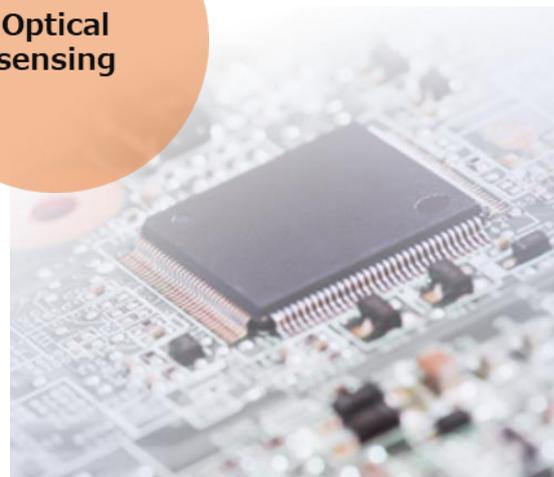
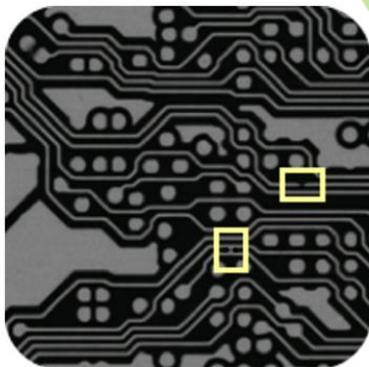
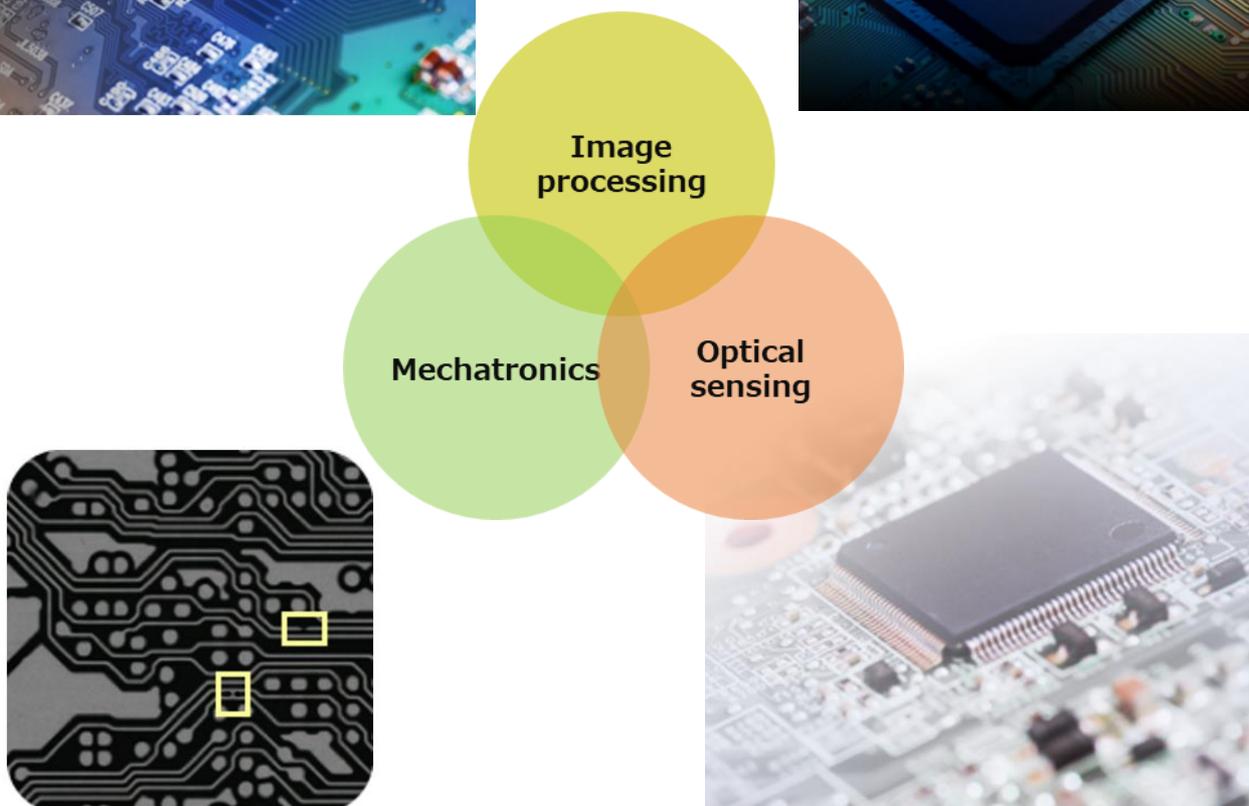
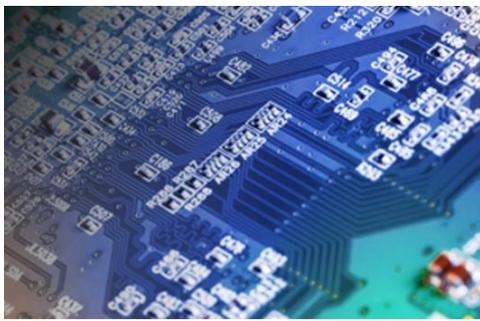


INSPEC INC. [6656]

Report on the Medium-term Business Plan and its Contribution to Corporate Value

Becoming a global No. 1 in the rapidly-growing ultra-high-end optical visual inspection area

From a global niche top company to a global major top company, with a profit growth of 6.5 times



October 2017

Contents

- 1. Executive Summary 1**
- A global top player in the niche market of ultra-high-end optical visual inspection 1**
 - Optical visual inspection equipment that guarantees quality of advanced electronic devices is the company’s main business..... 1
 - Optimization of three element technologies helped us to establish a global niche top position, which is difficult to be imitated..... 2
- Increasing needs in optical visual inspection 2**
- Medium-term Business Plan and its contribution to corporate value..... 2**
 - From a global niche top player to a global major top player, driven by higher growth in the ultra-high-end market 2
 - Growth in scale led to increase operating profit by 6.5 times from fiscal 2017 to fiscal 2020 3
- 2. Corporate overview, history, and founding story 4**
- Corporate overview and history 4**
- Founding story: From a subcontractor to an R&D-oriented manufacturer..... 6**
 - 1984 to 1995: From foundation to growth and then shrinkage as a subcontractor business for a major manufacturer..... 6
 - 1995 to 2001: Entry into the business of optical visual inspection equipment for semiconductor substrates 6
 - Conversion from a subcontractor to an R&D -oriented manufacturer ...6
 - Making use of automation, controlling, and image processing technologies: satisfying need for more fine, consecutive, automated, high-speed, and all-product inspection6
 - 2001 to 2009: Growth driven by the optical visual inspection business for LCDs and devices..... 7
 - Strengthened capacity to respond to technologies for mounting on flexible films7
 - Global top share in TAB tape testing equipment, high growth, and the listing in the small-cap Mothers market in 20068
 - 2009 to 2013: Shrinkage caused by the global financial crisis and groundwork for next growth 8
 - 2013 to present: Aiming to become a global top player in the niche market of optical visual inspection (AOI and AVI) 9
 - 2015 to present: Transforming into a group management arrangement to make a leap forward as an R&D-oriented company10
 - The Digital Pathology Business aims to achieve strong growth by using INSPEC’s image processing technologies..... 10
 - The Precision Substrate Manufacturing Related Business will generate various synergies..... 10
- Business structure 12**
 - Business structure by segment.....12

- 3. Mission, Vision, Values to offer, and Business model 14**
 - Mission: Contribute to development and welfare of the society 14**
 - Vision: A unique company to take up challenges in the high-end technical domains..... 14**
 - Value to offer: ultra-high-spec inspection by optimizing three technologies combined..... 14**
 - Business model: Enhancing competitiveness based on its hard-to-imitate strength..... 15**
 - Offering comprehensive and best solutions in visual inspection 15
 - Business model is hard to be imitated 15
 - Undertaking research on AI to be fully prepared against an entry risk of other companies 16
- 4. Market and competitive environment..... 17**
 - Favorable market environment..... 17**
 - The Semiconductor Package Substrate and Precision Substrate Inspection Equipment Related Business.....17
 - Precision Substrate Inspection Equipment (Flat Bed Type) 17
 - Roll-to-Roll Type Inspection Equipment (FPC and COF areas) 17
 - Inline Testing Equipment 17
 - Market size and competitive environment..... 18**
 - Competitive environment: INSPEC is the only company in the ultra-high-end area for both AOI and AVI.....18
- 5. Medium-term Business Plan 19**
 - From a global niche top player to a global major top player, driven by higher growth in the ultra-high-end market19
 - Growth in scale led to increase operating profit by 6.5 times from fiscal 2017 to fiscal 202020
- 6. Strategy to create corporate value; capital policy; and shareholder return policy 21**
 - Strategy to raise three types of corporate value in the Medium-term Business Plan21
 - Asset structure and shareholder return policy22
 - The company intends to improve financial stability and pursue opportunities to realize corporate value and high growth, and hence for the time being is expected to continue making no dividend payment. 22
- Disclaimer..... 23**

1. Executive Summary

A global top player in the niche market of ultra-high-end optical visual inspection

Optical visual inspection equipment that guarantees quality of advanced electronic devices is the company's main business

INSPEC has evolved as a specialist in optical visual inspection equipment, which enables high-volume, high-speed, automatic inspection of a wide range of products, such as high-performance semiconductor substrates of electronic circuit lines, and products with spaces of 10 μm or less (L/S=100/100) and flexible precision substrates. Automated Optical Inspection (AOI) is a type of pattern inspection equipment used in manufacturing processes and Automated Final Visual Inspection (AVI) is used at final post-production inspection.

