

# FY2020 1<sup>st</sup> Half Results (from April 1, 2020 to September 30, 2020)

November 2, 2020



## NGK INSULATORS, LTD.



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This is a translation of materials used for the analyst meeting held in Tokyo, Japan on November 2, 2020

**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.**

**President**  
**Taku Oshima**

**Agenda**

Summary of financial results for FY2020 1<sup>st</sup> Half  
(Ended September 30, 2020)

Forecast for FY2020  
(Ending March 31, 2021)

Segment Information

Capital Expenditures & Depreciation Costs & R&D

Medium-term Plan (ROIC・Business Performance)

Financial Condition  
(Cash Flow・Assets&Dividend)

	(¥ Bil.)	FY2019 1 <sup>st</sup> half	Announcement June→September	FY2020 1 <sup>st</sup> half	Growth ratio
Net Sales		219.8	190.0→195.0	194.9	FX -1.2 -11%
Operating Income		31.6	3.0→10.0	11.6	-0.7 -63%
Ordinary Income		29.7	1.5→10.0	12.2	-59%
Profit Attributable to Owners of Parent		21.2	1.0→5.0	7.3	-66%
Exchange Rate	USD	¥109	(¥105→107)	¥107	-¥2
	EUR	¥121	(¥115→120)	¥121	±¥0

### YOY (Year-Over-Year) change: Decrease in sales and income

- Energy\* Both insulators and NAS remained weak and were roughly same as the previous year.
- Infrastructure
- Ceramics Although sales were recovering mainly in the Chinese market, sales and income have both declined significantly due to a drop in global sales of passenger cars caused by the COVID-19 pandemic.
- Electronics Sales declined due to a decrease in package demand for mobile phone base stations despite the higher demand for wafers and piezoceramic actuators for HDDs.
- Process Both sales and income from semiconductor manufacturing equipment increased for such as an increased investment for 3D NAND.
- Technology
- Extraordinary Losses 0.9 billion yen of fixed asset impairment loss recorded including the package business that continued deficits.

\* FY2020 「Power Business」 was renamed 「Energy Infrastructure Business」

# Forecasts for FY 2020

	(¥ Bil.)	FY2019	Announcement June→September	FY2020	Growth ratio FX
Net Sales		442.0	420.0→420.0	435.0	-5.0 -2%
Operating Income		55.0	30.0→33.0	42.0	-1.4 -24%
Ordinary Income		52.0	29.0→34.0	43.0	-17%
Profit Attributable to Owners of Parent	Extraordinary Loss ¥13.1Bil.	27.1	17.0→21.0	28.0	+3%
Exchange Rate	USD	¥109	(¥105→106)	¥106	-¥3
	EUR	¥121	(¥115→118)	¥118	-¥3

Sales are forecast to fall on a year-over-year basis.

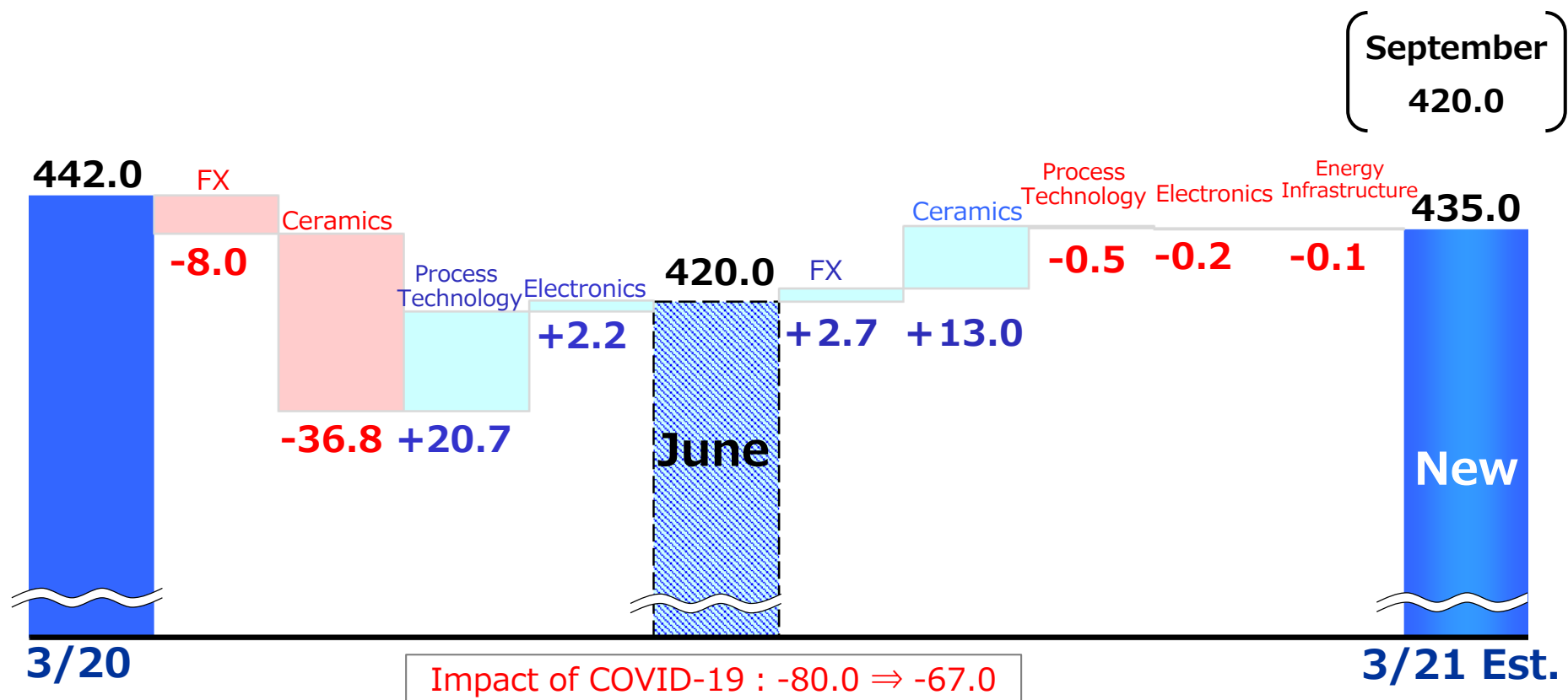
Profit is forecast to slightly increase despite a decline in operating income and ordinary income.

We upwardly revised the forecast announced in September.

■Energy Infrastructure	The demand for both insulators and NAS will remain weak. Sales and income are forecast to be roughly same as the previous year.
■Ceramics	Lower sales and income are expected for a lower demand for automotive-related products on the background of a global significant decrease in passenger cars and trucks caused by the COVID-19 pandemic.
■Electronics	Increasing sales and income are expected due to a higher demand for electronics components.
■Process Technology	Increasing sales and income are expected as a result of a gradual recovery in memory investment after bottoming out in the fiscal year ended March 31, 2020.

# Change Analysis: Sales

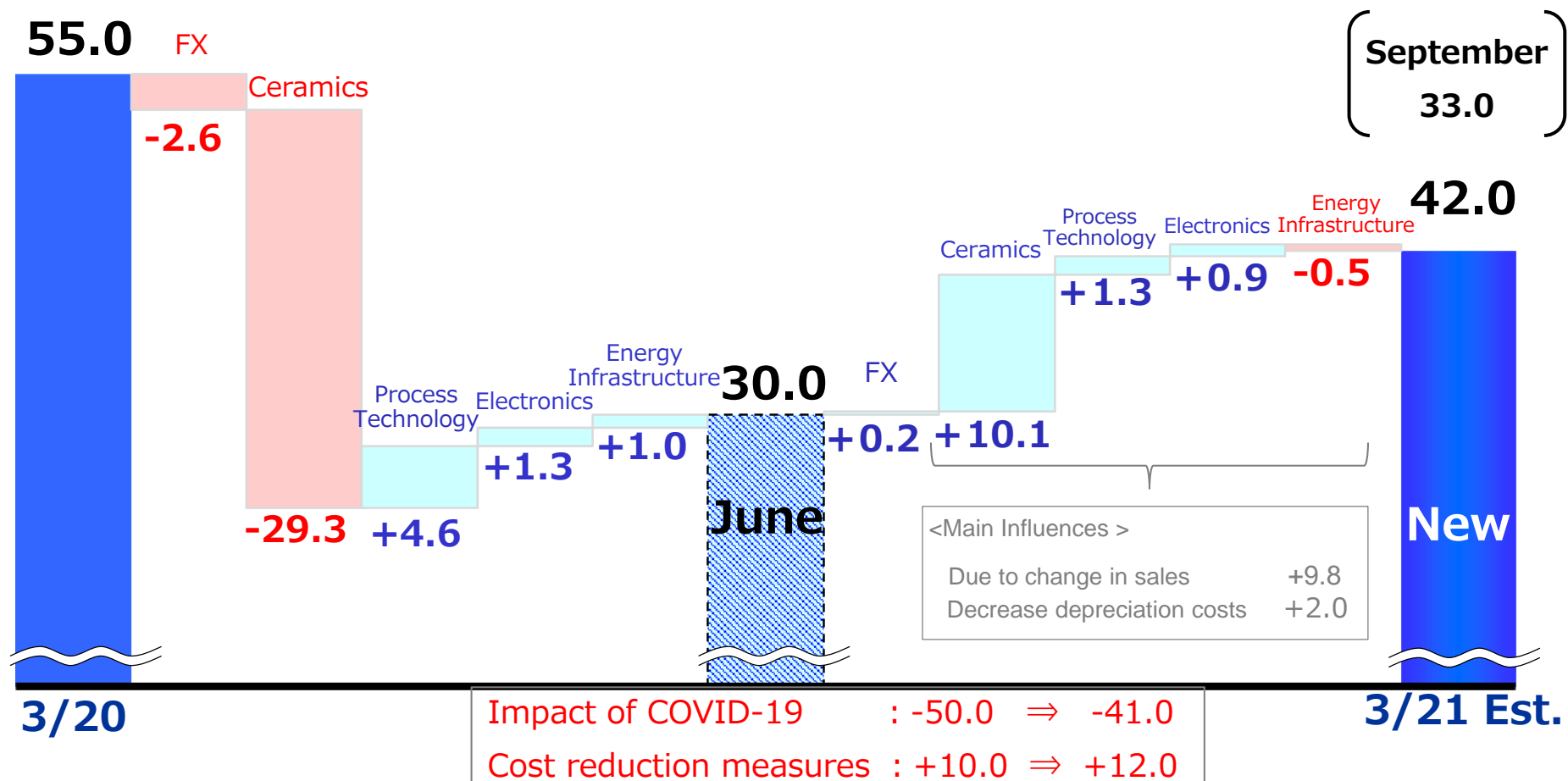
(¥ Bil.)



