FY2017 Results
(from April 1, 2017 to March 31, 2018)

April 27, 2018

NGK INSULATORS, LTD.

This is a translation of materials used for the analyst meeting held in Tokyo, Japan on April 27, 2018

President
Taku Oshima

SINCE 1919 YEARS

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 FY2017

(Ended March 31, 2018)

Forecast for FY2018

(End in March 31, 2019)

Segment Information

Capital Expenditure & Depreciation Cost

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

New products / R&D

Financial Condition

FY2017 Consolidated Financial Results

(¥Bil.)	FY2016	October announcement	FY2017	Growth ratio	
Net Sales	401.3	440.0	451.1	FX +8.2	+12%
Operating Income	63.2	70.0	70.0	+2.9	+11%
Ordinary Income	64.6	70.0	70.6		+9%
Profit Attributable to Owners of Parent	36.4	46.0	45.8		+26%
Exchange Rate USD	¥109	(¥111)	¥111		+¥2
Exchange Rate EUR	¥119	(¥126)	¥129		+¥10

Higher sales and income compared with the last year
Recorded highest sales*

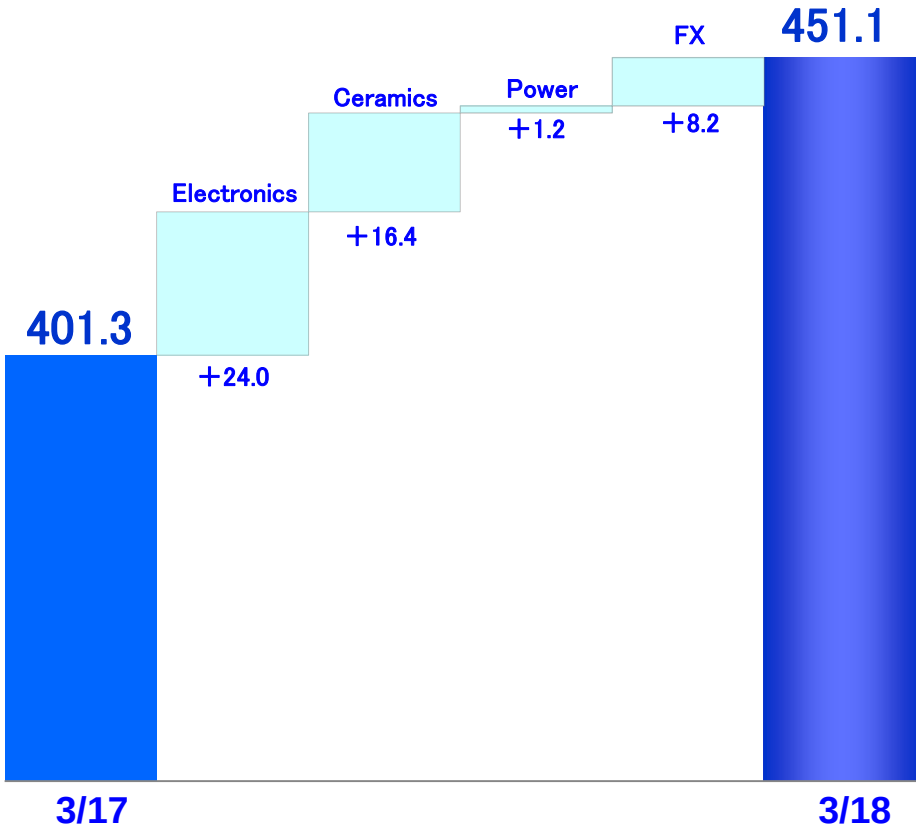
* Net Sales ¥ 435.8 Bil (FY2015)

- **Power** Domestic sales of insulators were slow and there were no large shipments for NAS® batteries, resulting in a deficit for both of them.
- **Ceramics** Sales increased for automotive-related products due to the increase in sensor usage caused by tighter emissions regulations in addition to higher truck sales in the Chinese market. Profits decreased as expected due to the rise in temporary costs such as startup costs in addition to the increase in depreciation and development costs.
- **Electronics** Both sales and profits increased due to the increased demand for products for semiconductor manufacturing equipment against the background of robust 3D-NAND related investments.
- **Extraordinary gain** Income ¥1.3 billion recorded for sales of investment securities.
- **Extraordinary loss** An impairment loss of ¥3.8 billion and a provision for loss related to competition law of ¥2.1 billion.

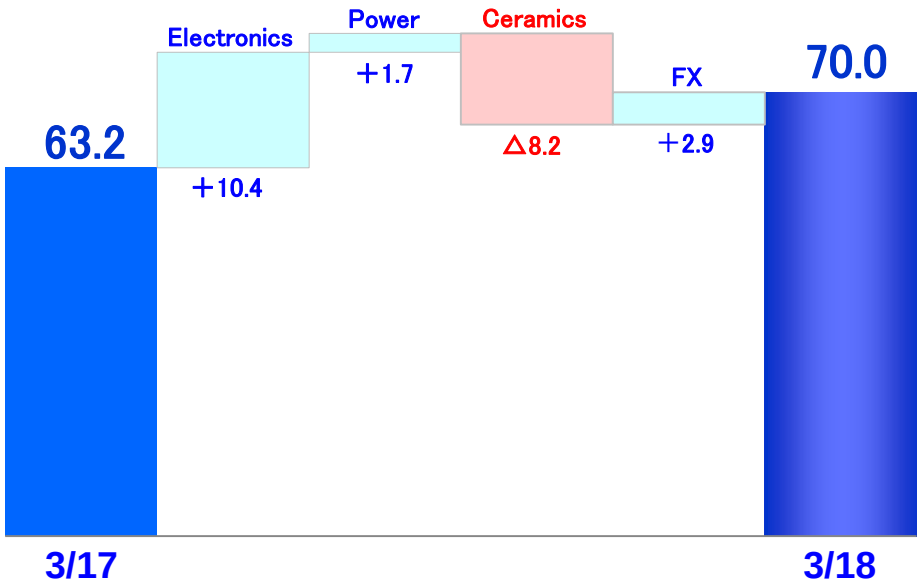
Change Analysis for FY2017

(¥ Bil.)

Sales



Op. Income



	3/17	3/18
FX Rate	¥109 /USD	¥111 /USD
	¥119 /EUR	¥129 /EUR

For Future Growth

Achievement

New Structural Innovation of Manufacturing

Create new products and business
「Keep up 30」

Pursuit of substance

Through implementation of business basics
Safety, Quality, Environmental, and CSR Compliance

Tackle key challenges
aiming to leap forward further

Change of Business Segments

Create the “Process Technology Business ” for restructuring

[Until FY 2017]

- Power Business
- Ceramics Business
  - ・Automotive related
  - ・Industrial Process
- Electronics Business
  - ・Metal related
  - ・SPE related
  - ・Electric related
  - ・Soshin Electric CO.

[From FY2018]

- Power Business
- Ceramics Business
  - ・Automotive related
- Electronics Business
  - ・Metal related
  - ・Electric related
  - ・Soshin Electric CO.
- Process Technology Business
  - ・Industrial Process
  - ・SPE related

Objective: Further growth in industrial processes and SPE

Expedite the launch of mass production for new products throughout the whole company

Forecasts for FY 2018

(¥Bil.)	FY2017	FY2018	Growth ratio
Net Sales	451.1	500.0	+11%
Operating Income	70.0	77.0	+10%
Ordinary Income	70.6	76.5	+8%
Profit Attributable to Owners of Parent	45.8	52.0	+14%
Exchange Rate USD	¥111	¥105	-¥6
Exchange Rate EUR	¥129	¥125	-¥4

Higher sales and income compared with the last year

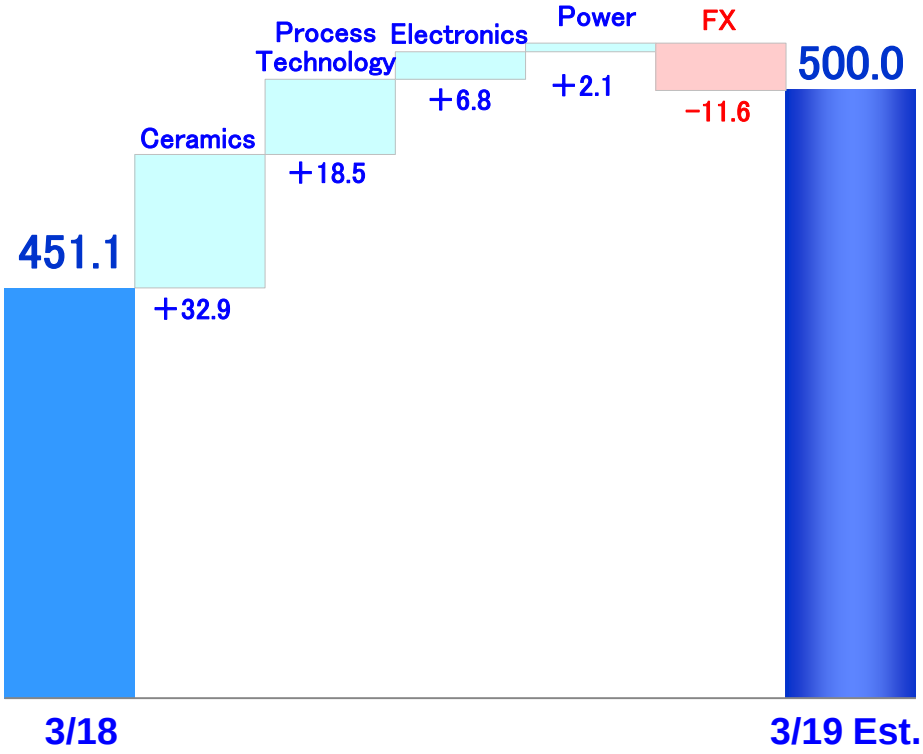
★ Sales are expected to exceed the past record

- **Power** Sales of insulators are forecast to slow and there will be few NAS® battery projects, resulting in a continued deficit for both of them.
- **Ceramics** Both sales and profits are forecast to increase due to the full production of GPFs (Gasoline Particulate Filters) in addition to a significant increase in the demand for sensors.
- **Electronics** Both sales and profits are forecast to increase due to the increased demand for composite wafer products.
- **Process Technology** Both sales and profits are forecast to increase because of the solid demand for products for semiconductor manufacturing equipment.