Roles and market segments of optical visual inspection equipment

Pattern width of electronic circuits	Flexible electronic components	Market segments of optical visual inspection equipment								
<p>Line of 15μm and Space of 15μm : L/S=15/15 Width of a pattern or a line: about 15μm</p>	<p>Roles of optical visual inspection equipment</p> <p>Miniaturized PCBs L/S=30/30 or less</p> <p>Flexible PCBs</p> <p>High-volume, high-speed, automated inspection of all products</p> <p>Optical visual testing equipment is indispensable</p>	<table border="1"> <thead> <tr> <th>Market segment</th> <th>L/S</th> </tr> </thead> <tbody> <tr> <td>Ultra-high-end</td> <td>5/5 or less</td> </tr> <tr> <td>High-end</td> <td>10/10 or less</td> </tr> <tr> <td>General</td> <td>30/30 or less</td> </tr> </tbody> </table> <p>The degree of difficulty rises in case of flexible substrates.</p>	Market segment	L/S	Ultra-high-end	5/5 or less	High-end	10/10 or less	General	30/30 or less
Market segment	L/S									
Ultra-high-end	5/5 or less									
High-end	10/10 or less									
General	30/30 or less									

The optical visual inspection equipment market (AOI and AVI) can be segmented into ultra-high-end, high-end, and general categories. Inspection becomes technologically more difficult if products are more miniaturized and more flexible. We specialize in the high-end and ultra-high-end segments. We have the best technological capacity in the ultra-high-end flexible segment, and have acquired a global niche top position.

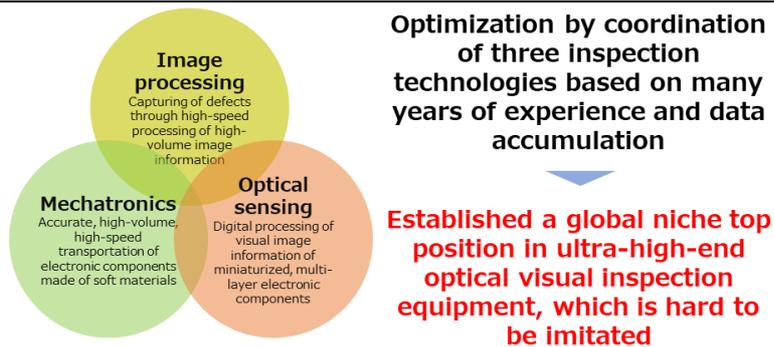
Present optical visual inspection equipment market (AOI and AVI) and INSPEC's positioning



Optimization of three element technologies helped us to establish a global niche top position, which is difficult to be imitated

The strength of INSPEC is to optimize the system of the following three technologies, by using hardware and software technologies, and lighting technology, based on long experience and data accumulation. As this strength is difficult to be imitated, we have established a global niche position, specialized in the ultra-high-end segment.

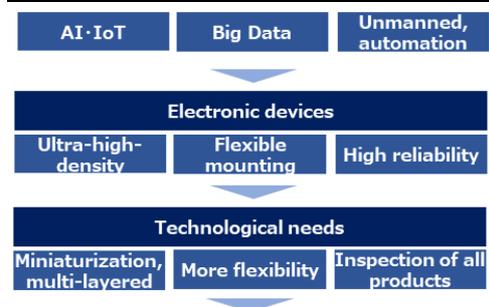
Three element technologies that support INSPEC’s positioning



Increasing needs in optical visual inspection

Industry 4.0 or the Fourth Industrial Revolution has created continual advance in electronics, such as Artificial Intelligence (AI), Internet of Things (IoT), use of Big Data, automation, and higher resolution. In addition, diffusion of wearable devices, for example, requires flexible mounting of components in devices, leading to a growth in demand for finer, more flexible electronic devices. Moreover, for electronic devices to be highly reliable, meaning to be stable, durable, and safe over the long term, and to have guaranteed quality, there is an increasing need for high-volume, high-speed automatic inspection of all products. Against such a background, the need for optical visual inspection has been rapidly increasing.

Latest technology needs and inspection needs



Increase in need for optical visual inspection

Medium-term Business Plan and its contribution to corporate value

From a global niche top player to a global major top player, driven by higher growth in the ultra-high-end market

According to projections by a prominent market research firm, the optical visual inspection market is expected to grow by the CAGR of 20% from ¥30-40 billion at present to around ¥100 billion by 2022. Further development in miniaturization and flexibility are likely to make the ultra-high-end segment grow at a higher rate than other segments. We therefore are dedicated to maintaining our high share in the ultra-high-end segment, aiming to become a global major top player.

■ Market outlook for optical visual inspection equipment up to 2022



Market forecasts are based on Research and Market
<https://globenewswire.com/news-release/2016/09/08/870394/0/en/1-008-Million-Automated-Optical-Inspection-System-Market-by-Type-Technolog>

Growth in scale led to increase operating profit by 6.5 times from fiscal 2017 to fiscal 2020

Against such a favorable business environment, INSPEC's targets in its Medium-term Business Plan are to increase sales by 1.8 times or a CAGR of 22.8% from fiscal 2017 (ended April 2017) to fiscal 2020 (ending April 2020) and increase operating profit by 6.5 times with operating margin improving from 6.3% to 16.3% during the same period. We also aim at enhancing business stability through business expansion in scale and raising invested capital efficiency. As additional business pillars, we are promoting development of "Precision Substrate Manufacturing Equipment Related Business," with anticipated sales synergies with our main business, and the "Digital Pathology Business," which enables pathologists to remotely observe histological samples by converting images of glass slides into digital slides, with anticipated technological synergy with our main business.

■ Major benchmarks and measures of the Medium-term Business Plan

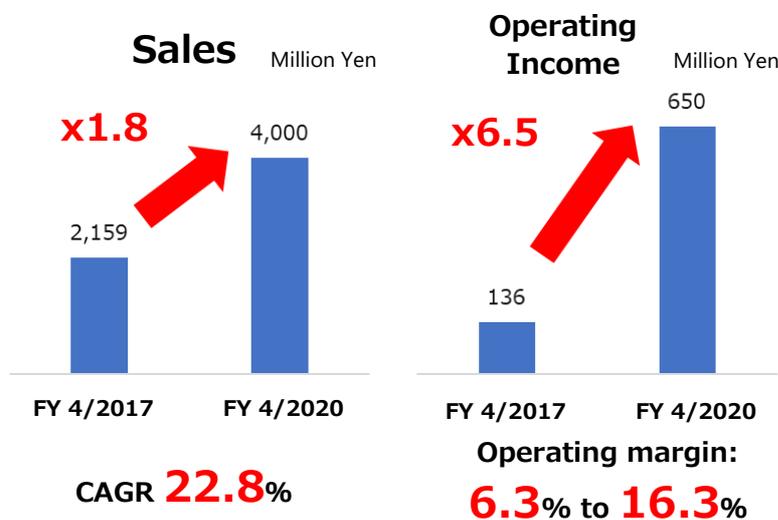
Aiming at high growth and higher margin as a groundwork for becoming a global major top company

Other financial impacts

Enhance business stability by expansion; enhance efficiency in invested capital

New two business pillars

- ① Precision Substrate Manufacturing Equipment Related Business
- ② Digital Pathology Related Business



2. Corporate overview, history, and founding story

Corporate overview and history

INSPEC is a research and development (R&D)-oriented company founded in 1984, and has visual inspection equipment of electronic circuit boards as its main area of business concentration. Consolidated subsidiaries are engaged in the “Precision Substrate Manufacturing Equipment Related Business” and the “Digital Pathology Business.” The latter business is to convert glass slide tissue samples into digital slides, enabling pathologists at remote locations to observe them.