FX Rate 3/20  
¥109/USD  
¥121/EUR

June(3/21 Est.)  
¥105/USD  
¥115/EUR

New(3/21 Est.)  
¥106/USD  
¥118/EUR



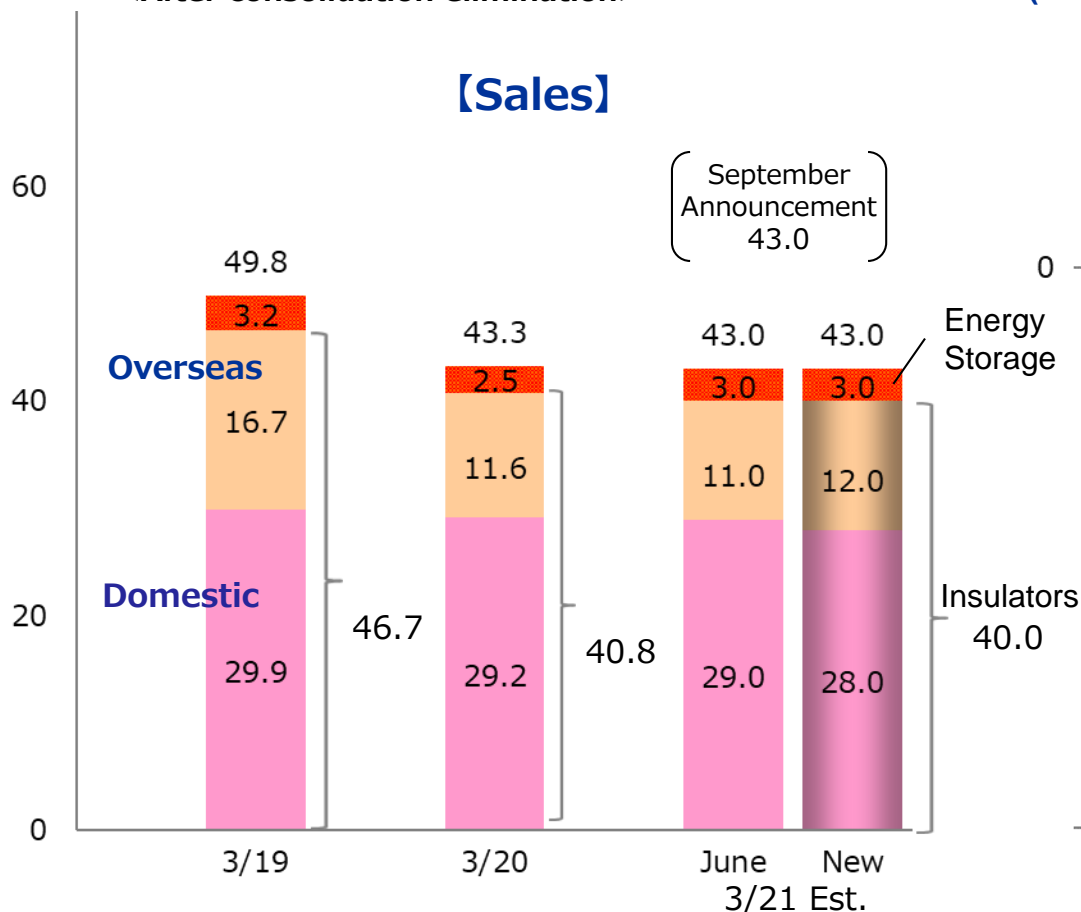
FX Rate 3/20  
¥109/USD  
¥121/EUR

June(3/21 Est.)  
¥105/USD  
¥115/EUR

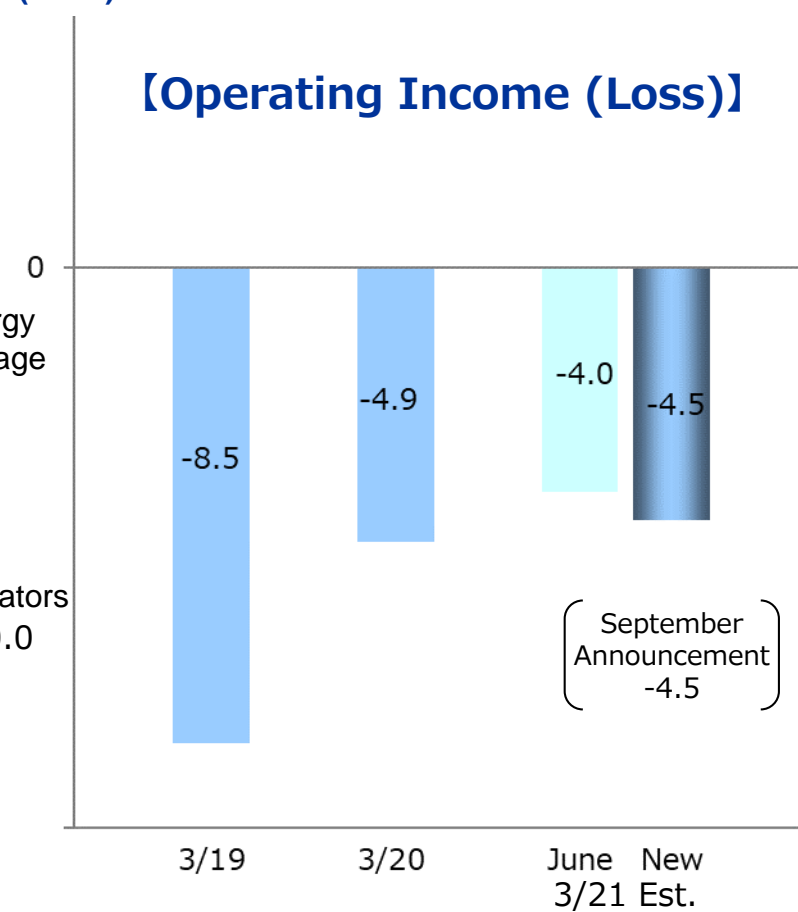
New(3/21 Est.)  
¥106/USD  
¥118/EUR

- **Insulators**
  - While domestic demand for general power distribution products will remain sluggish, overseas sales are expected to increase as some export projects are to start ahead of schedule.
  - With slimming down of overhead costs, both sales and income are expected to be at the same level as the June forecast.
- **Energy Storage**
  - There will be no change to poor performance from the June forecast and the deficit is expected to continue.

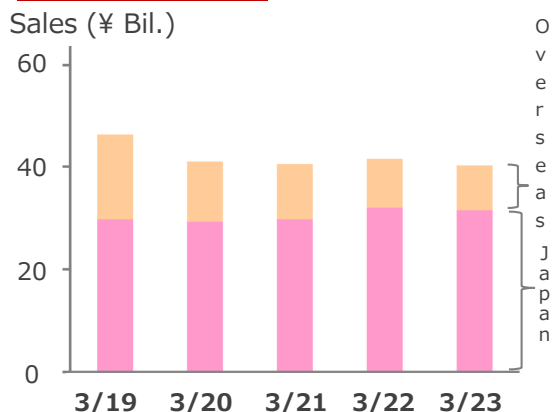
(¥ Bil.) <After consolidation elimination>



(¥ Bil.)



## ■ Insulators Aim to achieve an early turnaround



### 【 Market environment 】

**Japan:** In April 2020 along with power companies' separation of electrical power production from power distribution and transmission, power system reform is beginning to enter the final phase. Demand for projects as resilience measures and replacement are expected to increase in mid- to long-term despite ongoing trends among power companies toward restricting capital investment.

**Overseas:** Large-scale new projects have been completed, so we will make sure to capture replacement demand.

Aim to achieve turnaround in next term by improving sales prices while pursuing business restructuring including slimming down of overhead costs and removal of some unprofitable products.

## ■ Energy Storage Aim for business expansion with NAS®Batteries and Zinc Rechargeable Batteries



NAS®Batteries

### 【 NAS®Batteries 】

Focus on receiving orders for domestic VPP deals and renewal deals for the time being, and also aim to build a power system model for local production and local consumption that takes advantage of our large capacity.

In overseas, pursue improvement of cost competitiveness and expansion of sales channels through joint development in collaboration with BASF, and aim to increase our share in the long-term energy storage market.



Zinc Rechargeable Batteries

### 【 Zinc Rechargeable Batteries 】

Work on early commercialization by utilizing our high level of safety and promoting marketing activities mainly of products for indoor use.

Meet a wide range of needs with large-capacity, long-lasting NAS® batteries and highly safe Zinc Rechargeable Batteries.



