



Representative and Chief Executive Officer
Yuichi Tsuji

NITTO BOSEKI CO., LTD. (3110)



Company Information

Market	TSE 1st Section
Industry	Glass and ceramics products (manufacturing)
Representative and Chief Executive Officer	Yuichi Tsuji
HQ Address	Kojimachi-odori Bldg., 2-4-1, Kojimachi, Chiyoda-ku, Tokyo
Year-end	End of March
Homepage	https://www.nittobo.co.jp/eng/index.html

Stock Information

Share Price	Shares Outstanding		Total market cap	ROE Act.	Trading Unit
¥3,690	39,935,512 shares		¥147,362 million	9.1%	100 shares
DPS Est.	Dividend yield Est.	EPS Est.	PER Est.	BPS Act.	PBR Act.
¥40.00	1.1%	¥149.48	24.7 x	¥2,312.06	1.6 x

*The share price is the closing price on November 15. Shares Outstanding, DPS, EPS are taken from the financial settlement report for 1H of FY3/20. ROE and BPS are based on previous term earnings results.

Earnings Trend

Fiscal Year	Net Sales	Operating Profit	Ordinary Profit	Net Profit	EPS	DPS
2016/Mar Act.	86,199	10,893	10,974	5,598	140.50	30.00
2017/Mar Act.	83,324	11,148	11,396	7,479	188.57	35.00
2018/Mar Act.	84,526	10,837	11,071	10,253	263.97	40.00
2019/Mar Act.	82,292	8,198	8,934	7,984	205.76	40.00
2020/Mar Forecast	89,000	8,200	8,300	5,800	149.48	40.00

*Unit: million yen. The estimates are from the company.

This report introduces the first half of fiscal year March 2020 earnings results and fiscal year March 2020 earnings estimates of NITTO BOSEKI CO., LTD.

Table of Contents

[Key Points](#)

[1. Company Overview](#)

[2. Results for The First Half of Fiscal Year ending March 2020](#)

[3. Forecast for Fiscal Year Ending March 2020](#)

[4. Progress of the <<Go for Next 100>> Mid-Term Business Plan](#)

[5. Conclusions](#)

[<Reference: Regarding Corporate Governance>](#)

Key Points

- In the second quarter of the Fiscal Year ending March 2020, Net Sales increased 3.0% year on year to 42.7 billion yen. Sales increased in the Glass Fiber Cloth Business, Glass Fiber for Industrial Materials Business, and the Life Science Business, while decreased in the Textiles Business and Glass Fiber Yarn Business. Operating Profit was 3.3 billion yen, down 22.7% year on year. Among high value-added products, special glass (T-Glass and NE-Glass) increased due to strong demand, while middle-grade products for electronic and composite materials decreased due to sluggish market conditions. Investment for strengthening the foundation for growth was implemented as scheduled.
- For the Fiscal Year ending March 2020, although there is no change in the earnings improvement trend due to strong sales of special glass, the company made a downward revision on its sales and profit forecasts, considering fire accident occurred at a subsidiary and the impact of Typhoon No.19. Net Sales are expected to increase by 8.2% year on year to 89 billion yen. The Glass Fiber Yarn Business, Glass Fiber Cloth Business and Life Science Business will lead the sales. Operating Profit is expected to be 8.2 billion yen, the same level as the previous year. It is expected that the profit from the Glass Fiber Cloth Business and Life Science Business will increase. The company will continuously reinforce the business base for the mid- to long-term growth including depreciation costs for new investments. There is no change in the estimated dividends. It will be 40 yen/share, the same level as the previous term. The estimated payout ratio is 26.8%.
- Although the company made a slight downward revision of its full-year earnings forecast for the Fiscal Year ending March 2020 due to temporary factors, demand for special glass, which is one of the company's strengths, is strong. It expects that the demand will be even stronger in the next term when 5G communications are launched. It also believes that attaining the Operating Profit of 12.0 billion yen in the Fiscal Year ending March 2021, which is the final year of the Mid-Term Business Plan "Go for Next 100", is possible. Furthermore, as for the Medical Business, the company plans to strengthen its overseas sales and expand production capacity in Japan and the United States in order to achieve further growth.
- In the short term, we would like to pay attention to the accumulation of the second half of this Fiscal Year. In the medium to long term, we would like to pay attention to specific measures for the "Long-Term Vision 101" towards the Fiscal Year ending March 2024, which is the 100th anniversary of its founding.

1. Company Overview

The company succeeded in the first industrialization of glass fiber in Japan through technologies of the textiles business which is its original business. It provides products for a wide range of applications, such as electronic materials and industrial materials, with consistent coverage from yarn manufacturing to glass cloth processing.

Among them, special glass (NE glass, T glass) which achieves low dielectric and low thermal expansion by special composition is used in server base station and precision material for electronic devices such as smart phone and has high competitiveness. Furthermore, for “in vitro diagnostic reagents” in the life science business, have the top share in more than 10 items in Japan.

1-1 Corporate History

“*Koriyama Kenshi Boseki Co., Ltd*” founded in Koriyama, Fukushima Prefecture in 1898, is the predecessor. The company has a history of 120 years.

Nitto Boseki Co., Ltd. was established in 1923 when Fukushima Boshoku Co., Ltd. (formerly Fukushima Seiren Seishi Co., Ltd.) acquired the ownership of the Iwashiro Spinning Plant of Katakura Seishi (formerly *Koriyama Kenshi Boseki Co., Ltd*) in 1918.

In 1938, it succeeded in industrialization (mass production) of glass fiber for the first time in Japan. In the world, Owens Corning Glass Fiber of the United States has achieved the industrialization of glass fiber around the same time.

In 1949, it began manufacturing glass wool for the first time in Japan.

In 1969, the company began manufacturing glass cloth for printed wiring board. In 1982, it began manufacturing test reagents for blood coagulation factors. And in 1983, it succeeded in industrializing functional polymers “PAA®” for the first time in the world. As such, the company has continued to challenge new fields and expanded its business fields.

It has established the Mid to Long Term Business Plan “Vision 101” and Mid-Term Business Plan “Go for Next 100” targeting its 100th anniversary in April 2023 and is currently implementing them.

1-2 Management Philosophy

Its corporate philosophy is as follows: **“Nittobo Group will, as a corporate group, enhance its significance by striving to create healthy and comfortable lifestyles, and thereby continue to contribute to the realization of prosperous communities.”**

Furthermore, under the following Nittobo Declaration, it is aiming to be society’s “best partner” in collaboration with all stakeholders.