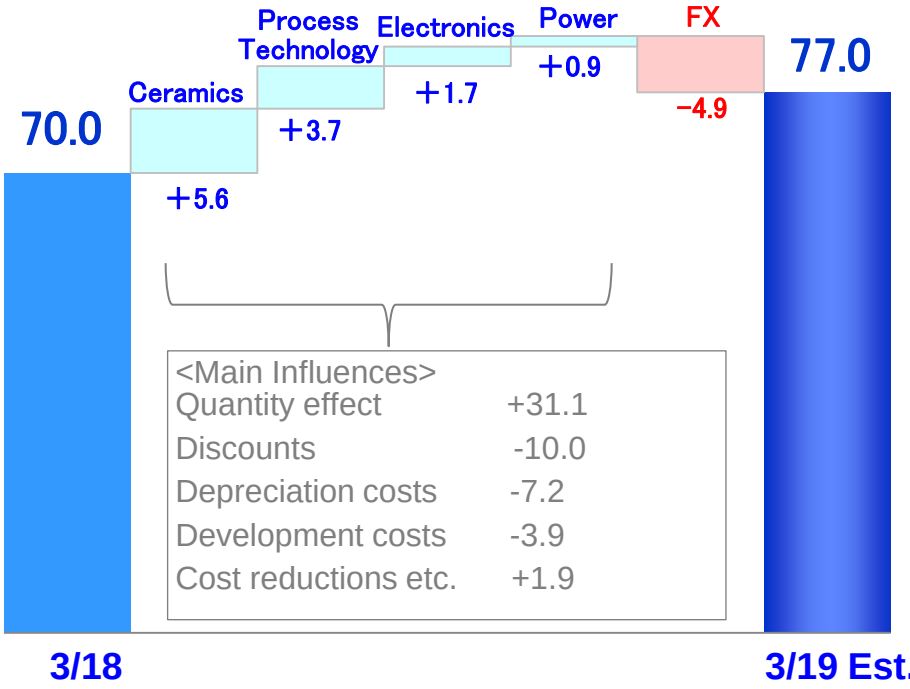
Change Analysis for FY2018

(¥ Bil.)

Sales



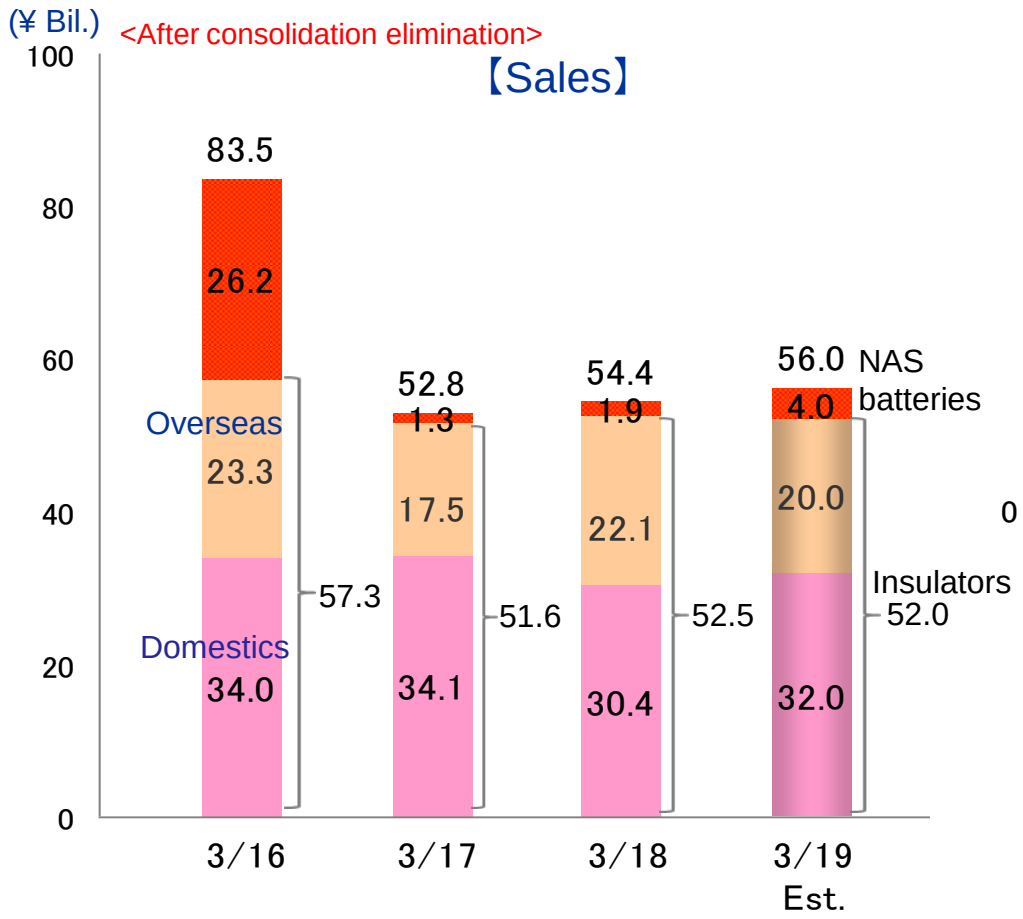
Op. Income

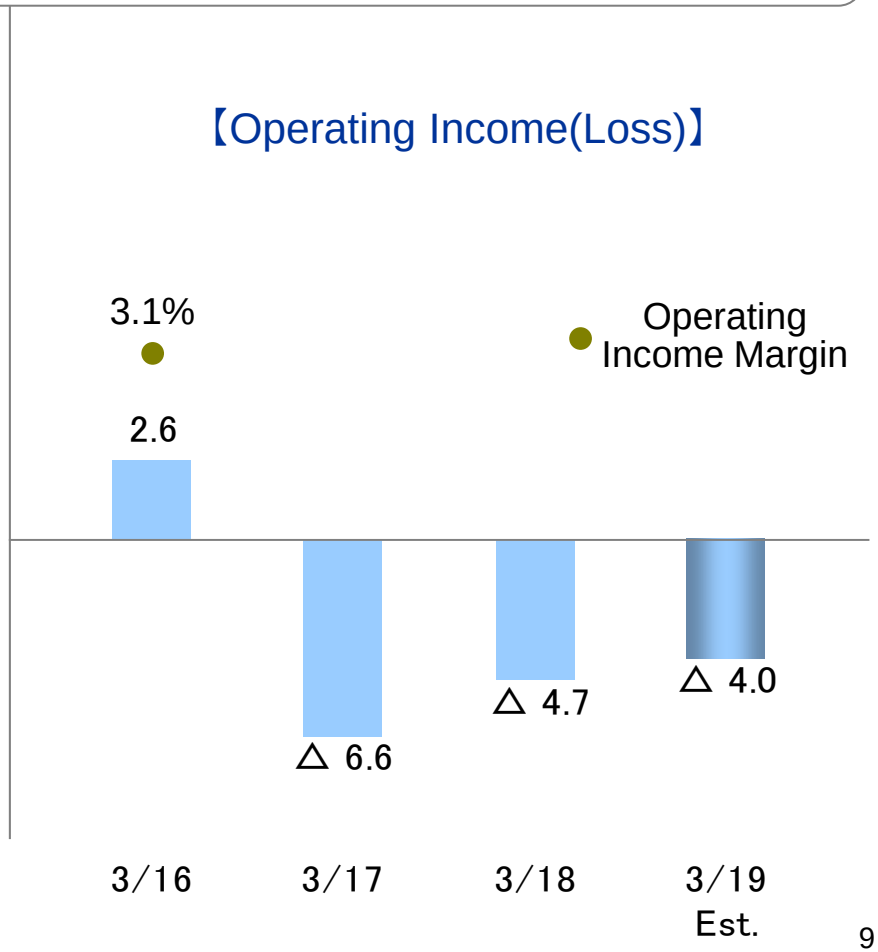


	3/18	3/19 Est.
FX Rate	¥111 /USD	¥105 /USD
	¥129/EUR	¥125 /EUR

Power Business

- Insulators
  - Domestically, electric power companies have been restraining capital investment, while overseas demand in the Middle East and North America is slow as well.
  - A deficit is forecast to continue despite the on-going rationalization of production.
- NAS
  - A deficit is forecast to continue due to few projects, although demand will increase centered on domestic users.

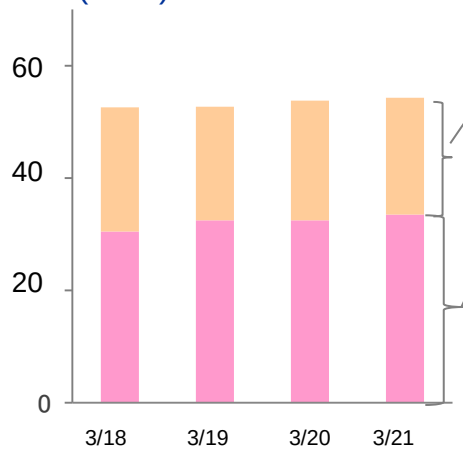




Forecast for the Power business

Insulators — Demand is forecast to remain sluggish both in Japan and overseas

Sales(¥ Bil.)



Overseas: Demand is forecast to remain sluggish in the Middle East due to the tight budget. In North America, demand for electric distribution and transformation insulators to be sluggish with capital investments shifting to electric power distribution related to sending renewable energies to the region.

Japan: Demand is forecast to be sluggish due to the restraint of capital investments by electric power companies against the background of the decreased demand for electric power with progress in energy saving, the separation of electric power generation and transmission, etc.

FY ended Mar 2018 (FY2017) Implemented restructuring of North American business and the reduction of production system (2 shifts to one) at Komaki Plant

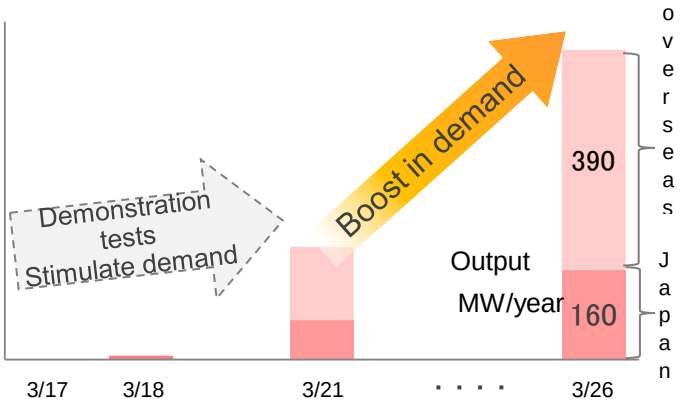
FY ending Mar 2019 (FY2018) Plan to reduce the production system at Chita Plant (2 shifts to one)

While some results have been achieved such as the OEM strategy in North America, additional countermeasures are under consideration in response to worse-than-expected market conditions.

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〕



＜Market environment＞

Plans for introducing renewable energies are under way in various places around the world for the 2030 targets of reducing greenhouse gas emissions under the Paris Agreement.

