

Electronic Devices Business Strategies

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■ Business Overview






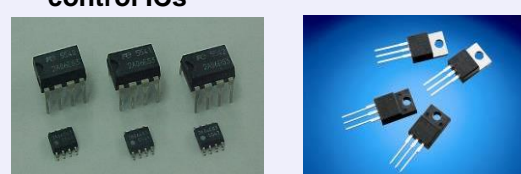


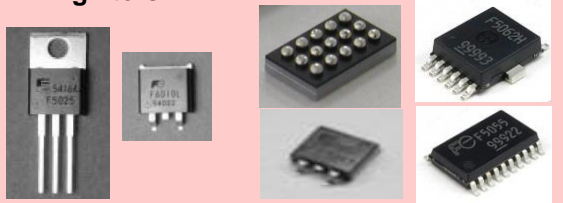
■ FY2020 Management Plan

- Market Outlook
- Business Policies
- Business Plan
- Priority Measures
- Capital Investment / Research and Development

Business	Major Products	Applications	Production Bases
<p>Semi-conductors</p>	<p>Power semiconductors</p> 	<p>Inverters</p> <p>UPSs</p> <p>PCSs</p> <p>Air conditioning</p> <p>Automobiles</p> <p>Power supplies</p>	<p>【Front-End Processes】</p> <ul style="list-style-type: none"> • Matsumoto Factory of Fuji Electric • Yamanashi Factory of Fuji Electric • Fuji Electric Tsugaru Semiconductor Co., Ltd. • Fuji Electric (Malaysia) Sdn. Bhd. <p>【Back-End Processes】</p> <ul style="list-style-type: none"> • Fuji Electric Power Semiconductor Co., Ltd. • Fuji Electric (Shenzhen) Co., Ltd. • Fuji Electric Philippines, Inc. • Fuji Electric (Malaysia) Sdn. Bhd.
	<p>Photoconductors</p> 	<p>Copiers</p> <p>Printers</p>	<p>• Fuji Electric (Shenzhen) Co., Ltd.</p>
<p>Magnetic disks</p>	<p>Aluminum substrates</p> <p>Glass substrates</p> 	<p>HDDs</p>	<p>• Fuji Electric (Malaysia) Sdn. Bhd.</p>







UPS: Uninterruptible power systems PCS: Power conditioning systems

※ % of total sales are for FY2019.

	Industrial field 【% of total sales: 65%】		Automotive field
	【45%】	【20%】	【% of total sales: 35%】
Application	<p>Low capacity: Air conditioners, miniature UPSs Mid capacity: Inverters, NC machine tools, elevators, etc. Large capacity: PCS (wind/solar power generation)</p>  <p>Inverters NC machine tools PCS</p>	<p>Industrial equipment, communication equipment, servers, PCs, flat-screen TVs, video game consoles, copiers, printers, etc.</p>  <p>servers flat-screen TVs</p>	<p>HEV motor controls, engine controls, transmission controls, brake controls, steering controls, etc.</p>  <p>Automobiles</p>
Products	<p>Modules</p> <p>IGBT modules SiC modules</p>  <p>RB-IGBT modules</p> 	<p>Discrete Devices</p> <p>Power supply control ICs Diodes</p>  <p>Photoconductors MOSFET</p> 	<p>IGBT modules Pressure sensors</p>  <p>Igniters Power ICs</p> 
Features	<p>Unique devices that greatly improve power conversion efficiency (SiC, RB-IGBT*) and packaging technologies that realize high reliability</p>	<p>High-voltage power supply IC and SJ-MOS* technologies that respond to energy saving standards for power supplies</p>	<p>Small, lightweight, and high-reliability devices critical for driving, turning, and stopping created by utilizing unique technologies (direct liquid-cooling technology, single chip power IC technology)</p>

