

# FY2015 1<sup>st</sup> Half Results

(from April 1, 2015 to September 30, 2015)

November 2, 2015



# NGK INSULATORS, LTD.

This is a translation of materials used for the analyst meeting held in Tokyo, Japan on November 2, 2015

This document contains forward-looking statements that are based on management's expectations, estimates, projection and assumptions that were available and reasonable at the time of release. Actual future results and trends may differ materially from those in the forecasts due to a variety of factors.

# **Agenda**

Summary of financial results for FY2015 1<sup>st</sup> Half

( Ended September 30, 2015)

Forecast for FY2015

( Ending March 31, 2016)

Segment Information

Capital Expenditure & Depreciation Cost

Ratio of new products to total sales / New products

(2017 Challenge 30)

R&D / Priority Tasks

Financial Condition

	(¥Bil.)	FY2014 1 <sup>st</sup> half	FY2015 1 <sup>st</sup> half May announcement		Growth ratio
Net Sales		168.0	210.0	210.6	FX +9.0 +25%
Operating Income		28.8	35.0	41.3	+3.7 +44%
Ordinary Income		26.9	34.0	40.3	+50%
Profit Attributable to Owners of Parent		20.1	24.0	27.5	+37%
Exchange Rate	USD	¥104	(¥115)	¥122	+¥18
	EUR	¥139	(¥125)	¥135	—¥ 4

## Highest sales and income <sup>\*</sup>ever

<sup>\*</sup> Net Sales ¥ 173.7 Bil (FY2007 1<sup>st</sup> half)  
 Operating Income ¥ 34.9 Bil (FY2007 1<sup>st</sup> half)  
 Ordinary Income ¥35.3 Bil (FY2007 1<sup>st</sup> half)  
 Net Income ¥25.8 Bil (FY2007 1<sup>st</sup> half)

- Power A large overseas order of NAS<sup>®</sup> batteries was shipped.
- Ceramics Demand for automotive-related products increased due to strong sales of passenger cars in the US and Europe, and trucks in the US.
- Electronics Reflected the first half results of NGK Electronics Devices, Inc. acquired in January 2015.  
Demand for ceramic components for semiconductor manufacturing equipment grew.
- In September, we entered into a plea agreement with the U.S. Department of Justice. Because we have recorded provision for loss related to competition law in the last fiscal year, its effect on profit and loss is minimal.

# Forecasts for FY 2015

	(¥Bil.)	FY2014	May announcement	FY2015	Growth ratio
Net Sales		378.7	420.0	430.0	+14%
Operating Income		61.6	68.0	72.0	+17%
Ordinary Income		61.1	69.0	74.5	+22%
Profit Attributable to Owners of Parent		41.5	48.0	51.0	+23%
Exchange Rate	USD	¥110	(¥115)	¥119	+¥9
	EUR	¥139	(¥125)	¥132	-¥7

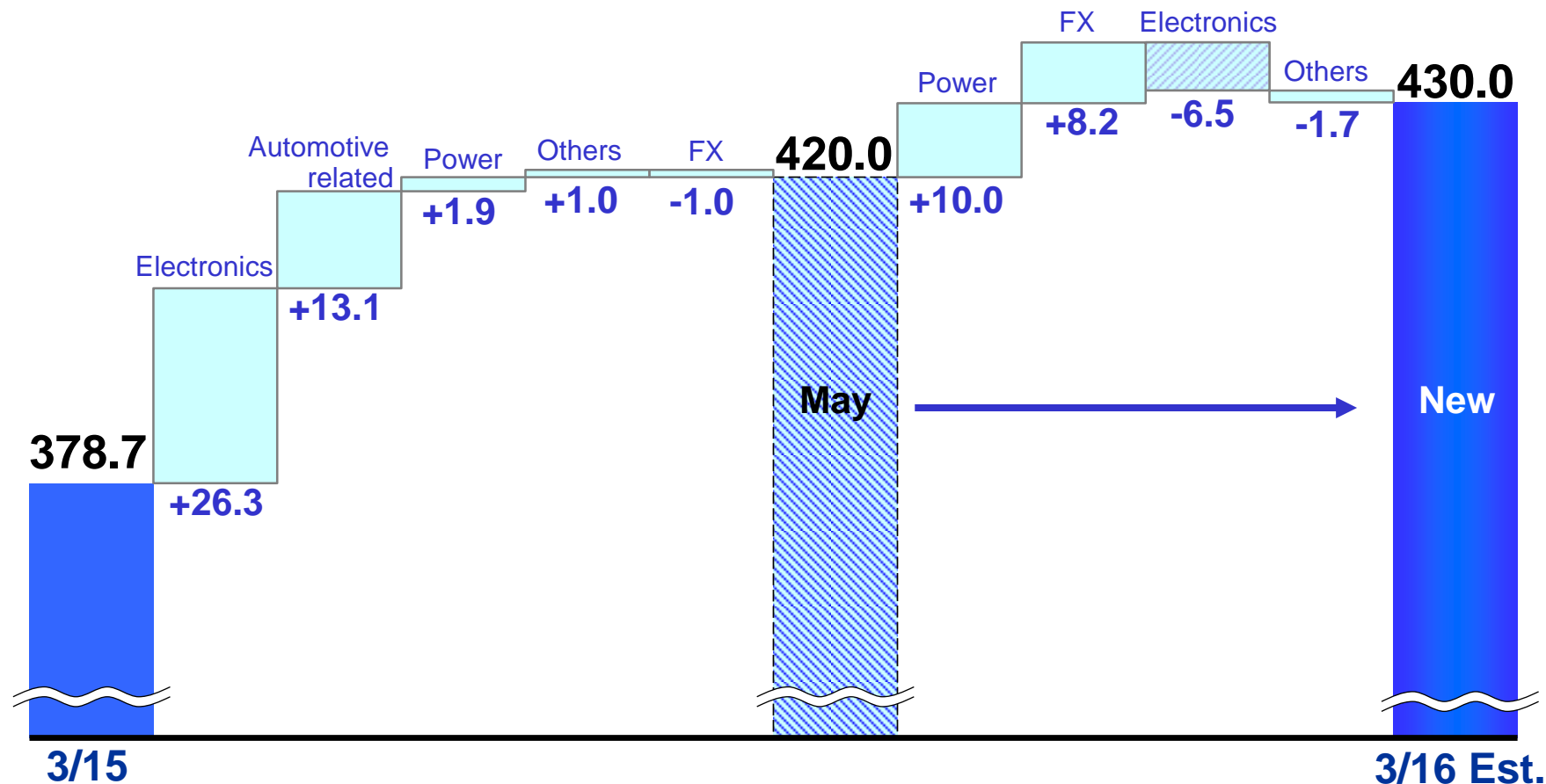
## Highest sales and income forecasts ever\*

\* Net Sales ¥ 378.7 Bil (FY2014)  
 Operating Income ¥ 69.4 Bil (FY2007)  
 Ordinary Income ¥69.3 Bil (FY2007)  
 Net Income ¥46.0 Bil (FY2007)

- Power NAS® batteries shipment for Kyushu Electric Power is expected. Significantly higher sales forecast; sequent expected to go into the black.
- Ceramics While sales in China may have weakened, sales of passenger cars in Europe and the US, and sales of trucks in the US are expected to remain strong.
- Electronics Due to the delayed investments in mobile phone base stations mainly in China, demand for the package products will fall below the initial forecast.

# Change Analysis: Sales

(¥ Bil.)

