Industrial Printing Business

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April 11, 2019

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General Manager of
Industrial Printing Business Group
Ricoh Company, Ltd.

- I'm Tetsuya Morita, and I look after the Industrial Printing Business Group.

RICOH Ignite Growth Strategy

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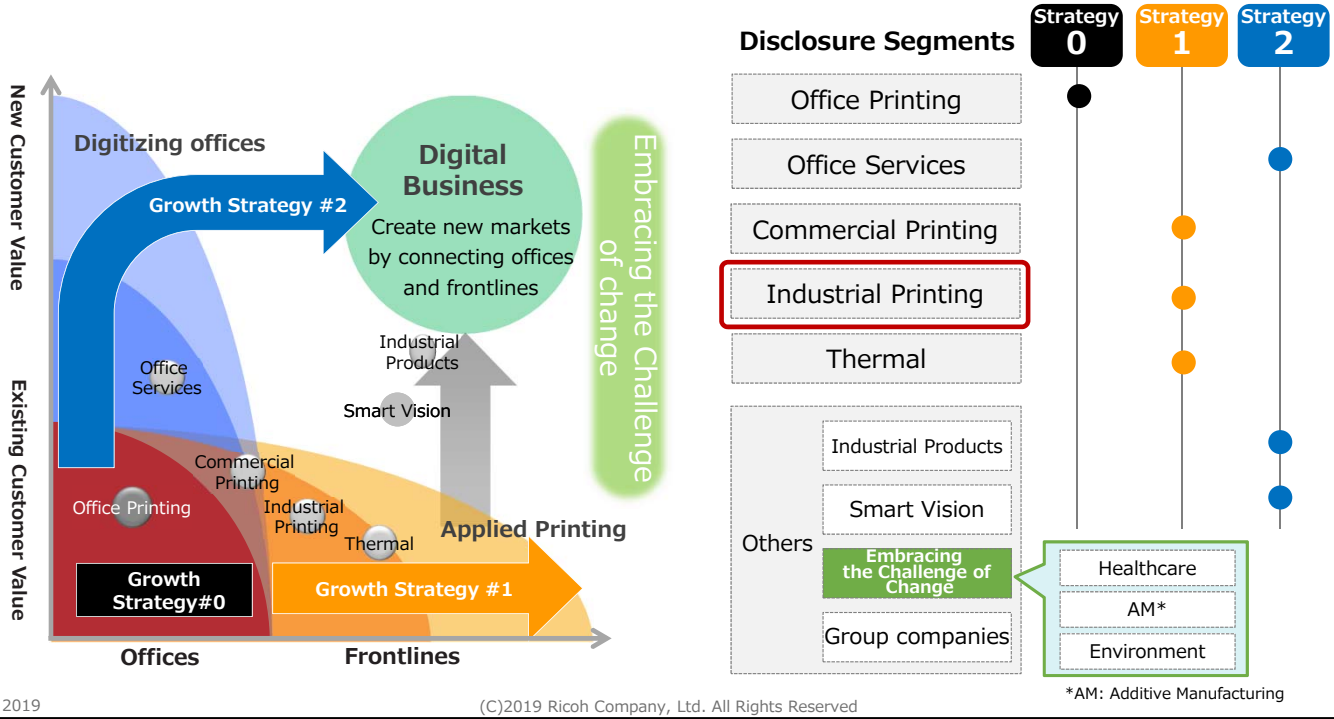

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- Growth Strategy #1 covers our operations.
- You will note that we operate on the frontlines under that strategy. The prime difference from Ricoh's office businesses to date is that we offer industrial printing equipment for manufacturers in such fields as textile, construction materials, and furniture.
- Our business can expand footprint of our customers in the manufacturing industry Ricoh's customer footprint in manufacturing with industrial printing equipment incorporating the company's machines and ink.