## ● Electronics Components

- Increasing sales of piezoceramic actuators for HDDs continues roughly as assumed, thanks to the steady data center investment.
- Sales and income from composite wafers are forecast to increase, thanks to an increasing demand for high performance filters with 5G communications advancement.

## ● Soshin Electric

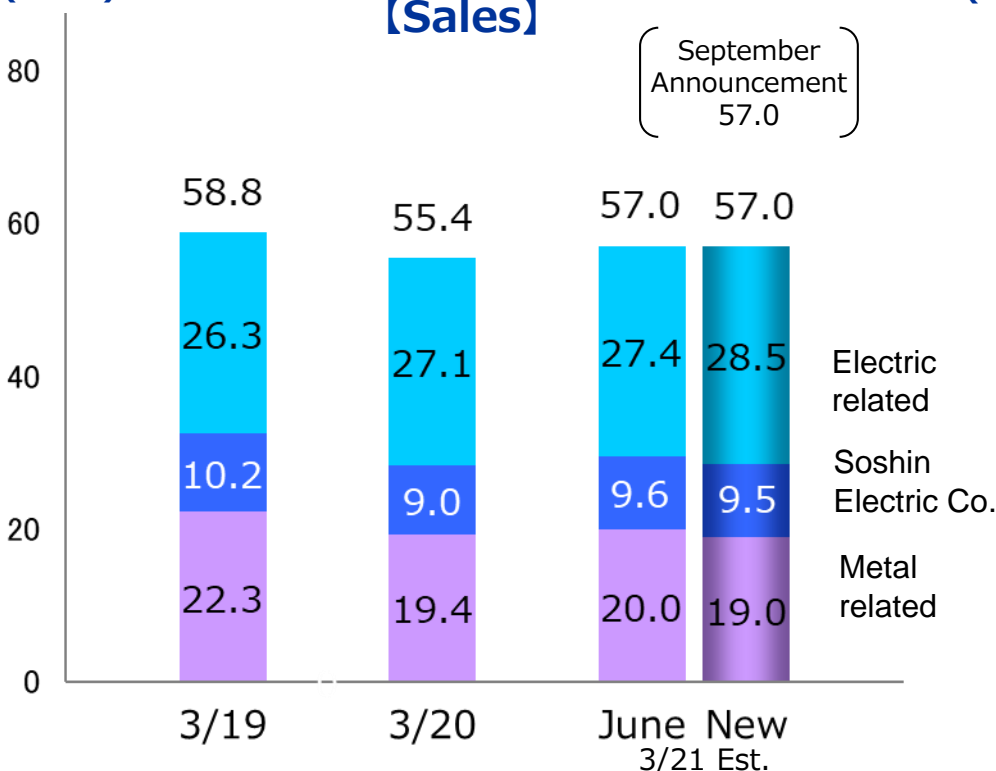
- Sales and income are forecast to decline due to a decrease in products for automobiles and electromagnetic noise measurement.

## ● Metal Related Products

- Sales and income are forecast to decline due to lower demand for aircraft and metal mold products.

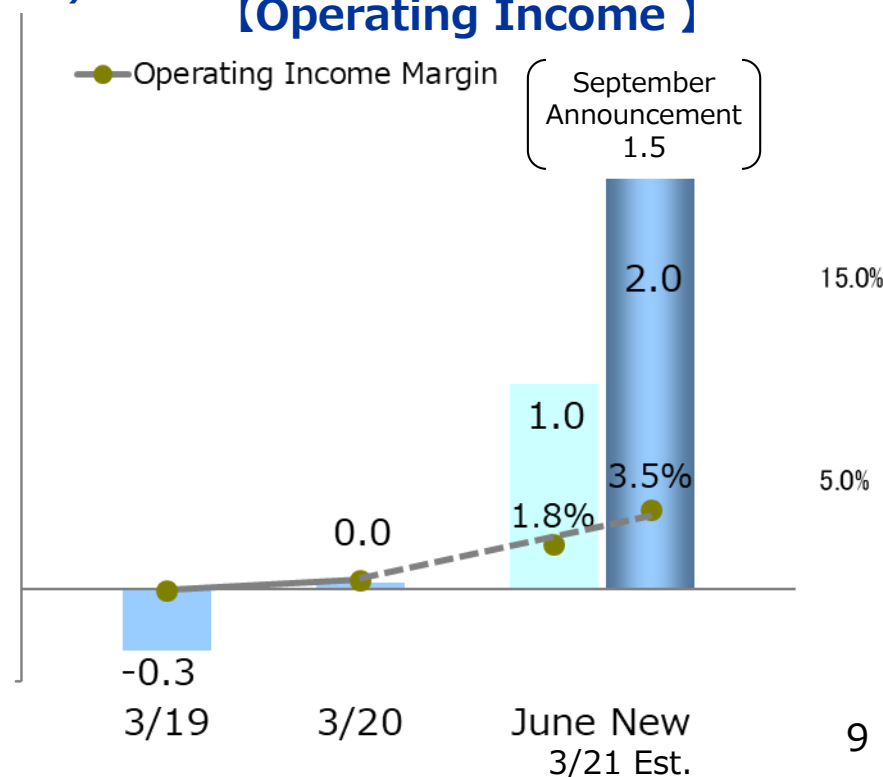
(¥ Bil.) <After consolidation elimination>

### 【Sales】



(¥ Bil.)

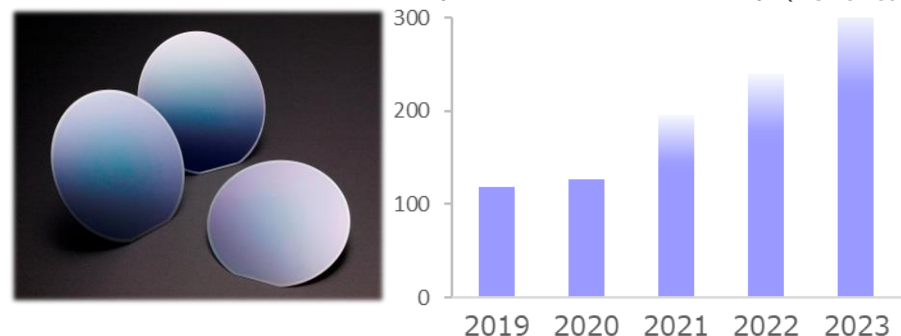
### 【Operating Income】



## ■ Bonded Wafer Products (Electronics Components)

The demand for composite wafer products for high-functionality SAW filters with an improved temperature profile, is forecast to expand as the required performance level rises and the number of filters installed on mobile devices increases due to advancements in communication systems such as a widespread adoption of 5G despite sluggish demand for smartphones.

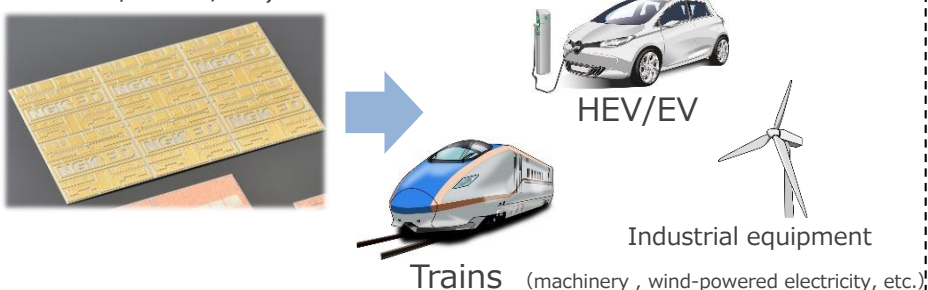
〔Total demand forecast of high performance filters〕  
(100 mils. number of pieces) (NGK's Est.)



Increasing production capacity is ongoing to meet growing demand.

## ■ DCB and AMB substrates (Electronics Components)

Ceramic circuit boards for power modules of automotive and industrial equipment with excellent reliability and heat conduction. The demand is forecast to expand in the medium and long term due to electrification of automobiles (electric vehicles/hybrid vehicles, or EV/HV).

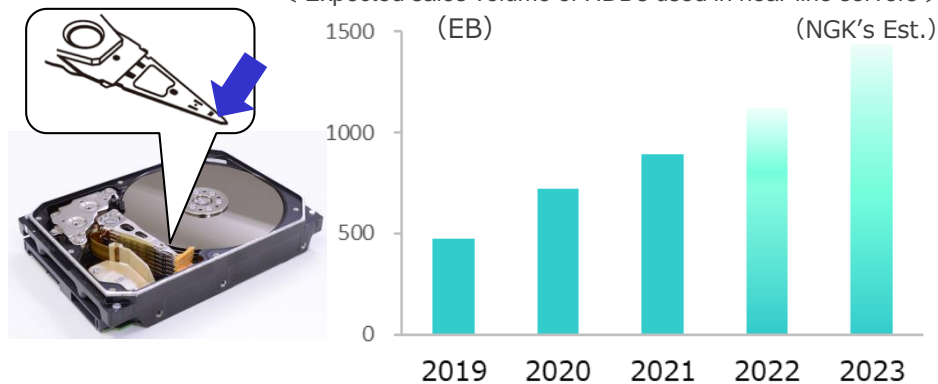


Strengthen the development of products for automobiles.

## ■ Piezoceramic Actuators for HDD (Electronic Components)

A piezoceramic actuators for large-capacity HDDs primarily used in nearline servers for data centers. With the spread of video data, IoT sensing, etc., the amount of generated data will increase an annualized rate of over 20%, and so mid- to long-term investment in data centers is expected to expand.

〔Expected sales volume of HDDs used in near-line servers〕



Increasing production capacity in Yamanashi and Malaysia is ongoing to meet growing demand.