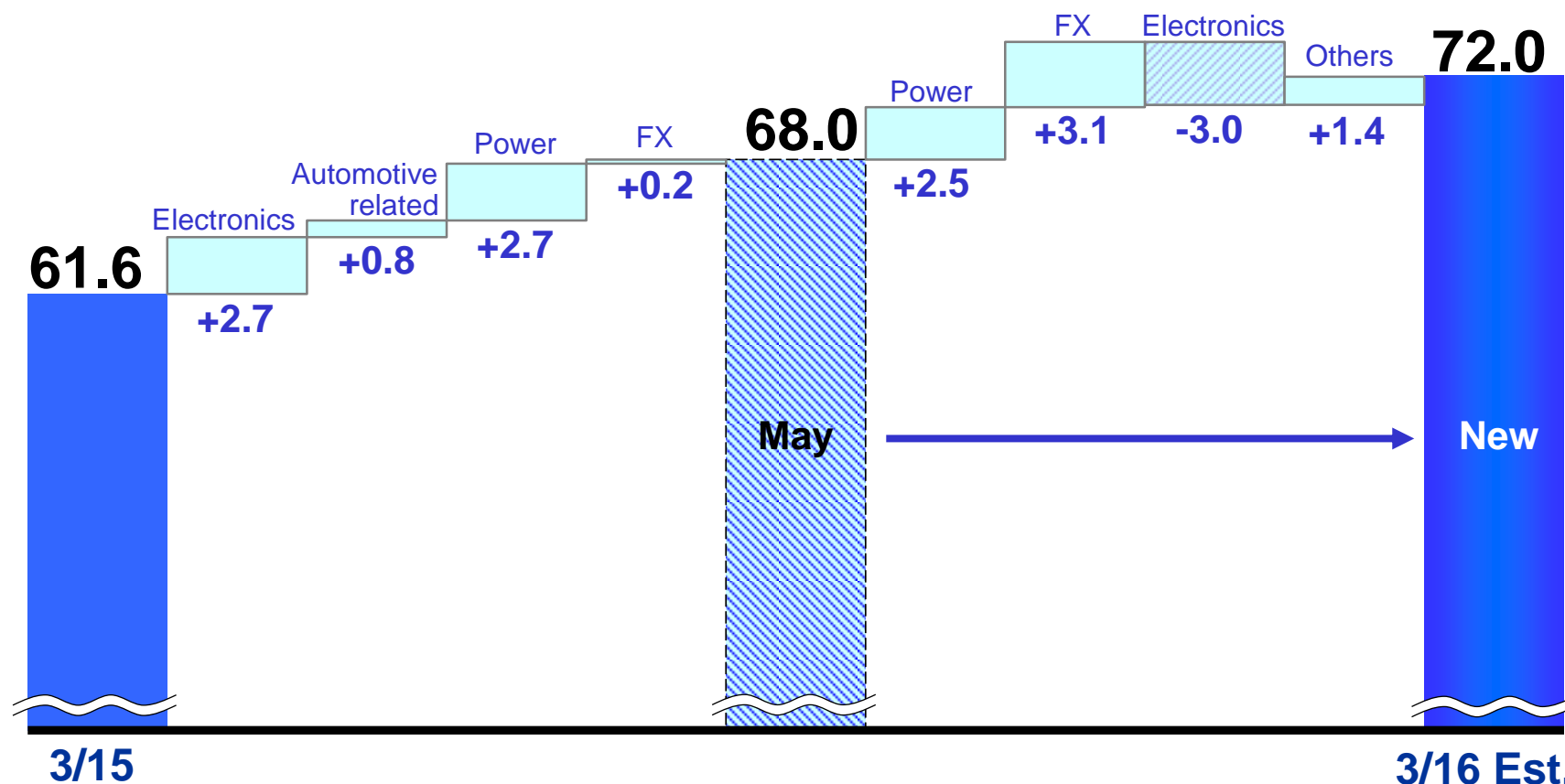


FX Rate

3/15  
¥110/USD  
¥139/EUR

May(3/16 Est.)  
¥115/USD  
¥125/EUR

New(3/16 Est.)  
¥119/USD  
¥132/EUR



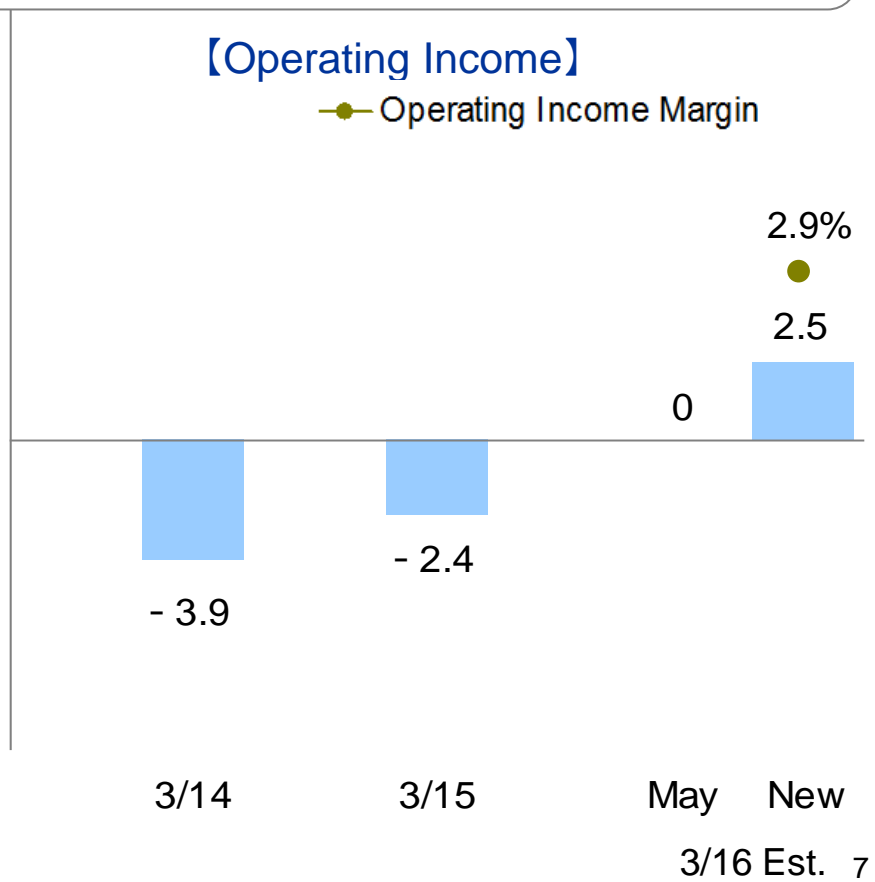
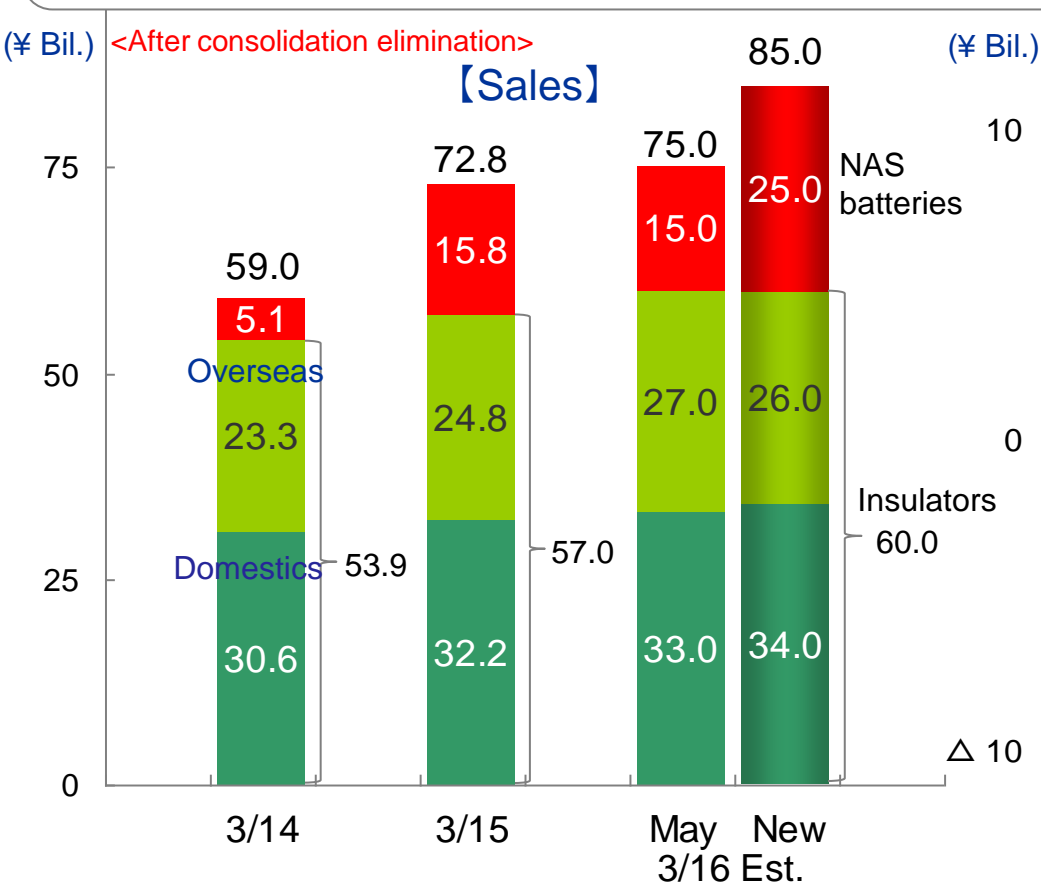
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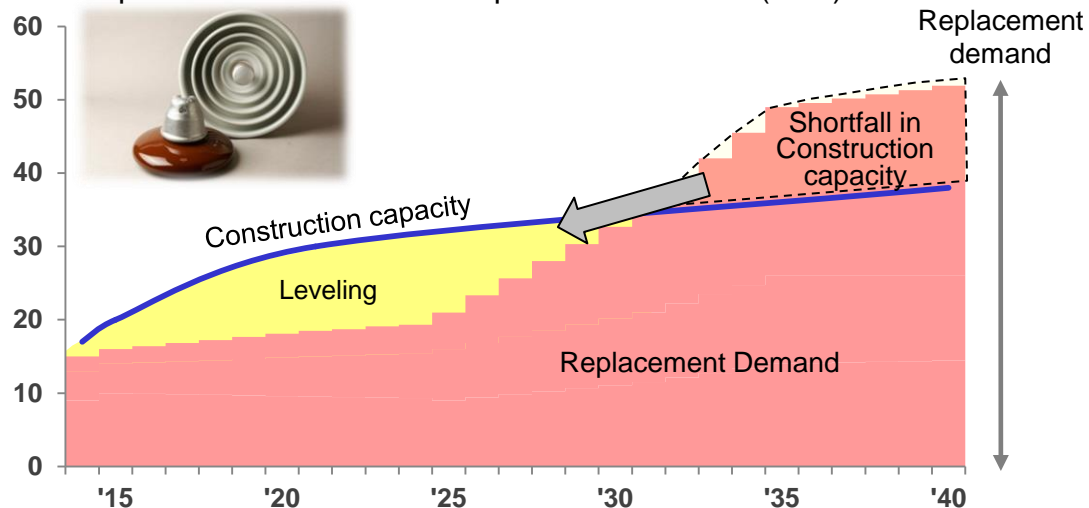
- Insulators
  - Demand remains strong both domestically and overseas (mainly in North America, Middle East, and Southeast Asia) and profit is expected.
  - Aim to improve earnings by capturing replacement demand for insulators installed after the high-speed growth period, and making further cost reductions.
- NAS
  - With some overseas large-scale orders, and orders received and shipments for Buzen Power Station of Kyushu Electric Power, significantly higher sales and profit are projected.
  - Demand for long time use, the key features of NAS batteries, is currently limited. We expect full-scale demand to arise around 2020. Aim to secure continuous demand by capturing new demand overseas and strengthening partnerships with customers.



