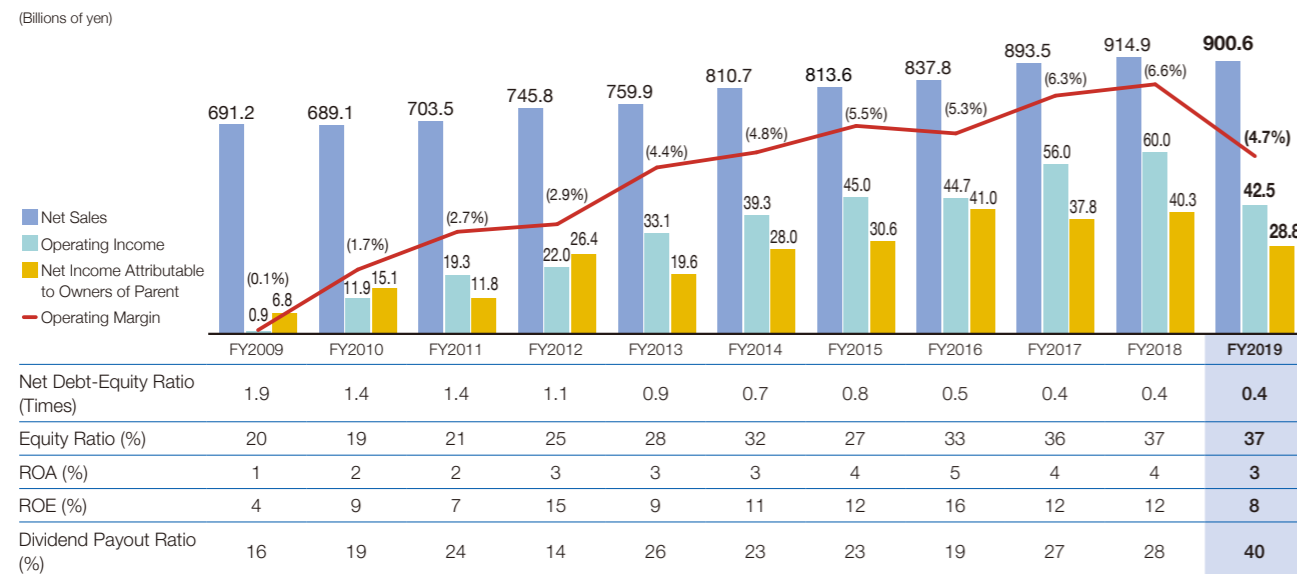


# Progress of Management Reforms

Following the global financial crisis in 2008, Fuji Electric initiated business restructuring to enable generation of profits even without growth in sales. Since then, we have taken steps to implement management reforms aimed at achieving targets set in our medium-term management plans, in order to deliver growth and further improve our profitability.

Main initiatives	2010–2012 Strengthen a profitable structure through business restructuring	2013–2015 Promote growth strategies Proactive management	2016–2018 Further renovation of Fuji Electric	2019– Establish foundations for sustainable growth
Reinforcing operating foundations	<ul style="list-style-type: none"> <li>Integrated business operational management by abolishing the holding company system</li> <li>Expedited management decision-making (reduced executive officers from 53 to 18)</li> <li>Revised our management policies</li> </ul>		<ul style="list-style-type: none"> <li>Partial cancellation of cross-shareholdings</li> </ul>	<ul style="list-style-type: none"> <li>Established Nomination and Remuneration Committee</li> <li>Formulated Environmental Vision 2050</li> </ul>
Promoting growth strategies	<ul style="list-style-type: none"> <li>Clarified business domains as energy and environment businesses</li> </ul>	<ul style="list-style-type: none"> <li>Overseas business expansion                             <ul style="list-style-type: none"> <li>Promoted M&amp;As and collaborations to secure human resources and sales channels (six companies in Asia and other regions, two in China, two in the United States, and one in Europe)</li> </ul> </li> <li>Strengthened our businesses in power electronics systems and power semiconductors and maximized synergies</li> <li>Stepped up research and development</li> </ul>	<ul style="list-style-type: none"> <li>Strengthened our power electronics systems business                             <ul style="list-style-type: none"> <li>Reorganized social engineering systems, industrial infrastructure, and power electronics businesses</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Actively invested in power semiconductor business</li> </ul>
Improving profitability	<ul style="list-style-type: none"> <li>Implemented business restructuring                             <ul style="list-style-type: none"> <li>Reorganized production bases (magnetic disks and vending machines)</li> </ul> </li> <li>Reduced costs through global procurement and centralized purchasing</li> <li>Reduced inventories through supply chain reforms</li> <li>Reinforced manufacturing capabilities</li> <li>Consolidated production and engineering departments and strengthened human resource development</li> </ul>	<ul style="list-style-type: none"> <li>Promoted local production for local consumption                             <ul style="list-style-type: none"> <li>Established production bases (Thailand, India, and United States)</li> </ul> </li> <li>Improved value-added productivity through in-house production, automation, and standardization</li> <li>Promoted companywide Pro-7 Activities to improve profitability                             <ul style="list-style-type: none"> <li>Improved operational efficiency by reviewing all costs from the ground up</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Strengthened a profitable structure                             <ul style="list-style-type: none"> <li>Strengthened mother factories in Japan (Suzuka, Kobe)</li> <li>Reorganized production model lineup</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Improved productivity through increased introduction of RPA</li> <li>Promoted workstyle reforms</li> </ul>

## Business Performance Trends



# FY2023 Medium-Term Management Plan “Reiwa Prosperity 2023”

Under our Medium-Term Management Plan for Fiscal 2023, we aim to establish a foundation for sustainable growth with net sales of ¥1 trillion and an operating margin of 8% or more. As for financial indicators, we will emphasize a balance between growth potential, profitability, efficiency, and financial soundness in order to further improve capital efficiency.

## Promote Growth Strategies

### ✓ Focus on our businesses in power electronics systems and power semiconductors

From fiscal 2019 to 2023, we plan to allocate about 90% of plant and equipment investments of ¥220 billion and about 80% of R&D expenditures of ¥200 billion to expand our businesses in power electronics systems and power semiconductors.

**[Plant and equipment investment]** We will make investments to expand the system business of our power electronics systems while reinforcing production facilities for power semiconductors aimed at increasing sales of those for electrified vehicles.

**[Research and development]** In addition to stepping up incubation development, we will deploy our strength in the mobility field where we can utilize synergy between the power electronics systems and the power semiconductors, and competitive components to develop global products, such as FA systems, IoT solutions, transformers, and switches. We will also develop next-generation power semiconductors for electrified vehicles.

### ✓ Expand overseas businesses

Amid growing demand for electricity, energy savings and automation for industrial and social infrastructure, as well as the spread of renewable energy, we will raise the overseas sales ratio from 25% in fiscal 2018 to 35% in fiscal 2023 by increasing sales mainly in Southeast Asia, India, and China.

## Further Improve Profitability

### ✓ Reinforce global manufacturing capabilities

We will work to strengthen our global manufacturing capabilities with an emphasis on local production for local consumption. At the same time, we will step up development of local leaders at our overseas production bases and promote their autonomy. We will also deploy IoT technologies to advance digital reforms of our manufacturing and achieve innovative productivity improvements by promoting collaboration across processes and bases through visualization and sharing of information on design, purchasing, manufacturing, and testing.

## Ongoing Reinforcement of Operating Foundations

Targeting sustainable growth, we will continue reinforcing our operating foundations with a focus on the environment, human resources, and governance. In addition, we will revitalize our companywide Pro-7 Activities and promote workstyle reforms aimed at improving work efficiency, work quality, and productivity.

\* For more details, please refer to Environment (page 31), Human Resources (page 37), and Corporate Governance (page 41).