Nittobo Group aims to become the “Best Partner” of your community. (Nittobo BP Declaration)
We will relentlessly strive to identify our customers’ needs and will find great satisfaction in steadfastly earning their Confidence and Trust. In addition, we will attach importance to sharing this satisfaction with all of our stakeholders (communities) through our products and services, including shareholders, investors, public administrations and regional communities.
We are committed to becoming a corporate group in which the potential of our respective, independent employees is valued and thereby inspires our employees to freely and willingly share their own ideas, ultimately achieving greater results through teamwork. Our corporate group will provide its’ employees with an opportunity for progress and self-realization based on the belief that their progress leads to everyone’s success.
We will encourage our employees to be good citizens, think deeply, observe widely, act courageously and to approach their jobs with resolve and determination.

<Deeply, Widely, Strongly and Hospitably>



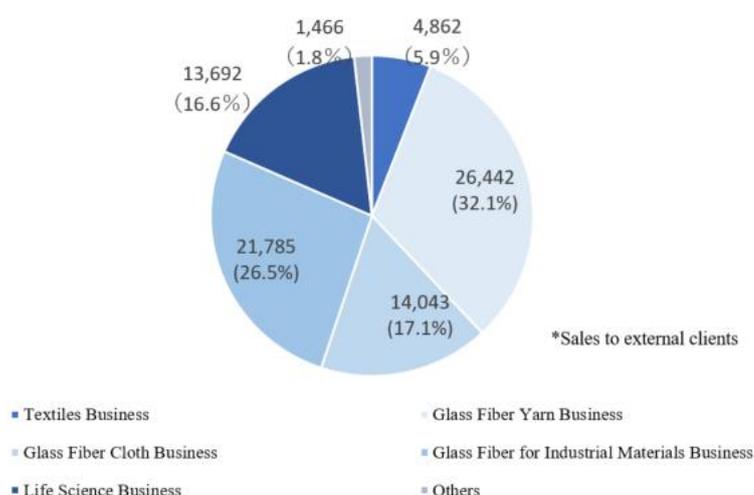
(From the company’s website)

1-3 Business Description

(1) Business Description

The company’s business can be largely divided into three categories, namely, the “Glass Fiber Business” which manufactures and sells various products using glass fiber, “Textiles Business”, which manufactures and sells textile products for clothing, and “Life Science Business”, which manufactures and sells immunological in vitro diagnostic reagents and produces and bottles beverage. As for the reporting segments, the “Glass Fiber Business” is divided into three categories, namely, the “Glass Fiber Yarn Business,” “Glass Fiber Cloth Business,” and “Glass Fiber for Industrial Materials Business.” Together with the “Textiles Business” and “Life Science Business,” there are a total of 5 reporting segments. In addition, there is a category called “Others” which consists of the service business that are not included in the reporting segment.

Sales Composition by Segment (FY2019/Mar, Unit: Million yen)

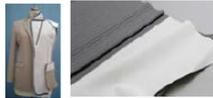


Segment	Amount	Composition rate
Textiles Business	4,862	5.9%
Glass Fiber Yarn Business	26,442	32.1%
Glass Fiber Cloth Business	14,043	17.1%
Glass Fiber for Industrial Materials Business	21,785	26.5%
Life Science Business	13,692	16.6%
Others	1,466	1.8%
Total Sales	82,292	100.0%

*Unit: million yen.

①Textiles Business

The company provides products utilizing its unique technologies to respond to the diversifying needs of customers, from yarns that are indispensable for clothing, to secondary materials and products. “C·S·Y (Core Spun Yarn)” is the double-structured textile which is the precursor of stretch fabrics. “Dan Reine” is adhesive interlining for women and has been boasting high market share. And “Nittobo Dishcloth” won the 2015 Good Design Long Life Design Award.

Business	Principal product category	Characteristics	Product photograph
Raw yarn	Core spun yarn (CSY)	Nittobo's CSY is a yarn product made by twining short fiber such as cotton around a polyurethane filament before covering it. CSY, being a pioneer of stretch fabric, represents a combination of core and cover materials, something made possible by our multi-layer-structure yarn making technique. CSY serves to aid idea generation for products based on a combination of functionality, such as for moisture absorption and heat generation, quick drying and cold sensitivity and light weight, as well as a sense of touch.	
	Dishcloth	The Nittobo Dishcloth, being superior in water absorption and quick drying features and not prone to picking up fluff, is a long-seller item, which the Company developed over five decades ago, jointly with kurashi-no-techo co., ltd. The Nittobo Dishcloth was honored with the Good Design Long Life Design Award 2015.	
Interlining	Interlining	Nittobo Interlining is a low-profile function material product that is intended to be attached to the inner side of a garment to keep its shape and size stability. This product accentuates the stylish look of the silhouette by tapping the texture of the outer fabric of the garment. Nittobo Interlining boasts the top market share in Japan, among domestic female interlining products.	
	Adhesive tape	Nittobo's adhesive tape products are used for reinforcing garment connection parts such as collar, sleeve and pocket, spots that are difficult to be attached with interlining, and for raising stitching work efficiency. The Company's adhesive tape product lineup caters for any shape and is composed of tapes made of fabric identical to each outer garment fabric.	
	Liner material (liner)	Nittobo's liner material, being a product made by applying its ultra-thin fabric attachment technique of excellence, is enabled to be used as a liner as well. For example, this product was adopted as the material for a sports wear item using a moisture-permeation laminated waterproof film.	

(Source: the company)

②Glass Fiber Business

The company succeeded in the first industrialization of glass fiber in Japan. It provides products for a wide range of applications with consistent coverage from yarn manufacturing to glass cloth processing.

Especially, special glass has low dielectric and low thermal expansion characteristics due to its special composition. It is employed as a precision material for electronic devices such as base stations, high-performance servers and smartphones, and is highly competitive. Among them, special glass (NE glass, T glass) which achieves low dielectric and low thermal expansion by special composition is used in server base station and precision material for electronic devices such as smart phone and has high competitiveness.

In addition, the company spearheaded the manufacturing of glass wool in Japan to be used as insulation for housing, and is regarded as the pioneer of heat insulation materials with its unique technologies. In particular, high performance glass wool contributes to an energy-saving society as heat insulation materials for very airtight and highly heated insulating houses.

(Major uses)

High function electronic substrate	NE Glass has low dielectric characteristics that improve transmission loss and is now used in electronic substrates for servers in data centers and base stations. T Glass has low thermal expansion characteristics and high tensile elasticity and is now used in electronic substrates for semiconductor packages that are mounted on smartphones and high-performance servers.
Glass fiber for composite material of smartphone body (FF)	With its unique technology, the company succeeded in making the cross section of glass fiber an oblong shape, instead of an ordinary circular shape. When used as a composite material, it helps avoid warpage and twist of molded products. It is used in the body of small electronic devices such as smartphones for which even a small distortion cannot be allowed.

