

FY2016 Results

(from April 1, 2016 to March 31, 2017)

April 28, 2017



NGK INSULATORS, LTD.

This is a translation of materials used for the analyst meeting held in Tokyo, Japan on April 28, 2017

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 FY2016

(Ended March 31, 2017)

Forecast for FY2017

(End in March 31, 2018)

Segment Information

Capital Expenditure & Depreciation Cost

Mid-term image / Ratio of new products to total sales

New products / R&D

Priority Tasks

Financial Condition

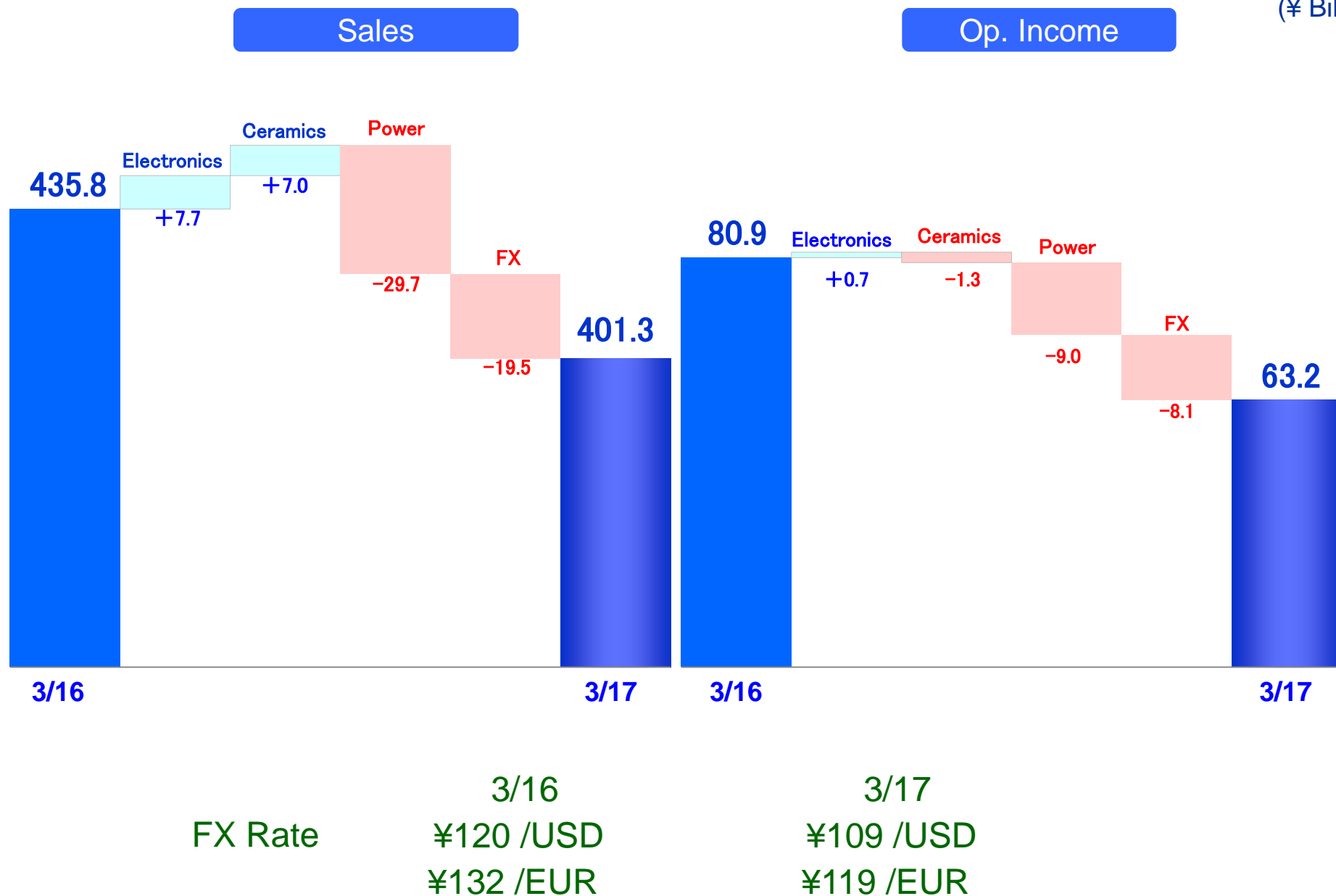
	(¥Bil.)	FY2015	FY2016	Growth ratio	
			January announcement		
Net Sales		435.8	401.3	FX -19.5	-8%
			400.0		
Operating Income		80.9	63.2	-8.1	-22%
			63.0		
Ordinary Income		81.5	64.6		-21%
			64.0		
Profit Attributable to Owners of Parent		53.3	36.4		-32%
			35.0		
Exchange Rate	USD	¥120	¥109	-¥11	
	EUR	¥132	¥119	-¥13	

Sales and income lower than last year

- Power Sales decreased and loss recorded for both insulators and NAS® batteries.
- Ceramics In terms of automotive-related products, sales decreased due to a stronger yen, despite increased production volume reflecting sales of passenger cars in the robust Chinese and European markets, and truck sales in the Chinese market.
Profits also decreased as a result of factors such as increased costs.
- Electronics Sales increased for ceramics components for semiconductor manufacturing equipment.
Profits decreased as a result of a decrease in demand for package products and the stronger yen.
- Extraordinary gain Income ¥5.2 billion yen recorded for sales of investment securities.
- Extraordinary Loss We recorded provision of reserve for loss related to competition law of ¥6.3 billion and impairment loss of ¥4.2 billion.
- Taxes ¥11.2 billion yen recorded for expected past year portion of revision in transfer pricing taxation.

Change Analysis for FY2016

(¥ Bil.)



Forecasts for FY 2017

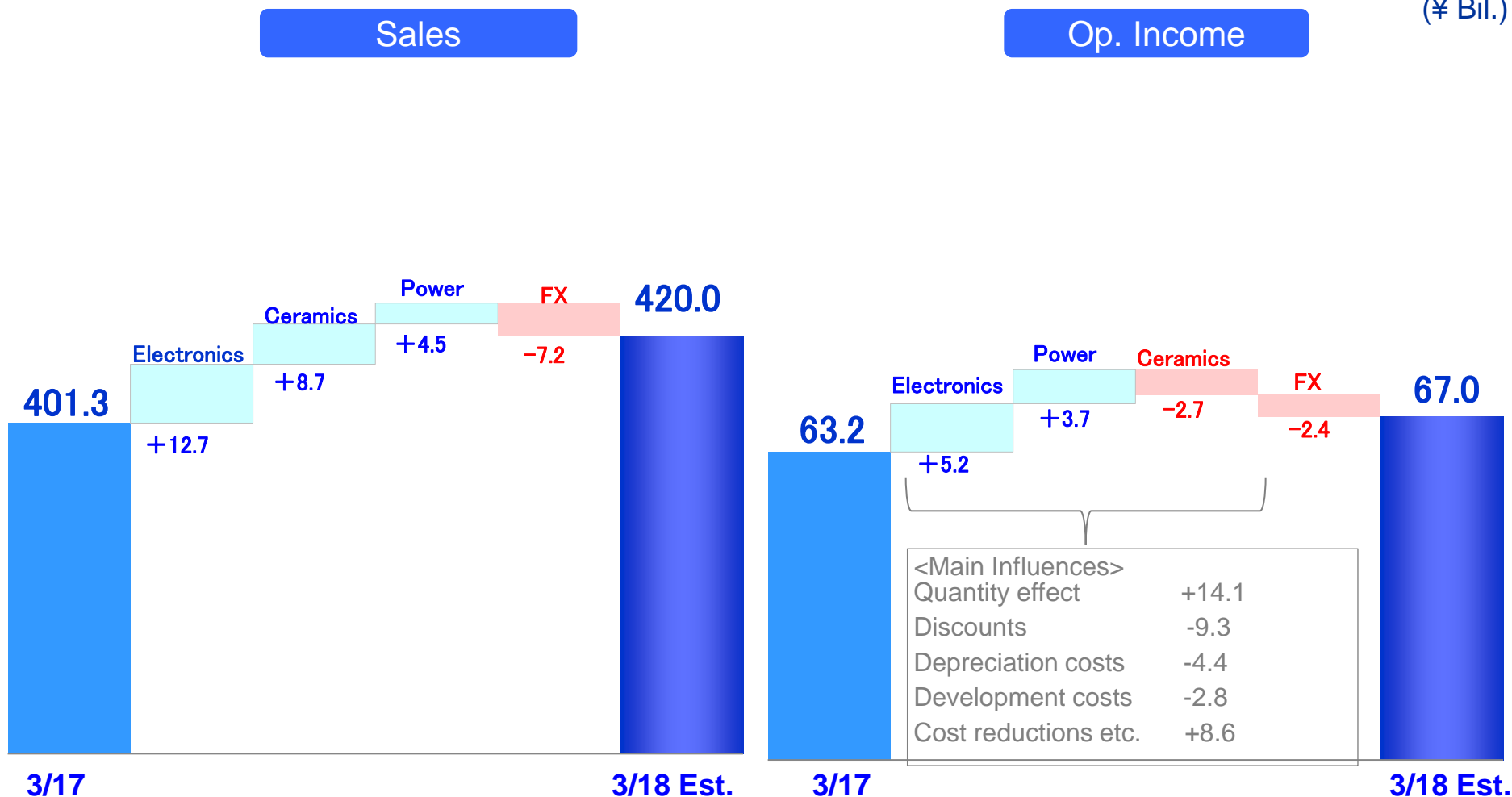
	(¥Bil.)	FY2016	FY2017	Growth ratio
Net Sales		401.3	420.0	+5%
Operating Income		63.2	67.0	+6%
Ordinary Income		64.6	68.0	+5%
Profit Attributable to Owners of Parent		36.4	45.0	+24%
<hr/>				
Exchange Rate	USD	¥109	¥105	-¥4
	EUR	¥119	¥115	-¥4

Higher sales and income compared with the same period last year

- **Power** An increase in overseas projects for insulators is expected. Loss continued for NAS® batteries as there were no major shipments
- **Ceramics** Demand increased for automotive-related products as a result of increased truck sales in the Chinese market and tighter emission regulations in Europe. Lower income is expected as a result of factors such as increased development and depreciation costs.
- **Electronics** Sales and income are forecast to increase due to strong demand for ceramics components for semiconductor manufacturing equipment and increased demand for wafer products, both sales and income increased.

