timely manner. As a result, our business may be harmed and our operating results may suffer.

We may be unable to attract or retain the other highly skilled employees that are necessary for the success of our business.

In addition to our dependence on our technical personnel, our success also depends on our continuing ability to attract and retain other highly skilled employees. We depend on the continued services of our senior management, particularly Thomas G. Hood, our President and Chief Executive Officer, Robert R. Freeman our Chief Financial Officer, Dr. Sicco W. T. Westra, our Senior Vice President, Sales and Marketing, and Wolfgang Heinze, our plant manager in Dresden, and other personnel. We do not have employment contracts with any of our officers or key person life insurance covering any officer or employee. Our officers have technical and industry knowledge that cannot easily be replaced. Competition for similar personnel in our industry where we operate is intense. We have experienced, and we expect to continue to experience, difficulty in hiring and retaining highly skilled employees with appropriate qualifications. If we do not succeed in attracting or retaining the necessary personnel, our business could be adversely affected.

If we are unable to adequately protect our intellectual property, third parties may be able to duplicate our products or develop functionally equivalent or superior technology.

Our success depends in large part upon our proprietary technology. We rely on our know-how, as well as a combination of patent, trademark and trade secret protection, to establish and protect our intellectual property rights. Despite our efforts to protect our proprietary rights, unauthorized parties may attempt to copy aspects of our products or to obtain and use information that we regard as proprietary. Policing unauthorized use of our products is difficult. Our means of protecting our proprietary rights may not be adequate. In addition, the laws of some foreign countries do not protect our proprietary rights to as great an extent as do the laws of the United States. During 2001, one of our U.S. patents relating to our architectural products expired. In the next three years, two more U.S. patents will expire. Expiration of these patents or our failure to adequately protect our proprietary rights may allow third parties to duplicate our products or develop functionally equivalent or superior technology. In addition, our competitors may independently develop similar technology or design around our proprietary intellectual property.

Our business is susceptible to numerous risks associated with international operations.

We have expanded our operations and hired additional personnel to address international markets for the thin film coatings industry. International revenues amounted to approximately 78%, 85%, 87% and 86% of our net revenues during 1999, 2000, 2001 and the first quarter of 2002, respectively. The distance between Palo Alto and Dresden creates logistical and communications challenges. In addition, to achieve acceptance in international markets, our products must be modified to handle a variety of factors specific to each international market as well as local regulations. We may also be subject to a number of other risks associated with international business activities. These risks include:

unexpected changes in and the burdens and costs of compliance with a variety of foreign laws and regulatory requirements;

potentially adverse tax consequences; and

global economic turbulence and political instability.

Labor strikes in Germany could disrupt the production schedule of automotive products that incorporate our films, which could have a material adverse effect on our revenues.

On May 6, 2002, German metal workers represented by IG Metal began rolling strikes against a number of companies in Germany, including DaimlerChrysler, in connection with negotiations over a

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new labor contract. Our customers in the automotive glass market sell glass incorporating our products to German automobile manufacturers including DaimlerChrysler. A prolonged strike by IG Metal or other workers or a significant delay in DaimlerChrysler's production schedule or the production schedules of others as a result of labor activity could disrupt the demand for our products, which would adversely affect our revenues.

If we fail to comply with environmental regulations, our operations could be suspended.

We use hazardous chemicals in producing our products and have air and water emissions that require controls. As a result, we are subject to a variety of local, state and federal governmental regulations relating to the storage, discharge, handling, emission, generation, manufacture and disposal of toxic or other hazardous substances used to manufacture our products, compliance with which is expensive. Our failure to comply with current or future regulations could result in the imposition of substantial fines on us, suspension of production, alteration of our manufacturing processes, increased costs or cessation of operations.

We rely on our domestic sales representatives, without whom our architectural product sales may suffer.

We use independent sales representatives to promote our Heat Mirror products to architects in the United States. If some or all of our sales representatives experience financial difficulties, or otherwise become unable or unwilling to promote our products, our business could be harmed. These sales representatives could reduce or discontinue promotion of our products. They may not devote the resources necessary to provide effective marketing support to us. In addition, we depend upon the continued viability and financial resources of these representatives, many of which are small organizations with limited working capital. These representatives, in turn, depend substantially on general economic conditions and other factors affecting the markets for the products they promote. We believe that our success in this market will continue to depend upon these sales representatives.

We may experience unanticipated warranty or other claims with respect to our products which may lead to extensive litigation costs and expenses.

In the ordinary course of business, we have periodically become engaged in litigation principally as a result of disputes with customers of our architectural products. We have settled some of these suits and others are pending. We may become engaged in similar or other lawsuits in the future. For example, we have recently received a letter that threatens litigation based upon the allegation that a sealant provided by a third party and used with our film was defective, and as a result the plaintiff has suffered elevated warranty replacement claims and costs. Some of our products that have been the basis for lawsuits against us could be the basis for future lawsuits. An adverse outcome in the defense of a warranty or other claim could subject us to significant liabilities to third parties. Any litigation, regardless of the outcome, could be costly and require significant time and attention of key members of our management and technical personnel.

We may face extensive damages or litigation costs if our insurance carriers seek to have us indemnify them for settlements of past and outstanding litigation.

Several of our insurance carriers have reserved their rights to seek indemnification from us for substantial amounts paid to plaintiffs by the insurance carriers as part of settlements of litigation relating to our architectural products. Our insurance carriers in a case in which the plaintiff alleged we were responsible for defects in window products manufactured by others have advised us that they intend to seek reimbursement for settlement and defense costs. Any claims, with or without merit, could require significant time and attention of key members of our management

and result in costly litigation. Some of the proceeds of this offering could be used to defend or satisfy obligations arising from this potential litigation.

Offering Risks

Our stock price could fluctuate widely in response to various factors, many of which are beyond our control.

The market price of our common stock has been, and we expect will continue to be, subject to significant fluctuations. For example, over the past year the closing market price of our common stock has fluctuated between \$2.60 on May 22, 2001 and \$4.76 on July 1, 2002 while reaching a high of \$15.45 on April 17, 2002. Factors affecting our market price include:

- the limited number of shares of common stock available for purchase or sale in the public markets;
- sales or purchases of large blocks of our shares;
- quarterly variations in our results of operations;
- failure to meet earnings estimates;
- changes in earnings estimates or buy/sell recommendations by analysts;
- the operating and stock price performance of comparable companies;
- developments in the financial markets;
- the announcement of new products or product enhancements or business results by us or our competitors; and
- general market conditions or market conditions specific to the industries in which we operate.

Recent events have caused stock prices for many companies, including our company, to fluctuate in ways unrelated or disproportionate to their operating performance. General economic and political events may affect market conditions generally, and, in particular, the market price of our common stock. These events and market trends are beyond our control. The market price of our common stock at any particular time may not remain the market price in the future.

Certain provisions of our charter, by-laws and Delaware law make a takeover difficult.

Certain provisions of our corporate charter and by-laws and Delaware law, might discourage, delay or prevent a change of control or a change in our management, even if such changes would be beneficial to our stockholders. These provisions include the ability of our board of directors, without stockholder approval, to issue any class or series of preferred stock with dividend rights, dividend rates, conversion rights, redemption rights, preferences on liquidation or dissolution, voting rights and any other preferences, which could adversely affect the voting and other rights of the holders of common stock. These provisions could discourage proxy contests and make it more difficult for you and other stockholders to elect directors and take other corporate actions. We also have a severance policy that covers all of our officers and some of our key employees under which they may become entitled to special benefits in connection with certain changes in control of Southwall. The existence of all of these provisions and policies could limit the price that investors might be willing to pay for shares of our common stock and could deprive you of an opportunity to receive a premium for your common stock as part of a sale of Southwall. See "Description of Capital Stock."

The market price of our common stock may drop significantly when the restrictions on resale by our existing securityholders lapse.

Following this offering, we will have approximately 12.1 million shares of common stock outstanding. Holders of approximately 1,612,129 shares have agreed not to sell these shares for at least 180 days following the date of this prospectus. As these restrictions on resale end, the market price of our common stock could drop significantly if holders of these shares sell them or if the market perceives they intend to sell them. We also currently have 1,401,859 shares subject to outstanding options under our 1997 stock incentive plan with a weighted average exercise price of \$5.24 per share

and 694,345 shares subject to outstanding options under our 1998 stock option plan with a weighted average purchase price of \$6.61 per share, all of which may be exercised and sold by option holders in the future. These potential future exercises and sales also may make it difficult for us to sell equity securities in the future at a time and price that we deem appropriate.

FORWARD-LOOKING STATEMENTS

This prospectus contains forward-looking statements, as that term is defined in the Private Securities Litigation Reform Act of 1995, that are subject to a number of risks and uncertainties. All statements other than statements of historical facts are forward-looking statements. These statements are identified by terminology such as "may," "will," "could," "should," "expects," "plans," "intends," "seeks," "anticipates," "believes," "estimates," "potential," or "continue," or the negative of such terms or other comparable terminology, although not all forward-looking statements contain these identifying words. Forward-looking statements are only predictions and include statements relating to:

- our strategy, future operations and financial plans, including, without limitation, our plans to install and commercially produce products on new machines;
- future applications of thin film coating technologies and our development of new products;
- our projected need for additional borrowings and our future liquidity;
- our competition;
- our expectations with respect to future grants, investment allowances and bank guarantees from the Saxony government;
- statements about the future size of markets;
- pending and threatened litigation and its outcome;
- our use of the proceeds of this offering; and
- our projected capital expenditures.

You should not place undue reliance on our forward-looking statements. Actual events or results may differ materially. In evaluating these statements, you should specifically consider various factors, including the risks outlined under "Risk Factors." These factors may cause our actual results to differ materially from any forward-looking statement. Although we believe the expectations reflected in our forward-looking statements are reasonable as of the date they are being made, we cannot guarantee our future results, levels of activity, performance, or achievements. Moreover, neither we nor any other person assumes responsibility for the future accuracy and completeness of these forward-looking statements.

USE OF PROCEEDS

We estimate our net proceeds from the sale of 3,500,000 shares of common stock that we are offering by means of this prospectus will be approximately \$14.1 million, at the public offering price of \$4.50 per share, after deducting estimated underwriting discounts and commissions, and offering expenses. If the underwriters' over-allotment option is exercised in full, we estimate our net proceeds will be approximately \$16.3 million. We will not receive any proceeds from the sale of shares in the over-allotment option by the selling stockholders.

We intend to use a portion of our net proceeds from this offering as follows:

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to pay off the outstanding balance of our accounts receivable financing line of credit, which as of June 30, 2002 was approximately \$3.4 million; this indebtedness bears interest at 0.88% per month of the average daily balance of accounts receivable against which we have borrowed and expires in June 2003;

approximately \$2.5 million to pay down a note payable to a Japanese bank and guaranteed by Teijin Limited; this indebtedness bears interest per annum at a percentage rate of LIBOR plus 1.0% and we are required to make equal semi-annual principal repayments of \$1.25 million each May and November until the note is fully repaid in November 2004; the \$2.5 million we intend to repay in 2002 would be applied towards the last two required payments;

approximately \$2.0 million to replace our enterprise resource planning system;

approximately \$2.5 million towards the purchase of a new production machine (PM 10);

approximately \$1.5 million to maintain and update our production facilities in Palo Alto and Tempe; and

approximately \$0.75 million to partially repay a loan from a German bank; this loan bears interest at 5.8% per annum on the total committed amount under the loan of \$1.5 million and is due in June 2009.

The remaining net proceeds from this offering may be used as follows:

to make future acquisitions of product lines or technologies or other companies, although we currently have no acquisition agreements or understandings in place;

the potential resolution of disputes with insurers or settlement of litigation, including litigation with Matrix Funding Corporation arising out of sale-leaseback agreements for two of our production machines; and

the balance for funding of working capital and general corporate purposes.

With respect to the balance of the net proceeds after the repayment of debt, replacement of our enterprise resource planning system, the purchase of PM 10 and the maintenance and updating of our production facilities in Palo Alto and Tempe, we have not determined the amount of net proceeds to be used for the other purposes indicated. Accordingly, our management will have flexibility in applying net proceeds of the offering. Pending any use, we intend to invest our net proceeds from this offering in short-term, interest-bearing, investment-grade securities, certificates of deposit or direct or guaranteed obligations of the United States.

DIVIDEND POLICY

We have never declared or paid any cash dividends on our common stock, and we do not anticipate paying cash dividends in the foreseeable future. We currently intend to retain future earnings, if any, to fund the expansion and growth of our business. Payment of future cash dividends, if any, will be at the discretion of our board of directors after taking into account various factors, including our financial condition, operating results, current and anticipated cash needs and plans for expansion.

CAPITALIZATION

The following table sets forth our capitalization as of March 31, 2002 on an actual basis and on a pro forma as adjusted basis to reflect the sale by us of 3,500,000 shares of common stock offered hereby at the public offering price of \$4.50 per share, after deducting the estimated underwriting discount and estimated offering expenses payable by us, and to reflect the net proceeds of the offering as applied.

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This information should be read in conjunction with our consolidated financial statements and notes thereto, appearing elsewhere in this prospectus.