* RB-IGBT: Reverse Blocking IGBT; SJ-MOS: Super Junction MOSFET

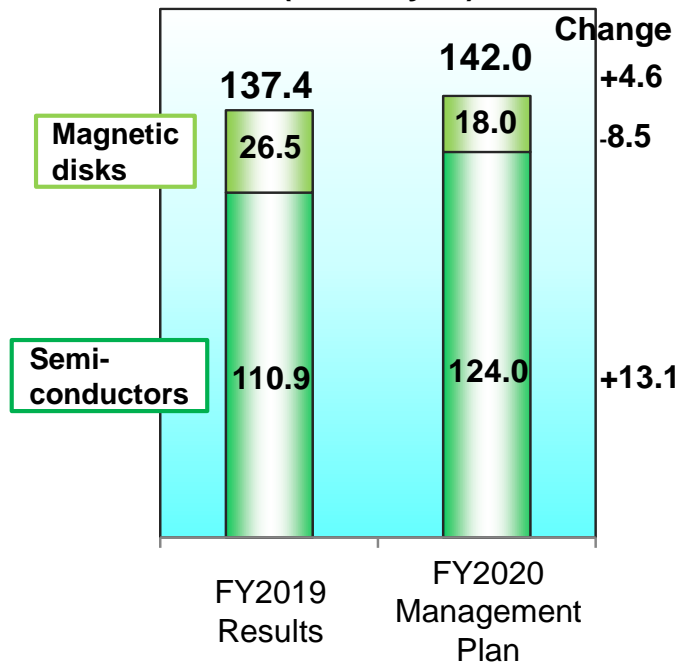
- Industrial semiconductor field driven by demand recovery in China while favorable conditions are seen with regard to new energy and 5G communications
- Sluggish market for automotive semiconductors for gasoline vehicles but growing xEV market

		YoY Change	Market Outlook (FY2020)
Semi-conductors (Industrial Field)	1H		<ul style="list-style-type: none"> • Bearish demand in domestic market due to the COVID-19 pandemic, market recovery and strong new energy and air conditioning demand in China, and sluggish conditions in Europe and the United States because of the COVID-19 pandemic • Overall conditions in line with depressed conditions seen in previous year due to U.S.-China trade friction
	2H		<ul style="list-style-type: none"> • Signs of recovery in domestic market due to higher demand for products for 5G applications in China and NC machine tool products for smartphone applications • Continuation of favorable conditions with strong new energy and air conditioning demand in China, signs of market recovery after bottoming out in Europe and the United States but uncertain regarding potential subsequent outbreaks of COVID-19 cases
Semi-conductors (Automotive field)	1H		<ul style="list-style-type: none"> • Massive decrease in overall automobile production volumes due to sluggish sales stemming from the COVID-19 pandemic • Drop in sales of gasoline vehicles but increase in sales of xEVs
	2H		<ul style="list-style-type: none"> • Slight decline despite recovery trend in domestic and overseas markets • Ongoing growth in xEV sales, recovery in gasoline vehicle sales from 1H
Magnetic disks	1H		<ul style="list-style-type: none"> • Strong performance of products for data center applications, but lower HDD production due to reduced demand for desktop PCs, stemming from increase in teleworking spurred by the COVID-19 pandemic, and the trend toward SSDs
	2H		<ul style="list-style-type: none"> • Continuation of strong performance of products for data center applications, but ongoing decline in HDD production volumes due to reduced demand for desktop PCs and the trend toward SSDs

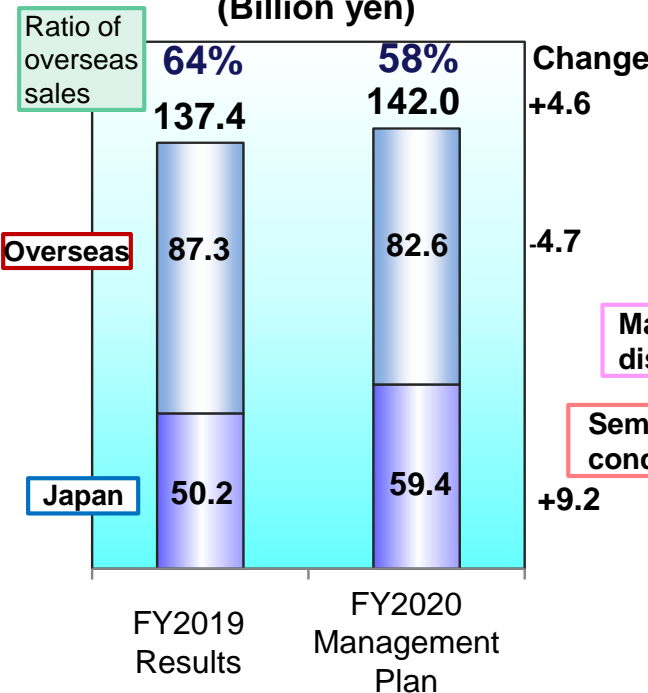
Business Policies

Increase sales and income through focus on mainstay IGBTs and proactive investments in growth markets

