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RESEARCH REPORT

Camtek Ltd.

July 28, 2004

Symbol (NasdaqNM)	CAMT	Fiscal Year Ending: December 31				
Industry:	Optical Inspection	Year	EPS	P/E	REVS	PSR
Recent Price:	\$4.96	2001 A	\$ (0.17)	---	\$ 44.1	3.1 x
52-Week Price Range:	1.01 - 7.87	2002 A	\$ (0.39)	---	\$ 22.6	6.1 x
Target Price (12 months):	\$6.50	2003 E	\$ (0.06)	---	\$ 31.1	4.4 x
Avg. Daily Vol. (30 day):	55,800	2004 E	\$ 0.34	14.6 x	\$ 69.0	2.0 x
		2005 E	\$ 0.50	9.9 x	\$ 87.5	1.6 x

Balance Sheet Data 3/30/04 (mil)		Ownership and Valuation		Current Rating History	
Cash Equivalent:	\$ 12.8	Shares Outstanding (mil):	27.9	Date Assigned:	7/28/04
Working Capital:	\$ 30.9	Inside Ownership:	83%	Price at Rating:	\$ 4.96
Long-Term Liabilities:	\$ 2.3	Institutional Ownership:	3%	Original Price Target:	\$ 9.00
Shareholders' Equity:	\$ 40.2	Equity Market Value	\$ 138.2	Time Frame:	12 months

Initial Report

All figures in U.S. dollars unless otherwise indicated.

Rating: Buy

We initiate coverage on Camtek Ltd. with a **Buy** rating and price target of \$6.50. Camtek designs, develops manufactures and markets technologically advanced and cost-effective automated optical inspection systems and related products, providing yield enhancement solutions that detect defects and ensure quality during the manufacturing process in the printed circuit board industry, high-density interconnect substrate industry, and the semiconductor manufacturing and packaging industries. The Company is based in Migdal Ha'emek, Israel, and has approximately 290 employees worldwide.

Basis for Rating

Second Largest AOI (Automatic Optical Inspection) Player Globally

With an installed base of around 860 active units in 33 countries, Camtek holds approximately 30 - 35% of the global PCB (Printed Circuit Board) AOI market. Camtek was a late entrant into the PCB AOI market, but the Company has been able to penetrate many major Tier-1 PCB makers. The Company's success among Tier-1 PCB makers has been a function of its products' accuracy, resolution, and pricing. Today, over 50% of sales are already repeat orders and about 50% of all systems are sold to the top 100 PCB manufacturers world-wide.

PCB AOI: Attractive Market with Strong Growth Potential

We estimate aggregate sales among all PCB AOI players in 2003 as approximately \$150 million. Our estimate includes sales of plotters, some CAD/CAM software, and LDI (Laser Digital Imaging) systems, but it does not include maintenance contracts. Strong technology drivers such as increasingly complex printed circuit boards with increasingly finer lines, sophisticated semiconductor substrates and packaging, combined with high manufacturing costs and intensifying competitive pressures, should continue to drive strong demand for AOI.

Microelectronics-Packaging Division (MEP): Second Growth Engine Ready to Start

Camtek's strategy has been to diversify the product portfolio away from the increasingly cyclical PCB AOI market and to enter the microelectronic and semiconductor packaging markets, where the Company can leverage the superior know-how

in optoelectronics and mechanical engineering. Camtek's two flagship products, Falcon and Pegasus, target 2-D and 3-D wafer surface inspection and inspection of advanced semiconductor substrates, respectively. The Company plans to generate the first significant revenues in the MEP division in 2004E.

MEP Presents Potential Upside

We believe that Camtek's demonstrated success in expanding into microelectronics and semiconductor packaging should have a very positive impact on the Company's valuation as demonstrated by the significant premium mustered by AOI players with more diversified product footprint and a focus on other higher-growth, high-margin areas such as flat-panel AOI. While AOI penetration among PCB manufacturers is already quite high, with the technology being well established as a must for quality purposes, AOI in other markets such as electronic assembly, microelectronics and semiconductor packaging is still relatively new and offers considerable potential for the vendors targeting the market. Camtek has proven in the PCB AOI market that the Company can compete against more established competitors, and we are hopeful about the Company's prospects. We do not incorporate any incremental revenues from the MEP division into our forecast at this stage.

Strong Competitive Position

Camtek continued to spend aggressively on R&D during the recent slump and today the Company has the most diversified product portfolio ever. Today, Camtek has, in our view, established itself as the second largest AOI PCB vendor. We do not expect Camtek to enter other more developed AOI market such as flat-panel display and electronic assembly through internal development. Our analysis – which is not adjusted for Orbotech's sales from plotter, CAM, and LDI product lines – indicates that Camtek has not lost any market share to Orbotech since 4Q 2002. However, any pronouncements on market share gains and losses in the AOI business have historically been fraught with problems as very few AOI companies publish their results.

Return to Operating Profitability in 3Q 03

Camtek's sales suffered from a slump in demand for PCB AOI systems between 2Q 2001 and 4Q 2002. In 3Q 2003 the Company returned to operating profitability (\$0.2 million) and bolstered the balance sheet with a \$6.1 million private offering. As of 1Q 04 the Company had \$12.8 million in cash and \$2.3 million in debt. We anticipate the company's cash position to weaken in the coming quarters as Camtek's strong sequential growth should drive increasing working capital needs.

Expect Strong Sales Ramp-Up in 2004E

We are forecasting revenue growth of 122% in 2004E and 27% in 2005E, respectively. In the PCB AOI division, which should remain the core revenue driver over the next two years, Camtek, should benefit from increasing factory utilization rates, PCB capacity build out, strong technology drivers, and the accelerating replacement cycle as AOI systems are beginning to wear out after two years of very depressed spending among PCB manufacturers.

Valuation

AOI is very much a niche market with very few publicly traded companies, so finding peers is a challenge. As Table 1 indicates, Camtek is trading at a significant discount to peers such as Orbotech, the most important valuation benchmark, in our view, and to other AOI companies such as Photon Dynamics (flat-panel AOI), and CyberOptics.

We argue that Camtek should no longer be trading at a discount to Orbotech, as Camtek's growth prospects are particularly strong over the next two years and in spite of Orbotech's more diversified product footprint. We establish a fair equity value per share of \$6.50, which corresponds to P/S 03 and P/S 04E of 2.5x and 2.0x, respectively.