	March 31, 2002	
	Actual	Pro Forma as Adjusted
(in thousands)		
Line of credit	\$ 4,606	\$
Current portion of long-term debt	\$ 7,579	\$ 7,579
Term debt, less current portion	13,800	9,800
Total long-term debt	\$ 21,379	\$ 17,379
Stockholders' equity:		
Common Stock, \$0.001 par value: 20,000 shares authorized; 8,562 shares issued and outstanding (actual); 12,062 shares issued and outstanding (pro forma as adjusted)	9	12
Capital in excess of par value	53,467	67,608
Notes receivable	(103)	(103)
Translation loss on subsidiary	(356)	(356)
Accumulated deficit	(24,731)	(24,731)
Total stockholders' equity	28,286	42,430
Total capitalization	\$ 49,665	\$ 59,809

This information excludes 1,979,494 shares, which consist of:

1,450,653 shares subject to outstanding options as of March 31, 2002 under our 1997 stock incentive plan, with a weighted average exercise price of \$5.24 per share; and

528,841 shares subject to outstanding options as of March 31, 2002 under our 1998 stock option plan for employees and consultants, with a weighted average exercise price of \$5.20 per share.

PRICE RANGE OF COMMON STOCK

Our common stock has been traded on the Nasdaq National Market System under the symbol "SWTX" since the completion of our initial public offering in June 1987. From August 2, 2000 through November 28, 2000, the trading of our common stock was suspended by Nasdaq in connection with the restatement of our financial statements. Prices in the following table represent the high and low closing sales prices per share for our common stock as reported by Nasdaq during the periods indicated.

	High	Low
2000		

	High	Low
	_____	_____
First quarter	\$ 11.87	\$ 4.68
Second quarter	11.25	7.37
Third quarter	14.00	6.12
Fourth quarter	4.17	2.62
2001		
First quarter	3.63	2.00
Second quarter	3.47	2.03
Third quarter	5.41	2.97
Fourth quarter	7.26	4.55
2002		
First quarter	12.99	7.19
Second quarter	15.45	4.68

On July 1, 2002 the last reported sale price for our common stock as reported on Nasdaq was \$4.76 per share. On such date, there were approximately 350 holders of record of our common stock, and we believe there were approximately 3,000 beneficial owners of our common stock.

SELECTED CONSOLIDATED FINANCIAL DATA

(in thousands, except per share data)

The following selected consolidated financial data as of and for the five years ended December 31, 2001 are derived from our audited consolidated financial statements. The following selected consolidated financial data as of and for the three months ended April 1, 2001 and March 31, 2002 have been derived from our unaudited consolidated financial statements for the three months ended March 31, 2002. In the opinion of management, such unaudited financial statements have been prepared on the same basis as the audited financial statements referred to above and include all adjustments, consisting only of normal recurring adjustments, necessary for a fair presentation of results of operations for the indicated period when read in conjunction with our audited financial statements and related notes. Results of operations for the three months ended March 31, 2002 are not necessarily indicative of the results that may be expected for the full year. This information should be read together with "Management's Discussion and Analysis of Financial Condition and Results of Operations" and the consolidated financial statements and related notes included elsewhere in this prospectus.

	Year Ended December 31,					Quarter Ended	
	1997	1998	1999	2000	2001	April 1, 2001	March 31, 2002
	_____	_____	_____	_____	_____	_____	_____
Consolidated Statements of Operations Data:							
Net revenues by product:							
Automotive glass	\$ 6,629	\$ 12,845	\$ 19,477	\$ 20,198	\$ 37,385	\$ 8,007	\$ 7,003
Electronic display	21,957	16,954	16,014	47,734	29,691	6,724	7,925
Architectural	21,503	20,234	19,107	17,416	15,900	2,982	4,341
	_____	_____	_____	_____	_____	_____	_____
Total net revenues	50,089	50,033	54,598	85,348	82,976	17,713	19,269
Cost of sales	35,310	44,253	40,706	69,060	60,148	14,849	12,425
	_____	_____	_____	_____	_____	_____	_____
Gross profit	14,779	5,780	13,892	16,288	22,828	2,864	6,844
Operating expenses:							
Research and development	3,117	3,864	5,249	6,732	5,456	1,425	1,777
Selling, general and administrative	9,216	9,046	8,670	12,614	11,036	2,656	3,745

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Legal settlement	Quarter Ended						
			500	536			
Total operating expenses	12,333	12,910	14,419	19,882	16,492	4,081	5,522
Income (loss) from operations	2,446	(7,130)	(527)	(3,594)	6,336	(1,217)	1,322
Interest expense, net	(428)	(1,150)	(1,350)	(2,808)	(2,872)	(757)	(466)
Other income, net	408	469	62	350	1,385	864	378
Income (loss) before provision for income taxes	2,426	(7,811)	(1,815)	(6,052)	4,849	(1,110)	1,234
Provision for income taxes	(145)	(58)	(50)	(128)	(214)	21	53
Net income (loss)	\$ 2,281	\$ (7,869)	\$ (1,865)	\$ (6,180)	\$ 4,635	\$ (1,131)	\$ 1,181
Net income (loss) per share:							
Basic	\$ 0.32	\$ (1.03)	\$ (0.25)	\$ (0.81)	\$ 0.58	\$ (0.15)	\$ 0.14
Diluted	\$ 0.29	\$ (1.03)	\$ (0.25)	\$ (0.81)	\$ 0.57	\$ (0.15)	\$ 0.13
Weighted average number of common stock and dilutive common stock equivalents:							
Basic	7,107	7,608	7,421	7,642	8,032	7,743	8,417
Diluted	7,799	7,608	7,421	7,642	8,186	7,743	9,277

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	As of December 31,					As of	
	1997	1998	1999	2000	2001	April 1, 2001	March 31, 2002
	Consolidated Balance Sheet Data:						
Cash and cash equivalents	\$ 10,524	\$ 4,136	\$ 1,772	\$ 61	\$ 3,362	\$ 218	\$ 2,713
Working capital (deficit)	23,999	(4,256)	(11,699)	(32,148)	(6,471)	(32,593)	(4,987)
Property, plant and equipment, net	26,272	29,068	43,533	49,884	47,841	48,876	47,326
Total assets	61,469	54,019	70,142	80,462	73,158	74,049	73,067
Term debt	15,539	141	10,000		14,513		13,800
Total liabilities	25,729	28,202	45,562	60,324	46,706	55,347	44,781
Total stockholders' equity	35,740	25,817	24,580	20,138	26,452	18,702	28,286

	Year Ended December 31,					Quarter Ended	
	1997	1998	1999	2000	2001	April 1, 2001	March 31, 2002
	Selected Cash Flow Data:						
Cash provided by (used in) operating activities	\$ 84	\$ 4,347	\$ 4,523	\$ 1,188	\$ 13,791	\$ 2,222	\$ (947)
Net cash provided by (used in) investing activities	(11,727)	(7,190)	(25,942)	(12,855)	(5,698)	940	(367)
Net cash provided by (used in) financing activities	14,748	(3,545)	19,055	9,558	(4,793)	(3,005)	665
Net increase (decrease) in cash and cash equivalents	3,105	(6,388)	(2,364)	(1,711)	3,301	157	(649)

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Quarterly Results of Operations:

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The following table sets forth statements of operations data for the nine fiscal quarters ended March 31, 2002. This information has been derived from our unaudited consolidated financial statements and has been prepared on the same basis as our audited consolidated financial statements contained in this prospectus. It includes all adjustments, consisting of normal recurring adjustments only, that we consider necessary for a fair presentation of such information when read in conjunction with our audited financial statements and related notes. Operating results for any quarter are not necessarily indicative of results for any future period. This information should be read together with "Management's Discussion and Analysis of Financial Condition and Results of Operations" and the consolidated financial statements and related notes included elsewhere in this prospectus.

Selected Quarterly Financial Information (Unaudited)

	Quarters Ended								
	April 2, 2000	July 2, 2000	Oct. 1, 2000	Dec. 31, 2000	April 1, 2001	July 1, 2001	Sep. 30, 2001	Dec. 31, 2001	March 31, 2002
Net revenues	\$ 17,109	\$ 20,928	\$ 26,361	\$ 20,950	\$ 17,713	\$ 21,946	\$ 22,777	\$ 20,540	\$ 19,269
Cost of sales	14,783	16,922	19,399	17,956	14,849	16,320	15,629	13,350	12,425
Gross profit	2,326	4,006	6,962	2,994	2,864	5,626	7,148	7,190	6,844
Income (loss) before provision for income taxes	(1,647)	(1,606)	(1,530)	(1,269)	(1,110)	1,104	2,420	2,435	1,234
Net income (loss)	(1,683)	(1,647)	(1,548)	(1,302)	(1,131)	1,184	2,409	2,172	1,181
Net income (loss) per share									
Basic	\$ (0.22)	\$ (0.22)	\$ (0.20)	\$ (0.17)	\$ (0.15)	\$ 0.15	\$ 0.29	\$ 0.26	\$ 0.14
Diluted	\$ (0.22)	\$ (0.22)	\$ (0.20)	\$ (0.17)	\$ (0.15)	\$ 0.15	\$ 0.28	\$ 0.25	\$ 0.13

Our results of operations can vary significantly from quarter to quarter. As a result of our high fixed costs, if revenues fall significantly below our expectations, we will not be able to reduce our spending sufficiently to prevent a loss from operations. We anticipate that we will continue to have long sales cycles. Therefore, the timing of future customer contracts could be difficult to predict, making it very difficult to predict revenues in future quarters, and our operating results may vary significantly.

Our revenue from the electronic display and architectural markets is affected by seasonality patterns with the highest sales occurring during the second, third and fourth fiscal quarters. During the past three fiscal years, 21% of our sales have occurred during the first quarter with 25%, 29% and 25% occurring during the second, third and fourth quarters, respectively. Demand in the electronic display market is generally at its highest before the holiday season, in our second and third quarters, when production of electronic goods is at its highest. Demand for architectural glass generally increases when the weather is warmer in northern climates and construction activity increases. Lower demand for our products during the first quarter generally result in lower sales and operating results during that quarter. In addition, our sales of electronic display products were adversely affected in 2001 by a worldwide decline in the personal computer industry.

During 2001, our Dresden facility, at which PM 8 and PM 9 are located, commenced production of commercial product for the automotive market. This expansion in our overall manufacturing capacity allowed us to increase significantly our sales to the automotive market in 2001, compared with 2000.

Other factors that could affect our quarterly operating results include those described elsewhere in this prospectus and the following:

fluctuating customer demand, which is influenced by a number of factors, including market acceptance of our products and the products of our customers and end-users, changes in product mix, and the timing, cancellation or delay of customer orders and shipments;

the timing of shipments of our products by us and by independent subcontractors to our customers;

manufacturing and operational difficulties that may arise due to, among other things, quality control, capacity utilization of our production machines, unscheduled equipment maintenance, and the hiring and training of additional staff;

The progress and outcome of litigation with which we are involved;

The announcement, consummation or integration by us of any acquired businesses, technologies or products;

our ability to introduce new products on a timely basis; and

competition, including the introduction or announcement of new products by competitors, the adoption of competitive technologies by our customers, the addition of new production capacity by competitors and competitive pressures on prices of our products and those of our customers.

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

The following discussion and analysis of our financial condition and results of operations should be read in conjunction with "Selected Consolidated Financial Data" and our consolidated financial statements and notes thereto appearing elsewhere in this prospectus. This discussion and analysis contains forward-looking statements that involve risks and uncertainties. You should not place undue reliance on these forward-looking statements. Our actual results may differ materially from those anticipated in these forward-looking statements as a result of certain important factors, including, but not limited to, those set forth under "Risk Factors" beginning on page 7 of this prospectus.

Overview

We are a global developer, manufacturer and marketer of thin film coatings for the automotive glass, electronic display and architectural markets. We have developed a variety of products that control sunlight in automotive glass, reduce light reflection and improve image quality in electronic display products and conserve energy in architectural products. Our products consist of transparent solar-control films for automotive glass; anti-reflective films for computer screens, including flat panel displays, plasma displays, and transparent conductive films for use in touch screen and liquid crystal displays; energy control films for architectural glass; and various other coatings.

From our founding in 1979 through the early 1990s, we developed and produced thin film coated substances primarily for residential and commercial building applications, and for military applications. In the early 1990s, we began to develop products for the automotive and electronic display markets. In 1996, we realized our first material revenue from the automotive and electronic display markets. In 2001, automotive glass products accounted for approximately 45% of our revenues, electronic display products accounted for approximately 36% of our revenues, and architectural products accounted for approximately 19% of our revenues. Revenues from international customers accounted for 78%, 85%, 87% and 86% of our net revenues in 1999, 2000, 2001 and the first quarter of 2002, respectively.

