CAMTEK LTD
Form 20-F
March 18, 2015

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, DC 20549

FORM 20-F

(Mark One)

o Registration statement pursuant to Section 12(b) or (g) of the Securities Exchange Act of 1934

or

x Annual report pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934

For the fiscal year ended December 31, 2014

or

o Transition report pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934

or

o Shell Company report pursuant to Section 13 or 15 (d) of the Securities Exchange Act of 1934

Date of event requiring this shall Company report _____

For the transition period from _____ to _____

Commission file number 000-30664

Camtek Ltd.
(Exact name of Registrant as specified in its charter)

Israel
(Jurisdiction of incorporation or organization)

Ramat Gavriel Industrial Zone, P.O. BOX 544, Migdal Ha'Emek, Israel
(Address of principal executive offices)

Moshe Eisenberg, Telephone: (972) (4) 6048100, Facsimile: (972) (4) 6048300, E-mail: moshee@camtek.co.il
Ramat Gavriel Industrial Zone, P.O. BOX 544, Migdal Ha'Emek, Israel
(Name, Telephone, E-Mail and/or Facsimile number and Address of Company Contact Person)

Securities registered or to be registered pursuant to Section 12(b) of the Act:
Ordinary Shares, nominal value NIS 0.01 per share

(Title of each Class)

Nasdaq Global Market
(Name of each Exchange on which registered)

Securities registered or to be registered pursuant to Section 12(g) of the Act:
None
(Title of Class)

Securities for which there is a reporting obligation pursuant to Section 15(d) of the Act:
None
(Title of Class)

Indicate the number of outstanding shares of each of the issuer's classes of capital or common stock as of the close of the period covered by the Annual Report:

30,494,522 Ordinary Shares, par value NIS 0.01 per share.

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act.

o Yes x No

If this report is an annual or transition report, indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934.

o Yes x No

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.

x Yes o No

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 (232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit and post such files).

x Yes o No

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, or a non-accelerated filer. See definition of "accelerated filer" and "large accelerated filer" in Rule 12b-2 of the Exchange Act (check one):

o Large Accelerated Filer o Accelerated Filer x Non-Accelerated Filer

Indicate by check mark which basis of accounting the registrant has used to prepare the financial statements included in this filing:

U.S. GAAP x

International Financial Reporting Standards as issued by the International Accounting Standards Board o

Other o

If "Other" has been checked in response to the previous question, indicate by check mark which financial statement item the registrant has elected to follow.

Item 17 o Item 18 o

If this is an annual report, indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act).

o Yes x No

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Cautionary Language Regarding Forward-Looking Statements

Statements in this Annual Report about our future results, levels of activity, performance, goals or achievements or other future events constitute forward-looking statements. These statements involve known and unknown risks, uncertainties and other factors that may cause actual results or events to differ materially from those anticipated in our forward-looking statements. These factors include, among others, those listed under "Risk Factors" or described elsewhere in this Annual Report.

In some cases, you can identify forward-looking statements by our use of words such as "may," "will," "should," "could," "expects," "plans," "intends," "anticipates," "believes," "estimates," "predicts," "seeks," "strategy," "potential" or "continue" or the negative or other variations of these words, or other comparable words or phrases.

Although we believe that the expectations reflected in our forward-looking statements are reasonable, we cannot guarantee future results, levels of activity, performance or achievements or other future events. We are under no duty to update any of our forward-looking statements after the date of this Annual Report, other than as required by law. You should not place undue reliance on forward-looking statements.

As used in this Annual Report, the terms "we", "us", "our", the "Company" and "Camtek" mean Camtek Ltd. and its subsidiaries, unless otherwise indicated.

PART I

Item 1. Identity of Directors, Senior Management and Advisers.

Not applicable.

Item 2. Offer Statistics and Expected Timetable.

Not applicable.

Item 3. Key Information.

A. Selected Consolidated Financial Data.

We derived the selected data under the captions "Selected Statement of Income Data" for the years ended December 31, 2014, 2013 and 2012, and "Selected Balance Sheet Data" as of December 31, 2014 and 2013 from the audited consolidated financial statements included elsewhere in this Annual Report. We derived the selected data under the captions "Selected Statement of Income Data" for the years ended December 31, 2011 and 2010 and "Selected Balance Sheet Data" as of December 31, 2012, 2011 and 2010 from audited financial statements that are not included in this Annual Report.

For all fiscal periods for which consolidated financial data are set forth below, our consolidated financial statements are prepared in accordance with accounting principles generally accepted in the United States of America.

	Year Ended December 31,				
	2014	2013	2012	2011	2010
	U.S. Dollars (in thousands, except per share data)				
Selected Statement of Income Data:					
Revenues:					
Sales of products	71,371	67,864	66,929	88,404	70,235
Service fees	16,942	17,541	17,618	18,624	17,545
Total revenuesTotal revenues	88,313	85,405	84,547	107,028	87,780
Cost of revenues:					
Cost of products sold	35,870	38,692	35,908	48,039	38,464
Cost of services	11,424	12,311	11,574	11,549	10,897
Total cost of revenues	47,294	51,003	47,482	59,588	49,361
Gross profit	41,019	34,402	37,065	47,440	38,419
Research and development costs	14,406	14,370	12,916	14,077	12,906
Selling, general and administrative expenses	21,417	22,362	21,138	24,341	20,662
Reorganization and impairment	60	(3,466)	3,031	-	-
Total operating expenses	35,883	33,266	37,085	38,418	33,568
Operating income (loss)	5,136	1,136	(20)	9,022	4,851
Financial income (expenses), net	(1,220)	(1,738)	233	(2,900)	(1,478)
Income (loss) before income taxes	3,916	(602)	213	6,122	3,373
Income tax (expense) benefit	(579)	609	(210)	(744)	(557)
Net income	3,337	7	3	5,378	2,816
Earnings per ordinary share:					
Basic	0.11	0.00	0.00	0.18	0.10
Diluted	0.11	0.00	0.00	0.18	0.09
Weighted average number of ordinary shares outstanding (in thousands):					
Basic	30,464	30,040	29,849	29,557	29,259
Diluted	30,545	30,094	30,013	30,009	30,360

	Year Ended December 31,				
	2014	2013	2012	2011	2010
	U.S. Dollars (in thousands, except per share data)				
Selected Balance Sheet Data:					
Cash and cash equivalents	18,220	16,495	18,867	22,185	9,577
Short-term deposits	8,607	6,000	7,160	4,100	-
Long-term restricted deposit	729	729	729	-	5,182
Total assets	96,511	91,850	99,008	104,757	96,271
Short and long term bank loans	-	-	6,252	6,792	2,600
Total liabilities	30,779	29,954	38,671	44,824	42,279
Additional paid in capital	63,465	62,966	61,415	61,014	60,452
Total shareholders' equity	65,732	61,896	60,337	59,933	53,992
Ordinary issued and outstanding shares	30,494,522	30,405,526	29,896,933	29,717,964	29,277,983

B. Capitalization and Indebtedness.

Not applicable.

C. Reasons for the Offer and Use of Proceeds.

Not applicable.

D. Risk Factors

There is a high degree of risk associated with our company and business. If any of the following risks occur, our business, revenues, operating results and financial condition could be materially adversely affected and the trading price of our ordinary shares could decline.

Risk Factors Related to Our Business and Our Markets

Our operating results have varied, and will likely continue to vary significantly from quarter to quarter, making it difficult to predict future results.

Our quarterly operating results have varied in the past and will likely continue to vary significantly from quarter to quarter in the future. This complicates our planning processes, reduces the predictability of our earnings and subjects our stock to price and volume fluctuations. Period-to-period comparisons of our results of operations may be meaningless, and you should not rely on them as indications of our future performance.