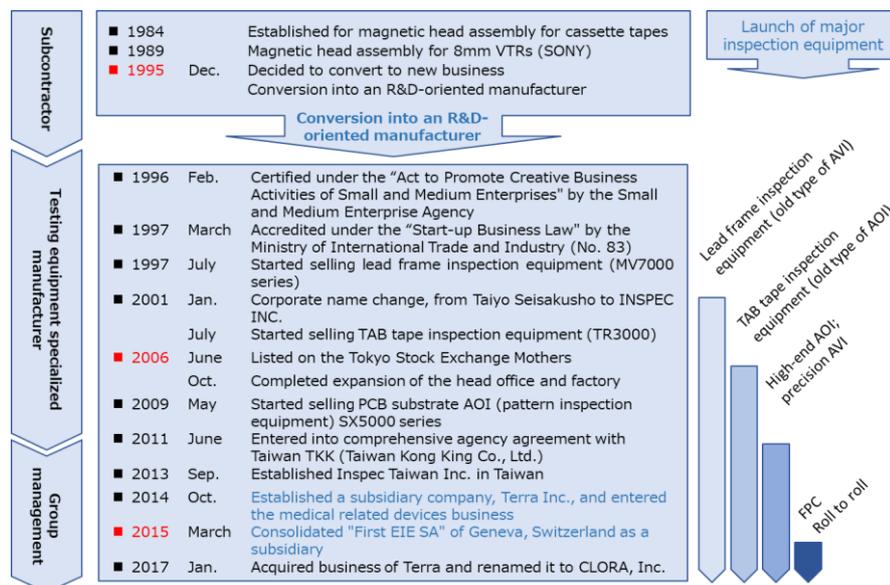
Corporate overview

Corporates name	INSPEC INC.
Head office	79-1 Arayashiki Kakunodatemachi Kumoshikari, Senboku-shi, Akita-ken
Established	January 1984
Stock exchange	June 2006 (Tokyo Stock Exchange Mothers: Code 6656) September 2017 (Tokyo Stock Exchange Second Section)
Representative	Masashi Sugawara, Representative Director and President
Main business	Development, manufacturing, sales and services of visual testing equipment and manufacturing equipment of electronic circuit boards (semiconductor package substrates, FPCs, etc.) Development, manufacturing, and sales of medical-related equipment
Consolidated subsidiaries	Two
Number of employees	62 (consolidated); 42 (non-consolidated)
Capital	811 million yen
Number of outstanding shares	3,258,600 shares (trading unit: 100 shares)
Number of shareholders	2,308



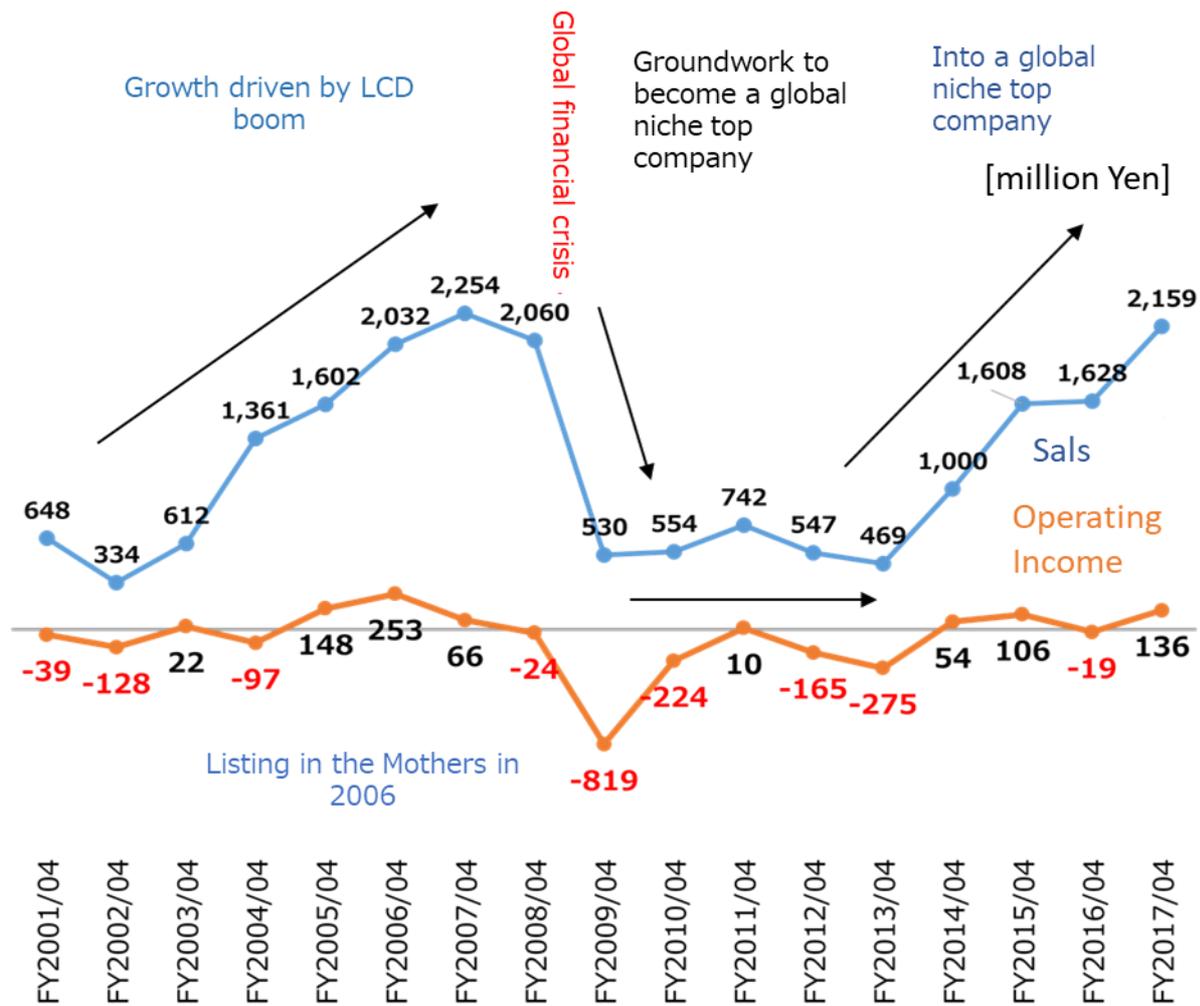
When the company was originally founded, it was a manufacturing subcontractor. In 1995, however, the company undertook a business transition and became an R&D-oriented manufacturer, establishing a global niche top position in optical visual inspection. Recently, through acquisitions, the overall INSPEC Group has evolved with the underlying objective of pursuing high-end technologies.

History



The following chart of sales and operating profit from 2000 shows that INSPEC initially had a significant growth in LCD-related sales, which sharply dropped after the global financial crisis of 2008. We then decided to move away from high dependence on specific products, and focused on R&D related to broad-based high-end optical visual inspection demand. Since 2013, we have returned to a growth trajectory. By now, we have established a global niche top position in high-end and ultra-high-end optical visual inspection equipment for electronic devices.

■ Sales and operating profit



Founding story: From a subcontractor to an R&D-oriented manufacturer

1984 to 1995: From foundation to growth and then shrinkage as a subcontractor business for a major manufacturer

In 1984, the current president Masashi Sugawara established Taiyo Seisakusho (present INSPEC) in Akita Prefecture, northeast Japan, mainly to do subcontracting of magnetic head assembly for a major manufacturer. Taiyo strengthened its automation, control, and image processing technologies and expanded business into high-quality component assembly. In 1995, however, the subcontracting contract was canceled due to a decline in demand for end products, resulting in a substantial business shrinkage.

1995 to 2001: Entry into the business of optical visual inspection equipment for semiconductor substrates

Conversion from a subcontractor to an R&D -oriented manufacturer

Since 1995, Taiyo had explored ways to convert into a manufacturer. By focusing on expanding need to inspect all lead frames for semiconductor substrates, which were undergoing miniaturization, Taiyo entered the business of optical visual inspection equipment for semiconductor substrates, aiming to become an R&D-oriented manufacturer.

Making use of automation, controlling, and image processing technologies: satisfying need for more fine, consecutive, automated, high-speed, and all-product inspection

By making use of automation, controlling, and image processing technologies, Taiyo completed development of inspection equipment and started doing business in this equipment in 1997. Subsequently, the company developed a series of optical visual inspection equipment for ultra-precision semiconductor package substrates (AOI of substrates, AVI of substrates).

Optical visual inspection equipment for precision substrates and others of semiconductors

Lead frame



CPU



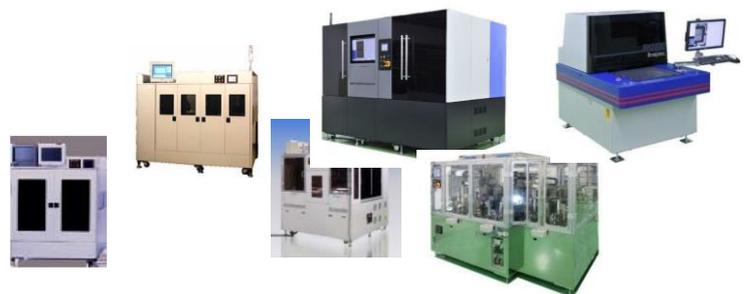
BGA



CPU・GPU



More miniaturization has led to development of more optical visual testing equipment



BGA substrates: Ball Grid Array packaged substrates have a grid array of solder balls.