## FY2023 Management Targets

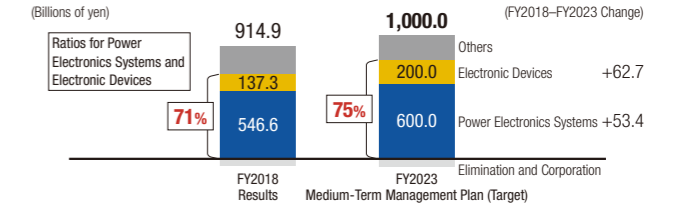
(Billions of yen)	FY2018 Results	FY2023 Medium-Term Management Plan (Target)	FY2018–FY2023 Change
Net Sales	914.9	1,000.0	+85.1
Operating Income	60.0	80.0	+20.0
Operating Margin	6.6%	8.0%	+1.4pt
Net Income Attributable to Owners of Parent	40.3	55.0	+14.7

## Financial Indicators

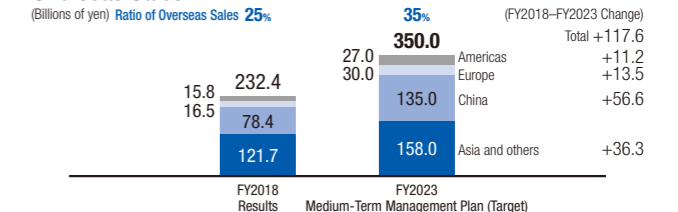
	FY2018 Results	FY2023 Medium-Term Management Plan (Target)	FY2018–FY2023 Change
Net Debt-Equity Ratio	0.4 times	0.1 times	-0.3
Equity Ratio	37%	50%	+13pt
ROA	4%	5%	+1pt
ROE	12%	11%	-1pt
Dividend Payout Ratio	28%	30%	+2pt

Note: Assumed exchange rates for fiscal 2023: ¥105 to the U.S. dollar; ¥123 to the Euro; ¥16 to the RMB

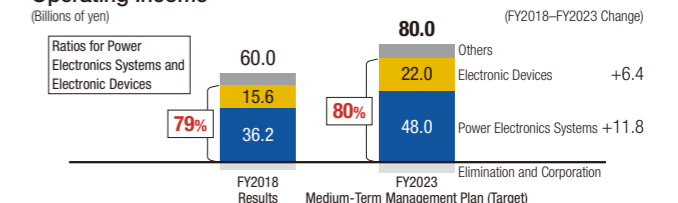
## Net Sales



## Overseas Sales

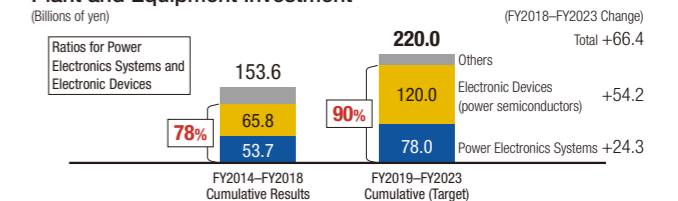


## Operating Income

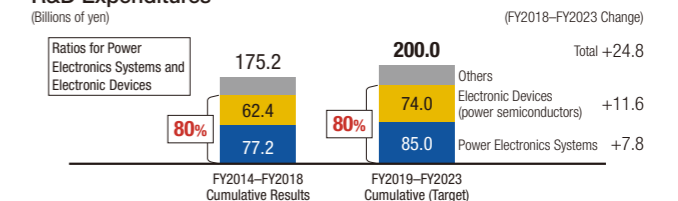


Note: Ratios for Net Sales and Operating Income are calculated based on amounts before elimination and adjustment of inter-segment transactions

## Plant and Equipment Investment



## R&D Expenditures



\* Figures for R&D expenditures are classified by segment according to theme and therefore differ from figures stated in the consolidated financial report.

# Fiscal 2019 Review of Operations

In fiscal 2019, ended March 31, 2020, Fuji Electric posted year-on-year declines in consolidated net sales and operating income amid curtailment of economic activities stemming from the spread of COVID-19, as well as slowdown in markets outside Japan, centered on China, due to the trade friction between the United States and China. Nevertheless, we continued actively investing in production facilities for our power electronics systems and power semiconductors and in R&D aimed at expanding our business.

## Fiscal 2019 Performance

For the year, consolidated net sales amounted to ¥900.6 billion, down by ¥14.3 billion year on year. Factors in the decline included delays in deliveries and curtailment of plant and equipment investments stemming from restrictions placed on business activities to combat the spread of COVID-19, as well as the absence of large-scale orders recorded in the previous fiscal year and the impact of the trade friction between the United States and China. However, we benefited from strong demand in Japan to upgrade or replace aging equipment.

Despite the efforts to reduce costs, earnings were affected by lower sales and production volumes for major components\*, as well as foreign exchange factors, upfront investments, and increased costs related to product defects. As a result, operating income declined by ¥17.5 billion, to ¥42.5 billion. Sales in substation equipment, switchgears and controlgears in the power electronics systems for energy, and plant system projects such as power plants increased, but demand for major components declined.

\* Major components: ED&C components (Power Electronics Systems Energy); low-voltage inverters, rotating machines, FA components, measuring instruments (Power Electronics Systems Industry); semiconductors (Electronic Devices); and vending machines (Food and Beverage Distribution).

### <Reasons for decrease in sales of major components>

From the first quarter through the third quarter of fiscal 2019, economic slowdown in China due to the trade friction between the United States and China led to ongoing investment restraint. Meanwhile, demand for machine tools and industrial equipment declined in Japan and overseas, and sales of ED&C components and low-voltage inverters also decreased. In addition, worsening the Chinese economy caused closure of factories, and demand for new vending machines decreased because the vending machines which had been installed in closed factories are reused. From the fourth quarter, demand for machine tools and industrial equipment declined in Japan and overseas due to the spread of COVID-19, while ED&C components, low-voltage inverters, FA components, and the like were also down. In addition, sales of vending machines for the Japanese and Chinese markets declined, as did sales of semiconductors for the Chinese market.

### Sales outside Japan

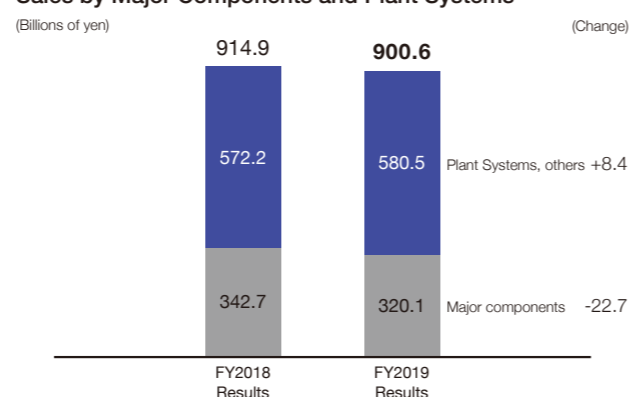
Sales outside Japan declined by ¥11.5 billion year on year, to ¥220.9 billion. This was due to falling demand in China for major components, such as vending machines, semiconductors, and low-voltage inverters. By contrast, we enjoyed an increase in sales elsewhere in Asia thanks to large-scale projects for switchgears and controlgears, as well as higher sales in the industrial semiconductor sector in Europe. The overseas sales ratio was 25%, unchanged from the previous year.

