COHERENT INC
Form 10-K
November 30, 2011
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UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, D.C. 20549

FORM 10-K
(Mark One)

x ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

For the Fiscal Year Ended October 1, 2011

or

o TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

Commission File Number: 001-33962

COHERENT, INC.

Delaware	94-1622541
(State or other jurisdiction of incorporation or organization)	(I.R.S. Employer Identification No.)
5100 Patrick Henry Drive, Santa Clara, California	95054
(Address of principal executive offices)	(Zip Code)

Registrant's telephone number, including area code: (408) 764-4000
Securities registered pursuant to Section 12(b) of the Act:

Title of each class	Name of each exchange on which registered
Common Stock, $0.01 par value	The NASDAQ Stock Market LLC Nasdaq Global Select Market

Securities registered pursuant to Section 12(g) of the Act: None
Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes o No x
Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Securities Exchange Act of 1934 (the "Exchange Act"). Yes o No x
Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports) and (2) has been subject to such filing requirements for the past 90 days. Yes x No o
Indicate by check mark whether the registrant has submitted electronically and posted on its corporate Web site, if any, every Interactive Data File required to be submitted and posted pursuant to Rule 405 of Regulation S-T (§229.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit and post such files. Yes x No o

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K is not contained herein, and will not be contained, to the best of registrant's knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K. o

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, or a smaller reporting company. See definitions of "large accelerated filer", "accelerated filer" and "smaller reporting company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer x	Accelerated filer ¨	Non-accelerated filer o (Do not check if a smaller reporting company)	Smaller reporting company o

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act). Yes o No x

As of November 25, 2011, 23,594,170 shares of common stock were outstanding. The aggregate market value of the voting shares (based on the closing price reported on the NASDAQ Global Select Market on April 1, 2011, of Coherent, Inc., held by nonaffiliates was approximately $1,148,000,000. For purposes of this disclosure, shares of common stock held by persons who own 5% or more of the outstanding common stock and shares of common stock held by each officer and director have been excluded in that such persons may be deemed to be "affiliates" as that term is defined under the Rules and Regulations of the Exchange Act. This determination of affiliate status is not necessarily conclusive.

DOCUMENT INCORPORATED BY REFERENCE

Portions of the registrant's Proxy Statement for the registrant's fiscal 2012 Annual Meeting of Stockholders are incorporated by reference into Part III of the Form 10-K to the extent stated herein. The Proxy Statement or an amended report on Form 10-K will be filed within 120 days of the registrant's fiscal year ended

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PART IV

October 1, 2011.

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SPECIAL NOTE REGARDING FORWARD LOOKING STATEMENTS

This Annual Report contains forward-looking statements. These forward-looking statements include, without limitation, statements relating to:

- expansion into, and financial returns from, new markets;
- optimization of financial returns;
- maintenance and development of current and new customer relationships;
- enhancement of market position through existing or new technologies;
- optimization of product mix;
- future trends in microelectronics, scientific research and government programs, OEM components and instrumentation and materials processing;
- utilization of vertical integration;
- adoption of our products or lasers generally;
- applications and processes that will use lasers, including the suitability of our products;
- capitalization on market trends;
- alignment with current and new customer demands;
- emergence of OLED technology;
- use of lasers in the manufacture of solar cells;
- positioning in the marketplace and gains of market share;
- leadership position;
- design and development of products, services and solutions;
- control of supply chain and partners;
- realization of restructuring benefits;
- establishment of global sourcing function;
- protection of intellectual property rights;
- cancellation rates;
- employees recruiting and retention;
- compliance with environmental and safety regulations;

•net sales and operating results;

•variations in stock price;

•research and development expenditures and benefits;

•market acceptance of products;

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•conversion of bookings to net sales;

•flat panel displays orders;

•trends in the instrumentation market;

•sufficiency and management of cash, cash equivalents and investments;

•acquisition efforts and associated potential capital commitments;

•accounting for goodwill and intangible assets, inventory valuation, warranty reserves and taxes; and

•future net revenue.