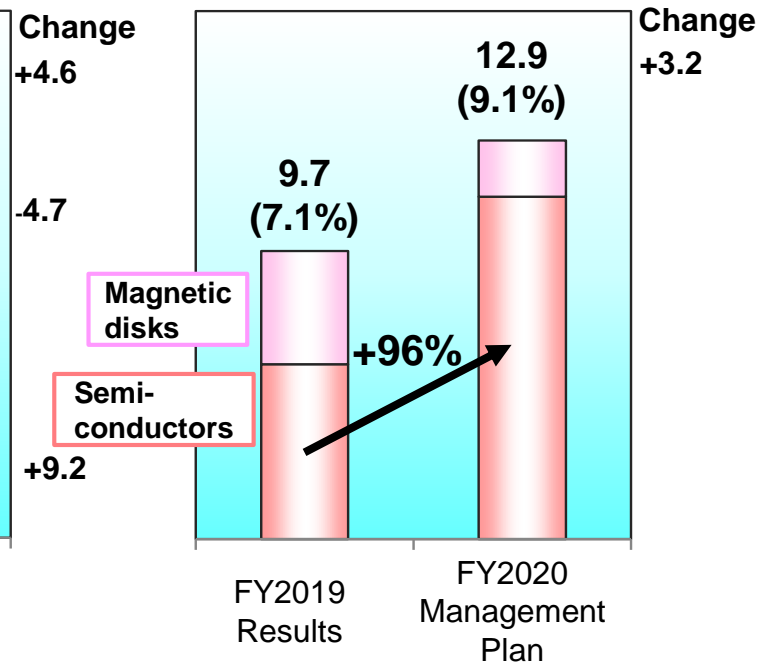
Net Sales by Subsegment
(Billion yen)



Net Sales in Japan / Overseas
(Billion yen)

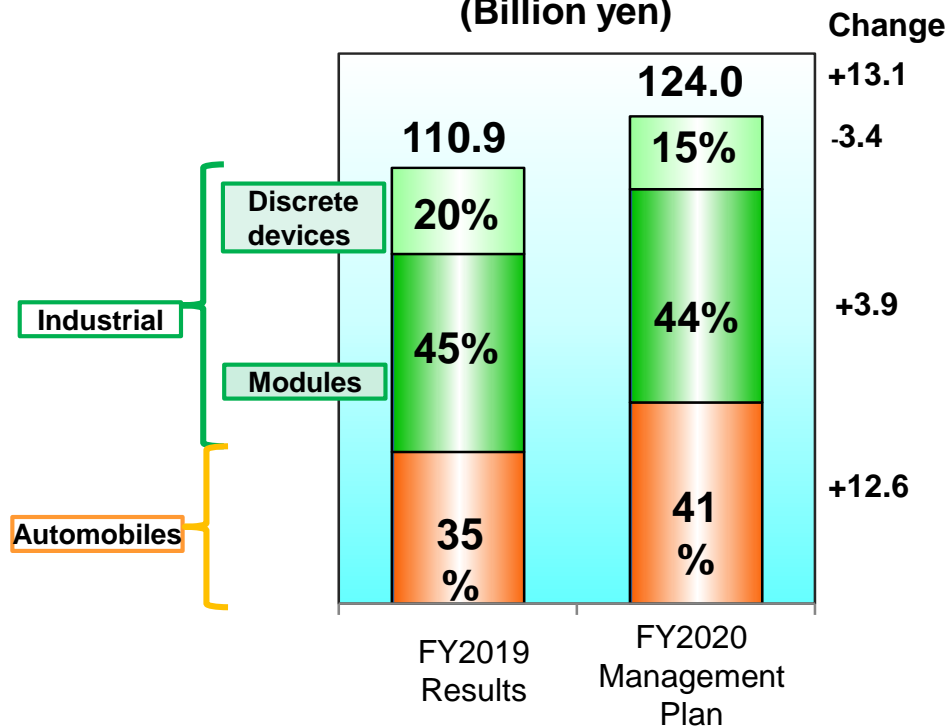


Operating Income / Operating Margin
(Billion yen)