Toward FY2022

Growth Strategy #1

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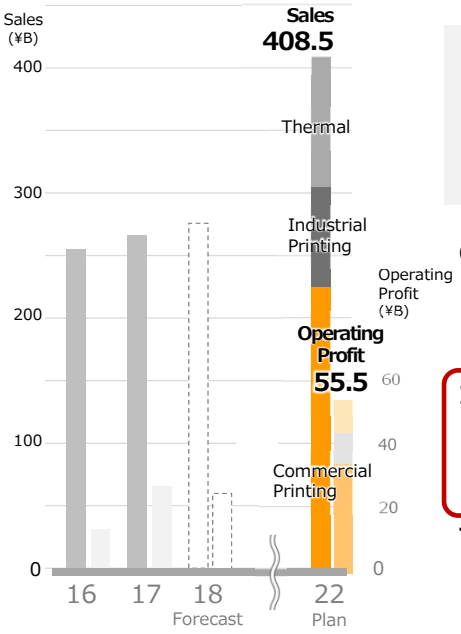

Growth Strategy #1 toward FY2022

Expand Commercial Printing business earnings and invest headily to drive Industrial Printing business growth

Commercial Printing: Bolster solutions to cater to various market needs in core, enterprise, commercial, and other printing areas, supporting customers and printing businesses and growing with customers

Industrial Printing: Expand our customer value proposition and reduce environmental impact by materializing our digital micro factory concept, opening up new vistas for industrial printing ”

Thermal: Leverage competitive edge in existing businesses to maximize earnings while launching new operations to expand our business and increase the operating margin to more than 10%

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- The industrial printing business is about transforming market value chains through a Print to Everything approach. As I will discuss later in my presentation, we are expanding new businesses through our Digital Micro Factory concept.

Industrial Printing Business Overview (Products)

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Industrial Printing Business

Provide industrial printing solutions that contribute to more eco-friendly production processes and safer and more reliable clothing, food, and housing

Print heads and inks

A lineup that caters to diverse industrial printing needs

Key products

GH series
Low-cost print head for office and photo printers

MH series
Print heads that are No. 1 in ink head in industrial photo curable ink market for outstanding durability, performance, and viscosity

TH series
High-performance heads for low-cost silicon micro-electric mechanical systems industrial applications

Industrial inks
Including photo curable inks with outstanding adhesion and color development and latex inks with exceptional safety and quality

Industrial printers

Direct to garment printers, wide format decorative and sign graphic printers, and other models

Key products

RICOH Ri 100
Compact direct to garment printer

RICOH Ri 6000
Professional direct to garment printer

RICOH Pro L5160
Sign graphics printer

RICOH Pro T7210
Decorative printer

Imaging systems

Collaborating with factory automation vendors and system integrators while supplying modules for embroidery machine, wallpaper, and flooring industrial inkjet printing systems

COLOREEL

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- This page highlights our prime offerings, including the inkjet heads and inks that are vital for industrial printing businesses. Ricoh began developing inkjet heads in 1973.
- The GH series of heads is employed in Geljet office printers. These heads are particularly noteworthy for ejecting high-viscosity ink.
- The MH series is a core offering, employing technology from a company we acquired. The heads are created by stacking thin stainless steel plates with holes drilled in them. The heads are very durable and powerful, employing mechanical structures to eject ink through the piezo-type actuators. Most consumer and office printers employ different thermal head technologies, and are not very durable because the ink is in direct contact with the heaters. An ultra-precision production process is essential to manufacture thin metal plates that are stacked. Ricoh's strength is that it has such advanced manufacturing technology.
- The TH series features brand-new inkjet heads. Launched in 2018, these heads were developed for low-cost silicon micro-electric mechanical systems applications. We can mass-produce silicon-based piezo actuators, enabling element uniformity. The series can employ Ricoh's ink, which offers outstanding adhesion, color development, safety, and image quality.
- We leveraged our inkjet head and ink technology to build an industrial printer lineup over around two years from 2017. For compact direct to garment printers, we applied Geljet technology from A4 office machines. The result was a T-shirt printer.
- We offer professional direct to garment printers through AnaJet, an American firm that we acquired in 2016. In 2018, we have launched sign graphic printers for signs, banners, and other media. The RICOH Pro T7210 can print directly on various media larger than 3 x 2 meters. All such industrial printers use our key inkjet head and ink technologies.
- We also supply imaging systems that integrate printheads, inks, and ink delivery components. We are undertaking joint development with Sweden's Coloreel, and are showcasing our efforts at exhibitions.
- We also provide technology for developing and manufacturing new industrial systems for embroidery that can color one thread at a time with inkjets. As the name suggests, our Print to Everything approach has diverse potential.