CSP substrates: Chip Size Package type of substrates

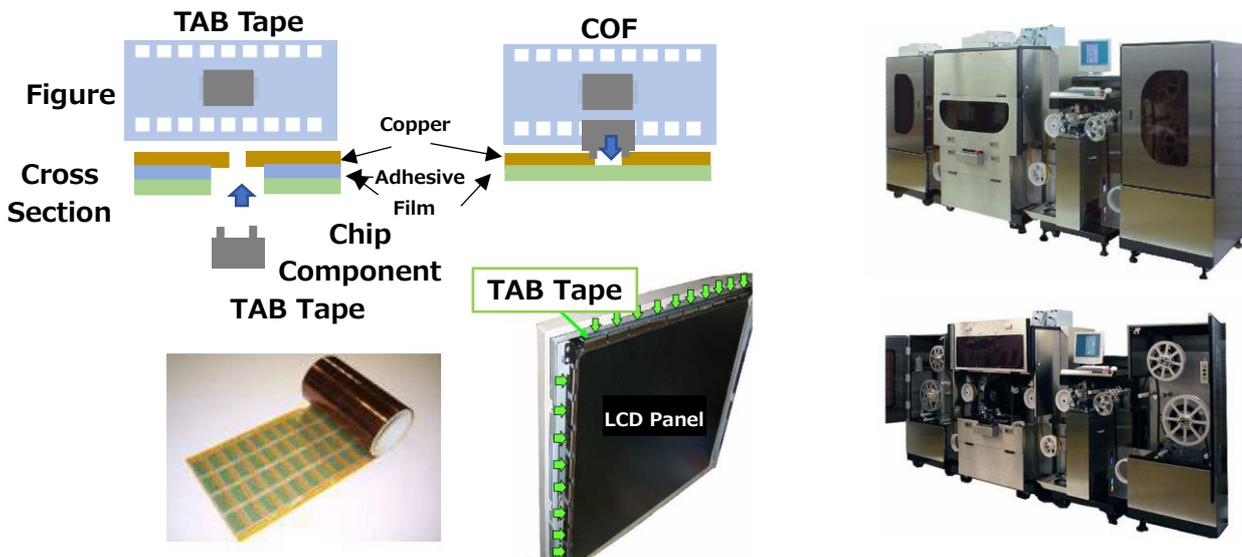
CPU: High-precision substrates such as Central Processing Units and Graphics Processing Units(GPU)

2001 to 2009: Growth driven by the optical visual inspection business for LCDs and devices

Strengthened capacity to respond to technologies for mounting on flexible films

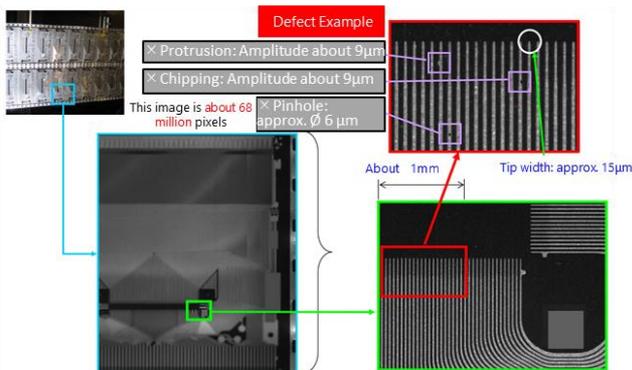
In 2001, INSPEC (renamed in the same year) began to develop inspection equipment for flexible tapes and films, such as Tape Automated Bonding (TAB) and Chip on Film (COF) to be mounted on semiconductor chips for LCD panels. The company has optimized image processing, mechatronics, and optical sensing technologies in combination in developing the inspection equipment, which has higher inspection capacity and does inspections three times faster than conventional equipment.

LCD devices (TAB tapes and COF) and optical visual inspection equipment



Defect images and INSPEC's solutions: Higher inspection ability and three times faster processing speed

Defect images of TAB Tape



INSPEC's solutions

Image processing technology

- Internally-developed image processing computer to identify defects of materials that are susceptible to deform by humidity, temperature, and other factors, at high speed and with high sensitivity within certain defect detection limits

Mechatronics technology

- High-precision, high-reliability, high-speed transportation of soft materials

Optical sensing technology

- Unique, customized, lighting, lens, and imaging technology



Image processing Computer

Global top share in TAB tape testing equipment, high growth, and the listing in the small-cap Mothers market in 2006

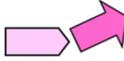
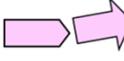
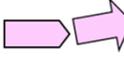
Having been adopted by a major TAB manufacturer, INSPEC started its TAB inspection equipment business in 2003. This customer purchased all its TAB tape inspection equipment from INSPEC.

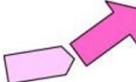
Subsequently, all domestic TAB manufacturers followed and purchased the company’s equipment. It thereby obtained a global top share in the TAB tape inspection equipment market. With sales exceeding ¥2 billion in fiscal 2006, ended April 2006, INSPEC was listed in the Tokyo Stock Exchange Mothers Market in June 2006.

2009 to 2013: Shrinkage caused by the global financial crisis and groundwork for next growth

Due to the global financial crisis in 2008, sales for LCDs dropped sharply. The company reduced excessive dependence on specific products, integrated image processing, mechatronics, and optical sensing technologies and promoted development of ultra-high end optical visual inspection equipment, aiming for its next growth phase.

■ Post-financial crisis R&D strategy for further growth

Products	Market environment	Trend of needs from INSPEC's perspective	Issues
Roll-to-roll inspection equipment For COF For FPC 	<ul style="list-style-type: none"> COF will become finer for use in 4K TV and organic EL TV, boosting demand for high-precision testing equipment. For FPC, due to growth in mobile devices, demand will continue to expand and particularly need for testing of all fine pattern products will grow sharply. 		Use of accumulated roll-to-roll technologies in TAB tapes to expand in the FPC area
BGA, CSP L/F inspection equipment 	<ul style="list-style-type: none"> Package substrates for memory (in particular CSP) continue to advance in thinness and fineness. Package substrates for system LSI (in particular BGA) are required to raise quality so as to respond to higher-speed movement L/F quality guarantee is becoming important for semiconductors for vehicles. 		High-performance color processing is required to respond to severe testing requirements in gold-plated areas or resist areas.
High-speed inline testing equipment	Need is rising for high-speed all-product testing for chip components or sheet components (i.e., chip condensers, electrode and separators for lithium ion batteries)		Proactive sales proposals need to receive customized orders

Products	Market environment	Trend of needs from INSPEC's perspective	Issues
Substrate AOI (SX5000) High-end model 	<ul style="list-style-type: none"> Semiconductors for CPU and MPU will continue to advance in terms of multi-core, and reduced power consumption. Because of the above, package substrates advance in fineness and functions required of testing equipment will change in keeping with quality guarantee requirements. A newly-required function is to accurately capture raw data of defects, replacing the previous function that was limited to defecting defects. Such function is already realized in the SX series. 		Package substrates for CPU and MPU are manufactured by several major companies. INSPEC intends to fulfill these high-end needs.
Substrate AOI (SX5x00) Ultra-fine type 	<ul style="list-style-type: none"> INSPEC is ahead in developing core technology, in anticipation of advanced fine semiconductors, based on major CPU manufacturers' road maps. Jointly with a major PKG manufacturer, INSPEC is ahead in developing optical, illumination, and mechatronics core technologies, so as to be able to provide cutting-edge testing equipment ahead of its peers. 		INSPEC will advance its proprietary technology and always be available to respond to most advanced needs.

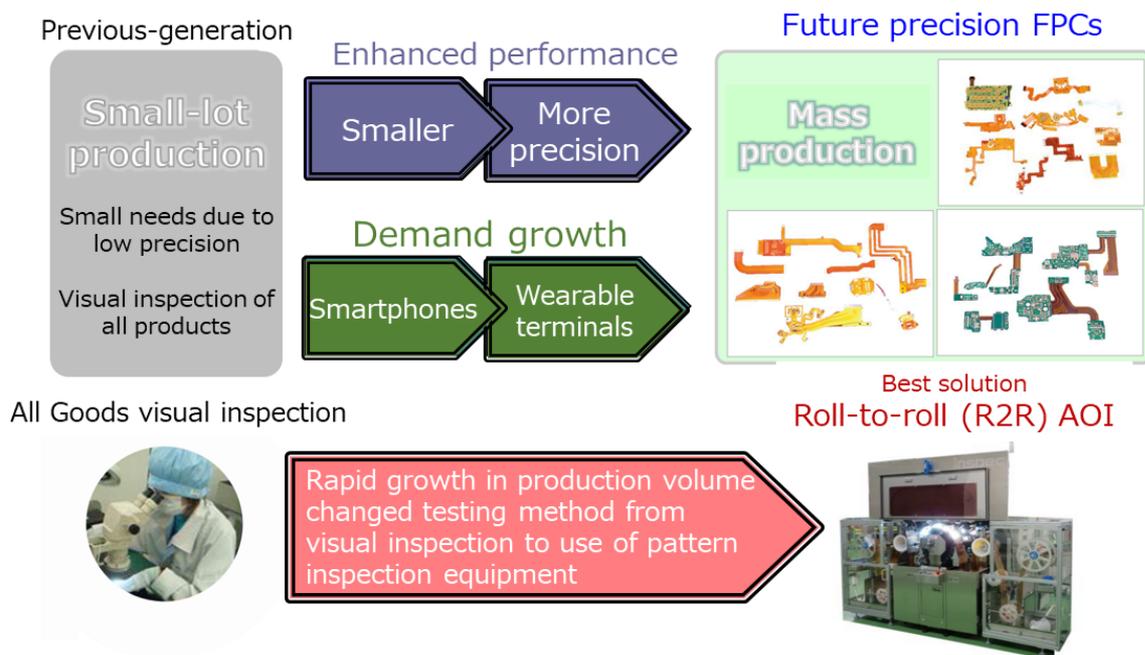
2013 to present: Aiming to become a global top player in the niche market of optical visual inspection (AOI and AVI)

R&D efforts since 2009 begun to bear fruit in 2013 and the company entered another growth phase. There were three factors behind this: (1) growth in demand for flexible printed circuits (FPC); (2) growth in demand, stemmed from growth in the 4K display market; and (3) growth in demand associated with miniaturization of semiconductors. Responding to such needs, the company optimized image processing, mechatronics, and optical sensing technologies in combination and acquired top shares in the high-end and ultra-high-end AOI and AVI market, becoming positioned as a global niche top company.