Middle East: Materialization of the plans to introduce large-scale solar power generation (Plans to introduce solar power generation of 5GW in Dubai by 2030 and 5.7GW in Abu Dhabi by 2026)

Europe: Considering an upward revision of the renewable energy ratio target from 27% to 35% in 2030

Japan: Targeting the renewable energy ratio of 22% - 24% in the on-going review of Basic Energy Plan (15% in 2016)

Needs for long-life storage batteries are expected to rise, gaining full force around 2020 in order to avoid the reinforcement of systems for the power distribution grid and shift peak hours of solar power generation

Electronics Business

● Metal Related Products

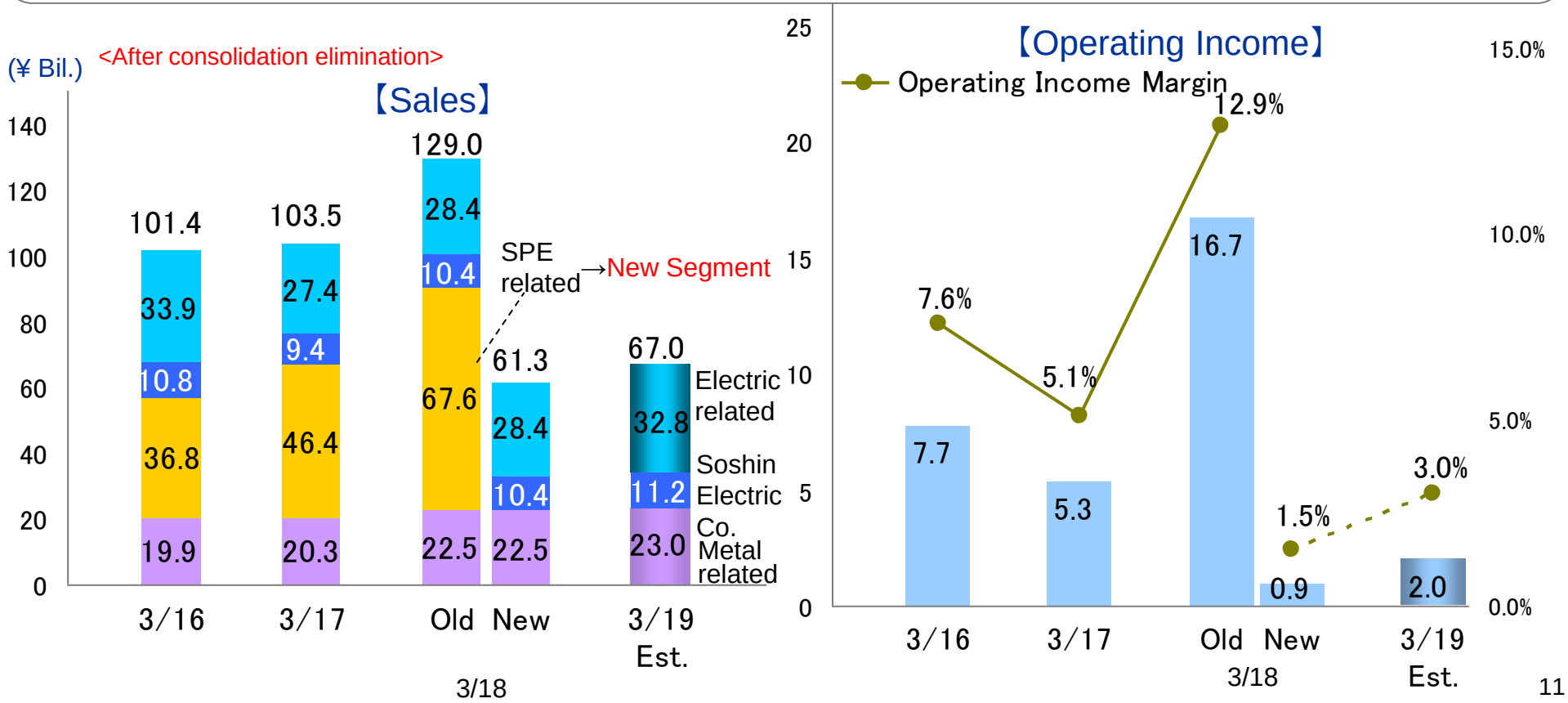
・Sales are forecast to increase due to products with new materials and the expanded marketing of beryllium copper products for new usages.

● Electronics Components

・Demand has grown for composite wafers products, underpinned by an expansion in the high performance filter market for mobile communications.

・Package products are forecast to increase in revenue slightly due to expansion of next generation telecommunications market (5G mobile base station etc.) and launching of new products.

・New products (Micro-lens for ultraviolet LEDs and gallium nitride (GaN) wafers) were commercialized in April 2018.



Forecast for the Electronics Business

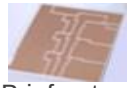
＜Existing Products＞

■Ceramic Package Business (Electronics Components)

Strengthening the profitability of existing products

RF package

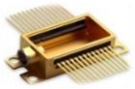
Demand has increased due to the progress in IoT, expansion of investments in mobile phone base stations, etc. Reduce costs to improve profitability.



DCB infrastructure

Aim to expand sales for in-vehicle use for which demand is expected to increase with the advance of EVs, in addition to that for industrial equipment.

Boost of injecting and promoting development of new products



Optical package

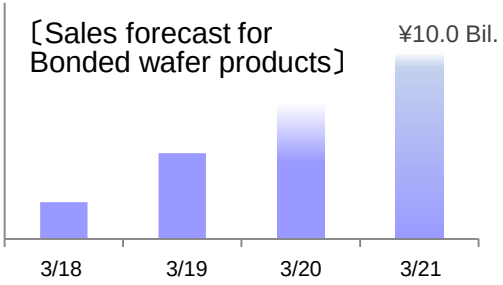
Demand is forecast to grow due to development of high-speed optical communication networks.
*Transition from 10G (Gbps) to 100G, 400G

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

■Bonded Wafer Products (Electronics Components)

Bonded wafers for SAW filters

With the spread of technologies to accelerate mobile communications, the market for high performance filters is expected to expand, resulting in a rapid expansion of demand.

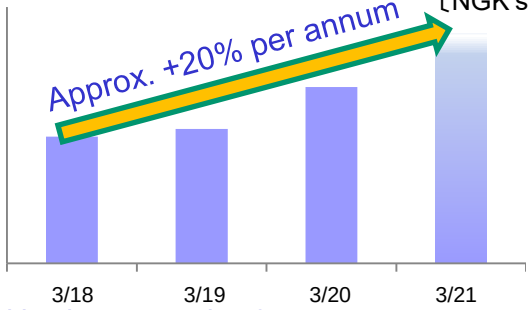


Work to reduce costs while strengthening production capacity in response to the increase in demand.

■Piezoceramic Actuators for HDD (electronic parts)

While high-speed/mobile memory devices are shifting to SSDs, demand for HDDs, due to their cost advantage, is expected to increase for data centers (near line).

〔Expected sales of piezoceramic devices for HDDs〕 〔NGK's Est〕



Reinforce production capacities in preparation for the increase in data volumes and HDDs with large capacities.

＜New Products＞

■Gallium Nitride (GaN) Wafer

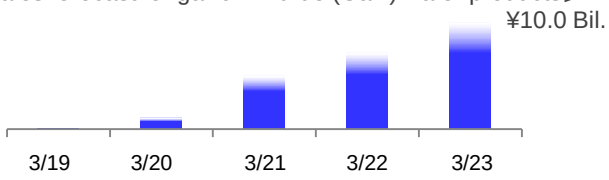
Product

Final Use

Business projector

Against the background of the Minamata Convention on mercury regulation, demand for ultra high luminance LEDs using GaN wafers has expanded as the substitutes for super high pressure mercury lamp light sources for projectors.
We will enter into the promising automobile headlight market.

〔Sales forecast for gallium nitride (GaN) wafer products〕

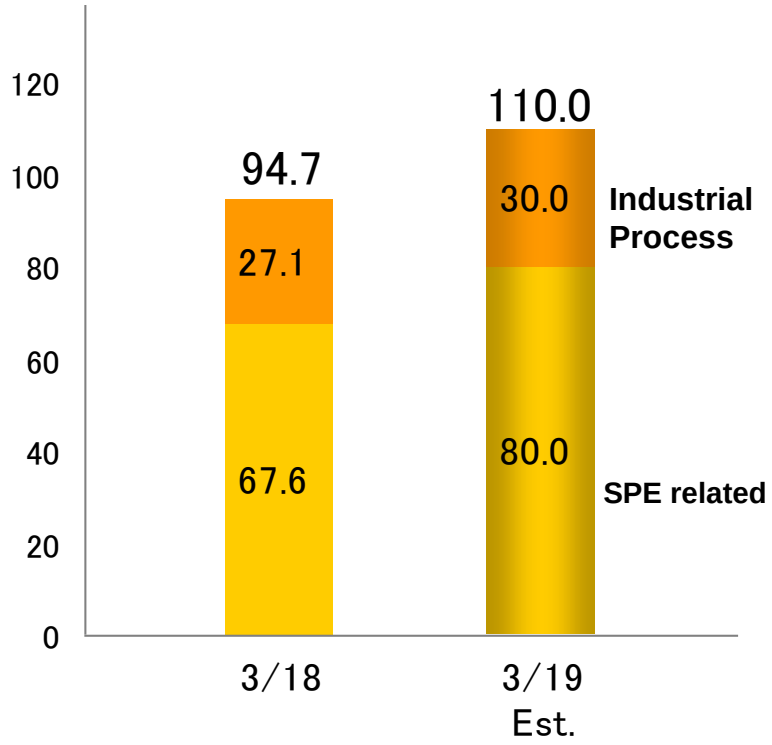


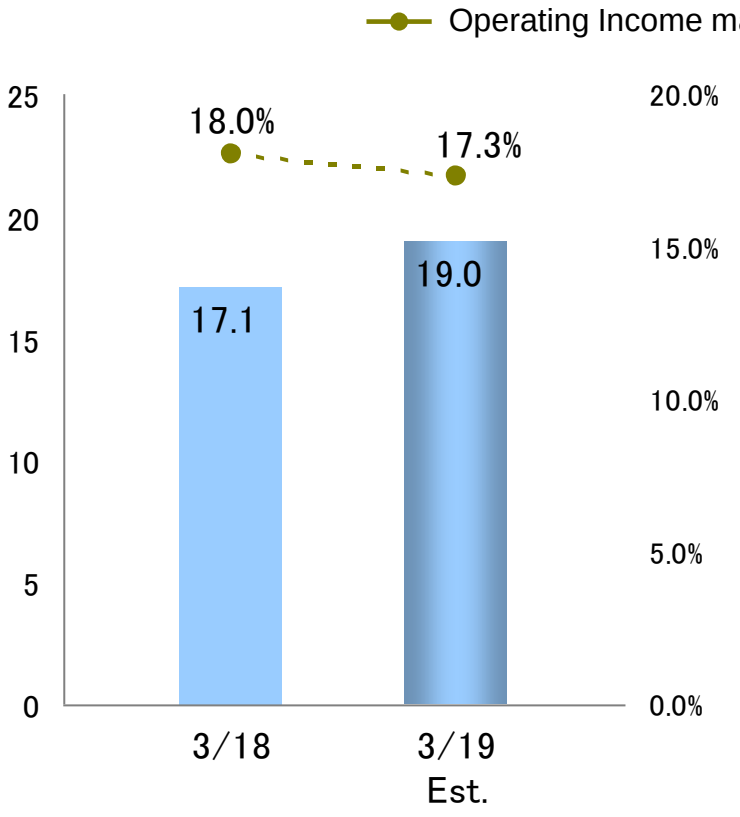
Capture demand by starting mass production in an early stage.

Process Technology Business

- Ceramic for Semiconductor Manufacturing Equipment (SPE-related products)
  - Both sales and profits are expected to increase because demand for high-performance SPEs remains strong due to the high integration (multi-layered and microfabrication) of semiconductors in addition to the high level of investments related to memories, such as 3D-NAND and DRAM against a backdrop of the increased demand for servers at data centers.
- Industrial processes
  - Sales of heating equipment are solid as a result of the continued investments related to in-vehicle lithium ion batteries by Chinese customers, while sales are expected to increase for new projects of low-level radioactive waste disposal equipment.