Industrial Printing Business (Results)

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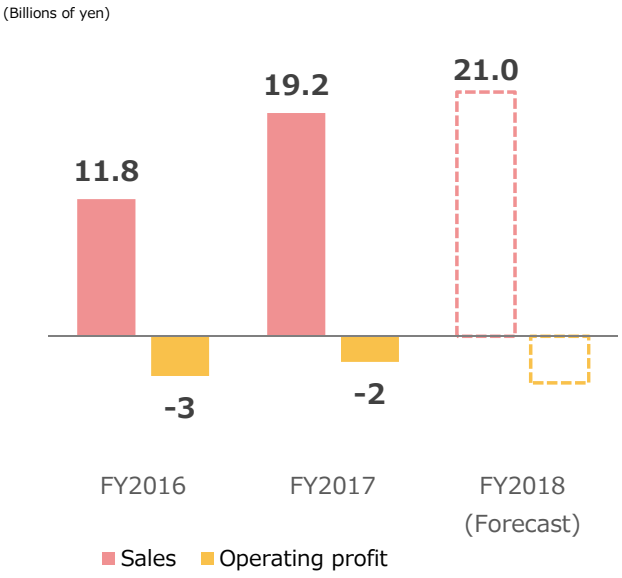
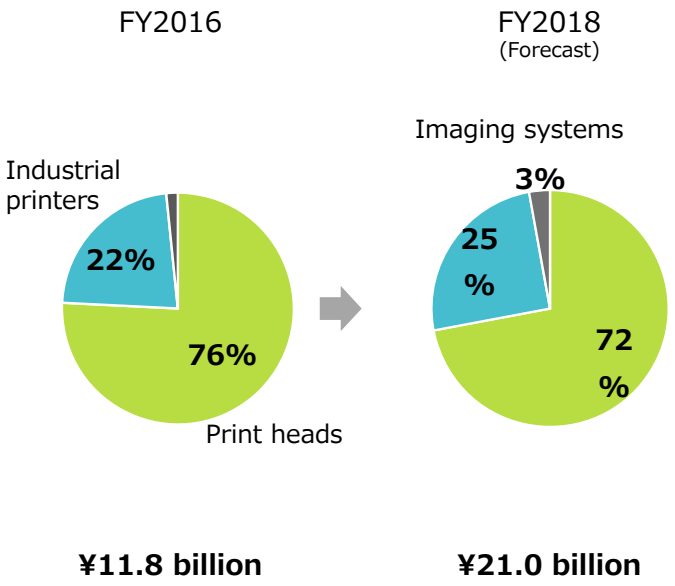
Performances



Sales composition



¥11.8 billion **¥21.0 billion**

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- This page presents our Industrial Printing Business results.
- Although sales have risen, we have posted operating losses. Gross profit from sales and internal controls has increased steadily. From 2016 through 2018, we reinforced efforts to complete our printer model lineup and sales structure.
- Industrial printers account for just over 20% of segment sales. We began developing printers in-house from 2016. At the same time, we have endeavored to strengthen sales by marketing OEM models in collaboration with other printer vendors. We are in the investment phase, and should shift to the phase in which we generate returns on investment from FY2019.