Some of the factors that may influence our operating results include:

- change in customer demand for our systems and installation schedules;
- product introductions and the penetration period of new products;
- rapid shifts in industry capacity;
- the size, timing and shipment of substantial orders;
- timing of evaluation and qualification of our products by new customers;
- lack of visibility/low levels of backlog from the preceding quarter;
- product mixes;
- pricing of our products;
- timing of new product upgrades or enhancements;
- interest and exchange rates;
- possible impairment of goodwill and other assets; and
- legal expenses and the impact of legal actions.

In light of these factors and the cyclical nature of the markets we target, we expect to continue to experience significant fluctuations in our quarterly and annual operating results.

We are dependent upon the worldwide electronics industry; unfavorable economic conditions and low capital expenditures may negatively impact our operating results.

Our revenue is dependent upon the strength of the worldwide electronics industry. In particular, we depend upon the need by manufacturers in the semiconductor fabrication industry, as well as in the printed circuit board industry, to make continuing capital investments in our products for use in their manufacturing processes.

The capital equipment procurement practices of these manufactures have been, and continue to be, cyclical in nature, and have experienced both periodic and sustained downturns. These spending levels are impacted by the actual and expected worldwide level of demand for consumer end-products that utilize our solutions in their production processes. Demand for consumer end-products is normally a function of prevailing global or regional economic conditions and is negatively affected by a general economic slow-down and/or periods of economic uncertainty as consumers reduce discretionary spending on electronics. The occurrences of cyclical downturns in our industries are very difficult to predict. Although we have in the past implemented cost reduction and business realignment measures in response to prevailing economic conditions which had led to decreased demand, we are limited in our ability to reduce expenses due to the ongoing need to invest in research and development and the need to maintain short lead times for delivery and our worldwide customer service and support operations. In circumstances of significantly reduced overall demand, or delays in capital investment due to uncertain economic and/or industry conditions, or if orders received differ from our expectations with respect to the product, volume, price or other items, our fixed cost structure could have a material adverse effect on our business and results of operations. Our inability to respond to industry cycles could have a material adverse effect on our business and results of operations. Demand for our products is also created, in part, by technological developments that affect product functionality or give rise to new, enhanced or more complex electronic devices. These developments generate an ongoing need on the part of electronics component manufacturers for the type of improved yield-enhancing and production solutions we provide. If changes in these technologies do not continue to occur, or if other technologies were to emerge that lessened or obviated the need for the use of our solutions in electronic devices, the overall demand for our products could be reduced.

We may face challenges in the process of commercialization and market penetration of the Gryphon System, which could have a material adverse effect on our operating results and plans to further expand our business.

Although we have completed the development of the first generation of our 3D functional Inkjet System (the "Gryphon System", previously referred to as "3D Inkjet System") which is expected to be one of our future growth engines, and determined that it is suitable for commercialization, we cannot predict the extent of market penetration of this new technology, which may require more time and resources than expected. Challenges we may face in the penetration process include, inter alia, the education of customers to incorporate this new technology into their production process, which may not happen or take longer than anticipated, and there is the potential that we may also face competition, whereby additional or superior methods for the process performed by our Gryphon System are presented by our competitors.

In light of the increased investments in capital equipment, human resources and procurement of inventory, the resources which were made and are expected to be made in this commercialization process, delays and challenges in our ability to successfully commercialize this new technology could result in inventory write-offs and loss of capital investment. In addition, such failure to achieve successful market penetration may adversely affect our plans to further expand our business.

Also, the revenues generated may not represent a fair return on the investment, as a result of, for example, pricing and market conditions, post-commercialization system failures or subsequent slow demand and corresponding inventory write offs.

Our products may infringe on the intellectual property rights of others, which could result in claims against us. Our existing patent infringement claims expose us to costs and risks.

Third parties, including our competitor August Technology Corporation’s (which currently operates as Rudolph Technologies Inc.) ("Rudolph"), have asserted claims, and may assert additional claims in the future, that we have violated their patents or that we have infringed upon their intellectual property rights. Any intellectual property claims

against us, even if without merit, could lead to protracted litigation, could be costly to defend and could divert management’s attention from our business. Successful claims against us could limit our ability to sell products in certain jurisdictions; see in Item 8.A – "Consolidated Statements and Other Financial Information"- "Legal Proceedings" below.

Without derogating from the generality of the above, we cannot guarantee that we will ultimately prevail against Rudolph's patent infringement claims. If Rudolph were to ultimately succeed with its infringement actions, it could have a negative impact on our business and could result in monetary damages being assessed against us which will affect our profitability and liquidity. Rudolph's actions have already subjected us, and may continue to subject us, to significant legal and other defense costs, which would impact our cash resources and profitability. In the event that we do not prevail against these claims, we may also be liable for court costs and attorney's fees incurred by the claimants in these litigations (see Item 8.A – "Consolidated Statements and Other Financial Information"- "Legal Proceedings" – "litigation with Rudolph Technologies Inc.").

We have incurred major losses in the past and may not sustain profitable operations in the future. Moreover, if our business deteriorates, we could face liquidity problems.

Although we recorded net income in recent years, we have incurred significant losses in earlier periods. We may use cash in our operations during 2015 for working capital and investment activities and may continue to incur significant additional legal expenses and other defense costs associated with certain patent infringement actions all of which may reduce our available cash resources and harm our operations.

We may not be able to achieve or increase profitability on a quarterly or annual basis. The failure to generate consistent profitability could have a material adverse effect on the market price of our shares. Our ability to sustain profitability in the future depends in part on the global economy, the rate of growth of, and changes in technology trends in, the industries in which we currently or may in the future operate, our ability to develop and manufacture new products and technologies in a timely manner, the competitive position of our products, the continued acceptance of our products by our customers and in the industries that we serve and our ability to manage expenses.

We have from time to time in the past undertaken cost cutting initiatives in response to economic conditions, including reducing our worldwide workforce. In the future, we may again have to undertake cost reduction initiatives, which could lead to a deterioration of our competitive position, and any difficulty in reducing our cost structure could negatively impact our results of operations and cash flow in the future. If available liquidity is not sufficient to meet our operating and other obligations as they come due, our plans include pursuing additional financing arrangements from banks or others, the availability and terms of which are not assured, or further reducing expenditures as necessary to meet our cash requirements.

We cannot assure you that we will continue to remain profitable or that we will not report losses in future periods.

If available liquidity is not sufficient to meet our operating and other obligations as they come due, our plans include pursuing additional financing arrangements from banks or others, the availability and terms of which are not assured, or further reducing expenditures as necessary to meet our cash requirements.

Fluctuations in currency exchange rates may result in the prices of our products becoming less competitive or in additional expenses being recorded, and thus may have negative impact on our profitability.

Currency exchange rate fluctuations may affect the prices of our products. Our products' prices in most countries are denominated in U.S. Dollars, except for in Europe, in Japan and part of our revenues from products in China. In recent months, foreign currency exchange rates have been subject to considerable fluctuations. If there is a significant devaluation in the relevant local currencies in which we operate compared to the dollar, the prices of our products will increase relative to that local currency and may be less competitive. In addition, much of our service income is denominated in local currencies. If a larger number of our sales were to be denominated in currencies other than U.S. Dollars, our reported revenue and earnings would be subject to a greater degree of foreign exchange fluctuations. Further, we generate most of our revenues from products in U.S. Dollars but incur a significant portion of our salary and operating expenses in New Israeli Shekel ("NIS"). As most of our revenues are denominated in U.S. Dollars and as our financial results are reported in U.S. Dollars, we believe that inflation and fluctuations in the NIS/ U.S. Dollar exchange rate have no material effect on our revenues. However, a major portion of the costs of our Israeli operations, such as personnel, subcontractors, materials and facility-related costs, are incurred in NIS. Therefore an increase in the NIS value relative to the U.S. Dollar will increase our costs expressed in U.S. Dollars, and a decrease in the NIS value relative to the U.S. Dollar will decrease our costs expressed in U.S. Dollars (as it did in 2014). In addition, part of our revenues from products in China is denominated in local currency. Most of the expenses and purchases in China are also denominated in local currency. As our financial results are reported in U.S. Dollars, fluctuations in the Chinese

Renminbi ("CNY") to U.S. Dollar exchange rate may affect our revenues and level of expenses. We may, from time to time, take various measures designed to reduce our exposure to these effects, but any such steps may be inadequate to protect us from currency rate fluctuations. Failure to protect adequately against currency rate fluctuations could have a material adverse effect on our financial condition and results of operations.