In addition, we include forward-looking statements under the "Our Strategy" and "Future Trends" headings set forth below in "Business" and under the "Bookings and Book-to-Bill Ratio" heading set forth below in "Management's Discussion and Analysis of Financial Condition and Results of Operations."

You can identify these and other forward-looking statements by the use of the words such as "may," "will," "could," "would," "should," "expects," "plans," "anticipates," "estimates," "intends," "potential," "projected," "continue," "our observation," or the negative of such terms, or other comparable terminology. Forward-looking statements also include the assumptions underlying or relating to any of the foregoing statements.

Our actual results could differ materially from those anticipated in these forward-looking statements as a result of various factors, including those set forth below in "Business," "Management's Discussion and Analysis of Financial Condition and Results of Operations" and under the heading "Risk Factors." All forward-looking statements included in this document are based on information available to us on the date hereof. We undertake no obligation to update these forward-looking statements as a result of events or circumstances or to reflect the occurrence of unanticipated events or non-occurrence of anticipated events.

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PART I

ITEM 1. BUSINESS

GENERAL

Business Overview

Our fiscal year ends on the Saturday closest to September 30. Fiscal years 2011, 2010 and 2009 ended on October 1, October 2, and October 3, respectively, and are referred to in this annual report as fiscal 2011, fiscal 2010 and fiscal 2009 for convenience. Fiscal years 2011 and 2010 included 52 weeks; fiscal year 2009 included 53 weeks.

We are one of the world's leading suppliers of photonics-based solutions in a broad range of commercial and scientific research applications. We design, manufacture, service and market lasers and related accessories for a diverse group of customers. Since inception in 1966, we have grown through internal expansion and through strategic acquisitions of complementary businesses, technologies, intellectual property, manufacturing processes and product offerings.

We are organized into two operating segments: Commercial Lasers and Components ("CLC") and Specialty Lasers and Systems ("SLS"). This segmentation reflects the go-to-market strategies for various products and markets. While both segments deliver cost-effective photonics solutions, CLC focuses on higher volume products that are offered in set configurations. The product architectures are designed for easy exchange at the point of use such that substantially all product service and repairs are based upon advanced replacement and depot (i.e., factory) repair. CLC's primary markets include materials processing and original equipment manufacturer ("OEM") components and instrumentation. SLS develops and manufactures configurable, advanced performance products largely serving the microelectronics, OEM components and instrumentation and scientific research and government programs markets. The size and complexity of many of the SLS products require service to be performed at the customer site by factory-trained field service engineers.

Effective as of the beginning of the first quarter of fiscal 2009, we moved our diode pumped solid state ("DPSS") Germany and Crystal product families from the CLC segment into the SLS segment. This concentrated all DPSS product families in the SLS segment. All reporting has been aligned to reflect the revised reportable operating segments (CLC and SLS) and prior periods have been restated. See additional discussion in Note 18 "Segment and Geographic Information" of our Notes to Consolidated Financial Statements under Item 15 of this Annual Report on Form 10-K.

Income (loss) from operations is the measure of profit and loss that our chief operating decision maker ("CODM") uses to assess performance and make decisions. Income (loss) from operations represents the sales less the cost of sales and direct operating expenses incurred within the operating segments as well as allocated expenses such as shared sales and manufacturing costs. We do not allocate to our operating segments certain operating expenses, which we manage separately at the corporate level. These unallocated costs include stock-based compensation and corporate functions (certain advanced research and development, management, finance, legal and human resources) and are included in Corporate and other. Management does not consider unallocated Corporate and other costs in its measurement of segment performance.