## ■ Boost domestic replacement demand for insulators

- In Japan, replacement demand for insulators installed after the high-speed growth period is increasing.
- As future replacement demand will exceed the construction capacity of customers, boost demand by proposing replacement standards, and other means.

< Replacement demand for suspension insulators (¥Bil.) > (NGK's Est)



## ■ Shipment of large-capacity NAS batteries for power grids planned for FY2015

Buzen Power Station in Buzen City,  
Fukuoka Prefecture

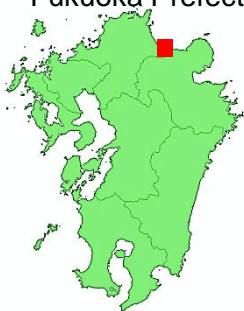


Image of installed batteries

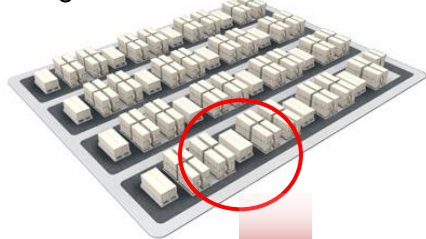


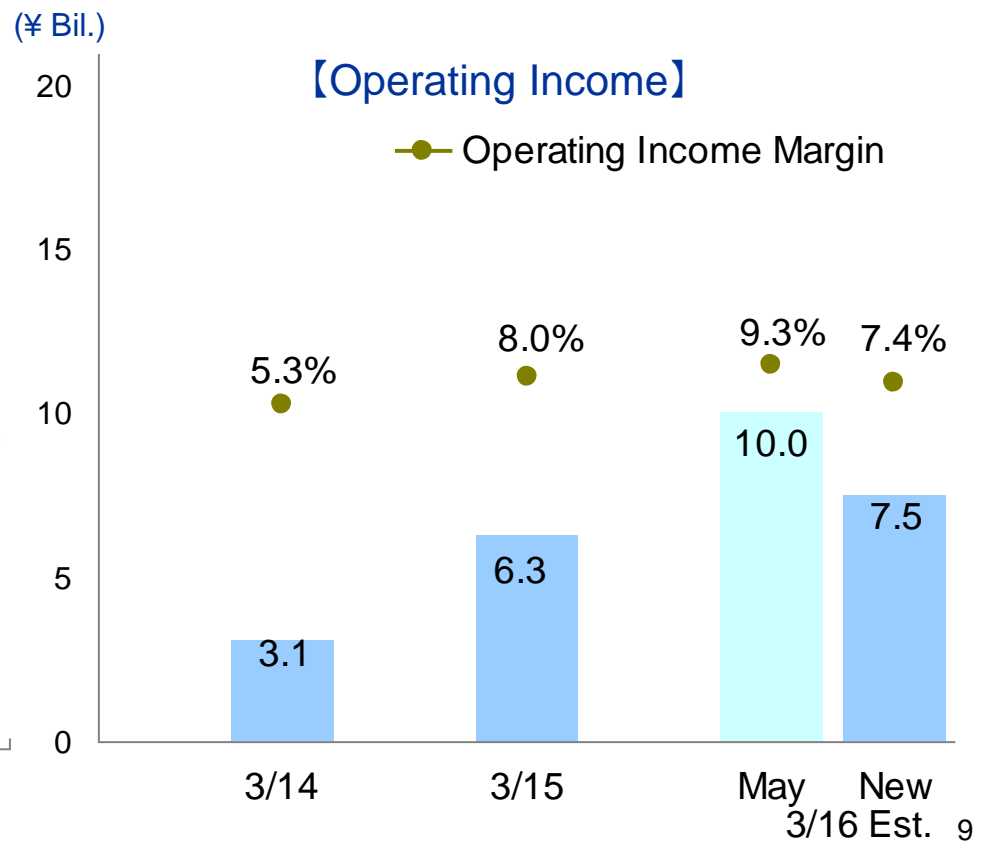
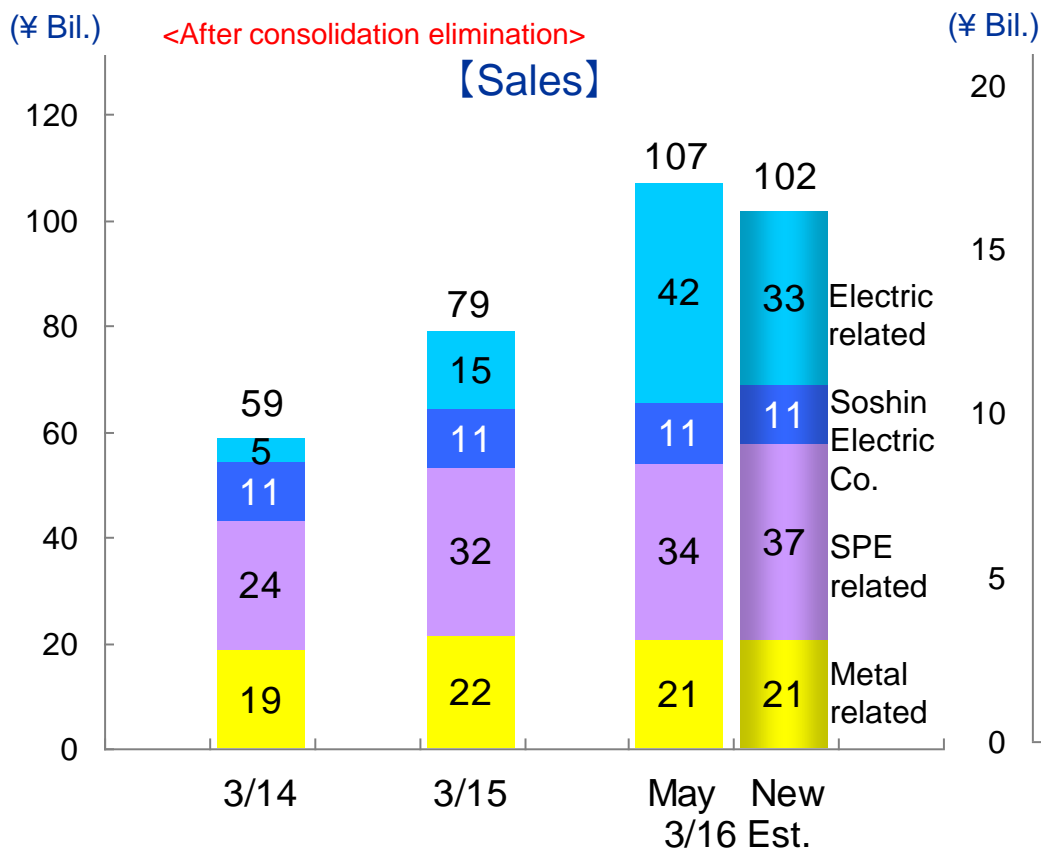
Image of container  
model battery



- We received an order from Mitsubishi Electric Corporation to install the world's largest NAS battery system, to be used for electricity storage, at the Buzen Power Station of Kyushu Electric Power Co., Inc.  
(Power output: 50,000kW / Storage capacity: Approx. 300,000kWh)
- New containerized batteries, which substantially reduce the installation lead time compared to the former models, were successfully developed.
- Drawing on this achievement, we encourage the use of NAS batteries as a stabilization measure for a renewable energy power grid.



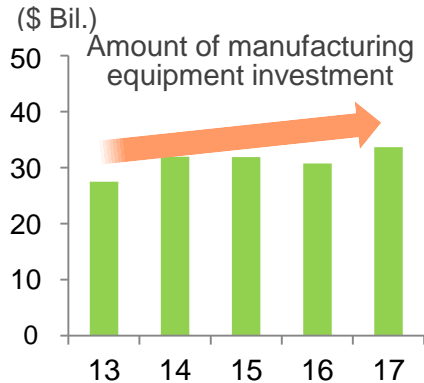
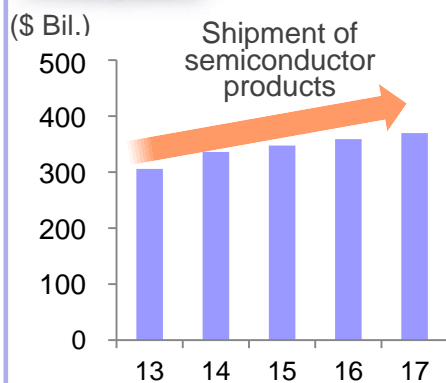
- Electronics Components
  - Due to delayed investments in mobile phone base stations mainly in China, demand for package products is temporarily stagnant.
- Ceramics for Semiconductor Manufacturing Equipment (SPE-related products)
  - Demand increases as semiconductor companies are continuing high-level investments for further multi-layering and miniaturization on the back of increased demand for semiconductors for data centers.
  - Focus on cost reduction by working on technological advancement of products and establishing the use of innovative production methods.
- Metal Related Products
  - Demand in China may weaken. Grow the business by developing new materials and products with new uses.