We operate an international sales and manufacturing organization. A substantial majority of our sales have been to manufacturers in the Asia Pacific region. The concentration of our sales and other resources within a particular geographical region subjects us to additional risks that could impede our plans for expansion and growth.

The majority of our sales is in the Asia Pacific region. In 2014, our sales in the Asia Pacific region accounted for approximately 79% of our total revenues, of which approximately 32% of our total revenues were from sales in China, 20% of sales in Taiwan and 10% of sales in Korea. In addition, parts of the manufacturing and assembly of our AOI systems for the printed circuit boards industry are made in our manufacturing facility in Suzhou, China. A number of Asian countries have experienced or could experience political and economic instability. For example, Taiwan and China have had a number of disputes, as have North and South Korea. Changes in local legislation, changes in governmental controls and regulations, changes in tariffs and taxes, trade restrictions, a downturn in economic or financial conditions, political instability, an outbreak of hostilities or other political upheaval, as well as any further extraordinary events having an adverse effect on the economy or business environment in this region, would likely harm the operations of our customers in these countries, may cause a significant decline in our future revenues and may have an adverse effect on our results of operations and cash flow. These general risks are heightened in China, where the nature of the economy and the legal parameters are rapidly evolving and where foreign companies may face cultural obstacles.

The markets we serve are highly competitive. There are dominant market participants in each of the markets in which we operate with greater resources, all of which may make it difficult for us to maintain profitability and may negatively affect our cash flow.

The markets that we serve are highly competitive. During market downturns competition is intensified due to the reduced demand for the products that we manufacture. When competitors respond to declining demand by offering discounts, free evaluation machines or more favorable credit terms, we may need to implement some or all of the same methods in order to maintain our market position. These could mean lower prices for our products and a corresponding reduction in our gross margin, as well as more favorable payment terms to our customers and a corresponding decline in cash flow. If we have to lower prices to remain competitive and are unable to reduce our costs to offset price reductions or are unable to introduce new, higher performance products with higher prices, our operating results may be adversely affected. If we have to implement more favorable payment terms to our customers, our cash flow may be adversely affected.

In the semiconductor manufacturing industry, our principal competitor and a significant participant for automated optical inspection ("AOI") systems is Rudolph, with additional competitors including KLA-Tencor Corporation, Topcon Corporation, Toray Industries, Inc. and ATI Electronics Pty Ltd.

In the printed circuit board industry, our principal competitor and the dominant market participant is Orbotech Ltd., with additional competitors including Dainippon Screen Manufacturing Company, Lloyd-Doyle Limited, Gigavis Co. Ltd., Shirai Electronics Industrial Co. Ltd., ATI Electronics Pty Ltd. and local AOI vendors in China and Taiwan such as Machvision Inc., Optima Ltd., Ovitech and Jointpower Technology Co,. Ltd. In addition, there is a market for used AOI systems for printed circuit board manufacturers, which may reduce the demand for our products and force us to lower our prices in certain cases.

Some of our competitors have greater financial, personnel and other resources and offer a broader range of products and services. These competitors may be able to respond more quickly to new or emerging technologies or changes in customer requirements, develop additional or superior products, benefit from greater purchasing economies, offer more aggressive pricing or devote greater resources to the promotion of their products.

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We have expanded and may attempt to further expand our activity in the markets in which we operate through merger and acquisition (M&A) activity. Such activity has resulted and may further result in operating difficulties, losses and other adverse consequences.

We have in the past expanded our activity through merger and acquisitions, including the acquisition of assets and certain liabilities of Printar Ltd. ("Printar") and the entire share capital of SELA – Semiconductor Engineering Laboratories Ltd. ("Sela"), (see below in Item 4.B - Business Overview – "Our Business").

We may, in the future, continue to acquire businesses and assets. Our existing operations, as well as any future acquired businesses or assets, could involve numerous risks, including: post-merger integration difficulties; diversion of management's attention from our core business and operations; failure to estimate the acquired businesses' future performance and failure to execute on such expectations; failure to launch new products to our existing or new markets; inaccurate evaluation of expected competition and/or the fair value of certain assets acquired, liabilities assumed and contingent liabilities; and the loss of key employees of the acquired operations.

In addition, principally as a result of acquisition activity, our future results of operations may be influenced by the possibility of our incurring impairment charges as a result of decline in value of goodwill and other intangible assets, ongoing amortization of intangible assets acquired and financing expenses due to re-evaluation of contingent liabilities and other liabilities assumed presented at fair value (see also in Item 5 below - "Critical Accounting Policies"). In 2014, the Company's annual impairment tests did not lead to an impairment charge for goodwill or intangible assets. In 2013 and 2012 we recorded an impairment of intangible assets of $1.65 million and $3 million, respectively, related to the Sela and Printar acquisitions (see Note 9– "Goodwill and Intangible Assets, Net", of the consolidated financial statements). Future acquisitions could also result in potentially dilutive issuances of equity securities, a decrease in our cash resources, incurrence of debt, contingent liabilities or impairment charges related to goodwill and other intangible assets, any of which could harm our business. Furthermore, we compete for acquisition and investment opportunities with other well-established and well-capitalized entities. There can be no assurance that we will be able to locate acquisition or investment opportunities upon favorable terms.

A longer sales process for new products may increase our costs and delay time to market of our products, both of which may negatively impact our revenues, results of operations, cash flow and may result in inventory write-offs.

Our sales process to new and existing customers usually involves: demonstrations and testing against industry benchmarks in our sales centers; sales and technical presentations and presentations regarding our products' competitive advantages; and installation of the systems at the customer's site for side-by-side competitive evaluations for a period of approximately six months. More evaluation time is devoted during the initial penetration period for several new products such as our Eagle and Gryphon systems, and for new customers in new markets, since these circumstances usually require qualification of the systems by the customers and engineering efforts to fix errors, customize tasks and add new features. Considering the above factors, the length of time until we recognize revenue can vary and affect our revenues, cash flow and results of operations.

The long sales process may cause an increase in inventory levels and a risk for inventory write downs and write-offs; for more details regarding recent inventory write downs and write-offs see Item 5.A – Operating Results – Critical Accounting Policies– Valuation of Inventory.

Technology in the markets in which we operate is rapidly evolving, and we may not be able to keep pace with these changes or with emerging industry standards and may incur substantial costs as a result thereof. This could result in a loss of revenues or adversely affect our profits.

The markets for our products are characterized by changing technology, evolving industry standards, changes in end-user requirements and new product introductions. Potential new technologies and improvements to existing production equipment and methods could improve production yields, thereby reducing the need to use our AOI systems in these industries. In addition, new technologies could emerge as alternatives to using our products.

Our future success will depend on our ability to enhance our existing products and to develop and introduce new technologies for the markets in which we operate. These products must keep pace with technological developments and address the increasingly sophisticated needs of our customers. If we fail to keep pace with technological changes, with products offered by our competitors or with emerging industry standards, our ability to attract new business and generate revenues may be damaged.

We seek to expand our activity into unsaturated markets adjacent to our existing served markets, such as the inspection of silicon wafers at various steps during their manufacturing process inside the wafer fabrication facility. Technological developments in production processes and in process control may reduce the growth we anticipate in demand for inspection systems. If this happens, we may not be able to cover our investments in penetrating these markets, or will have to increase our research and development ("R&D") and marketing expense to adapt our products to such changes. Adopting new technologies may also result in material inventory write-offs which will adversely affect our results of operations.