Change Analysis for FY2017

(¥ Bil.)



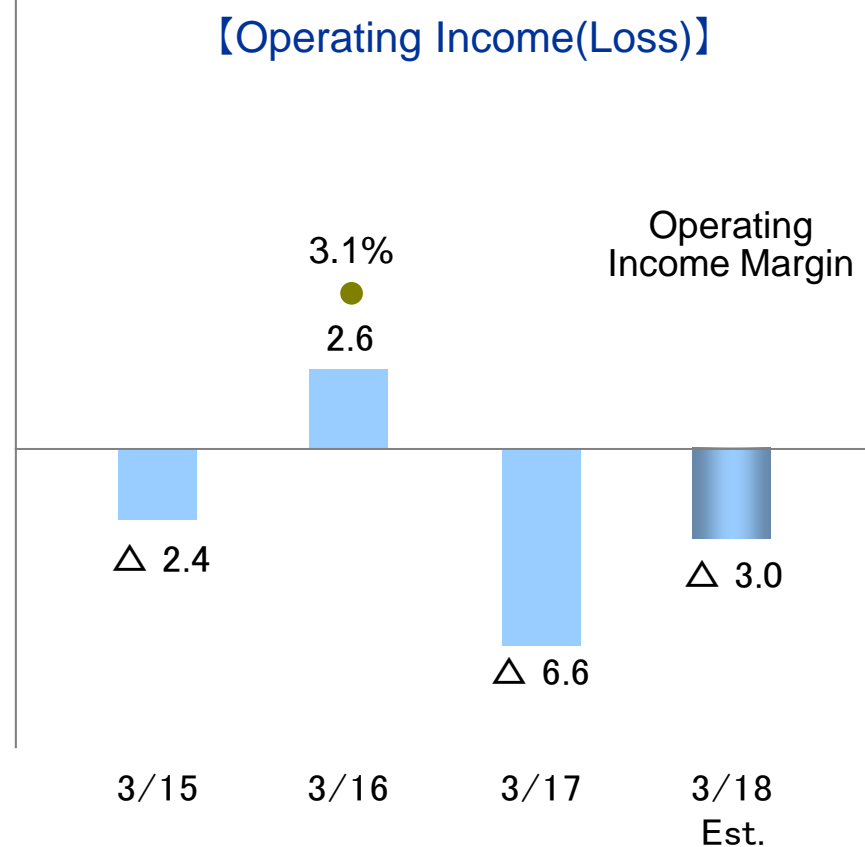
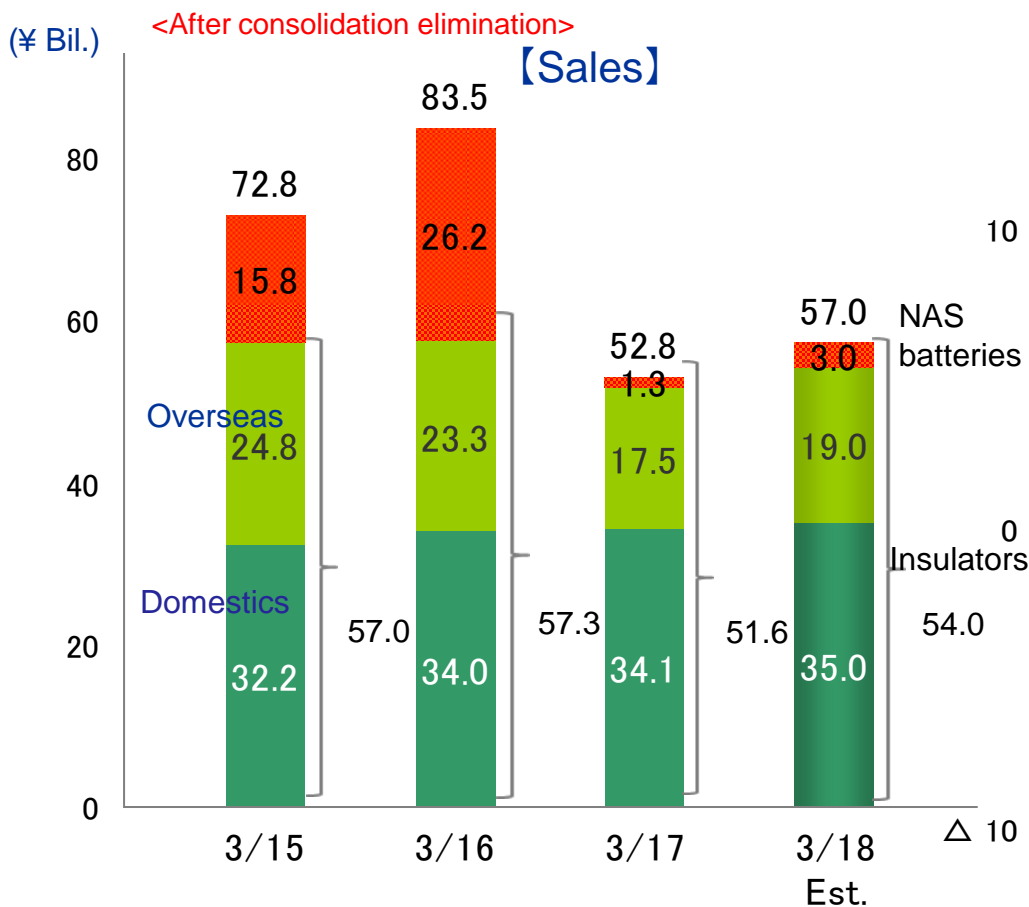
	3/17	3/18 Est.
FX Rate	¥109 /USD	¥105 /USD
	¥119 /EUR	¥115 /EUR

● Insulators

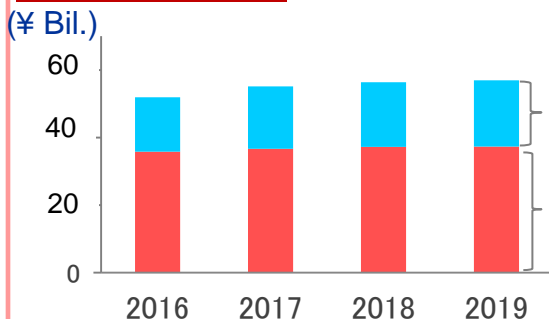
- Domestic replacement demand is strong. While demand has continued to be sluggish in North America, sales are expected to recover due to an increase in shipments to China.
- Aim to become profitable in FY2017 by working to reduce fixed costs through means such as downsizing the production system at domestic plants.

● NAS

- A loss is expected to continue as there are no major shipments for both Japan and overseas.
- The business operation system will be streamlined to minimize losses.



Insulators Results overseas will be unchanged.



Overseas: Large-scale projects in the Middle East and Asia will be sluggish.
 Japan: Replacement demand for insulators installed during and after the period of high economic growth will be robust.

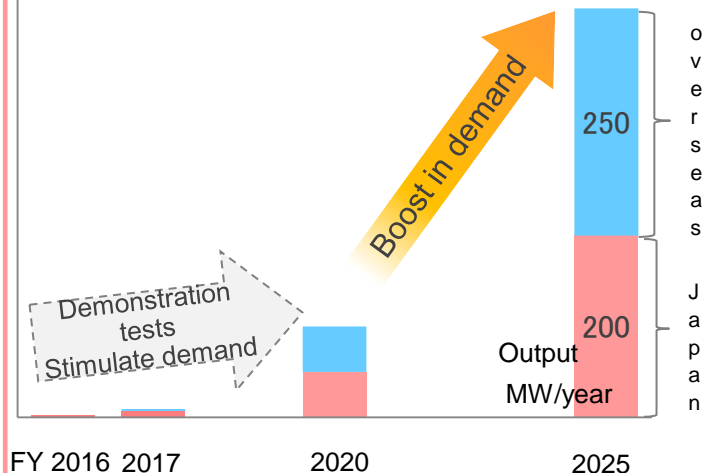
*** Streamline production system in Japan by improving the efficiency of overseas locations to improve profits.**

* FY2017: Komaki Plant (2 shift ⇒ 1 shift)

NAS® Batteries While it will take time for the development of full-scale demand, the potential needs are high.