## ■ Ceramic Components for Semiconductor Manufacturing Equipment



Semiconductor manufacturing equipment demand remains at high level on the back of increased demand for semiconductors for data centers



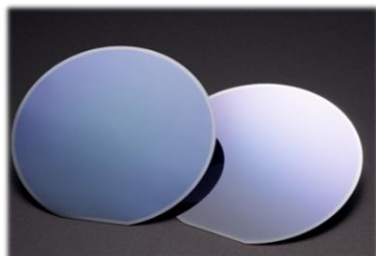
Source) Semiconductor: WSTS

(FY) Source) Manufacturing equipment: Gartner WFE

Make capital investments in advance in view of anticipated rise in demand

## ■ Wafer Products (Electronics Components)

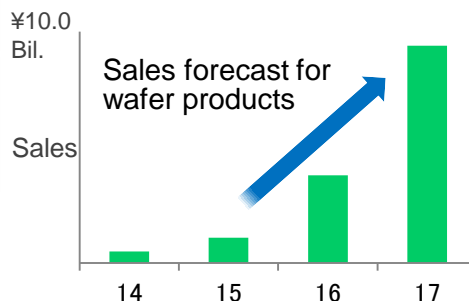
Bonded wafers for SAW filters



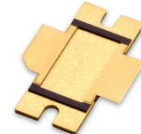
For temperature compensated SAW filters

Widespread adoption of LTE and next-generation LTE expands SAW filter market

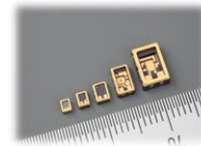
Demand for our wafers will increase



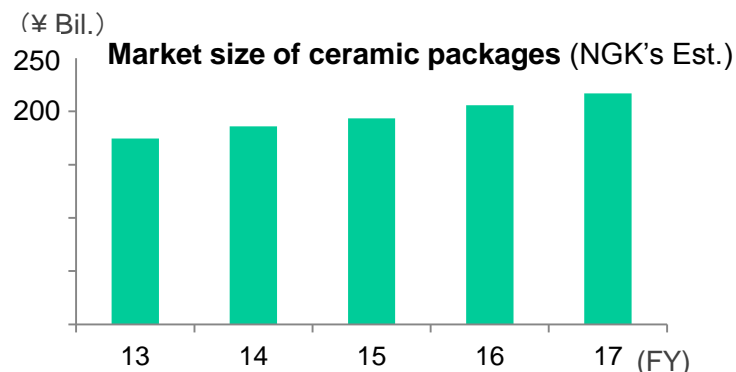
## ■ Ceramic Package Business (Electronics Components)



Ceramic package market is projected to expand in the medium to long term



Quartz crystal package



Translucent alumina wafer (HICERAM™ wafer)



Alternative use of alumina and sapphire substrates with high resistivity & conductivity, and larger diameters

New product

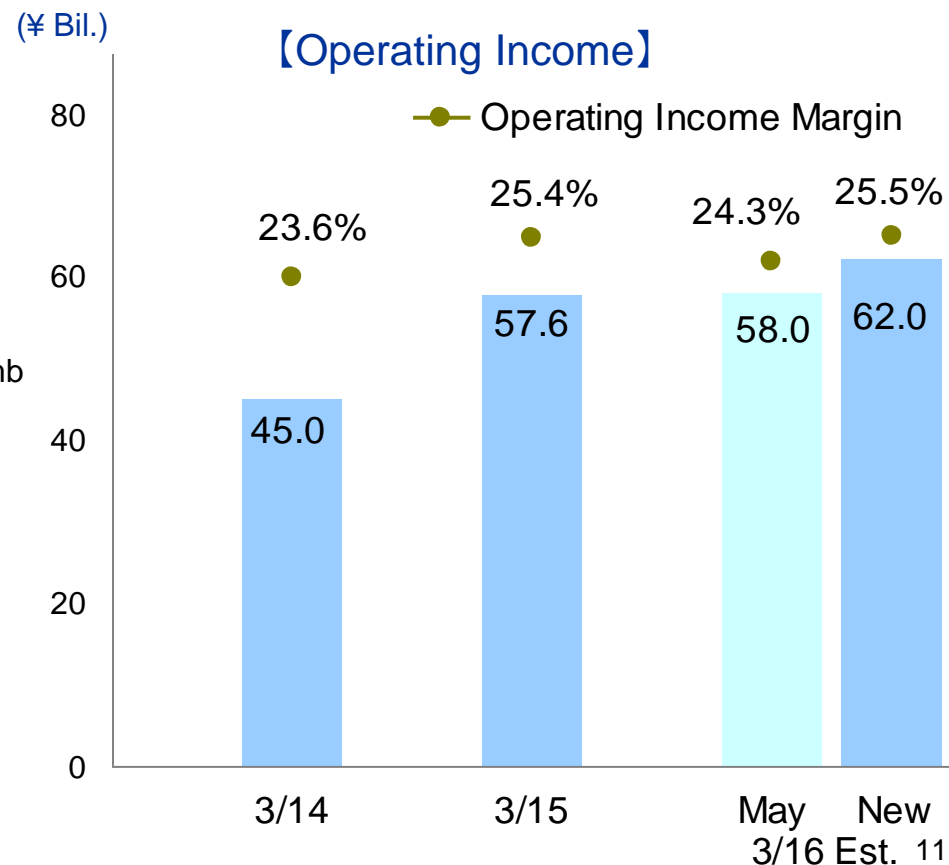
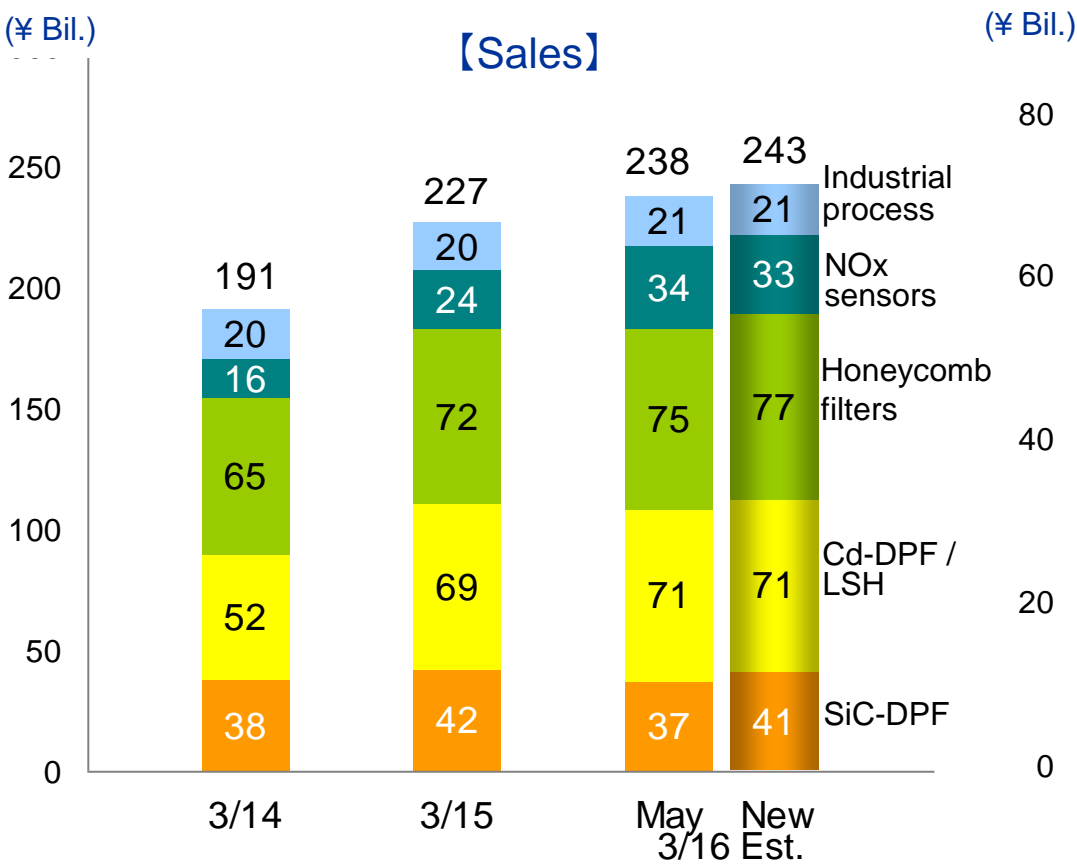
Gallium nitride (GaN) wafer