Automobile	“FRP (fiber reinforced plastic)” is widely used in various parts of automobiles as a light weight and high strength material.
Resin coating film material	Glass cloth for membrane materials made with ultrathin glass fiber is widely used for multipurpose stadiums, soccer fields, indoor tennis courts, membrane materials for tent warehouse, and various events.
Residential insulation (glass wool)	Glass wool exerts high insulation performance and is excellent in airtightness and soundproofing. Hence, it is used as heat insulation materials for houses and buildings to enhance the energy-saving effect. It is an environmentally friendly product since it uses 80% recycled glass and is recyclable after use.

<What is glass fiber?>

Glass fiber is a product for which glass is melted at a high temperature of 1,300°C or higher and stretched to be fibrous. The company succeeded in the industrialization of glass fiber for the first time in 1938 in Japan, and it developed rapidly thereafter. Its characteristics include strength, heat resistance, non-flammability, electrical insulation and chemical resistance, and it is used for various purposes such as printed wiring boards, FRP (Fiber Reinforced Plastics), and building materials. For its excellent characteristics, it is being used in a wide range of industries.

(Composition, property)

As described earlier, it has characteristics such as strength, heat resistance, non-flammability, and electrical insulation. However, to be applied as electronic materials, higher level of performance including high strength, high elasticity, and low dielectric is required.

(Manufacturing method)

After raw materials of glass are melted at a high temperature of 1,300 to 1,600°C, they pass through a spinning nozzle and are reeled up to form a filament. A very precise control technique is required.

The thinness of the glass fiber, which is a glass base pulled out from the machine at high speed, is 4 to 24 micrometers in diameter.

(*The thinness of a human hair is about 50 to 100 micrometers.)

The spun glass fiber is processed into product forms according to the application.

(Major product forms)

◎Yarns

Yarns (twisted yarns) include a single yarn which is a strand composed of several hundred filaments that are simultaneously spun and twisted in the same direction and a twisted yarn which is made by twisting several single yarns.

The “E glass yarn,” a single yarn made of twisted strands mainly composed of filaments of 4.0 μm to 7.4 μm, has excellent electrical insulation, heat resistance, tensile strength, and dimensional stability, and is generally used for printed wiring boards. In addition, it is highly compatible with resins due to its unique surface treatment technology for industrial materials. It is highly evaluated as a base material with good workability.

◎Glass fiber cloth

Glass cloth, which is fabric (cloth form) made of glass fiber yarns, is used for a wide range of applications such as printed wiring boards, damping materials, tent films, and road reinforcement materials.

Among them, the glass cloth used for printed wiring boards and electronic parts is the company’s flagship product that it boasts worldwide.

【Glass cloth for printed wiring boards】

A printed wiring board is formed of the fine wiring of metals such as copper on the surface of a base body such as resin, and components including resistors, capacitors and IC chips are fixed by soldering on the wiring. It is an important parts that influence the performance of all electronic equipment, including PC, smartphones, servers, medical equipment, industrial robots, automobiles, and aircraft.



Glass fiber cloth, which has characteristics of high insulation, high strength, heat resistance, and dimensional stability, is thought to be the most suitable material for a printed wiring board.

Along with remarkable development of digital technologies, electronic devices such as PC and smartphones are becoming lighter, thinner, smaller and more sophisticated, and the need for the improvement of glass cloth performance is increasing.

In response to these needs, the company develops high performance glass cloth products such as “Low dielectric glass cloth (NE-glass),” “Low CTE (Coefficient of Thermal Expansion) glass cloth (T-glass),” and “Ultra-thin glass cloth,” using the strengths of integrated manufacturing based on its unique technologies including glass composition development technology, fiber development technology and textile processing technology and has a high market share.

“Low dielectric glass cloth (NE-glass)”

Higher speed transmission with higher frequency is becoming more common, and low dielectric materials that reduce transmission loss is required for printed wiring boards.

To address the need, the company has developed the “NE-glass” that is excellent in low dielectric constant and dissipation factor with the same characteristics as “E-glass” by lowering the component ratio of alkaline-earth elements (CaO, MgO) as compared with the conventional “E-glass” while enhancing the component ratio of boric acid (B₂O₃).

It is mainly used for electronic boards for data centers and base station servers.

“Glass Cloth with Low Thermal Expansion Characteristics (T-glass)”

“T glass” has the higher component ratio of silica (SiO₂) and alumina (Al₂O₃) compared with the standard “E-glass” and provides significantly advanced mechanical and thermal performance of glass fiber.

Utilizing its low thermal expansion characteristics and high tensile elasticity, it realizes excellent dimensional stability and increased rigidity, and it is used as an electronic substrate for semiconductor packages mainly mounted on smartphones as a high-performance electronic material.

Like carbon fiber and aramid fiber, it also works well as a reinforcing material for advanced composite materials, so it is used by itself or as a hybrid material with carbon fiber in the fields of aviation, space and sports.

“Ultra-thin glass cloth”

Demand for thinner glass cloth is increasing as a material to respond to the trend of making lighter, thinner and smaller printed wiring boards with high density packaging. In addition to its thinness, the company’s ultra-thin glass cloth has superb capacities to process fine holes both for laser and drill processing and offers great dimensional stability and surface smoothness as a laminated plate.

The product forms and uses by segment in the glass fiber business are as follows.

Business	Principal product category	Characteristics	Product photograph	Main uses
Glass fiber yarn	Roving	A product consisting of strands of untwisted glass fiber.		Prefabricated bath unit Septic tank
	Chopped Strand	A product made by chopping glass fiber into fine pieces		Body of smartphone and PC Composite materials for automobile
	Yarn	A product made of twisted glass fiber		Glass cloth
Glass fiber cloth	Glass cloth	A product made by turning yarn into cloth		Printed circuit board
Glass fiber for industrial materials	Glass cloth	A product made by turning yarn into cloth		Anti-vibration materials Tent film Road reinforcement materials
	Glass wool	A product made by turning short glass fiber wool		Homes and non-residential buildings

(Source: the company)

③Life Science Business

The Life Science Business consists of the Medical Division and the Environment and Health Division.

The Medical Division manufactures and sells in vitro diagnostics reagents used for blood and urine tests and specialty chemicals products centered on functional polymers.

The company is achieving high quality and stable supply of the “in vitro diagnostic reagents” that are used in health checkups and thorough physical examinations to examine health status using blood or urine, by integrally manufacturing them from the antiserum as the raw material to the diagnostic reagents as the final product within the Group.

The products’ high quality has been recognized, and they are supplied in medical fields globally. In Japan, the company is winning the top share with more than 10 items.