(¥ Bil.) <After consolidation elimination>



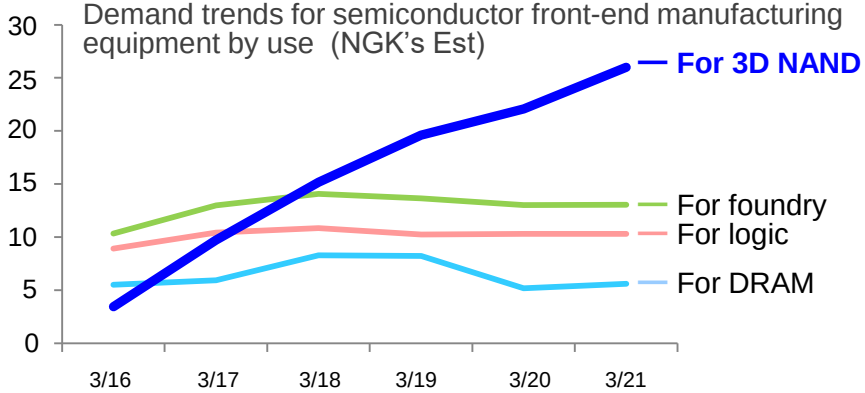


Forecast for the Process Technology Business

Ceramic Components for Semiconductor Manufacturing Equipment

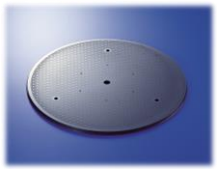
Investment related to 3D-NAND flash memories is forecast to increase against the backdrop of brisk demand for mobile devices and memory devices including data servers.
Demand for semiconductor manufacturing equipment is forecast to continue growing.

Demand trends for semiconductor front-end manufacturing equipment by use (NGK's Est)



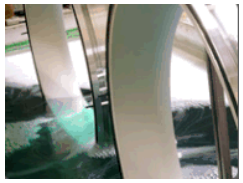
Susceptors
(Japan)

Heater (AlN)

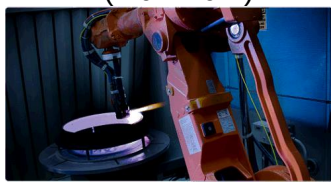


Electrostatic chuck
(Alumina, AlN)

Chamber Components
(U.S.)

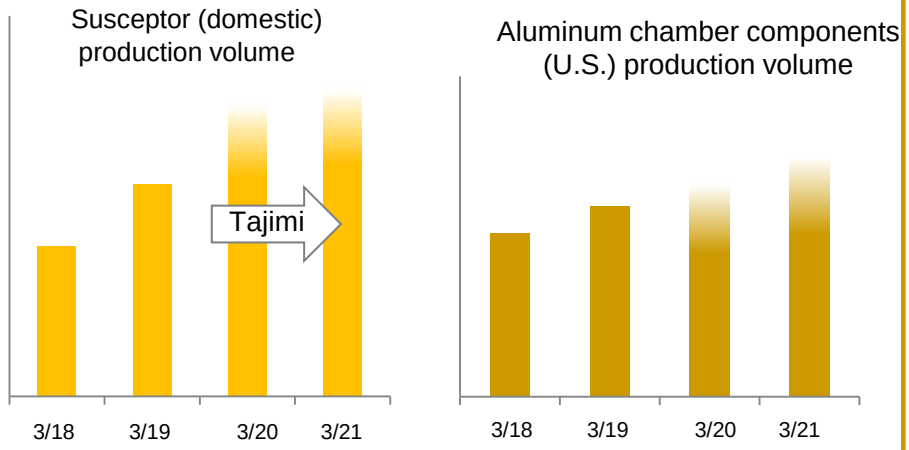


Chamber Components
(Aluminum)



Chamber Components
(Aluminum, thermal spraying)

NGK's production volume for semiconductor manufacturing equipment

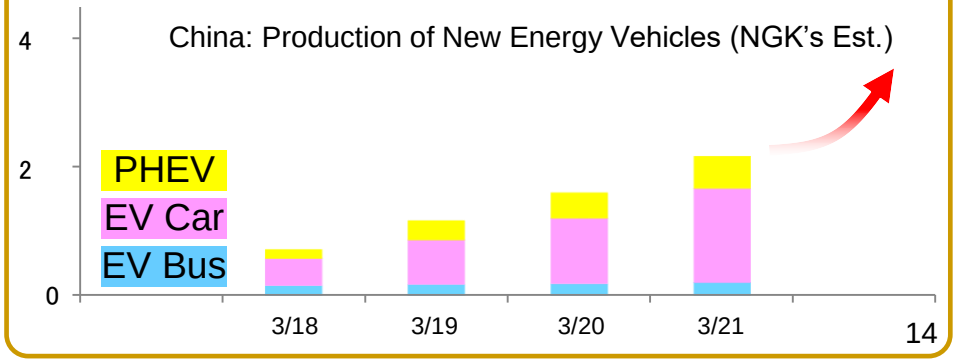


Implement investments to increase production in Japan and abroad.

Heating Equipment (Industrial Process Products)

Against the background of the strengthened Chinese EV policy, including the introduction of the new energy vehicle (NEV) regulations, investments in positive electrode materials for lithium ion batteries for EVs has accelerated in China.
Shipments of the Company's firing kilns for lithium ion battery positive electrode components have increased.

China: Production of New Energy Vehicles (NGK's Est.)



● Automotive-related

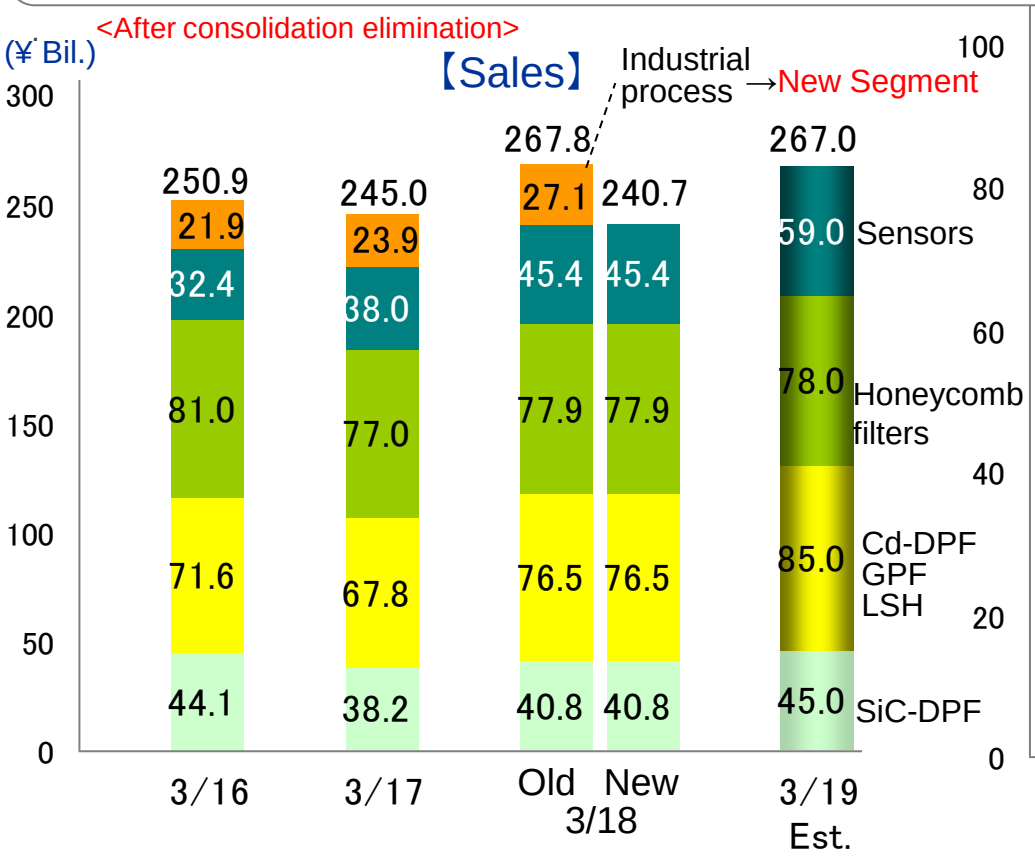
・Demand for automotive-related products has increased as a result of tighter emissions regulations in addition to the increase in sales of passenger cars and trucks globally.
Profits are forecast to increase by absorbing the increase in depreciation costs, development expenses, etc., with the increase in volume.

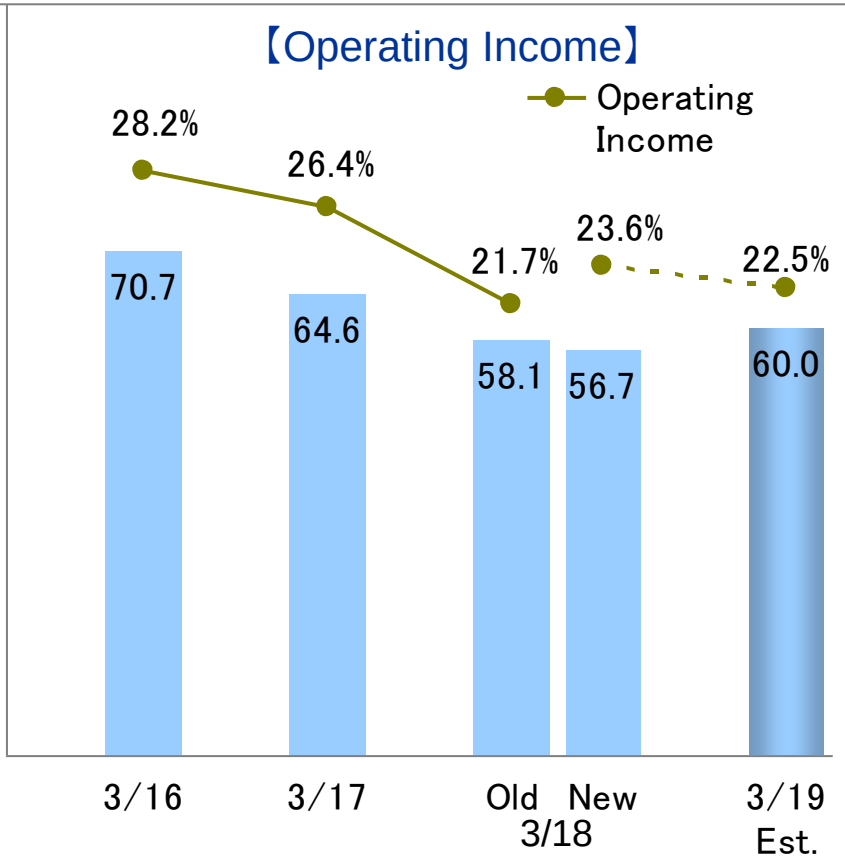
・Honeycomb : Demand has increased against the backdrop of increased sales of passenger cars in China and emerging markets in Asia.
(Plant in Thailand started production in April 2018.)

・LSH / Cd-DPF GPF : Demand has increased due to the increased sales of trucks in the U.S. and India as well as off-road vehicles in the markets of developed countries. GPF demand has gained strength as a result of RDE regulations in Europe.
(1st plant in Poland start mass production of GPF in July 2018.)

・SiC-DPF : Sales are forecast to increase with an effort to increase the market share, despite the lower ratio of diesel for European passenger cars.

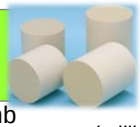
・Sensors : The number of sensors used for each diesel vehicle is forecast to increase as a result of tighter emissions regulations in Europe.