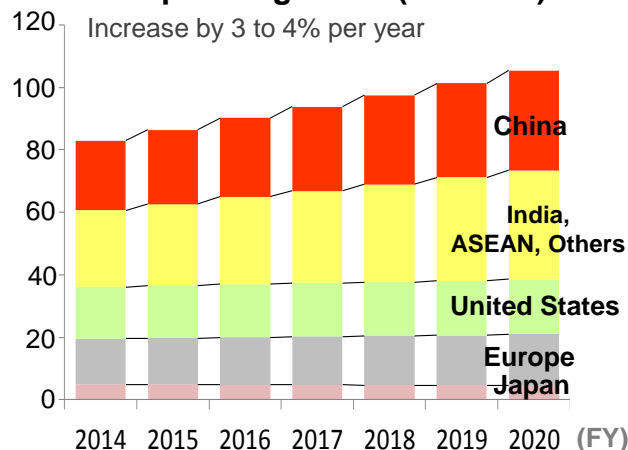
[Example of final products]

- Ultra-bright LED
- High-power blue/green laser
- Next-generation power semiconductor

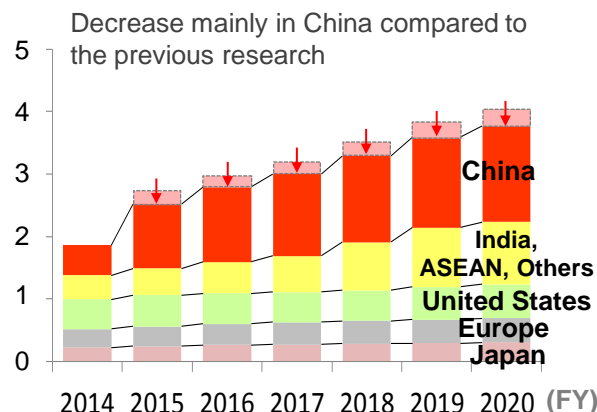
- Automotive-related
  - Demand for SiC-DPF increases due to strong sales of passenger cars in Europe.
  - Sales of trucks in the US remain strong, whereas sales are stagnant in China
  - The effect of the European auto manufacturer's misconduct in exhaust gas treatment is uncertain at this moment in time. For the mid to long term, the global trend for tighter emission regulations is set to continue and the demand for related products will increase. We will continue to focus on constructing a global production system.
- Industrial processes
  - Capex in Japan shows signs of recovery with improvement of medical, electronic, and chemical industries.
  - Continue efforts to improve profitability.



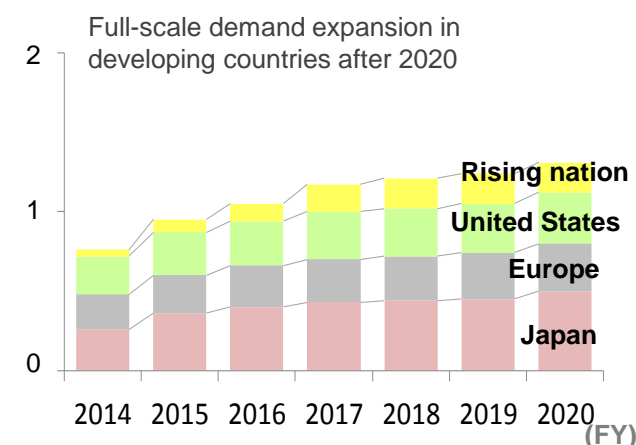
## ■ Sales of passenger cars (mil. cars)



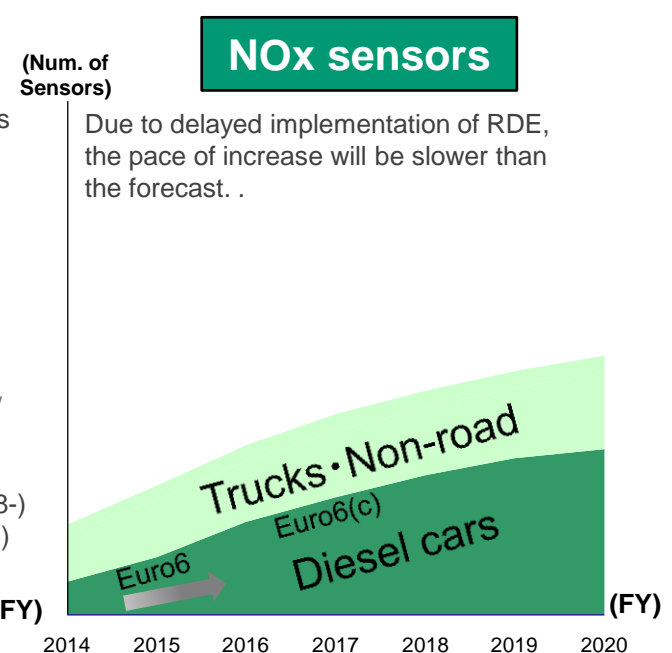
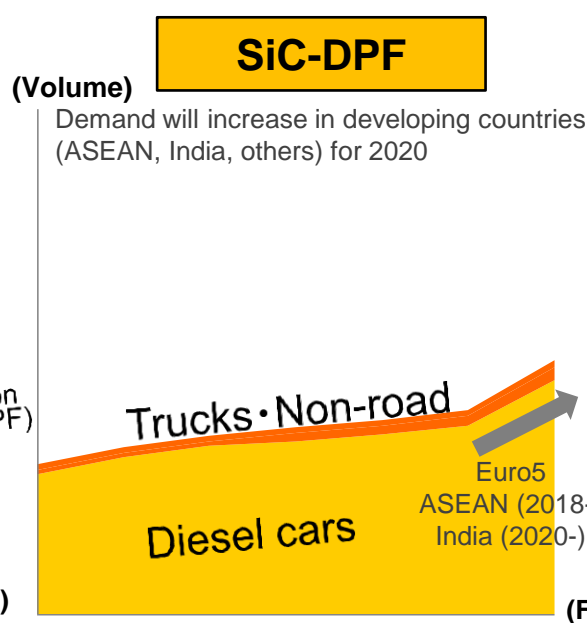
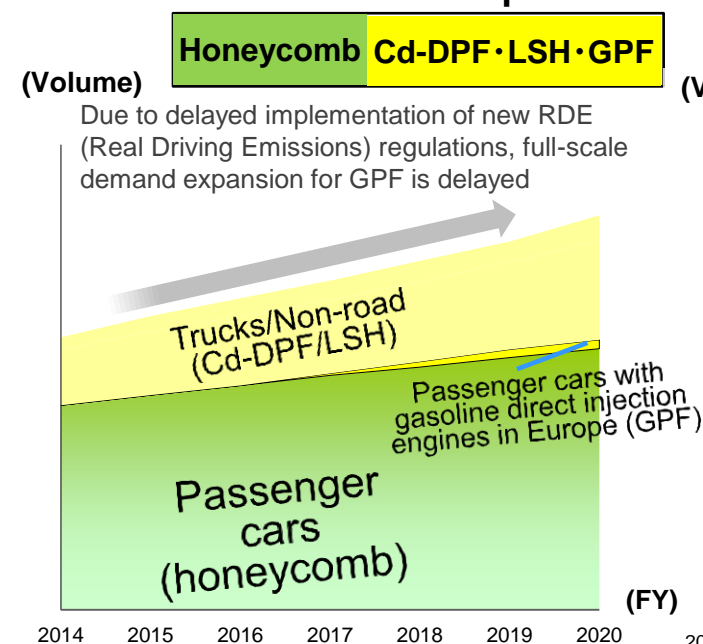
## ■ Trucks requiring aftertreatment (mil. trucks)