As for the Specialty Chemicals Business, the company develops products, and sells unique functional polymers (polyallylamine and polyamine series). The characteristics of this business are R&D together with chemical products/pharmaceutical manufacturers and research institutes and product proposals that capture customer needs. The company is strong in niche markets and is actively expanding the business not only in Japan but also in the global market.

For the Environment and Health Business, the company utilizes the technologies that have been cultivated over many years to develop a business in the beverage industry.

In the beverage business, centered on the private brands, it is working on development of plastic bottles, beverage production and bottling.

Segment	Characteristics	Product photograph	Main uses
Medical	Provides in-vitro diagnostic drugs in biochemistry, hematology and serum-immunology areas, and excels in immunological reagents and osteoporosis.		<ul style="list-style-type: none"> • Measurement of liver function, cholesterol and neutral lipid • Measurement of inflammation, autoimmune disorders and nutrition conditions
Specialty chemicals (SC)	Develops new polymer materials by using special polymerization techniques, expanding various uses such as for metal scavenger.		<ul style="list-style-type: none"> • Metal processing aid agent • Pharmaceutical raw materials • Water processing agent • Paper making aid agent • Deodorant • Hard coat and surface protection agent
Beverage	Produces soft drink products and plastic bottle-based beverage items. Excels in high-mix low-volume production mainly for private-brand names.		<ul style="list-style-type: none"> • Tea-based beverages • Sports drinks • Fruit juice-containing beverage • Baby drinks <ul style="list-style-type: none"> • Leading supermarkets • Drug stores

(Source: the company)

(2) Research and development (R&D)

Since its founding, the Group has been actively promoting R&D and delivering unique products to the world.

R&D will continue to be a source of enhancing the company's competitiveness and corporate value.

In recent years, while the needs of customers are becoming more sophisticated and diversified, global competition is intensifying. Under these circumstances, the company established its general research laboratory in 2017 to provide products and services with high value-added and strong originality in a timely manner with its characteristics and strengths, and to promote R&D toward the future.

The Group will continuously work on R&D from the viewpoint of expertise in each business division. At the same time, it will promote cross-sectional management by the research laboratory to pursue synergy among businesses with a focus on speed.

Furthermore, in each field, in order to accelerate research speed and expand the perspectives, the company is actively promoting joint research on industry, government and academia from the viewpoint of open innovation.

In order to further strengthen company-wide R&D capabilities, the company decided to construct a new building called "NI-CoLabo," in Koriyama City, Fukushima Prefecture. The total cost of the construction will be 2.7 billion yen and the construction will be completed in April 2020. In addition to consolidating R&D divisions of each business segment into one location, it will enhance collaboration with external users. The building will be a symbol of the company's R&D system.

Also, in July 2018, the satellite laboratory "NI-Tech" was opened at the Kawasaki Nanomedical Innovation Center as a new research and development base to strengthen the Life Sciences Business.

1-4 Characteristics and strengths

◎ Supply products by accurately grasping needs of the times

In addition to succeeding in the industrialization of glass fiber for the first time in Japan, the company began manufacturing glass wool for the first time in Japan. As such, the company has been always leading the global and Japanese markets in the field of glass fiber. In the history of over ninety years, it has always been capturing the changes and needs of the world accurately and developing and supplying various products centered on glass fiber.

Since the company is not manufacturing final products, people do not see the company's products. However, it supplies materials that are indispensable to the world and supports our lives behind the scenes.

◎ High competitiveness by unique technologies

Among many manufacturers of glass fiber in the world, it is almost the only company that realized excellent low dielectric constant and low dielectric loss tangent (NE-glass) and high dimensional stability and higher rigidity (T-glass) in the field of glass cloth for electronic materials and has established a system that can stably supply sufficient volume.

In addition, having acquired the top share in Japan for more than 10 items with in vitro diagnostic reagents in the Medical Division also shows its high competitiveness with its unique technologies.

1-5 ROE Analysis

	2014/Mar	2015/ Mar	2016/ Mar	2017/ Mar	2018/ Mar	2019/ Mar
ROE (%)	6.3	6.8	7.6	9.8	12.5	9.1
Net Profit margin (%)	4.53	5.09	6.49	8.98	12.13	9.70
Total asset turnover [times]	0.63	0.64	0.60	0.59	0.59	0.55
Leverage [times]	2.21	2.09	1.96	1.86	1.75	1.69

The company's goal is to achieve 8% or more in the Fiscal Year Ending March 2021 and 10% or more in the Fiscal Year Ending March 2024.

The ROE for the Fiscal Year Ending March 2019 was 9.1%.

Expansion of sales for high value-added products and cost reduction will be the keys.

2. Results for The First Half of Fiscal Year ending March 2020

(1) Consolidated Business Results

	1H of FY3/19	Ratio to sales	1H of FY3/20	Ratio to sales	YY change	Compared with the initial forecasts
Net Sales	41,502	100.0%	42,762	100.0%	+3.0%	+1.8%
Gross profit	14,021	33.8%	13,437	31.4%	-4.2%	-
SG&A	9,629	23.2%	10,043	23.5%	+4.3%	-
Operating Profit	4,392	10.6%	3,394	7.9%	-22.7%	+13.1%
Ordinary Profit	4,912	11.8%	3,391	7.9%	-31.0%	+9.4%
Net Profit	4,534	10.9%	2,065	4.8%	-54.4%	-6.1%

*Unit: million yen. Net Profit means the profit attributable to owners of parent.

Sales increased and profit decreased.

Net Sales increased 3.0% year on year to 42.7 billion yen. Net Sales increased in the Glass Fiber Cloth Business, Glass Fiber for Industrial Materials Business, and the Life Science Business, while they decreased in the Textiles Business and Glass Fiber Yarn Business. Operating Profit was 3.3 billion yen, down 22.7% year on year. Among high value-added products, special glass was healthy due to strong demand, while middle-grade products for electronic and composite materials contributed negatively due to sluggish market conditions. Investment for strengthening the foundation for growth was implemented as scheduled.

(2) Trend by segments

	1H of FY3/19	Ratio to sales	1H of FY3/20	Ratio to sales	YY change	Compared with the initial forecasts
Total Sales	41,502	100.0%	42,762	100.0%	+3.0%	+1.8%
Textiles	2,515	6.1%	2,006	4.7%	-20.2%	+0.3%
Glass Fiber Yarn	13,617	32.8%	13,122	30.7%	-3.6%	+0.9%
Glass Fiber Cloth	6,825	16.4%	8,761	20.5%	+28.4%	-2.7%
Glass Fiber for Industrial Materials	10,513	25.3%	10,656	24.9%	+1.4%	+6.6%
Life Science	7,187	17.3%	7,839	18.3%	+9.1%	+4.5%
Total Operating Profit	4,392	10.6%	3,394	7.9%	-22.7%	+13.1%
Textiles	-161	-	-115	-	-	-
Glass Fiber Yarn	2,180	16.0%	1,055	8.0%	-51.6%	+5.5%
Glass Fiber Cloth	1,054	15.4%	1,227	14.0%	+16.4%	+22.7%
Glass Fiber for Industrial Materials	187	1.8%	73	0.7%	-61.0%	-
Life Science	1,438	20.0%	1,646	21.0%	+14.5%	+9.7%

*Unit: million yen. Total sales mean the sales to external clients. Ratio to sales (in profit) means the ratio of profit to sales. "Compared with the initial forecasts" was calculated by our company with reference to the documents of the company.