Print Heads and Inks (Business Strategies)

Key business strategy	Maintain and reinforce position as No.1 in Chinese market while expanding silicon thin-film printhead business	FY2022 sales target: ¥30 billion

Domain Strategies	Measures	Results through FY2018	KPI (FY2022)
● Maintain and reinforce our No.1 position in China's sign graphics market and expand our textile market business	● Expand business in sign business domain that harnesses our strengths	● In inkjet heads, we were No.1 (with a **45%***1 share) in the sign graphics market ● Deployed GEN6 series printheads offering improved ink compatibility, productivity, and safety 	● **64%** market share in UV ink printers
	● Fully enter the textile market	● Entered textile market and captured **5%** share*2	● **30%** market share in textile printers
● Expand business through low-cost silicon thin-film silicon printheads	● Achieve low costs through mass production ● Provide single pass heads for high-speed printers	● Rolled out low-cost, single-pass silicon thin-film silicon printheads	● **¥8.0 billion** in thin-film printhead sales

*1: Share for photo-curable printheads; Ricoh estimate
*2: Share for inkjet heads in textile market; Ricoh estimate

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- I will now explain our printhead and printer strategies.
- The first point to note is that China is the biggest market for printheads. The global market is worth around 500 billion yen, and this includes print applications for such sign graphics as billboards and banners.
- Ricoh is the No. 1 player in printheads for the sign graphics market, with a 45% share. We look to expand sales of printheads for UV ink printers. We accordingly plan to launch sixth-generation MH series heads in summer this year.
- We supply printheads for the textiles market, which we have entered. The new MH series heads will be compatible with textiles applications, and our goal for FY2022 is to expand our share in printers incorporating these heads.
- We will commercialize printers incorporating low-cost, single pass silicon printheads. These printheads make it possible to create systems at lower costs for printing on fabrics and paper.

Printheads and Inks (Products)

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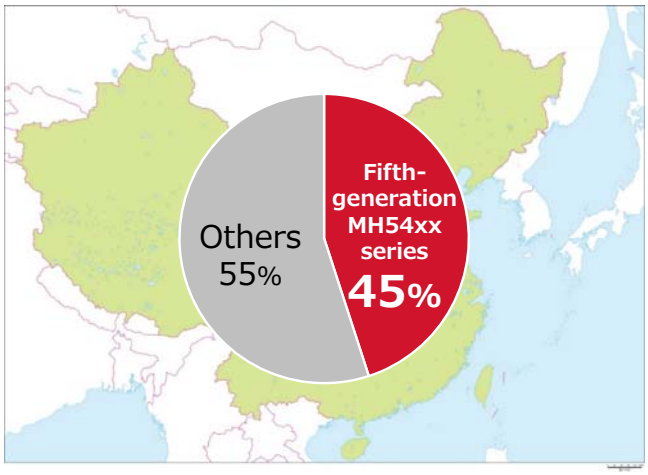
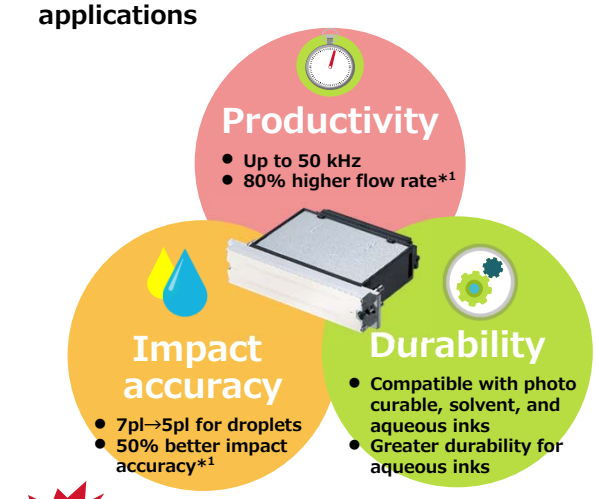
- **Our fifth-generation MH-series gained No.1 in inkjet printheads in China's sign graphics market**



Source: Percentage of photo-curable printers at Shanghai Ad & Sign Expo 2018 incorporating Ricoh inkjet printheads

- **In 2019, commercializing sixth-generation printheads compatible with inks for diverse applications**



New

Sixth-generation series printheads (MH5320 and 5340)

*1: Compared with predecessor MH54xx series

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- Our fifth-generation MH series printheads enjoy a solid position in the Chinese market.
- In March this year, we announced our sixth-generation MH series, whose enhanced productivity has led to numerous inquiries. These printheads are poised to drive growth because high productivity is possible with the same head configurations.