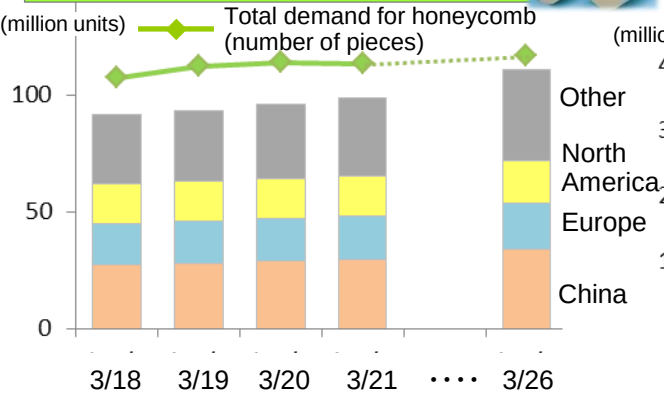




Demand Trends for Automotive-Related Products

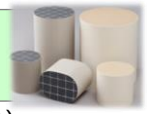
Passenger car sales volumes and total demand for honeycomb

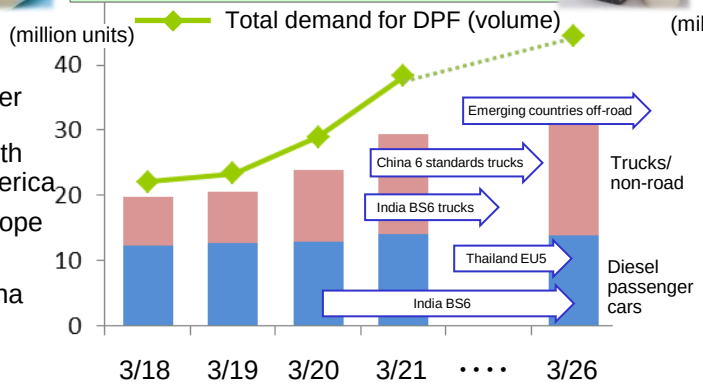




Demand for honeycomb is increasing at an annual rate of about 3% in proportion to the increase in sales of passenger cars.

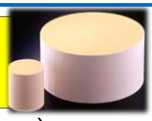
Number of vehicles equipped with DPF (passenger car conversion) and total demand for DPF (SiC, Cd, AT)

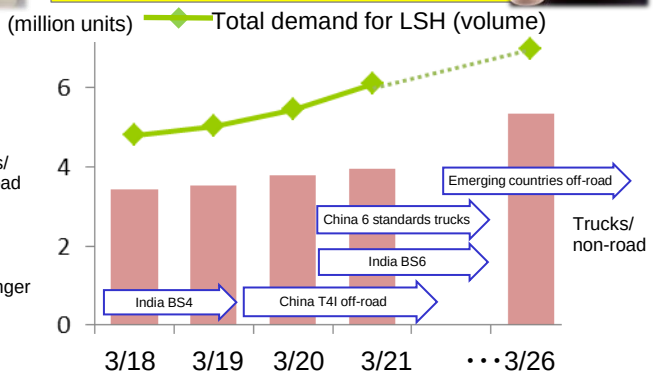




Tightening of regulations mainly in China, India, and other emerging countries will cause DPF demand to increase from FY2019.

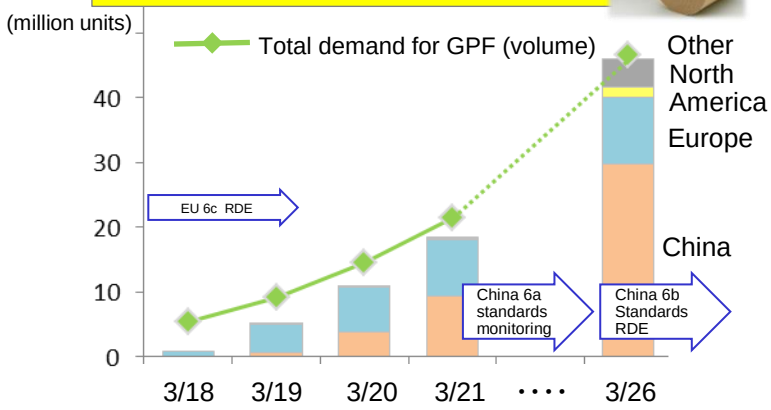
Number of trucks and construction machinery requiring after-treatment and total demand for LSH





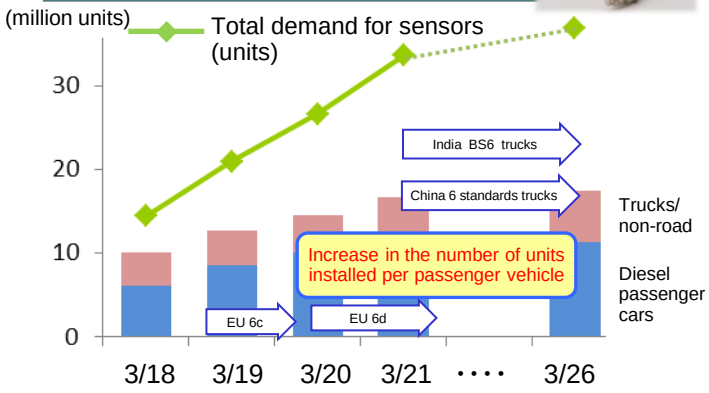
Increase in demand for LSH due to increased sales of trucks in the Chinese market and tightening regulations in India.

Number of vehicles equipped with GPF and total demand for GPF



GPF demand increases due to the start of RDE in Europe and reinforced regulations in China (China 6a, b)

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

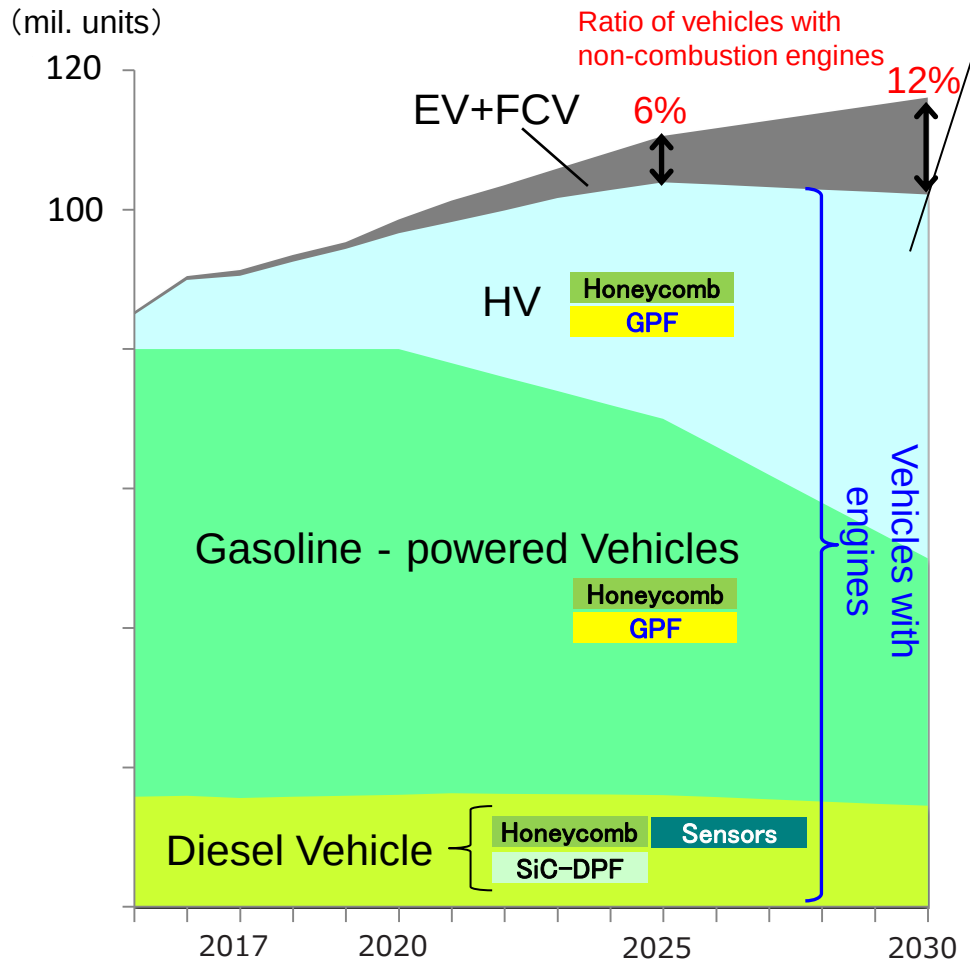


Demand expands rapidly because the number of in-vehicle sensors for each diesel vehicle has increased (from 2 to 3) due to the strengthened Euro regulations (Euro6d).

Long-term Forecast of Passenger Car Power Train

- Sales of vehicles with engines are forecast to increase until 2025.
- Ratio of vehicles with non-combustion engines in global vehicle sales is assumed to be about 6-12% in 2025 – 2030.

〔 Forecast of sales by drive unit 〕(NGK's Est.)

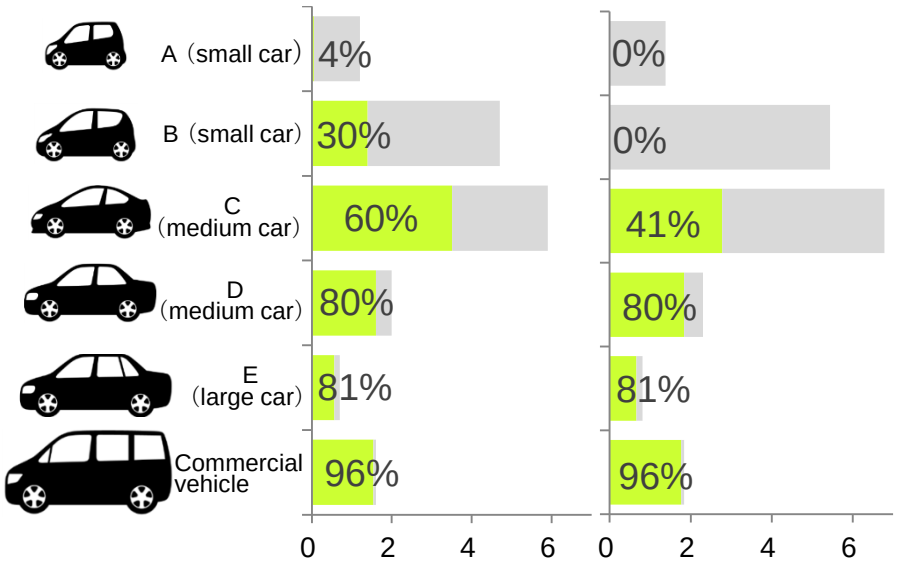


Strengthen development of new products responding to the reinforced regulations
EHC (Electrically Heated Catalyst)

LV Sales and Diesel Ratios in Europe (NGK's Est.)

(mil. units)

	〔2016〕	〔2025〕
LV Sales in Europe	16.1	18.6
(Diesel ratios)	(54%)	(38%)
Diesel LV sales in Europe	8.7	7.0



Demand is solid for medium- to large diesel passenger cars/commercial vehicles

Demand for SiC-DPF gradually increase due to increased sales of medium and small tracks in the area other than Europe, and due to an expansion of the tightened regulation area.

Construct a global production system (Major Bases)

Ceramics business base
Process technology business base

Increase of capacity of Sensors (approx. ¥14.0 Bil.)

1st plant in Poland
Facilities for assembling Sensors :
Production starts in October 2019.

Plant in Ishikawa
Facilities for elements of Sensors :
Production Starts in January 2019.