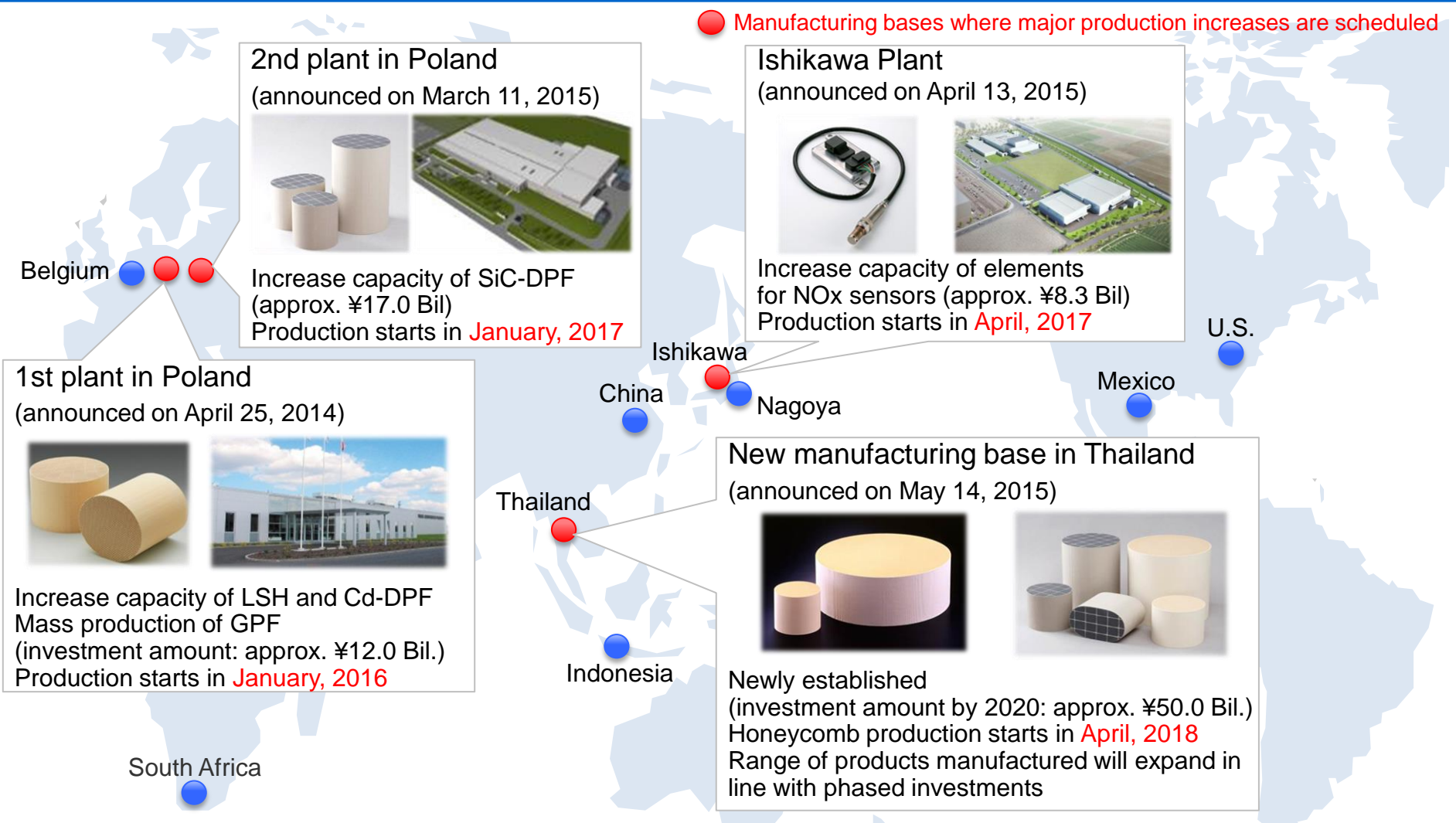
## ■ Non-roads requiring aftertreatment (mil. cars)



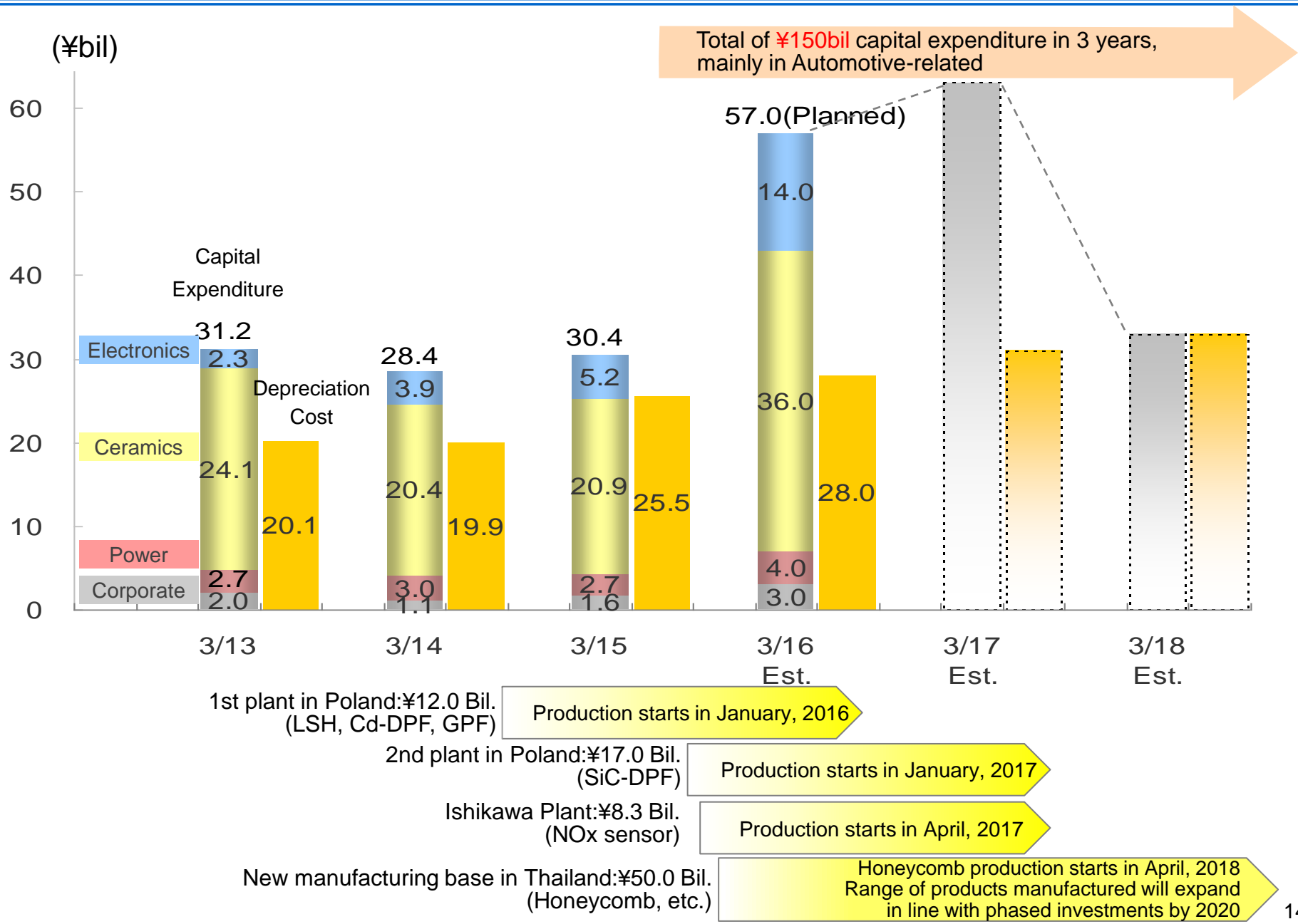
## ■ Total demand forecast for products



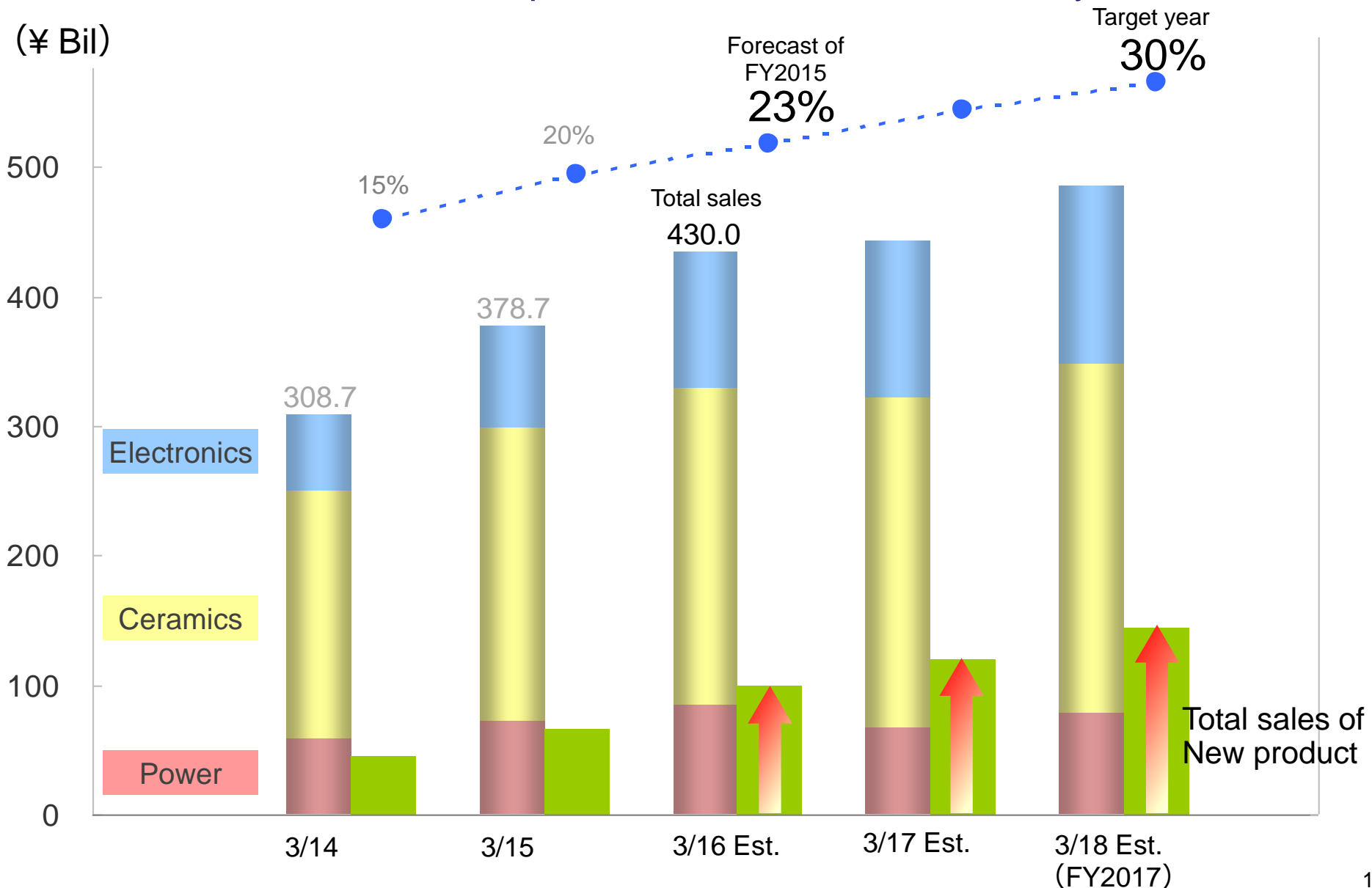
The effect of the European auto manufacturer's misconduct in exhaust gas treatment is uncertain at this moment in time.