We depend on a limited number of suppliers, and in some cases a sole supplier and/or subcontractor. If one or more of our third-party suppliers or subcontractors does not provide us with key components or subsystems, we may not be able to deliver our products to our customers in a timely manner, and we may incur substantial costs to obtain these components from alternate sources.

While a portion of our manufacturing is performed in our production facilities in Israel and in China, we outsource some of our manufacturing processes to contract manufacturers, including one significant contract manufacturer that is located in Israel ("Contract Manufacturers"). From time to time, we have experienced and may in the future experience delays in shipments from our Contract Manufacturers. In addition we rely on single source and limited source suppliers and subcontractors for a number of essential components and subsystems of our products. We do not have agreements with all of these suppliers and subcontractors for the continued supply of the components or subsystems they provide ("Key Suppliers").

Although we believe that our Contract Manufacturers and Key Suppliers have sufficient economic incentive to perform our manufacturing and meet our supply needs, the resources devoted to these activities are not within our control, and we cannot assure you that manufacturing problems will not occur in the future. In addition, the operations of our Contract Manufacturers and Key Suppliers are not under our control, and may themselves in the future experience manufacturing problems, including inferior quality and insufficient quantities of components. These delays, disruptions, quality control problems and loss in capacity could result in delays in deliveries of our products to our customers, which could subject us to penalties payable to our customers, increased warranty costs and possible cancellation of orders. If our Contract Manufacturers and Key Suppliers experience financial, operational, manufacturing capacity or other difficulties, or shortages in components required for manufacturing, our supply may be disrupted and we may be required to seek alternate manufacturers. We may be unable to secure alternate manufacturers that meet our needs in a timely and cost-effective manner.

We may encounter difficulties in purchasing key components and subsystems, or overestimate our needs, to meet customer demand.

In the current highly competitive business environment, our customers require us to fill orders within a very short period of time. Our products are complex and require essential components and subsystems that are produced by a number of suppliers and subcontractors. In order to meet our customers' needs in the timeframe they require, we usually need to pre-order components and subsystems based on our forecasts of future orders, rather than on actual orders. While we believe that we have sufficient inventory to fill our customers' orders our predictions may not correspond to our actual future needs and our suppliers and subcontractors cannot always supply such components and subsystems within a shorter than anticipated time frame. Our inability to anticipate rapid market changes may cause an increase of inventory which could result in material inventory write-offs, which we have incurred in the past, or may alternately limit our ability to satisfy customer orders which could result in the loss of sales and could cause customers to seek products from our competitors.

If we are unable to protect our proprietary technologies, we may not be able to compete effectively.

We differentiate our products and technologies from those of our competitors by using our proprietary information for the development of our products. We rely on a combination of patents, copyrights, trade secrets, trademarks, confidentiality and non-disclosure agreements to protect our proprietary know-how and intellectual property. These measures may not be adequate to protect our proprietary technologies and it may be possible for a third party, including a competitor, to copy or otherwise obtain and use our products or technologies without authorization or to develop similar technologies independently. Additionally, our products may be sold in countries, particularly in the Asia Pacific region, that provide less protection to intellectual property than that provided under U.S., European or Israeli laws. In addition, we have a manufacturing facility in China, in which we manufacture certain components and assemble most of our AOI systems for the printed circuit board industry, where the intellectual property laws may not be strictly enforced. Therefore, potential risk may be associated with the protection of our intellectual property, which in turn may affect our competitive advantage.

We may face risks of interruptions in our production capabilities.

Our corporate headquarters is located in Migdal Ha'Emek, in the northern part of Israel. Any event affecting this site, including a natural disaster, labor stoppages or armed conflict, may disrupt or indefinitely discontinue our ability to fulfill manufacturing demands and generate revenues, thus negatively impacting our business (see also "We depend on a limited number of suppliers, and in some cases a sole supplier and/or subcontractor" above and "Conducting business in Israel entails special risks" below).

We also have a manufacturing facility in China, in which we manufacture certain components and assemble most of our AOI systems for the printed circuit board industry. Therefore, we may be influenced by changing events in China; for example, our manufacturing activity in China may suffer as a result of changes in China's geopolitical status or fluctuations in its economic stability. In addition, we may be exposed to sourcing risks, such as supply chain and business interruption issues. Any event affecting this site may disrupt our manufacturing capabilities and could significantly impair our ability to fulfill orders and generate revenues, thus negatively impacting our business.

Our principal shareholder, Priortech Ltd., ("Priortech"), holds a controlling interest in us and will be able to exercise its control in ways that may be adverse to your interests.

Priortech beneficially holds 55.48% of our issued and outstanding ordinary shares. As a result, Priortech has the power to control the outcome of certain matters submitted to a vote of our shareholders, including the election of members of our board and the approval of significant corporate transactions. This concentration of ownership may also have the effect of making it more difficult to obtain approval for a change in control of the Company. Messrs. Rafi Amit, Yotam Stern, David Kishon, Itzhak Krell (deceased), Haim Langmas (deceased), Zehava Wineberg and Hanoch Feldstien (the "Founding Members") are parties to a voting agreement dated March 26, 1992, governing inter-alia joint voting at Priortech's general meeting of the shareholders and the right of first refusal among themselves. As of February 28, 2015 the Founding Members or their heirs aggregately hold 35.76% of the voting power at Priortech's general meeting of the shareholders and as such may be deemed to control Priortech.

Our relationship with Priortech may give rise to conflicts of interest.

We purchase products from, or sell products to companies controlled by Priortech Ltd., our principal shareholder, directly or indirectly, or in which Priortech has substantial holdings, and act jointly with such companies with respect to governmental and administrative matters and the purchase from third parties of various products and services, which may create conflicts of interest. Despite our efforts to conduct ourselves by Israeli law procedural requirements, including regarding audit or compensation committee, board of directors and in certain cases shareholder approvals (including special majority requirement in certain cases) for interested party transactions, we cannot be certain that the possible conflict of interests in any of these transactions and activities is fully eliminated. In addition, Mr. Rafi Amit acts as the Chief Executive Officer and Chairman of the Board of Directors of the Company, on a 75% of a full time position basis, as well as acting as Priortech's Chairman of the Board of Directors and providing consulting and management services to Priortech on a 25% of a full time position basis. Mr. Yotam Stern who acts as one of our Directors, holds several other positions in the Priortech group including the position of Chief Executive Officer at Priortech and at P.C.B Technologies Ltd., an Israeli public company controlled by Priortech. For more details regarding our senior management arrangements, see Item 6 B below - "Compensation – Employment Agreements".

We depend on a limited number of key personnel who would be difficult to replace.

Our continued growth and success significantly depend on the managerial and technical skills of the members of our senior management and key employees. If our operations rapidly expand, we believe that we will need to promote and hire qualified engineering, administrative, operational, financial and marketing personnel. In particular, we may find it difficult to hire key personnel with the requisite knowledge of our business, products and technologies. The process of locating, training and successfully integrating qualified personnel into our operations can be lengthy and expensive. During periods of economic growth, competition for qualified engineering and technical personnel is intense.

If we are classified as a passive foreign investment company, our U.S. shareholders may suffer adverse tax consequences.

Generally, if for any taxable year, after applying certain look-through rules, 75% or more of our gross income is passive income, or at least 50% of our assets (averaged quarterly) are held for the production of, or produce, passive income, we may be characterized as a passive foreign investment company, or PFIC, for U.S. federal income tax purposes. This characterization could result in adverse tax consequences to our U.S. shareholders, including gain realized on the sale of our ordinary shares being taxed at ordinary income rates rather than capital gain rates, and punitive interest charges being applied to such sales proceeds. Rules similar to those applicable to dispositions generally will apply to certain "excess distributions" with respect to our ordinary shares. U.S. shareholders should consult with their own U.S. tax advisors with respect to the U.S. tax consequences of investing in our ordinary shares.