Belgium
Poland

2nd plant in Poland

Increase capacity of SiC-DPF.
(No. 2 Building)(approx. ¥22.0 Bil)
Production Starts in April 2019.

2nd plant in China

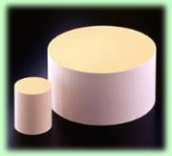
Mass Production of GPF
(approx. ¥33.0 Bil.)
Production starts in December 2019.

China
Ishikawa
Gifu (Tajimi)
Aichi
(Komaki,Chita)

U.S. (California)
U.S. (Arizona)
Mexico
U.S.

Thailand

Plant in Thailand



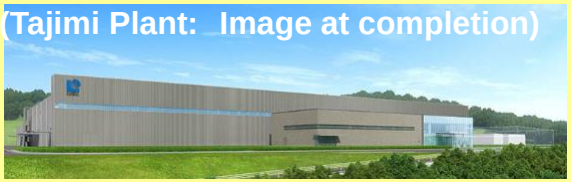

Investment amount by 2020: approx ¥50.0 Bil.
Honeycomb production starts in Aprill 2018.

South Africa

Indonesia

Reinforce ceramic products for semiconductor manufacturing equipment

Susceptor

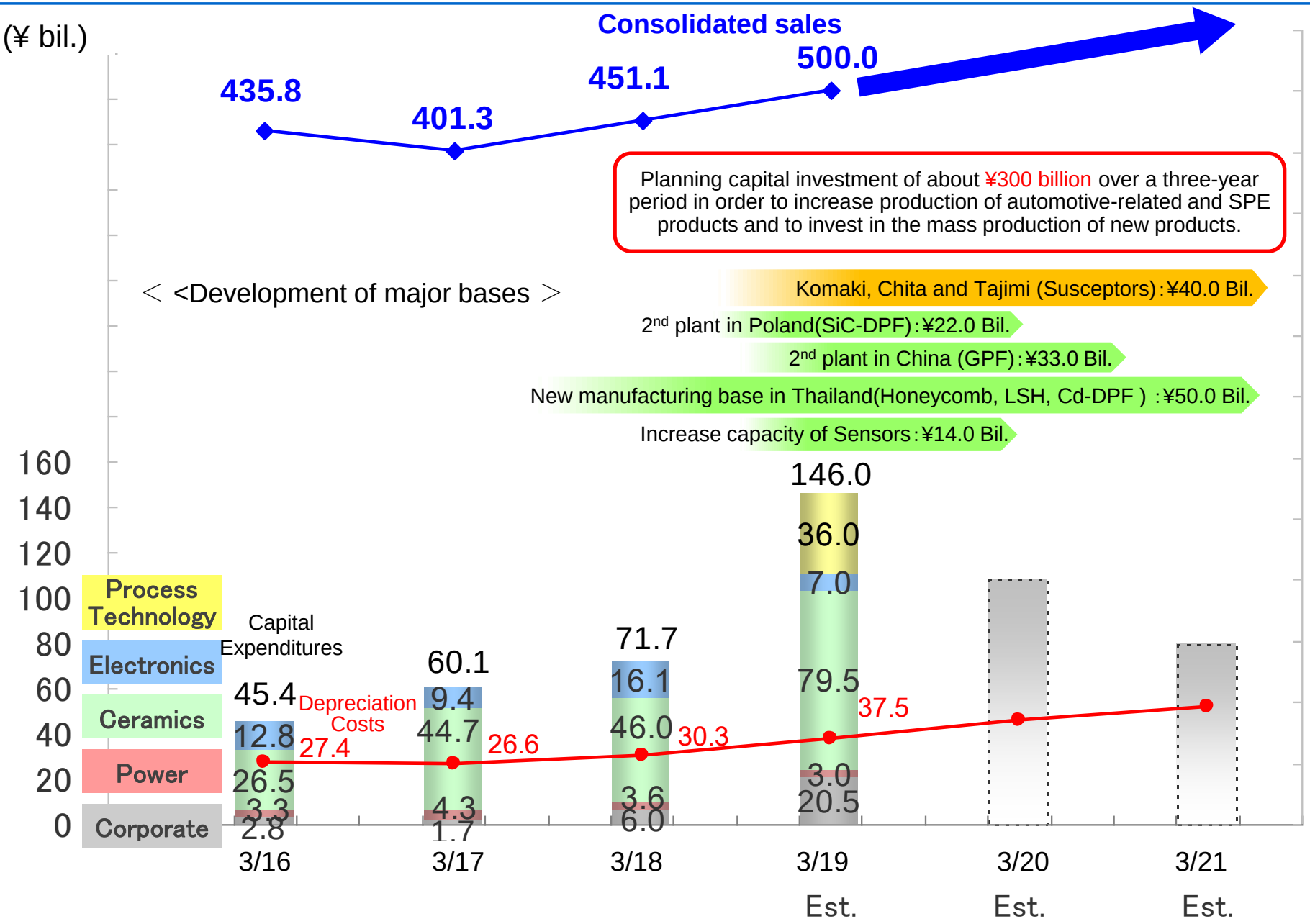


Construct a new plant in Tajimi City, Gifu Prefecture with an investment of about ¥20 billion. (Press release on May 18, 2017)

Plan to double production capacity with a further investment of ¥20 billion at 3 bases (Tajimi, Komaki, and Chita). Bring forward the start of production at the new Tajimi Plant to October 2019.
(Press release on March 20, 2018)

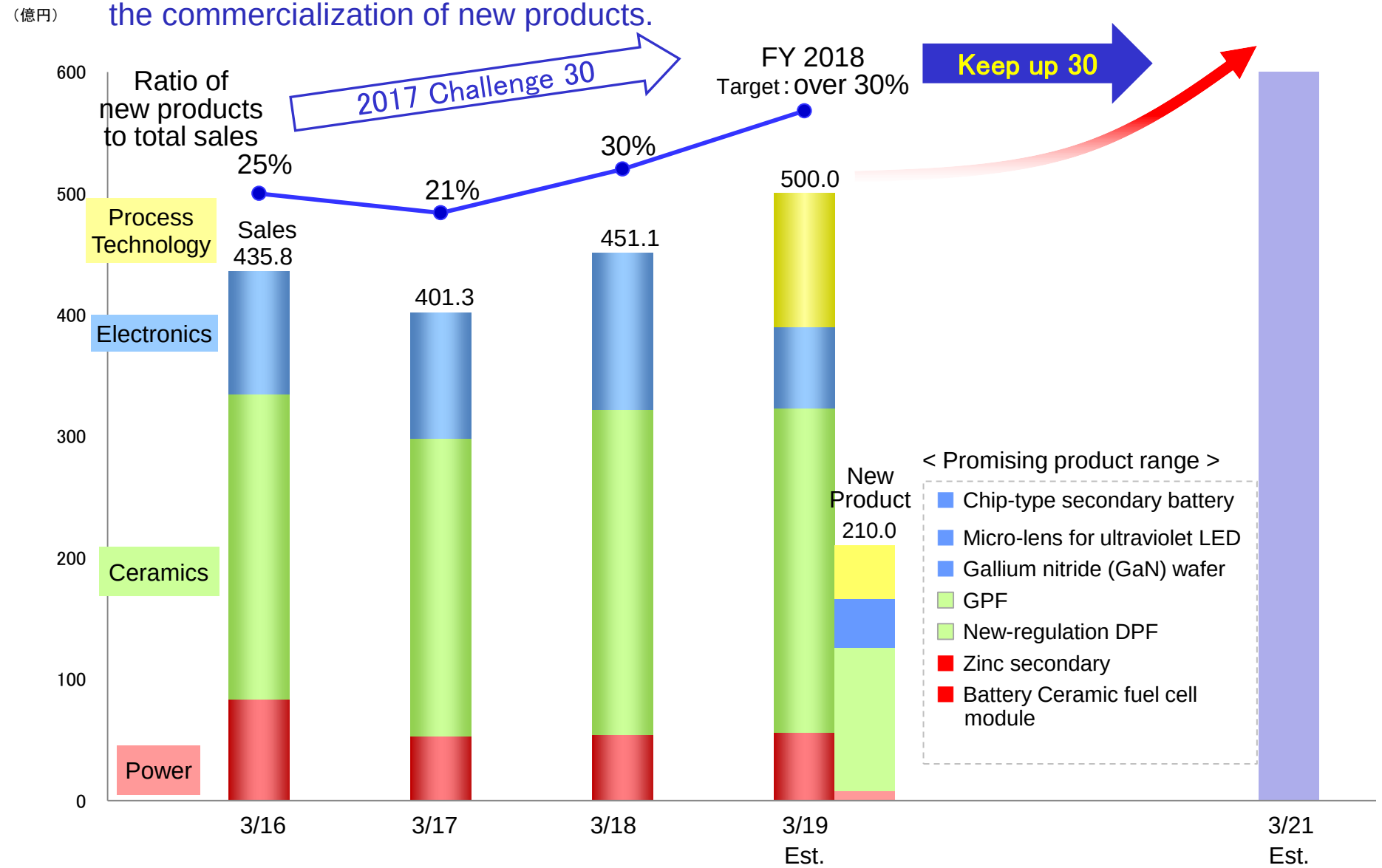
- Make investments to increase production of automotive-related products in each country in response to tighter emissions regulations globally, including in Europe and China (RDE regulations).
- Also promote investments to increase production in Japan and the U.S. of products for semiconductor manufacturing equipment for which demand is expanding.

Capital Expenditures & Depreciation Costs



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

- Achieved target ratio of new products to total sales in FY2017.
- Maintain ratio of new product to total sales of at least 30% from FY2018 by working towards the commercialization of new products.



Early commercialization of new products "The Ceramic Battery Project"

Chip-type Secondary Battery

Remarks

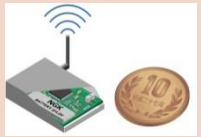
- Crystallographically-oriented ceramic positive plates (basic patents acquired)
- Very small thickness, high energy density, and high temperature operation

Applications

Wearable devices

Smart cards

IoT wireless modules



On-board power units

Progress

Commercialization planned for FY2018

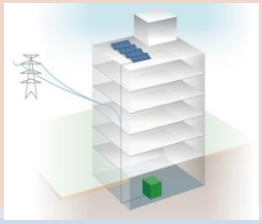
Zinc Secondary Battery

Remarks

- Unique ceramic separator of solid electrolyte
- Intrinsically safe (aqueous electrolyte) and large capacity

Applications

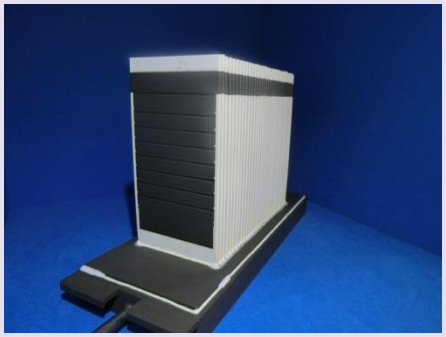
Stationary storage battery
(several kWh - several hundred kWh class)
For peak cut, energy management and BCP at buildings, hospitals, commercial facilities, etc.
(Optimal for internal installment, while possible for outside installment)



Progress

Aiming for commercialization in or after FY2019 by developing markets through field experiments and customer evaluation