①Textiles Business

Sales declined and loss reduced.

Net Sales declined due to the transfer of equity interests of Nittobo (China) Co., Ltd. and sluggish market conditions, but profits improved due to the penetration of price increases and the transfer of production from China to Japan.

②Glass Fiber Yarn Business

Sales and profit declined.

Production of ultra-fine glass yarns for electronic materials recovered, as production adjustments for smartphones were settled down. However, sales of middle-grade yarns for electronic materials and composite materials for reinforced plastics to be used for automobiles and housing equipment were sluggish. Depreciation and personnel costs increased due to the installation of additional special glass melting furnaces.

③Glass Fiber Cloth Business

Sales grew and profit increased.

Demand for special glass which contributes to high-speed, high capacity communications remained favorable. The conversion of Baotek Industrial Materials Ltd. of Taiwan into a consolidated subsidiary contributed to the increase in sales.

④Glass Fiber for Industrial Materials Business

Sales increased but profit shrank.

Net Sales of glass cloth for equipment and construction materials and insulation for houses remained healthy, but profit and loss deteriorated due to an increase in depreciation and amortization costs associated with capital investment and an increase in costs such as electricity usage fees and transportation costs.

⑤Life Science Business

Sales and profits increased.

*Medical

Expenses increased due to the strengthening of the research and sales system. However, revenue grew as the company focused on domestic and overseas sales of immunological in vitro diagnostics. The revenue absorbed the increase in R&D and labor costs, resulting in increased profit.

*Specialty chemicals

High value-added products have been steadily supplied for both domestic and overseas markets.

*Beverages

While focusing on production of variety of small lot products to meet the demand, raw materials and distribution costs increased.

(3) Financial standing and cash flows

◎Main BS

	End of 2019/Mar	End of 2019/Sep		End of 2019/Mar	End of 2019/Sep
Current Assets	72,674	82,414	Current liabilities	32,066	33,384
Cash	16,145	25,880	Payables	9,415	6,977
Receivables	25,353	24,623	LT Interest Bearing Liabilities	12,998	14,914
Inventories	28,585	29,116	Noncurrent liabilities	28,193	43,444
Noncurrent Assets	78,326	91,433	ST Interest Bearing Liabilities	9,696	24,908
Tangible Assets	47,523	61,163	Total Liabilities	60,259	76,829
Intangible Assets	1,680	2,685	Net Assets	90,740	97,018
Investment, Others	29,122	27,584	retained earnings	51,440	52,645
Total assets	151,000	173,848	Total Liabilities and Net Assets	151,000	173,848
			Total Interest-Bearing Liabilities	22,694	39,822

*Unit: million yen

Cash and deposits increased because of the issuance of bonds for the first time in 30 years. Total assets increased 22.8 billion yen from the end of the previous year to 173.8 billion yen, due to the increase in property, plant, and equipment in association with capital investment.

Total liabilities increased 16.5 billion yen from the end of the previous year to 76.8 billion yen as a result of the issuance of bonds.

As retained earnings increased 1.2 billion yen and non-controlling interest increased 3.7 billion yen from the end of the previous year, net assets increased 6.2 billion yen to 97.0 billion yen.

As a result, the equity ratio decreased by 6.3 points from the end of the previous year to 53.1%.

◎Cash Flow

	1H of FY3/19	1H of FY3/20	Increase/decrease
Operating CF	1,345	4,781	+3,436
Investing CF	-6,595	-10,983	-4,388
Free CF	-5,250	-6,202	-952
Financing CF	4,204	15,875	+11,671
Term End Cash and Equivalents	17,129	25,861	+8,732

*Unit: million yen

The outflow of free CF increased due to the increase in investments.

The inflow of financing CF increased because of the issuance of bonds.

The cash position improved.

3. Forecast for Fiscal Year Ending March 2020

① Consolidated Earnings Forecasts

	FY2019/Mar	Ratio to sales	FY2020/Mar Forecast	Ratio to sales	YY change	Correction rate	Progress rate
Net Sales	82,292	100.0%	89,000	100.0%	+8.2%	-1.1%	48.0%
Operating Profit	8,198	10.0%	8,200	9.2%	+0.0%	-3.5%	41.4%
Ordinary Profit	8,934	10.9%	8,300	9.3%	-7.1%	-5.7%	40.9%
Net Profit	7,984	9.7%	5,800	6.5%	-27.4%	-6.5%	35.6%

*Unit: million yen. The estimates are from the company

Performance forecasts have been slightly revised. Operating Profit remained the same as the previous year despite increased sales.

There is no change in the profit improvement trend following the increased sales of special glass. But the company made a downward revision of sales and profit forecasts for the Fiscal Year ending March 2020 by considering fires at a subsidiary and the impact of Typhoon No.19.

Net Sales are estimated to rise 8.2% year on year to 89 billion yen. The “Glass Fiber Yarn Business,” “Glass Fiber Cloth Business” and “Life Science Business” will lead the sales.

Operating Profit is estimated to be 8.2 billion yen, the same level as the previous year. It is expected that the profit from the Glass Fiber Cloth Business and the Life Science Business will increase. The company will continuously reinforce the business base for the mid- to long-term growth including depreciation costs for new investments. There is no change in the dividend forecast. Estimated dividend is 40 yen/share, the same level as the previous term. The estimated payout ratio is 26.8%. The premise of exchange rate is 110.7 yen/USD, which is 2.7 yen higher than 108.0 yen/USD in the previous term.

(Business environment, market environment)

The company believes that the operating climate will be severer due to US-China trade friction, concerns over a slowdown in the Chinese economy, withdrawal of the UK from the EU, and an increase in the consumption tax rate.

In the electronic materials market, it is also anticipated that the demand for special glass will increase for base stations and high-performance servers in data centers due to expanded applications of 5G high-speed, high-capacity communications.

Sales of ultrafine yarns, which were sluggish in the previous fiscal year, is expected to recover from liquidation of distribution inventory and smartphone performance improvement.

(Measures of the company)

Enhancement of special glass production will contribute to revenue from the second half.