## ■ EnerCera® Chip-type Secondary Battery (Electronics Components)

A lithium-ion secondary battery that is small, thin, features a large capacity, and has high heat resistance, with a positive electrode material using crystal-orientation technology. Demand is expected to increase as IoT device markets and wearable terminal, the smart card expand.



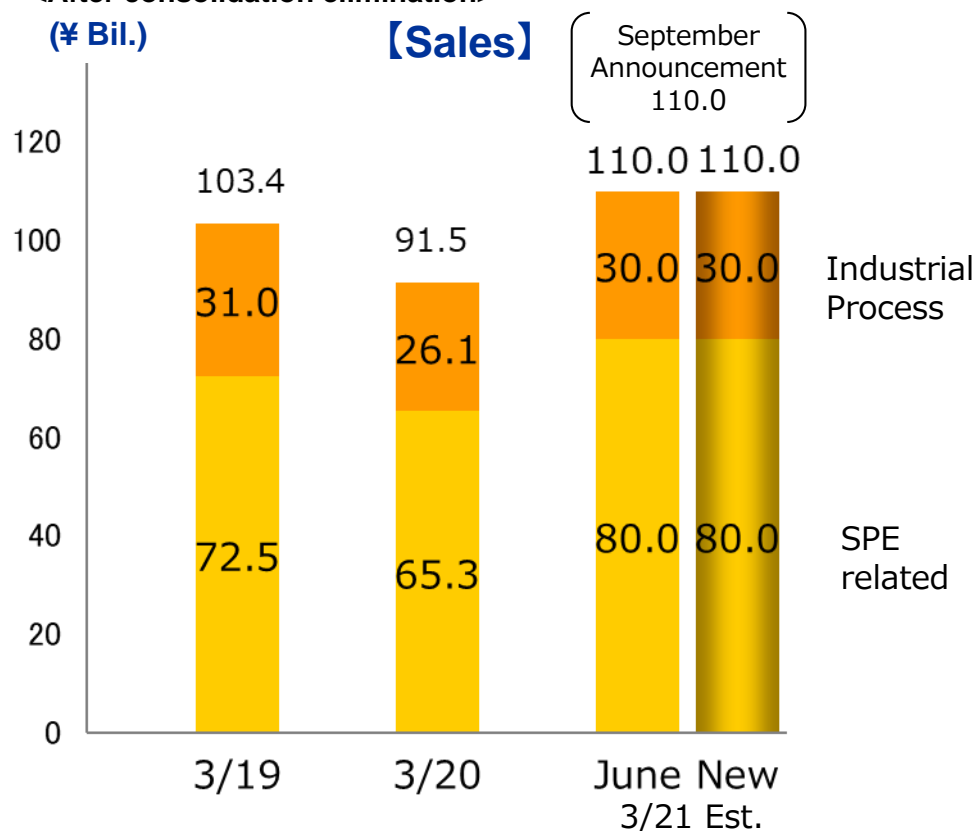
Strengthen marketing activities and reduce costs to generate sales and profits early.

- Ceramic for Semiconductor Manufacturing Equipment (SPE-related products)
  - Although memory-related investment was weak due to sluggish demand for smartphones, investment in foundries will be solid, supported by strong growth of data centers, PCs and tablets due to the spread of remote working. Overall, sales from SPE- related products are expected to be same as the June forecast. Income is expected to increase due to cost reduction etc..
- Industrial processes
  - There will be no significant movement in supplies of such as low-level radioactive waste disposal equipment. Both sales and income are expected to be roughly same as the June forecast.

## <After consolidation elimination>

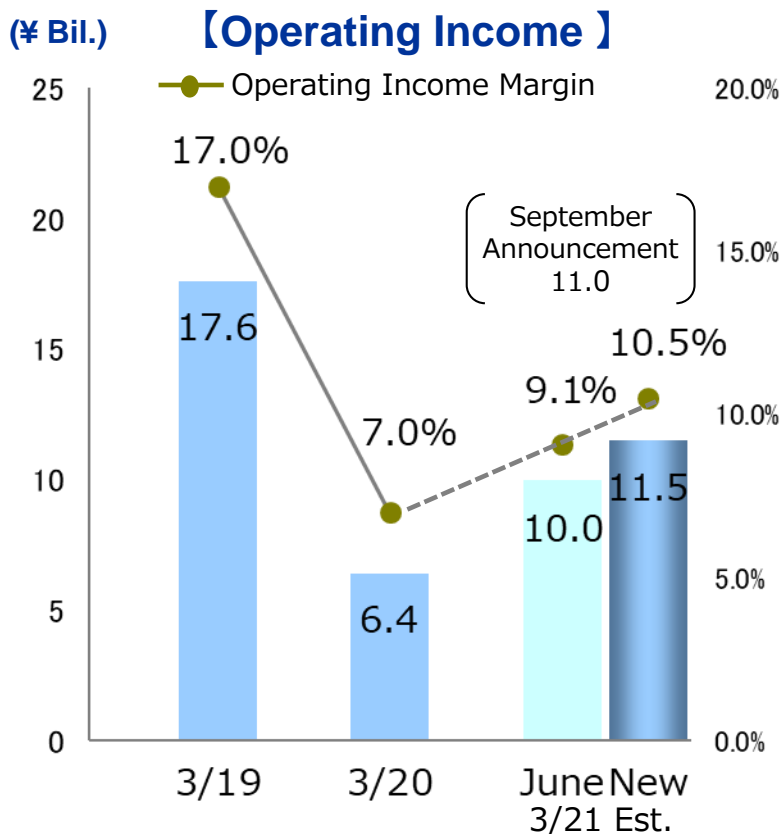
(¥ Bil.)

## 【Sales】



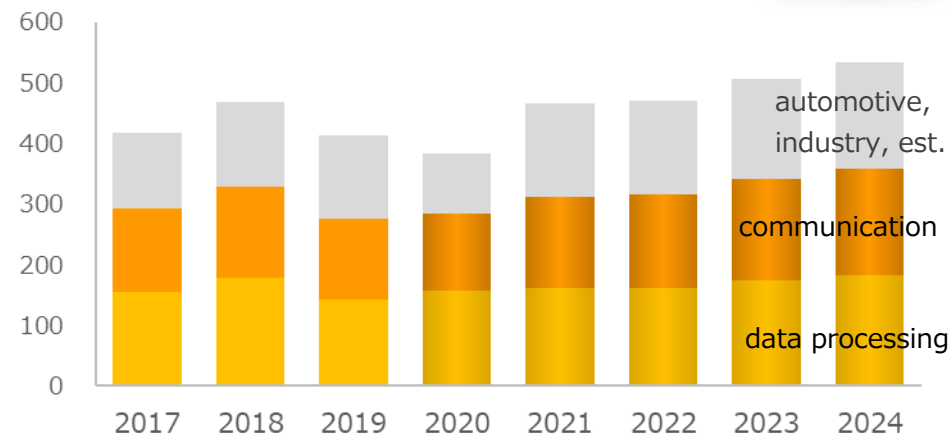
(¥ Bil.)

## 【Operating Income】



## ■ Ceramics Components for Semiconductor Manufacturing Equipment

(\$ Bils.) Demand trends for semiconductor (NGK's EST)



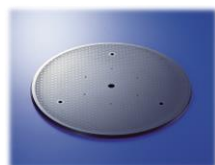
While demand for semiconductors for smartphones will slow in 2020, demand for data centers will remain firm. A full recovery is expected in 2021.

NGK's Ceramics Components for Semiconductor Manufacturing Equipment

### Susceptors



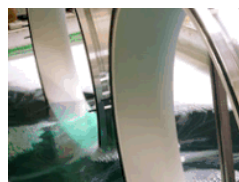
Heater (AlN)



Electrostatic chuck  
(Alumina, AlN)

Japan

### Chamber components



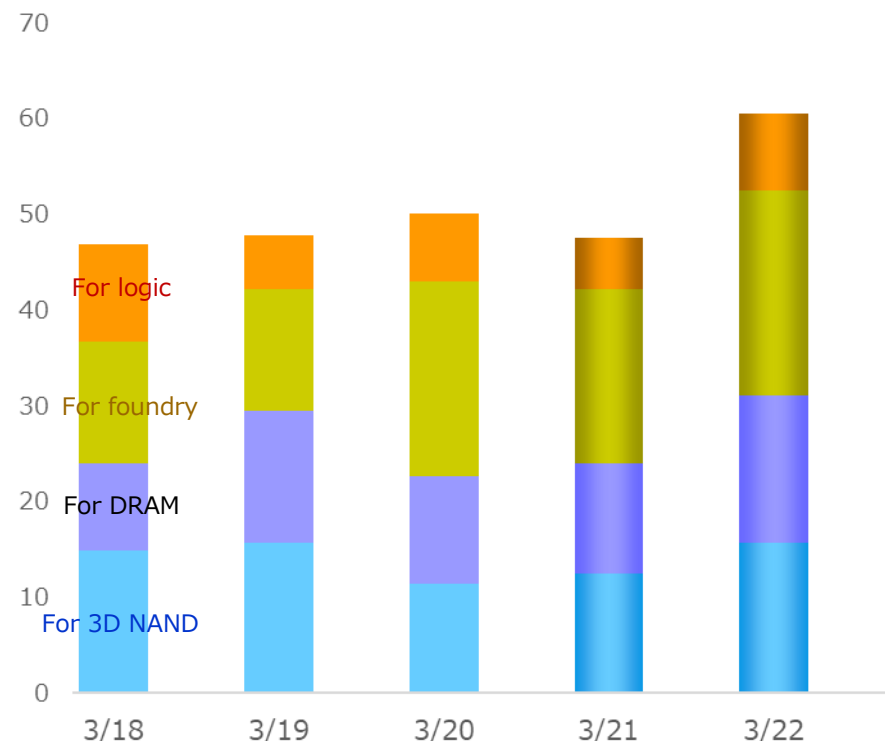
Chamber Components  
(Aluminum)



Chamber Components  
(Aluminum, thermal spraying)

U.S.