Based on an analysis of our assets and income, we believe that in 2014 we were not a PFIC. We currently expect that we will not be a PFIC in 2015. However, PFIC status is determined as of the end of the taxable year and is dependent on a number of factors, including the relative value of our passive assets and our non-passive assets, our market capitalization and the amount and type of our gross income. Therefore, there can be no assurance that we will not become a PFIC for the year ending December 31, 2015 or in any future taxable year. For a discussion of how we might be characterized as a PFIC and the related tax consequences, please see in Item 10.E below "U.S. Federal Income Tax Considerations– Tax Consequences if We Are a Passive Foreign Investment Company".

Our share price and trading volumes have demonstrated significant volatility in the past and may continue to fluctuate in the future. Such share price volatility may cause additional exposure for securities class action litigation.

During the period from January 1, 2014 through February 28, 2015, the closing price of our ordinary shares ranged from $2.90 to $5.40 (See Item 9 A below- "Price History of Ordinary Shares"). Our ordinary shares may experience significant market price and volume fluctuations in response to numerous factors, many of which are beyond our control, such as the following:

- global economic conditions, which generally influence stock market prices and volume fluctuations;
- changes in expectations as to our future financial performance, including financial estimates or recommendations by securities analysts and investors
- quarterly variations in our operating results;
- market conditions relating to our customers' industries;
- announcements of technological innovations or new products by us or our competitors, in particular, speculation concerning the potential of our Gryphon System;

- operating results that vary from the expectations of securities analysts and investors;

- announcements of significant claims or proceedings against us and developments in such proceedings or adverse decisions in pending litigation matters;
- large block transactions in our ordinary shares;
- announcements by us or our competitors of significant contracts, acquisitions, strategic partnerships, M&A transactions, joint ventures or capital commitments;
- changes in the status of our intellectual property rights and patent litigation;
- additions or departures of our key personnel; and
- future offerings or sales of our ordinary shares.

Stock markets often experience extreme price and volume fluctuations. Market fluctuations, as well as general economic conditions, such as a recession, interest rate or currency rate fluctuations, political events or hostilities in Israel, the surrounding region or worldwide could adversely affect the market price of our ordinary shares.

In the past, securities class action litigation has often been brought against companies following periods of volatility in the market price of their securities, and one was brought against us. Although this claim was dismissed, we cannot guarantee that similar complaints would not be filed in the future.

Compliance with conflict mineral disclosure requirements will create additional compliance cost and may create reputational challenges.

Pursuant to Section 1502 of the Dodd-Frank Act, United States publicly-traded companies are required to disclose use or potential use of certain minerals and their derivatives, including tantalum, tin, gold and tungsten, that are mined from the Democratic Republic of Congo and adjoining countries and deemed conflict minerals.

These requirements necessitate due diligence efforts to assess whether such minerals are used in our products in order to make the relevant required annual disclosures. We filed our initial conflict minerals report on June 2, 2014. There are, and will be, ongoing costs associated with complying with these recent disclosure requirements, including diligence to determine the sources of those minerals that may be used or necessary to the production of our products. We may face reputational challenges that could impact future sales if we determine that certain of our products contain minerals not determined to be conflict free or if we are unable to verify with sufficient accuracy the origins of all conflict minerals used in our products.

Risks Relating to Our Operations in Israel

Conducting business in Israel entails special risks.

Our principal offices, sole research and development facility and one of our manufacturing facilities are located in the State of Israel. We depend on components imported from outside of Israel and almost all of our sales occur outside of Israel. Accordingly, we are directly influenced by the political, economic and military conditions affecting Israel. Specifically, we could be adversely affected by:

- hostilities involving Israel;
- the interruption or curtailment of trade between Israel and its present trading partners;

- a downturn in the economic or financial condition of Israel; and
- a full or partial mobilization of the reserve forces of the Israeli army.

Since the establishment of the State of Israel in 1948, a number of armed conflicts have taken place between Israel and its Arab neighbors. A state of hostility, varying from time to time in intensity and degree, has led to security and economic problems for Israel. Since September 2000, there has been a marked increase in violence, civil unrest and hostility, including armed clashes, between the State of Israel and the Palestinians, and acts of terror have been committed inside Israel and against Israeli targets in the West Bank and Gaza. In July 2006 there were extensive hostilities along Israel's northern border, with Lebanon, in proximity to where we are located, and during the past six years Israel was engaged in several armed conflicts in the Gaza Strip, most recently in July 2014. None of the above had any material impact on our operations. Further, since the beginning of 2011 there has been political turmoil and outbreaks of violence throughout the Middle East, for example in neighboring Syria, some of which ended in a revolutionary change of governments, such as in neighboring Egypt and Libya. The effects of the aforementioned political turmoil are yet to unfold but contribute to the general atmosphere of instability in the region. In addition, the threat of Iran becoming armed with nuclear weapons, with all that it entails, has gradually intensified. Increased hostilities, current and future armed conflicts, further adverse developments in other states in the region, or continued or increased terrorism could make it more difficult for us to conduct our operations in Israel, which could increase our costs and adversely affect our financial results. Furthermore, there are a number of countries, primarily in the Middle East, that restrict business with Israel or Israeli companies, and we are precluded from marketing our products to these countries. Restrictive laws or policies of those countries directed towards Israel or Israeli businesses may have an adverse impact on our operations, our financial results or the expansion of our business.

Our operations could be disrupted as a result of the obligation of our key personnel in Israel to perform military service. Some of our employees in Israel, including certain key employees, are obligated to perform annual reserve duty in the Israeli army and are subject to being called up for reserve duty at any time. The absence of one or more of our officers and key employees for significant periods of time due to military service could be disruptive to our operations.

The Israeli government programs and tax benefits in which we have participated in the past and in which we currently participate or from which we receive benefits require us to meet several conditions. These programs or benefits may be terminated or reduced in the future, which could increase our tax expenses.

We benefit from certain Israeli government programs and tax benefits, particularly from tax exemptions including "Approved Enterprise" status due to our manufacturing facilities in Israel. To be eligible for these programs and tax benefits or similar programs in the future, we must continue to meet certain conditions, including making specified investments in fixed assets and equipment. If we fail to meet such conditions in the future, these tax benefits could be cancelled, and we could be required to refund those tax benefits already received, if any. These programs and tax benefits may not be continued in the future at their current levels, and our requests for tax exemption on income from our manufacturing facilities may not be approved.

The government grants we received for research and development expenditures restrict our ability to manufacture products or to transfer technologies outside of Israel.

From our inception through 2000, we received government grants from the Office of the Chief Scientist of the Ministry of Industry and Trade (the "OCS"), for the financing of a significant portion of our product development expenditures. In March 2001, we commenced repayment of many of these grants pursuant to an understanding reached with the OCS. As of June 1, 2005, we had fully repaid our previously received grants from the OCS. Sela and Printar, from which we acquired businesses and assets, also received OCS grants. Except for special circumstances and if we obtain governmental consents and pay to the OCS amounts which may be substantial, the terms of these grants prohibit us from selling or transferring outside of Israel rights in the technology developed with the grants and allow sale or transfer of rights within Israel only with special governmental approvals, even after full repayment of the grants. Elements of our technologies, including in the areas of electronic hardware, image processing, electro-optics, physics and mechanics, were developed with OCS grants. In addition, we may only manufacture products developed

with these grants outside of Israel pursuant to the approval of a special governmental committee, and any approval of this nature may also require us to pay a further significant amount of royalties than the terms of the grants required, unless the amount of production outside Israel is less than 10% of the total production of those products from inception of their production until cessation thereof. The restrictions regarding the sale or transfer of technology or manufacturing rights out of Israel could have a material adverse effect on our ability to enter into strategic alliances or enter into merger or acquisition transactions in the future that provide for the sale or transfer of our technology or manufacturing rights.