**Table 1. Camtek Ltd.
Peer Analysis**

	Ticker	Price	Market Cap.	P/E 04	P/E 05	P/ Sales 04	P/Sales 05
Camtek	CAMT	4.7	128	13.7	9.5	1.9	1.5
Orbotech	ORBK	16.2	520	19.1	12.9	1.8	1.5
Photon Dynamics	PHTN	24.4	406	27.7	13.6	3.2	2.4
CyberOptics	CYBE	17.9	152	13.7	13.1	2.7	2.1
Amphenol	APH	29.2	2574	17.3	14.9	1.8	1.6
AVX Corporation	AVX	12.6	2179	26.7	16.1	1.5	1.3
Harman International	HAR	84.1	5554	38.2	30.9	2.1	1.8
August Technology	AUGT	8.6	152	16.1	8.6	1.9	1.3

Source: Bloomberg, JM Dutton

Camtek Ltd. – Company Background

Camtek Ltd. was established in 1987, and through 1994 produced semi-automatic systems for the optical testing of printed circuit boards. Initially, the Company focused on developing lower-end semi-automatic AOI systems. During the second quarter of 1999, the Company introduced its third generation of products with the launch of its Orion family of six AOI systems, allowing it to effectively compete in the high-end/high-volume printed circuit board manufacturers market. The Orion line provides important improved performance and detection, allowing it to detect defects in technology down to 0.6 mil lines. The Company went public in July 2000.

PCB AOI Technology

On a high level, an AOI system incorporates an image acquisition unit (typically multiple off-the-shelf cameras from Dalsa or some other manufacturer) and a processing unit, which compares the acquired image of a PCB's circuitry with some circuit reference design. The acquired image data is compressed at extremely high frame rates and stored. In general terms, three elements define the quality of an AOI unit:

- **Image acquisition capability and lighting**, in particular. Diffusive, or side lighting, is especially difficult to implement. Multisource lighting is critical for 3-D inspection.
- **Algorithms** that eliminate the number of false calls. AOI systems must exhibit a minimal number of false calls on the fastest manufacturing lines so as not to produce unnecessary and costly work stoppages.
- **Productivity** as defined by throughput. Most of the AOI companies are positioned along the throughput-versus-resolution spectrum. The greater the resolution, the slower the throughput of the system.

Typically, AOI systems are installed at multiple points off-line on large-volume PCB production lines where manual inspection becomes unfeasible due to the complexity of the boards and the speed of the manufacturing process. In the manufacturing process, CAD data gets transferred to a plotter, which plots the circuitry of the board onto a substrate, and then the circuitry is etched on the substrate in a chemical process. Defective PCBs are diverted to a verification station, where they are either fixed or rejected. The most common defects include opens, short-circuits, and line-width variations, particularly in the more complex PCBs, where circuit lines can be as thin as 1 mil. AOI units are usually deployed for inspection of inner layers, pre-solder masks and pre-assembly.

Divisional Overview

Camtek's core competencies are in the areas of optoelectronics, system integration and mechanical engineering. The Company's CTO, Roni Flieswasser, joined Camtek in 1994 from Orbotech. After the recent reorganization, Camtek is comprised of two divisions:

- The **AOI PCB Division** focuses on developing AOI solutions for PCB manufacturing. In 2003, the AOI PCB division – including the sales of the Pegasus and Orion Fine-line systems-generated 100% of sales.
- The recently created **Microelectronic and Packaging Division (MEP)** develops AOI solutions for the microelectronic (inspection of advanced substrates) and semiconductor packaging (2-D wafer surface and 3-D wafer surface inspection, diced wafer 2-D inspection) industries (2D wafer surface and 3D wafer surface inspection, diced wafer 2D inspection). We expect the division to generate its first significant revenues in 2004E as it ramps up sales of the newly developed Falcon AOI unit.

Acquisition of InspecTech

Camtek's strategy has been to diversify away from the sole reliance on PCB manufacturing into new emerging markets such as inspection of advanced substrates and advanced semiconductor packaging.

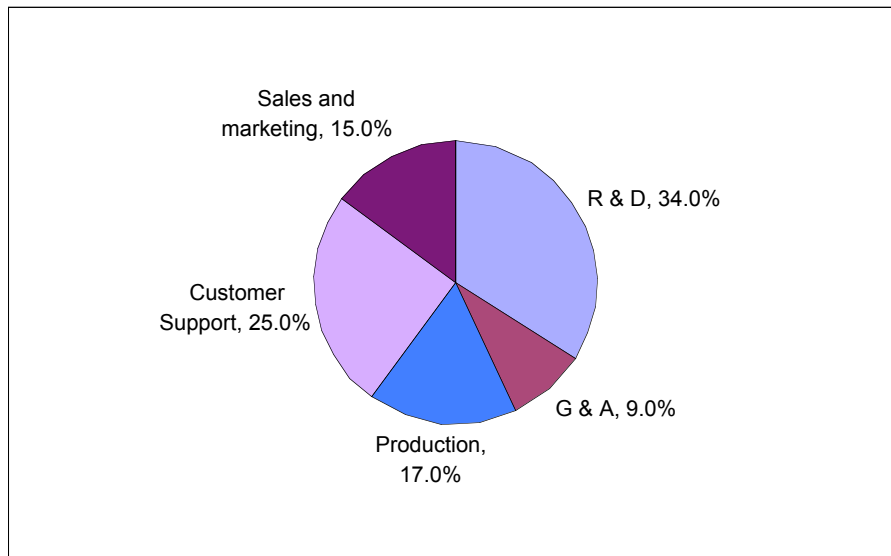
In 2001 Camtek acquired InspecTech, an Israel-based company of approximately 20 employees focused on developing AOI solutions for the microelectronics and semiconductor industries, for \$2.25 million in cash and \$2 million in assumed debt. The acquisition, at least theoretically, appeared like a good fit at the time, especially as it provided Camtek with 3-D flip-chip inspection technology that was going to be implemented for 3-D bump inspection. However, we argue, the acquisition turned out to be somewhat of a disappointment as InspecTech's technology was not quite ready for prime time yet. Camtek did manage to sell a few systems from InspecTech, but the sales volume was below the initial projections.

However, the acquisition provided Camtek with significant know-how and ownership of technology and manufacturing right to three AOI systems:

- the Kerf Inspection System (KIS) for the detection and analysis of defects caused during the wafer dicing process,
- the Bump Inspection System (BIS) for the inspection of surface defects and the inspection and measurement of bumps on wafers and
- the Wafer Inspection System (WIS) for wafer surface inspection at different stages of the dicing process.

Since 2001 Camtek has invested extensive research and development efforts to further develop the core technology on which these systems were based. Camtek's Falcon and Gemini systems are effectively positioned to replace the BIS and the WIS systems from InspecTech, respectively.

**Chart 1. Camtek Ltd.
Workforce Breakdown**



Source: Company data

Sales and Distribution

Camtek has a truly global footprint, with a direct sales organization spanning all major industrial manufacturing centers globally. The Company’s channel is totally direct, with the exception of Japan (as a result of Dainippon Screen’s virtual market domination). AOI systems must be supported by a direct sales organization and strong service support as AOI systems do require quite extensive maintenance. According to Camtek, approximately 50% of customers today are signing long-term maintenance contracts.