In the second half of 2000, we restated our previously issued financial statements for the first quarter of 2000 and for the year 1999. The restatement was primarily related to an overstatement of licensing revenues and inventory and under-recognition of expenses. Following the restatement, we implemented additional processes and procedures as well as increased staffing to strengthen our internal accounting controls. In connection with the restatement, Nasdaq suspended trading in our common stock for over three months. In addition, following the announcement of the need to restate our financial statements, we and some of our officers were named as defendants in seven lawsuits, all alleging violations of the federal securities laws. We settled these lawsuits in 2001. The settlement required us and the other defendants to pay the plaintiff class \$4.2 million, which was paid by our insurer.

Recent Development

On June 24, 2002, we disclosed preliminary estimates of our financial results for the quarter ended June 30, 2002, indicating that we expected revenues for the quarter to be between \$19.5 million and \$20.5 million and net income for the quarter to be between \$1.2 million and

\$1.4 million. We also disclosed preliminary estimates of our financial results for the fiscal year ended December 31, 2002, indicating that we expected revenues for 2002 to be between \$78.0 million and \$82.0 million and net income for 2002 to be between \$4.8 million and \$5.2 million before including any adjustments from the sale of common stock that we are offering by means of this prospectus. These estimates are, however, subject to certain assumptions, risks and uncertainties that could cause actual revenues or net income for our second quarter or 2002 to be different than the estimates presented.

We expect the remainder of 2002 to continue to be affected by a slowdown in sales by European automobile manufacturers. We do not anticipate a significant improvement, if any, over our first

quarter sales to the automotive market for any of the remaining quarters of 2002. However, we recently announced a new ten-year distribution agreement with Globamatrix Holdings Pte. Ltd., or Globamatrix, which includes commitments by Globamatrix to purchase an annually increasing amount, subject to volume and quality standards, of our solar control products for retrofit applications to the automotive and residential and commercial architectural glass markets. As a result, we believe that we will have somewhat greater revenues from Globamatrix in 2002 than in 2001, and that this growth will continue through 2003.

Our revenues from the CDT portion of our electronic display business have declined during 2002 as compared to 2001 primarily due to lower prices. During the same period, however, sales to the liquid crystal and plasma display portions of this market have increased. We recently started shipping production quantities and sizes of new films specifically designed for the liquid crystal display and plasma display panel markets that maintain optical clarity while reducing the reflection of ambient light to improve image quality. We expect the decline of the CDT portion of our electronic display business and the growth in sales of our new electronic display films to continue through 2003.

Due to production capacity constraints, in the past we have not allocated resources to expanding revenues from our architectural products. Additional production capacity for architectural products has recently been created, in part, by the addition of our new Dresden facility. Our revenues from our architectural business have increased during 2002 as compared to 2001, and we expect that the availability of production capacity in 2003 will allow for continued growth in this business. However, we can give no assurances that availability of production capacity will increase our revenues from architectural products.

Historical Factors Affecting Our Financial Condition and Results of Operations

As described in more detail below, our financial condition and results of operations are affected by a number of factors, including our financing arrangements, expansion of our manufacturing capacity, demand for our customers' products, our relationships with customers and suppliers, product warranty claims, fluctuations in our selling, general and administrative expenses, and the mix of products that we sell. Over the past several years, these factors have contributed to volatility in our results of operations and cash flows and have significantly affected our financial position.

Our financing arrangements. We incurred net losses from operating activities in 1998, 1999 and 2000. As a result of these net losses, together with the restatement in 2000 of our financial statements for prior periods and the suspension of trading of our common stock on Nasdaq in 2000, we were in default, as of December 31, 2000, under our German bank loans, our sale-leaseback agreement and our Japanese bank loan and the guarantee by Teijin of that loan. As a result, we reclassified all of the debt under those arrangements as current liabilities as of December 31, 2000. Accordingly, there was substantial doubt about our ability to continue as a going concern at December 31, 2000.

At December 31, 2001 and March 31, 2002, we had made all payments required to be made through those dates under our German bank loans and our Japanese bank loan guaranteed by Teijin. We were in compliance with all of the covenants of the German bank loans. We have received waivers from Teijin and the Japanese bank of our defaults under the financial covenants of the Teijin guarantee. As a result, we have classified \$9.2 million outstanding under the German bank loans and \$5.0 million outstanding under the Japanese bank loan guaranteed by Teijin as long-term liabilities as of December 31, 2001 and March 31, 2002.

During 1999, we entered into a sale-leaseback agreement for two of our production machines with an equipment leasing company. The leasing company has filed bankruptcy proceedings. Because we have an option to purchase the machines at the end of the lease periods, we treat these sale-leaseback arrangements as financings. During 2001, a dispute arose between us and an agent purporting to act on behalf of the leasing company. The agent has recently filed suit against us to recover the unpaid lease payments and alleged residual value of the machines. As a result, we have classified \$3.3 million as

short-term liabilities (\$4.3 million outstanding under the sale-leaseback agreement, less \$1.0 million of the amounts due from the leasing company that was not funded).

Expansion of our manufacturing capacity. The expansion of our manufacturing capacity has affected our results of operations, cash flows and financial position. We have invested \$55.0 million in new production capacity in Tempe and Dresden since 1997. The expansion has been financed by a combination of term loans, investment incentive grants from the government of the State of Saxony, in Germany, short-term borrowings, and cash flows from operating activities. Our results of operations, profitability, cash flows, stockholders' equity and financial position were adversely affected by initial start up costs and the lower production yields we generally experience before our new production machines reach commercial production levels. As a result, our financial position has been weakened by reduced liquidity and higher leverage.

Demand for our customers' products. Volatility in our customers' markets affects our results of operations. Demand for our customers' products has changed rapidly from time to time in the past and may do so in the future. For example, partly as a result of changing demand in the personal computer industry from 1999 through 2001, our electronic display revenues rose from \$16.0 million in 1999 to \$47.7 million in 2000 then declined to \$29.6 million in 2001. We can also be affected when the markets for the products in which our films are used evolve to new technologies, such as the evolution from cathode ray tubes, or CRTs, to flat panel displays. Additionally, our results of operations and cash flows can vary significantly from quarter to quarter as we experience seasonal fluctuations in revenue from our customers in the electronic display and architectural markets.

Our customer and supplier relationships. We derive significant benefits from our relationships with a few large customers and suppliers. Our revenues and gross profit can increase or decrease rapidly reflecting underlying demand for the products of one or a small number of our customers. In addition, a customer relationship may become unprofitable. For example, in the fourth quarter of 1998, we discovered quality issues with product that had been shipped to Sony, a significant customer at that time, and with other film that was still in our inventory. We recorded a \$4.0 million provision in the fourth quarter of 1998 to account for product returned from Sony and the related write-off of inventory. We discontinued the manufacture and sale of film to Sony in 1999. Sony accounted for 33%, 7% and 0% of our total revenues in 1998, 1999 and 2000. We may also be unable to replace a customer when a relationship ends or demand for our product declines as a result of evolution of our customer's products. In 1999, we began our relationship with Mitsubishi Electric Company, or Mitsubishi, which accounted for 38% and 21% of our total revenues in 2000 and 2001, respectively. In 1999, we expanded our relationship with customers in the automotive glass market, including Pilkington PLC, Saint Gobain and Globamatrix Holdings Pte. Ltd., or Globamatrix, which collectively accounted for approximately 46% of our total revenues in 2001.

In addition, Teijin, one of our suppliers, has guaranteed our loan from a Japanese bank in the original principal amount of \$10.0 million, the proceeds of which we used to fund capital expenditures. Teijin and Globamatrix are investors in us, over time having purchased a total of 1.1 million shares of our common stock and, as of May 20, 2002, continue to hold 1.1 million shares, or approximately 13% of the outstanding stock. In addition, to assist us with our short-term liquidity needs, some of our key vendors, such as Teijin and Lintec Inc., have extended the amount of time in which we are required to repay amounts we owe to them.

Product warranty claims. Our gross margins and profitability have been adversely affected from time to time by product quality claims. From 1999 to 2001, our warranty provision has averaged 4.0% of net revenues. In 1998, our gross profit was reduced by \$4.0 million related to product we produced for Sony.

Fluctuations in our selling, general and administrative expenses. Our selling, general and administrative expenses increased significantly in 2000 due to facility costs and expansion, and

nonrecurring professional fees. Our Palo Alto facility rents increased by \$1.7 million in 2000 pursuant to lease extensions entered into for all of our Palo Alto properties. Our nonrecurring legal and accounting expenses totaled \$1.6 million in 2000 and were primarily related to the restatement of our previously issued first quarter 2000 and fiscal 1999 financial statements.

Product mix. Product mix affects our gross margins on the products we sell. Our product mix is determined by new products and applications that we have developed, end-customer market demand for products which use our applications, the availability of our production capacity and the allocation of our resources to meet demand for our products in markets we target. Generally, our gross margins on sales of electronic display film are lower than automotive and architectural products due to the additional costs for higher levels of outside processing required for electronic display film.

Application of Critical Accounting Policies and Estimates

The preparation of our financial statements requires us to make estimates and assumptions that affect the amounts of assets and liabilities we report, our disclosure of contingencies, and the amounts of revenue and expenses we report in our financial statements. If we used different judgments or different estimates, there might be material differences in amount and timing of revenues and expenses we report. See Note 1 of our notes to consolidated financial statements for details of our accounting policies. The critical accounting policies, judgment and estimates, which we believe have the most significant effect on our financial statements, are set forth below:

Revenue recognition;

Allowances for doubtful accounts and warranties;

Valuation of inventories;

Assessment of the probability of the outcome of current litigation; and

Accounting for income taxes.

Revenue recognition. We recognize revenue when persuasive evidence of an arrangement exists, delivery has occurred or services have been provided, the sale price is fixed or determinable, and collectibility is reasonably assured. Accordingly, we generally recognize revenue from product sales when the terms of sale transfer title and risk of loss, which occurs either upon shipment or upon receipt by customers. In connection with product sales, we make allowances for estimated returns and warranties. We adjust these allowances periodically to reflect our actual and anticipated experience. Revenue recognition in each period is dependent on our application of this accounting policy. If all conditions to recognize revenue are not met, we defer revenue recognition.

Allowances for doubtful accounts and warranties. We establish allowances for doubtful accounts and warranties for specifically identified, as well as anticipated, doubtful accounts and warranty claims based on credit profiles of our customers, current economic trends, contractual terms and conditions, and historical payment and warranty experience. As of December 31, 2001, our balance sheet included allowances for doubtful accounts of \$0.4 million and \$2.6 million for warranties. As of March 31, 2002, our balance sheet included allowances for doubtful accounts of \$0.4 million and \$3.0 million for warranties. During 1999, 2000, 2001 and the first quarter of 2002, we charged \$1.9 million, \$3.0 million, \$3.9 million and \$0.7 million, respectively, against revenue for warranty expense. Bad debt expenses were \$0.3 million, \$(0.1) million, \$0.4 million and \$0.1 million during 1999, 2000, 2001 and the first quarter of 2002, respectively. If we experience actual bad debt and warranty expense different from estimates or we adjust our estimates in future periods, our operating results, cash flows and financial position could be materially adversely affected.

Valuation of inventories. We state inventories at the lower of cost or market. We establish provisions for excess and obsolete inventories after periodic evaluation of historical sales, current economic trends, forecasted sales, predicted lifecycle and current inventory levels. During 1999, 2000,

2001 and the first quarter of 2002, we charged \$0.6 million, \$0.5 million, \$1.1 million and \$0.1 million against cost of sales for excess and obsolete inventories. If we adjust our estimates, such forecasted sales and expected product lifecycle, our operating results, cash flows and financial position could be materially adversely affected.

Assessment of the probability of the outcome of current litigation. In the ordinary course of business, we have periodically become engaged in litigation principally as a result of disputes with customers of our architectural products. In addition, in 2000 seven lawsuits were filed against us, alleging violations of the federal securities laws, which were settled collectively in 2001. We have relied upon insurance coverage to fund the defense of these actions and significant portions of the settlements that were reached. Based on our review of pending litigation, we record accruals for loss contingencies when we believe it is probable that a liability has been incurred and we can reasonably estimate the amount of our share of the loss. In connection with recent settlements related to sales of architectural products, we have been advised by some of our insurers that they have reserved the right, and have expressed their intent, to proceed against us to recoup a portion or all of the settlements paid to plaintiffs.

Accounting for income taxes. In preparing our financial statements, we estimate our income taxes for each of the jurisdictions in which we operate, including Germany. We include differences between our deferred tax assets, such as net operating loss carry forwards, and tax liabilities in our consolidated balance sheet. We must then assess the likelihood that our deferred tax assets will be recovered from future taxable income, and to the extent we believe that recovery is not likely, we must establish a valuation allowance. To the extent we establish a valuation allowance or increase this allowance in any period, we must include an expense within the tax provision in our statement of operations. To date,

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we have recorded a full allowance against our deferred tax assets. The valuation allowance was \$11.0 million as of December 31, 2001, which fully reserved our net deferred tax assets related to temporary differences, net operating loss carry forwards and other tax credit carry forwards. Future income tax liabilities will be reduced to the extent permitted under federal and applicable state income tax laws, when the future tax benefit can be utilized by applying it against future income.