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

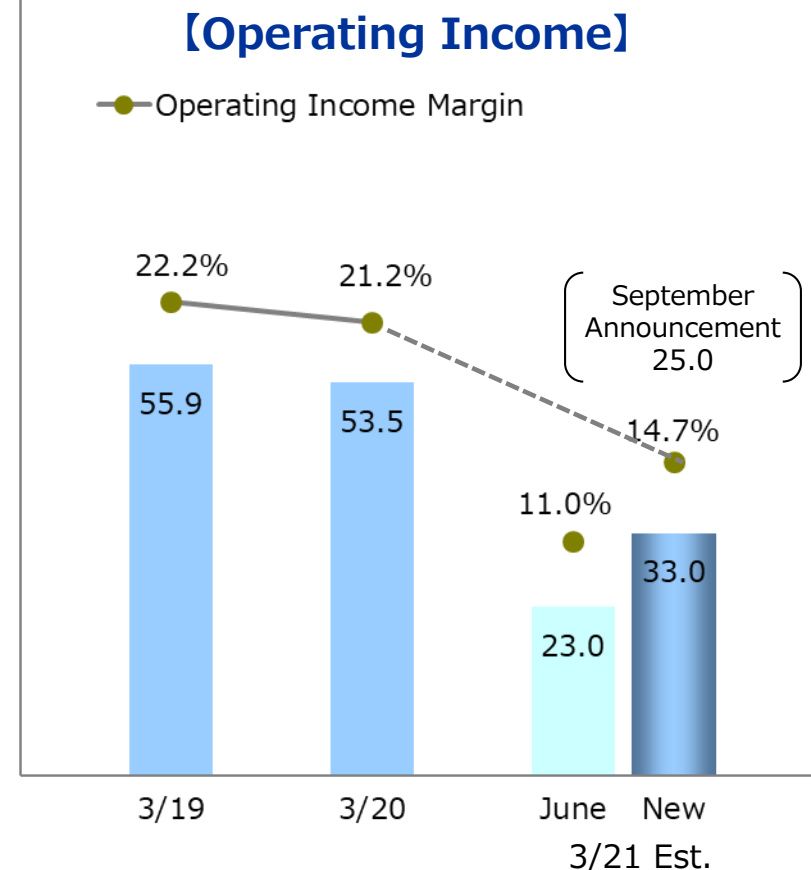
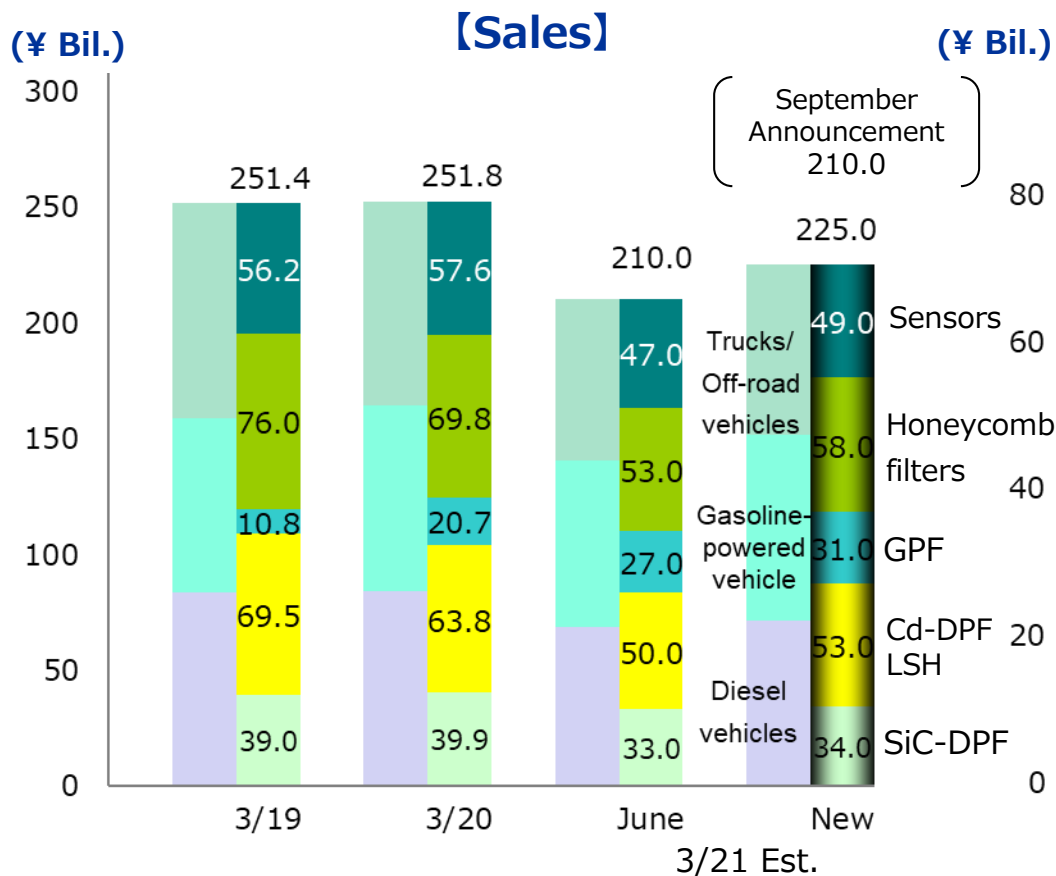


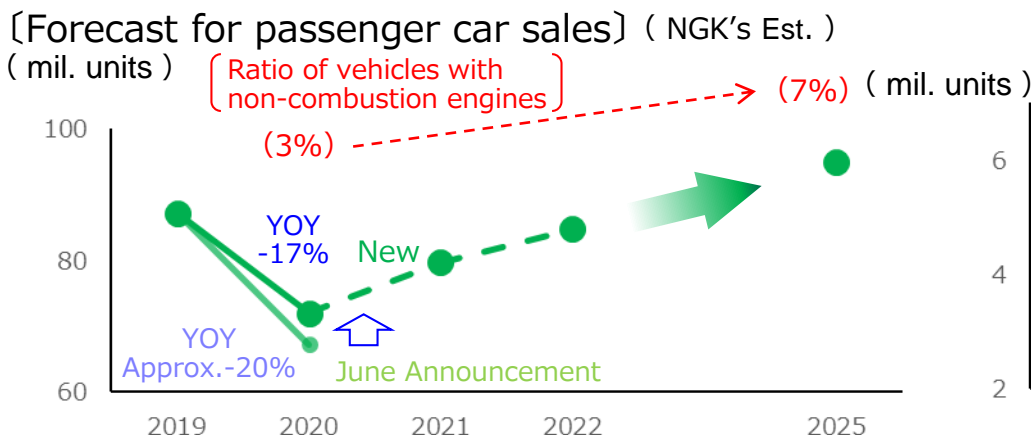
Memory investment bottomed out in FY2019 and will recover fully in FY2021. Strong investment in foundries will continue. Over the medium to long term, there will be no change in the trend of increasing capital investment in semiconductors backed by AI, 5G and the IoT.

Aim to maximize profit by fully using the Tajimi Plant, whose operations are highly efficient, as the demand for NGK's components used for semiconductor manufacturing equipment is expected to increase with demand recovery from 2021.

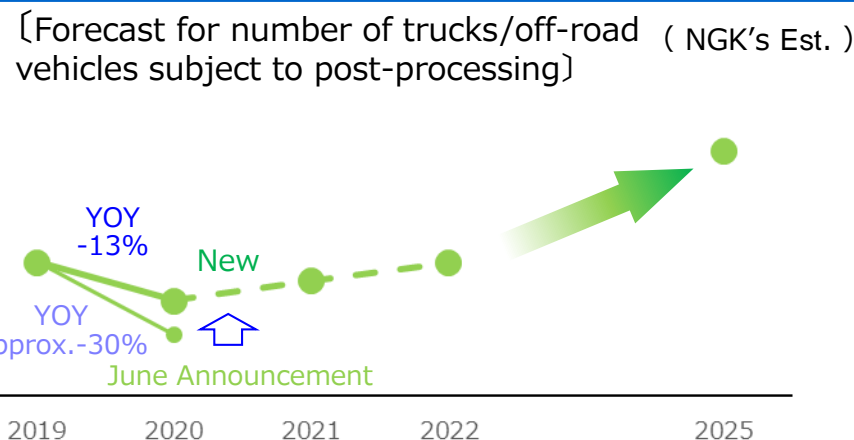
- Automotive-related...Automobile sales and production are recovering in China and other countries, and the assumptions for passenger car sales are expected to improve from the June forecast.  
Income is forecast to increase due to the impact of such as cost reduction in addition to increasing sales amounts.
- GPF  
(For gasoline-powered vehicles) :Demand is expected to increase due to a recovery trend in China and Europe.
- Cd-DPF/LSH(For trucks) :Demand is expected to increase due to the recovery trend of trucks sales.
- SiC-DPF/Sensors  
(For diesel passenger vehicles/trucks) :The ratio of diesel cars in Europe market is changing mostly as expected. Also, the recovery of sales amount will recover steadily and the demand for our products is forecast to increase.

## <After consolidation elimination>





Passenger car sales will gradually recover. The ratio of vehicles with non-combustion engines such as EV isn't likely to be higher compared to the previous forecast and there has been no movement. Emission regulations is becoming stricter in each country in mid- to long-term and the demand for our products is expected to increase.