Customers

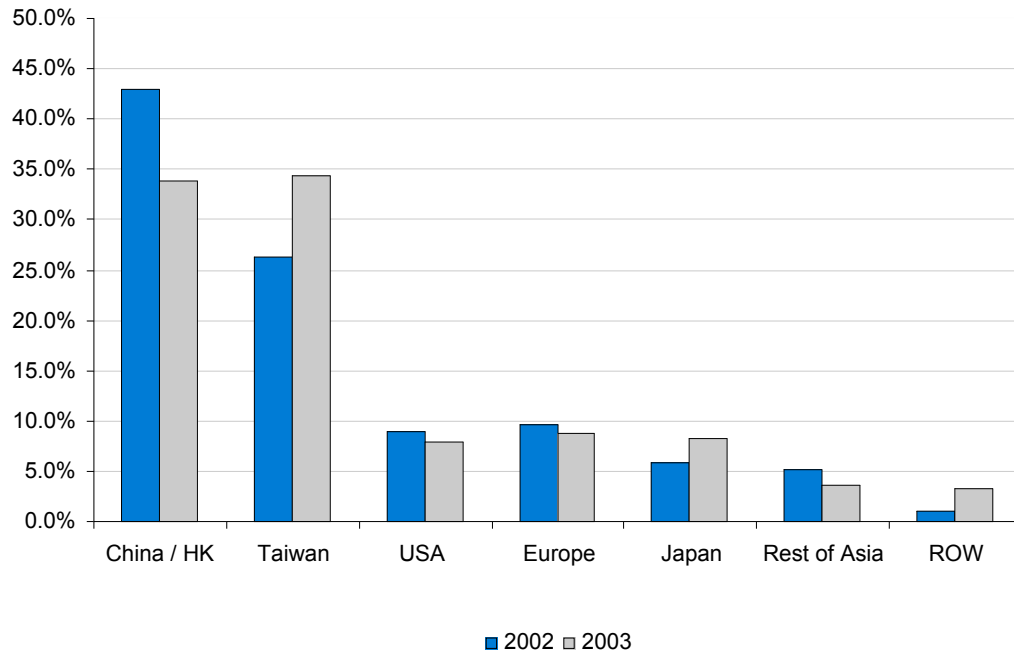
At the beginning of the nineties, Camtek’s customer base was weighted towards smaller PCB manufacturers who were extremely price-sensitive as they struggled to maintain margins competing against the quickly consolidating Tier-1 and Tier-2 PCB manufacturers. Also, they did not require as much as automation in material handling. Today, the Company is already a well-established AOI supplier to most of the 100 top PCB manufacturers (around 50% of total sales) with the total installed base of approximately 860 active units worldwide.

Geographic Sales Distribution: PCB AOI Market Shifts to China and Taiwan

We estimate the total size of the PCB AOI equipment market at approximately \$150 million in 2003, including plotters and LDI systems. Over the last two years a few forces have changes the competitive landscape of the market.

Significantly, China has already become the single most important market. In the past, Chinese PCB manufacturers focused on the lower-end of PCB manufacturing. However, more recently they have increasingly migrated to higher-layer-count boards. The migration has driven strong demand for optical inspection. Chinese manufacturers achieve yields in the range of 70–80% but they still remain profitable as a function of the lower labor costs. Rising labor costs should further extend the market opportunity for AOI.

**Chart 2. Camtek Ltd.
Geographic Sales Distribution (2002–2003)**



Source: Company data

Conversely, the US and European markets have shrunk as some, especially lower-end PCB manufacturing, continue to migrate to Asia. However, we expect Europe to remain an important market as European PCB manufacturers, such as AT&S and Aspocomp, are focusing on the very high-end of PCB manufacturing and should continue to require high-quality AOI systems.

Camtek has only been partially successful in penetrating the mostly high-end Japanese market for two reasons: (1) Dainippon Screen’s market domination (40% market share) and (2) a lack of a strong direct local distribution network.

Overview of the AOI Market

Printed Circuit Board AOI (PCB AOI)

High false call rates and slow speed hindered growth in the AOI market when the first systems were released commercially in the early eighties. Since then, AOI technologies have matured and PCB manufacturers perceive AOI as an indispensable part of their process control and cost reduction strategies.

The rationale for AOI includes lower wastage cost from defective boards, quicker turnaround times, and considerably greater quality. PCB manufacturers in the higher end of the market typically experience defect rates as high as 20%. With AOI they are theoretically able to reduce wastage by as much as 90%.

Growing Installed Base

We estimate the total installed base of PCB AOI systems at approximately 3,000, with an increasing share of them located in Asia. The market is characterized by high barriers to entry (detection algorithms, optics, and system integration), low-cost manual substitutes, and the increasing power of buyers as a result of the ongoing consolidation in the PCB and electronic assembly manufacturing industries. An average AOI system sells for anywhere between \$150,000 on the low

end to \$350,000 on the high end. Cheaper systems are available from the secondary market. Some AOI manufacturers purchase second-hand AOI units in the secondary market, refurbish them and sell them on, which is a relatively high-margin activity.

Camtek also develops and manufactures verification and repair systems for customers who require a stand-alone offline verification station. This is a value-added product to be added to Camtek's Dragon systems. Typically, a customer will purchase anywhere between one and two verification stations per AOI system.

Technology Drivers

In our view, the market's growth should increasingly be a function of technological innovation and replacement, rather than increasing penetration. This is particularly true in PCB manufacturing, where penetration among the major players is already approaching 100%. In contrast, smaller Tier-3 PCB manufacturers continue to migrate to AOI as they are trying to focus on higher valued-added, more complex boards in order to compete more successfully with the larger players and to avoid the ongoing market consolidation.

The most recent Productronica, an industry trade show, demonstrated that the product roadmap in PCB AOI continues to be defined by faster speeds, lower false call rates, and greater resolutions, with the greatest technology trade-off between speed and resolution. The high-end PCB AOI systems are already capable of detecting PCB circuit defects in the range of 0.6 mil.

In general terms, we believe that the following trends should continue to drive strong demand for PCB AOI:

- **Increasing complexity of PCBs**, with circuit lines becoming progressively thinner while manufacturing processes have lagged in terms of accuracy. The greater board complexity has increased the square area of PCB panels that get optically inspected in the manufacturing process.
- **Consolidation in the PCB industry**, with larger companies committing larger budgets to testing.
- **OEM-driven ISO quality requirements**. Large OEMs, based in Europe and the United States, impose stringent quality requirements upon their PCB manufacturing partners in Asia, effectively forcing them to invest in AOI.
- **Above-average growth in the multi-layer, higher-density segments of the PCB markets**. The global PCB industry, according to Allied Business Intelligence, has grown at around 6% per annum. In contrast, the higher-layer segment of the market, defined as those producing boards with six layers and plus, has grown by around 11 to 12%.