(Billions of yen)	FY2018 Results	FY2019 Results	Change
Net Sales	914.9	900.6	-14.3
Operating Income	60.0	42.5	-17.5
Operating Margin	6.6%	4.7%	-1.8%
Net Income Attributable to Owners of Parent	40.3	28.8	-11.5

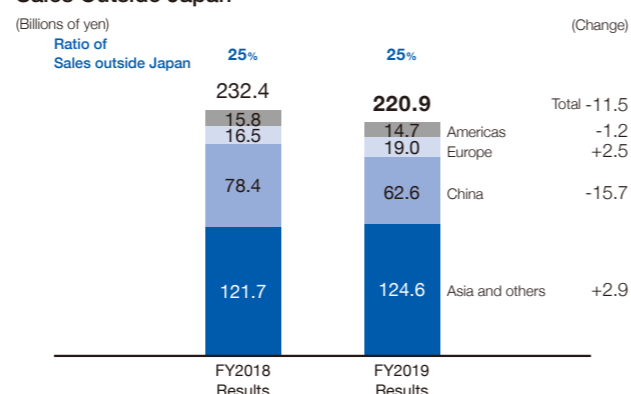
### Financial Indicators

Net Debt-Equity Ratio	0.4 times	0.4 times	+0.1 times
Equity Ratio	37%	37%	-0%
ROA	4%	3%	-1%
ROE	12%	8%	-4%

### Sales by Major Components and Plant Systems



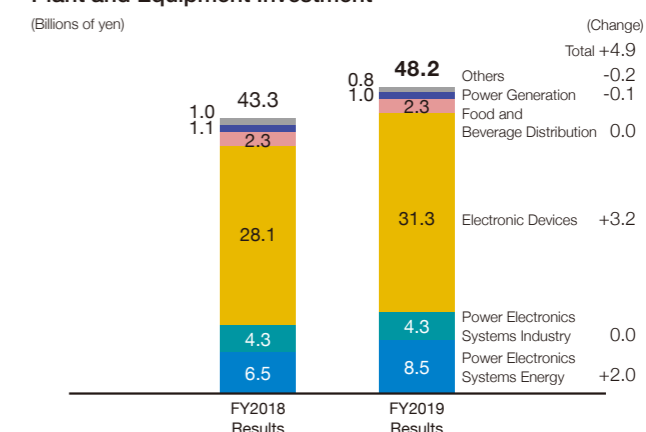
### Sales Outside Japan



## Plant and Equipment Investment

Approximately 90% of total plant and equipment investment was allocated to our businesses in power electronics systems and electronic devices, such as expanding production capacity and streamlining production lines. During the year, in the Power Electronics Systems segment, we completed the third facility at the Thai Factory for the manufacture of switchgear and controlgear systems. We also started construction of an engineering facility at the Chiba Factory to strengthen energy-related products. In addition, we invested to streamline production lines at the Suzuka Factory and Tokyo Factory in order to expand in-house production and strengthen the competitiveness of our inverters and measuring instruments. In the Electronic Devices segment, we increased the capacity of the 8-inch chip production line (front-end process) at our Yamanashi Factory in order to expand our power semiconductor business for electrified vehicles. In back-end processes, at our bases in Japan and overseas, we invested to increase production of large-capacity IGBT modules for automotive pressure sensors and power converters.

### Plant and Equipment Investment



## Research and Development

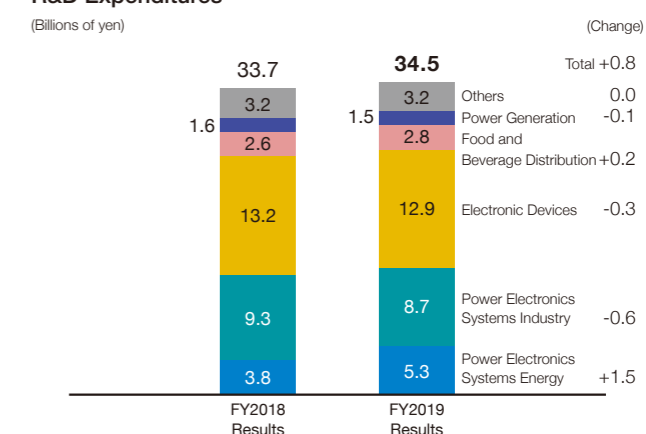
Seeking to advance product development and strengthen global competitiveness, we allocated around 80% of R&D expenditures to power electronics systems and electronic devices.

In the Power Electronics Systems segment, we developed some of the world's most compact substation equipment, which enables significant cost reductions. Other developments included an uninterruptible power system for large data centers, an induction furnace that delivers energy savings in the casting process, and an exhaust gas cleaning system for large ships. We also developed SignAiEdge, on-site diagnostic equipment that utilizes IoT to visualize problems at production sites, as well as analytics and AI (MSPC\*) technology to contribute to productivity improvements.

In the Electronic Devices segment, we focused on developing power semiconductors for electrified vehicles. Fiscal 2019 developments include RC-IGBTs that reduce power loss compared with conventional devices to achieve smaller, lighter, and more efficient electrified vehicles.

\* Abbreviation for "multivariate statistical process control"

### R&D Expenditures



Note: Figures for R&D expenditures are allocated by research theme and therefore differ from those in the consolidated financial report

## Fiscal 2020 Outlook

The Company has chosen not to release consolidated performance forecasts the fiscal year ending March 31, 2021, as it is currently difficult to project future trends in capital investment and production by customers amid restrained economic activity in Japan and other countries stemming

from the global COVID-19 pandemic. We will disclose our forecasts promptly when we are able to estimate the impacts of this situation on economic activities with a sufficient degree of accuracy.

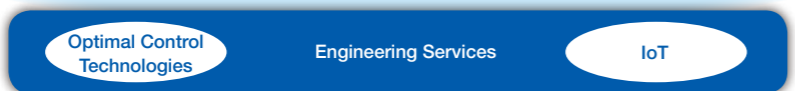
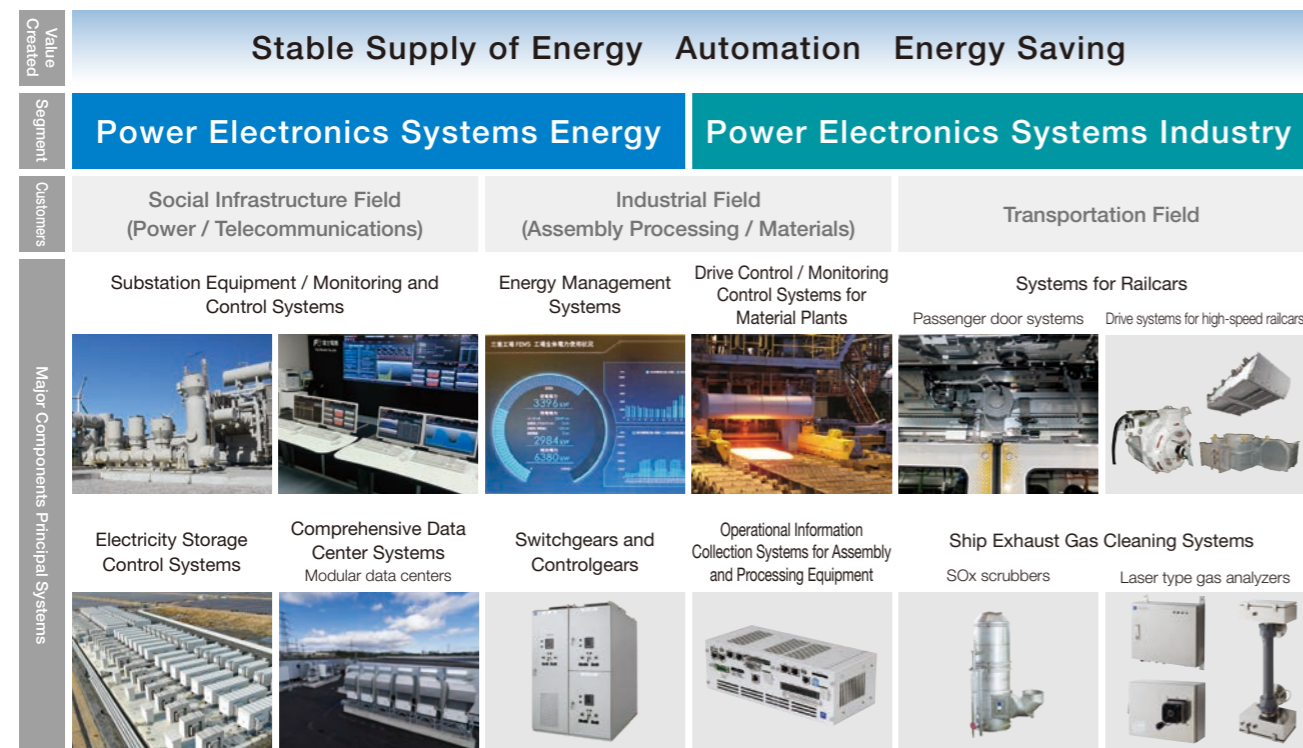
# Review of Segments

## Power Electronics Systems Energy / Industry

### Medium-Term Management Plan Policy

In these segments, our aim is to create competitive components and reinforce our system business by bringing together our engineering services, optimal control technologies, and IoT. At the same time, we will utilize local partners and sales channels developed through M&A to expand our overseas business. We will

also promote standardization and packaging of software and hardware for the social and industrial infrastructure fields and attract increased orders for our comprehensive electrical equipment business. In the transportation field, we will work to accelerate development of products that differentiate us from other companies.