We were originally incorporated in California on May 26, 1966 and reincorporated in Delaware on October 1, 1990. Additional information about Coherent, Inc. (referred to herein as the Company, we, our, or Coherent) is available on our web site at www.coherent.com. We make available, free of charge on our web site, access to our annual report on Form 10-K, our quarterly reports on Form 10-Q, our current reports on Form 8-K and amendments to those reports filed or furnished pursuant to Section 13(a) or 15(d) of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), as soon as reasonably practicable after we file or furnish them electronically with the Securities and Exchange Commission ("SEC"). Information contained on our web site is not part of this annual report or our other filings with the SEC. Any product, product name, process, or technology described in these materials is the property of Coherent, Inc.

INDUSTRY BACKGROUND

The word "laser" is an acronym for "light amplification by stimulated emission of radiation." A laser emits an intense coherent beam of light with some unique and highly useful properties. Most importantly, a laser is orders of magnitude brighter than any lamp. As a result of its coherence, the beam can be focused to a very small and intense

spot, useful for applications requiring very high power densities including cutting and other materials processing procedures. The laser's high spatial resolution is also useful for microscopic imaging and inspection applications. Laser light can be monochromatic—all the beam energy is confined to a narrow wavelength band. Some lasers can be used to create ultrafast output—a series of pulses with pulse durations as short as attoseconds (i.e., 10^{-18} seconds). There are many types of lasers and one way of classifying them is by the material or medium used to create the lasing action. This can be in the form of a gas, liquid, semiconductor or solid state crystal. Lasers can also be classified by their

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output wavelength: ultraviolet, visible, infrared or wavelength tunable. We manufacture all of these laser types. There are also many options in terms of pulsed output versus continuous wave, pulse duration, output power, beam dimensions, etc. In fact, each application has its specific requirements in terms of laser performance. The broad technical depth at Coherent enables us to offer a diverse set of product lines characterized by lasers targeted at growth opportunities and key applications. In all cases, we aim to be the supplier of choice by offering a high-value combination of superior technical performance and high reliability.

Photonics has taken its place alongside electronics as a critical enabling technology for the twenty-first century. Photonics based solutions are entrenched in broad industries that include industrial automation, textile processing, microelectronics, flat panel displays and medical diagnostics, with adoption continuing in ever more diverse applications. Growth in these applications stems from two sources. First, there are many applications where the laser is displacing conventional technology because it can do the job faster, better or more economically. Second, there are new applications where the laser is the enabling tool that makes the work possible (e.g., the production of sub 50 micron microvias) used in the manufacture of high density printed circuit boards found in the latest smartphones and tablet computers.

Key laser applications include: micro and nanotechnologies; solar cell production; semiconductor inspection; microlithography; measurement, test and repair of electronic circuits; flat panel display manufacturing; medical and bio-instrumentation; industrial process and quality control; materials processing; imaging and printing; graphic arts and display; and, research and development. For example, ultraviolet ("UV") lasers are enabling the move towards miniaturization, which drives innovation and growth in many markets. The short wavelength of lasers that produce light in the UV spectral region makes it possible to manufacture extremely small structures with maximum precision—consistent with the latest state-of-the-art technology.

OUR STRATEGY

We strive to develop innovative and proprietary products and solutions that meet the needs of our customers and that are based on our core expertise in lasers and optical technologies. In pursuit of our strategy, we intend to:

- Leverage our technology portfolio and application engineering to lead the proliferation of photonics into broader markets—We will continue to identify opportunities in which our technology portfolio and application engineering can be used to offer innovative solutions and gain access to new markets. We plan to utilize our expertise to expand into new markets, such as laser-based processing development tools for solar manufacturing and high power materials processing solutions.
- Optimize our leadership position in existing markets—There are a number of markets where we have historically been at the forefront of technological development and product deployment and from which we have derived a substantial portion of our revenues. We plan to optimize our financial returns from these markets.
- Maintain and develop additional strong collaborative customer and industry relationships—We believe that the Coherent brand name and reputation for product quality, technical performance and customer satisfaction will help us to further develop our loyal customer base. We plan to maintain our current customer relationships and develop new ones with customers who are industry leaders and work together with these customers to design and develop innovative product systems and solutions as they develop new technologies.
- Develop and acquire new technologies and market share—We will continue to enhance our market position through our existing technologies and develop new technologies through our internal research and development efforts, as well as through the acquisition of additional complementary technologies, intellectual property, manufacturing processes and product offerings.
- Streamline our manufacturing structure and improve our cost structure—We will focus on optimizing the mix of products that we manufacture internally and externally. We will utilize vertical integration where our internal manufacturing process is considered proprietary and seek to leverage external sources when the capabilities and cost structure are well developed and on a path towards commoditization.
- Focus on long-term improvement of adjusted EBITDA, in dollars and as a percentage of net sales—We define adjusted EBITDA as operating income adjusted for depreciation, amortization, stock compensation expenses, major restructuring costs and certain other non-operating income and expense items. Key initiatives to reach our goals for EBITDA improvements include utilization of our Asian manufacturing locations, rationalizing our supply chain and

continued leveraging of our infrastructure.

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APPLICATIONS

Our products address a broad range of applications that we group into the following markets: Microelectronics, Scientific Research and Government Programs, OEM Components and Instrumentation and Materials Processing.

Microelectronics

Nowhere is the trend towards miniaturization more prevalent than in the Microelectronics market where smart phones, tablets, ultrabooks, personal computers ("PC's") and televisions ("TV's") are driving advances in displays, integrated circuits and printed circuit boards ("PCB's"). In response to market demands and expectations, semiconductor and device manufacturers are continually seeking to improve their process and design technologies in order to manufacture smaller, more powerful and more reliable devices at lower cost. New laser applications and new laser technologies are a key element in delivering higher resolution and higher precision at lower manufacturing cost.

We support four major markets in the microelectronics industry: (1) flat panel display manufacturing, (2) advanced packaging and interconnects, (3) semiconductor front-end, and (4) solar cell production and other emerging processes.

Microelectronics—flat panel display manufacturing

The high-volume consumer market is driving the production of flat panel displays ("FPDs") in applications such as mobile telephones, tablets, ultrabooks, laptop computers, television monitors, digital cameras, personal digital assistants ("PDAs") and car navigation systems. There are several types of established and emerging displays based on quite different technologies, including plasma ("PDP"), liquid crystal ("LCD") and organic polymers ("OLED"). Lasers have found applications in each of these technologies given that the laser provides higher process speed, better yield, improved battery life, lower cost and/or superior display brightness and resolution.

Several display types require a high-density pattern of silicon Thin Film Transistors ("TFTs"). If this silicon is polycrystalline, the performance is greatly enhanced. In the past, these polysilicon layers could only be produced on expensive special glass at high temperatures. However, excimer based processes, such as excimer laser annealing ("ELA") have allowed high-volume production of low-temperature polysilicon ("LTPS") on conventional glass substrates. Our excimer lasers provide an invaluable solution for LTPS because they are the only industrial-grade excimer lasers with the high pulse energy optimized for this application. The current state-of-the-art product for this application is our excimer VYPER laser, which delivers over 1000W of power, enabling customers to scale to current Generation 5 & 5.5 substrates and in the near future up to Generation 8 sizes, when coupled with our latest 750mm length Line Beam optical delivery system (LB-750). These systems are integral to the manufacturing process on all leading LTPS based smartphone displays, with the highest commercially available pixel densities of greater than 300 pixels per inch (ppi) and hold the potential for widespread deployment in tablet computing and future OLED TV manufacturing.

Our AVIA and DIAMOND lasers are also used in other production processes for FPDs. These processes include drilling, cutting, patterning, marking and yield improvement.

Lasers have also become a valuable tool in high-brightness (HB) LED manufacturing, improving LED performance and yield. LED has seen rapid growth in the last year due to widespread adoption as the light source in all categories of LCD displays, from phones all the way to full size TV's. Our lasers are used in the back-end processing of HB-LEDs.