Significant management judgment is required in determining our provisions for income taxes, our deferred tax assets and liabilities and our future taxable income for purposes of assessing our ability to utilize any future tax benefit from our deferred tax assets. If actual results differ from these estimates or we adjust these estimates in future periods, our financial position, cash flows and results of operations could be materially affected.

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Results of Operations

The following table sets forth our results of operations expressed as a percentage of total revenues:

	Year Ended December 31,					Quarter Ended	
	1997	1998	1999	2000	2001	April 1, 2001	March 31, 2002
Net Revenues							
Automotive glass	13.2%	25.7%	35.7%	23.7%	45.0%	45.2%	36.2%
Electronic display	43.9	33.9	29.3	55.9	35.8	38.0	41.4
Architectural	42.9	40.4	35.0	20.4	19.2	16.8	22.4
Total net revenues	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Cost of sales	70.5	88.4	74.6	80.9	72.5	83.8	64.2
Gross profit	29.5	11.6	25.4	19.1	27.5	16.2	35.8
Research and development	6.2	7.7	9.6	7.9	6.6	8.1	9.2
Selling, general and administrative	18.4	18.1	15.9	14.8	13.3	15.0	19.4
Legal settlement			0.9	0.6			
Total operating expenses	24.6	25.8	26.4	23.3	19.9	23.1	28.6
Income (loss) from operations	4.9	(14.2)	(1.0)	(4.2)	7.6	(6.9)	7.2
Interest expense, net	(0.9)	(2.3)	(2.5)	(3.3)	(3.5)	(4.3)	(2.3)
Other income, net	0.8	0.9	0.1	0.4	1.7	4.9	1.9
Income (loss) before provision for income taxes	4.8	(15.6)	(3.3)	(7.1)	5.8	(6.3)	6.8
Provision for income taxes	(0.3)	(0.1)	(0.1)	(0.1)	(0.3)	(0.1)	(0.3)
Net income (loss)	4.6%	(15.7)%	(3.4)%	(7.2)%	5.6%	(6.4)%	6.5%

First Quarter 2001 Compared to First Quarter 2002

Net revenues. Our net revenues increased \$1.6 million, or 9.0%, from \$17.7 million for the first quarter of 2001 to \$19.3 million for the first quarter of 2002. Our sales to the automotive market decreased by \$1.0 million, or 12.5%, from \$8.0 million in the first quarter of 2001 to \$7.0 million in the first quarter of 2002. The decline was due to lower sales volume as a result of a slowdown in sales by several European automobile manufacturers. We believe this slowdown in the European automobile market will continue throughout 2002. Therefore, we do not anticipate a significant improvement, if any, over our first quarter sales to the automotive market for any of the remaining quarters of 2002. Our sales to the electronic display market increased by \$1.2 million, or 17.9%, from \$6.7 million in the first quarter of 2001 to \$7.9 million in the first quarter of 2002. The increase in sales was primarily the result of revenues from sales of our new plasma display film product. Our sales to

the architectural market increased \$1.4 million, or 46.7%, from \$3.0 million in the first quarter of 2001 to \$4.4 million in the first quarter of 2002. The increase was primarily attributable to additional available manufacturing capacity.

Cost of sales. Cost of sales consists primarily of materials and subcontractor services, labor and manufacturing overhead. Cost of sales decreased \$2.4 million, or 16.2%, from \$14.8 million in the first quarter of 2001 to \$12.4 million in the first quarter of 2002. Cost of sales decreased from 83.8% of net revenues in the first quarter of 2001 to 64.2% of net revenues for the same period in 2002. The higher costs in 2001 in dollars and as a percentage of revenues were primarily due to greater start-up costs in our Dresden operation. We also realized improved manufacturing yields in our Palo Alto, Tempe and Dresden facilities during the first quarter of 2002, compared to the first quarter of 2001. In addition, we also benefited in the first quarter of 2002, compared with the same period in 2001, from producing a greater portion of our products at our Dresden plant. The Dresden plant, which began production of

significant volumes of commercial product during the first quarter of 2001, has lower manufacturing costs as a result of lower payroll and operating expenses, as well as lower depreciation charges due to the grants provided for plant and equipment by the Saxony government.

Gross profit and gross margin. Our gross profit increased \$4.0 million, or 137.9%, from \$2.9 million in the first quarter of 2001 to \$6.9 million in the first quarter of 2002. Our gross margin improved from 16.4% in the first quarter of 2001 to 35.8% in the first quarter of 2002. The increase in gross profit and gross margin in 2002 was due to increased revenues from the Dresden plant with its lower cost base and cost savings and yield improvements in our Palo Alto, Tempe and Dresden facilities.

Operating expenses

Research and development. Research and development spending increased \$0.4 million, or 28.6%, from \$1.4 million in the first quarter of 2001 to \$1.8 million in the first quarter of 2002. Research and development expenses increased from 8.1% of net revenues in the first quarter of 2001 to 9.2% of net revenues in the first quarter of 2002. The increase in our research and development spending during the first quarter of 2002 was primarily attributable to the costs associated with the use of a production machine (PM1) that has been dedicated primarily to on-going research and development activities.

Selling, general and administrative. Selling, general and administrative expenses consist primarily of corporate and administrative overhead, selling commissions, advertising costs and occupancy costs. These expenses increased \$1.0 million, or 37.0%, from \$2.7 million in the first quarter of 2001 to \$3.7 million in the first quarter of 2002. Selling, general and administrative expenses, as a percentage of revenue, increased from 15.3% in the first quarter of 2001 to 19.4% in the first quarter of 2002. The higher expenses in the first quarter of 2002 were mainly the result of increased outside professional fees and accrued costs associated with performance-based compensation as a result of our improved profitability.

Income (loss) from operations. Income (loss) from operations increased from an operating loss of \$1.2 million in the first quarter of 2001 to an operating profit of \$1.3 million for the same period in 2002. The improvement was due to higher revenues, reduced start-up costs from our Dresden operations and improved manufacturing yields, partially offset by increased outside professional fees and accrued costs associated with performance-based compensation as a result of our improved profitability.

Interest expense, net. Net interest expense decreased \$0.3 million, or 37.5%, from \$0.8 million in the first quarter of 2001 to \$0.5 million in the first quarter of 2002. The reduction in interest expense was primarily attributable to lower interest rates and the reduction of our overall debt and line of credit by \$6.5 million from \$32.5 million at April 1, 2001 to \$26.0 million at March 31, 2002.

Other income, net. Other income, net includes interest income, rental income and foreign exchange transaction gains and losses. We recorded other income of \$0.9 million in the first quarter of 2001 compared with \$0.4 million in the first quarter of 2002. The reduction was primarily attributable to foreign currency fluctuations. Some of our transactions with foreign suppliers are denominated in foreign currencies, principally Japanese yen. As exchange rates fluctuate relative to the U.S. dollar, exchange gains and losses occur.

Income (loss) before provision for income taxes. We recorded a pre-tax loss of \$1.1 million in the first quarter of 2001 compared to a pre-tax profit of \$1.2 million in the first quarter of 2002. Our improvement from a loss in 2001 to profitability in 2002 was due to higher revenue, reduced start-up costs from our Dresden operations and improved manufacturing yields in our Palo Alto, Tempe and Dresden facilities, partially offset by costs attributable to an increase in performance based compensation as a result of our improved profitability, outside professional fees and a reduction in income derived from foreign currency fluctuations.

2000 Compared to 2001

Net revenues. Our net revenues decreased \$2.3 million, or 2.7%, from \$85.3 million in 2000 to \$83.0 million in 2001. Our sales to the automotive market increased by \$17.2 million, or 85.2%, from \$20.2 million in 2000 to \$37.4 million in 2001. In 2001, our Dresden operations began commercial production of film products for the automotive market. The additional production capacity from the Dresden plant was the primary factor in the increase of our sales to the automotive market during 2001. Our sales to the electronic display market decreased by \$18.0 million, or 37.7%, from \$47.7 million in 2000 to \$29.7 million in 2001. The decline in sales was primarily the result of the worldwide slowdown in the sale and manufacture of personal computers and the adoption of lower cost manufacturing alternatives by one of our major customers. Our sales to the architectural market decreased \$1.5 million, or 8.6%, from \$17.4 million in 2000, to \$15.9 million in 2001. The decrease was primarily the result of our using production machines previously used to produce products for the architectural market to manufacture products for the automotive market.

Cost of sales. Cost of sales decreased \$9.0 million, or 13.0%, from \$69.1 million in 2000 to \$60.1 million in 2001. Cost of sales decreased from 80.9% of net revenues in 2000 to 72.5% of net revenues for 2001. The higher costs in 2000, as a percentage of revenues, were due to greater start-up costs in our Tempe and Dresden operations and higher electronic display revenues during 2000, which generally yield lower gross margins as a result of outside processing costs. Additionally, the reduction in the number of employees at our Tempe and Palo Alto facilities effected during the first quarter of 2001 resulted in cost savings. We also realized improved manufacturing yield in our Palo Alto and Tempe facilities during 2001, which further contributed to the improvement in margin from 2000 to 2001. We benefited in 2001 from producing a greater portion of our products at our Dresden plant, which has lower costs as a result of lower payroll and operating expenses, as well as lower depreciation charges due to the grants provided for plant and equipment by the Saxony government.

Gross profit and gross margin. Our gross profit increased \$6.5 million, or 39.9%, from \$16.3 million in 2000 to \$22.8 million in 2001. Our gross margin improved from 19.1% in 2000 to 27.5% in 2001. The increase in gross profit and gross margin in 2001 was due to increased revenues from the Dresden plant with its lower cost base and cost savings and yield improvements in our Palo Alto and Tempe facilities.

Operating expenses

Research and development. Research and development spending decreased \$1.2 million, or 17.9%, from \$6.7 million in 2000 to \$5.5 million in 2001. Research and development expenses decreased from 7.9% of net revenues for 2000 to 6.6% of net revenues for 2001. The decrease in our research and development spending during 2001 was primarily attributable to reduced headcount and cost control measures.

Selling, general and administrative. These expenses decreased \$1.6 million, or 12.7%, from \$12.6 million in 2000 to \$11.0 million in 2001. Selling, general and administrative expenses, as a percentage of revenue, decreased from 14.8% in 2000 to 13.3% for 2001. The higher expenses in 2000 were mainly the result of accounting, legal and consulting costs incurred relating to our restatement in 2000 of financial statements for prior periods. In 2001, we incurred higher expenses in Dresden as the production machines located there were brought up to commercial production levels. Performance based compensation also increased in 2001 as a result of our improved profitability.

Legal settlement. In 2000, we settled employee practices litigation relating to one individual for \$0.5 million. Legal fees and expenses we incur are included in selling, general and administrative expenses, while actual settlements are reported as legal settlements. We incurred no settlement costs in 2001.

Income (loss) from operations. Income (loss) from operations increased from an operating loss of \$3.6 million in 2000 to an operating profit of \$6.3 million for 2001. The improvement was due to reduced start-up costs and increased revenue from our Dresden operations, improved manufacturing yields, cost reduction programs put in place in the Palo Alto and Tempe facilities, and a reduction in professional fees during 2001 compared to 2000.

Interest expense, net. We incurred net interest expense of \$2.8 million in 2000 and \$2.9 million in 2001, and capitalized interest incurred in connection with construction in process of \$1.8 million in 2000 and \$0.1 million in 2001. The increase in net interest expense resulted

principally from the completion of construction in process related to the Dresden and Tempe facilities in late 2000.

Other income, net. We recorded other income of \$0.4 million in 2000, compared with \$1.4 million for 2001. Some of our transactions with foreign suppliers are denominated in foreign currencies, principally Japanese yen. As exchange rates fluctuate relative to the U.S. dollar, exchange gains and losses occur. We incurred a foreign currency loss in 2000 of \$0.1 million and a foreign currency gain in 2001 of \$0.7 million. We offset higher rent expense in Palo Alto by subleasing space in this facility to three different parties, resulting in rental income of \$0.4 million in 2000 and \$0.5 million in 2001. One of the subleases expired on February 28, 2001 while the underlying lease is scheduled to expire on December 31, 2002. This sublease generated \$0.2 million and \$0.03 million of rental income during 2000 and 2001, respectively, as compared to \$0.6 million and \$0.6 million in rental payments we owed in 2000 and 2001, respectively, pursuant to the underlying lease. We also sublet a portion of our Palo Alto facilities to two companies on a month-to-month basis during 2000 and 2001. Collectively, these arrangements generated \$0.1 million and \$0.4 million in rental income in 2000 and 2001, respectively, as compared to \$0.8 million and \$0.8 million in rental payments we owed in 2000 and 2001, respectively, pursuant to the underlying lease. The underlying lease covering these month-to-month arrangements is scheduled to expire on December 31, 2004.

Income (loss) before provision for income taxes. We recorded a pre-tax loss of \$6.1 million in 2000, compared to a pre-tax profit of \$4.8 million in 2001. Our improvement from a loss in 2000 to profitability in 2001 was due to higher revenues from the automotive market due to our Dresden operations, improved manufacturing yields and cost reduction programs put into place in our Palo Alto and Tempe facilities, a reduction in professional fees and an increase in other income, partially offset by a decrease in revenue from the electronic display market.