### Overseas Business Expansion (Fiscal 2019 and 2020)

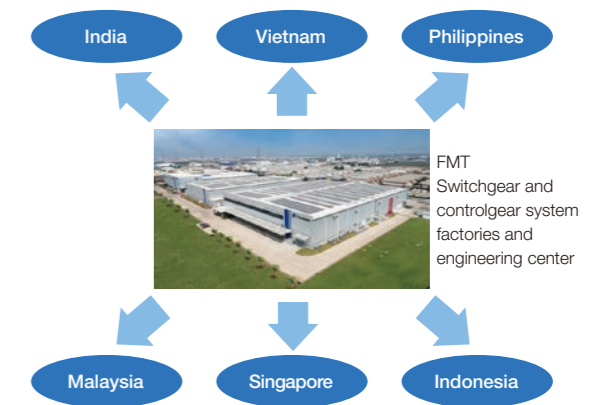
In Southeast Asia and India, we are expanding orders by utilizing our sales channels developed through M&A and engineering capabilities. By establishing a system factory and integrating local subsidiaries, we will expand our local design capabilities in addition to local production for local consumption to build an integrated manufacturing system. In China, we will deploy the sales channels of local partners

to provide drive control and monitoring control systems, as well as energy management systems, to material and beverage factories, allowing them to save energy by improving productivity and optimizing energy usage. In North America, we will collaborate with Fuji SEMEC Inc. to further strengthen our manufacturing and engineering systems and expand our rolling stock business.

#### Southeast Asia

In 2019, we established a new switchgear and controlgear system factory and engineering center at Fuji Electric Manufacturing (Thailand) Co., Ltd. (FMT), which will serve as our core production site in Asia. By reinforcing our local engineering and manufacturing systems, we will build a system business that contributes to electric power supply stability and energy savings for data centers and the electricity and materials fields.

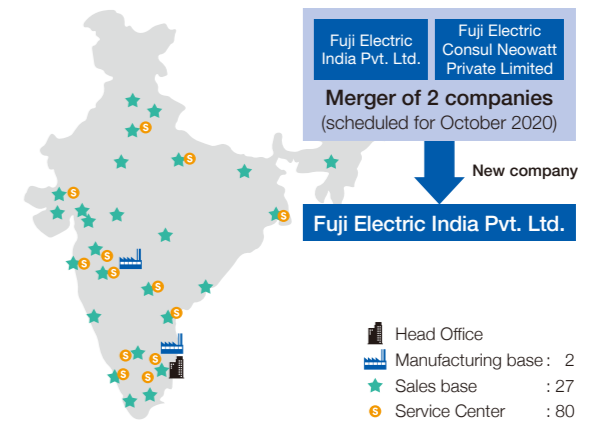
#### FMT as Core Base in Asia Coordinates with All Other Bases



#### India

Fuji Electric Consul Neowatt Private Limited (FCN), which became a consolidated subsidiary in 2019, and Fuji Electric India Private Limited will join forces to facilitate reorganization and expansion of our manufacturing, sales, and service bases in India. We will leverage the sales channels- and product-related strengths of both companies to grow our business and strengthen our service system, while also expanding localization of design and procurement to enhance product competitiveness.

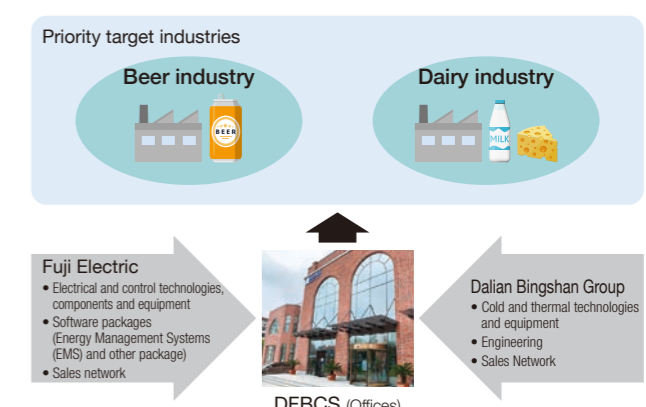
#### Strengthening the Business Structure in India (Reorganizing and Expanding Bases)



#### China

In fiscal 2019, Dalian Fuji Bingshan Control Systems Co., Ltd. (DFBCS)—a joint venture with the Dalian Bingshan Group, a major Chinese refrigeration and air conditioning equipment manufacturer—introduced energy management systems (EMSs) to the Dalian Bingshan Group and our Wuxi Factory. Positioning this factory as our “model factory” in the Chinese market, we will focus on the beer and dairy industries as our top-priority targets. Here, we will demonstrate to customers the energy-saving benefits of EMSs and give concrete examples, while proposing various solution to facilitate EMS adoption and thus expand our system business.

#### System Proposal Centered on an EMS in Collaboration with Local Partners



# Power Electronics Systems Energy

We will use our integrated proposal capabilities and abundant engineering experience, cultivated in Japan, to expand our overseas businesses in transmission and distribution systems and comprehensive electrical equipment.

Masashi Kawano  
Executive Officer  
Corporate General Manager,  
Power Electronics Systems Energy Business Group



## Business Areas

- Energy management  
Power distribution, Smart meters, Industrial substation, Railway substations, Industrial power supplies
- Power supply and facility systems  
Data centers, Uninterruptible power systems (UPS), Electrical facilities, Switchgears and control gears
- ED&C components  
Power distribution and control equipment

## Supplied to

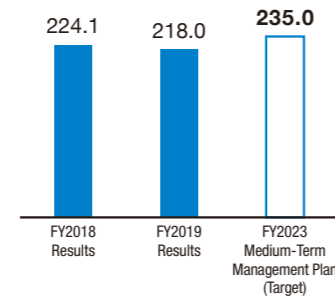
Power companies,  
Material plants (steel, chemical, etc.),  
Data centers, Machine manufacturers

## Strengths

- Package proposals from a wide range of products and systems, to maintenance services, contributing to stable power supply and power optimization
- Extensive delivery record and engineering experience in stable power supply and power optimization
- Energy-saving expertise developed at Fuji Electric's factories in Japan and overseas

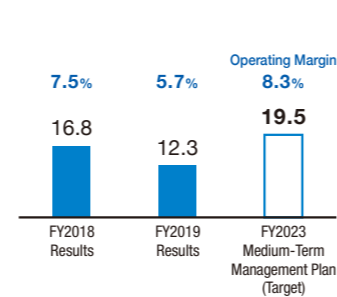
## Net Sales

(Billions of yen)



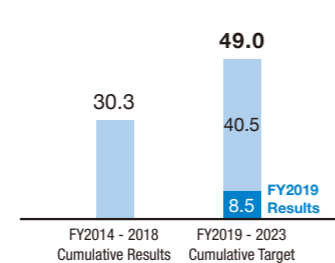
## Operating Income

(Billions of yen)



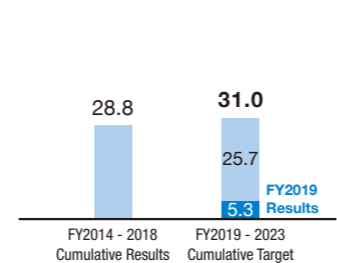
## Plant and Equipment Investment

(Billions of yen)



## R&D Expenditures

(Billions of yen)



## Medium-Term Management Plan Policy

We will introduce globally competitive products, such as substation equipment, power supply equipment, and switchgears and controlgears, to strengthen our manufacturing and engineering systems. At the same

time, we will deploy our integrated proposal capabilities, cultivated in Japan, to expand our overseas businesses in transmission and distribution systems and comprehensive electrical equipment.