[Global market scale for long-life storage batteries]

[NGK's Est]

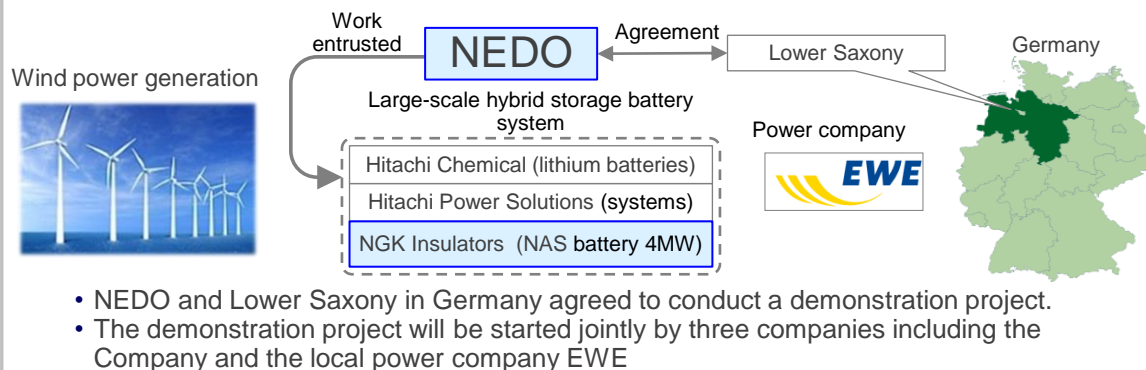


Overseas : Europe Trend of utilizing storage batteries for supply-demand adjustments with the expansion of renewable energy

Middle East: Plans for the large-scale introduction of solar power generation as an alternative to thermal power generation

Work to create demand by leveraging demonstration projects

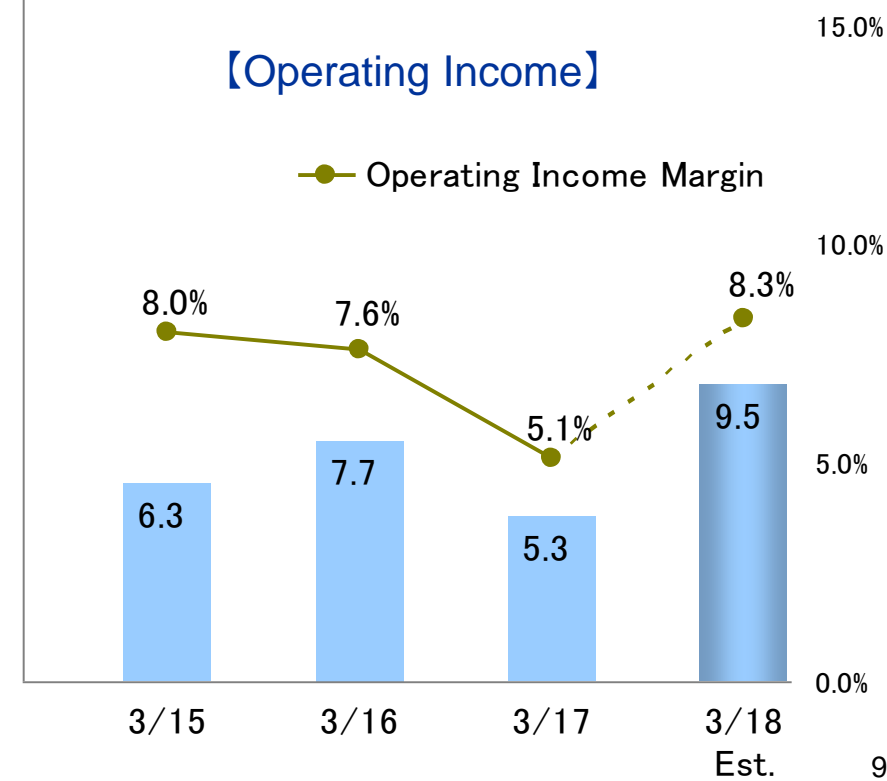
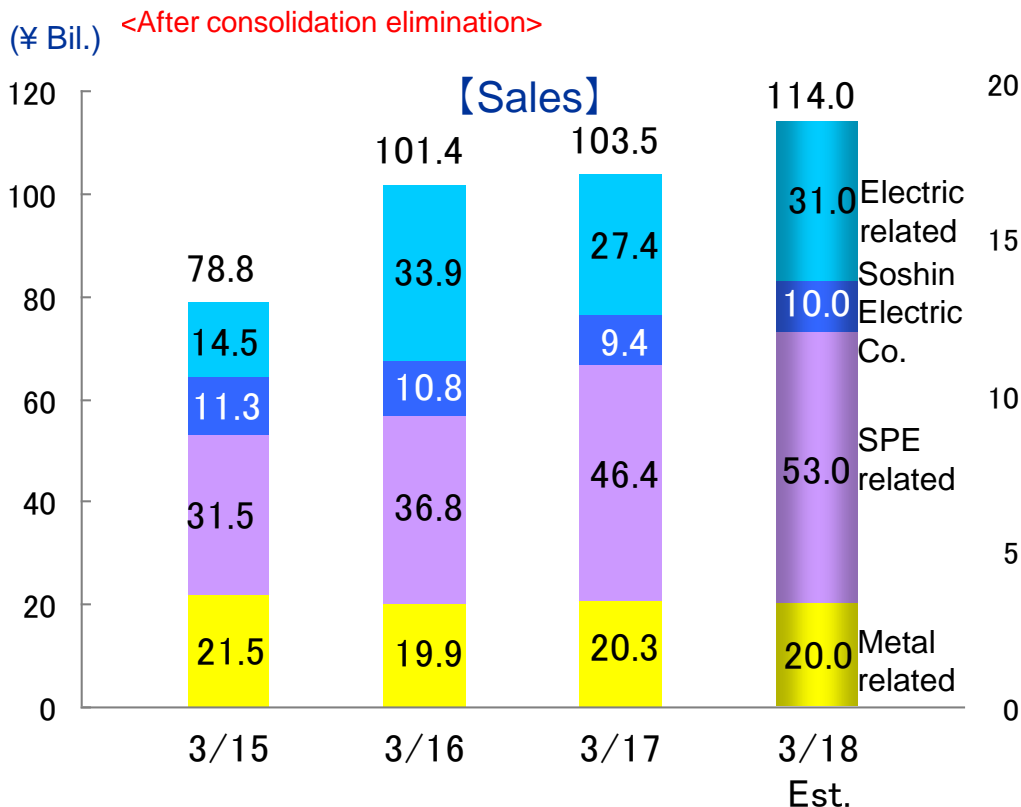
[Start of demonstration project for large-scale hybrid storage battery system in Germany] (press release dated March 21)



Japan: Realization of systems storage battery installation for the introduction of wind power generation in Hokkaido

Aim to capture the order

- Metal Related Products
 - Demand for beryllium copper products is flat. Aim to expand business by promoting development of new materials and products with new applications.
- Ceramics for Semiconductor Manufacturing Equipment (SPE-related products)
 - Both sales and profits increase due to continue high levels of capital expenditures by semiconductor manufacturers and foundries, underpinned by the increasingly shrinking of semiconductors.
- Electronics Components
 - Demand has grown for composite wafers products, underpinned by an expansion in the high performance filter market for mobile communications.
 - Demand for existing package products is flat. Aim to growth by injecting and promoting development of new products.

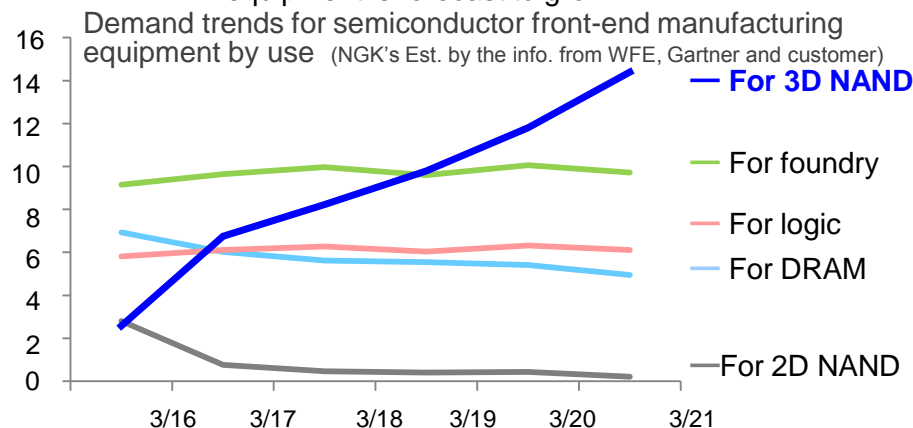


■ Ceramic Components for Semiconductor Manufacturing Equipment

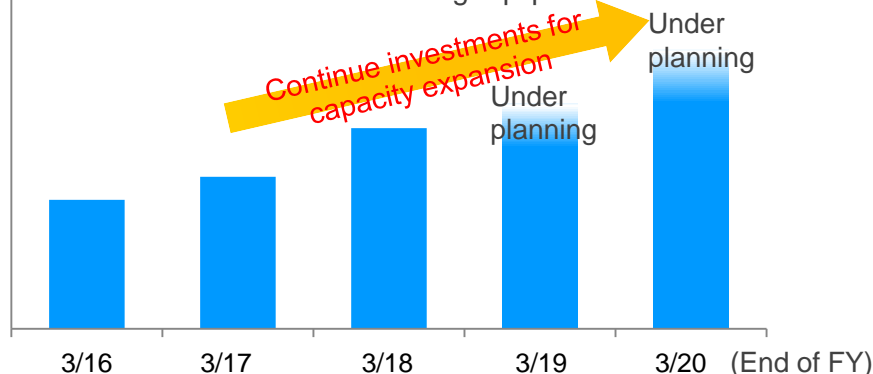
Investment related to 3D-NAND flash memories is forecast to increase against the backdrop of brisk demand for mobile devices and memory devices including data servers.

Demand for semiconductor manufacturing equipment is forecast to grow.

(\$ Bil.)



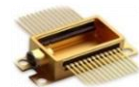
NGK Insulators' production capacity for ceramics products for semiconductor manufacturing equipment



Aggressively invest in increased production to certainly capture increased demand

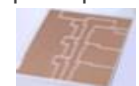
■ Ceramic Package Business (Electronics Components)

Boost of injecting and promoting development of new products



Optical package

Demand is forecast to glow due to development of high-speed optical communication networks.



DCB infrastructure

Expand sales for use in power semiconductor installed in industrial robot, HV/EV vehicles.

Strengthening the profitability of existing products



RF package



Quartz crystal package

Expansion of IoT and development of new generation mobile communication infrastructure are expected.

Improve profitability by promoting cost reduction.

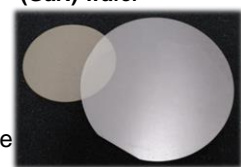
Aim to expand business by strengthening the profitability of existing businesses and developing new products.