Microelectronics—advanced packaging and interconnects

After a wafer is patterned, there are then a host of other processes, referred to as back-end processing, which finally result in a packaged encapsulated silicon chip. Ultimately, these chips are then assembled into finished products. The advent of high-speed logic and high-memory content devices has caused chip manufacturers to look for alternative technologies to improve performance and lower process costs. In terms of materials, this search includes new types of wafers based on low-k materials and thinner silicon. Our AVIA and Matrix lasers are providing economic methods of cutting and scribing these wafers while delivering higher yields than traditional mechanical methods. Our DIAMOND carbon dioxide ("CO_2") lasers are used for singulating packages and printed circuit boards into individual components for final assembly. Our Talisker lasers are used in a broad range of applications requiring high precision and low heat damage, such as in thin wafer cutting and drilling.

These same trends are also driving integration and miniaturization, blurring the traditional lines between formerly discrete applications such as assembly and PCB fabrication. Lasers are playing several enabling roles in this

integration and miniaturization. For instance, lasers are now the only economically practical method for drilling microvias in chip assemblies and in both rigid and flexible printed circuit boards. These microvias are tiny interconnects that are essential for enabling high-density circuitry commonly used in mobile handsets and advanced computing systems. Our AVIA and DIAMOND lasers are the lasers of choice in this application. The ability of these lasers to operate at very high repetition rates translates into faster drilling speeds and increased throughput in Microvia processing applications.

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Other applications have developed as well. For instance, the high density of the latest circuit boards is reaching the limits of conventional printing technologies, causing wider adoption of laser direct write methods. Our Paladin laser is used for this application.

Microelectronics—semiconductor front-end

The term "front-end" refers to the production of semiconductor devices which occurs prior to packaging.

As semiconductor device geometries decrease in size, devices become increasingly susceptible to smaller defects during each phase of the manufacturing process and these defects can negatively impact yield. One of the semiconductor industry's responses to the increasing vulnerability of semiconductor devices to smaller defects has been to use defect detection and inspection techniques that are closely linked to the manufacturing process. For example, automated laser-based inspection systems are now used to detect and locate defects as small as 0.01 micron, which may not be observable by conventional optical microscopes.

Detecting the presence of defects is only the first step in preventing their recurrence. After detection, defects must be examined in order to identify their size, shape and the process step in which the defect occurred. This examination is called defect classification. Identification of the sources of defects in the lengthy and complex semiconductor manufacturing process has become essential for maintaining high yield production. Semiconductor manufacturing has become an around-the-clock operation and it is important for products used for inspection, measurement and testing to be reliable and to have long lifetimes. Our Azure, Paladin, Sapphire, and Excimer lasers are used to detect and characterize defects in semiconductor chips.

Microelectronics—solar cell production

Numerous areas of microelectronics can be grouped as "emerging technologies." Some of these are transitioning to volume production in the present timeframe while others are more forward-looking.

Today's higher energy costs have led to heightened interest in solar panels. The interest in solar cell technology coupled with the intense focus on improving cell efficiency, is driving the adoption of laser technology in the manufacturing of solar cells. Our lasers, such as AVIA, Paladin, Matrix and Talisker, are used in the production of solar panels with applications such as dopant activation in the Crystalline Silicon (C:Si) cells and transparent conductive oxide ("TCO") scribing purposes in Thin Film designs.

We have introduced a number of complete solutions for certain processes in the manufacturing of solar cells including the Coherent Equinox laser system and the Aethon laser system. These systems are based on Coherent lasers and can be used in a production or process development environment.

Scientific research and government programs

We are widely recognized as a technology innovator and the scientific market has historically provided an ideal "test market" for our leading-edge innovations. These have included ultrafast lasers, DPSS lasers, continuous-wave ("CW") systems, excimer gas lasers and water-cooled ion gas lasers. Our portfolio of lasers that address the scientific research market is broad and includes our Chameleon, COMPexPro, Evolution, Legend, Libra, MBD, MBR, Micra, Mira, Mantis and Verdi lasers. Many of the innovations and products pioneered in the scientific marketplace have become commercial successes for both our OEM customers and us.