Textile & Wide Format Printers (Initiatives to Date)

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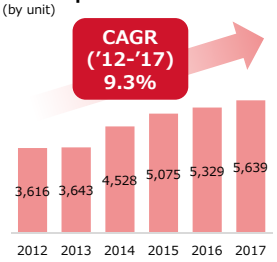
Market trends

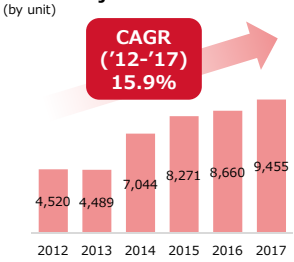
Signage and decoration applications

- Strong growth prospects for UV ink and latex printers

UV ink printers
(by unit)



Latex Inkjet Printers
(by unit)



Source : Keypoint Intelligence

Direct to garment and textile markets

- Waste water pollution from analog printing propelling demand for digital printing
- Digital printing accounts for just 5% of T-shirt demand and 3% of the textile market, so there is plenty of upside potential

Ricoh's strengths

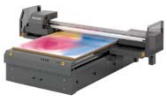
- High Productivity, high Image quality and high durability
- High Performance Printheads and Inks with exceptional safety and quality (Internal manufacturing)
- Rich Workflow solutions

Initiatives and results

- Launched wide format latex printer for ornamental and sign graphics

RICOH Pro L5160

- Launched flatbed printer for decoration sector



RICOH Pro T7210

- Developed and introduced four direct to garment printer models for small and medium-sized customers, principally in United States
- Functionally enhanced and supply wide format printers for textiles applications

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- I will now discuss our printer business.
- The target applications for our industrial printers are sign graphics and textiles.
- The sign graphics market has continued to expand in the past few years. Last year, we developed and launched UV ink and latex inkjet printers. The latter models employ a very safe aqueous resin latex ink.
- In the textiles market, we supply direct to garment T-shirt printers and textile printing systems for apparel firms.

Textile & Wide Format Printers (Business Strategies)

Key business strategy	Capture top market share by rolling out competitive offerings in specific areas	FY2022 sales target: ¥20 billion

Domain strategy	Measures	KPI (FY2022)	Results stance
● Increase share of direct to garment market	● Employ Ricoh Group's sales and services network	● Capture of top market share	Set to increase earnings through business expansion
● Expand business in textile market	● Deployed digital micro factory concept	● **¥10 billion** sales in FY2022	Poised to undertake extensive forward investments
● Develop technologies with view to entering flexible packaging, label, and other packaging fields	● Accelerating R&D of key technologies	● Enter flexible packaging market	Poised to undertake extensive forward investments

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- Our printer business goal is to increase our share of the direct to garment market.
- Our measures in that regard have been to employ the Ricoh Group's sales and services network and offer cloud service-based printing services. These efforts have enabled us to capture a leading market share. We are endeavoring to transform the value chain in the textiles field.
- We aim to enter the flexible packaging, label, and other packaging fields, and are moving forward with imaging modules for them. Soft and flexible packaging, such as film wraps on plastic beverage bottles, offer massive print volume opportunities.