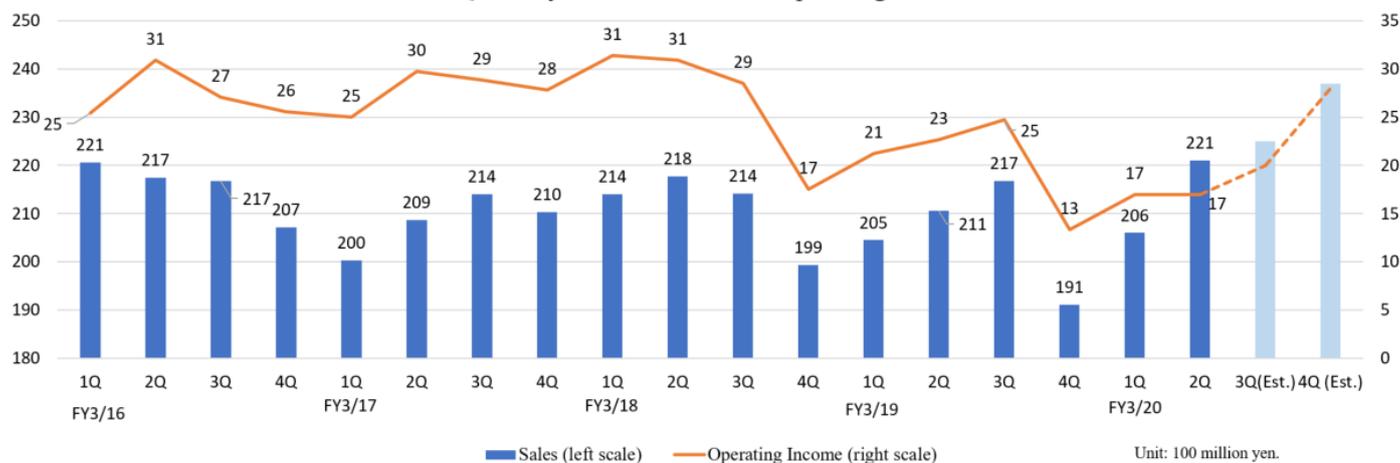
In addition, the company will continue to strengthen the Glass Fiber Business and the Medical Business.

The operation of a new melting furnace is expected to begin smoothly.

BRIDGE REPORT



Quarterly trends in sales and operating income



The company believes that both Net Sales and Operating Profit will recover in the second half, and Operating Profit will bottom out at 3.4 billion yen in the first half.

②Trends by segment

	FY2019/Mar	FY2020/Mar Forecast	YY change	Correction rate	Progress rate
Net Sales	822	890	+8.2%	-1.1%	48.0%
Textiles	48	40	-17.7%	0.0%	50.2%
Glass Fiber Yarn	264	280	+5.9%	-3.4%	46.9%
Glass Fiber Cloth	140	200	+42.4%	0.0%	43.8%
Glass Fiber for Industrial Materials	217	210	-3.6%	0.0%	50.7%
Life Science	136	150	+9.6%	0.0%	52.3%
Other	14	10	-31.8%	0.0%	37.6%
Operating Profit	82	82	+0.0%	-3.5%	41.4%
Textiles	-4	-1	-	0.0%	-
Glass Fiber Yarn	39	29	-26.3%	-14.7%	36.4%
Glass Fiber Cloth	20	32	+57.6%	+14.3%	38.3%
Glass Fiber for Industrial Materials	6	2	-68.2%	0.0%	36.5%
Life Science	26	30	+13.5%	0.0%	54.9%
Other	-7	-10	-	0.0%	-

*Unit: 100 million yen. Sales to external clients

In the Glass Fiber Yarn Business, delivery of glass fiber products for composite materials was impacted by fires at its subsidiary, Fuji Fiber Glass Co., Ltd., and the flood damage of the Fukushima No.1 factory by Typhoon No.19. In each case, they have resumed operations sequentially.

4. Progress of the <<Go for Next 100>> Mid-Term Business Plan

(1) Mid to Long Term Business Plan “Vision 101” and the Mid-Term Business Plan “Go for Next 100”

The company decided on **Mid to Long Term Business Plan “Vision 101”** for surviving and growing sustainably while seeing overseas markets, as Japan is faced with the declining birthrate, the super aging population, and the decline in total demand, and defined the ideal corporate vision in Fiscal Year Ending March 2024, which is the 101st anniversary of establishment of the company, as follows: “Nittobo delivers the unique products and innovations globally from Fukushima in Japan based on customer relations and technology.”

As the first stage for achieving **Mid to Long Term Business Plan “Vision 101,”** the company formulated the Mid-Term Business Plan “Go for Next 100,” whose final year is Fiscal Year Ending March 2021, and this plan is ongoing.

The company will first establish the foundation for keeping profitability at the current level, seize a chance to grow, identify the advantages of the corporate group, and pursue it thoroughly.

(2) Activities in each business

Mid to Long Term Business Plan “Vision 101” defines the ideal corporate vision of each business in Fiscal Year Ending March 2024 as follows.

Glass Fiber Business	Stable provision of high value-added products in the rapidly changing environment to consolidate our presence as market leader.
Medical Business	Supply of high quality in vitro diagnostic reagents for self-medication
Textiles Business	Acceleration of high value-added strategy and expansion of the application of textile technology to industrial fields with proper business volume and profitability.

① Glass Fiber Business

The themes are “reinforcing the field of electronic materials” and “reinforcing the field of industrial materials,” taking advantage of the strengths of the Glass Fiber Business.

(Strengths of the Business)

◎Product characteristics

* Superfine count yarn

Produce the world's finest yarn with a stable quality for the realization of smaller and thinner electronics.

* NE glass

Low-dielectric feature and reduce transmission loss and noise. Contribute to high-speed/high capacity communications using 5G which is expected to rapidly spread from this Fiscal Year.

* T glass

Actualize high-strength, low thermal expansion. It is essential for high density package substrate.

◎Technical characteristics

* Have both a spinning process and a weaving process and making the integrated production possible. There are fewer companies that have both a spinning process and a weaving process on a large-scale basis.

* In the spinning process, stable production of the world's finest glass yarn (4μ), NE glass yarn, T glass yarn.

* In the weaving process, actualize the optimum weaving process or processing process in line with characteristics of individual yarns, making use of the know-how of the spinning process

“Reinforcing the field of electronic materials”

The demand for high value-added special glass will continue to grow as the miniaturization technologies and performance of semiconductor advance with the realization of a high-speed, large-volume communication society represented by 5G. In response, the company will find more purposes of use of special glass such as high value-added products “T glass” and “NE glass,” enhance its production capacity, produce finer and thinner “E glass,” and reinforce production capacity.