Establish a new manufacturing base in Thailand in response to mid- to long-term demand increase in Asian developing countries.  
Including in Poland (1st and 2nd plants) and at the Ishikawa Plant (NOx sensor), increase productivity worldwide.

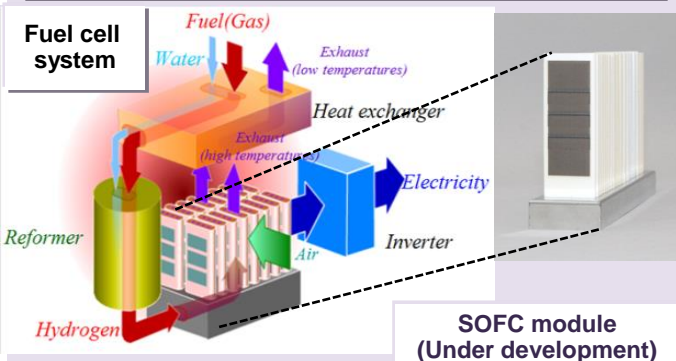


Raise the ratio of new products to total sales to 30% by FY2017





## Ceramic fuel cell module SOFC (Solid-Oxide Fuel Cell) module



- Compact but highly efficient and durable power generation component made of ceramic enabled by proprietary configuration and ceramic material

This component generates electricity in a chemical reaction using gas as a fuel. The heat generated is used to heat water, which greatly contributes to energy conservation. It is expected to be used in detached houses, and commercial buildings.

Fuel cell system for a detached house and an apartment building (installed in every unit)



- Being evaluated at major fuel cell system companies for commercialization

## Zinc secondary battery



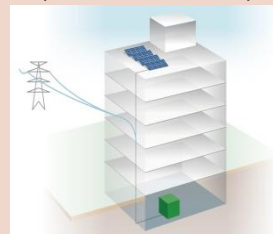
- Safe storage battery for small- to medium-sized functions with large capacity using proprietary OH ion-conducting ceramic materials in its separators

As it has large capacity, operability at normal temperatures, and is very safe thanks to the use of aqueous electrolyte, it can be installed in various locations. It is suitable for houses, buildings, hospitals and commercial buildings.

Household-type storage battery (10kWh class)



Indoor-type storage battery (500kWh class)



- Being evaluated for long-term durability, for commercialization in 2017

## All-solid-state battery



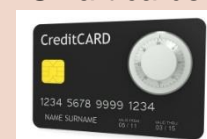
- All-solid-state battery which are ultra-slim, high energy dense and operable under high temperatures

The battery enables adjacent mounting with semiconductor components, sensors, wireless ICs and antennas on the circuit board, and contributes to the reduction in size and width of electronic devices.

Wearable devices



Smart cards



IoT wireless modules

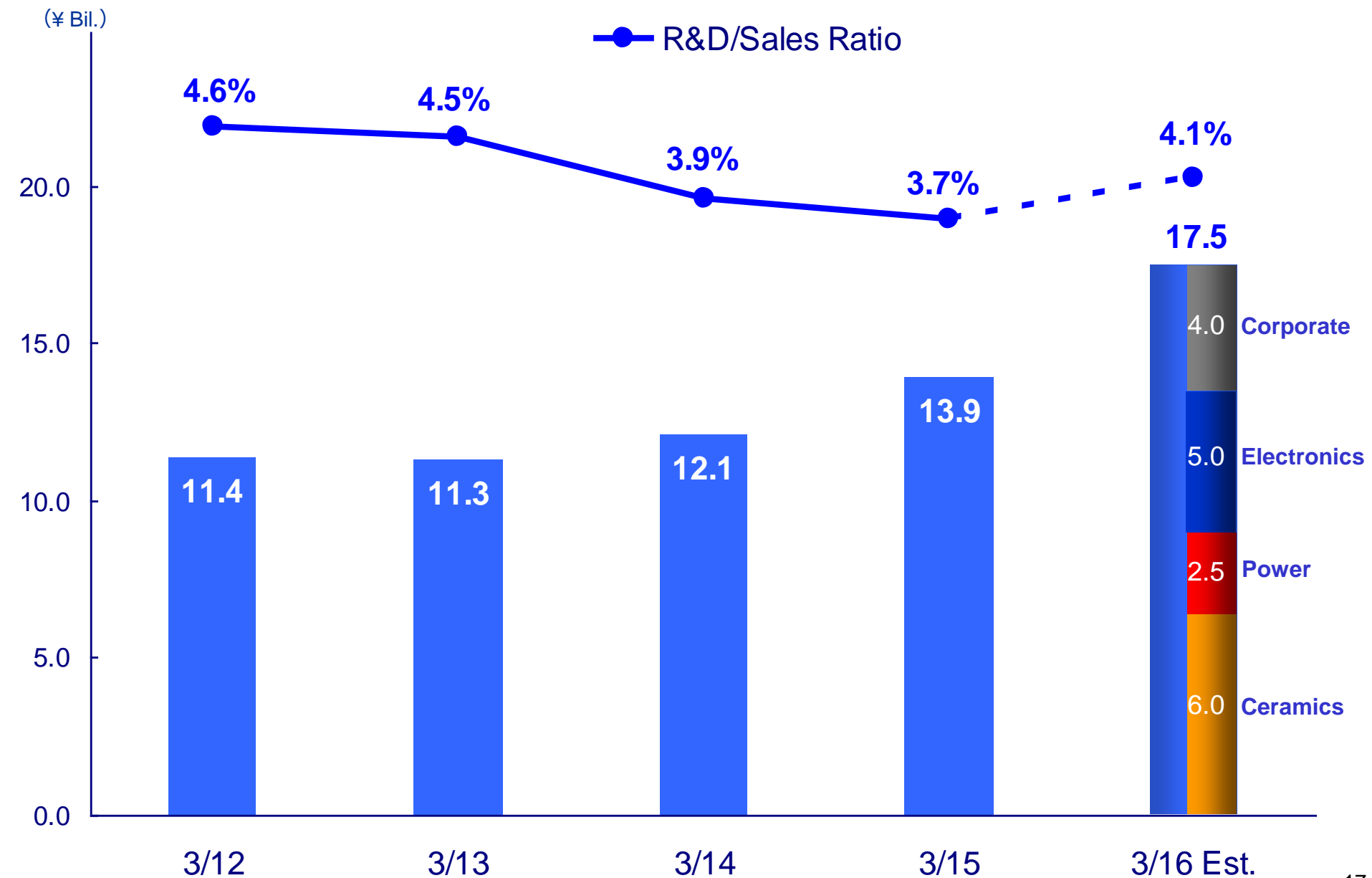


Memory boards for servers



- Samples being evaluated at more than 10 companies





# Priority Tasks

Respond to demand expansion  
Enhance the competitiveness  
of the product

Break dependence on  
Automotive-related  
products

Strengthen system  
to respond  
Global expansion  
Risk countermeasure

Strengthen global  
productivity

- Planning world wide production increase, mainly automotive-related products
- Coinstantaneous world wide plant establishment

Enhance the competitiveness  
of existing products  
New Structural Innovation of  
Manufacturing

- Increase the value of the products by advanced technology
- Reduce cost by establishing innovational manufacturing process.