High Density Interconnect Substrate Industry

In the microelectronic and semiconductor packaging industry, AOI is still relatively new and still requires extensive market development. However, more sophisticated semiconductor packaging technologies, complex manufacturing processes, and growing competitive pressures should continue to push AOI toward the mainstream. Also, high growth rates in market for CSPs (Chip Scale Packaging) and BGAs (Ball Grid Arrays) should create additional AOI opportunities.

Semiconductor Manufacturing And Packaging Industry

Some of the opportunities in the short term include kerf inspection, which is the inspection of the cut at dicing in semiconductor manufacturing and the proliferation of larger, twelve inch silicon wafers and their high cost. Camtek's Falcon systems target the final inspection of silicon wafers in the semi industry. So far Camtek has sold one Falcon to Cypress Semiconductor and has a few systems in evaluations.

Camtek: Product Roadmap

PCB AOI Products

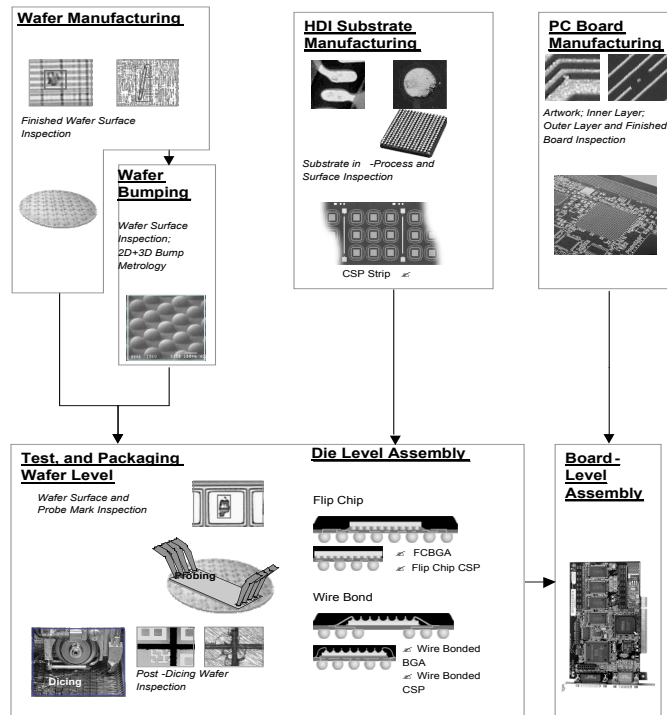
The first AOI systems that Camtek introduced to the market at the beginning of the nineties were largely manual and targeted low-volume PCB manufacturing. This has given rise to an incorrect view of Camtek as a lower-end player, which has not been the case since the launch of the Orion family of AOI systems in 1998. Orions catapulted Camtek into mainstream PCB manufacturing and positioned the Company as the direct competitor to other more established AOI vendors such as Orbotech, Lloyd Doyle and Dainippon Screen.

The early Orions required manual PCB panel loading by a human operator. In 2000 Camtek developed Vega, an Orion-based AOI machine with automatic panel handling. The market's response to Vega has been rather cool and the Company has sold only around 15 systems globally. The newer Dragon AOI system is characterized by higher effective operating resolution and faster speed and represents a considerable improvement over Vega.

Similarly, the market's response to Pegasus, the Company's unit for a final inspection system of advanced substrates, has been rather disappointing, partly due to the market's immaturity. Pegasus is fully automatic and locates surface defects, like scratches and discoloration, over the metallization area in advanced semiconductor substrates. The Company's Phoenix incorporates some of the technology acquired from InspecTech and is an improved version of Pegasus, especially in terms of resolution.

**Chart 3. Camtek Ltd.
MEP: Product Positioning**

Wafer-to-Board Assembly Process Flow



Source: Company data

MEP Products

In the MEP division, Falcon is targeted at the market for 2-D and 3-D flip-chip inspection. The Falcon system has the ability to inspect unmounted semiconductor wafers in the final manufacturing stages. It detects surface defects such as scratches, contamination and probe misplacement, as well as bump size and placement deviations. Camtek expects first sales in late 2004. Up to now the company has sold one Falcon and has a few in evaluations with major semiconductor manufacturers.

**Table 2. Camtek Ltd.
Product Overview**

PCB Product Division			Launch
Orion Product Line	Manufacturers of high-end printed circuit boards	Inspection and verification of printed circuit boards	1998
Sirius System	Manufacturers of high-end printed circuit boards that require offline verification	Offline verification of printed circuit boards	2001
Lynx System	Manufacturers of high-end, back-plane printed circuit boards	Inspection and verification of printed circuit boards	2003
Dragon System	Mass production manufacturers of high-end printed circuit boards that require unattended operation	High-speed unattended inspection of printed circuit boards	2003/2004

Source: Company data, JM Dutton

Other Products

In our view, Camtek is not going to enter other AOI markets – such as electronic assembly and flat-panel display – through internal product development. We believe the Company’s management remains focused on opportunities in the PCB, microelectronic and semiconductor packaging industries and simply lacks R&D resources to start product development in yet another area.

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Dragon System	Mass production manufacturers of high-end printed circuit boards that require unattended operation	High-speed unattended inspection of printed circuit boards	2003/2004
HDI-S Product Division			Launch
Pegasus FI-S System	Manufacturers of HDI-S	High-speed surface inspection of both sides of HDI-S	2002
Orion Fine Line System	Manufacturers of HDI-S and manufacturers of very dense and complex printed circuit boards	Inspection of HDI-S and very dense and complex printed circuit boards	2003
Semiconductor Manufacturing and Packaging			
KIS System	Manufacturers of semiconductors	Inspection of wafer dicing	2001
Falcon System	Manufacturers of semiconductor wafers and bumping service providers	Inspection of surface defects and 2D and 3D metrology of wafers in their final manufacturing stages.	2003

Source: Company data, JM Dutton

In the flat-panel AOI market, the Company’s acquisitions target is limited to Kubotech (Japan), which is, apart from Orbotech, the only other significant AOI player. But we view this scenario as highly unlikely due to the required financing. In electronic assembly, there is a range of potential partnership candidates but the assembly market has failed to live up to its potential and we do not view it as an attractive market opportunity at this stage.

Competitive Overview

Camtek’s largest competitors include Orbotech (Israel), Dainippon Screen (primarily in Japan), Lloyd Doyle (UK), and Mania Barco (Belgium). Some of the new entries include Nippon Avionics, Kyoei Sangyo, Taiyo Industrial, and Fujitsu Automation.

From our viewpoint, the PCB AOI market is not a winner-takes-all market. Based on the feedback we have received from the channel, Camtek has made considerable progress in positioning itself as a strong second AOI vendor in the PCB AOI market, which should easily accommodate two to three strong players—with Orbotech and Camtek increasingly dominating the space.