■ Three demand factors for INSPEC to become a global niche top company

(1) Demand growth for flexible printed circuits (FPCs)

- Change from visual inspection to optical visual testing, due to enhanced performance and a sharp growth in production
- Increase in labor costs in China also boosted demand for optical visual inspection.
- Growth in need for consecutive, automated, high-speed, all-product inspection of rolls of fine, soft materials
- Increase in roll-to-roll testing demand, using mechatronics



(2) Higher resolution

- Growth in 4K displays
- Increase in organic EL with a high number of signals

(3) Miniaturization, higher flexibility, and growth in need for all-product inspection

- Continuous improvement in performance from IoT and automation; more miniaturized, more flexible mounting, growth in demand for optical visual inspection equipment for consecutive, high-speed, automated, all-product inspection

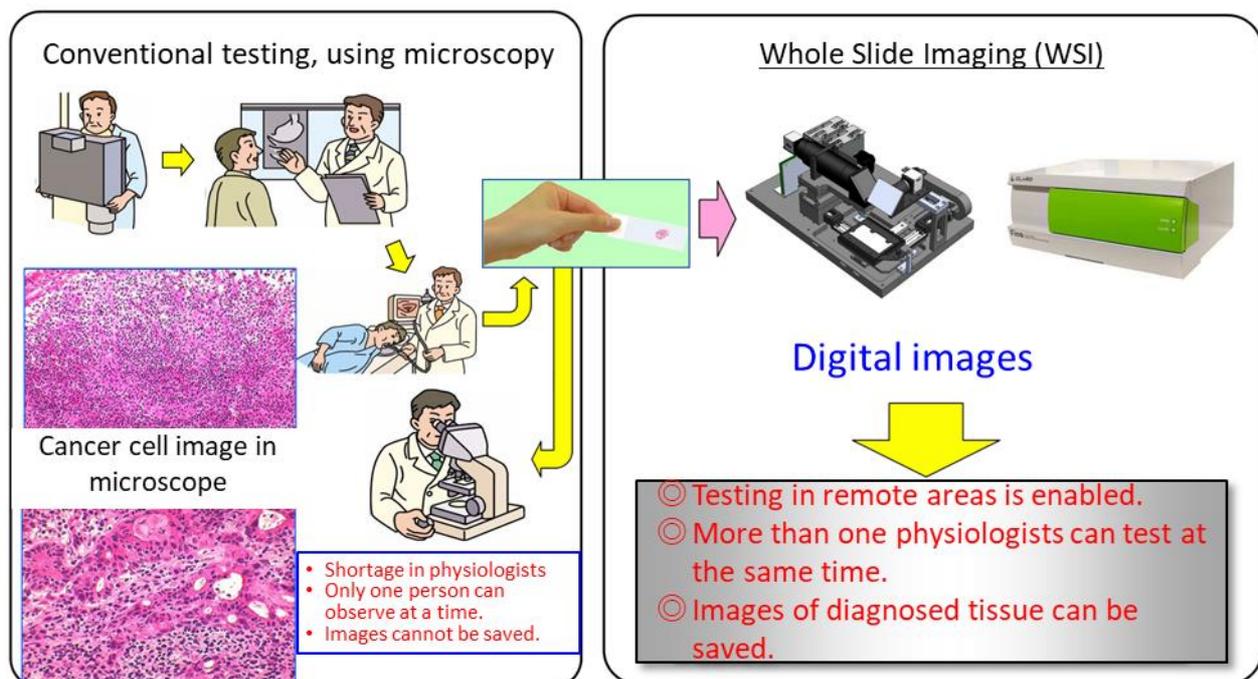
2015 to present: Transforming into a group management arrangement to make a leap forward as an R&D-oriented company

Since 2015, INSPEC acquired two businesses and has been developing them into growth drivers for the company. They are the “Precision Substrate Manufacturing Equipment Related Business,” with anticipated sales synergies with the main business, and the “Digital Pathology Business,” which enables pathologists to remotely look at samples by converting images of glass slides into digital slides, with anticipated technological synergy with the main business. The former business is operated by a consolidated subsidiary, First EIE S.A. in Switzerland, and the latter business, by CLARO Inc. in Japan.

The Digital Pathology Business aims to achieve strong growth by using INSPEC’s image processing technologies

In this business, testing of cancer and other tissue slide samples by microscopy is enabled remotely through Whole Slide Imaging (WSI). As the images can be saved and remotely and concurrently inspected by more than one physiologist, improves the efficiency and effectiveness of histological analysis, and offers a way to address the shortage of physiologists. By clarifying its legally recognized status as medical practice, dramatic growth can be anticipated. INSPEC’s image processing technologies are being adopted to this business, operated by CLARO.

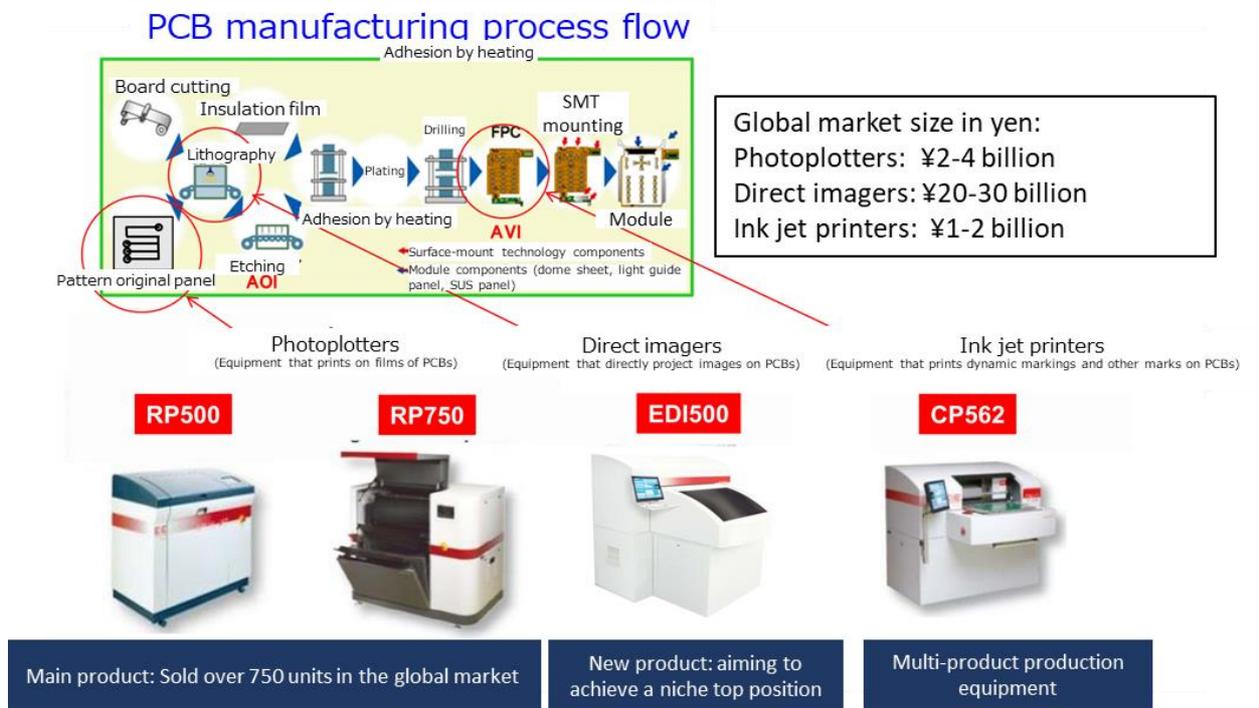
■ Digital Pathology Business



The Precision Substrate Manufacturing Related Business will generate various synergies

In the Precision Substrate Manufacturing Related Business operated by First EIE S.A. in Switzerland, synergies in sales, technological development and human resource development are expected. INSPEC and First EIE are working on specific measures to generate such synergies.

Precision Substrate Manufacturing Related Business: First EIE's products and their market scale



Synergy with First EIE



Business structure

Business structure by segment

Reflecting recent moves, the mainstay optical visual inspection equipment business has been renamed as the Semiconductor Package Substrate and Precision Substrate Inspection Equipment Related Business. It is concerned with three types of main equipment.