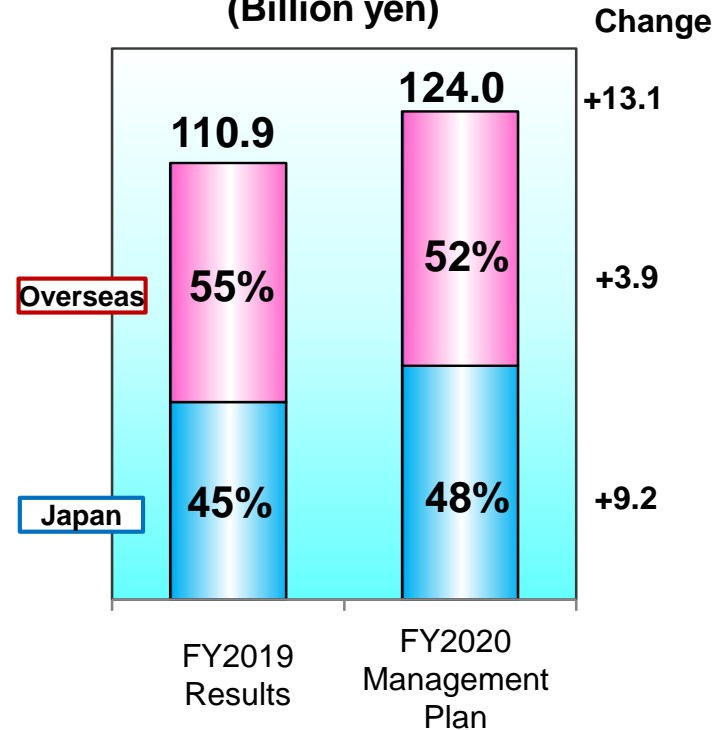


Increase in net sales through growth centered on industrial modules and IGBTs for xEVs

Net Sales by Business Field
(Billion yen)



Net Sales in Japan / Overseas
(Billion yen)



● Automotive field

- **Grow sales of products for xEVs (address full-fledged production of new products and respond to increased demand from customers)**
- **Accelerate shift of development resources to automotive field and development of new products**