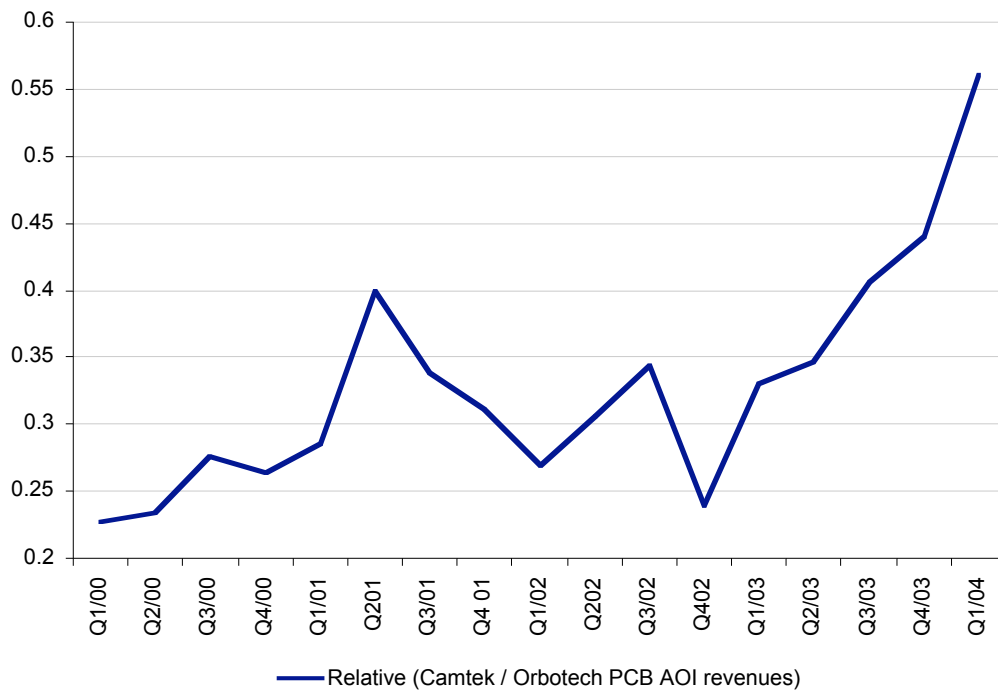
Historically, the AOI market was less cyclical than the PCB industry as AOI penetration was fairly low. Today, in contrast, we argue that the industry has become considerably less immune to cyclical demand swings as AOI penetration is

considerably higher, with nearly all Tier-1 and Tier-2 PCB manufacturers deploying AOI systems at least at one stage in the production process. There has normally been a 6 to 9 month lag between a capital expenditure and an actual capacity increase.

The pricing pressure has increased as a function of the growing secondary market and as a result of more AOI companies focusing on the high-growth Chinese market. We believe that sales of lower-end, lower-margin systems fuelled the bulk of both Camtek’s and Orbotech’s sales during the recent market slump.

Technological barriers to entry are high and are defined by technology, both software (proprietary algorithms with possibly low false call rates) and hardware. As a result, there have not been any successful lower-end players emerging in Asia. As the PCB market migrates to HDI (High Definition Interconnect) boards, we argue that the barriers are going to increase.

**Chart 4. Camtek Ltd.
Camtek vs Orbotech PCB AOI Equipment Revenues**



Source: Company data

The Main Competition: Orbotech

Orbotech is Camtek’s single largest competitor with a commanding share of the AOI market. Also based in Israel, Orbotech controls approximately 40 - 45% of the global PCB AOI market. This company’s strong market position is a function of the management’s early entry into and aggressive exploitation of multiple markets (flat-panel, LDI, electronic assembly).

Orbotech’s PCB AOI product line covers both the lower and higher end of the market. Also, the company is one of the few successful manufacturers of laser digital imaging systems (LDI) for quick-turn PCB production. LDI systems eliminate the chemical process in PCB manufacturing; instead, they employ either solid-state or gas-based lasers to etch the circuitry directly onto a substrate. The LDI market is still in its infancy but represents an interesting opportunity in the long term.

(Camtek has been reselling Pentax’s LDI systems in the United States and parts of Asia with little success. We do not believe that Camtek’s strategy will include developing a proprietary LDI system in the near future.)

In addition, Orbotech controls anywhere between 70% to 80% of the market for flat-panel display optical inspection and around 15% of the AOI assembly markets. All in all, Orbotech should remain Camtek’s primary competitor, whose advantages include a very strong distribution network, long-standing customer relationships, and the ability to deliver a comprehensive PCB manufacturing solution, which, apart from LDI and AOI systems, includes CAD/CAM software (through a strategic partnership with Valor) and plotters. Camtek has been reselling Fuji’s plotters in all international markets for a few months now.

Other Competitors

From among the other AOI companies, Dainippon Screen has a strong market position in Japan, where PCB production focuses on the higher end of the market. Dainippon Screen’s AOI employ more sophisticated image acquisition technologies with multiple cameras, which defines their premium cost. It is still uncertain whether Dainippon’s recent targeting of the Taiwanese market should increase the competitive pressure on Camtek in that market.

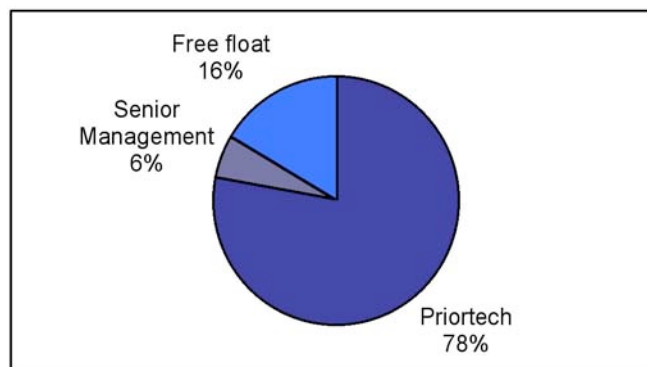
Lloyd Doyle, a private company based in the UK, whose annual revenue is approximately \$12-\$15 million, competes against Camtek primarily in Europe: Lloyd Doyle’s expansion into Asia has been only partially successful.

In the Microelectronic division, August Technology (U.S.) and Robotic Vision Systems (U.S.) are Camtek’s primary competitors in the microelectronics industry. In the semiconductor packaging category, the largest competitors include Orbotech, Robotic Vision Systems and Utechzone. Also, Camtek’s Falcon AOI system will compete against systems from a number of small Japanese manufacturers with varying capability. Camtek’s product differentiation in the semiconductor packaging category lies in the ability to offer an integrated inspection system that incorporates both 2-D and 3-D inspection capability in a single unit.

Shareholder Structure

After the recent offering, in which Camtek raised \$6.1 million, PriorTech, the mother company, holds 78% of Camtek. PriorTech was created after a group of investors, including Rafi Amit and Yotam Stern, acquired control over PCB Technologies in 1988. Based on our discussions with the management, we believe that PriorTech would be willing to increase the free float.