Textile & Wide Format Printers (Market Expansion)

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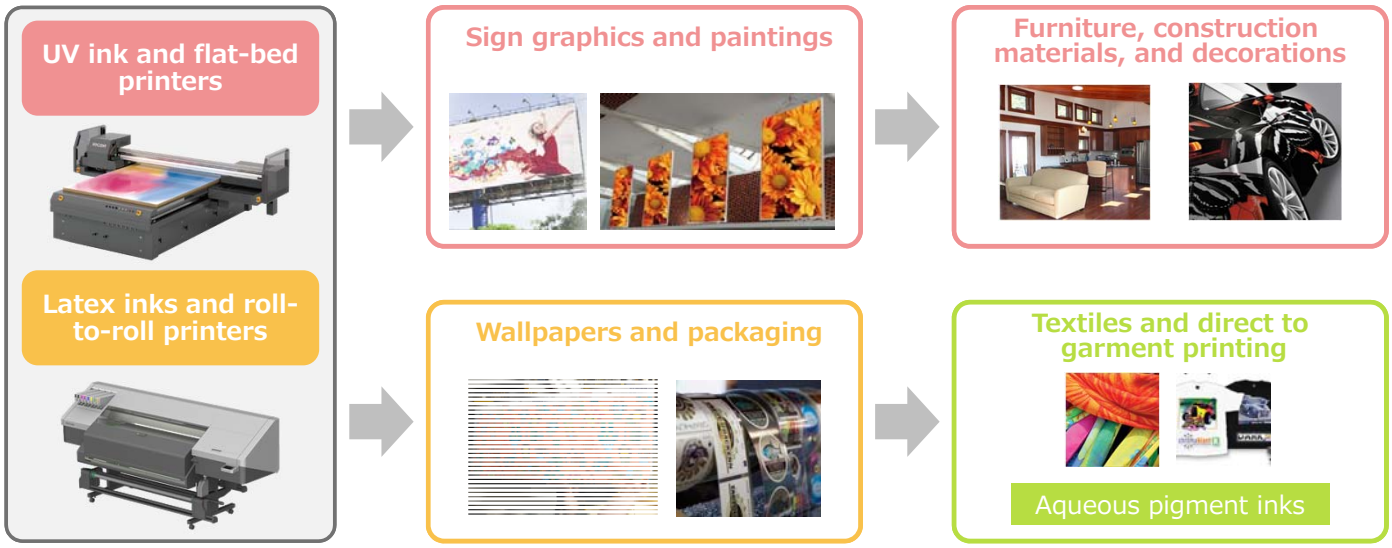
We are leveraging machine, printhead, and ink technologies amassed in the decoration and sign graphics fields to expand into new markets while drawing on our workflow software in endeavoring to transform the value chain in the textiles market



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- This page illustrates our printer market expansion efforts.
- We manufactured printer systems through FY2018. We also offer inks for a range of applications. They include sign graphics, 2.5D paintings, and furniture, construction material, decoration, and vehicle body painting.
- Applications for our roll-to-roll printers include wallpaper and packages.

Lowering Environmental Impact in Textiles Market

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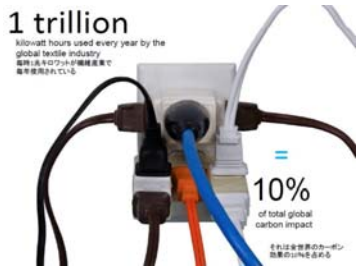
The textiles industry profoundly affects the environment, including through wastewater pollution from analog printing. We strive to lower environmental impact by supplying printing systems using eco-friendly aqueous ink



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- Our next goal is to expand our textiles-related business.
- The key to this is aqueous pigment inks. The sensational image in the top left of this page is a posted from Textile Exchange, a global non-profit organization that seeks to reduce the textile industry's impact on the environment and human population. The poster depicts dirty water flowing into a drain. The copy quotes a World Bank finding that 20% of industrial fresh water pollution comes from textile treatment and dyeing.
- The poster on the top right shows a mountain of cheaply produced, discarded clothing.
- The copy in the poster on the bottom left says that it takes 700 gallons, or about 2,600 liters, of water to make one T-shirt. Finally, the poster on the right highlights the textile industry's power consumption.
- Conventional dyeing technology is the source of social issues arising from the textile industry.
- Traditional textiles and dyes are safe because they are derived from natural materials and plants. The need for volume production has increased the use of synthetic dyes.