1999 Compared to 2000

Net revenues. Our net revenues increased \$30.7 million, or 56.2%, from \$54.6 million in 1999 to \$85.3 million in 2000. In 2000, sales of our automotive glass film increased \$2.5 million, or 14.1%, primarily due to a two-year supply agreement signed with Saint Gobain. Our sales of electronic display film increased \$29.6 million, or 163.5%, principally as a result of revenue from Mitsubishi and other customers, partially offset by a loss of sales to a customer who adopted an alternative manufacturing solution. Our sales of architectural product decreased \$1.4 million, or 7.3%, primarily due to the use of our production machines to produce product for automotive glass customers.

Costs of sales. Cost of sales increased \$28.4 million, or 69.8%, from \$40.7 million in 1999 to \$69.1 million in 2000. Cost of sales for 1999 was 74.5% of net revenues compared to 81.0% of net revenues for 2000. The increase in the percentage of cost of sales to net revenues resulted from additional processing costs attributable to electronic display film production in 2000. It was also affected by the lower production yields on a new production machine in Tempe. Non-recurring start-up expenses in our Dresden facility for new plant and equipment and staffing also added \$2.1 million to cost of sales in 2000.

Gross profit and gross margin. Gross profit increased \$2.4 million, or 17.3%, from \$13.9 million in 1999 to \$16.3 million in 2000. Gross margin declined from 25.5% in 1999 to 19.1% in 2000. The

increase in the percentage of cost of sales to net revenues resulted from additional processing costs attributable to electronic display film production in 2000. It was also affected by the lower production yields on a new production machine in Tempe. Non-recurring start-up expenses in our Dresden facility for new plant and equipment and staffing added \$2.1 million to cost of sales.

Operating expenses

Research and development. Total research and development expenses increased \$1.5 million, or 28.8%, from \$5.2 million in 1999 to \$6.7 million in 2000. Research and development expenses, as a percentage of net revenues, decreased from 9.5% for 1999 to 7.9% for 2000. The percentage decrease in these expenses was the result of the increase in net revenues from 1999. The increase in research and development expense was primarily attributable to costs associated with an increase in research and development staff, and costs incurred in testing and preparing for commercial production a production machine (PM 6) located in our Tempe facility and another production machine (PM 8) located in our Dresden facility.

Selling, general and administrative. Selling, general and administrative expenses increased \$3.9 million, or 44.8%, from \$8.7 million in 1999 to \$12.6 million in 2000. Selling, general and administrative expenses, as a percentage of net revenues, decreased from 15.9% in 1999 to 14.8% in 2000. The primary reason for the decline in these costs as a percentage of sales was due to the increase in 2000 revenue of 56%. The increase in costs was the result of non-recurring legal, accounting and temporary labor costs incurred in the preparation of restated financial statements and other filings. We also incurred increased rents in Palo Alto and increased administrative expenses in Dresden. Travel and communication expenses also increased as additional sales personnel devoted

increased time to international sales.

Legal settlement. We incurred costs of \$0.5 million in legal settlements related to a product liability claim in 1999 and \$0.5 million in an employee practices claim in 2000.

Income (loss) from operations. Loss from operations increased \$3.1 million from a loss of \$0.5 million for 1999 to a loss of \$3.6 million for 2000. Our larger loss in 2000 was primarily due to non-recurring costs to restate our financial statements, start-up costs for our Tempe and Dresden facilities, higher cost of sales, and increased rent expense.

Interest expense, net. We incurred net interest expense of \$1.3 million in 1999 and \$2.8 million in 2000, and capitalized interest of \$1.2 million in 1999 and \$1.8 million in 2000 incurred in connection with construction in process. This increase was primarily due to borrowings to finance construction of new production machines and facilities and working capital requirements.

Other income, net. We recorded other income of \$0.1 million in 1999, compared with \$0.3 million for 2000. We did not incur a foreign currency loss in 1999 and incurred a foreign currency loss of \$0.1 million in 2000.

Income (loss) before provision for income taxes. We reported a pre-tax loss of \$1.8 million for 1999 compared to a pre-tax loss of \$6.1 million for 2000. Our higher loss in 2000 was primarily due to start-up costs in Tempe and Dresden, lower gross margins due to increased production costs, non-recurring expenses to restate our financial statements, increased rent at our Palo Alto facility, and higher interest expense due to increased debt.

Liquidity and Capital Resources

Liquidity

Our cash and cash equivalents increased by \$3.3 million from \$0.1 million at December 31, 2000 to \$3.4 million at December 31, 2001. At March 31, 2002, our cash and cash equivalents were \$2.7 million. We increased cash from operating activities by \$12.6 million from \$1.2 million in 2000 to \$13.8 million in 2001. We reduced cash used in investing activities by \$7.2 million from \$12.9 million in 2000 to

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\$5.7 million in 2001. During the first quarter of 2002, we used \$0.4 million of cash in investing activities as compared to \$0.9 million of cash provided by investing activities during the first quarter of 2001, a difference of \$1.3 million. We increased cash from financing activities by \$10.0 million in 2000 and used cash to reduce debt by \$5.6 million in 2001. During the first quarter of 2002, \$1.0 million of cash was provided by financing activities as compared to \$2.6 million of cash used in financing activities during the first quarter of 2001, an increase of \$3.6 million. As a result of our compliance with various loan covenants and obtaining waivers from Teijin and the Japanese bank for the Japanese bank loan, \$13.8 million and \$14.5 million of long term debt was classified as noncurrent at March 31, 2002 and December 31, 2001, respectively. Accordingly, we reduced our working capital deficit from \$32.1 million at December 31, 2000 to \$6.5 million at December 31, 2001 and to \$5.0 million at March 31, 2002. We reduced our total liabilities from \$60.3 million at December 31, 2000 to \$46.7 million at December 31, 2001 and to \$44.8 million at March 31, 2002. Stockholders' equity increased from \$20.1 million at December 31, 2000 to \$26.5 million at December 31, 2001 and to \$28.3 million at March 31, 2002.

In 2001, we had net cash of \$13.8 million provided by operating activities, which consisted primarily of depreciation of \$6.0 million, net income of \$4.6 million, a reduction of \$4.3 million in accounts receivable and a reduction of \$4.0 million in inventory, partially offset by a reduction of \$4.6 million in accounts payable. Cash provided by our operating activities was also increased as a result of average accounts receivable outstanding decreasing from 61 days in 2000 to 43 days in 2001, and inventory turns increasing from 6.6 in 2000 to 8.7 in 2001. While we generated significant cash in 2001 from a reduction in receivables and inventory, receivables and inventory increased during the first quarter of 2002. We do not expect to generate significant cash from a reduction in receivables or inventory in 2002 or in future years, especially if our sales volume increases. During the first quarter of 2002, we used \$0.9 million of cash in operating activities as compared to \$2.2 million of cash generated from operating activities during the first quarter of 2001, a decrease of \$3.1 million. The decline in cash from operating activities during the first quarter of 2002 was primarily the result of an increase in accounts receivable and inventory and a reduction in accounts payable, partially offset by net income, compared to a loss in the first quarter of 2001.

We entered into an agreement with the Saxony government in May 1999 under which we receive investment grants. As of March 31, 2002, we had received \$4.7 million of the grants and accounted for these grants by applying the proceeds received to reduce the cost of our fixed assets of our Dresden manufacturing facility. During 2000, we also received \$1.0 million in investment allowances, which are reimbursements for capital expenditures, from the Saxony government and those proceeds were also applied to reduce the cost of our fixed assets of our Dresden

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manufacturing facility. We received an additional \$2.1 million in investment allowances from the Saxony government in 2001, and we expect to receive approximately \$1.0 million in investment allowances in 2002, although we cannot assure you that we will receive these amounts. Those funds have been or will also be applied to reduce the cost of our fixed assets of our Dresden manufacturing facility. Additionally, we have received \$0.9 million of Saxony government grants that have been recorded as an advance until we earn the grant through future expenditures. The total annual amount of investment grants and investment allowances that we are entitled to seek varies from year to year based upon the amount of our capital expenditures that meet certain requirements of the Saxony government. Generally, we are not eligible to seek total investment grants and allowances for any year in excess of 33% of our eligible capital expenditures for that year. We expect to continue to finance a portion of our capital expenditures in Dresden with additional grants from the Saxony government and additional loans from German banks, some of which may be guaranteed by the Saxony government. However, we cannot guarantee that we will be eligible for or will receive additional grants in the future from the Saxony government.

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Borrowing arrangements

The following table (with dollars in thousands) sets forth the material terms of our indebtedness at March 31, 2002:

Description	Rate	Balance at March 31, 2002	Remaining Due in 2002
Line of credit	(1)	\$ 4,606	(1)
Term debt:			
Japanese bank loan, guaranteed by Teijin	LIBOR+1.0%(2)	7,500	\$ 2,500
German bank loan dated May 12, 1999	6.13%(3)	2,321	225
German bank loan dated May 28, 1999	7.10%(4)	2,196	
German bank loan dated May 28, 1999	3.75%	1,129	188
German bank loan dated July 25, 2000	7.15%	1,761	155
German bank loan due June 30, 2009	5.75%	1,482	
German bank loan dated June 29, 2000	5.75%	299	113
German bank loan dated July 10, 2000	7.10%	299	112
German bank loan dated December 19, 2000	7.50%	190	52
German bank loan dated December 18, 2000	7.50%	208	57
Note payable dated September 21, 2001	8.00%	520	450
Other equipment financings		207	68
Total term debt		18,112	3,920
Capital leases:			
Sale-leaseback dated July 19, 1999	13.00%	2,321	2,321
Sale-leaseback dated October 19, 1999	13.00%	946	946
Total capital leases		3,267	3,267
Total term debt and capital leases		21,379	\$ 7,187
Less current portion		7,579	
Term debt, non-current		\$ 13,800	

- (1) This line of credit expires in June 2003. Under the line, we can borrow an amount equal to 80% of eligible accounts receivable. We pay a finance fee equal to 0.88% per month of the average daily balance of the amount of accounts receivable against which we have borrowed. We are required to repay the lender amounts borrowed when we receive payments of these accounts receivable.
- (2) As of March 31, 2001, the interest rate on this loan was 3.16%.
- (3) Interest rate will be reset to the then prevailing market rate in 2004.
- (4) Interest rate will be reset to the then prevailing market rate in 2009.

At December 31, 2000, we were in default under our German bank loans, our sale-leaseback agreement and the guarantee by Teijin of the Japanese bank loan. Accordingly, all borrowings outstanding under the Japanese bank loan, the German bank loans, sale-leaseback agreement were classified as current liabilities on our balance sheet at December 31, 2000.

At December 31, 2001 and March 31, 2002, we were not in compliance with certain of the covenants of the guarantee by Teijin of the Japanese bank loan. We have received waivers from Teijin and the Japanese bank of any defaults that may exist for any measurement period through and including September 30, 2003 arising out of our failure to comply with the minimum quick ratio, tangible net worth and maximum debt/tangible net worth covenants. The waivers are conditioned on our agreement to prepay \$2.5 million of the debt with the proceeds of this offering. Accordingly, the non-current portion of the amount outstanding under the loan of \$5.0 million has been classified as a long-term liability on our balance sheet at December 31, 2001 and March 31, 2002.

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As of March 31, 2002, we were in compliance with the covenants under our German bank loans. As a result, of the total \$9.9 million outstanding under those loans as of March 31, 2002, we classified \$8.7 million, which is the amount due after March 31, 2002, as a long-term liability.

We are in default under a master sale-leaseback agreement with respect to two of our production machines. We have withheld lease payments in connection with a dispute with the leasing company. An agent purporting to act on behalf of the leasing company has recently filed suit against us to recover the unpaid lease payments and alleged residual value of the machines. The leasing company holds a security interest in the production machines and may be able to repossess those machines. As a result, we have classified all \$3.3 million outstanding under those agreements net of \$1.0 million of the amounts due from the leasing company that was not funded, as current portion of long-term debt as of March 31, 2002.

Under the original terms of our grant agreement with the Saxony government, we were required to meet investment and hiring targets by March 31, 2002. If we failed to meet those targets, the Saxony government was permitted to require us to repay all grants and government allowances previously received by us. In February 2002, the Saxony government extended the date by which we must comply with these targets to June 2006.

Equity transactions

In April 2001, we raised \$1.0 million from the sale of 422,119 shares of common stock to Globamatrix. In addition, the exercise of stock options and employee purchases under our employee stock purchase plan generated cash proceeds to us of \$0.7 million during 2001.

Capital expenditures

We spent \$12.9 million for capital expenditures in 2000, of which \$9.8 million was invested in our Dresden facility and \$3.1 million was invested in our Tempe and Palo Alto facilities for leasehold improvements, computer equipment and improvements to our production machines. Of the \$9.8 million invested in our Dresden facility, \$7.0 million represented progress payments on our two new production machines (PM 8 and PM 9). We financed our capital expenditures in Dresden primarily through \$4.0 million of German bank loans, the release of \$2.6 million of cash restricted by the Saxony government, and \$1.0 million of subsidies from the Saxony government.