**Chart 5. Camtek Ltd.
Shareholder Structure**



Source: Company data

Financials

Sales Outlook

We argue that the recently demonstrated strength in the networking and consumer electronics sectors should have a very positive impact on demand for AOI systems. The AOI market has historically benefited from strong demand for PCBs in three main categories: communication, automotive, and consumer electronics (approximately 80% of total PCB manufacturing). PCB manufacturers have typically purchased AOI equipment when their capacity utilization has reached approximately 90% and the book-to-bill ratio exceeded 1.

**Table 3. Camtek Ltd.
Sales Growth Forecast**

	2002	Q1/03	Q2/03	Q3/03	Q4/03	2003	Q1/04	Q2/04E	Q3/04E	Q4/04E	2004E	Q1/05E	Q2/05E	Q3/05E	Q4/05E	2005E
Sales	22.6	5.8	6.4	8.5	10.4	31.1	13.1	17.1	18.7	20.2	69.0	21.0	21.6	22.2	22.7	87.5
growth %	-48.7%	24.0%	10.6%	32.1%	23.1%	37.8%	25.2%	31.0%	9.0%	8.0%	121.7%	4.0%	3.0%	3.0%	2.0%	26.8%

Source: Company data, JM Dutton

As a result, we forecast sales growth of 122% in 2004E, which should be a function of the following factors.

- **Improving economic environment:** with the PCB book-to-bill ratio improving and the key network infrastructure and personal computers sectors recovering from the recent slump.
- The announced **capacity increases**, particularly in China and Taiwan.
- **Accelerating replacement cycle:** the installed base of AOI units has grown old over the last three years, when equipment replacement was minimal.

MEP Division: Incremental Revenue from Falcon Could Drive Some Upside

With a price tag of \$500,000 – \$700,000, Falcon has the potential emerge as a very powerful growth engine over the next two years. However, in the short term, Falcon’s margin contribution should be limited, as Camtek is likely to offer significant discounts in the initial launch stages to gain some market penetration. We do not incorporate any significant margin contribution from Falcon into our 2004E forecast.

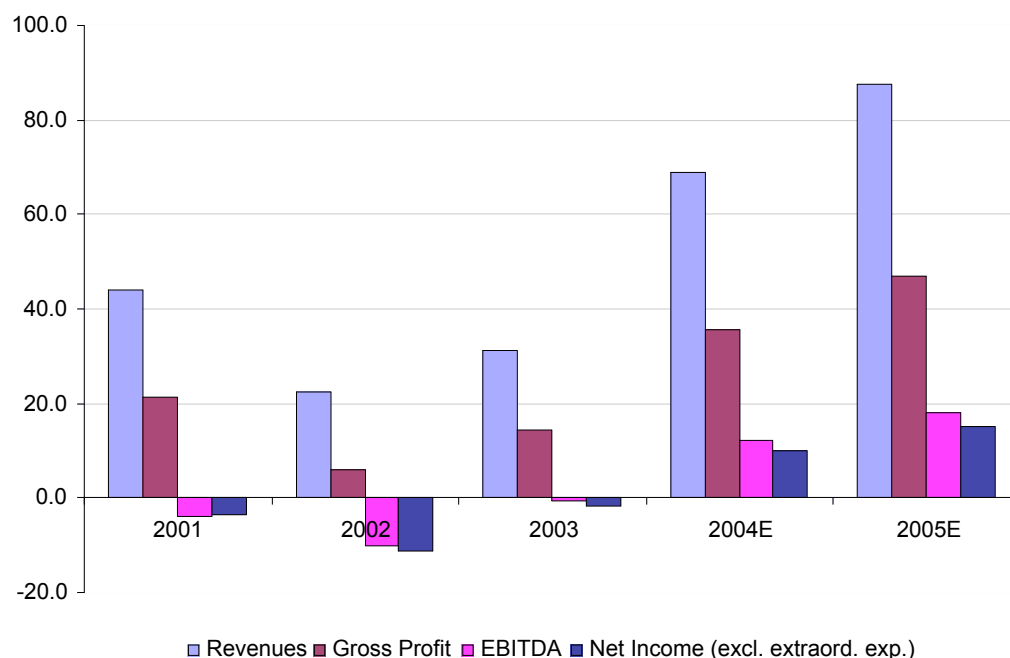
Contribution from Maintenance Contracts

Camtek derives approximately 5 - 7% of revenues from maintenance contracts. We believe the contribution should remain at the same level, as the Company has not insisted on customers’ signing maintenance contracts, while the competitors have historically been far less flexible. With maintenance contracts being perceived by customers as a necessary evil, Camtek’s soft approach, we believe, has been instrumental in increasing the Company’s market share.

Gross Margins

Camtek assembles their systems at their manufacturing facility in Israel, where the Company has approximately 45 employees in manufacturing and testing. Camtek’s BOM (Bill of Materials) is anywhere between 10% and 15% lower than for other PCB AOI players, which, apart from the higher product software content, has driven above-average gross margins.

**Chart 6. Camtek Ltd.
Financial Snapshot**



Source: Company data, JM Dutton

Operating Expenses

We forecast increasing R&D expenses as the Company plans to ramp up R&D and to reverse the 10% salary cut instituted during the market slump. Also, we expect higher SG&A due to the marketing costs associated with Falcon’s market launch.

Balance Sheet

Camtek ended 1Q 04 with approximately \$12.8 million on the balance sheet. The Company does not have any off-balance sheet agreements. We anticipate the Company’s cash position to weaken in the coming quarters as Camtek’s strong sequential growth should drive increasing working capital needs.

**Table 4. Camtek Ltd.
Balance Sheet Data**

Balance Sheet Data	Y1998	Y1999	Y2000	Y2001	Y2002	Y2003	1Q2004
Cash and cash equiv.	0.3	0.5	9.8	7.0	2.9	12.4	12.8
Working capital	0.0	-0.3	45.5	34.9	30.2	29.4	30.9
Total assets	12.9	18.6	65.7	61.3	48.9	54.2	56.7
Total debt	6.9	8.5	0.9	4.8	3.9	2.3	2.3
Shareholders’ equity	2.4	3.4	49.8	46.0	40.3	38.9	40.2

Source: Company data, JM Dutton

**Chart 7. Camtek Ltd.
Cash Flow Snapshot**



Source: Company data, JM Dutton

Management

Rafi Amit has served as General Manager or Chief Executive Officer since January 1998 and has served as Chairman of the Board of Directors since 1987. Since 1981, Mr. Amit has also served as the President, General Manager and director of Priortech and has been the Chairman of the Board of Directors of Priortech since 1988. Mr. Amit has a B.Sc. in Industrial Engineering and Management from the Technion - Israel Institute of Technology. Rafi Amit is the brother of Moshe Amit.