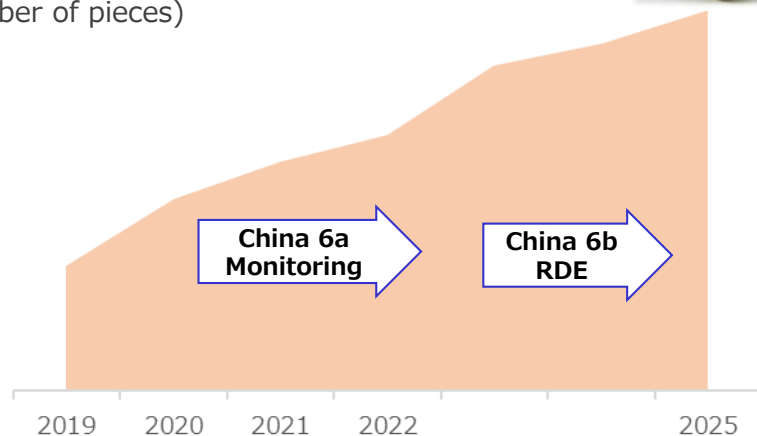


The COVID-19 pandemic caused recent sales to slow down, but tighter regulations in emerging countries are contributing to an increase in the number of target vehicles. From 2024, even more increase is expected due to tighter emissions regulations in India.

## Total Demand Forecast of GPF



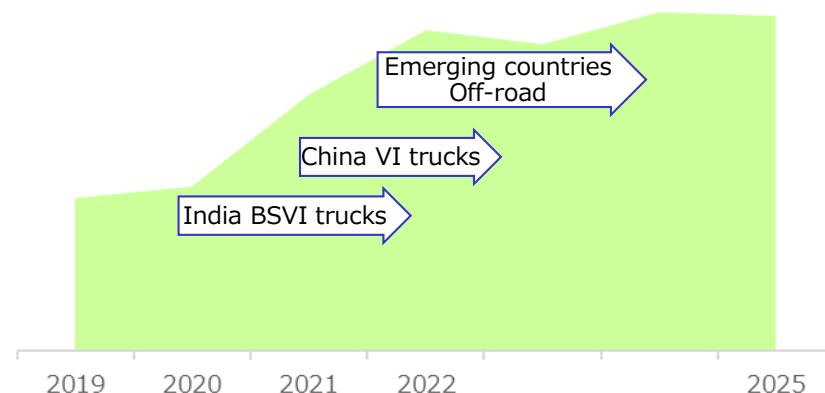
(number of pieces)



## Total Demand Forecast of Cd-DPF



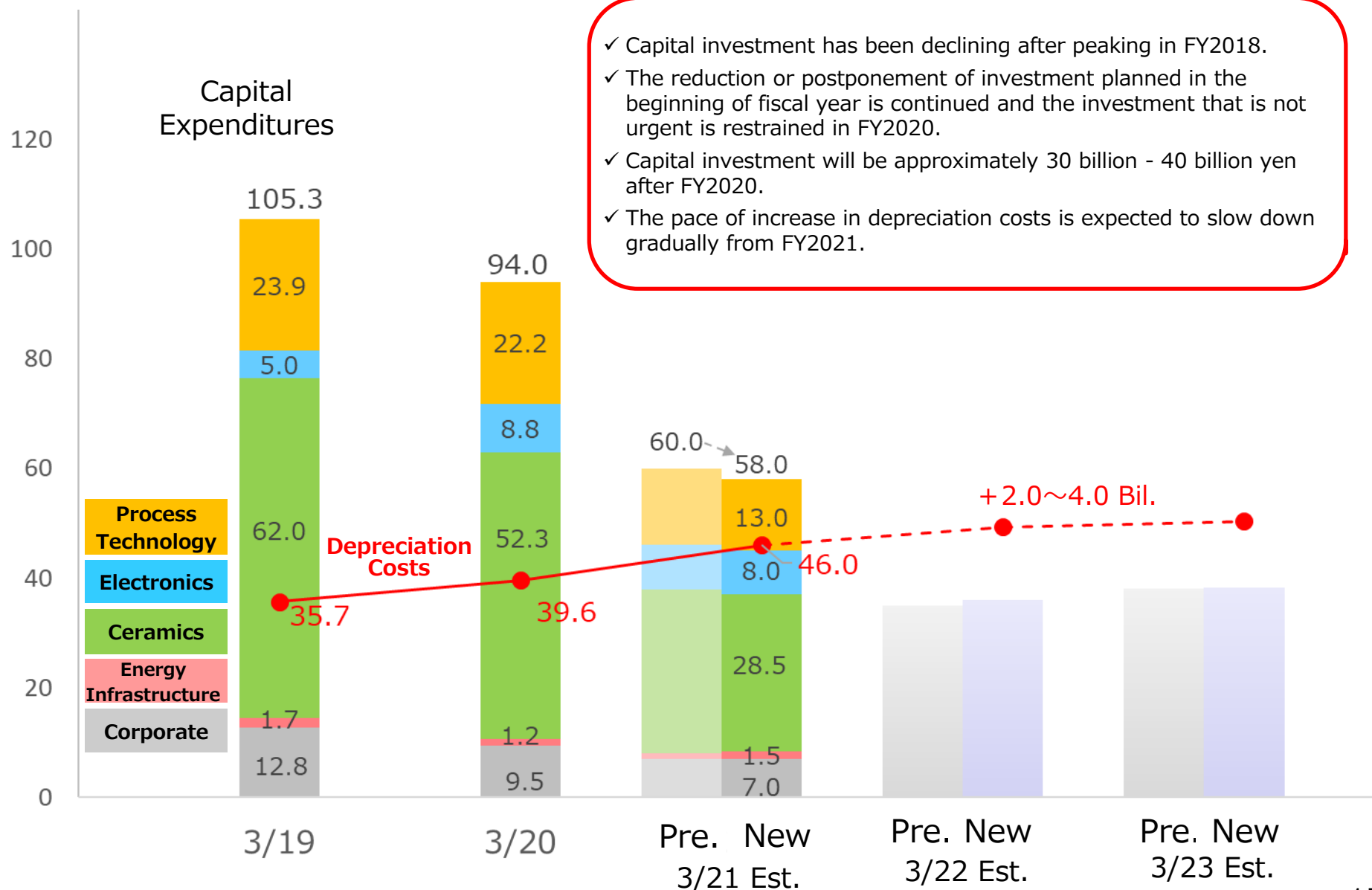
(Volume)



The demand for trucks/off-road is forecast to increase steadily due to tighter emission regulations in India, China, emerging countries.

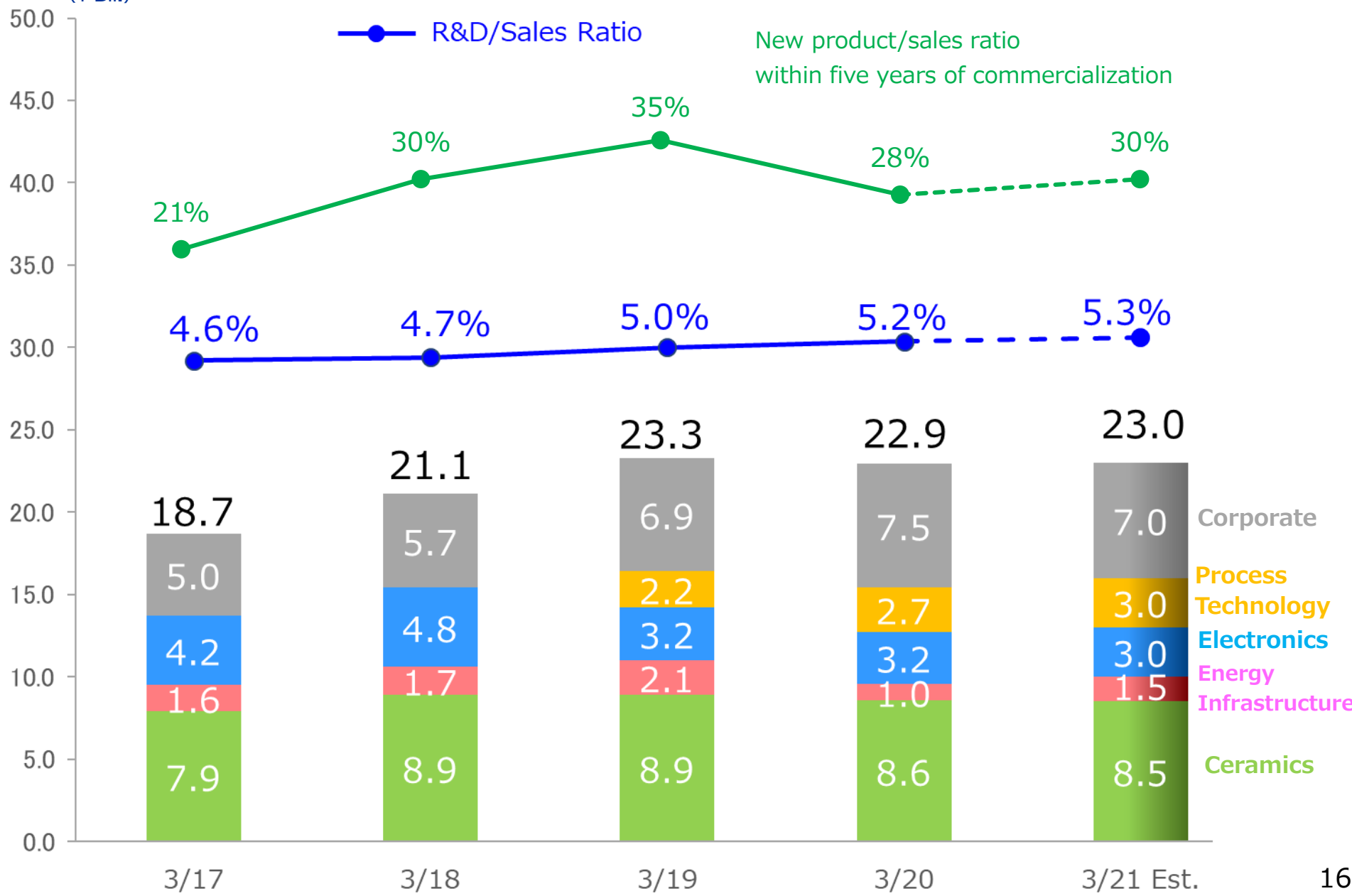
Although the demand is forecast to increase for the tightening emission regulations(China 6a,b), the recent ratio of installation is forecast to decrease. Total demand is expected to increase as the tightening emission regulations continues in other countries in the mid- to long-term.