During 2001, we spent \$5.9 million for capital expenditures, primarily for production equipment and computer resources. In the fourth quarter of 2001, we placed an order to purchase PM 10 for our Dresden facility, to be paid for by progress payments beginning in 2001 through 2003, when the machine is expected to become operational. We do not currently have financing in place to purchase a new production machine and expect to fund this purchase through a combination of investment allowances from the Saxony government, cash from operating activities,

borrowings from German banks, and a portion of the proceeds from this offering.

We anticipate spending approximately \$7.0 million in capital expenditures in 2002, approximately \$4.0 million of which will consist of progress payments for PM 10 in Dresden, approximately \$1.5 million to replace our current enterprise resource planning system, and approximately \$1.5 million to maintain and upgrade our production facilities in Palo Alto and Tempe. We spent approximately \$0.8 million in capital expenditures during the first quarter of 2002.

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Our future payment obligations on our borrowings pursuant to our term debt, capital lease obligations, line of credit and noncancellable operating leases at December 31, 2001 were as follows (in thousands):

Contractual obligations	Payments Due by Period				
	Total	Less than 1 year	1-3 years	4-5 years	After 5 years
Term debt	\$ 19,061	\$ 4,548	\$ 7,446	\$ 1,558	\$ 5,509
Financing lease obligations	3,767	3,767			
Line of credit	2,974	2,974			
Operating leases	10,229	3,601	5,678	950	
Other long-term obligations					
Total contractual cash obligations	\$ 36,031	\$ 14,890	\$ 13,124	\$ 2,508	\$ 5,509

We believe that our existing liquidity sources, including our expected cash flows from operations, our existing cash reserves and existing credit facilities, will satisfy our cash requirements for the next twelve months. The net proceeds from this offering should be sufficient to repay the debt, replace our enterprise resource planning system, purchase a new production machine (PM 10) and update our production facilities in Palo Alto and Tempe as set forth in the "Use of Proceeds" section of this prospectus. After using the proceeds of the offering for such purposes, however, we expect that there may be only approximately \$1 million of proceeds of the offering remaining. In the event our estimates prove inaccurate and the planned uses of proceeds consume more proceeds than we anticipate, there may not be any proceeds of the offering remaining for working capital or general corporate purposes. We may need to raise additional funds in order for us to respond to unforeseen technological, marketing or other problems, or to take advantage of unanticipated opportunities. To fully implement our business plan, we will need to raise additional capital from external sources.

Alternative financing sources

We are in discussions with potential lenders regarding the establishment of new credit facilities to meet our projected working capital and capital expenditure needs in 2002. Additionally, we continue to explore a number of alternative equity transaction proposals to meet or supplement our working capital and capital expenditure needs. We cannot provide any assurance that alternative sources of financing will be available at all or on terms acceptable to us. Our ability to raise additional funds may be adversely affected by a number of factors relating to us, as well as factors beyond our control.

Qualitative and Quantitative Disclosure about Market Risk

Financing risk

Our exposure to market rate risk for changes in interest rates relates primarily to our term loan, specifically our loan from Sanwa Bank, which is tied to the London Interbank Offered Rate, and our line of credit which bears a finance fee equal to 0.88% per month of the average daily balance of the accounts receivable against which we have borrowed. In addition, the interest rate on one of our German loans will be reset to the prevailing market rate in 2004 and on another of our German loans will be reset to the prevailing market rate in 2009. Fluctuations or changes in interest rates may adversely affect our expected interest expense. The effect of a 10% fluctuation in the interest rate on our loan from Sanwa Bank would have an effect of less than \$25,000 and \$10,000 on our interest expense for the year ended December 31, 2001 and the quarter ended March 31, 2002, respectively. The effect of interest rate fluctuations during 2001 and the first quarter of 2002 was not material.

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Investment risk

We invest our excess cash in money market accounts and, by practice, limit the amount of exposure to any one institution. Investments in both fixed rate and floating rate interest earning instruments carry a degree of interest rate risk. Fixed rate securities may have their fair market value adversely affected due to a rise in interest rates, while floating rate securities may produce less income than expected if interest rates fall. The effect of a 10% fluctuation in the interest rate of any floating rate securities would have had an adverse effect of less than \$25,000 for the quarter ended March 31, 2002.

Foreign currency risk

International revenues (defined as sales to customers located outside of the United States) accounted for approximately 86% of our total sales in the first quarter of 2002. Of this amount, approximately 15% was denominated in euros relating to sales from our Dresden operation. The other 85% of our international sales were denominated in US dollars. We expect that approximately 10% to 15% of our total sales in 2002 will be denominated in euros. In addition, certain transactions with foreign suppliers are denominated in foreign currencies (principally Japanese Yen). The effect of a 10% fluctuation in the euro exchange rate would have had an effect of \$0.3 million on net revenues for the three months ended March 31, 2002 and the effect of a 10% fluctuation in the Yen exchange rate would have had an effect of approximately \$0.1 million.

Recent Accounting Pronouncements

In July 2001, the Financial Accounting Standards Board ("FASB") issued Statement of Financial Accounting Standards ("SFAS") No. 141, "Business Combinations." SFAS No. 141 addresses financial accounting and reporting for business combinations and supersedes Accounting Principles Board ("APB") Opinion No. 16, "Business Combinations," and SFAS No. 38, "Accounting for Preacquisition Contingencies of Purchased Enterprises." SFAS No. 141 requires applicable business combinations to be accounted for using one method, the purchase method. The provisions of SFAS No. 141 apply to all business combinations initiated after June 30, 2001. We do not expect that the adoption of SFAS 141 will have a significant effect on our financial position or results of operations.

In July 2001, the FASB issued SFAS No. 142, "Goodwill and Other Intangible Assets," which is effective for fiscal years beginning after March 15, 2001. SFAS No. 142 requires, among other things, the discontinuance of goodwill amortization. In addition, the standard includes provisions upon adoption for the reclassification of certain existing recognized intangibles as goodwill, reassessment of the useful lives of existing recognized intangibles, reclassification of certain intangibles out of previously reported goodwill and the testing for impairment of existing goodwill and other intangibles. We do not expect the adoption of SFAS 142 will have a significant effect on our financial position and results of operations.

In June 2001, the FASB issued SFAS No. 143, "Accounting for Asset Retirement Obligations," which addresses financial accounting and reporting for obligations related to the retirement of tangible long-lived assets and associated asset retirement costs. SFAS No. 143 is effective for fiscal years beginning after June 15, 2002. We do not expect that the adoption of SFAS 143 will have a significant effect on our financial position or results of operations.

In October 2001, the FASB issued SFAS No. 144, "Accounting for the Impairment or Disposal of Long-Lived Assets," which addresses financial accounting and reporting for the impairment or disposal of long-lived assets. This Statement supersedes SFAS No. 121, "Accounting for the Impairment of Long-Lived Assets and for Long-Lived Assets to Be Disposed Of," and the accounting and reporting provisions of APB Opinion No. 30, "Reporting the Results of Operations-Reporting the Effects of Disposal of a Segment of a Business, and Extraordinary, Unusual and Infrequently Occurring Events

and Transactions" for the disposal of a segment of a business. The provisions of SFAS No. 144 are required to be adopted during our fiscal year beginning January 1, 2002. We do not expect that the adoption of SFAS 144 will have a significant effect on our financial position or results of operations.

In May 2002, the FASB issued SFAS 145, "Rescission of FAS Nos. 4, 44, and 64, Amendment of FAS 13, and Technical Corrections." Among other things, SFAS 145 rescinds various pronouncements regarding early extinguishment of debt and allows extraordinary accounting treatment for early extinguishment only when the provisions of Accounting principles Board Opinion No. 30, "Reporting the Results of

Operations Reporting the Effects of Disposal of a Segment of a Business, and Extraordinary, Unusual and Infrequently Occurring Events and Transactions" are met. SFAS 145 provisions regarding early extinguishment of debt are generally effective for fiscal years beginning after May 15, 2002. We do not believe that the adoption of this statement will have a material effect on our consolidated financial statements.

BUSINESS

We are a global developer, manufacturer and marketer of thin film coatings for the automotive glass, electronic display and architectural markets. We have developed a variety of products that control sunlight in automotive glass, reduce light reflection and improve image quality in electronic display products, and conserve energy in architectural products. Our products consist of transparent solar-control films for automotive glass; anti-reflective films for computer screens, including flat panel and plasma displays; transparent conductive films for use in touch screen and liquid crystal displays; energy control films for architectural glass; and various other coatings. Based upon our production capacity, we believe we are one of the world's largest producers of sputter-coated, flexible thin film products.

Industry Background

Large area, single layer, thin film coatings were developed in the early 1960s using vacuum evaporation, a less precise precursor to sputter coating. As a result of technological developments in the early 1970s, multi-layer coatings for large substrates became possible. Sputtering based on these developments is used today in a large number of applications in which high quality, uniform coatings need to be deposited on large surfaces or on many smaller surfaces simultaneously. Examples of sputter coating include the deposition of various metal and metal oxide layers on wafers in the semiconductor and hard disk industries, and optical coatings on transparent surfaces in the automotive glass, electronic display, and architectural markets.

Thin film coatings are used in a wide variety of surface applications to control the transmission and reflection of light and the flow of energy. Thin film coatings can modify the transmission and reflection of both visible and non-visible light, such as infrared and ultra-violet light, to enhance the performance and characteristics of the surface.

Thin film process technologies

The three most common methods for commercially producing thin film coatings on glass and flexible substrates are:

Wet coating. The wet coating process generally involves depositing a thin layer of material onto glass by a spin coating technique or onto a flexible substrate, or film, by a number of different methods. In the case of spin coating, which is sometimes used for computer display tubes, or CDTs, a small amount of liquid is placed at the center of a spinning CDT, forcing the liquid from the center towards the outside edge. Once a uniform thin layer of liquid is thus applied, the layer is bake-dried at a moderate temperature. In the case of film coating, a thin layer of liquid material is applied to the surface of plastic film and then dried by means of thermal or direct radiation. This process is generally less expensive than sputter-coating, but generally yields coatings with lower quality, optical and mechanical characteristics.

Direct coating onto glass substrates. Direct coating onto glass can be accomplished by sputtering and by pyrolytic means. Direct-to-glass sputtering is a mature, well-known process for applying thin film coatings to glass. This technology is commonly used to manufacture products that conserve energy in buildings. Pyrolytic coatings are formed directly on the glass as it is produced on a float line. The process uses the heat of the molten glass to make a single layer, metal oxide coating from a solution sprayed onto the glass. Because this technique produces only single layer coatings, the solar performance is limited.

Sputter coating onto flexible film substrates. The sputter coating process, which is the process we primarily employ, deposits a thin layer of materials, generally metals and metal oxides, onto the surface of a flexible substrate, usually polyester. The substrate can then be either laminated in or applied to glass or suspended between panes of glass. The substrate can be applied to both flat glass and curved glass, such as is used in automotive applications.

The thin film coating process begins with a clear base substrate that is typically glass or a flexible polyester film. When using a flexible film, a hard coat is sometimes applied to prevent undesired interactions between the materials to be deposited and the base substrate, as well as improve the mechanical properties of the coating. Various materials are then deposited in very thin layers on the substrate. The process of building up the various layers results in a "stack." The stack consists of layers of materials that produce the desired optical and performance effects. In some applications, primarily with flexible films, adhesive or protective layers may be applied to the substrate to improve the subsequent application of the product onto a rigid substrate, such as glass.

Our Markets

Primary markets for the thin film coated substrates that we manufacture are the automotive glass, electronic display and the architectural markets. Advances in manufacturing processes coupled with improved thin film deposition technologies in the automotive glass and electronic display markets are reducing production costs, allowing thin film coated substrates to more cost-effectively address these markets.

Automotive glass products

Thin film coated substrates we sell in this market reflect infrared heat. These coatings allow carmakers to use more glass and increase energy efficiency by reducing the demand on a vehicle's air conditioning system, as well as improving thermal comfort in the vehicle. Thin film coated substrates in this market are sold primarily to original equipment manufacturers, or OEMs, that produce glass for sale to European manufacturers of new cars and trucks for worldwide distribution. These substrates are also sold to independent glass manufacturers as part of a large aftermarket for replacement automobile glass. In addition, thin film coated substrates for retrofit application to the inside surface of a vehicle window are sold through resellers who install the film.

Nearly all automotive glass in the world uses some degree of tint or coloration to absorb light and solar energy, thus reducing solar transmission into the vehicle. This tint is usually created through the mixing of inorganic metals and metal oxides into the glass as the glass is produced. The cost of adding these materials is very low, but the solar control benefit is limited by the fact that solar energy is absorbed in the glass, causing the glass to heat up which eventually increases the temperature of the inside of the automobile.

Based on the most recent report with respect to the worldwide production of flat glass by the Freedonia Group, an independent market research company, we believe approximately 7.2 billion square feet of glass were installed in motor vehicles in 1999. This amount consists of approximately 5.5 billion square feet of glass in new motor vehicles and 1.7 billion square feet of replacement glass.