Sela received government grants from the OCS for the financing of a significant portion of its product development expenditures in previous years. As of December 31, 2014 the amount of unpaid grants received, including interest accrued by Sela, amounted to $2.4 million. As of January 2015, as part of the transfer of the Sela division activity, all of Sela's outstanding liabilities to the OCS were assumed by the transferee.

As part of the acquisition of Printar's assets and certain liabilities, we assumed Printar's liability to the OCS. In addition, in 2009 and 2010 we received additional grants with respect to the development programs of the functional ink technology systems in the amount of $0.6 million. As of December 31, 2014, the amount of unpaid grants received, including interest accrued by Camtek and the liabilities assumed from Printar but not the amounts accrued by Sela, amounted to $6.0 million.

In 2010, a dispute has arisen between us and the OCS in Israel with respect to an amount of approximately $770,000 regarding repayment of an increased amount of grants pertaining to certain of our products, the manufacturing and assembly of which has been moved to a foreign subsidiary.

It may be difficult to enforce a U.S. judgment against us, our officers and directors and some of the experts named in this Annual Report or to assert U.S. securities law claims in Israel.

We are incorporated in Israel. Substantially all of our executive officers and directors and our Israeli attorneys are nonresidents of the United States, and a substantial portion of our assets and the assets of these persons are located outside the United States. Therefore, it may be difficult to enforce a judgment obtained in the United States against us or any of these persons, including one based on the civil liability provisions of the U.S. federal securities laws. Additionally, it may be difficult for you to assert U.S. federal securities laws claims or to enforce civil liabilities under U.S. federal securities laws in actions originally instituted in Israel.

Some provisions of Israeli law could inhibit the acquisition of us by others.

Some provisions of Israeli corporate law may have the effect of delaying, preventing or making more difficult a merger with, or acquisition of, us; see item 10.B-"Memorandum and Articles"-"Anti-Takeover Effects of Israeli Laws; Mergers and Acquisitions Under Israeli Law". In addition, Israeli tax law treats some acquisitions, such as stock-for-stock exchanges between an Israeli company and a foreign company, less favorably than U.S. tax laws. For example, Israeli tax law may, under certain circumstances, subject a shareholder who exchanges his ordinary shares for shares in another corporation to taxation prior to the sale of the shares received in such stock-for-stock swap. For more information on the provisions of Israeli law in these contexts, please see sections "Share Capital" and "Israeli Taxation."

Item 4. Information on the Company.

A. History and Development of the Company

Our legal and commercial name is Camtek Ltd. We were incorporated under the laws of the State of Israel in 1987. We operate under the Israeli Companies Law. See below in Item 4.C "Organizational Structure".

In our first years of operation, we provided manual optical inspection equipment to address the needs of the printed circuit board industry. In September 2001, we acquired a developer and producer of AOI systems for the semiconductor fabrication industry. This acquisition allowed us to enter the back end semiconductor inspection market. After a period of intense internal research and development, we shipped our first new Falcon system for the back end market in the semiconductor industry in the fourth quarter of 2003. The first revenue recognition of the Falcon system was in the second quarter of 2004. Applying our core technologies we have further introduced three

additional AOI product lines- the Condor, the Gannet and, in 2014, the Eagle. Sales of all four AOI product lines for the semiconductor industry have since accounted for a significant portion of our total sales. See below in Item 4.B "Business Overview."

In 2009 we entered into two new fields of activity as a result of our June 2009 acquisition of the assets and certain liabilities of Printar. Printar's two major fields of activity were: a functional ink technology system for application of identification nomenclature on certain printed circuit boards and designated ink ("FIT Legend System") and a functional ink technology system and designated solder mask ink for application during production of printed circuit boards. We evolved this technology after extensive research and development efforts into the Gryphon System. We have ceased manufacturing FIT Legend Systems, but still support an installed base of more than 17 active FIT Legend Systems and sell ink products used by FIT Legend Systems. Printar's technology could also be used in the future for various other applications in the field of electronic manufacturing. In 2014, based on the Company's annual impairment tests, no impairment charge was recognized for the goodwill or intangible assets. In 2013 we recorded an impairment of technology in the amount of $52,000 relating to obsolete FIT Legend System technology. In 2012 we recorded an impairment of goodwill and in process research and development in the amounts of $575,000 and $957,000, respectively, related to the Printar acquisition (see Note 9 – "Goodwill and Intangible Assets, Net", of the consolidated financial statements).

In 2009 we also completed the acquisition of Sela, which was engaged in the development, manufacturing and marketing of automated SEM (Scanning Electron Microscope) and TEM (Transmission Electron Microscope) sample preparation equipment, primarily for the front end semiconductor industry. Sela developed the Xact, a TEM sample preparation tool using adaptive ion milling (AIM™) technology. The first Xact system was sold in the first quarter of 2009, and sales of this system continued in 2010 and until 2013. The second generation of Xact was introduced in the fourth quarter of 2011. In 2014, based on the Company's annual impairment tests, no impairment charge was recognized for the goodwill or intangible assets. In 2013 and 2012 we recorded an impairment of intangible assets of $1.6 million and $1.5 million, respectively, due in part to the Sela acquisition. In the fourth quarter of 2013 the Company announced that other than sale and support of existing Xact products it will not continue with further development of its Xact product line. In January 2015, the Company concluded a definitive agreement for the transfer of the Sela division activity (assets and liabilities) to a company fully owned by Sela's long time business manager, thereby effectively terminating any and all involvement of the Company in the Sela business (the "Sela Transaction").

In July 2000, we sold 5,835,000 ordinary shares in an initial public offering, in which we received net proceeds of approximately $35 million. In August 2002, we sold 5,926,730 ordinary shares in a rights offering of ordinary shares to our then existing shareholders (of which 5,922,228 shares were sold to Priortech), in which we received net proceeds of $6.1 million. On August 23, 2005 we raised $5 million as a convertible loan from FIMI Opportunity Fund L.P and FIMI Israel Opportunity Fund, Limited Partnership (FIMI), which amount was repaid in full by August 2010. On April 30, 2006, we completed a private placement in which we issued 2,525,252 ordinary shares to Israeli institutional investors at a price of $5.94 per share, raising $14.5 million.

We have been a public company since July 2000. Our ordinary shares are dual listed on the Nasdaq Global Market and on the Tel-Aviv Stock Exchange (see below in Item 9.A. "Offer and Listing Details"). Our headquarters are located in Israel, and we currently have operations in the Asia Pacific region, North America and Europe.

For discussion of capital expenditures, see Item 5- "Operating and Financial Review and Prospects– Liquidity and Capital Resources."

Our principal executive offices are located in Ramat Gavriel Industrial Zone, P.O. Box 544, Migdal Ha'Emek 23150, Israel, and our telephone number is 011-972-4-604-8100. Our agent for service of process in the United States is Camtek USA, Inc., located at 2000 Wyatt Dr., Santa Clara, CA 95054, Tel: (408) 986 9640. Our website is located at www.camtek.co.il. The information on our website is not incorporated by reference into this Annual Report.

B. Business Overview.

Our Business

Camtek Ltd. provides automated and technologically advanced solutions dedicated to enhancing production processes, increasing products yield and reliability, enabling and supporting customers' latest technologies in the semiconductor fabrication and Printed Circuit Boards (PCB) industries.

Camtek addresses the specific needs of these interconnected industries with dedicated solutions based on a wide and advanced platform of technologies including intelligent imaging, image processing and functional 3D inkjet printing.

We design, develop, manufacture and market products mainly based on two core technologies: AOI and functional ink technology (“FIT”).