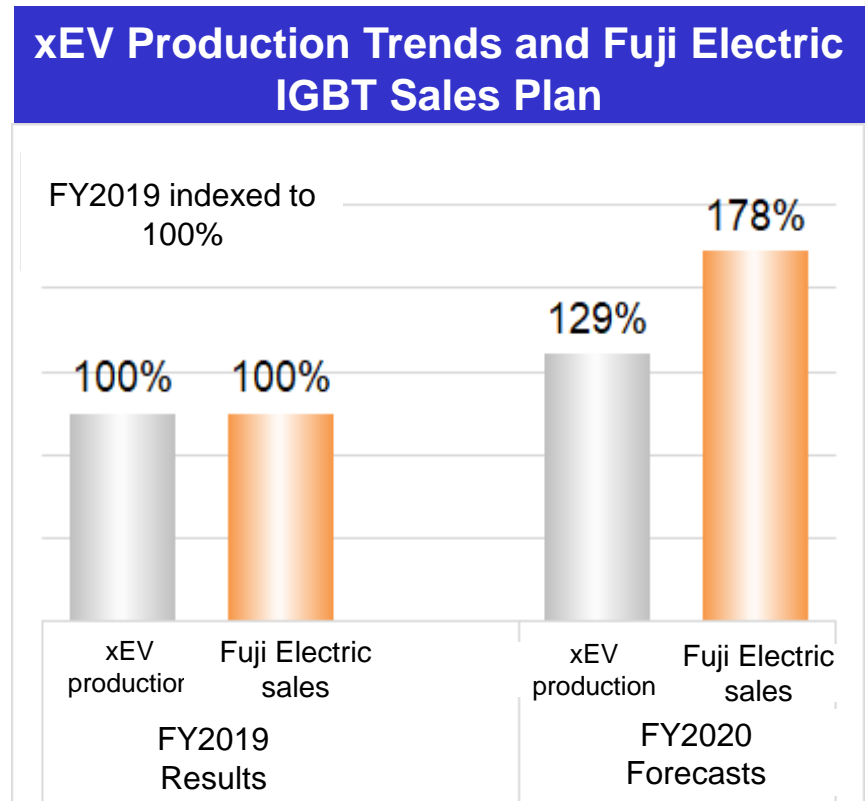
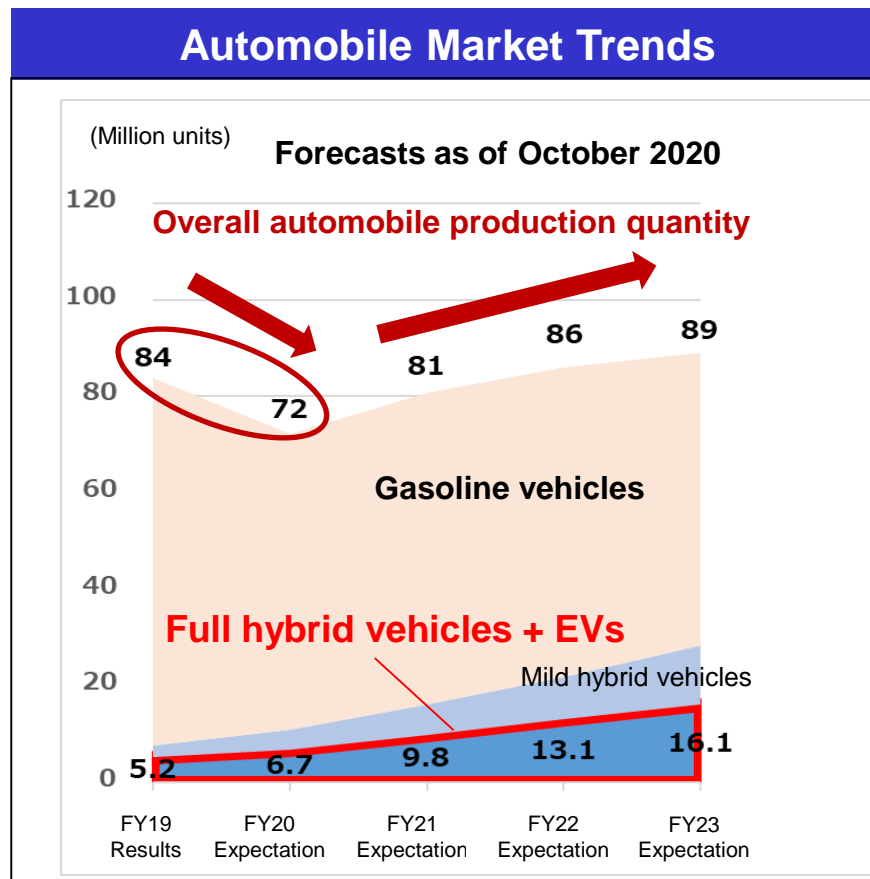
● Industrial field

- **Increase sales of products for renewable energy and air conditioning applications**

● Enhancement of manufacturing

- **Front-end: Bolster 8-inch wafer production capacity**
- **Back-end: Expand overseas production of large-capacity industrial IGBT modules**

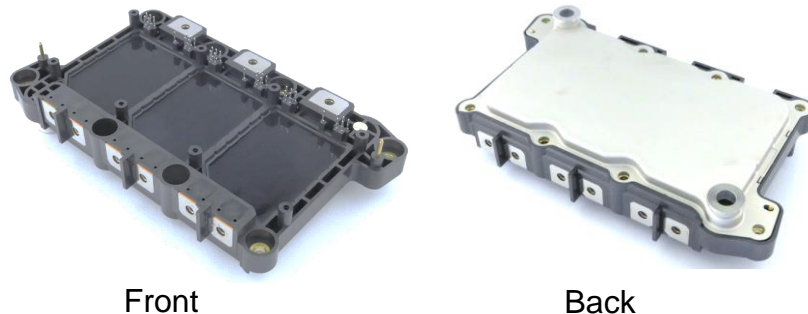
- Strong xEV market as gasoline vehicles struggle due to the COVID-19 pandemic
- Plan for sales growth exceeding xEV market growth rate



Note: xEV production represents Fuji Electric's estimates based on projections by investigation firms and uses the total of full hybrid vehicles and EVs.