■ Wafer Products (Electronics Components)

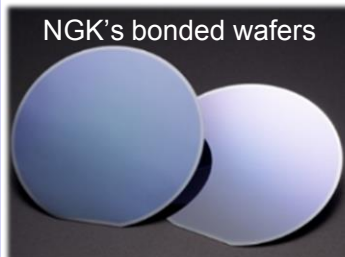
Bonded wafers for SAW filters

Demand for NGK's composite wafers is expected to grow for use in high-functionality SAW filters as a result of a shift to multiband following increases in the speed and capacity of mobile communication

New product
Gallium nitride (GaN) wafer

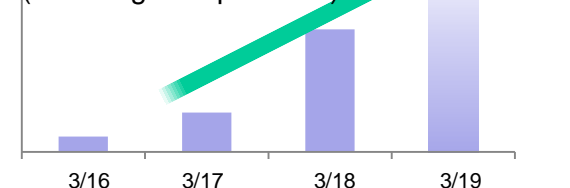


Details are on page 17



NGK's bonded wafers

Sales forecast for wafer products (including new products)



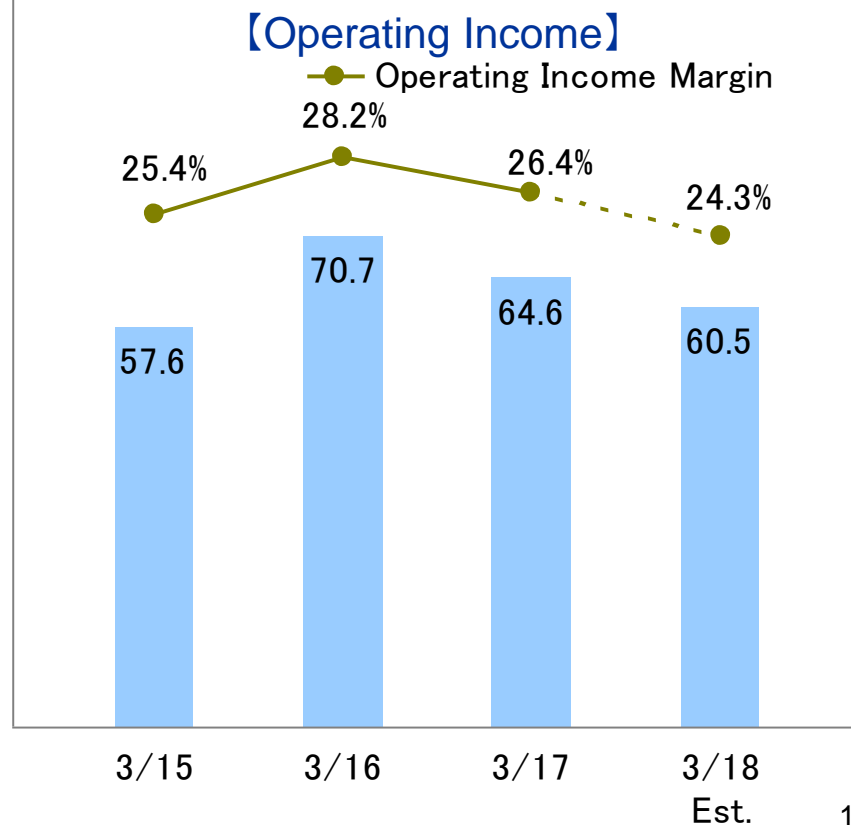
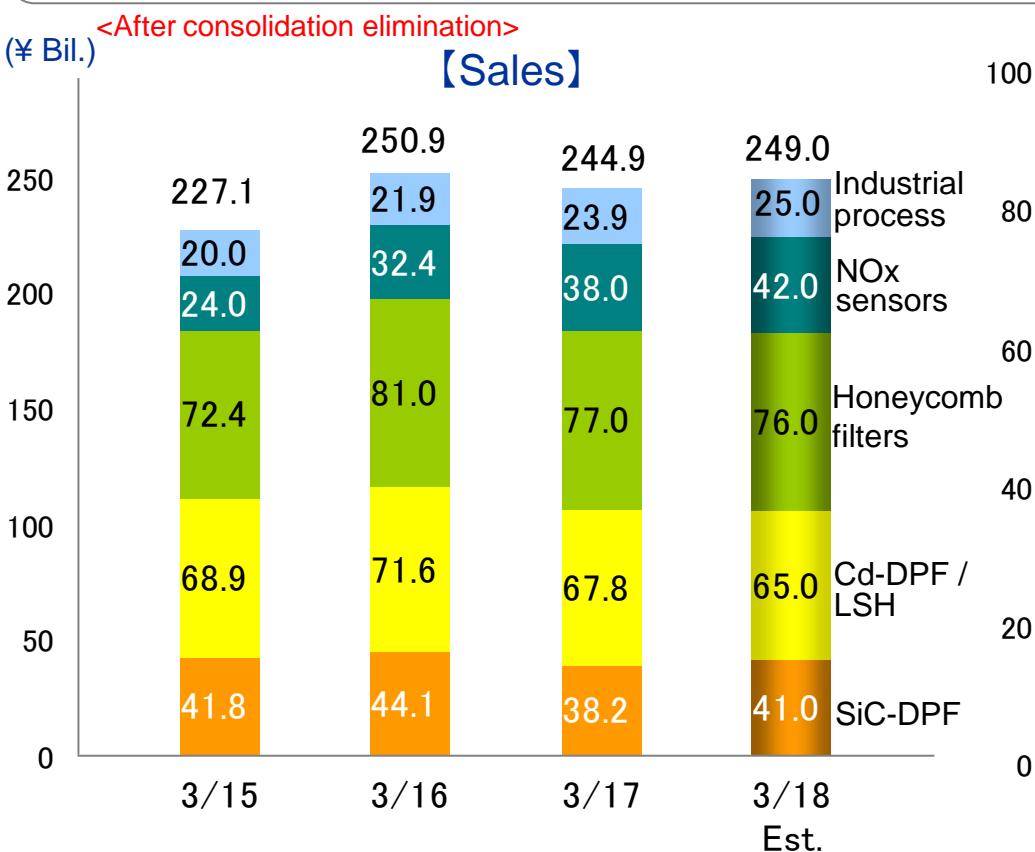
Work to increase production and reduce costs while promoting the development of new products.

● Automotive-related

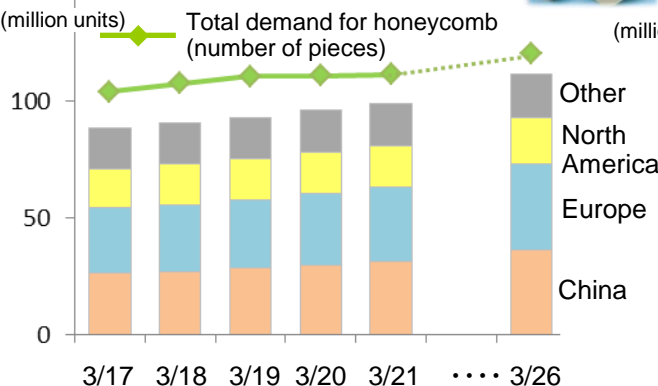
- Overall lower income is expected as a result of increase in depreciation costs and development costs and a decline in prices.
- Honeycomb : Demand increase due to strong sales of passenger cars in the Chinese market.
- LSH : Demand grow as a result of factors including increased truck sales in the Chinese market.
- Cd-DPF : As there are some switches to SiC-DPF, demand has decreased.
- NOx sensors : In addition to increased truck sales in the Chinese market, there has been an increase in demand due to tighter emission regulations in Europe.

● Industrial processes

- Strong performance for heating equipment as customers in Japan and China has continued investments in lithium-ion automotive batteries.
- There are also an increase in renovation projects for nuclear power related facilities.

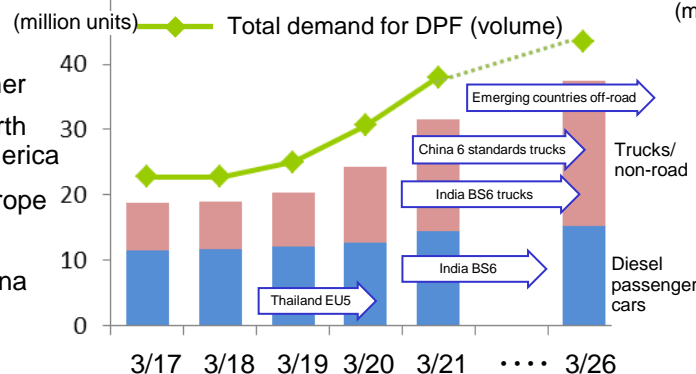


Passenger car sales volumes and total demand for honeycomb



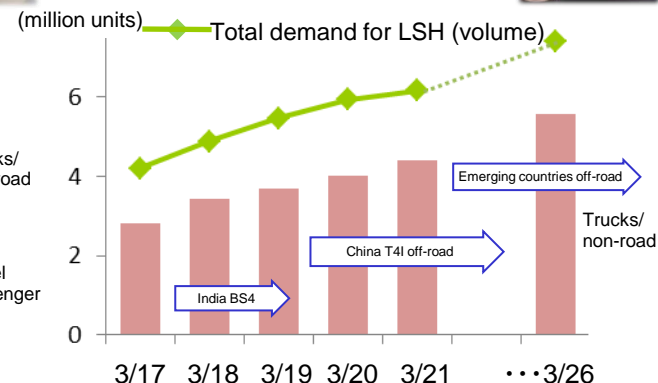
Demand for honeycomb is increasing at an annual rate of about 3% in proportion to the increase in sales of passenger cars.

Number of vehicles equipped with DPF (passenger car conversion) and total demand for DPF (SiC, Cd, AT)



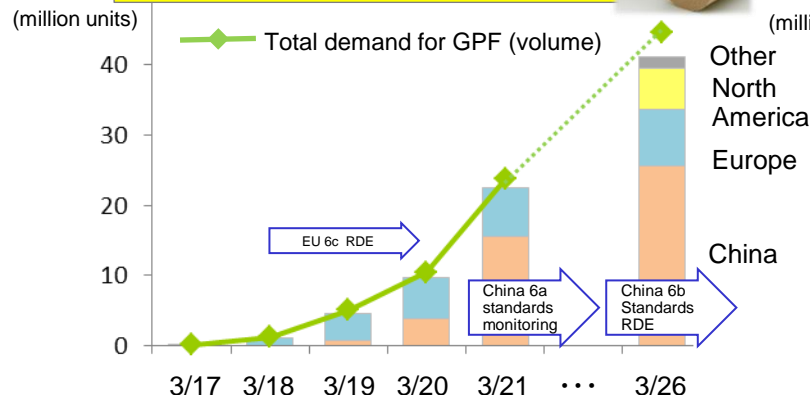
Tightening of regulations mainly in China, India, and other emerging countries will cause DPF demand to increase from FY2018.