Moshe Amit has served as Executive Vice President and Chief Financial Officer since February 2001. Prior to that, from March 2000 to February 2001, Mr. Amit served as Vice President, Sales and Subsidiaries, and from October 1994 to March 2000, he served as Vice President, Sales and Marketing. From 1987 until 1994, Mr. Amit served as the President of PCE, Inc., a New Jersey-based company affiliated with Camtek and, which until 2001, sold and serviced printed circuit boards and AOI systems. Mr. Amit has a B.Sc. in Industrial Engineering and Management from the Technion-Israel Institute of Technology. Moshe Amit is the brother of Rafi Amit.

Yotam Stern has served as Executive Vice President, Director of Business and Strategy since February 2001 and as a member of the board of directors since 1987. From January 1998 until February 2001, Mr. Stern served as Chief Financial Officer. Mr. Stern has also served as the Chief Financial Officer of Priortech since 1981 and has served as a director of Priortech Ltd. since 1985. Mr. Stern has a B.A. in Economics from the Hebrew University of Jerusalem.

Amir Gilead has served as Vice President (MEP) Division since November 2002. From November 2001 until November 2002, Mr. Gilead served as Vice President, Semiconductor Packaging (HDI) Division, and from March 2000 until November 2001, he served as Vice President, Marketing. From 1999 until March 2000, Mr. Gilead served as President and Chief Executive Officer of Advanced Automation International Inc., a startup in the semiconductor equipment manufacturing industry. From 1990 until 1999, Mr. Gilead held various executive positions with Kulicke & Soffa, a

semiconductor equipment manufacturer. From 1984 until 1990, Mr. Gilead held various management positions with Optrotech Ltd., which subsequently merged with Orbotech. Mr. Gilead has a B.Sc. and an M.Sc. in electrical engineering from the Technion - Israel Institute of Technology.

Adi Corem has served as Vice President, Operations since January 2001, and from November 1998, he served as Operations Manager. From 1988 to November 1998, Mr. Corem served as the Operation Manager of Volta Carmiel Ltd., a manufacturer of plastic products. From 1984 to 1988, Mr. Corem worked as a Projects Manager in Elbit Systems Ltd., a military technology developer and producer. Mr. Corem has a B.Sc. in Industrial Engineering from the Technion - Israel Institute of Technology.

Jacob Yavor has served as Vice President, Printed Circuit Boards Division since May 2002. Prior to that time and since January 2001, he served as a Vice President. From 1998 until January 2001, Mr. Yavor served as Regional Manager in Camtek's subsidiary, Camtek USA, Inc. From 1987 to 1998, Mr. Yavor held various positions in Camtek Ltd., including Regional Manager, Worldwide Customer Support Manager, Products Manager and Deputy Manager of the Electronics Department. Mr. Yavor has a B.Sc. in Computers Engineering from the Technion - Israel Institute of Technology.

Roni Fliesswasser established the then European branch of Cantek in September 1995, prior to the establishment of Camtel Europe NV. Prior to joining Camtek, Mr. Flieswasser worked with AOI systems at Orbotech, and was a partner for four years in a software company specializing in business applications.

Roy Porat has served as President of Camtek Hong Kong since September 2003. From 2001 until September 2003, Mr Porat served as President of our US subsidiary, Camtek USA, Inc. From 1999 to 2000, Mr Porat served as Chief Executive Officer of Aeronautics Ltd. From 1994 to 1999, Mr Porat served in various executive positions at Camtek's affiliate, PCB Technologies. Mr. Porat has a B.Sc. in Industrial Engineering from Technion – Israel Institute of Technology.