- Growth in sales through adoption in new products (4th-generation direct liquid-cooling modules)
- Target of ratio of sales to automotive market exceeding medium-term target (2018–2019)

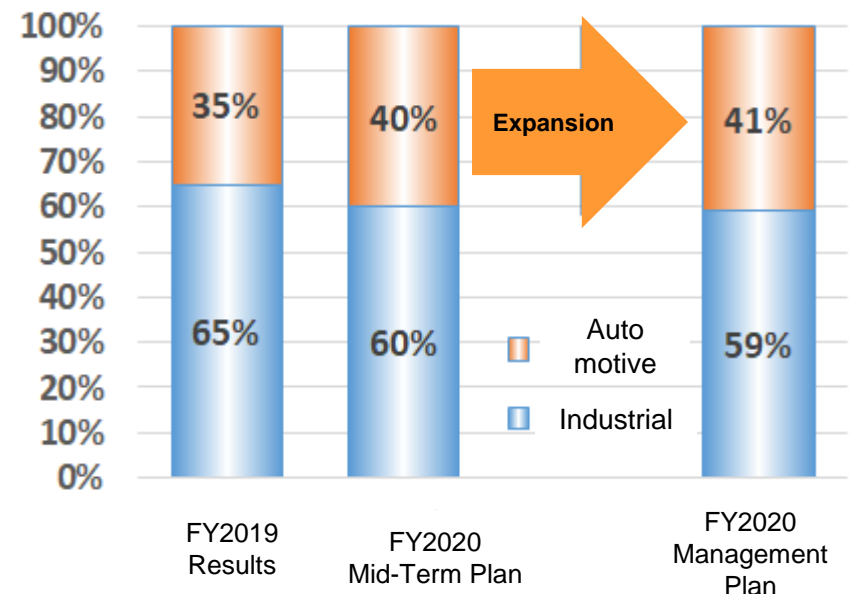
4th-Generation Direct Liquid-Cooling Modules



Superior Performance in Compact, Lightweight Package Characteristics

- Closed, aluminum cooling unit (direct liquid)
 - RC-IGBT (7th generation) equipped with on-chip sensor
- ⇒ **Power density : 60% greater than rival offerings**
(20% smaller, 30% higher current output)

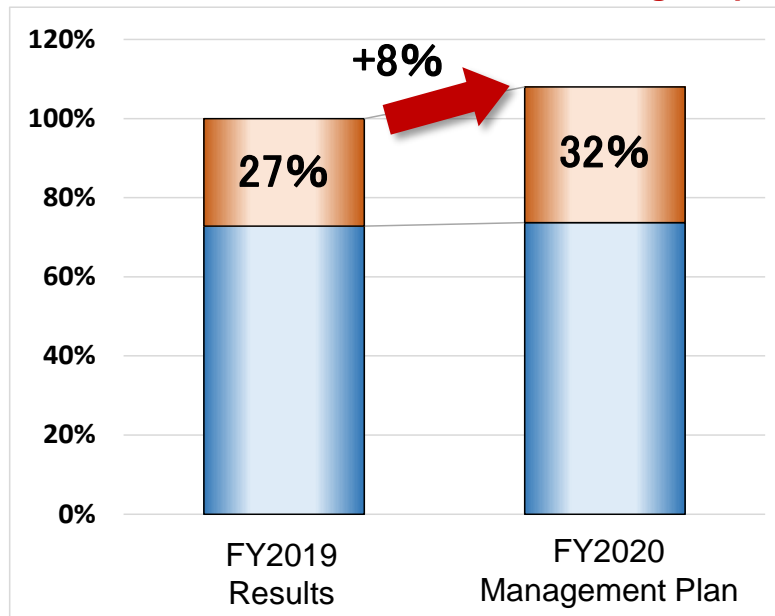
Ratio of Sales from Products for Automotive Applications



- Growth in sales of products for renewable energy (large capacity) and air conditioning (small capacity) applications
- Expansion ratio of sales from 7th-generation IGBTs