Number of trucks and construction machinery requiring after-treatment and total demand for LSH



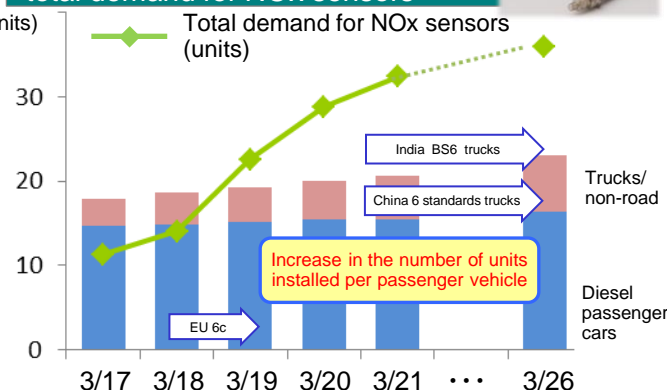
Increase in demand for LSH due to increased sales of trucks in the Chinese market and tightening regulations in India (FY2017).

Number of vehicles equipped with GPF and total demand for GPF

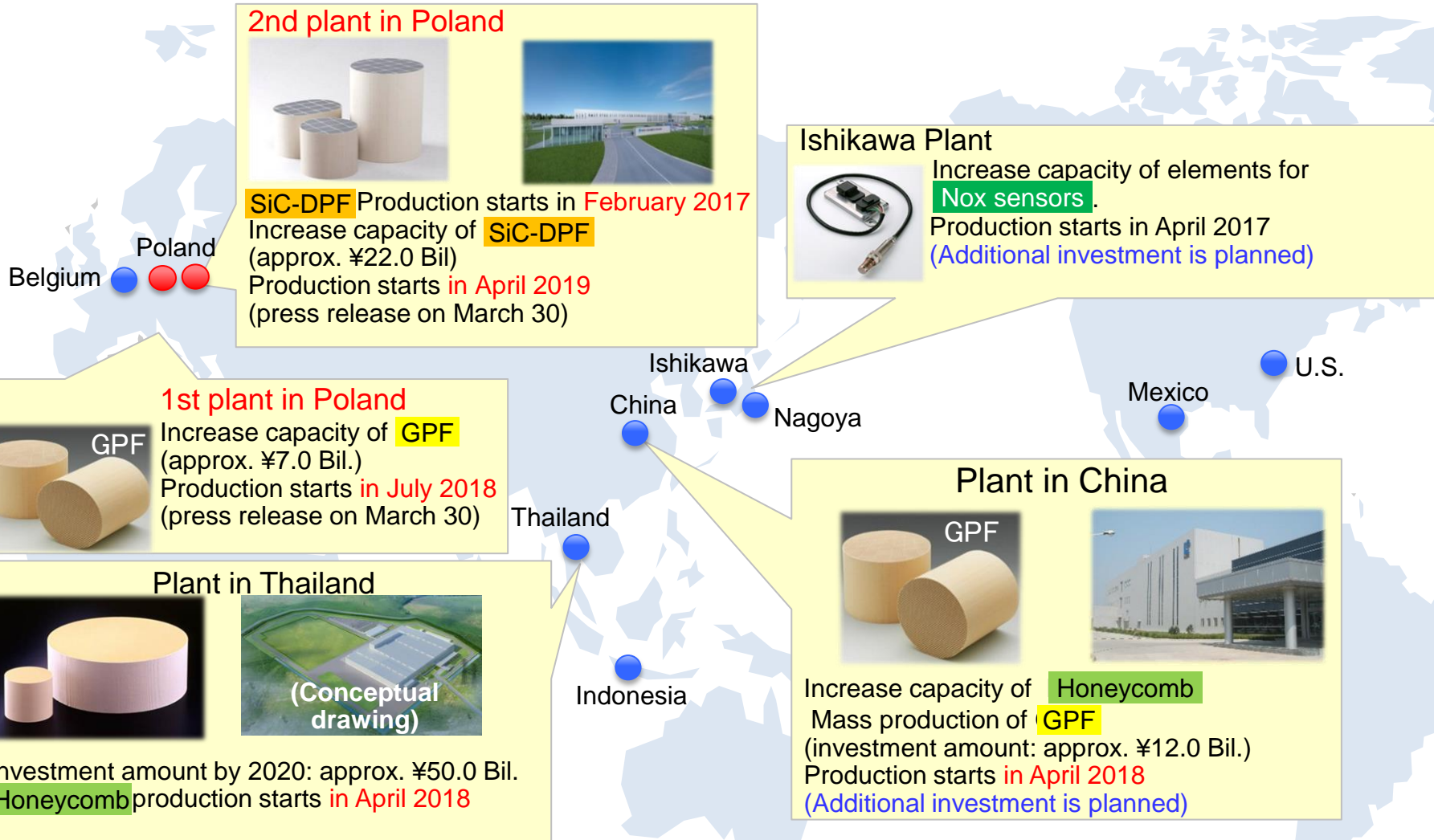


Dramatic increase in GPF demand accompanying the introduction of regulations in the Eurozone (Euro6c RDE) and tightening of regulation in China (6a and 6b).

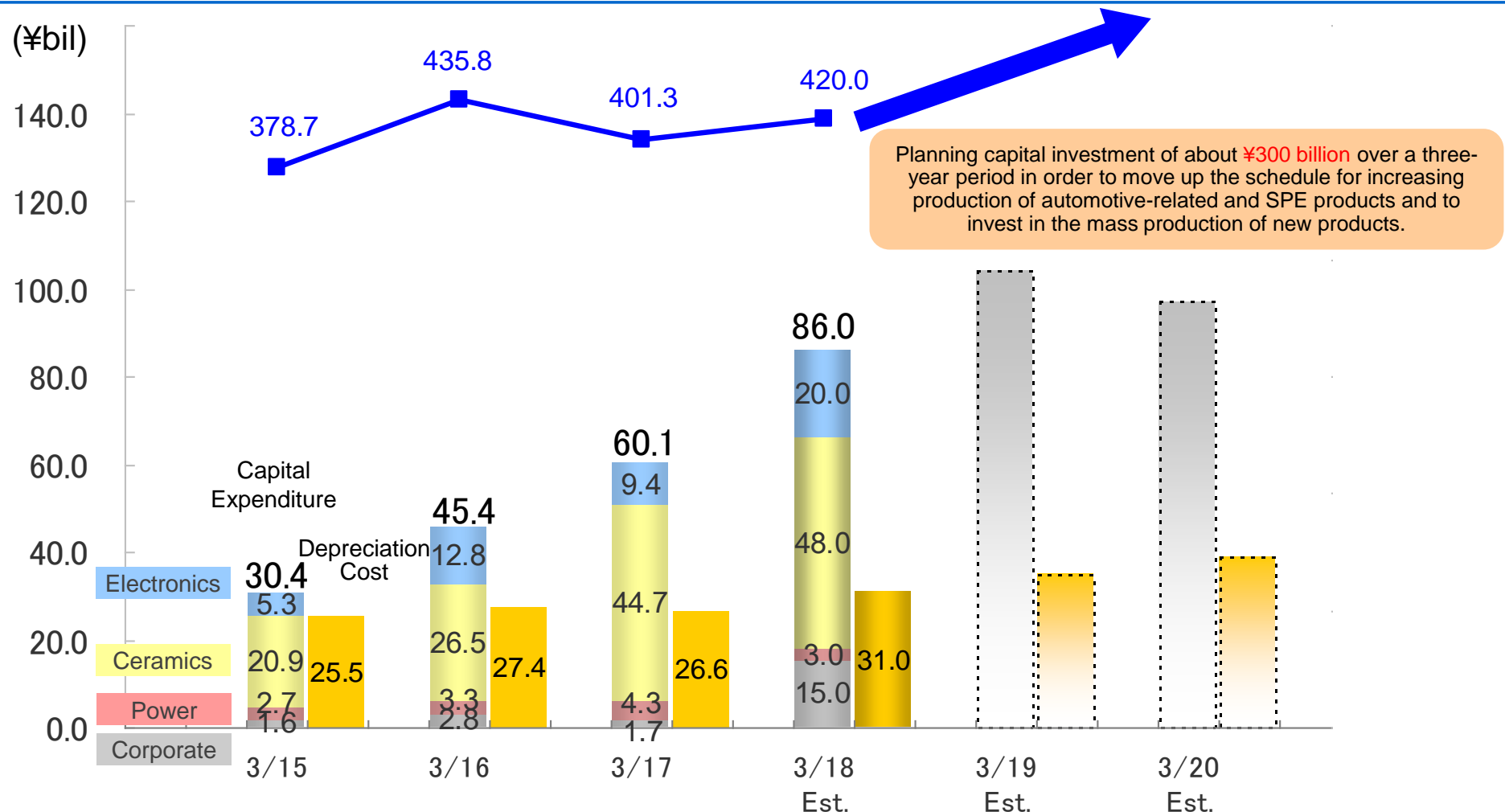
Diesel engine vehicles requiring after-treatment and total demand for NOx sensors



Increase in the number of diesel passenger vehicles equipped with NOx sensors accompanying the tightening of regulations in the Eurozone (Euro6c).