We have a large installed base of scientific lasers which are used in a wide range of applications spanning virtually every branch of science and engineering. These applications include biology and life science, engineering, physical chemistry and physics. Most of these applications require the use of ultrafast lasers that enable the generation of pulses short enough to be measured in attoseconds (10^{-18} seconds). Because of these very short pulse durations, ultrafast lasers enable the study of fundamental physical and chemical processes with temporal resolution unachievable with any other tool. These lasers also deliver very high peak power and large bandwidths, which can be used to generate many exotic effects. Some of these are now finding their way into mainstream applications, such as microscopy or materials processing. In fact, the use of ultrafast lasers such as the Chameleon in microscopy is now a common occurrence in bio-imaging labs.

OEM components and instrumentation

Instrumentation is one of our more mature commercial applications. Representative applications within this market include bio-instrumentation, medical OEMs, graphic arts and display and machine vision. We also support the laser-based instrumentation market with a range of laser-related components, including diode lasers for optical

pumping. Some of our OEM component business includes sales to other, less integrated laser manufacturers participating in OEM markets such as materials processing, scientific, and medical.

Bio-instrumentation

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Bio-instrumentation applications for lasers include bio-agent detection for point source and standoff detection of pathogens or other bio-toxins; confocal microscopy for biological imaging that allows researchers and clinicians to visualize cellular and subcellular structures and processes with an incredible amount of detail; DNA sequencing that provides automation and data acquisition rates that would be impossible by any other method; drug discovery—genomic and proteomic analyses that enable drug discovery to proceed at very high throughput rates; and flow cytometry for analyzing single cells or populations of cells in a heterogeneous mixture, including blood samples. Specifically, our Sapphire, Compass and Coherent CUBE lasers are used in several bio-instrumentation applications.

Medical Therapy

We sell a variety of components and lasers to medical laser companies in end-user applications such as ophthalmology, aesthetic, surgical, therapeutic and dentistry. Our DIAMOND series CO2 lasers are widely used in ophthalmic, aesthetic and surgical markets. Our Compass and Sapphire series of lasers are used in the retinal scanning market in diagnostic imaging systems as well as new ground breaking in-vivo imaging applications. In addition, we have a leading position in Lasik and photorefractive keratectomy ("PRK") surgery methods with our ExciStar XS excimer laser platform.

The unique ability of our optically pumped semiconductor lasers ("OPSL") technology to match a wavelength to an application has led to the development of a high-power yellow (577nm) laser for the treatment of eye related diseases, such as Age Related Macular Degeneration and retinal diseases associated with diabetes. The 577nm wavelength was designed to match the peak in absorption of oxygenated hemoglobin thereby allowing treatment to occur at a lower power level, and thus reducing stress and heat-load placed on the eye with traditional green-based (530nm) solid state lasers. This technology is finding traction with both medical OEMs and ophthalmologists.

Materials Processing

Lasers are widely accepted today in many important industrial manufacturing applications including cutting, welding, joining, drilling, perforating, and marking of metals and nonmetals. We supply high-power lasers for metal processing and low-to-medium power lasers for laser marking, nonmetals processing and precision micromachining.

Our high power industrial laser systems are used for cutting, cladding and hardening of metals, joining materials, and other materials processing applications. Other applications include welding of plastics and direct metal welding.

Our Semiconductor business provides higher power arrays with powers in excess of 50Kilowatts through its proprietary cooling and stacking technology. This unique technology provides the engine for both our Highlight direct diode systems as well as our upcoming kW class fiber laser. Complementing our high power solid state lasers is our industry leading DIAMOND E1000 CO_2 laser. Introduced in 2009, this laser remains in high demand due to its high power, small size and completely sealed design - all ideal for material processing.