AOI systems are computerized systems that optically inspect various types of electronic product components for defects caused during the manufacturing process. Our AOI systems are used to enhance both production processes and yields for manufacturers in the semiconductor fabrication industry as well as the printed circuit board industry. Our systems provide our customers with a high level of defect detection ability, are easy to operate and offer high productivity. Our AOI products incorporate proprietary advanced image processing software and algorithms, as well as advanced electro-optics and precision mechanics. They are designed for easy operation and maintenance. In addition, our AOI systems use technology that enables our customers to handle a wide range of inspection and verification needs.

The Gryphon System's technology (system and process) is designed to provide a high performance one-step, environment-friendly and relatively low-cost process in comparison with traditional solder mask and legend application methods, and is our main FIT product. The process and system have been commercialized following the completion of final testing at two select customers' sites, and we believe that the technology can also be applicable in the future to various other applications in the field of electronic manufacturing. The Gryphon System and its proprietary technology enable us to offer to our customers in the printed circuit board industry a broader range of products, while relying on our existing operational, research and development, customer support and sales and marketing infrastructure.

Our global direct customer support organization provides responsive, localized pre- and post- sales support for our customers through our wholly-owned subsidiaries.

Our Markets

We target the semiconductor fabrication industry as well as the printed circuit board industry, all part of the electronic packaging industries and the electronics supply chain.

The Semiconductor Industry

The semiconductor manufacturing industry produces integrated circuits on silicon wafers; each wafer contains numerous integrated dices containing electronic circuits which are functional devices. AOI is implemented at various stages along the manufacturing process at the front end, mid-end and the back end. Camtek serves the mid and back end of the process starting with probe mark inspection after the testing of the individual dice, inspecting the finished wafers for defects, inspecting and measuring the bumps and conducting post dicing inspection. The surface inspection process looks for defects such as cracks, foreign materials or mechanical damage, and also ensures dimensional conformity, thus eliminating subsequent testing of defective products, increasing overall yield and reducing overall production costs.

In the fast growing advanced packaging market segment, the integrated circuits are attached to a substrate via an array of bumps, rather than being wire bonded. Wafers designed for such assembly interconnect go through a process in which solder bumps ranging from 2 to 300 microns in height, or gold bumps of about 15-20 microns tall, are plated or stenciled on pads on the face of the integrated circuits. Camtek AOI systems equipped with 3-D measurement capabilities are used to detect any missing, misplaced or deformed bump and to determine bumps conformity to shape and height specifications. Size, shape and placement deviations may cause damage to the integrated circuit or the

substrate during the packaging process, leading to device failure. Each wafer has several million bumps that need to be inspected and measured and the AOI is becoming crucial to the manufacturing process.

A fast growing segment is "micro-electro mechanical systems" ("MEMS") which is serving the mobile and automotive markets, utilizes materials, manufacturing technologies and facilities from the semiconductor industry to produce miniature mechanisms, such as inkjet print heads, accelerometers, image sensors, video projection devices, sensors and microphones. Many MEMS products are packaged between layers of glass while still at the wafer format, and diced in several steps afterwards. The MEMS manufacturing segment relies heavily on testing to ensure product performance and reliability. This testing may constitute a significant amount of the overall product cost. Camtek AOI is implemented at various stages along the manufacturing process to detect cracks, foreign materials or mechanical damage, as well as to confirm dimensional conformity, thus eliminating subsequent testing of defective products, increasing yield and reducing overall production costs.

The complementary metal oxide semiconductor image sensors ("CIS") is another growing market segment used for mobile devices, automotive and security products. The requirements of this market call for increasing the number of pixels per each sensor and in parallel reducing the size of each pixel.

These market requirements demand that the manufacturing process to have a high resolution inspection for every sensor. Camtek developed special capabilities to address this market and its AOI systems are used by the main CIS manufacturers.

The Printed Circuit Board and Integrated Circuit Substrate Industry

A printed circuit board is the basic platform that supports and interconnects a broad range of electronic components, such as integrated circuit devices, resistors, capacitors, coils and the like, and enables them to operate as an electronic system. Printed circuit boards consist of traces, or lines, of conductive material, such as copper, laminated on either a rigid or a flexible insulating base. These conductive lines provide electrical interconnections between the components. The trace integrity and conformance to exact dimensions are essential to the functioning of the electronic product. Imperfections in the various stages of the printed circuit board manufacturing process may result in defects or flaws, like open conductive lines, electrical short circuits, nicks and inappropriate line widths.

The trend towards compact, high-performance and highly reliable electronic products, such as mobile and smart phones, notebook computers, tablets, digital cameras, drives the demand for increased complexity and miniaturization of printed circuit boards. In response to this demand, printed circuit board manufacturers are producing multi-layer printed circuit boards with increasingly narrow and dense lines, as well as boards with higher layer counts. Multi-layer boards consist of several layers of circuitry laminated together to form a single board with both horizontal and vertical electrical interconnections. In addition, multi-layer boards are continuing to evolve with new technologies. Currently, high-end printed circuit boards (excluding substrates) use conductive lines and spaces of 15 to 120 μm (microns). The scan time required to inspect a given printed circuit boards surface increases substantially in relation to the reduction in line width.

The manufacturing process for multi-layer boards is comprised of three stages: the manufacture of production tools, including artwork and masks; the production of inner layers and their lamination into a single board; and the production of external layers. The majority of AOI systems in the printed circuit board industry are used for inspection of inner layers. Today, the number of inner layers in typical multi-layer printed circuit boards usually ranges from 4 to 14, though certain high layer-count boards may consist of as many as 52 layers. Inspection by AOI systems during the manufacturing process for the detection of defects in the inner layers prior to the lamination process is crucial so that any defective individual layers may be repaired or replaced while still accessible. Once the multi-layer board is laminated, any undetected defect in any specific layer will result in discarding the entire board.

Traditional solder mask application includes solder mask coating, in various methods, and photo imaging. Traditional solder mask application is a five step process involving high production costs, time-consuming procedures and several

production steps. This process includes solder mask coating (in various methods) following by a drying stage, Photo imaging step (exposure) follows by a development process and legend tiles printing (in various methods). Now commercially available, Camtek's Gryphon System (and, as of March 2015, the system's new version – the "Gryphon SL") is a full digital manufacturing station, for PCB Solder mask & Legend which allows significant simplification of the solder mask process by the elimination of all the above steps due to its both FIT to Image alignment capabilities and its direct deposition (by inkjet printing) of solder mask and legend tiles, which leads to faster cycle time and reduced operational costs. In addition our current version of the Gryphon can also print the legend ink within the same process as the solder mask application thus eliminating the need for additional system in the process of PCB manufacturing.

The pursuit of electronic products that deliver more functionality, and at the same time are smaller, lighter and less power-consuming, drive the semiconductor industry to produce integrated circuits requiring more input/output connections. These dies must fit into smaller packages. The integrated circuit substrate industry, in turn, supports these trends with high-density interconnect substrates that serve as carriers for the integrated circuit dice, providing it mechanical and electrical connection to the printed circuit board. These substrates feature conductive lines that are 5 to 25 µm (microns) in width. Although integrated circuit substrates are produced using technologies derived from those used for the production of traditional printed circuit boards, the complexity and high density of these substrates require separate, specialized manufacturing facilities.

The die is connected to the upper side of the substrate, either by wire bonding by means of thin metal wires, or by "flipping" the integrated circuit and directly connecting conductive bumps on its face to a matching array of pads or bumps on the substrate. The latter technology is known as flip chip die attach ("Flip-Chip"). The die substrate is connected to the printed circuit board via an array of conductive solder balls, known as a ball grid array.

The complexity of integrated circuit substrates requires advanced inspection systems with high magnification power for detecting minuscule defects that hinder production yields. Optical inspection of integrated circuit substrates is implemented along the manufacturing process, where the substrates are still in panel form, similar to printed circuit board, and at the end of the production process, where the substrates are cut to strips or packed in trays. Due to the high integration level of today’s electronic products, defective substrates that pass undetected, may render the entire product unusable; if assembled in a mission-critical system, they may cause a catastrophic failure.