In response to the tightening of emission regulations in Europe (gasoline direct injection engines) and in China, Thailand, and India , have decided to **increase production of GPF and SiC-DPF at the plant in Poland.**
 (press release on March 30)



1st plant in Poland(GPF):¥7.0 Bil. Production starts in July, 2018

2nd plant in Poland(SiC-DPF):¥22.0 Bil. Production starts in April, 2019

New manufacturing base in Thailand:¥50.0 Bil.
(Honeycomb, etc.)

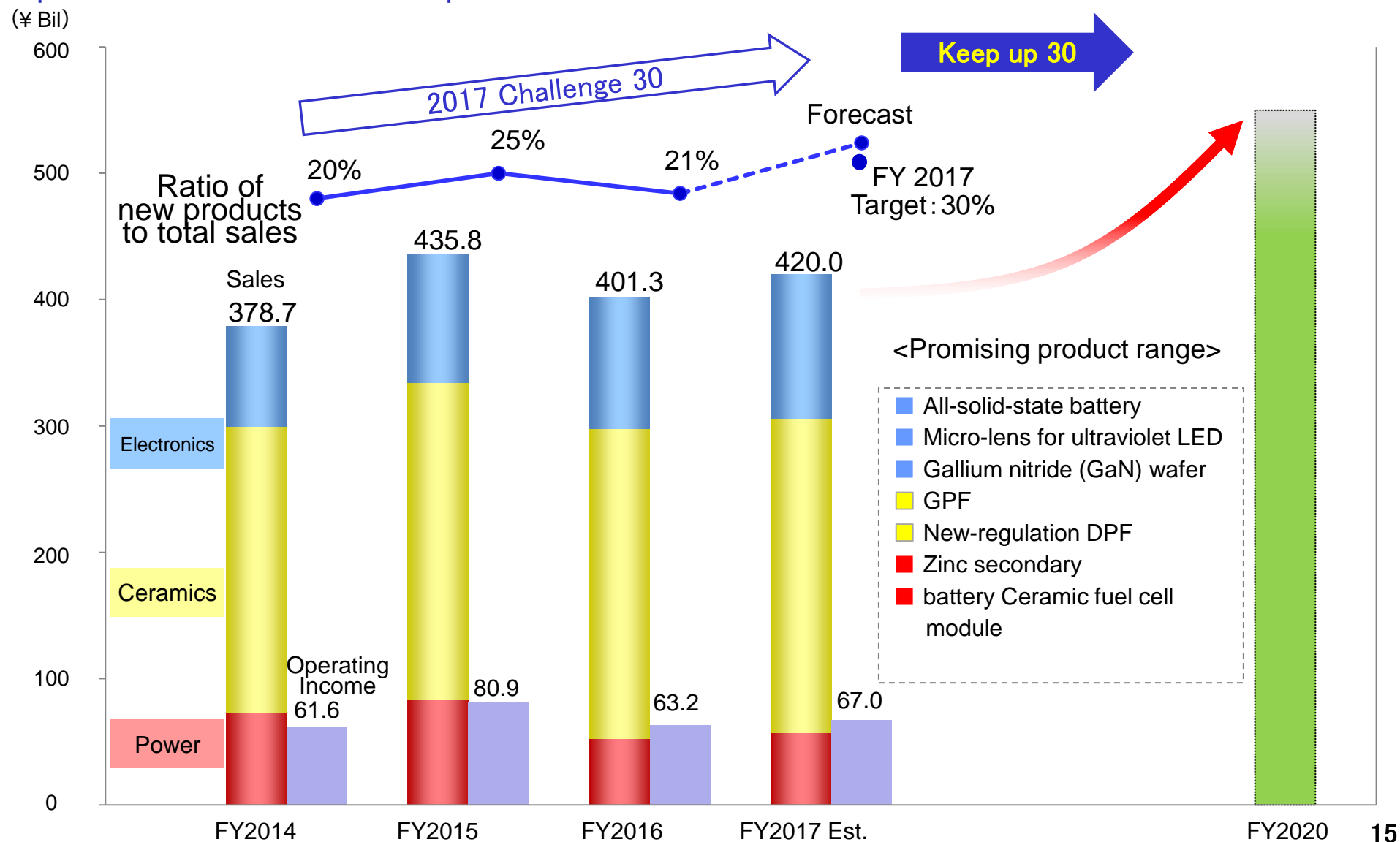
Honeycomb production starts in April, 2018
Range of products manufactured will expand
in line with phased investments by 2020

Plant in China: ¥12.0 billion
(Honeycomb/GPF)

Production starts in April, 2018

Additional investment is planned

Forecast to achieve target ratio of new products to total sales in FY2017
 Maintain ratio of new product to total sales of at least 30% from FY2017 by working towards the rapid commercialization of new products.



Gallium Nitride (GaN) Wafer



* Less than $10^4/\text{cm}^2$

Remarks

- Achieved Low defect density* through entire wafer surface by the original liquid phase epitaxial growth technology
- Contribute to ultra-high brightness light source (laser, LED) as substrates

Applications

Business projector



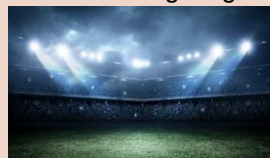
Cinema projector



Head light (high beam)



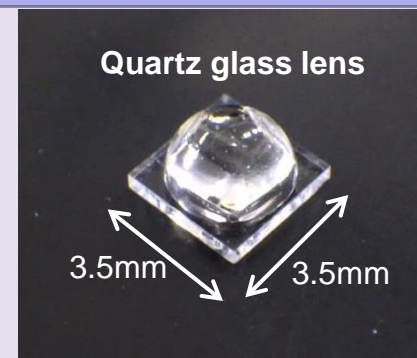
Stadium lighting



Progress

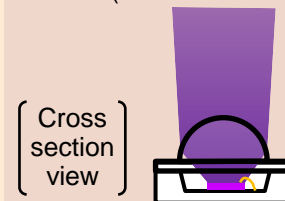
- Aiming for mass production in FY2017, sample evaluation is underway at several major customers

Micro-lens for Ultraviolet LED



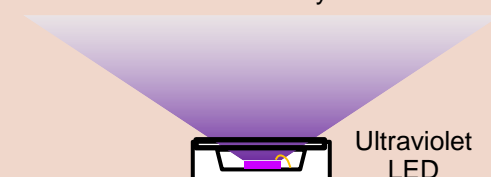
- Available in complex shapes through a unique manufacturing process
- Highly transparent and durable for ultraviolet light

Ultraviolet LED with micro-lens (for sterilization)



Reference:

In the case of LED without lens
Ultraviolet light is dispersed, hence
sterilization efficiency is reduced



A small lens that can reduce Ultraviolet light angle is necessary for effective sterilization.

- There are shipping requests from several companies (samples are under evaluation by more than ten customers).
- Aiming for preceding mass production start in FY2018

A companywide organization, “The Optical Component Project” has been newly launched

Chip-type Secondary Battery



Zinc Secondary Battery



Ceramic Fuel Cell Module (SOFC (Solid-Oxide Fuel Cell) Module)



Remarks

- Crystallographically-oriented ceramic positive plates (basic patents acquired)
- Very small thickness, high energy density, and high temperature operation

- Unique ceramic separator of solid electrolyte
- High safety (aqueous electrolyte), room temperature operation, high capacity

- Unique cell structure and unique ceramic materials
- Compact, high power generation efficiency, durability

Applications

Wearable devices



Smart cards



IoT wireless modules



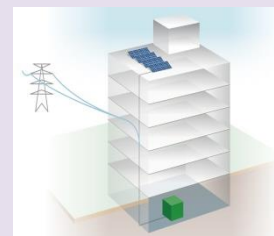
On-board power units



Household-type storage battery (10kWh class)



Indoor-type storage battery (500kWh class) for buildings, hospitals and commercial facilities, etc.



Fuel cell system for detached houses and apartments (for installation in each residence)