## Awareness of Market Needs and Business Opportunities

In Southeast Asia, India, and the Middle East, which are enjoying strong economic growth, demand continues to grow for electric power and investments in social and industrial infrastructure, such as substations and data centers. Accordingly, demand has remained firm for substation equipment, switchgears and controlgears, etc. for power companies, factories, and buildings requiring stable power supply.

In Japan, we look forward to ongoing steady investments—to replace aging facilities, including substation equipment delivered to material plants and

railway companies in the 1970s and 1980s—aimed at preventing accidents and improving efficiency.

Meanwhile, the need to save energy and reduce CO<sub>2</sub> emissions has led to increased demand for visualization and optimization of factory-wide energy usage, from the perspective of growing environmental awareness and efforts to lower energy costs. In addition to introducing products with high power conversion efficiency, customers will have more opportunities to use energy management systems (EMSs) to achieve optimal energy supply and demand control.

## Major Initiatives in Fiscal 2019–2020

### Strengthening our plant system business

Amid growing demand for switchgears and controlgears and substation equipment for data centers and railways, we are working to rebuild our development and production system to improve profitability.

In fiscal 2019, we started building an engineering center within the Chiba Factory, our mother factory for substation equipment. The new center will bring together the development, design, and engineering functions, which were previously dispersed over multiple locations. In fiscal 2020, we will consolidate our standardized switchgear and controlgear design and evaluation functions at the Tokyo Factory, and start construction of a dedicated systems building aimed at improving productivity. In addition to integrating functions to facilitate standardization of products and systems, we will work to improve our testing capabilities. Utilizing testing equipment that can simulate local environments enables us to achieve greater product quality perfection at the time of shipment, which reduces the need for onsite reworking and shortens testing times.

Through these efforts, we will accelerate the development of new competitive products, while further expanding standardization and streamlining production and testing processes, resulting in lower costs and shorter delivery times.

### Expanding our comprehensive electrical equipment business

The proliferation of 5G and IoT technologies has buoyed demand from large-scale data centers and semiconductor factories, boosting orders in our comprehensive electrical equipment business.

In fiscal 2019, we developed and launched a series of large-capacity uninterruptible power systems (UPSs) to address the increasing size of data centers. The new units have capacities ranging from 330 kVA to 1,000 kVA, making it possible to build large-scale systems with maximum capacity of 8,000 kVA by operating the devices in parallel.

In addition to our wide product lineup, we can handle integrated projects covering everything from facility design to equipment procurement and construction. This enables us to swiftly construct data centers and make them energy efficient. For this reason, we are receiving more and more orders each year from foreign-affiliated companies that are expanding globally.

In fiscal 2020, we will take advantage of our strong domestic track record to broaden our comprehensive electric equipment business across Southeast Asia.



## Contributing to development of global transformers and stable power supply

In Southeast Asia, India, and the Middle East, where power demand is strong, construction of power plants and substations continues unabated.

Transformers, switchgears, and other substation equipment play an important role in power plants and substations and thus need to be highly reliable. However, substations are often constructed in urban areas where land acquisition is difficult, leading to calls to build “smaller and lighter” facilities.

We have developed a global transformer that is among the most compact in the world and has achieved significant cost reduction. We will make these transformers locally at our production base in Thailand.

Going forward, we will develop and commercialize competitive global products, such as transformers, and switchgears and controlgears. In this way, we will contribute to the stable supply of electricity and the stable operation of equipment in overseas markets, such as Asia and India.



Global transformer



Fuji Tusco Co., Ltd. (production base in Thailand)

# Power Electronics Systems Industry

We will accelerate overseas business expansion by further promoting partnership strategies, mainly in Southeast Asia and India, while strengthening local production, consumption, and design systems.

Hiroshi Tetsutani  
Executive Officer  
Corporate General Manager,  
Power Electronics Systems Industry Business Group



## Business Areas

- Automation systems  
Inverters, Motors,  
FA components (servo and controller),  
Measuring instruments and sensors,  
FA systems, Drive control systems,  
Measuring and control systems
- Social solutions  
Electrical equipment for railcars,  
Radiation monitoring systems
- Equipment construction
- IT Solutions

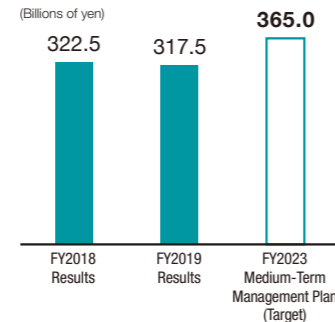
## Supplied to

Air conditioning and water treatment facilities,  
Machine manufacturers,  
Material plants (steel, chemical, etc.),  
Railway companies, Shipbuilding companies,  
Public agencies and local government

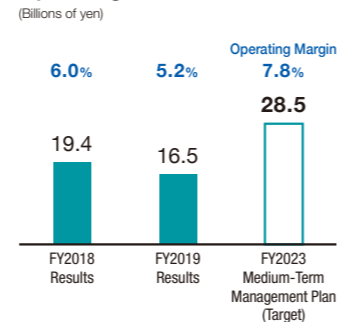
## Strengths

- Early development of power electronics equipped with power semiconductors
- Extensive product lineup tailored to customer applications
- Engineering capabilities built up over a substantial delivery track record

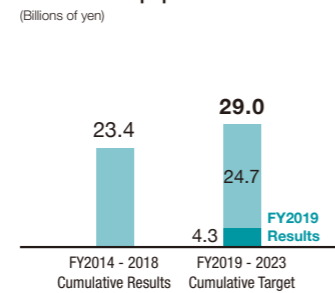
## Net Sales



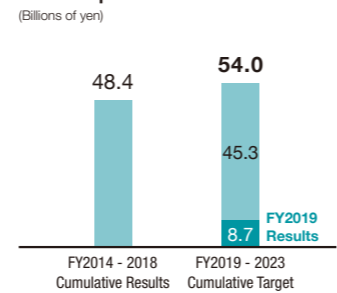
## Operating Income



## Plant and Equipment Investment



## R&D Expenditures



## Medium-Term Management Plan Policy

We will leverage our automation business—which combines IoT with drive equipment, measuring instruments, and control equipment—to promote partnership strategies aimed

at expanding our systems business. At the same time, we will broaden our business in ships and railways by utilizing unique products that differentiate us from other companies.

## Awareness of Market Needs and Business Opportunities

In Japan, the industrial field is witnessing a wave of production reform initiatives aimed at addressing labor shortages and increasing competitiveness. To combat COVID-19 and meet the need for workstyle reforms, meanwhile, we expect companies to increasingly adopt automation, labor saving, and remote control technologies at their manufacturing sites. In the materials field, companies in some industries are reorganizing their production bases. Nevertheless, we anticipate that investments in renewal of aging production equipment and in energy savings will remain steady.

In Southeast Asia and India, marked by strong economic growth, we expect an increase in demand to stabilize power supplies, improve energy-efficiency of facilities, and automate production lines. We also look forward to new capital investments and equipment renewal demand in various materials fields, including steel and cement. Meanwhile, companies in China are investing in energy savings to protect the environment while working to address labor shortages and taking steps to stop COVID-19. Against this backdrop, we expect investments in automation and labor-saving to remain solid going forward.

## Major Initiatives in Fiscal 2019–2020

### Promote partnership strategies to expand overseas business

In Southeast Asia, we are leveraging the engineering capabilities and sales channels of Fuji CAC Joint Stock Company in Vietnam to increase sales of monitoring and control systems for production equipment at cement plants. In fiscal 2020, we will emphasize development of standardized software and hardware packages to improve cost competitiveness and further increase orders.