Semiconductor Package Substrate and Precision Substrate Inspection Equipment Related Business

(1) Precision Substrate Inspection Equipment (Flat Bed Type)

- Flat-bed-type inspection equipment for next-generation semiconductors



(2) Roll-to-Roll Type Inspection Equipment (FPC and COF areas)

- Electronic device inspection equipment based on flexible substrates for FPCs and COF for LCDs



(3) Inline Testing Equipment

- High growth in micro devices, driven by penetration of IoT
- Advanced products → Higher needs for inline testing
- Inline testing is enabled by the roll-to-roll consecutive inspection technology

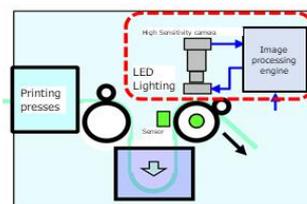
Chip components



Various sensors



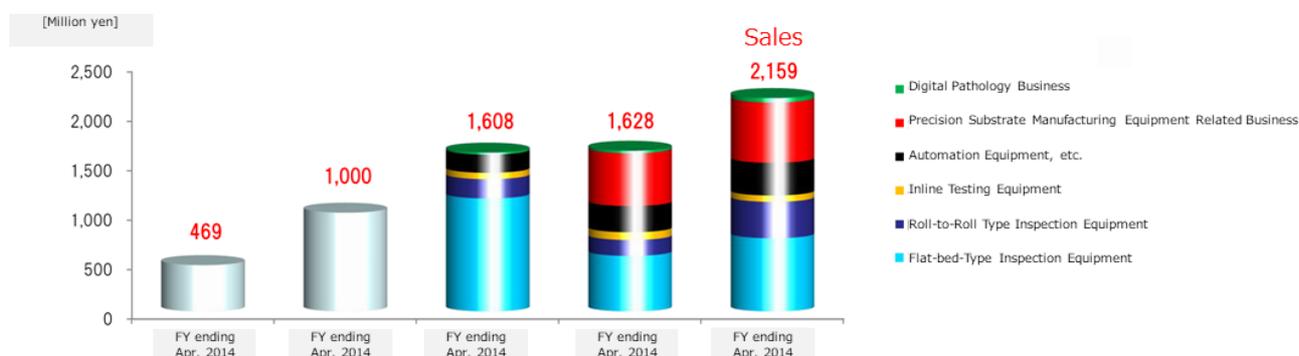
Inline testing equipment



The Semiconductor Package Substrate and Precision Substrate Inspection Equipment Related Business, operated by the parent company, represents about 70% of consolidated sales that include segment sales operated by consolidated subsidiaries.

Sales breakdown by business segment

	Fiscal Year ending Apr. 2016			Y-O-Y change	Fiscal Year ending Apr. 2017			Y-O-Y change
	Amount (¥mn)	% of total (parent)	% of total (consol.)		Amount (¥mn)	% of total (parent)	% of total (consol.)	
Semiconductor Package Substrate and Precision Substrate Inspection Equipment-related Business	1,068	100.0%	65.6%	△32.7%	1,507	100.0%	69.8%	41.1%
Flat-bed-Type Inspection Equipment	562	52.6%	34.5%	△50.8%	741	49.2%	34.3%	31.9%
Roll-to-Roll Type Inspection Equipment	162	15.2%	10.0%	△16.8%	369	24.5%	17.1%	127.5%
Inline Testing Equipment	78	7.3%	4.8%	23.5%	65	4.3%	3.0%	△17.0%
Automation Equipment, etc.	266	24.9%	16.4%	14.0%	332	22.1%	15.4%	24.7%
Precision Substrate Manufacturing Equipment Related Business	534	-	32.8%	-	606	-	28.1%	13.5%
Digital Pathology Business	25	-	1.5%	31.6%	45	-	2.1%	80.0%
Consolidated sales	1,628	-	100.0%	1.2%	2,159	-	100.0%	32.6%



3. Mission, Vision, Values to offer, and Business model

Mission: Contribute to development and welfare of the society

Under the Management Philosophy stated below, the company has grown to become a global top player in its niche domains, as an R&D- oriented manufacturer.

Management Philosophy

Contribute to development and welfare of the society.

This is the objective of the INSPEC Group and what generates satisfaction for its employees.

For achieving this objective, we will always think, continue bold actions and tireless efforts, and aim for happiness.

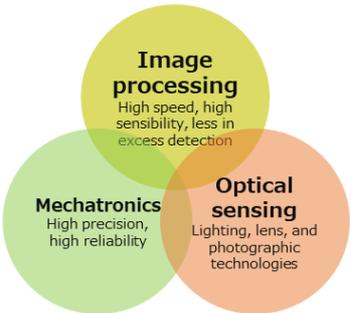
Vision: A unique company to take up challenges in the high-end technical domains

As an R&D-oriented manufacturer, INSPEC works in the most cutting-edge and high-end technical domains, and aims to become a company unique in the world. This attitude led it to become a global top player in its niche domains. Going forward, we are targeting to become a global major top player by boldly taking up new challenges with the aim to offer only-one solutions in the global market and achieve the number one position in customer satisfaction. We believe that tireless challengers are the only ones to open doors to new future.

Value to offer: ultra-high-spec inspection by optimizing three technologies combined

Value that we offer to customers is optical visual inspection capacity, by optimizing in combination image processing, mechatronics, and optical sensing technologies. The number of customers who regard this value highly is increasing, in step with rising need for this advanced capability.

INSPEC’s value offered to customers

INSPEC’s strengths in optical visual testing	Technological capacity in supporting strengths		Customer needs as growth drivers
	Electronic devices	Ultra fine	Growth in information processing capacity Lighter, thinner, smaller
		Flexible substrates	Wearable
	Testing	Consecutive, automated, high-speed, all-products	Durable Reduce personnel expense

Business model: Enhancing competitiveness based on its hard-to-imitate strength

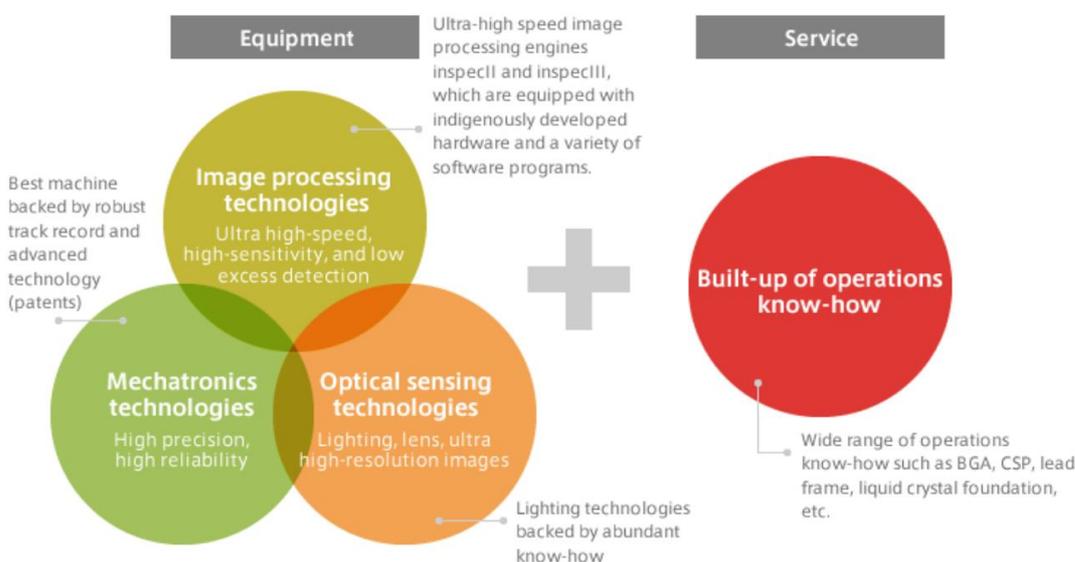
Offering comprehensive and best solutions in visual inspection

The most outstanding feature of INSPEC is to internally possess image processing, mechatronics, and optical sensing technologies, which are the three major element technologies in visual inspection. INSPEC makes the maximum use of these technologies and provide best solutions in terms of products, technologies, and services to fulfill cutting-edge inspection needs.

Business model is hard to be imitated

The three inspection technologies are optimized by coordination based on many years of experience and accumulated data. The company has thus established a global niche top position in the ultra-high-end optical visual inspection equipment, which is hard to be imitated.