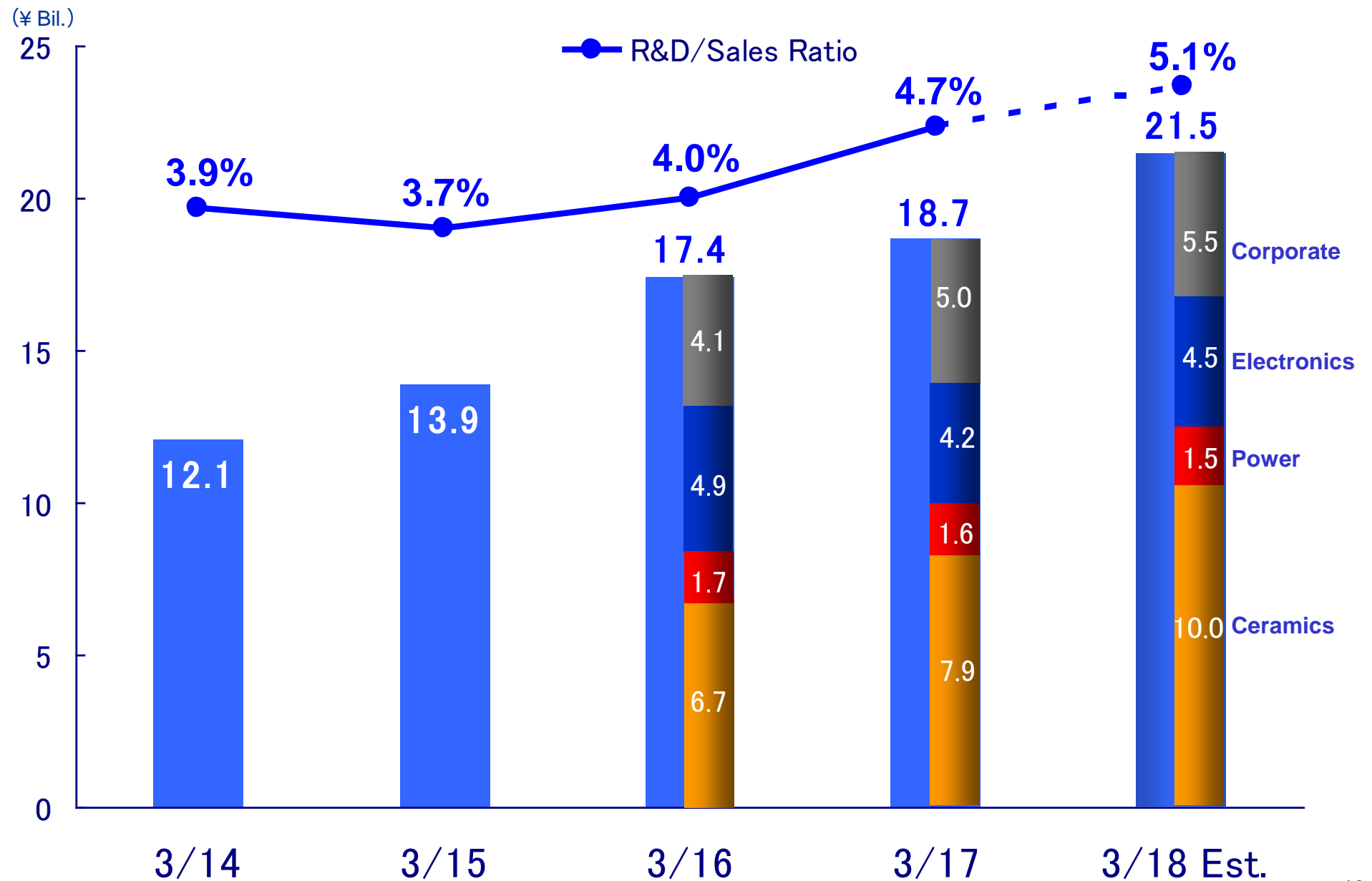
Progress

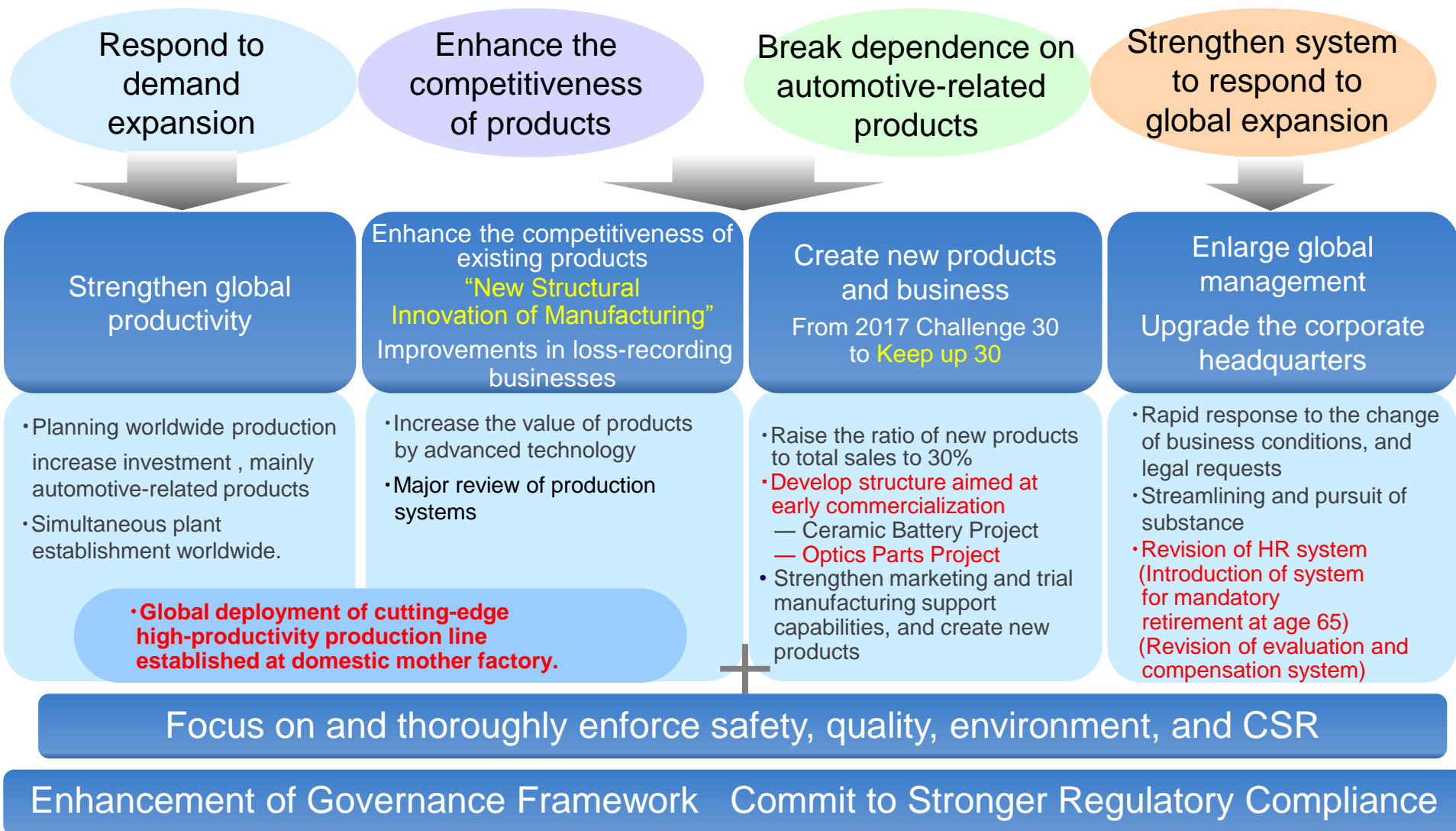
- Samples are being evaluated at more than 10 customers
- Obtained safety standards certification

- Field tests planned at the customer's sites

- Being evaluated at major fuel cell system companies for commercialization

Planned commercialized one by one from FY2018





Become a world-class global company
Prioritize investment and inputs including near-term development

Summary of Cash Flow

(¥ Bil.)

	3/16	3/17	3/18 Est.
Operating Activities	59.4	80.2	45.0
Investing Activities	-47.8	-56.5	-61.0
Financing Activities	-0.4 New loans +16.8 Repayment -6.7	-13.0 New loans +30.1 Repayment -19.2 Treasury stock purchase -11.2	22.0 New loans +44.0 Repayment -9.0
Effect of exchange rate change	-3.9	-2.1	-4.0
Net Change in Cash &Eq-	7.4	8.6	2.0
Cash & Eq- at the End of Year	136.1	144.7	146.7

Return on Invested Capital (ROIC)

- Return on invested capital (NGK-version ROIC*)

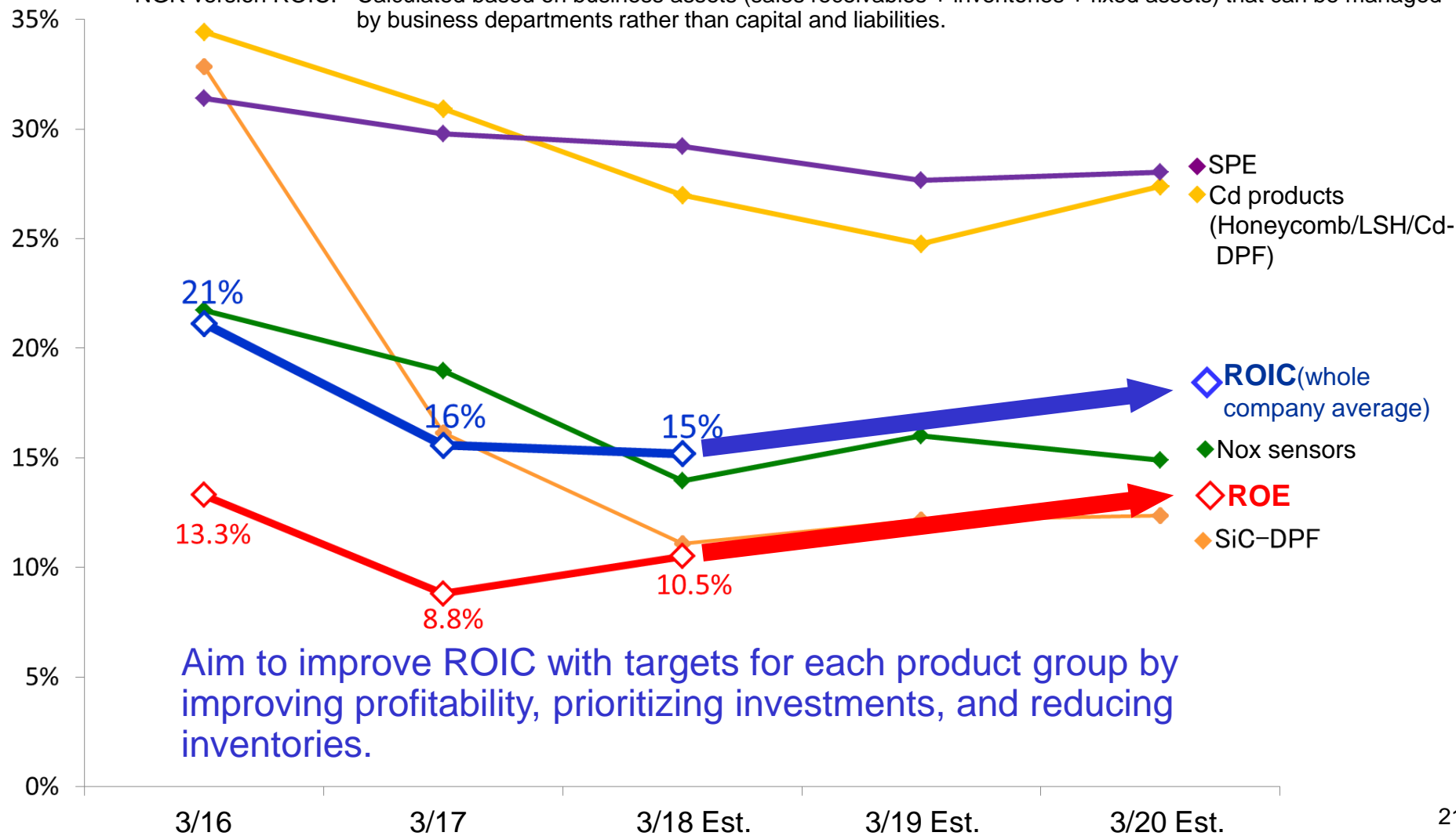
$$= \frac{\text{Operating income}}{\text{Net sales}} \times$$