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



Remarks

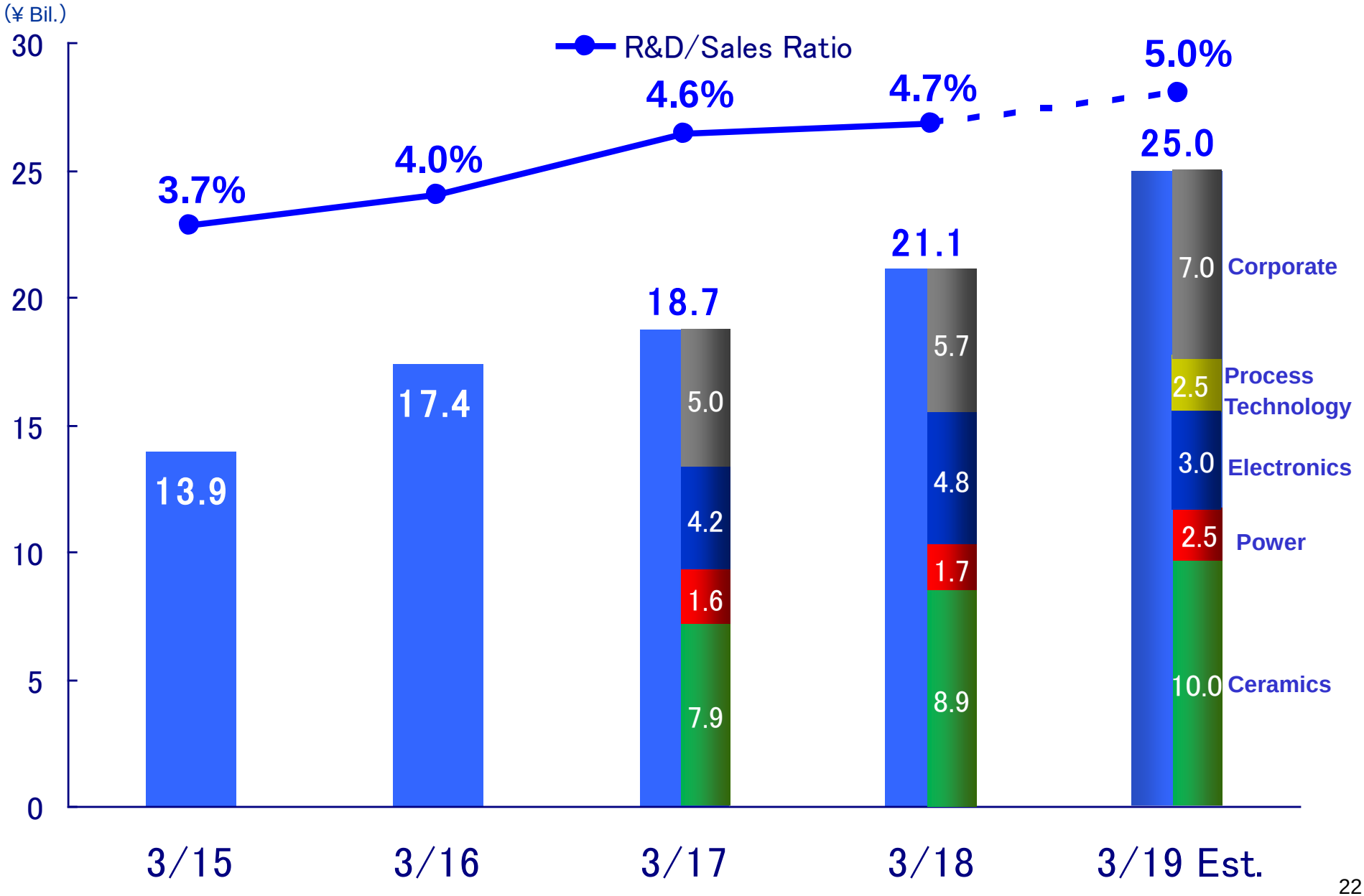
- Unique cell structure and unique ceramic materials
- Compact, high power generation efficiency, durability

Applications

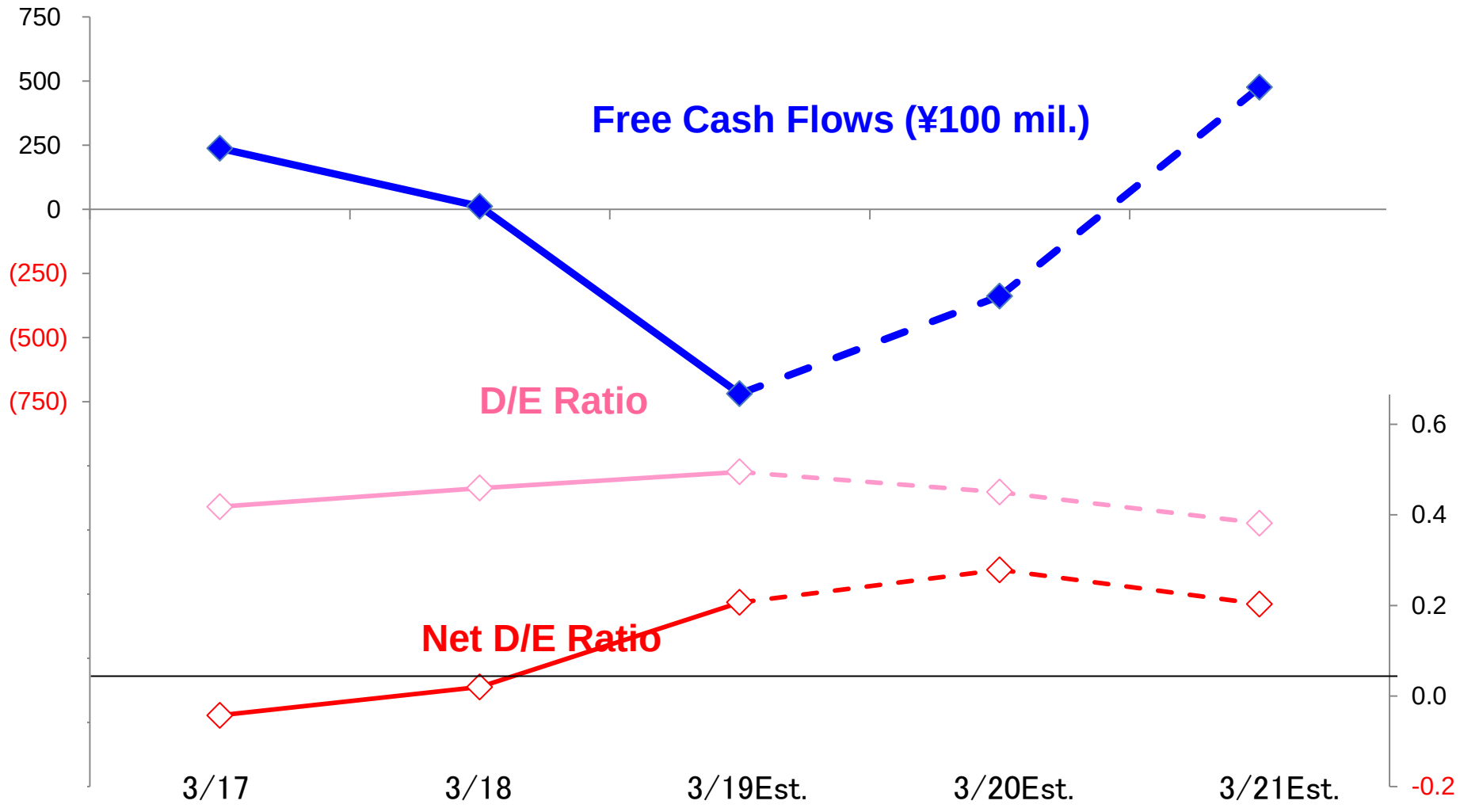
Fuel cell system
for detached houses and apartments
(for installation in each residence)

In addition to the above, a specialized organization will be established to facilitate the development of all ceramic batteries.

R&D Input


(¥ Bil.)
R&D/Sales Ratio
3.7%
4.0%
4.6%
4.7%
5.0%
13.9
17.4
18.7
21.1
25.0
5.0
4.2
1.6
7.9
5.7
4.8
1.7
8.9
7.0
2.5
3.0
2.5
10.0
Corporate
Process Technology
Electronics
Power
Ceramics
30
25
20
15
10
5
0
3/15
3/16
3/17
3/18
3/19 Est.

Future FCF and Financial Composition



- With capital expenditure preceding, interest-bearing liabilities will exceed outstanding funds for a while.
  Free cash flow is forecast to turn positive in FY ending March 2021.
- Equity ratio of 50% or higher and D/E ratio of about 0.4 will be maintained.

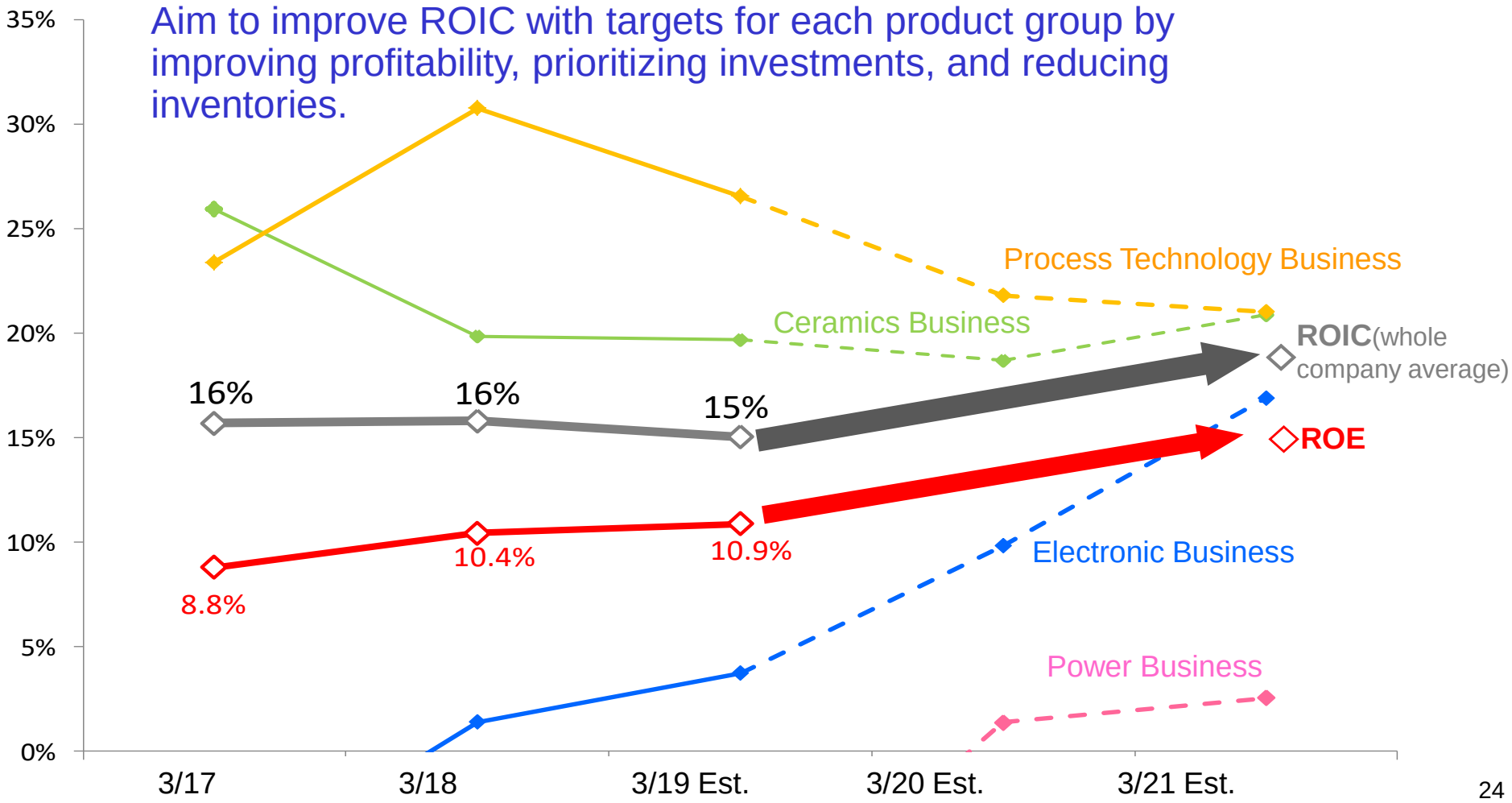
Return on Invested Capital (ROIC)

- Return on invested capital (NGK-version ROIC*) = $\frac{\text{Operating income}}{\text{Net sales}}$ X $\frac{\text{Net sales}}{\text{Business assets (sales receivables + inventories + fixed assets)*}}$

Return on turnover (profitability)

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.