Outline of business model



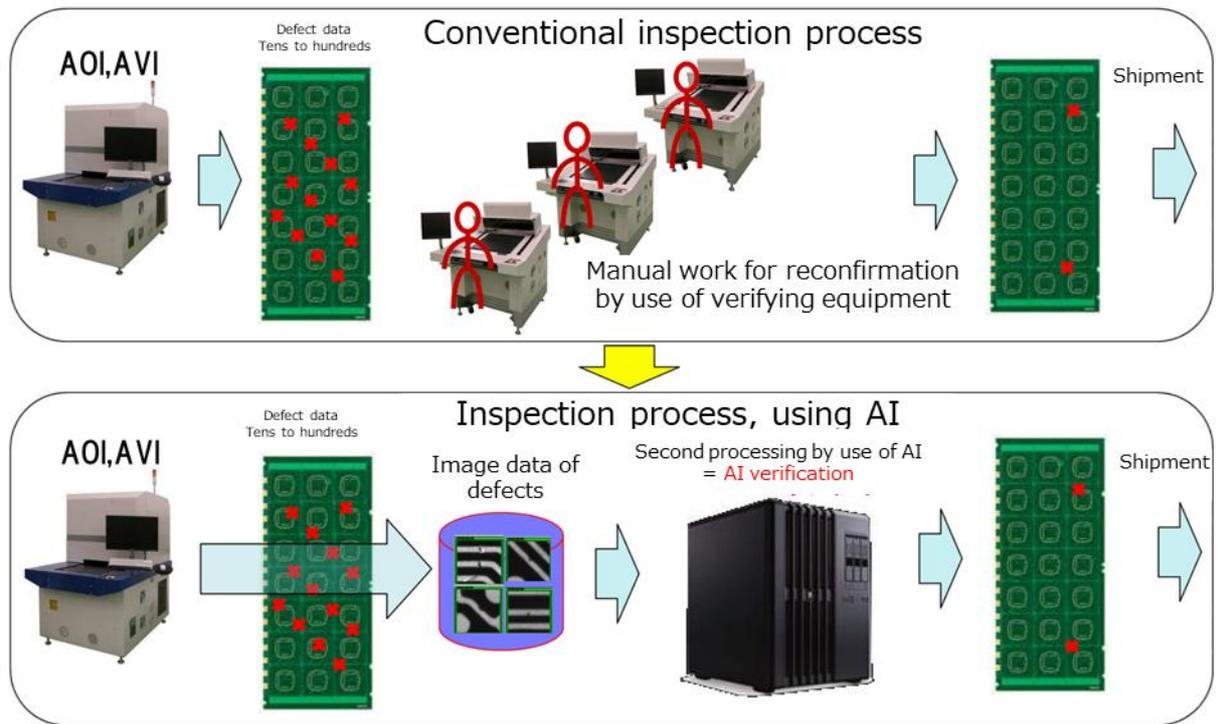
INSPEC is realizing the only-one strategy by responding to high-end inspection needs on the back of its advanced technology capacity



Undertaking research on AI to be fully prepared against an entry risk of other companies

The company is undertaking research on use of AI by using its own Big Data so as to prepare against the risk of declining competitiveness that could result from use of AI by its peers. The model is extremely complicated and application of “Deep Learning” (a class of machine learning algorithms) is not easy. However, leveraging its strength inherent in having more data in the ultra-high-end area than others have, the company is expected to continue the research needed to establish a top position in use of AI in optical visual inspection.

AI initiatives: What can be done by use of AI



4. Market and competitive environment

Favorable market environment

The Semiconductor Package Substrate and Precision Substrate Inspection Equipment Related Business

INSPEC is continuing to receive steady orders, along with manufacturers' growth in production volume and their evolution in miniaturization of circuit boards.

Precision Substrate Inspection Equipment (Flat Bed Type)

Growth in cloud services has boosted demand for high-performance CPUs. Also, AI evolution has led to a surge in demand for Deep Learning devices. To satisfy such needs, cutting-edge miniaturized, higher-density semiconductors have been developed. INSPEC is the only company to respond to demand for ultra-high-end fine pattern inspection (5/5 in AOI and LS), meaning that demand for its equipment has been expanding.

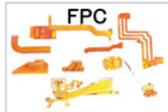
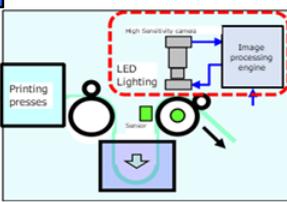
Roll-to-Roll Type Inspection Equipment (FPC and COF areas)

Demand for mobile devices and wearable devices is growing. INSPEC can capture demand in this area by being differentiated from others with its unique Roll-to-Roll Type Inspection Equipment.

Inline Testing Equipment

Expansion of IoT has rapidly increased demand for micro devices. Advanced products have increased need for inline testing. Application of the roll-to-roll consecutive inspection technology has enabled inline testing, responding to needs in this area of rising demand.

Market environment and product strategy

<p>1. Roll-to-Roll Type Inspection Equipment (FPC and COF areas)</p> <ul style="list-style-type: none"> High growth in mobile devices and wearable devices Being differentiated with others with its roll-to-roll high-precision pattern inspection Overwhelming know-how accumulation from the TAB tape era 		<p>Roll-to-Roll Type Inspection Equipment</p> 
<p>2. Inline Testing Equipment</p> <ul style="list-style-type: none"> Expansion of IoT has rapidly increased demand for micro devices. Advanced products have increased needs for inline testing. Roll-to-roll consecutive inspection technology has enabled inline testing. 	<p>Chip components</p>  <p>Various sensors</p> 	<p>Inline testing equipment</p> 
<p>3. Precision Substrate Inspection Equipment (Flat Bed Type)</p> <ul style="list-style-type: none"> Growth in cloud services has boosted demand for high-performance CPUs. AI evolution has led to a surge in demand for Deep Learning devices. The only company to respond with ultra-high-end fine pattern inspection (AOI) technology 	<p>CPS</p> 	<p>Precision Substrate Inspection Equipment</p> 

Market size and competitive environment

As mentioned in the Executive Summary, the optical visual inspection equipment market (AOI and AVI) can be segmented into ultra-high-end, high-end, and general categories. The company focuses on the high-end and ultra-high-end segments. By optimizing image processing, mechatronics, and optical sensing technologies, it acquired the best technological capacity in the ultra-high-end flexible segment, enabling it to establish a global niche top position.

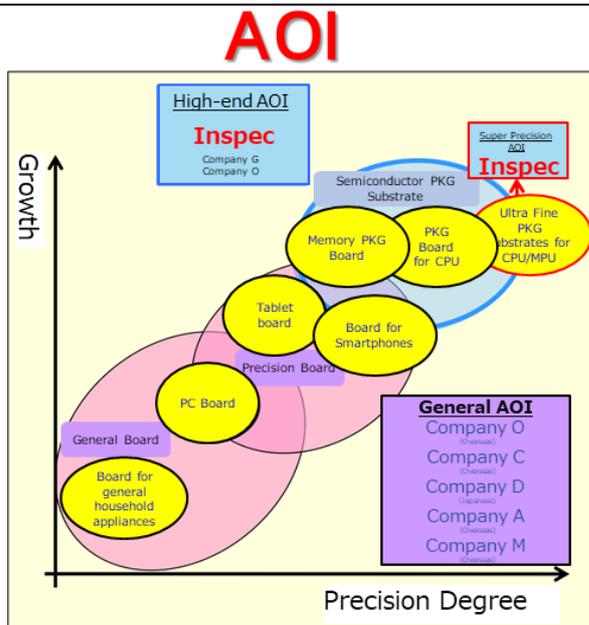
Present optical visual inspection equipment market (AOI and AVI) and INSPEC’s positioning



Competitive environment: INSPEC is the only company in the ultra-high-end area for both AOI and AVI

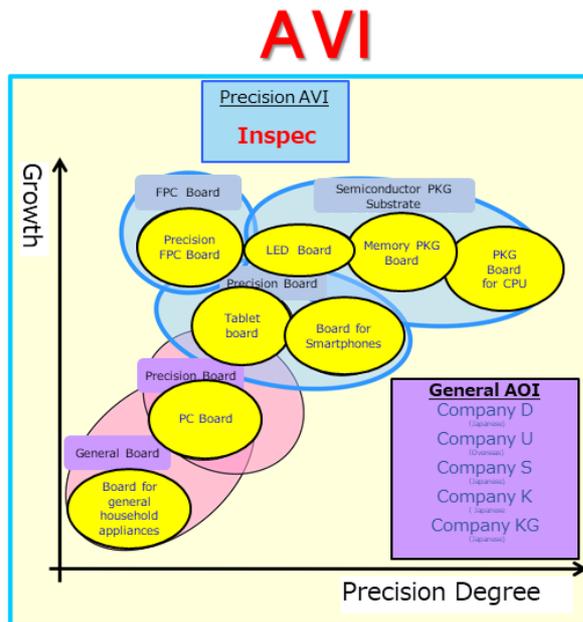
Our positioning in AOI and AVI is shown in the following illustration. This positioning is unlikely to deteriorate in the foreseeable future.

Competitive landscape in AOI (pattern inspection in the mid-flow of the manufacturing line)



- AOI’s entire market
¥20-30 billion/year
CAGR: 5-10%
- Precision AOI’s market
¥2-3 billion/year
CAGR: 10-20%
- ◎ **INSPEC’s strategy**
Focusing on high-end AOIs and differentiating from peers to acquire an overwhelming share in this market.