Product Lines

Our AOI systems consist of:

- An electro-optical assembly unit, either movable or fixed, which consists of a video camera, precision optics and illumination sources. The electro-optical unit captures the image of the inspected product;
- A precise, either movable or fixed table, that holds the inspected product; and
- An electronic hardware unit, which operates the entire system and includes embedded components that process and analyze the captured image by using our proprietary algorithms.

The inspected product is placed on a designated platform and is scanned under the optical assembly unit. The optical assembly unit then captures images of the product, while the electronic hardware unit processes the image using the analysis algorithms. Detected discrepancies are logged and reported as defects per the user preferences. The image of the defect is immediately available for verification by the system operator. Our systems can also compile and communicate statistical reports of inspection findings via the customer’s factory information system.

We offer a broad range of systems for automated optical inspection of semiconductor wafers, integrated circuit substrates and printed circuit boards. We invest significant resources in research and development to provide our customers with advantageous performance, low cost of ownership, high reliability and ease of operation. We believe that a significant part of our competitive advantage and of our ability to adapt our technologies to evolving market needs comes from our design philosophy and applicable know-how in basing our products on software-intensive architectures.

AOI Systems for the Semiconductor Industry

Eagle

The Eagle AP is designed to support the fast growing advanced packaging market, using state of the art technologies, both software and hardware, that deliver superior 2D and 3D inspection and metrology capabilities on the same platform. The advanced packaging market in particular uses a wide spectrum of bump types and sizes. The Eagle AP meets the current and future requirements in the inspection and metrology including measurement of bumps down to 2µm (microns) and providing high throughput.

The Eagle-i is Camtek's most advanced system for 2D inspection and provides high volume production inspection and metrology solutions at extremely high throughput. It can be used for a wide variety of inspection steps including operational quality control, probe mark inspection, post dicing and reconstructed wafers and pre- and post- bumped wafers. Eagle-i has high resolution optics, advanced image processing and algorithms, flexible software and multiple handling options.

Condor

The Condor is designed to meet the current inspection needs of the semiconductor industry. The Condor, through its state of the art algorithms and advanced hardware configuration, is designed to enhance the 2D and 3D detection abilities and increased throughput. The Condor includes 2D inspection and metrology abilities combined with 3D metrology capabilities such as bump, micro bump and through silicon via ("TSV") measurements.

Gannet

The Gannet system is designed for the front end market of the semiconductor industry. The Gannet's advanced algorithms and inspection capabilities enable it to detect defects in the die, which, if left undetected, may cause failure. In addition, inspection data can be used by customers to monitor and characterize several production processes.

Falcon

Our Falcon systems are principally designed for the back end market of the semiconductor industry. The Falcon's advanced algorithms and inspection capabilities enable its dedicated models to detect defects in the die, which, if left undetected, may cause failure. In addition, inspection data can be used by customers to monitor and characterize several wafer finishing processes, troubleshoot functional issues or control the integrity of the interconnect and performs various metrology tasks.

AOI Systems for the Printed Circuit Board Industry

Our AOI products for this industry consist of four product lines: the Phoenix, Dragon and Orion for the inspection of inner and outer layers of printed circuit board panels and ultra-fine-line integrated circuit substrate and large area masks ("LAM") dedicated for inspection of artwork.

Phoenix

The Phoenix product family, introduced in November 2011, is designed to support a broad range of the most demanding printed circuit board and integrated circuit substrate applications, while keeping pace with the dynamic technology changes in the industry. It enables customers to increase AOI room total yield and offers high performance

in all AOI aspects. Phoenix models are optimized for specific printed circuit board technology ranges – from mainstream circuits of typically 50 µm (microns) conductor line width, up to high density substrates having 5 µm (microns) wide conductive lines. The Phoenix product family is enhanced with Spark, which is Camtek's unique and powerful detection engine that provides high detection capabilities, while minimizing false calls. Spark's open architecture software enables easy adaptation to new applications and technology, and supports critical dimensions detection.

Dragon

Dragon systems are high-throughput, automation-ready systems for inspection of all printed circuit board types in a mass production environment. Dragon models are optimized for specific printed circuit board technology ranges, from mainstream circuits of typically 100 µm (microns) conductor line width, up to high density substrates having 12 µm (microns) wide conductive lines. All Dragon models are designed to interface with automated material handling mechanisms provided by us or other automation suppliers. We believe that the combination of detection ability, scanning speed, real-time data collection for process control and automated material handling deliver outstanding value to customers. Some models of the Dragon product family are enhanced with Spark. The Dragon was first introduced in March 2003.

Orion

Orion systems are stand-alone AOI systems for high volume inspection of all printed circuit board types designed to operate in "Inspectify™" mode of operation. Inspectify™ is a unique mode of operation enabling the operator to perform verification immediately after inspection on the same system, thus saving time and eliminating handling-related defects. The Orion family has evolved gradually since its introduction in 1999. All Orion models retain an ergonomic user interface that supports high productivity and flexibility, allowing successive on-line inspection and verification, or solely inspection followed by off-line verification on a separate station. Like the Dragon family, Orion models are dedicated for various printed circuit board technology ranges. Some models of the Orion product family are enhanced with Spark.

LAM

The LAM inspection system is specially designed for main-stream LAM inspection. It offers advanced detection ability on LAM with down to 25 µm (microns) line to space width technology. The LAM incorporates advanced technology innovations to ensure the level of detection that these fine masks require at this critical production stage. Since large area masks are made of glass and transparent for light, the LAM inspection system contains specially designed image acquisition system, where the mask under inspection is located in between illumination sources and the digital camera.

Verification Systems

The CVR-100 is a stand-alone verification system designed for verification of panels after inspection on the Phoenix, Dragon or Orion AOI equipment.

Direct Functional Ink Technology (FIT) (previously referred to as Digital Material Deposition (DMD) technology)

Gryphon System

The Gryphon System is designed to replace the conventional solder mask and legend application lines for prototypes and high mix low volume production. The Gryphon System offers manufacturers flexible and high-performance digital printing technology solution, accompanied by a wide range of cost effective, and technological benefits.

The Gryphon System incorporates state of the art printing technology, using a specially developed hybrid ink which was tailored to the tough requirements of the printed circuit board industry. In addition, as of March 2015, the Gryphon SL System features two-color printing capabilities enabling both solder mask and legend tiles in a one stop manufacturing station. Following the successful completion of beta testing at two selected customers' sites, the Gryphon System has been fully commercialized.

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Customers

Our customer base includes the majority of the largest printed circuit board manufacturers worldwide and 23 semiconductor manufacturers, among them outsourced semiconductor assembly and test (OSAT), integrated device manufacturers and wafer level packaging subcontractors. Our customers, many of whom have multiple facilities, are located in 32 countries throughout Asia, Europe and North America. In 2014, 2013 and 2012, no individual customer accounted for more than 10% of our total revenues. In the integrated circuit substrate industry, our customers are typically dedicated substrate manufacturers, but also include large printed circuit board manufacturers who have separate substrate manufacturing facilities. Our integrated circuit substrate customers are located predominantly in Taiwan and the Asia Pacific region. In the semiconductor manufacturing industry, we target wafer manufacturers and companies involved in the testing, assembly and packaging of semiconductor devices. In the front end market of the semiconductor manufacturing industry, we target wafer manufacturers and companies involved in the device manufacturing processes.

The following table shows our revenues classified by geographical region for each of the last three years:

	Year Ended December 31,		
	2014	2013	2012
	U.S. Dollars (In thousands)		
China and Hong Kong	28,526	25,889	25,008
Taiwan	17,495	14,543	11,292
United States	12,518	11,705	9,482
Asia – Other	11,336	6,072	10,739
Korea	8,889	15,691	17,004
Western Europe	5,739	6,519	6,998
Japan	3,204	4,010	2,370
Rest of the world			