Return on turnover (profitability)

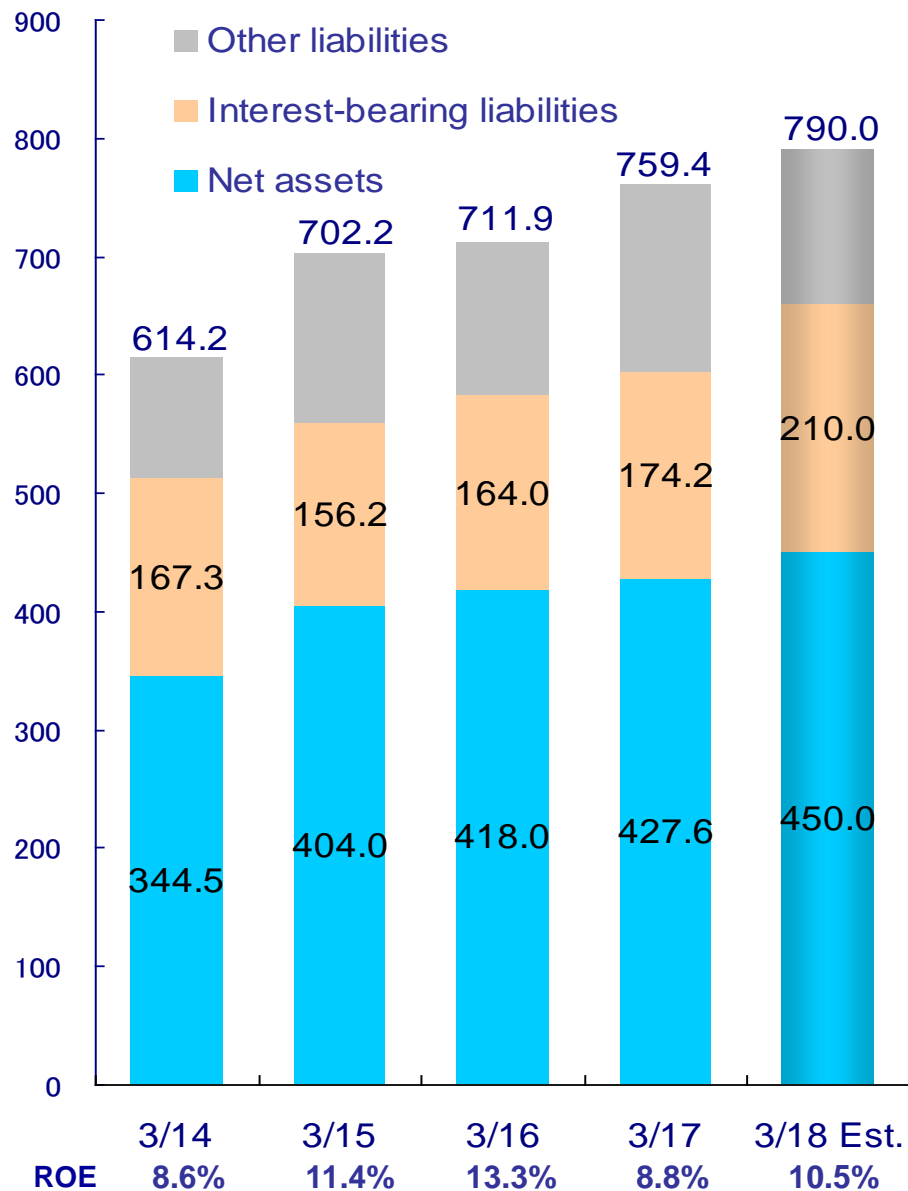
$$\frac{\text{Net sales}}{\text{Business assets (sales receivables + inventories + fixed assets)*}}$$

Business assets turnover rate (efficiency)

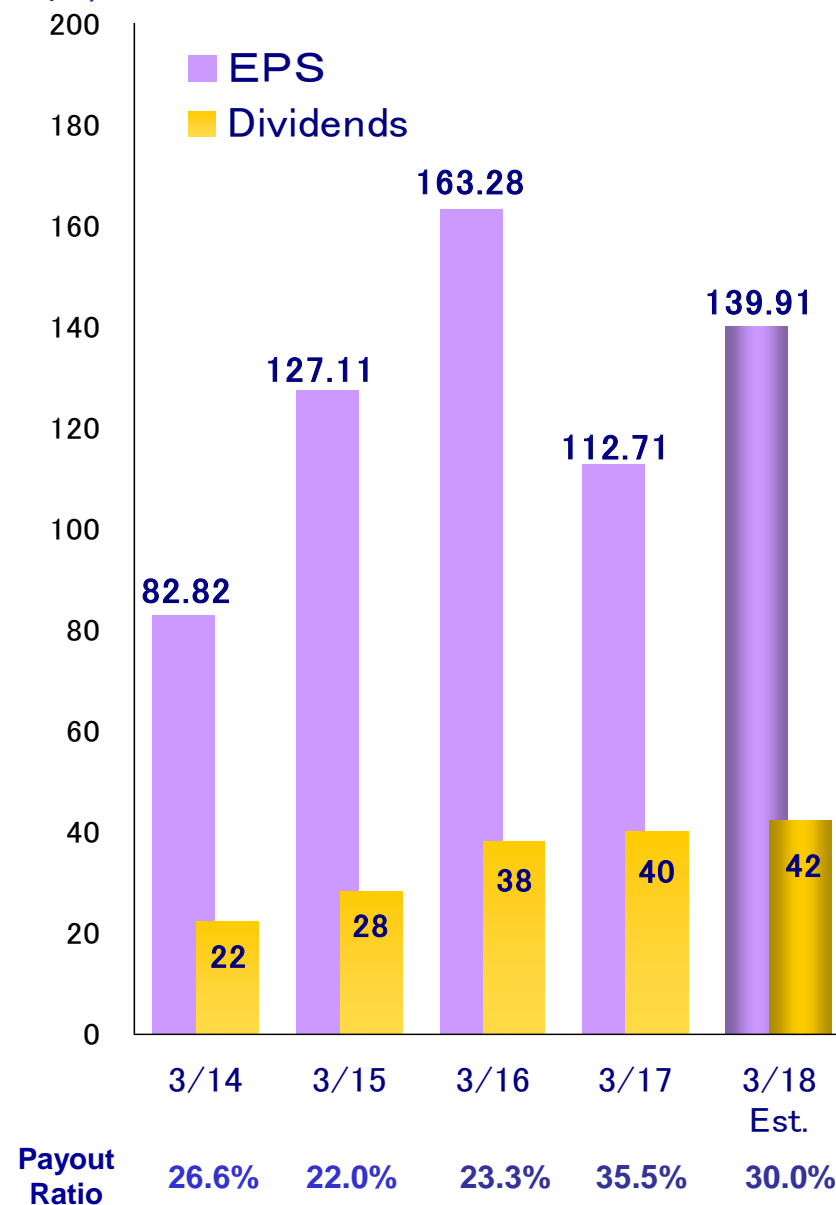
* NGK-version ROIC: Calculated based on business assets (sales receivables + inventories + fixed assets) that can be managed by business departments rather than capital and liabilities.



(¥ Bil.)



(¥)



Sales by Product (Annual)

<After Consolidation Elimination>

(¥ Bil.)

	3/15	3/16	3/17	3/18 Est.
Insulators	57.0	57.3	51.6	54.0
NAS	15.8	26.2	1.3	3.0
Power Business	72.8	83.5	52.8	57.0
Honeycomb filters	72.4	81.0	77.0	76.0
SiC-DPF	41.8	44.1	38.2	41.0
Cd-DPF / LSH	68.9	71.6	67.8	65.0
Sensors	24.0	32.4	38.0	42.0
Industrial Process	20.0	21.9	23.9	25.0
Ceramics Business	227.1	250.9	244.9	249.0
Metal related	21.5	19.9	20.3	20.0
SPE related	31.5	36.8	46.4	53.0
Electric Related	14.5	33.9	27.4	31.0
Soshin Electric CO.	11.3	10.8	9.4	10.0
Electronics Business	78.8	101.4	103.5	114.0
Total	378.7	435.8	401.3	420.0

Sales by Product (Semi Annual)

<After Consolidation Elimination>

(¥ Bil.)

	3/17		3/18 Est.	
	1 st . Half	2 nd . Half	1 st . Half	2 nd . Half
Insulators	26.0	25.5	27.5	26.5
NAS	0.4	0.9	0.5	2.5
Power Business	26.4	26.4	28.0	29.0
Honeycomb filters	39.0	38.0	38.0	38.0
SiC-DPF	19.4	18.8	20.0	21.0
Cd-DPF / LSH	33.1	34.7	32.0	33.0
Sensors	17.5	20.5	20.0	22.0
Industrial Process	10.3	13.6	13.0	12.0
Ceramics Business	119.3	125.6	123.0	126.0
Metal related	9.8	10.5	10.0	10.0
SPE related	20.5	25.9	25.0	28.0
Electric Related	13.7	13.6	14.1	16.9
Soshin Electric CO.	4.5	4.9	4.9	5.1
Electronics Business	48.6	54.9	54.0	60.0
Total	194.3	207.0	205.0	215.0

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.



NGK INSULATORS, LTD.

2-56, Suda-cho, Mizuho-ku, Nagoya

467-8530, Japan

Finance & Accounting Department

Tel. : + 81-52-872-7212 Fax. : + 81-52-872-7160

E-mail : ir-office@ngk.co.jp

NGK Website (English Version) :

<http://www.ngk.co.jp/english/index.html>