(¥ Bil.)



# R&D Input

(¥ Bil.)

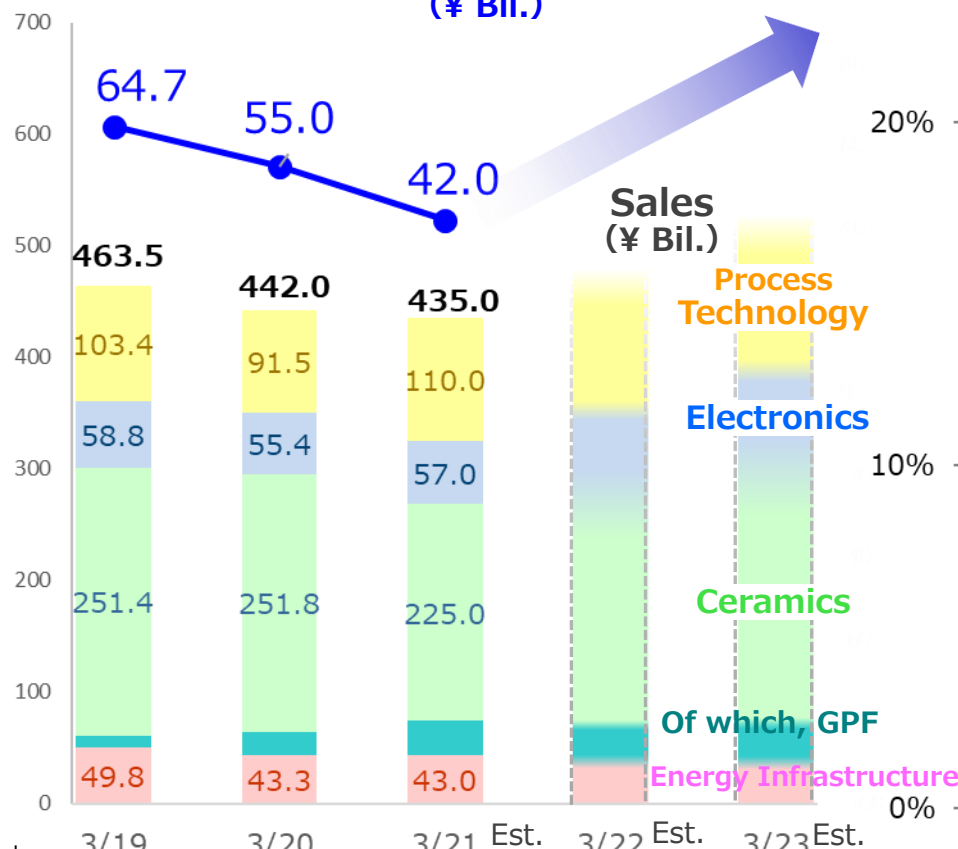




# Mid-term Business Performance· Return on Invested Capital (ROIC) Image

## Consolidated performance trends

### Operating Income (¥ Bil.)

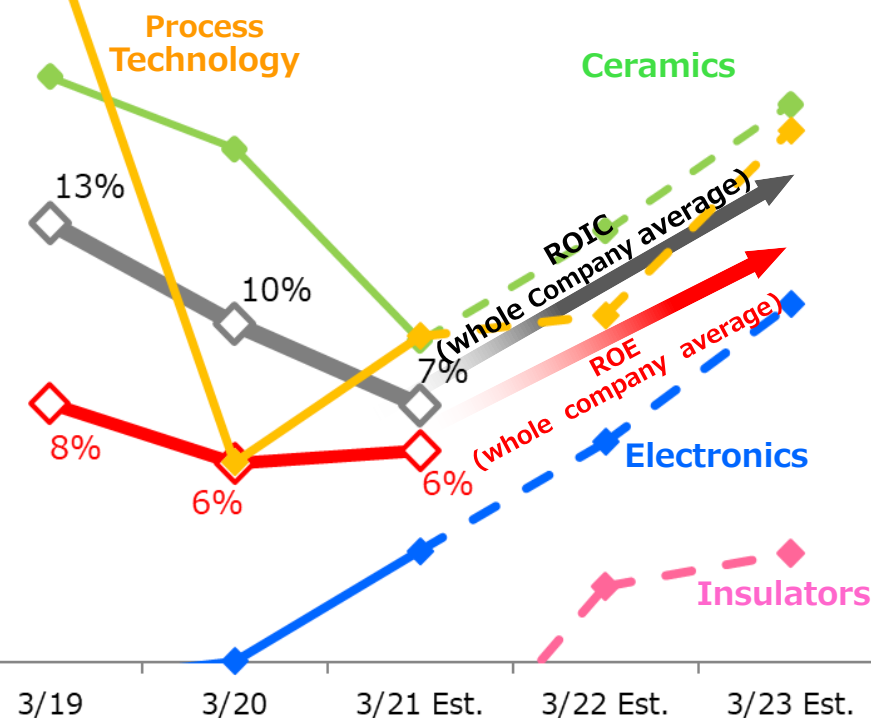


## ROIC transition

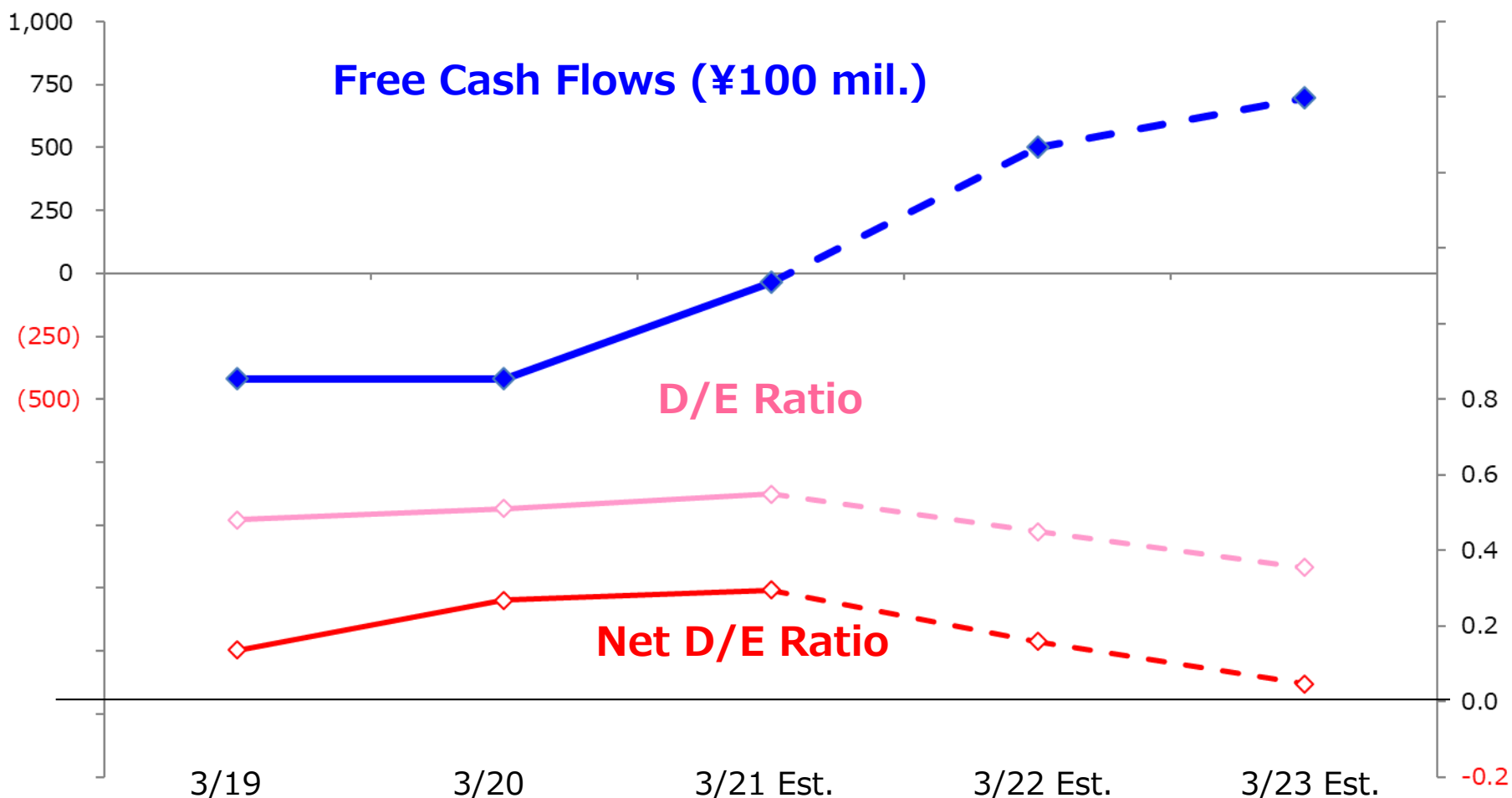
• Return on invested capital =  $\frac{\text{Operating Income}}{\text{Business assets} \times 1}$   
(NGK-version ROIC)

\*1 : Business assets = sales receivables + inventories + fixed assets

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



In addition to increasing sales of new products including GPF, we aim to improve performance by managing target with NGK ROIC for each business towards improving ROIC.