Digital Micro Factory Concept

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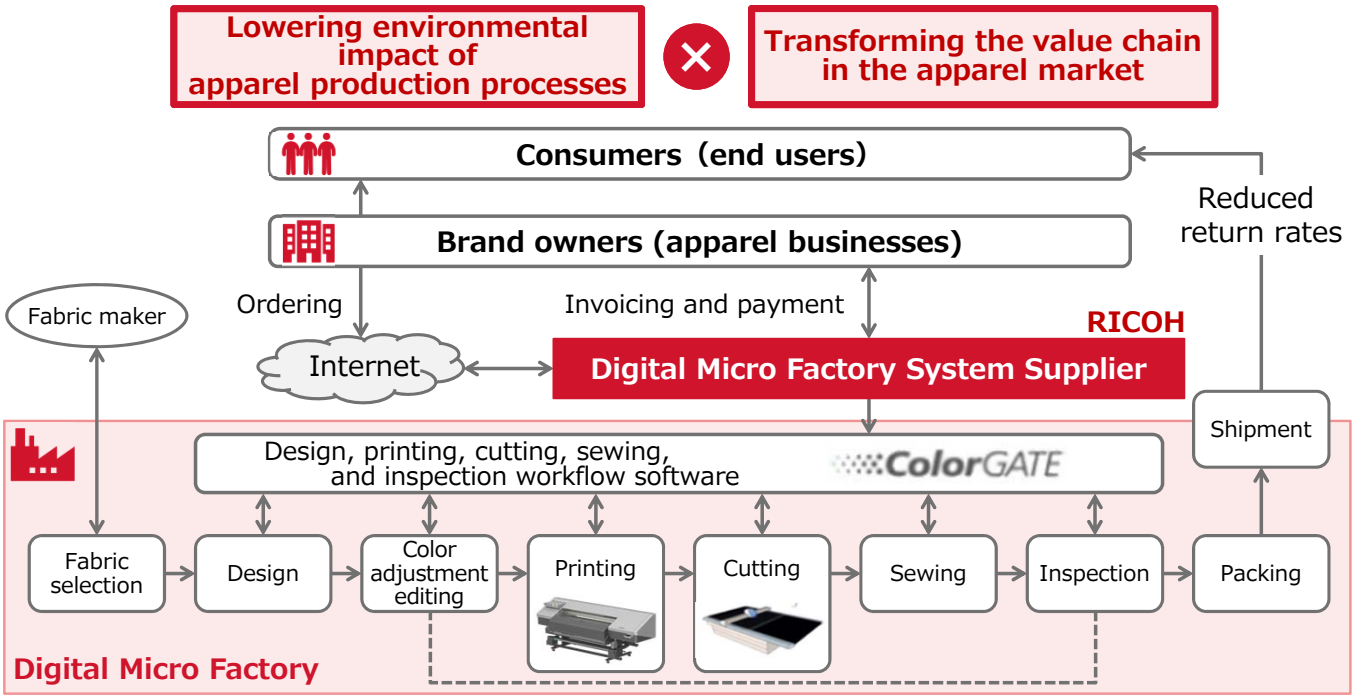

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- Our Digital Micro Factory concept shows how we can help lower the environmental impact of apparel production processes. We are pushing ahead with partners in many areas in this regard.
- The apparel manufacturing flow starts with fabric manufacturers determining color patterns, after which fabrics are printed, cut, and sewn to complete items.
- Conventional analog printing delivers large volumes at low costs by employing roller plates. This setup is similar to that of offset printing, using plates in a process of repeated runs for each color. The drawback is the high environmental impact.
- Ricoh will supply its Digital Micro Factory systems to small, medium-sized, and mid-major apparel brand owners.

Industrial Printing Business (Vision)

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Ricoh aims to become a leading provider of industrial printing solutions that contribute to more eco-friendly production processes and safer and more reliable clothing, food, and housing

Ricoh's inkjet technology helps resolve social issues

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- Ricoh’s Industrial Printing business vision is to contribute to safer and more reliable clothing, food, and housing.