Combining the high power Direct Diode, Fiber and CO_2 offerings with our MetaBeam 1000 flatbed cutting tool provides a strong, compelling four-pronged approach to meeting the needs of our diverse materials processing customers.

In 2010 we acquired Beam Dynamics, Inc., a manufacturer of flexible laser cutting tools for the materials processing market. These tools, when combined with Coherent's medium to high power CO_2 lasers, offer a unique blend of performance and precision in a small lightweight tool for cutting of metals and non-metals. Enabled with the DIAMOND E1000, the new METABEAM 1000 offers the industry's most compact 1kW tool, with tools footprints at least 50% smaller than competitive designs. Operating costs, due to the sealed nature of the DIAMOND series of CO_2 lasers are 75% less than similar, but larger tools.

We also participate in the low to medium power area, including such applications as the cutting, drilling and joining of host of materials using our DIAMOND CO_2 lasers; Highlight FAP semiconductor lasers in OEM opportunities and direct end user applications with the lower power OMNIBEAM and METABEAM cutting tools; applications including cutting, perforating and scoring of paper, thin metals and packaging materials; and various cutting and patterning applications in the textile, wood and sign industries. In the specific area of textiles and clothing, our DIAMOND lasers service older applications, such as cutting complex shapes in leather for footwear, as well as newer applications such as creating detailed fade patterns on designer denims.

Laser marking and coding are generally considered part of the precision materials processing applications market for which we remain a leading supplier. One such area where applications are growing rapidly is the displacement of

ink-jet coding due to both aesthetic and environmental pressures. The optimum choice of laser depends on the material being marked, whether it is a surface mark (engraved) or a sub-surface mark, and the specific economics of the application. We provide lasers for all important marking applications. Our DIAMOND C and GEM Series of CO_2 lasers provide many systems manufacturers with a reliable cost effective source for marking and engraving on non-metals. In addition, our Matrix product line of reliable,

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compact and low-cost diode pumped solid state lasers provides an ideal solution for marking of other materials in high volume manufacturing.

FUTURE TRENDS

Microelectronics

Lasers are widely used in mass production microelectronics applications largely because they enable entirely new application capabilities that cannot be realized by any other known means. These laser-based fabrication and testing methods provide a level of precision, typically on a micrometer and nanometer level, that are unique, faster, are touch free, deliver superior end products, increase yields, and/or cut production costs. We anticipate this trend to continue, driven primarily by the increasing sophistication of consumer electronic goods and their convergence via the internet, resulting in increasing demand for better displays, more bandwidth and memory, while at the same time consuming less power. Although this market follows the macro-economic trends and carries inherit risks, we believe that Coherent is well positioned to continue to capitalize on the current market trends and that we will see continued increased adoption of our pulsed fiber, solid-state, CO_2, direct diode and excimer lasers, as all these lasers enable entirely new applications, performance improvements and reduced process costs.

LTPS based high resolution mobile displays (greater than 300ppi), and especially the emergence of OLED technology, look set to dominate the FPD technology trends of the future. We believe we are well positioned, especially with our Vyper Excimer lasers and LB optical systems, to take advantage of this trend, including the possibility of LTPS based OLED TVs. CO_2, Avia, Talisker and direct diode lasers all seem aligned with the need for related FPD touch panel, thin film cutting, light guide technology, frit welding and glass cutting applications.

Semiconductor devices look set to continue Moore's Law, shrinking device geometries for at least another decade, as well as expanding vertically into new 3D structures. As a result we believe our many deep UV laser sources (such as Paladin, Avia, Talisker, ExiStar and Matrix) will continue to find increasing adoption, since their unique optical properties align well with the process demands of a nanometer scale world.