The use of thin films in the automotive glass market is being driven primarily by:

Incorporation of new features into conventional automotive glass based on newly-developed thin film products;

Growing demand for glass that rejects higher levels of solar heat, thereby improving occupant comfort and performance and extending lifetimes of leathers, fabrics and plastics used for automotive interiors;

Desire for smaller air conditioning systems that improve fuel efficiencies and reduce tailpipe emissions; and

Increasing adoption of laminated door glass for automobiles which offers security, safety, acoustic and ultra-violet protection benefits.

We began volume production for this market in 1996, and we estimate that in 2001 our coated substrates were used in less than 1% of the total worldwide automotive OEM glass produced.

Electronic display products

Thin film coated substrates we sell in this market primarily reduce glare caused by reflection from glass surfaces, improve contrast and image quality, and reduce energy emission from and build up of static charge on the computer display screen. Our thin film coated substrates are used in cathode ray tubes, or CRTs, liquid crystal and plasma displays, and in applications such as touch screens, wireless telephones and automated teller machines. We recently started shipping production quantities and sizes of a new anti-reflective film specifically designed for the

liquid crystal display and plasma display panel markets. The combined worldwide market for 17 inch and 19 inch flat screen computer display tubes and active matrix liquid crystal displays used for computer and handheld applications is anticipated to grow from approximately 75 million units in 2000 to 155 million units in 2005, according to a 2001 study by Stanford Resources, Inc., an independent market research firm. Considering the two categories separately, the market for 17 inch and 19 inch flat screen computer display tubes is expected to shrink from approximately 45 million units in 2000 to 37 million units in 2005, and the market for active matrix liquid crystal displays used for computer and handheld applications is expected to grow from approximately 30 million units in 2000 to 118 million units in 2005.

The use of thin films in the electronic display market is increasing primarily due to:

Growing consumer demand for displayed information, driven largely by the availability of information and entertainment on the internet, as well as strong growth in the sales of wireless and portable communication devices; and

The introduction of new products incorporating thin film technology, including active matrix liquid crystal and plasma display screens used in industrial and consumer products.

We began commercial production for the electronic display market in 1996. We estimate that in 2001, our coated substrates were applied to approximately 4% of the products in the 17 inch and 19 inch worldwide, flat screen CRT market, based on information from Stanford Resources, Inc.

Architectural products

Thin film coated substrates we sell in this market are primarily used to control the transmission of heat through window glass, as well as to limit ultra-violet light damage. Window glass is a poor thermal barrier. The primary source of heat build-up and loss in buildings is through the glass windows.

According to the Freedonia Group, the worldwide market for new and replacement glass sold for use in residential buildings is expected to increase from approximately 5.2 billion square feet in 1999 to approximately 8.0 billion square feet in 2009. Also, according to Freedonia, the market for new and replacement glass sold for use in commercial buildings is expected to increase from approximately 16.2 billion square feet in 1999 to approximately 25.4 billion square feet in 2009.

The use of thin films in the architectural market is driven by:

Increasing energy conservation concerns;

Increasing amounts of new and replacement glass sold for use in residential buildings; and

Increasing amounts of new and replacement glass sold for use in commercial buildings.

Our original business, in which we began volume production in 1979, focused on this market. In 2001, we estimate that our products were used in less than 1% of the glass used worldwide in residential and commercial buildings.

Market trends

The needs of our customers and end-users are driving the evolution of the thin film coating industry. Our coated products enhance the performance of their finished products.

Trends in the automotive glass market include:

Advanced automotive designs. New automotive glass designs, such as larger and more steeply sloped windows, have resulted in increased heat build-up and ultraviolet damage in automobiles, which can be reduced by thin film coatings.

Expanded applications. Automobile manufacturers are looking for ways in which thin film coatings can support new windshield features such as electrical defrost and antenna functions, including receipt of radio, GPS satellite signals and wireless communications. The use of thin film coatings to electrically heat the glass is dependent on the development and adoption of new, more powerful, 42 volt electrical systems as compared to current 14 volt systems. According to a 2001 report by DRI-WEFA, an independent market research company, it is anticipated that 35% of the cars and light trucks produced in North America, Europe and Japan will have a 42 volt electrical system by 2010.

Door glass and rear glass. Most automobile manufacturers today use two separate pieces of glass laminated together to form "safety glass" only in the windshield. The door glass and the rear glass are typically made of a single piece of tempered, or heat treated, glass. Automobile manufacturers are presently adopting laminated door glass and rear glass because of the security, safety, acoustic, and ultra-violet protection benefits. We believe that this trend in the automotive glass business offers opportunities to introduce solar heat control as an additional option to these pieces of glass. We believe that the demand for laminated door glass in Europe is expected to grow from less than 2 million parts in 2001 to more than 5 million parts by 2006, of which approximately 50% is expected to contain a solar control coating.

Trends in the electronic display market include:

Commercialization of flat panel technologies. The adoption of advanced display technologies such as liquid crystal and plasma displays, which require thin film coated substrates.

Preference for higher resolution displays. An increasing portion of the electronic products industry is moving to higher resolution displays, which are enhanced by advanced thin film technologies.

Reduction of harmful or undesirable emissions. Electronic product manufacturers are seeking ways to mitigate electromagnetic and infrared interference, driving the need for coatings that can reduce undesirable or potentially harmful radiation emissions by reflecting them back into the display without affecting functionality of the display.

Trends in the architectural market include:

Enhanced efficiency. Demand for heating and cooling efficiency have driven the need for thin film coatings that provide energy savings. These concerns include controlling solar radiation, improving the efficiency of air conditioning, and offering insulating properties that reduce heat loss in cold climates and heat gain in hot climates while reducing ultra-violet damage.

Growth of remodeling market. Remodeling of existing structures has increased the use of more modern materials, including the use of glass that increases thermal and ultra-violet protection and provides insulation from noise.

Our Solution

Our coated films solve our customers' need to improve the performance and competitiveness of their finished products. Our coated products offer a number of benefits to the end-use customers:

Improved thermal comfort in automobiles, homes, and office buildings;

Reduced eye-strain from prolonged use of electronic displays;

Blockage of potentially damaging solar and electromagnetic radiation from natural and electronic environments; and

Improved energy efficiency for transportation vehicles and buildings, which reduces costs and consumption of fossil fuels.

Our products are sold as large rolls, measuring up to approximately 7 feet wide by 20,000 feet long. The weight and extended shelf-life of these rolls allow for easy and inexpensive shipping and storage of product with our customers.

We believe our competitive advantages include:

Proprietary thin film sputtering process knowledge and control systems;

Extensive thin film materials expertise and optical design capabilities;

Over twenty years' experience providing large quantities of sophisticated coatings on flexible film for demanding applications and customers;

The world's largest installed base of coating machinery for application of sputter coatings to flexible film;

Our new, state-of-the-art coating facility in a low-cost labor environment, with significant financial support from local and federal governments in Germany;

Substantial expertise and technical support in the areas of product testing, reliability, and applications;

Rapid product development capabilities on small, proprietary research systems prior to commercial production;

Key strategic relationship with a large Japanese chemical company for electronic materials supply in Asia;

Close working relationship with our key substrate supplier; and

International patent portfolio covering a broad range of products.

Our Strategy

Our strategy is to enhance our position as a global developer, manufacturer and marketer of thin film coatings on flexible substrates for the automotive glass, electronic display, and architectural markets. The following are key elements of our strategy:

Increase penetration and expand customer base in the automotive glass market

During 2000 and 2001, we expanded our production capacity primarily through the opening of our manufacturing facility in Dresden. As a result, we are working to expand the sale of our products to automotive glass suppliers for new cars. We are also introducing new products into the automotive glass markets. These products have better thermal performance characteristics than and have a different look from our existing products. We expect these products will position us to expand our business in Europe and attract new customers in the U.S. We also expect these products will be included in some vehicles beginning in 2003. Vehicles using our sputtered thin film coated products include models by European automakers Audi, BMW, Mercedes, Volvo, Peugeot-Citroen and Renault. Our thin film coated products are sold to these car makers through the two largest automotive glass suppliers operating in Europe, Saint Gobain and Pilkington PLC. We are also working with other glass manufacturers in Europe to expand our customer base. In addition, we intend to target other major OEMs in the automotive glass industry in Japan, North America and South America to similarly integrate our products into their glass components. We will also seek to develop relationships with companies that specialize in the replacement of automobile glass.

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Increase production capacity in the automotive glass and architectural markets

Currently, two production machines (PM 8 and PM 9) in Dresden are commercially producing films and a third production machine (PM 10) is scheduled to be installed there and begin commercial production by the first quarter of 2003. These production machines will primarily produce films for the European automotive glass market but will be capable of manufacturing film for the architectural markets as well. In addition, this increase in our production capacity for automotive films in Europe has created additional capacity on our other production machines located in Palo Alto and Tempe.

Use expanded production capacity and new products to increase sales in the architectural market

To take advantage of our expanded production capacity, we plan to increase our marketing and sales activities in 2002 to seek additional customers in the architectural market. We are also focused on the introduction of several new products to the architectural marketplace. New products for both suspended Heat Mirror films as well as laminated XIR® films are envisioned for release this year. These new products will

increase the thermal insulation value of insulating glass made with our films and will improve the solar protection offered by laminated glass incorporating our films. As a result of enhanced sales activities and new products, we anticipate interest from a number of potential customers in North America and Europe. Significant orders, however, are not expected from these potential customers in 2002.

Capitalize on expanding flat panel display market

We will endeavor to create and maintain a competitive position in the production of thin film coated substrates for the flat panel display market, which we expect will grow substantially over the next five years. We intend to increase our share of this market by:

Working closely with dominant manufacturers in the sector to successfully integrate our solutions into their products;

Continuing to invest to develop anti-reflective coatings on substrates used by liquid crystal display, or LCD, manufacturers; and

Pursuing the processing of our films to add certain properties internally, rather than through third party subcontractors.

We seek to acquire a larger share of the growing LCD market by establishing relationships with LCD manufacturers and materials suppliers to provide thin film coatings for more of their products. Further, we will devote resources towards the development of additional coatings and processes to address the broader anti-reflective film market. For example, we recently started shipping production quantities and sizes of a new anti-reflective film specifically designed for the LCD and plasma display panel markets that maintains optical clarity while reducing the reflection of ambient light to improve image quality.

Continue to advance thin film production technology

We are focusing on developing new technologies to enhance the capabilities of thin film products and enhance the efficiency of the production of thin film products. For example, we are commercializing a deposition technique for our optical coatings called plasma enhanced chemical vapor deposition, or PECVD. This is commonly used in the semiconductor and disk drive industries for deposition of active, interconnected elements or magnetic materials. The attractiveness of this technique is its high deposition rate and the potentially lower material cost for the coatings, as compared to sputtering. A production machine (PM 7) based on this technology is currently installed at our Tempe facility and is expected to begin commercial production in the second half of 2002. Coatings for the automotive and architectural product lines, may be produced by PECVD in the future.

Technology

In a sputtering process, a solid target and a substrate are placed in a vacuum chamber. By adding a small amount of process gas, typically argon, to the chamber and negatively charging the target, the process gas is ionized and a plasma discharge is formed. The positively charged gas ions strike the solid target with enough force to eject atoms from its surface. The ejected target atoms condense on the substrate and a thin film coating is constructed atom by atom. By placing a magnet behind the target, the electrons in the ionized plasma are confined to a specific region on the target enhancing the creation of ionized gas atoms and increasing the efficiency of the target atom ejection process. By using different targets as the substrate moves through the vacuum chamber, we can create a multi-layered coating, or stack.

If the process gas is inert, such as argon, the coating will have the same composition as the target material. As an example, many of our coatings have a layer of silver in the stack. However, by adding a reactive gas such as oxygen or nitrogen to the process, it is possible to create metal oxide or metal nitride coatings from a metal target.

The advantages of our sputtering process include the high density of the formed coatings and the high degree of uniformity control that we can achieve.

While predominantly relying on sputter coating technology, we are actively developing new technologies and processes such as PECVD. The PECVD technique uses a gas rather than a solid target as the base material for the coating. The gas in the deposition chamber is excited into a very reactive plasma, using the energy from a microwave source mounted onto the chamber. A chemical reaction involving the excitement of gas molecules at the surface of the substrate then creates the thin film coating. In the past, this technique lacked the uniformity control necessary to make it useful for optical coatings, where uniformities of a few percent are required. New developments in this area have improved PECVD uniformity levels to the point that PECVD can now be explored for optical coatings. We plan to employ our new PECVD technology in one of our production machines (PM 7) in Tempe. However, since this system embodies a completely new technology, we expect and have budgeted

for a much slower start-up of this system compared to our standard sputter coating systems. This system is also limited by its ability to process only rolls which are two feet wide or less.

In addition to the vacuum-based deposition techniques described above, we have developed the ability to deposit wet chemistry based coatings under atmospheric conditions. In this technique, the active component of the thin film is in a solution and is applied to the substrate by rotating cylinder. After applying the wet film, the substrate is heated, evaporating the solvent and leaving a thin film of the active component behind. In Tempe, this technology is used to apply an anti-smudge coating on top of our sputtered anti-reflective films. The function of the anti-smudge coating is to make the final product more resistant to fingerprints and to make it easier to clean. Other coatings can be applied through this technique as well, and programs are in place to develop adhesive coatings and other coatings that enhance the mechanical durability of our products.