In India, Fuji Electric Consul Neowatt Private Limited (FCN) and Fuji Electric India Private Ltd. will join forces to build an integrated manufacturing system covering design, production, and testing of inverters, UPSs, power conditioning systems (PCSs), and other components.

By combining the sales channels of FCN with the engineering capabilities and sales channels of Fuji Gemco Private Limited, we will work to expand our systems business in the renewable energy and food and beverage fields, in addition to the materials field.

### Expansion of the systems business leveraging IoT

In the industrial field in Japan, we are increasing efforts to improve operations and productivity. Here, we use IoT to visualize equipment operational status and predict and analyze equipment failure, with the aims of raising competitiveness and preventing equipment stoppages.

In fiscal 2018, we launched OnePackEdge, a data collection system that bundles all types of production floor data to support factor analysis of equipment abnormalities and defects. In fiscal 2019, we developed and launched SignAiEdge, a field-based diagnostic device that detects and analyzes signs of equipment abnormalities. It is the first in the industry to incorporate batch-process MSPC\* technology.

In fiscal 2020, we will introduce these IoT products into our own production lines to help improve profitability, and we will use know-how acquired through this process to facilitate horizontal rollouts to our customers. Meanwhile, we will work to increase orders for IoT products by combining them with a remote equipment monitoring service, which is expected to attract demand as a measure to prevent the spread of COVID-19.

\* Abbreviation for "multivariate statistical process control"

## Close Up!

### Contributing to energy savings at Indian steel plant

In India, the third-largest emitter of CO<sub>2</sub> in the world, there is a campaign to improve energy efficiency of plants in nine industries that consume a lot of energy, including thermal power generation, steel, and cement, in order to meet that nation's greenhouse gas reduction targets.

Steel plants use large amounts of energy from multiple sources, such as electricity, gas, and steam, in the production process. In order to save energy, it is necessary to optimally combine and control each type of energy.

Using our own optimization technology, cultivated through our achievements in Japan, as well as past operational data and production and operational plans, we provided an energy management system (EMS) to a major Indian steel plant and started field tests. Our aim is to help predict and optimally

deploy energy usage across all of the plant's production equipment.

Utilizing the results of the field tests, we will promote rollouts to other Indian steel plants and step up proposals in other Asian regions to help reduce CO<sub>2</sub> emissions through energy savings.



Monitoring and control room (steel plant in India)

# Electronic Devices

We aim to expand our business by expediting efforts to increase our production capacity for power semiconductors for electrified vehicles.

Toru Housen  
Managing Executive Officer  
Corporate General Manager,  
Electronic Devices Business Group



## Business Areas

- Power semiconductors  
Industrial field, Automotive field
- Magnetic disks

## Supplied to

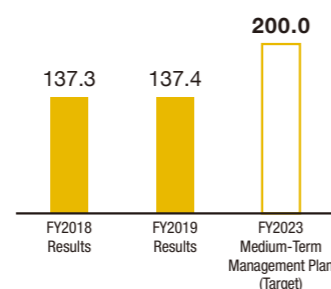
- Power semiconductors  
Industry:  
Inverters, Machine tools, Air conditioners,  
Solar and wind power, Electric railways  
Automobile:  
Motor drives for electrified vehicles  
(EVs, HEVs, etc.),  
Engine control, Brake control
- Magnetic disks  
HDD (Data center, PCs)

## Strengths

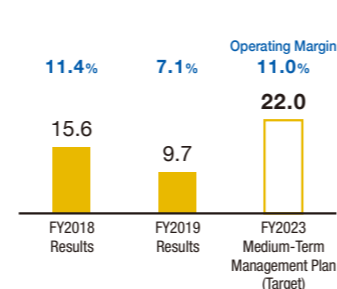
### Power semiconductors

- Proprietary devices that greatly improve power conversion efficiency
- Packaging technologies that achieve high levels of heat dissipation and reliability
- Product development capabilities of IGBT modules that contribute to increasing the efficiency, miniaturization, and reliability of power electronics

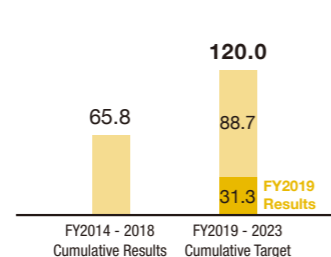
Net Sales  
(Billions of yen)



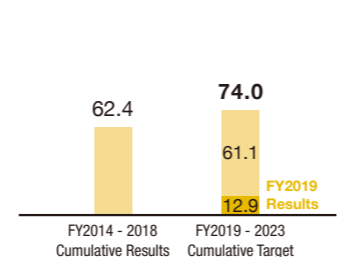
Operating Income  
(Billions of yen)



Plant and Equipment Investment  
(Billions of yen)



R&D Expenditures  
(Billions of yen)



## Major Initiatives in Fiscal 2019–2020

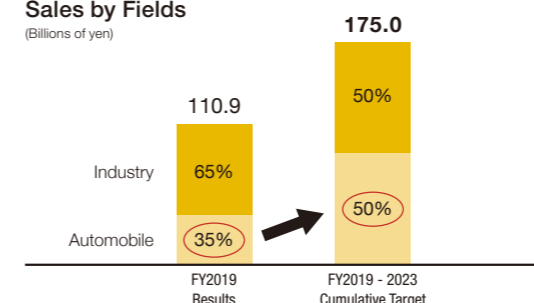
### Expanding sales of power semiconductors for xEVs

In fiscal 2019, we started mass production of 4th-generation direct liquid cooling modules that feature lower losses and higher cooling performance than before. We posted a significant year-on-year increase in sales of automotive products, which accounted for 35% of total power semiconductor sales, up from 29% in fiscal 2018.

In 2020, global production of automobiles, especially gasoline-powered vehicles, will remain on a downtrend due to shutdowns of overseas factories stemming from the COVID-19 pandemic. Nevertheless, we expect demand for xEVs to grow in the medium and long terms as environmental regulations tighten.

Our aim is to expand sales of power semiconductors for xEVs by consistently providing high-quality products.

Sales by Fields  
(Billions of yen)



### Accelerating increases in production capacity

To address rapidly increasing demand for power semiconductors for xEVs, we are investing actively to boost production of 8-inch wafer production equipment. In fiscal 2020, we will continue investing to raise production while strengthening the assembly process capacity of our production bases in Japan and overseas.

### Expanding sales of large-capacity IGBT modules for the renewable energy and electric railway markets

In fiscal 2019, we launched sales of 7th-generation IGBT modules (large-capacity series) equipped with 7th-generation IGBT chips that reduce losses by around 30% compared with existing chips. We are selling these modules, which boast high levels of heat dissipation and reliability, mainly to the renewable energy and electric railway markets.

In these markets, devices are increasing in capacity and decreasing in size while generating lower losses. Emphasizing the features of our products, we have expanded sales to manufacturers of wind and solar power generation equipment.

In fiscal 2020, we will continue increasing sales to the robust renewable energy market, while capturing new orders from the electric railway market with the aim of further increasing our market share in the industrial field.

## Medium-Term Management Plan Policy

Against the backdrop of steady global demand for electrified vehicles (xEVs) and proliferation of renewable energy, we will focus on automobiles (xEVs) and power

semiconductors for industrial use. To this end, we will invest aggressively to increase production capacity and boost sales and profits.

## Awareness of Market Needs and Business Opportunities

Power semiconductors help save energy thanks to their high levels of conversion efficiency and power control. Demand for these devices in various fields and applications is rising due to various factors. These include increases in energy consumption due to economic growth and technological progress, growing investments in automation in the manufacturing sector, and environmental regulations aimed at preventing global warming.

In the automotive field, the shift from gasoline-powered vehicles to xEVs is gaining momentum in various

countries around the world, and demand for power semiconductors is expected to grow, including for inverters used to drive xEV motors.