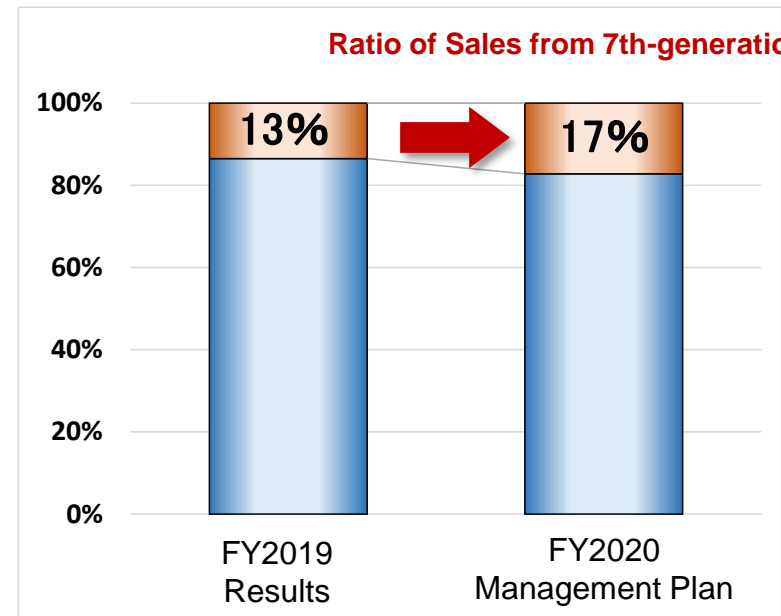
Industrial Module Sales Plan

Ratio of sales from small and large-capacity products



Ratio of Sales from 7th-generation IGBTs

Ratio of Sales from 7th-generation IGBTs



Front-End

Augmentation of wide-diameter wafer production capacity and expansion of series produced

- **Ongoing augmentation of 8-inch wafer production capacity (approx. 30% YoY increase in 2020)**
- **Expansion of series produced**
- **Preparation for production capacity increases in FY2021 and beyond**

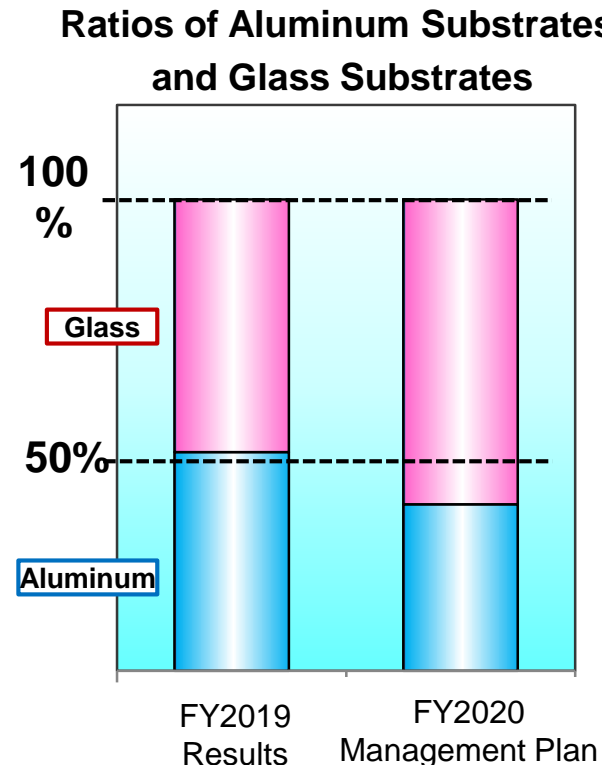
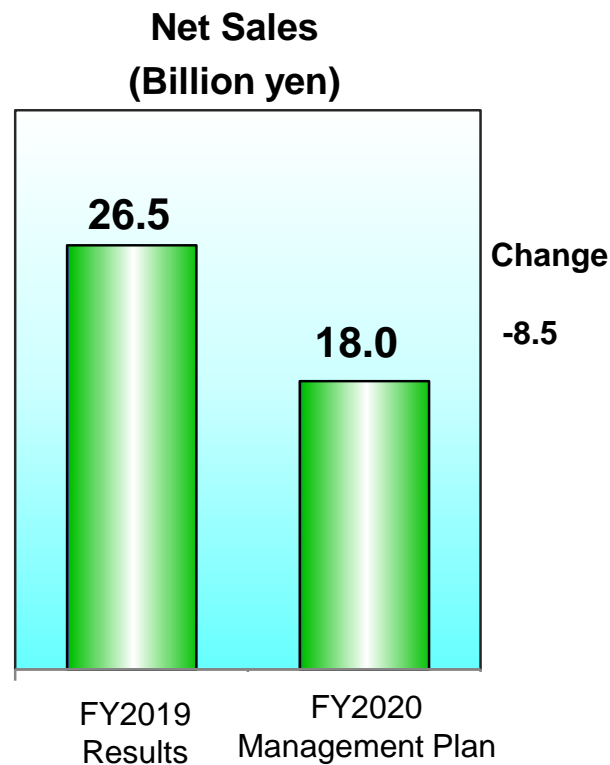
Back-End