Create new product  
and business  
2017 Challenge 30

- Raise the ratio of new products to total sales to 30%
- Early commercialization of promising business
- Set up the new department to reinforce the marketing and experimental production

Enlarge the global  
management  
Upgrade the cooperate  
headquarter

- Rapid response to the change of business conditions, and legal requests



Further Enhancement of Governance framework  
Commit Stronger Regulatory Compliance

Renovate Corporate Culture

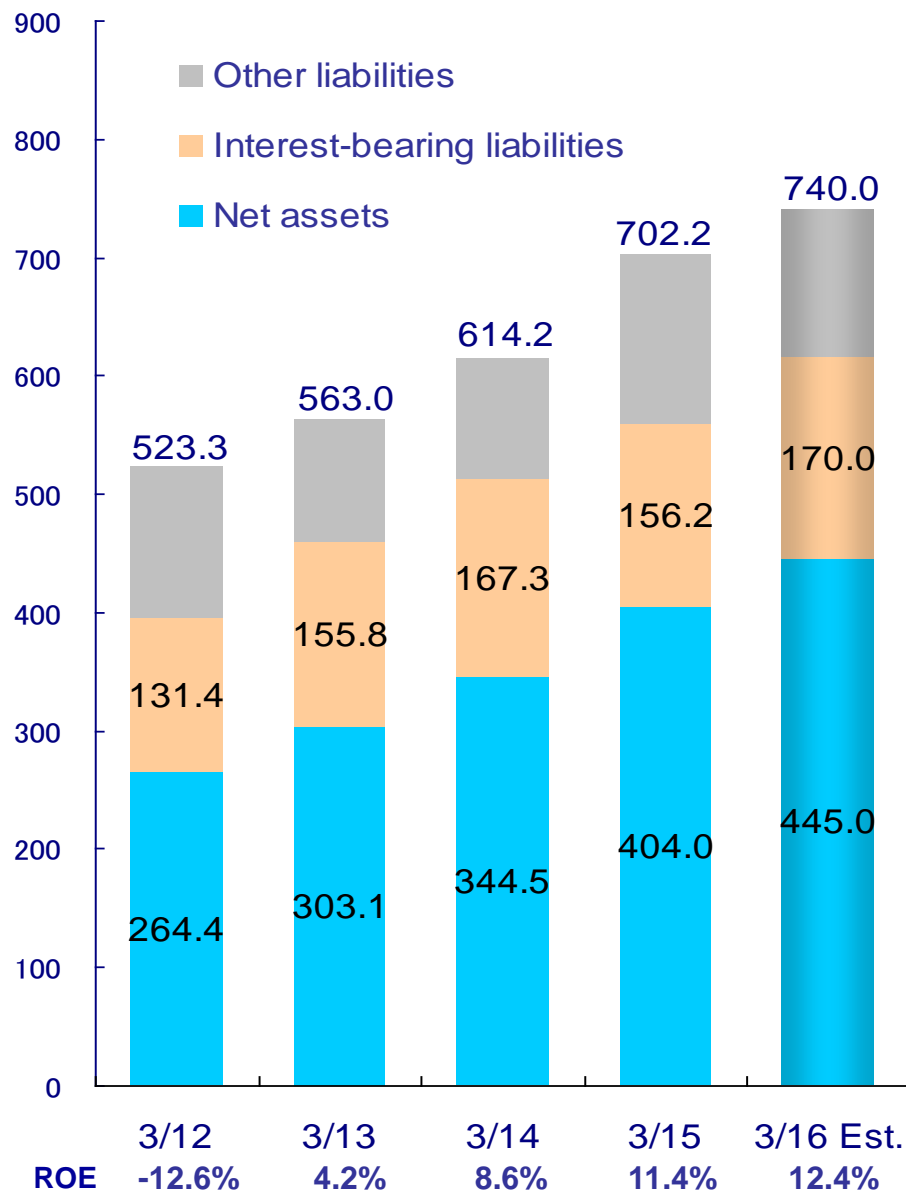
## Become a world-class global company

# Summary of Cash Flow

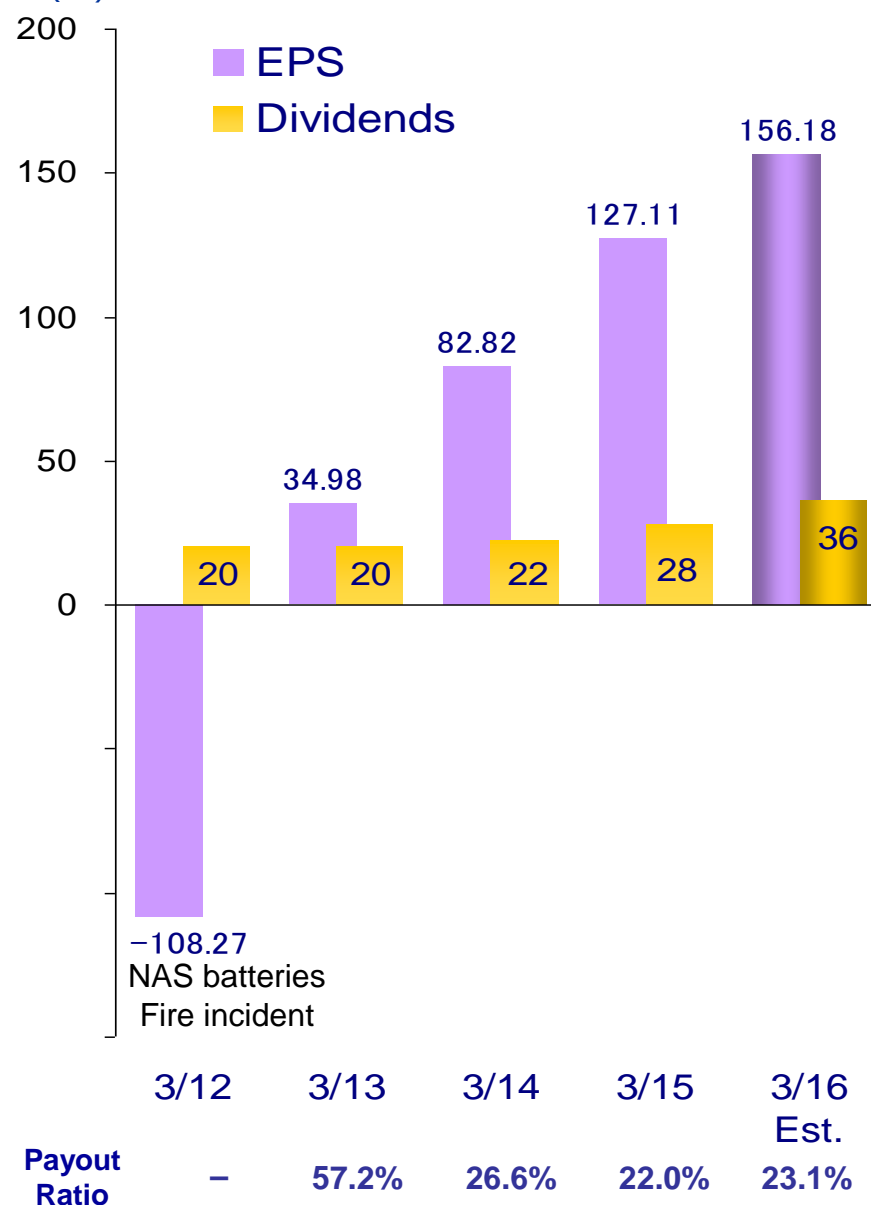
(¥ Bil.)

	3/14	3/15	3/16 Est.
Operating Activities	32.6	73.0	58.0
Investing Activities	-21.2	-39.5	-60.0
Financing Activities	2.0	-26.0	5.0
Effect of exchange rate change	3.4	1.3	-1.0
Net Change in Cash &Eq-	16.9	8.8	2.0
Cash & Eq- at the End of Year	119.8	128.6	130.6

(¥ Bil.)



(¥)



# Sales by Product (Annual)

&lt;After Consolidation Elimination&gt;

(¥ Bil.)

	3/13	3/14	3/15	3/16 Est.
Insulators	57.6	53.9	57.0	60.0
NAS	0.1	5.1	15.8	25.0
Power Business	57.7	59.0	72.8	85.0
Honeycomb filters	50.6	65.1	72.4	77.0
SiC-DPF	26.5	37.6	41.8	41.0
Cd-DPF / LSH	33.0	51.8	68.9	71.0
Sensors	10.1	16.4	24.0	33.0
Industrial Process	23.7	19.9	20.0	21.0
Ceramics Business	144.0	190.8	227.1	243.0
Metal related	17.2	18.6	21.5	20.5
SPE related	15.6	24.3	31.5	37.0
Electric Related	7.7	4.8	14.5	33.4
Soshin Electric CO.	10.5	11.2	11.3	11.1
Electronics Business	51.1	58.9	78.8	102.0
Total	252.8	308.7	378.7	430.0

# Sales by Product (Semi Annual)

&lt;After Consolidation Elimination&gt;

(¥ Bil.)

	3/15		3/16 Est.	
	1 <sup>st</sup> . Half	2 <sup>nd</sup> . Half	1 <sup>st</sup> . Half	2 <sup>nd</sup> . Half
Insulators	26.7	30.3	27.9	32.1
NAS	1.5	14.3	5.9	19.1
Power Business	28.2	44.6	33.8	51.2
Honeycomb filters	35.1	37.3	39.1	37.9
SiC-DPF	20.4	21.4	22.1	18.9
Cd-DPF / LSH	32.0	36.9	37.0	34.0
Sensors	11.4	12.6	14.9	18.1
Industrial Process	7.7	12.3	9.6	11.4
Ceramics Business	106.6	120.5	122.7	120.3
Metal related	10.7	10.8	10.6	9.9
SPE related	14.4	17.1	18.7	18.3
Electric Related	2.4	12.1	19.5	13.9
Soshin Electric CO.	5.8	5.5	5.4	5.7
Electronics Business	33.3	45.5	54.1	47.9
Total	168.0	210.7	210.6	219.4

The purpose of this brief is information disclosure for better understanding of NGK Group's policies, projections and financial condition. This brief does not solicit buying and selling of NGK's shares.

The figures included in this brief, including the business performance targets and figures, are all projected data based on the information currently available to the NGK Group, and are subject to variable factors such as economic conditions, competitive environments and future demands.

Accordingly, please be advised that the actual results of business performance may differ substantially from the projections described here.



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