In the industrial field, there is an ongoing shift to renewable energy sources, such as wind and solar, due to rising demand for clean energy. We also expect companies to continue investing in automation to solve labor shortages and improve productivity, and the demand for machine tools and robots will increase as a result.

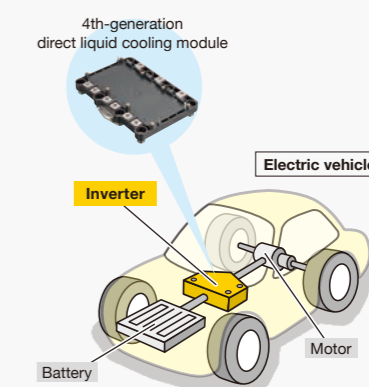
## Close Up!

### Helping xEVs reduce the environmental impact and improve driving distance

In the xEV field, the focus is on reducing environmental impact and improving driving distance, which requires components that are smaller, lighter, and more efficient than ever before.

To address these requirements, in fiscal 2019 we started mass production of a 4th-generation direct liquid cooling module featuring improved heat dissipation performance compared with conventional products. This module, which is fitted with RC-IGBTs\* for better compactness and lower losses, is for use in motor drive inverters that are indispensable for xEVs.

Image of electric vehicle (EV)



\*RC-IGBT: Acronym for "reverse conducting insulated gate bipolar transistor." An RC-IGBT arranges two types of semiconductors with differing functions—IGBTs and freewheeling diodes (FWDs)—alternately in a straight line on a single chip. This permits much greater miniaturization compared with arranging the IGBTs and FWDs on two separate chips.

# Food and Beverage Distribution

In response to a growing need for better hygiene through non-face-to-face and contactless interaction, as well as labor savings, we will swiftly offer new products that make full use of automation and heating and cooling technologies.

Yasuhiro Takahashi  
Managing Executive Officer  
Corporate General Manager,  
Food and Beverage Distribution Business Group



## Business Areas

- Vending machines  
Beverage vending machines,  
Vending machines for food and  
other goods
- Store distribution  
Store fixtures and equipment,  
automatic change dispensers

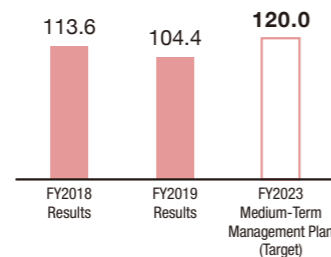
## Supplied to

Beverage manufacturers,  
Vending machine operators,  
Convenience stores, Supermarkets,  
POS manufacturers

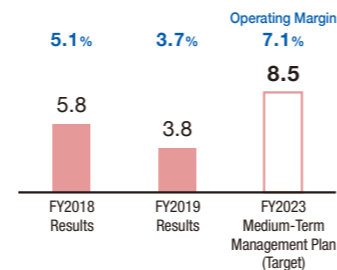
## Strengths

- Top share of the vending machine market in Japan, China and Southeast Asia
- Heating and cooling technologies that efficiently heat and cool products
- Automation technologies built up through vending machines that contribute to labor saving

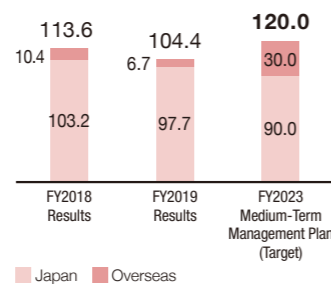
Net Sales  
(Billions of yen)



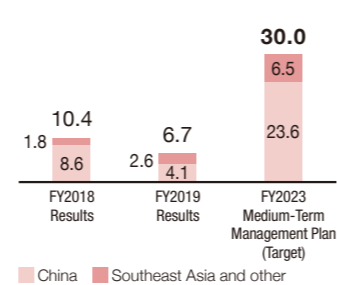
Operating Income  
(Billions of yen)



Japan and Overseas Sales  
(Billions of yen)



Overseas Sales by Region  
(Billions of yen)



## Medium-Term Management Plan Policy

We will reinforce our sensing technology and communications and information coordination technology, centered on vending machines and store equipment. Our aim is to transition into a system

business that supports customer needs, such as labor saving. Outside Japan, we will strengthen our vending machine business in China and Southeast Asia and build a optimal global production system.

## Awareness of Market Needs and Business Opportunities

In Japan, against the backdrop of labor shortages due to a declining working population and measures to prevent global warming, we are promoting advances in labor saving and energy efficiency for our customers—beverage manufacturers, convenience stores, and supermarkets.

Overseas, we expect demand for vending machines to grow, even in our priority Chinese market, due to increasing

need for automation of the beverage and commodity sales process. Meanwhile, the vending machine market in Southeast Asia is expanding rapidly, especially in Thailand, triggered by the entry of major beverage manufacturers.

In addition, there is a growing need for non-face-to-face, contactless products and services in Japan and overseas as a countermeasure against COVID-19.

## Major Initiatives in Fiscal 2019–2020

### Offering new vending machines that meet social needs

In fiscal 2019, we made proposals for high-value-added machines in Japan, but the postponement of the Olympic Games and the COVID-19 pandemic led to a decline in demand.

The needs of consumers and customers are changing drastically in the “With Corona” era. With this in mind, in fiscal 2020 we will deploy antibacterial materials and make our products and services more contactless, thereby offering new models that consumers can use with peace of mind and systems that improve the efficiency of our customers’ vending machine operations.

### Creating vending machine markets and expanding sales in China and Southeast Asia

Fiscal 2019 saw a decline in demand in the Chinese market due to economic downturn triggered by U.S.-China trade friction. In Southeast Asia, by contrast, we boosted sales by capturing demand for vending machines on the back of rising consumer income and labor costs.

In fiscal 2020, we will step up collaborations with major beverage manufacturers in each country while introducing new models to meet diversifying customer needs and demand for contactless solutions in the “With Corona” era.

### Offering new products that meet store needs for sales growth and labor-saving

In fiscal 2019, we proposed and advanced various new products, including counter fixtures that contribute to increased store sales and systems that help save energy and labor.

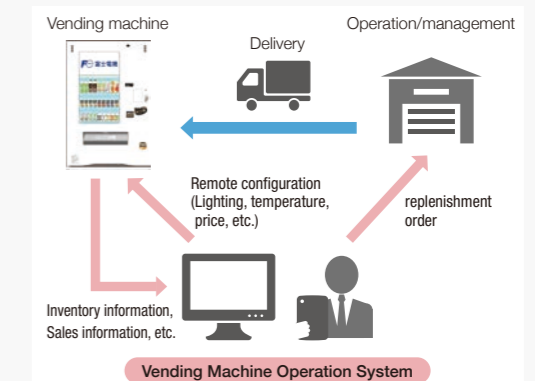
In Japan, there is a growing need among store operators to save labor and shorten business hours. In fiscal 2020, therefore, we will utilize our automation technology to develop new products and contribute to the convenience of consumers and the profitability of our customers. These include two-way case, which functions as a showcase in the daytime and a vending machine at night, as well as a positive pressure control system that maintains healthy store environments by controlling the air supply and exhaust and enhances the energy efficiency of air conditioning.

## Close Up!

### Using AI to enhance vending machine operational efficiency

Due to serious labor shortages, beverage manufacturers and vending machine operators in Japan are faced with an urgent need to improve the efficiency of product replenishment operations and other processes. In response, we have developed various systems that use AI to address the requirements of vending machine operators, including product demand forecasts, remote setting of vending machines, sales plans, and delivery route settings. We are currently making proposals to our customers, encouraging them to apply the new systems to our vending machines, which account for the majority of the market. By reducing losses of sales opportunities and shipping costs due to products being sold out, we will streamline the vending machine operations of our customers and help improve their profitability.