“Reinforcing the field of industrial materials”

The company plans to introduce special glass to the field of industrial materials, actively enter overseas markets, and establish the customer solution section. (Current: Product Planning Section)

With the establishment of the customer solution section, the company will promote new purposes of use of “T Glass,” which is now used in electronic substrates for semiconductor packages, and “NE Glass,” which is now used in electronic substrates for servers in data centers and base stations.

The company will enhance the business for industrial materials, to meet the needs for high-strength glass for aircraft and automobiles with “T Glass”

As for investment, the company will make investments mainly for boosting the production capacity, increasing their purposes of use for the high value-added products “T Glass and NE Glass,” making ultra-fine “E-glass.”

Major activities of each business for the glass fiber business are as follows.

Glass Fiber Yarn	<ul style="list-style-type: none"> *Enhance yarn production capacity <ul style="list-style-type: none"> ▪ Enhance production capability of special glass (T/NE) yarn (Nitto Glass Fiber Manufacturing Co., Ltd. : 2020/Mar H2~) (Fukushima No.1 factory: 2021/Mar~) (Fukushima No.1 factory/Fuji Fiber Glass/ Nitto Glass Fiber Manufacturing Co., Ltd. : 2020/Starting operation sequentially from autumn) (NITTOBO ASIA Glass Fiber (Taiwan) : 2022/Mar~) ▪ Enhance production capacity of fine count yarn (NITTOBO ASIA Glass Fiber: 2020/Mar H2~) <p>*Introduce facility of special glass (NE) for composite material (Fuji Fiber Glass Co., Ltd. : 2019/Mar H1~)</p>
Glass Fiber Cloth	<ul style="list-style-type: none"> *Enhance production capacity of high value-added glass cloth (Fukushima No.2 factory/Enhance weaving machine's processing ability: 2019/Mar H2~) *Acquired shares of Baotek Industrial Materials Ltd. (Taiwan) (August 2018) (Processing process: Super-thin cloth manufacturing: 2020/Mar H2~)
Glass Fiber for Industrial Material	<ul style="list-style-type: none"> *Ramp up production capacity of thin GW *Ramp up production capacity of non-formaldehyde GW

To ensure to capture the increasing demand for NE glass and T glass, the company is scheduling to install a new furnace in the Fukushima factory in the Fiscal Year ending March 2020 and launch a new factory in Taiwan in the following year. Furthermore, it announced the plans to install and reinforce special glass melting furnaces at its three bases in Japan from the fall of Fiscal Year ending March 2020.

② Medical Business

The two business strategies are “strengthening each function in the value chain, especially improving the capability to procure raw materials” and “establishing a supply chain for global production, sales, and regulatory approval.”

The company will refine its integrated production system in Japan and the United States, which is its strength, and supply high value-added reagents that respond to diversification and refinement to contribute to self-medication.

In these circumstances, the company will implement the following measures for the in vitro diagnostic reagents business.

Construction of new factories	Construction of new factories in the production bases at Nittobo Medical (Japan) and Nittobo America (US). Production capacity expansion will start from 2020.
Reinforce research production capability	<ul style="list-style-type: none"> *Investment in Rimco Corporation (Development and production of in vitro diagnostic reagents by using genetically modified silkworms) *Acquired Frontier Institute Co., Ltd. (R&D and production of monoclonal antibodies)

	*Establishment of FAN Co., Ltd. (JV with Fujikura Kasei Co., Ltd., R&D of materials for in vitro diagnostic reagents)
Enhance raw material supply capacity	*Acquisition of Capricorn Products (Enhance antiserum production capacity)
Sales	Strengthen know-how of US sales network (acquiring Kamiya Biomedical Company as a subsidiary)

③ Textiles Business

To undertake two structural reforms.

<Structural reform 1>

Nittobo established Nittobo (China) Co., Ltd., a wholly owned subsidiary, in Wuxi, Jiangsu Province, China in 1995. It has been producing high quality and high function interlining cloth since the start of operation in 1997, but the business was sluggish due to intensifying price competition in the market of general-purpose products due to rising labor cost, cost to comply with environmental regulations and progress of appreciation of the yen against RMB.

Under these circumstances, the company transferred Nittobo (China) Co., Ltd. to a Chinese local company called ZhejiangYinyu Spinning Co., Ltd. on May 2019.

It will receive support for sales, production, and development from Nittobo Trading Wuxi Co., Ltd., and continue to supply products to the existing customers.

The intention of this action is to streamline the operation of the Textile Business and improve competitiveness.

<Structural reform 2>

The company will develop following high value-added products.

Development of new functional products	<ul style="list-style-type: none"> *Develop interlining with functionality (deodorization, antibacterial, antifouling, cool feel, antistatic treatment), raw yarn (deodorization, water absorption, quick drying, lightweight) *Reinforce innovative fabric (windproof, cotton lining, chambray) *Develop products other than fashion clothing including sports application (e.g., backing, bandage)
Develop environmentally-friendly products	<ul style="list-style-type: none"> *Fluorine-free interlinings *Expand product lineup using recycled materials *Take measures to save water in the dyeing process
Expand into the industrial-use material field	<ul style="list-style-type: none"> *Reinforce collaboration with Glass Fiber Business *Early launch of products with industrial-use materials

(3) Numerical goals

The numerical goals in “Go for Next 100” for Fiscal Year Ending March 2021 and “Vision 101” for Fiscal Year Ending March 2024 are as follows.

(Earnings targets)

	FY2017/Mar	FY2018/Mar	FY2019/Mar Forecast	FY2020/Mar Plan	FY2023/Mar Plan
Net Sales	845	822	890	1,000	1,500
Operating Profit	108	82	82	120	150
Ordinary Profit	111	89	83	120	150
Net Profit	103	79	58	80	100
EBITDA	150	122	137	200	-
ROE	12.5%	9.1%	-	8% or over	10% or over
Net Interest-bearing Liabilities	11	88	-	100 or less	Virtually zero
Equity ratio	58.8%	59.4%	-	60% or over	70%

*Unit: 100 million yen.

(Capital expenditures and research & development)

	FY2017/Mar	FY2018/Mar	FY2019/Mar Forecast	FY2020/Mar Plan
Research and development expenses	16	15	18	At least 20
Research expenses to sales ratio	1.9%	1.8%	2.0%	At least 2.0%
Capital expenditures (acceptance inspection value)	70	119	216	550

*Unit: 100 million yen. The capital expenditures for FY2020 means the cumulative total in 4 years.

(Inflation assumptions)

	FY2017/Mar	FY2018/Mar	FY2019/Mar Forecast	FY2020/Mar Plan
Foreign exchange rate (¥/\$)	111.2	110.7	108.0	100
Oil price	55.9	69.4	-	60

*Oil price means the price of crude oil from Dubai. The unit is USD/BBL.