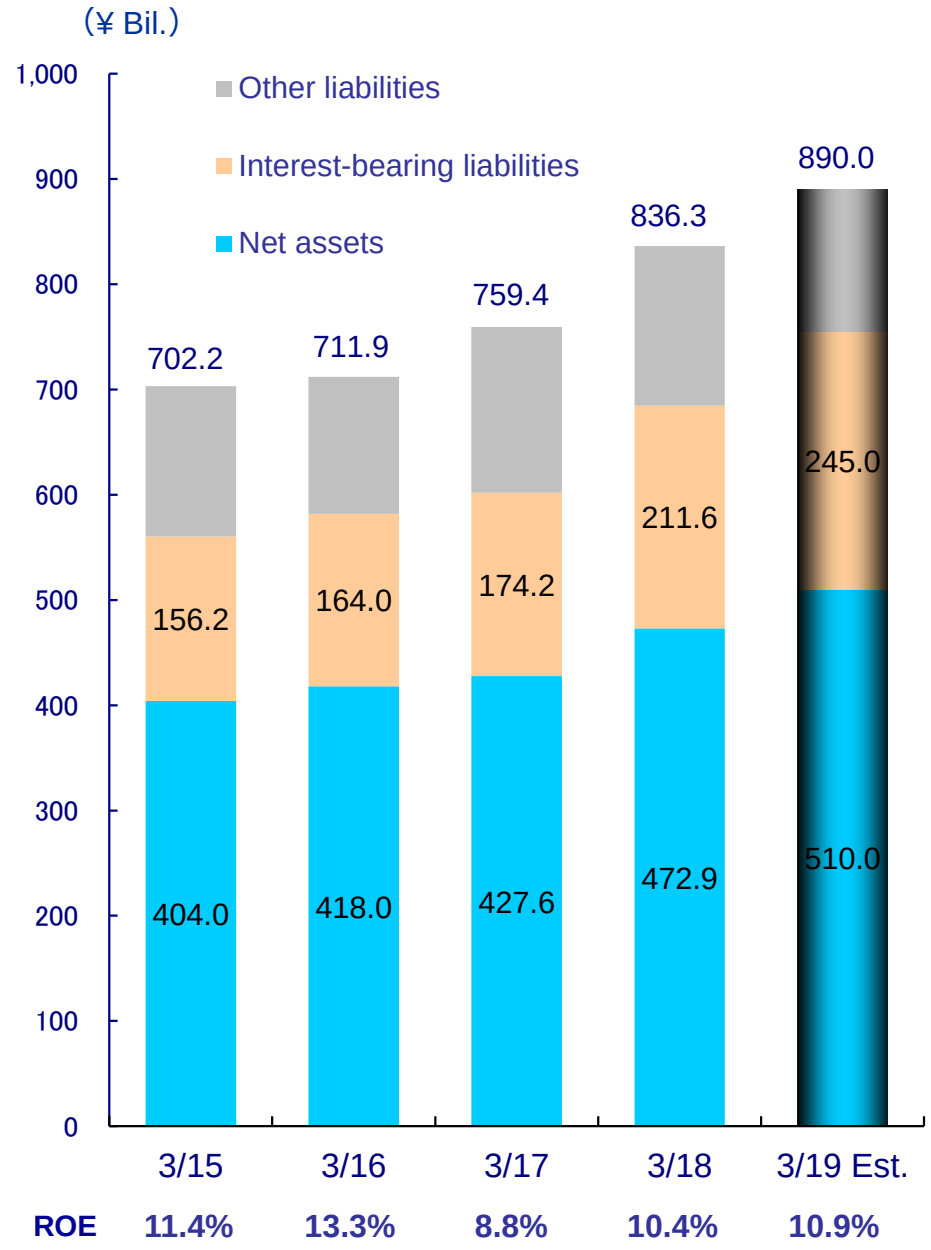


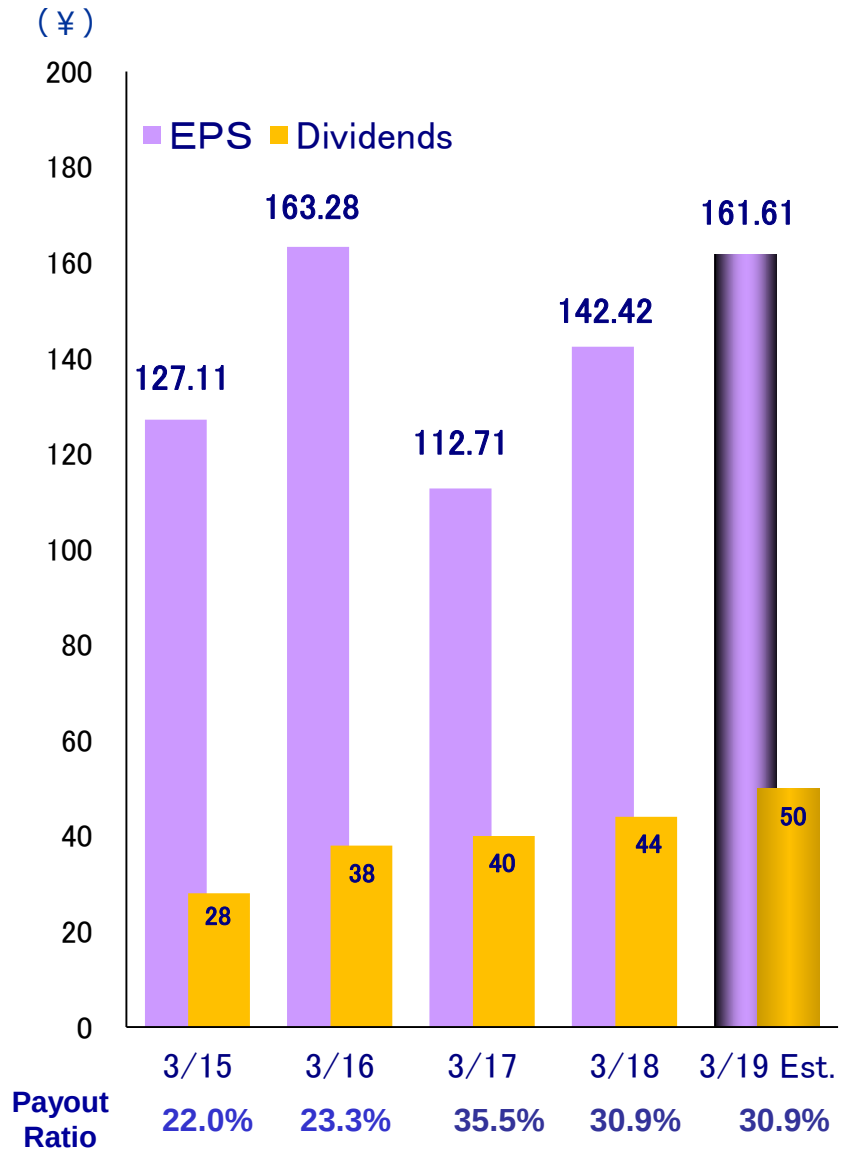
Summary of Cash Flow

(¥ Bil.)

	3/17	3/18	3/19 Est.
Operating Activities	80.2	50.6	66.0
Investing Activities	-56.5	-49.4	-141.0
Financing Activities	-13.0 New loans +30.1 Repayment -19.2 Treasury stock purchase -11.2	22.5 New loans +42.4 Repayment -6.8	22.0 New loans +47.0 Repayment -10.0
Effect of exchange rate change	-2.1	1.5	-2.0
Net Change in Cash &Eq-	8.6	25.2	-55.0
Cash & Eq- at the End of Year	144.7	169.9	114.9

Total Assets & ROE / EPS & Dividends





Sales by Product (Annual)

<After Consolidation Elimination>

(¥ Bil.)

	3/16	3/17	3/18		3/19 Est.
			Old Segment	New Segment	
Insulators	57.3	51.6	52.5	52.5	52.0
NAS	26.2	1.3	1.9	1.9	4.0
Power Business	83.5	52.8	54.4	54.4	56.0
Honeycomb filters	81.0	77.0	77.9	77.9	78.0
SiC-DPF	44.1	38.2	40.8	40.8	45.0
Cd-DPF / LSH	71.6	67.8	76.5	76.5	85.0
Sensors	32.4	38.0	45.4	45.4	59.0
Industrial Process	21.9	23.9	27.1		
Ceramics Business	250.9	250.0	267.8	240.7	267.0
Metal related	19.9	20.3	22.5	22.5	23.0
SPE related	36.8	46.4	67.6		
Electric related	33.9	27.4	28.3	28.3	32.8
Soshin Electric CO.	10.8	9.4	10.5	10.5	11.2
Electronics Business	101.4	103.5	129.0	61.3	67.0
Industrial Process				27.1	30.0
SPE related				67.6	80.0
Process Technology Business				94.7	110.0
Total	435.8	401.3	451.1	451.1	500.0

Sales by Product (Semi Annual)

(¥ Bil.)

<After Consolidation Elimination>	3/18		3/19 Est.	
	1st. Half	2nd. Half	1st. Half	2nd. Half
Insulators	26.9	25.6	24.0	28.0
NAS	0.4	1.5	1.0	3.0
Power Business	27.2	27.2	25.0	31.0
Honeycomb filters	38.5	39.4	38.5	39.5
SiC-DPF	20.4	20.4	21.0	24.0
Cd-DPF / LSH	37.6	38.9	41.0	44.0
Sensors	22.0	23.5	28.5	30.5
Industrial Process	12.5	14.6		
Ceramics Business	131.0	136.8	129.0	138.0
Metal related	11.2	11.3	11.5	11.5
SPE related	31.7	36.0		
Electric related	13.5	14.9	15.3	17.5
Soshin Electric CO.	5.2	5.3	5.2	6.0
Electronics Business	61.5	67.4	32.0	35.0
Industrial Process			15.0	15.0
SPE related			39.0	41.0
Process Technology Business			54.0	56.0
Total	219.8	231.4	240.0	260.0

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.

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