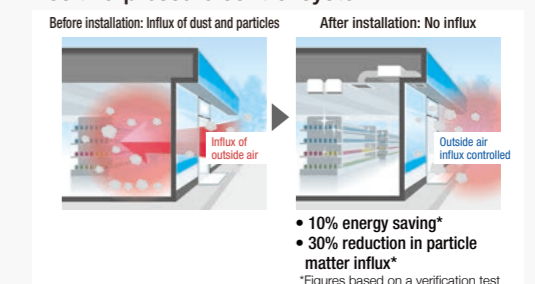
### AI-powered proposal of optimal sales and delivery plans based on vending machine information



### Contributing to maintaining healthy in-store environments and energy saving in air conditioning by preventing outside air influx

We have developed a system for controlling air pressure inside stores. This system uses sensors to control the balance of air intake and exhaust by ventilation fans and other equipment to prevent influxes of outside air when automatic doors are opened and closed. Furthermore, the system achieves a 10% reduction in energy consumption by lowering the burden placed on air conditioners while also cutting particle matter influx by 30%, thereby decreasing the amount of cleaning work needing to be done by employees. It has earned great praise from customers for its contribution to labor and energy savings in stores.

### Positive-pressure control system



# Power Generation

To address changing market conditions, we will focus on renewable energy and distributed power sources while expediting the transformation of our business portfolio to strengthen our after-sales business and enhance profitability.

Tadao Horie  
Executive Officer  
Corporate General Manager,  
Power Generation Business Group



## Business Areas

- Renewable and new energy  
Geothermal power, Hydro power,  
Solar power, Wind power, Fuel cells
- Thermal Power
- Nuclear power-related equipment

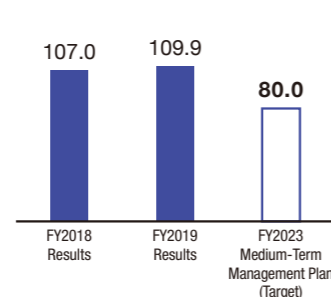
## Supplied to

Japanese and overseas power generation companies

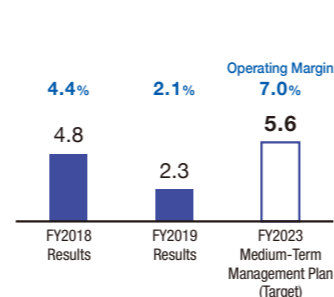
## Strengths

- Engineering capabilities across the whole plant
- One-stop proposal capabilities in geothermal power, and industry leading delivery track record
- Extensive delivery track record in hydro power
- Power storage control technologies and economic efficiency in solar and wind power

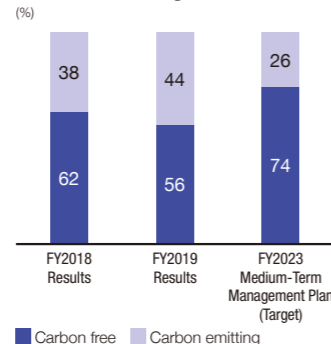
Net Sales  
(Billions of yen)



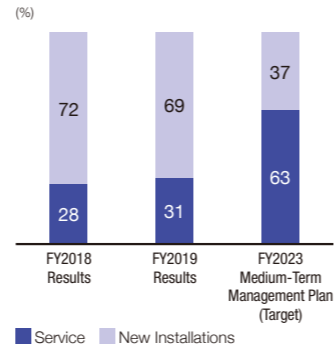
Operating Income  
(Billions of yen)



Sales Ratio by Carbon free / Carbon emitting



Sales Ratio by Service / New Installations



## Medium-Term Management Plan Policy

Responding to changes in the market environment as the world moves toward decarbonization, we will focus on renewable energy and distributed power sources to transform our business portfolio. At the same time, we

will capture replacement demand for power generation equipment while expanding our after-sales business and improving profitability.

## Awareness of Market Needs and Business Opportunities

Since the enactment of the Paris Agreement, an international framework for addressing climate change, moves toward decarbonization have gathered pace worldwide, and the market for renewable energy sources, which do not emit greenhouse gases, is growing as a result.

In addition to rising demand for mega solar power in Southeast Asia, demand is growing for solar as a small-scale distributed power source. Demand for geothermal power generation is also increasing on the back of

economic growth in Southeast Asia and Africa, which have abundant geothermal resources. In Japan, meanwhile, aging hydro power generation facilities are being replaced and upgraded to enhance generation efficiency, reflecting expectations that hydro power generation can help reduce environmental impact and risk.

In the maintenance and renewal of power generation equipment, the need to enhance capacity utilization ratio and operability is growing.

## Major Initiatives in Fiscal 2019–2020

### Expanding orders for renewable energy

#### Solar and wind power

For solar and wind power generation, using storage batteries and further combining them with our power conditioning systems and controllers, we are forging ahead with solution-driven proposals that contribute to power system stabilization and peak shifts.

In fiscal 2019, in collaboration with an overseas subsidiary, we received an order for our first overseas solar project, and we also received two orders in Japan.

In fiscal 2020, we will continue working to increase orders to meet growing demand for renewable energy in Japan and overseas.

#### Geothermal power

In geothermal power generation, where we have a leading market share<sup>\*1</sup>, we are proceeding with construction of a facility in Kenya, our first geothermal project in Africa.

In fiscal 2019, we received an order from the Onikobe Geothermal Power Plant in Japan and an order for a new project in Kenya, as we did in the previous year.

In fiscal 2020, we will aim to expand business opportunities by adding a small-capacity-generation package to our lineup for Japan to support a wide range of geothermal resources. Overseas, we will continue focusing on Southeast Asian and African regions as priority targets and accelerate marketing activities in countries with

geothermal resources all over the world.

#### Hydro power

Recent years have seen growth in demand for hydro power generation as a low-cost, stable power source in Japan, and scrap-and-build<sup>\*2</sup> projects for aging equipment are increasing as a result.

To address this demand, we will continue strengthening our frontline response capabilities. At the same time, we will strive to increase orders by making full use of our distinct and differentiated product lineup, including our hybrid servo system<sup>\*3</sup>, which won a New Energy Award in 2019.

### Expanding our after-sales business

In maintenance and replacement services, we will continue promoting onshore and onsite projects that bring together all functions in each customer's region, from sales to procurement, installation, and after-sales service.

In fiscal 2019, we enhanced our maintenance service proposals and achieved a year-on-year sales increase of around 10%.

In fiscal 2020, we will expand our after-sales business by strengthening our local networks, centered on our bases in the Middle East, the Philippines, Vietnam, and Indonesia.

<sup>\*1</sup> Based on actual figures for the past 20 years (Fuji Electric research)  
<sup>\*2</sup> Entails disposal or decommissioning of aging and inefficient equipment and replacing it with new equipment to achieve better efficiency  
<sup>\*3</sup> A turbine operation mechanism in a hydro power generation facility



### Expanding orders for solar power generation facilities with storage batteries

In Southeast Asia, a major challenge is to develop infrastructure in areas that are not serviced by electricity due to weak power grids. This has prompted numerous plans to utilize solar power generation as a distributed power source. Solar power become increasingly cost competitive because it is inexpensive to operate. However, using solar as the primary power source requires installation of storage batteries that can supply electricity at night when solar cannot generate power. To ensure stable power supply, there is growing demand to use storage batteries for optimal control.

By combining storage batteries with our power conditioning systems, we have amassed strengths in power control optimization. Moreover, we have a solid track record in the production of power generation equipment. These include equipment for the Suzuran Kushiro-cho Solar Power Plant, one of Japan's largest solar power stations with storage batteries.

Deploying our abundant know-how and track record, we collaborated with overseas subsidiary Fuji Electric (Thailand) Co., Ltd. to win two EPC\* contracts for our first overseas solar power generation projects. With this achievement as a foothold, we will continue aggressively expanding sales in Southeast Asia to foster the proliferation of renewable energy.

\* Abbreviation for "engineering, procurement, and construction." EPC contracts cover everything from design to construction, installation, and test operation.



Suzuran Kushiro-cho Solar Power Plant (Hokkaido, Japan)