We rely extensively upon trade secrets and know-how to develop and maintain our competitive position. We have 29 patents and seven patent applications pending in the United States and 39 patents and more than 50 patent applications pending outside the United States that cover materials, processes, products and production equipment. Of our existing patents, two U.S. patents and three international patents will expire in the next three years. We also seek to avoid disclosure of our know-how and trade secrets through a number of means, including requiring those persons with access to our proprietary information to execute nondisclosure agreements with us. We consider our proprietary technology, as well as its patent protection, to be an important factor in our business.

Products

The following table describes the markets into which we sell our products, the applications of our products, our product families, key features of our various products and representative customers.

MARKET	APPLICATION	FILM PRODUCTS	KEY FEATURES	REPRESENTATIVE CUSTOMERS
<i>Automotive glass</i>	Windscreens, side windows, and back windows	Infrared reflective (XIR 70 and XIR 75)	Transmits 70% or 75% visible light Reflects 85% of infrared heat energy	Saint Gobain Pilkington PLC
	After-market installation	Solis/V-KOOL	Transmits 70% or 75% visible light Reflects 85% of infrared heat energy	Globamatrix
<i>Electronic display</i>	Flat screen monitors and TVs	Anti-reflective absorbing (ARA)	Pigmented film 8X reduction in light reflection High picture quality	Mitsubishi Polar Vision
	Liquid crystal display (LCD) screens	Anti-reflective clear (ARC)	Clear anti-reflective product	Sumitomo Chemicals Polar Vision
	LCD reflector for lighting sources	Silver reflecting	95% Reflecting Light-weight mirror	Mitsui Chemicals Marubeni
	Plasma display panels (PDP)	Infrared reflective (XIR 70) Anti-reflective clear (ARC)	Clear and Conductive Clear infrared blocking	Mitsui Chemicals
<i>Architectural</i>	New and retrofit residential and commercial windows and doors	Suspended Heat Mirror	Cool in summer Warm in winter UV blocking Noise reducing	Kensington Hankuk Hurd Edge Seal
	Commercial buildings	Laminated	Infrared reflecting	Gulf Glass Industries

MARKET	APPLICATION	FILM PRODUCTS	KEY FEATURES	REPRESENTATIVE CUSTOMERS
		(XIR70 HT)	UV blocking Cool in summer Noise reducing	Cristales Curvados
	After-market installation	Solis/V-KOOL	Infrared reflecting UV blocking Cool in summer Noise reducing	Globamatrix

Automotive glass products

Direct-to-glass sputtering for automotive windshields is not well developed because of the need to bend the glass before it can be coated and then applied to an automobile. Coating flat glass and then bending it to match complex automobile designs is also difficult due, in part, to the stress on the coating during the bending, heating and cooling process. However, coating flat glass and then bending it is the method currently used by most glass producers. Sputter coated flexible substrates that we produce can be applied to windshields with different curvatures and incorporated into most in-line

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windshield production process used by glass companies today. Our net revenues from sales of automotive glass products were \$19.5 million in 1999, \$20.2 million in 2000, \$37.4 million in 2001 and \$7.0 million in the first quarter of 2002.

Infrared reflective films. Our XIR coated solar-control films are a transparent, sputter-coated, polyester films used in laminated glass for automobiles. The films have a patented, transparent solar-control coating on one side and a proprietary adhesion-promotion layer on the other.

Applied solar-control films. Our Solis/V-KOOL solar-control films for aftermarket installation for automotive glass utilizes our XIR technology. The product is applied to existing windows and has a protective hard coat over the patented, transparent solar-control coating on one side and the adhesion layer on the other. Solis/V-KOOL is sold through a worldwide distribution network of companies owned by or affiliated with Globamatrix.

Electronic display products

Our sputter coated substrates offer the high optical quality necessary for higher resolution electronic displays. Our substrates can be easily cut into different shapes and sizes, providing increased flexibility for our customers. In addition, our products can effectively reduce undesirable or potentially harmful emissions without affecting the resolution of the display. Our net revenues from sales of electronic display products were \$16.0 million in 1999, \$47.7 million in 2000, \$29.7 million in 2001 and \$7.9 million in the first quarter of 2002.

Anti-reflective films. Our anti-reflective films minimize reflection of visible light and electromagnetic radiation while allowing high picture quality. Our anti-reflective absorbing, or ARA, films are pigmented and used in flat screen monitors. Our anti-reflective clear, or ARC, films are clear and used in LCD screens.

Silver reflecting films. Our light-weight silver reflecting film is a mirror-like product used as a reflector in LCD backlit screens.

Transparent conductors. XIR films are used in the plasma display panel markets to block near-infrared and electromagnetic radiation from the display. Our ALTAIR-M films are used in products such as touch panels, liquid crystal displays and electroluminescent displays where the circuit or conductive material must not obscure the screen. ALTAIR films are also used in electromagnetic interference shielding, infrared rejection and electrostatic discharge packaging applications.

Architectural products

Windows containing our Heat Mirror product have approximately two to five times the insulating capacity of conventional double-pane windows. They also provide high levels of solar shading while transmitting a high percentage of visible light. In addition, our products also offer ultra-violet protection and reduce noise and condensation build-up. Architectural glass manufacturers are looking for ways to improve insulation without adding numerous panes of glass that are impractical to lift and cannot be supported by a structure's frame. This drives the need for thin film inside the glass that is a high performance insulator at a fraction of the weight of the glass. Our net revenues from sales of architectural products were \$19.1 million in 1999, \$17.4 million in 2000, \$15.9 million in 2001 and \$4.3 million in the first quarter of 2002.

Suspended Heat Mirror films. Our Heat Mirror films provide a variety of shading and insulating properties as well as ultra-violet damage protection. Windows are the primary areas of heat loss in winter and a major source of heat gain in summer. Heat Mirror films, which are sold in rolls to window manufacturers, are suspended in the airspace between sealed double-pane residential and commercial windows. We have developed proprietary film-mounting technology, which we license to window fabricators. There are a total of 66 Heat Mirror licenses in approximately 20 countries. We currently offer 12 different Heat Mirror films for architectural applications.

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Laminated films. Our thin film coated flexible substrates are laminated between panes of glass and perform similarly to our XIR solar control films for automobiles. This film is currently sold primarily to fabricators of laminated window glass for large commercial building applications such as airports, office buildings, and museums. We have sold a total of 20 licenses for this architectural film product in approximately 15 countries.

Applied solar-control films. Our XIR coating for architectural applications is Solis/V-KOOL solar-control films for the architectural glass aftermarket. This product is applied to existing windows and has a protective hard coat over the patented, transparent solar-control coating on one side and an adhesion layer on the other. Solis/V-KOOL is sold through a worldwide distribution network of companies owned by or affiliated with Globamatrix.

Sales and Marketing

Distribution channels

We sell our automobile and electronic display products primarily to OEMs in North America, Europe, the Middle East and Asia, principally through our own direct sales force and sales representatives. Mitsui Chemicals is our licensee and distributor for certain of our electronic products in Japan and Taiwan. Mitsui also has exclusive manufacturing rights for certain of our electronic products in Japan using our proprietary sputtering technology.

We supply our Heat Mirror architectural products to approximately 66 insulated glass and window fabricators and distributors worldwide. Our proprietary mounting technology is licensed to our customers, who use special equipment for the manufacture of Heat Mirror-equipped windows. Our field services organization assists customers in the manufacture of Heat Mirror-equipped windows. In North America, we also promote our Heat Mirror product line through approximately 30 regionally based architectural glass sales representatives.

We sell our Solis/V-KOOL aftermarket products for the automotive glass and architectural markets through a worldwide distribution network of companies owned by or affiliated with Globamatrix.

International revenues amounted to approximately 78%, 85%, 87% and 86% of our net revenues during 1999, 2000, 2001 and the first quarter of 2002, respectively. The principal foreign markets for our products in 2001 were Japan (\$26.8 million), France (\$19.8 million), Germany (\$8.6 million) and Singapore (\$6.4 million).

Warranties

We offer warranties on our products which we believe are competitive for the markets in which those products are sold. The nature and extent of these warranties depend on the product, the market, and in some cases the customer being served. We carry liability insurance. However, our insurance does not cover warranty claims and there can be no assurance that our insurance will be sufficient to cover all product liability claims in the future or that the costs of this insurance or the related deductibles will not increase materially.

Customers

Our customers include many of the world's leading OEMs in the automotive glass and electronic display markets. Our customers in the OEM automotive glass market include Saint Gobain and Pilkington PLC, which sell glass to automobile manufacturers including DaimlerChrysler, Renault, Audi, BMW, Volvo, Volkswagen and the PSA Group (which includes Peugeot and Citroen). We currently have a supply agreement with Saint Gobain that runs through 2003 and may be renewed by mutual consent of the parties. Under the Agreement, Saint Gobain committed to purchase set amounts of product. Our failure to produce the required amounts of products under the agreement will result in price penalties on future sales under the agreement.

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Our customers in the electronic display market include Mitsubishi Electric Corporation and Mitsui Chemicals. Our customers in 2001 in the architectural market included approximately 83 fabricators of insulated glass units and laminated glass for architectural applications.

Our aftermarket applied film in the automotive and architectural glass markets is sold pursuant to an exclusive worldwide license in our distribution agreement with Globamatrix. Under the Agreement, which is scheduled to expire in 2011, Globamatrix agreed to purchase an aggregate of approximately \$200.0 million of our products during the term of the agreement subject to volume and quality standards. Our failure to produce required amounts of product under the agreement will result in penalties under which we would be required to reimburse Globamatrix for the full cost of any product not timely delivered.

A small number of customers have accounted for a substantial portion of our revenues. Our ten largest customers accounted for approximately 69%, 85%, 85% and 85% of our net sales in 1999, 2000, 2001 and the first quarter of 2002, respectively. During the first quarter of 2002, Pilkington, Mitsubishi, Mitsui and Saint Gobain accounted for 10.8%, 20.9%, 14.6% and 20.9%, respectively, of our net sales. During 2001, Pilkington, Mitsubishi and Saint Gobain accounted for 15.8%, 21.2% and 23.9%, respectively, of our net sales. During 2000, Saint Gobain, Mitsubishi and Samsung accounted for 14.1%, 37.3% and 12.2%, respectively, of our net sales; and during 1999, Saint Gobain and Pilkington accounted for 18.0% and 11.7%, respectively, of our net sales. Because of our fixed costs, the loss of, or substantial reduction in orders from, one or more of these customers would have a material adverse affect on our profitability and cash flow. The timing and amount of sales to these customers depends on sales levels and shipping schedules for the OEM products into which our products are incorporated. We have no control over the shipping dates or volume of products shipped by our OEM customers, and we cannot be certain that they will continue to ship products that incorporate our products at current levels or at all. In addition, we rely on our OEM customers to timely inform us of opportunities to develop new products that serve end-user demands.

Research and Development

Our research and development activities are focused upon the development of new proprietary products, thin film materials science, and deposition process optimization and automation. Our research and development expenditures totaled \$5.2 million, \$6.7 million, \$5.5 million and \$1.8 million, or approximately 9.6%, 7.9%, 6.6% and 9.3% of total net revenues, during 1999, 2000, 2001 and the first quarter of 2002, respectively.

Historically, our research and development efforts have been driven by customer requests for the development of new applications for thin film coated substrates. To meet the future needs of our customers, we continually seek to improve the quality and functionality of our current products and enhance our core technology. For example, we recently started shipping production quantities and sizes of a new anti-reflective film specifically designed for the liquid crystal display and plasma display panel markets that maintains optical clarity while reducing the reflection of ambient light to improve image quality. We are also working to develop a heatable automobile windshield using our XIR film capable of de-icing, defrosting and demisting the windshield, thus improving cold start visibility and reducing the need to scrape ice from the windshield. In addition, we are working with MegaWave Corporation to build a prototype antenna for integration into an automobile windshield which would be capable of receiving and transmitting radio, GPS and wireless telephone signals. However, we cannot guarantee that we will be successful in developing or marketing these applications.

Although our production systems are built by outside vendors, we work closely with our vendors on the detailed implementation of the production machine designs. Our experience with designing production systems is critical for the proper construction of these machines. Once a new machine is installed and accepted by us, our engineers are responsible for transitioning the system into commercial production to help ensure stable manufacturing yields.

Manufacturing

The table below provides information about our current and proposed production machines and the class of products that each is currently tooled to produce.

Status	Machine Number	Location	Primary Markets For Current Production	Year Commercial Production Initiated/Expected	Estimated Annual Capacity (Millions of Sq. Ft.) ⁽¹⁾
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Status	Machine Number	Location	Primary Markets For Current Production	Year Commercial Production Initiated/ Expected	Estimated Annual Capacity (Millions of Sq. Ft.) ⁽¹⁾
Existing	PM 1 ⁽²⁾	Palo Alto	Research and development	1980	
	PM 2	Palo Alto	Architectural and electronic display		