**Table 5. Camtek Ltd.
Quarterly Income Statement & Estimates
(US\$, millions)**

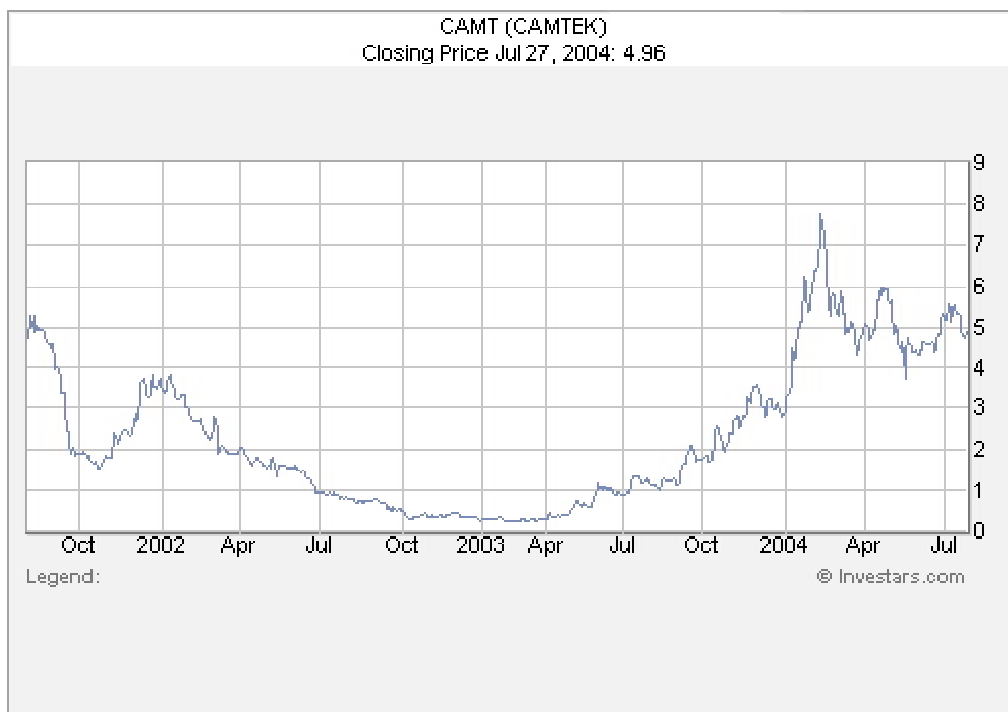
	2002	Q1/03	Q2/03	Q3/03	Q4/03	2003	Q1/04	Q204E	Q3/04E	Q404E	2004E	Q1/05E	Q205E	Q3/05E	Q405E	2005E
Sales	22.6	5.8	6.4	8.5	10.4	31.1	13.1	17.1	18.7	20.2	69.0	21.0	21.6	22.2	22.7	87.5
growth %	n.m.	24.0%	10.6%	32.1%	23.1%	37.8%	25.2%	31.0%	9.0%	8.0%	121.7%	4.0%	3.0%	3.0%	2.0%	26.8%
Total COGS	14.6	3.5	3.7	4.5	5.1	16.8	6.1	8.3	9.1	9.7	33.3	10.0	10.1	10.3	10.3	40.7
% sales	64.8%	60.3%	56.9%	52.6%	48.5%	54.0%	46.7%	48.7%	48.9%	48.1%	48.2%	47.5%	46.8%	46.2%	45.6%	46.5%
Gross profit	8.0	2.3	2.8	4.0	5.4	14.3	7.0	8.8	9.5	10.5	35.8	11.0	11.5	12.0	12.3	46.8
% sales	35.2%	39.7%	43.1%	47.4%	51.5%	46.0%	53.3%	51.3%	51.1%	51.9%	51.8%	52.5%	53.2%	53.8%	54.4%	53.5%
Research & Development expenses, net	7.2	1.6	1.5	1.4	1.4	5.9	1.7	2.1	2.4	2.5	8.6	2.5	2.6	2.6	2.7	10.3
% sales	31.8%	27.2%	22.7%	16.7%	13.4%	18.8%	12.8%	12.3%	12.9%	12.2%	12.5%	11.9%	11.8%	11.7%	11.7%	11.8%
S, G & A	10.1	2.0	2.5	2.6	3.2	10.0	3.5	4.1	4.5	4.7	16.8	5.0	5.2	5.2	5.3	20.7
% sales	44.5%	34.2%	38.5%	30.1%	30.5%	32.2%	26.9%	23.9%	24.1%	23.3%	24.4%	23.8%	23.8%	23.4%	23.4%	23.6%
Operating income (loss)	(9.3)	(1.3)	(1.2)	0.0	0.8	(1.6)	1.8	2.6	2.6	3.3	10.3	3.5	3.8	4.2	4.4	15.9
% sales	-41.2%	-21.7%	-18.1%	0.6%	7.6%	-5.1%	13.6%	15.1%	14.1%	16.4%	14.9%	16.7%	17.6%	18.7%	19.4%	18.1%
Financial income net	0.3	(0.1)	0.1	0.1	0.1	0.2	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1
% sales	1.5%	-1.2%	1.7%	1.7%	0.5%	0.8%	0.5%	0.1%	0.1%	0.1%	0.2%	0.1%	0.1%	0.1%	0.1%	0.1%
Other income net	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
% sales	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Income before tax	(9.0)	(1.3)	(1.1)	0.2	0.8	(1.3)	1.8	2.6	2.7	3.3	10.4	3.5	3.8	4.2	4.4	16.0
% sales	-39.7%	-22.9%	-16.4%	2.3%	8.1%	-4.3%	14.1%	15.2%	14.2%	16.5%	15.1%	16.8%	17.7%	18.8%	19.5%	18.2%
Taxes on income	0.5	0.0	0.0	0.0	0.2	0.2	0.5	0.0	0.0	0.0	0.5	0.0	0.0	0.3	0.4	0.8
% sales	5.8%	0.0%	0.0%	0.0%	26.5%	16.7%	29.0%	0.0%	0.0%	0.0%	5.1%	0.0%	0.0%	8.0%	10.0%	4.9%
Minority interest	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Extraordinary expense	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0
Net income for the period	(9.5)	(1.3)	(1.1)	0.2	0.6	(1.6)	1.3	2.1	2.7	3.3	9.9	3.5	3.8	3.9	4.0	15.2
% sales	-42.0%	-22.9%	-16.4%	2.3%	6.0%	-5.0%	10.0%	12.3%	14.2%	16.5%	14.3%	16.8%	17.7%	17.3%	17.5%	17.3%
# shares	24.13	27.00	27.05	27.05	27.05	27.04	27.05	27.59	28.15	28.71	27.88	29.00	29.29	29.58	29.87	29.43
# shares fully diluted	24.13	27.00	27.05	27.39	27.57	27.25	27.87	28.42	28.99	29.57	28.71	29.87	30.17	30.47	30.77	30.32
EPS	-0.39	-0.05	-0.04	0.01	0.02	-0.06	0.05	0.08	0.09	0.12	0.36	0.12	0.13	0.13	0.13	0.52
EPS (fully diluted)	-0.39	-0.05	-0.04	0.01	0.02	-0.06	0.05	0.07	0.09	0.11	0.34	0.12	0.13	0.13	0.13	0.50

Source: Company data, JM Dutton

**Table 6. Camtek Ltd.
Income Statement (US\$, millions)**

Income Statement	2001	2002	2003	2004E	2005E
Revenues	44.1	22.6	31.1	69.0	87.5
COGS	22.7	16.4	16.8	33.3	40.7
Gross Profit	21.4	6.1	14.3	35.8	46.8
R&D	12.7	7.2	5.9	8.6	10.3
S, G & A	13.2	10.1	10.0	16.8	20.7
Operating Income	-4.4	-11.1	-1.6	10.3	15.9
Depreciation and Amort.	0.6	0.9	0.8	1.7	2.2
EBITDA	-3.8	-10.2	-0.8	12.0	18.1
Financial Income (net)	1.4	0.3	0.2	0.1	0.1
Other Income (Expenses)	0.0	0.0	0.0	0.0	0.0
Income before Taxes	-3.0	-10.8	-1.3	10.4	16.0
Taxes on Income	0.2	0.5	0.2	0.5	0.8
Net Income before minorities	-3.2	-11.3	-1.6	9.9	15.2
Minorities	0.0	0.0	0.0	0.0	0.0
Extraordinary items	0.5	0.0	0.0	0.0	0.0
Net Income (excl. extraord. exp.)	-3.7	-11.3	-1.6	9.9	15.2
# shares					
simple	22.04	24.13	27.04	27.88	29.43
diluted	22.04	24.13	27.25	28.71	30.32
EPS					
simple	-0.17	-0.47	-0.06	0.36	0.52
diluted	-0.17	-0.47	-0.06	0.34	0.50
Margin analysis	2001	2002	2003	2004E	2005E
Gross	48.6%	27.2%	46.0%	51.8%	53.5%
EBIT	-10.0%	-49.1%	-5.1%	14.9%	18.1%
EBITDA	-8.6%	-45.2%	-2.5%	17.4%	20.6%
Net income	-8.3%	-50.0%	-5.0%	14.3%	17.3%

Source: Company data, JM Dutton



**J. M. Dutton Ratings Breakdown - All Covered Companies
as of 7/27/04**

J.M. Dutton & Associates Current Ratings Distribution	
Rating	% Total
Sell	1.37
Strong Buy	12.33
Buy	30.14
Strong Speculative Buy	10.96
Speculative Buy	24.66
Neutral	17.81
Avoid	2.74

Analyst: Rafael K. Kapelinski

Rafael Kapelinski most recently was Vice President, Equity Research at Credit Suisse First Boston, London, England. At CSFirst Boston, his coverage universe encompassed data networking, enterprise, and communication software, where he ranked #3 in the 2001 Institutional Investor survey. He began his career with CSFirst Boston in Zurich, Switzerland, initially with their asset management group. He received an MBA from the University of Washington, attended The Swiss Banking Institute, University of Zurich, Switzerland as an Exchange Scholar, and received his MA in American and English Literature from University of Nicholas Copernicus, Torun, Poland.

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