The same lasers plus CO_2 are also widely adopted for back end Advanced Packaging and Interconnect (API) applications. With dimension roadmaps showing a decade of dimension shrink on PCBs, interconnects, Silicon & LED scribe widths and glass thickness, we believe that our portfolio of lasers aligns well with these demands as well as new processes that seem likely to be enabled by our lasers, to meet the increasing demands and decreasing tolerances of these markets.

The short term outlook for solar is uncertain given the global economy, credit availability and the significant oversupply of cell production that exists at this time. The longer term outlook for this ultimate clean, free and abundant source of energy is expected to be strong; however, the timing is uncertain. We believe that the vast majority of leading solar cell manufacturers have laser based processes on their roadmap to enable higher conversion efficiencies. Lasers provide a touch-free manufacturing process on increasingly fragile substrates (as they get thinner). They also hold the promise of lower manufacturing costs and higher yield for certain process steps. We believe we are well positioned as this market matures, standardizes processes and recovers economically.

Scientific research and government programs

The scientific market benefited from stimulus funding during fiscal 2011, with applications in ultrashort pulses and in bio-research being the drivers of this anticipated expansion. We anticipate the total amount of government-related funding for scientific research to decline from prior stimulus levels, but believe that as we push the boundaries of performance and ease of use in our ultrafast lasers, we have the potential to capture a larger share of the funds that are available by enabling our customers to win funding for new research fields that drive discovery. While these markets remain highly competitive, we believe our leadership position and new product pipeline will drive Attosecond science boundaries and Biological Imaging ease of use, enabling new research frontiers to be forged and we would expect a gain in market share as a result.

OEM components and instrumentation

The instrumentation market is seeing a gradual migration from the use of mature laser technologies, such as water-cooled ion gas lasers, to new technologies, primarily based on solid state and semiconductor lasers. Using our unique portfolio of such lasers, as well as our patented OPSL technology, we are able to both assist and stimulate this transition as well as to be the technology of choice for developing applications such as security and clinical

diagnostics. Our OPSL technology resulted in the first truly continuous solid-state UV laser which enables the use of UV in a clinical as well as a research environment. Furthermore we anticipate greater future opportunities in bio-instrumentation, including DNA sequencing, drug discovery, flow cytometry, and microscopy, based on our product enhancements and evolving market developments, particularly in increased migration from clinical to point-of-care diagnostics. Our newer laser technologies are the basis of a number of clinical procedures. In the area of photocoagulation, the Genesis OPSL yellow lasers are being used as the wavelength is particularly

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suitable for the treatment of blood vessels. In aesthetic laser procedures, we are an OEM supplier of CO_2 and semiconductor lasers to the major manufacturers of equipment used in the latest procedures in dermatology and hair removal. We supply excimer lasers used in refractive eye surgery and are actively involved in further developments in laser vision correction.

Materials processing

The market for low to medium power CO_2, solid state and semiconductor lasers used in industrial materials processing has experienced a nice rebound and is expected to see continued growth driven by wider adoption of lasers in new processes especially in emerging markets. Key design wins as well as more favorable markets continue to support our growth in this area. These lasers represent a cost-effective manufacturing solution for cutting, joining, marking and engraving of non-metal materials including marking/coding, flat bed cutting, engraving, as well as the production of capital equipment for apparel and leather goods manufacturing. Our four-pronged approach to the higher power industrial laser market provides us with a unique combination of high power, precision and compact size, which we believe will be highly desirable in existing manufacturing environments as well as those of the future. We offer kilowatt Diamond CO2 lasers, Highlight direct diode lasers and MetaBEAM family of turnkey laser machine tools. We demonstrated a prototype 1kW fiber laser in fiscal 2011 to round-out our four-pronged strategy. Several factors are enabling us to gain market share in the materials processing market. First, we have developed an expanded portfolio of lasers with a broad spectrum of wavelengths, enabling optimum solutions for virtually every metal and non-metal material type. At the same time, the reliability of these products has been achieved at even higher levels, lowering the cost of ownership.

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