The company sets forth the business portfolio of the Fiscal Year Ending March2024 as “development of high value-added products and expansion of overseas sales ratio” and “establishment of the Medical Business as the second pillar” to establish a stable profit structure.

As for EBITDA, the company will invest in ultra-fine yarns and ultra-thin cloth inside Japan through the glass fiber business, make investment for making yarns thinner outside Japan, fortify an integrated manufacturing system for products ranging from yarns to cloth through M&A with Baotek in Taiwan, enhance the capacity for producing special glass inside and outside Japan, upgrade the integrated production system in the medical business in Japan and the U.S., intensify overseas business expansion, and so on for increasing its earning capacity, with the aim of earning about 16 billion yen this fiscal year, 20 billion yen in fiscal 2020.

(Capital expenditures, Research and development expenses, and depreciation costs)

As for equipment investment, the company plans to invest 55 billion yen in the 4-year Mid-Term Business Plan. The company has already decided to invest about 50 billion yen, about 90% of the planned amount by end of this fiscal year.

The number of staff members at the research institute also increased from 95 in the previous year to 106 in the current fiscal year. They will continue to increase the number.

5. Conclusions

Although the company made a slight downward revision of its full-year earnings forecast for the Fiscal Year ending March 2020 due to temporary factors, demand for special glass, which is one of the company’s strengths, is strong. It expects that the demand will be even stronger in the next term when 5G communications are launched. It also believes that attaining the Operating Profit of 12.0 billion yen in the Fiscal Year ending March 2021, which is the final year of the Mid-Term Business Plan “Go for Next 100”, is possible. Furthermore, as for the Medical Business, the company plans to strengthen its overseas sales and expand production capacity in Japan and the United States in order to achieve further growth. In the short term, we would like to pay attention to the accumulation of the second half. In the medium to long term, we would like to pay attention to specific measures for the “Long-Term Vision 101” towards the Fiscal Year ending March 2024, which is the 100th anniversary of its founding.

<Reference: Regarding Corporate Governance>

◎Organization type, Directors, and Auditors

Organization type	Company with audit and supervisory committee
Directors	6 directors, including 3 external ones

◎Corporate Governance Report

Updated on June 27, 2019

<Basic Policy>

Our Group aims to establish a fair and transparent management system in order to conduct business activities that put importance onto social trust from our stakeholders including shareholders and investors and undertake constant review of corporate governance.

Our company introduced an executive officer system in June 2003 with the intention to make the Board of Directors more effective and expedite decision-making. As a result, a system which maximizes the effect of consolidated management has been established. Since June 2008, the business has been operated with further clarification of functions and responsibilities for business administration and business execution. Having received an approval at the ordinary general meeting of shareholders on June 26, 2014, our company has shifted to a company with committees (currently, a company with nominating committee, etc.). In the new form, our company clearly separates supervising and business execution even further and aims at “supervisory functions reinforcement and transparent business administration” and “swift execution of business and improvement of management mobility.” Our company has also built functional systems, which allow us to respond more effectively to expectations of our stakeholders including our customers, shareholders, business partners, and employees and promotes further improvement of the corporate value.

<Reasons for Non-compliance with the Principles of the Corporate Governance Code (Excerpts)>

All Principles of the Corporate Governance Code that were revised in June 2018 are implemented.

<Disclosure Based on the Principles of the Corporate Governance Code (Excerpts)>

Principle	Disclosure contents
Principle 1-4 The so-called cross-shareholdings	<p>[Policy concerning cross-shareholdings]</p> <p>Our company may hold shares of listed companies as cross-shareholdings when we determine that it will contribute to the establishment of good relationships with the Group’s important business partners for sale, material procurement, finance, etc., facilitation of smooth business activities of the Group, and maintenance and improvement of the corporate value of the Group. Meanwhile, the share of the companies that do not contribute to the maintenance and improvement of the corporate value of the Group and are judged to have little significance in holding their shares will be sold while considering the impact on the market.</p> <p>[Method to validate rationality of possession]</p> <p>Concerning holding listed stocks, for each stock, the Board of Directors regularly verifies the holding policy, which comprehensively takes into account qualitative factors such as importance of transactions, existence of technical cooperation and joint investment, and implementation of joint ventures as well as quantitative assessments that compare the overall return on investment calculated based on the dividend yield and the business profit with capital cost.</p> <p>Based on the verification, our company sold 13 stocks of 2,050 million yen in Fiscal Year Ending March 2019, and sold a total of 13 stocks of 3,355 million yen in two years from Fiscal Year Ending March 2018.</p> <p>[Exercise of voting rights of cross-shareholdings]</p> <p>With regard to the exercise of voting rights of cross-shareholdings, our company will decide on the matter based on the factors such as whether the</p>

	<p>issuing company has an appropriate governance system and makes appropriate decisions that lead to enhancing its corporate value over the medium- and long-term, as well as whether it contributes to the enhancement of corporate value of the Group, and exercise the voting right appropriately.</p>
<p>Principle 5-1 Policy for promoting constructive dialogue with shareholders</p>	<p><Policy for developing systems and implementing measures for promoting constructive dialogue with shareholders></p> <p>(1) The executive officer responsible for corporate communication is assigned to supervise overall dialogue with our shareholders, and the Corporate Communication Department is a responsible department for assisting it. Being led by the executive officer, our group endeavors to create opportunities for dialogue with our shareholders, which should contribute to the continuous growth and mid/long-term improvement of the corporate value. In addition, together with the Corporate Communication Department, other departments associated with IR activities promote ongoing collaboration among departments.</p> <p>(2) The Group strives to continuously disclose information in a timely and appropriate manner so that parties including our customers, shareholders and investors will accurately be informed of and understand the state of the Group. To achieve this, we comply with laws and regulations related to information disclosure, stock exchange rules, etc. as well as establishing and operating appropriate systems for information disclosure.</p> <p>a) The Group publishes information that needs to be disclosed in accordance with domestic and international laws and regulations, stock exchange rules, etc. through our business reports, annual securities reports and annual reports for shareholders as well as making an announcement through information transmission systems at the stock exchange and press releases.</p> <p>b) The Group seeks to engage in fairer and broader information disclosure through our website, etc. in principle.</p> <p>c) Briefings for analysts and institutional investors are held immediately after announcement of half-yearly and final financial statements.</p> <p>(3) Feedback including opinions and concerns from shareholders and investors received through dialogue with them is collected at the Corporate Communication Department. The Department then reports to the responsible executive officer while feeding it back to the management team and Board of Directors by reporting at executive meetings, etc. when necessary.</p> <p>(4) The Group deals with individual inquiries and dialogue by paying sufficient attention to insider information and using only previously published and publicly known information.</p>

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