Competitive landscape in AVI (final visual inspection)



- AVI’s entire market
¥4-8 billion/year
CAGR: 10-20%

- Precision AVI’s market
¥1-2 billion/year
CAGR: 30-40%

- ◎ **INSPEC’s strategy**
Making forward proposals to promote market creation and garner a top share in the potential growth market of precision AVIs

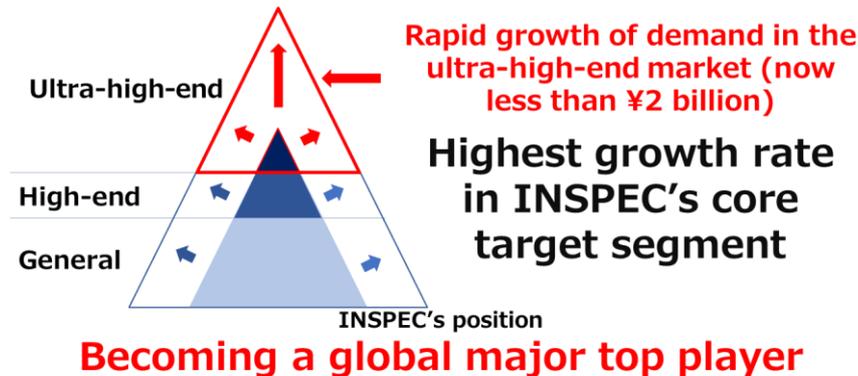
5. Medium-term Business Plan

From a global niche top player to a global major top player, driven by higher growth in the ultra-high-end market

According to projections by a prominent market research firm, the optical visual inspection market is expected to grow by CAGR of nearly 20% from ¥30-40 billion at present to around ¥100 billion by 2022. Further development in miniaturization and flexibility are likely to make the ultra-high-end segment grow at a higher rate than other segments. We therefore are dedicated to maintaining our high share in the ultra-high-end segment, aiming to become a global major top player.

Market outlook for optical visual inspection equipment up to 2022

CAGR of 20% to become a ¥100 billion market



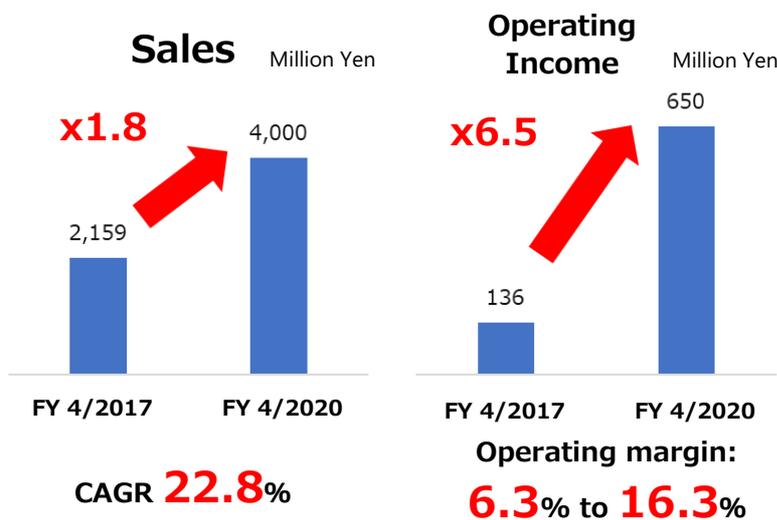
Market forecasts are based on Research and Market
<https://globenewswire.com/news-release/2016/09/08/870394/0/en/1-008-Million-Automated-Optical-Inspection-System-Market-by-Type-Technolog>

Growth in scale led to increase operating profit by 6.5 times from fiscal 2017 to fiscal 2020

In the background of a better business environment described before, INSPEC's targets in its Medium-term Business Plan are to increase sales by 1.8 times or a CAGR of 22.8% from fiscal 2017 (ended April 2017) to fiscal 2020 (ending April 2020) and increase operating profit by 6.5 times with operating margin improving from 6.3% to 16.3% during the same period. We also aim at enhancing business stability through business expansion in scale and raising invested capital efficiency. As additional business pillars, we are promoting development of "Precision Substrate Manufacturing Equipment Related Business," with anticipated sales synergies with our main business, and the "Digital Pathology Business," which enables pathologists to remotely observe histological samples by converting images of glass slides into digital slides, with anticipated technological synergy with our main business.

Major benchmarks and measures of the Medium-term Business Plan

Aiming at high growth and higher margin as a groundwork for becoming a global major top company



Other financial impacts

Enhance business stability by expansion; enhance efficiency in invested capital

New two business pillars

- ① Precision Substrate Manufacturing Equipment Related Business
- ② Digital Pathology Related Business

6. Strategy to create corporate value; capital policy; and shareholder return policy

Strategy to raise three types of corporate value in the Medium-term Business Plan

During the Medium-term Business Plan, in addition to expanding growth, the company is expecting to work on raising three types of corporate value: profitability, efficiency in invested capital, and return on invested capital (from around 6% currently to around 18%), to expand excess economic return. Moreover, it intends to reduce business risk, so as to lower capital cost and to raise corporate value.

Three factors to promote high sales growth and increase in corporate value

(1) Enhance profitability

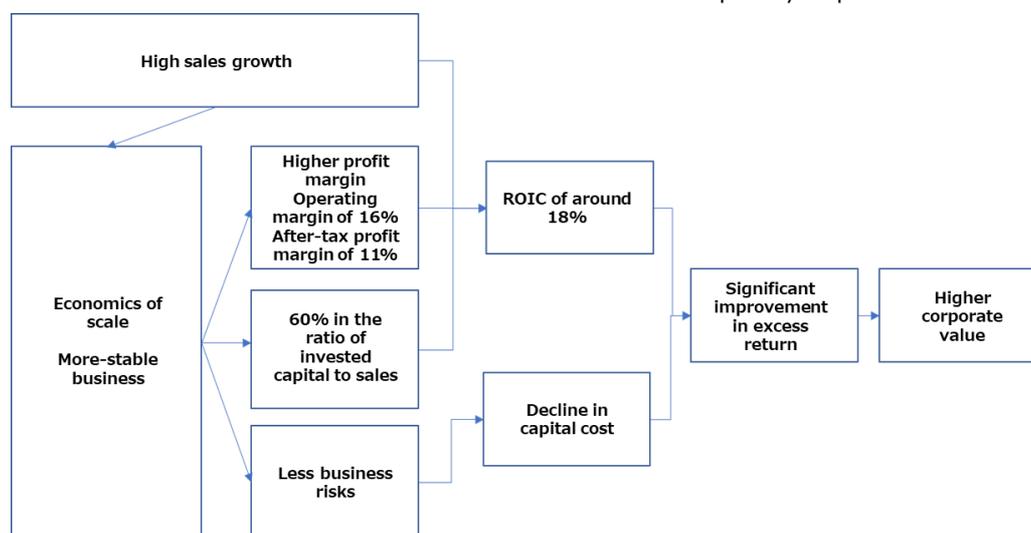
- Pursuit of economies of scale to improve profit margins
- Target: improve operating margin from 6.3% to 16.3%

(2) Improve efficiency in invested capital

- Pursuit of economies of scale to improve asset efficiency
- Target: lower the ratio of invested capital to sales from about 70% to 60%

(3) Reduce capital cost

- Scale expansion and group management to expand business, which then reduces business risk and subsequently capital cost



Fiscal 2017 status: operating margin, 6.3%; 72% ratio of invested capital to sales; and ROIC of around 6%

Calculation of the ratio of invested capital to sales: Invested capital as of the end of fiscal 2017

$$(\text{¥1.91bln}) / \text{Sales forecast for fiscal 2018 } (\text{¥2.65bln}) = 72\%$$

Invested capital as of the end of fiscal 2017 (¥1.91bln) = Total assets (app. ¥2.49bln) – Cash and deposits exceeding 10% of sales forecast (¥0.24bln) – Current liabilities other than interest-bearing debts (¥0.39bln) = ¥1.91bln

Asset structure and shareholder return policy

The company intends to improve financial stability and pursue opportunities to realize corporate value and high growth, and hence for the time being is expected to continue making no dividend payment.

At present, it has an ROIC of about 6% and the amount of interest-bearing debt is roughly equivalent to the amount of shareholders' capital. We believe it is at a stage of pursuing financial stability. We think making investment and aiming for a 20% growth and an 18% ROIC will contribute more to raising corporate value, while the company foregoes paying a dividend for the time being. It is expected to take steps to pay a return to shareholders when it realizes high profits and accumulates sufficient internal reserves to realize growth by implementing the Medium-term Business Plan.

Disclaimer

This document contains matters concerning the forecasts, targets, plans, etc. related to Inspec Inc.. ("the Company") and its group companies (the "Group"). These are prepared based on information obtained at the time of preparation of this material, based on forecasts etc. at that time. Certain assumptions are adopted for these matters, and certain assumptions also include those that include judgment of the Company's management team or subjective expectations. Also, due to various risks and uncertainties, it may turn out to be inaccurate in the future, or it may not be realized in the future. Therefore, there is a possibility that the actual results of the Group, the results of operations and financial condition, etc. will be different from our forecasts, targets and plans. For that reason, we do not have any obligation to update the information on the future, such as forecasts, targets, plans etc. posted in this material. The information contained in this material is for the purpose of providing information and is not intended for issuing any securities / financial products or transactions, soliciting investment or recommending trading. At the same time, we do not guarantee the accuracy, completeness, fairness and certainty of the contents. Therefore, we are not responsible for any damage caused as a result of using this document. The copyright of this material and all other rights pertaining to this material belong to Inspec Inc.