Production capacity increases and expansion of models produced overseas

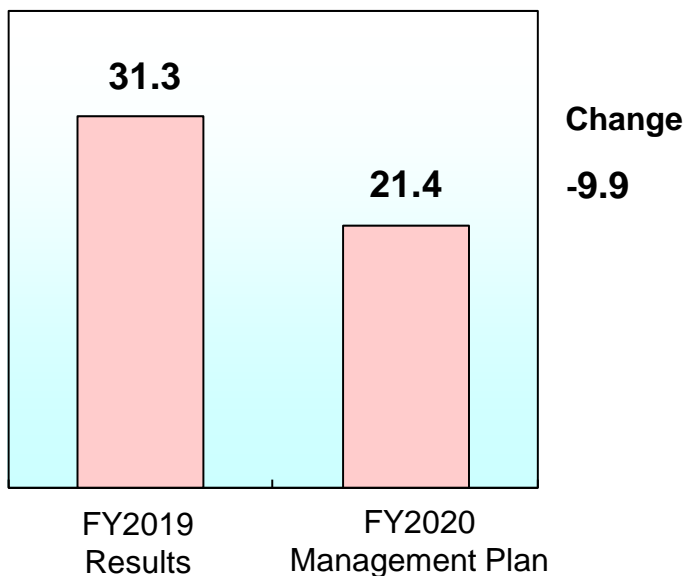
- **Increases in production capacity for products for automotive applications**
Bolstering of production capacity for IPMs for automotive air-conditioning systems (Japan)
Pressure sensor production capacity increases and commencement of production of new products (Philippines)
Preparation for increasing production capacity for xEV modules (Japan)
- **Augmentation of large-capacity industrial module production capacity (Malaysia)**

Decrease in sales due to reduced demand for desktop PCs and the trend toward SSDs

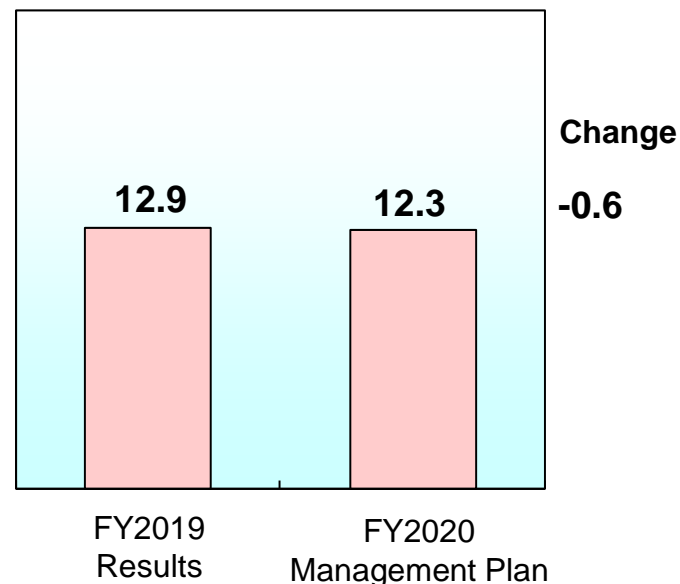
- Launch of new nearline products
- Joint development with customers to secure future sales



Capital Investment (Billion yen)



Research and Development (Billion yen)



Semiconductors

- Rationalization and production capacity increases for front-end processes (8-inch wafers) and back-end processes

Semiconductors

- Automotive IGBTs
 - Development of 8th-generation IGBT technologies
 - SiC devices and modules
- #### Magnetic Disks
- New nearline products

Note: The R&D expenditure figures above represent expenditures that have been allocated to segments based on theme and may therefore differ from figures contained in consolidated financial reports

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