Industrial Printing Business (Vision)

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Ricoh's inkjet technology helps resolve social issues

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- Ricoh’s Digital Micro Factory concept is applicable to all aspects of clothing, food, and housing, including in food labels and packaging, construction materials, and furniture.
- We will push ahead with SDGs (Sustainable Development Goals) initiatives while transforming inkjet processes through our Print to Everything approach, transforming value chains to help resolve social issues.

FY2022 Goals

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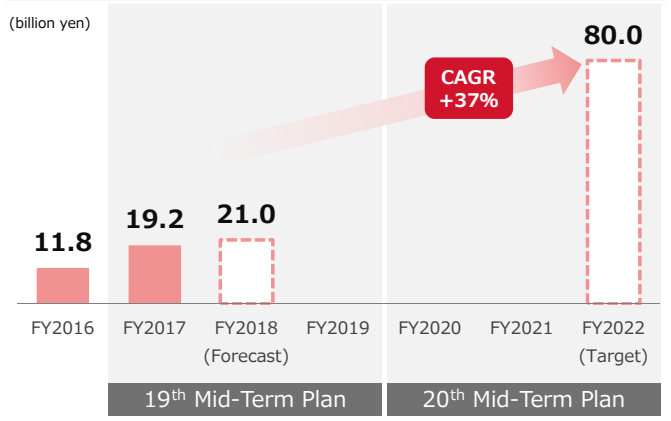
FY2022 Targets	
Sales	**¥80.0 billion**
Operating profit	**¥10.0 billion**

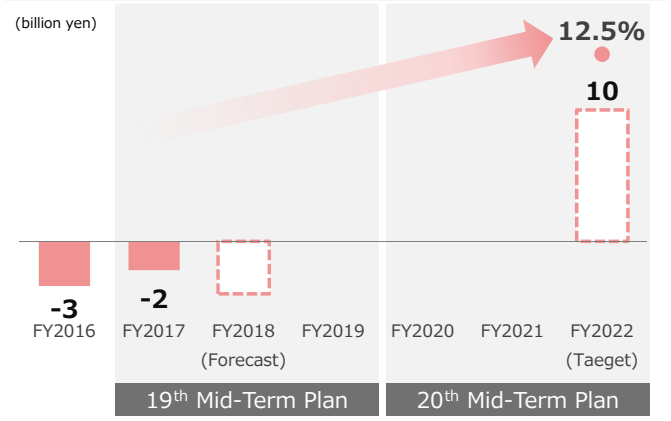
<Key strategy(Pursuing further growth)>

Expand our customer value proposition and reduce environmental impact by materializing our digital micro factory concept, opening up new vistas for industrial printing

Sales



Operating profit/Operating margin



*1 : From FY2016 to FY2022

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- We aim to generate 80 billion yen in segment sales and 10 billion yen in operating profit by FY2022. We will get there by expanding our customer value proposition and reducing environmental impact to materialize our Digital Micro Factory concept, opening up new vistas for industrial printing.
- That completes my presentation. Thank you very much for your time.

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Forward-Looking Statements

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The plans, prospects, strategies and other statements, except for the historical events, mentioned in this material are forward-looking statements with respect to future events and business results. Those statements were made based on the judgment of Ricoh's Directors from the information that is now obtainable. Actual results may differ materially from those projected or implied in such forward-looking statements and from any historical trends. Please refrain from judging only from these forward-looking statements with respect to future events and business results. The following important factors, without limiting the generality of the foregoing, could affect future results and could cause those results to differ materially from those expressed in the forward-looking statements:

a. General economic conditions and business trend
b. Exchange rates and their fluctuations
c. Rapid technological innovation
d. Uncertainty as to Ricoh's ability to continue to design, develop, produce and market products and services that achieve market acceptance in hot competitive market

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Note: In this document, fiscal years are defined as follows:
FY2018 = Fiscal year ended March 31, 2019, etc.

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