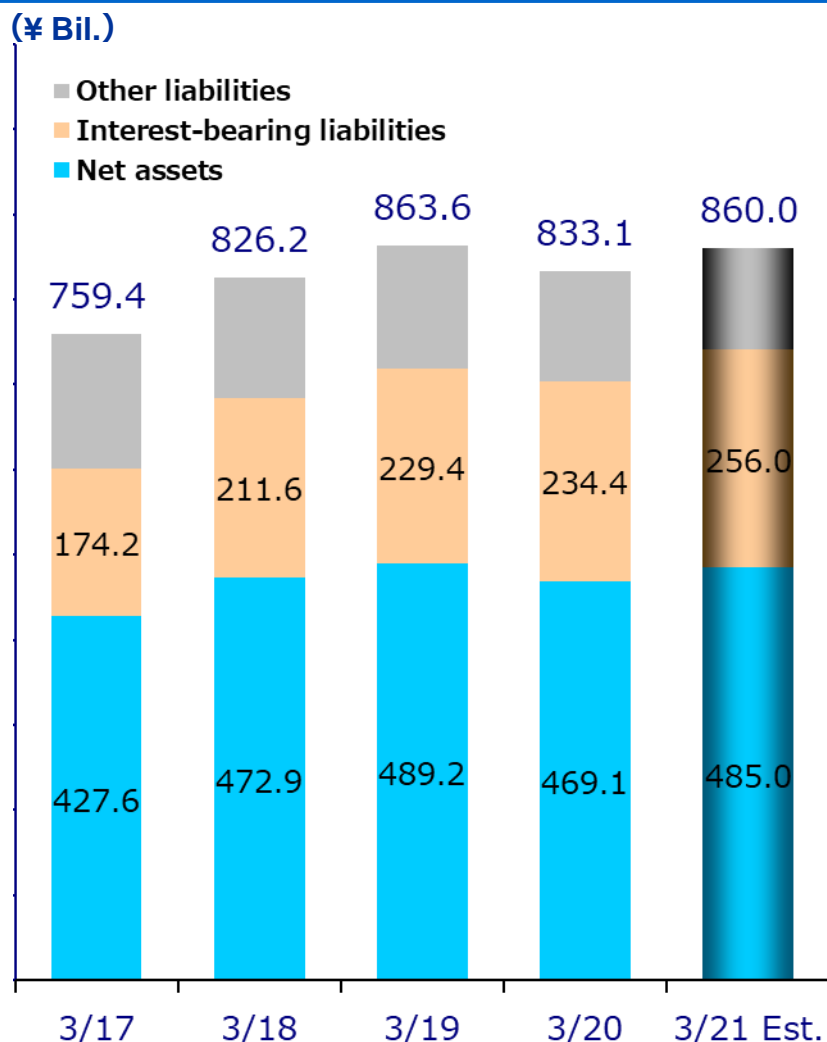


- The return on investment have been delayed because of decrease in demand for the impact of COVID-19 and interest-bearing liabilities will exceed outstanding funds.
- D/E ratio and Net D/E ratio will have been declining after peaking in FY2020 and net cash is forecast to turn positive in FY 2023.

# Summary of Cash Flows

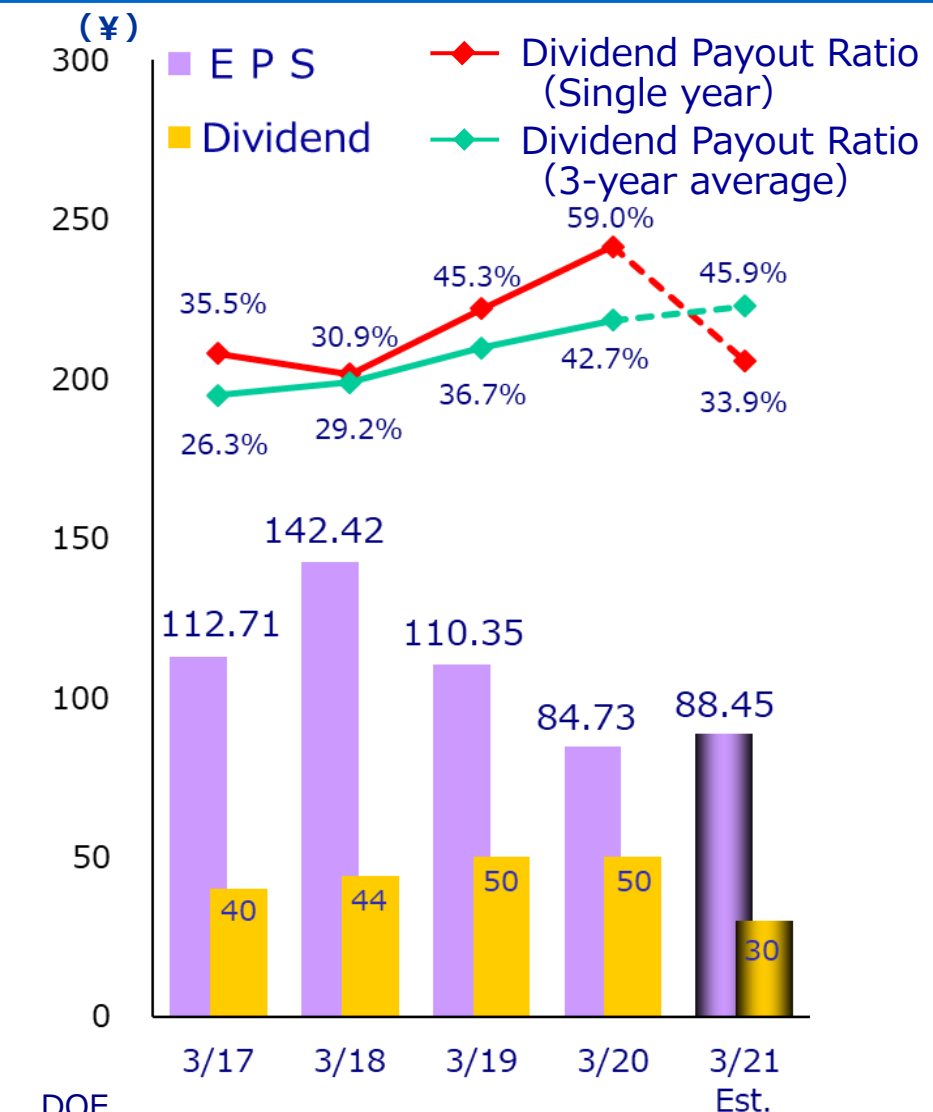
(¥ Bil.)

	3/19	3/20	3/21 Est.
Operating Activities	61.2	53.2	(June announcement) (45.0) 56.0
Investing Activities	-109.7 Investment -104.1	-60.8 Investment -95.4	(-63.0) -61.0 Investment -58.0
Financing Activities	3.6 New Loans +31.9 Repayment -10.8	-18.8 New Loans +37.0 Repayment -29.0 Treasury stock purchase -10.0	(11.0) 13.0 New Loans +33.0 Repayment -9.0
Effect of Exchange Rate Changes on Cash & Cash Equivalents	-1.0	-2.9	(0.0) -1.0
Net Change in Cash & Cash Equivalents	-45.9	-29.3	(-7.0) 7.0
Cash & Cash Equivalents-at the End of Year	124.0	94.7	(87.7) 101.7



ROE	8.8%	10.4%	7.6%	5.8%	6.0%
DE Ratio	0.42	0.46	0.48	0.51	0.54

Equity ratio of 50% or higher will be maintained



DOE	3.1%	3.2%	3.4%	3.4%	2.0%
Single year	3.1%	3.2%	3.4%	3.4%	2.0%
3-year average	2.9%	3.2%	3.3%	3.4%	3.0%

# Sales by Product (Annual) (¥ Bil.)

<After Consolidation Elimination>	3/18	3/19	3/20	3/21 Est.
Insulators	52.5	46.7	40.8	40.0
Energy Storage	1.9	3.2	2.5	3.0
Energy Infrastructure Business	54.4	49.8	43.3	43.0
Honeycomb filters	77.9	76.0	69.8	58.0
GPF	76.5	10.8	20.7	31.0
Cd-DPF / LSH		69.5	63.8	53.0
SiC-DPF	40.8	39.0	39.9	34.0
Sensors	45.4	56.2	57.6	49.0
Ceramics Business	240.7	251.4	251.8	225.0
Metal related	22.5	22.3	19.4	19.0
Electric related	28.4	26.3	27.1	28.5
Soshin Electric CO.	10.4	10.2	9.0	9.5
Electronics Business	61.3	58.8	55.4	57.0
Industrial Process	27.1	31.0	26.1	30.0
SPE related	67.6	72.5	65.3	80.0
Process Technology Business	94.7	103.4	91.5	110.0
Total	451.1	463.5	442.0	435.0

# Sales by Product (Semi Annual)

<After Consolidation Elimination>	3/20		3/21 Est. (¥ Bil.)	
	1 <sup>st</sup> . Half	2 <sup>nd</sup> . Half	1 <sup>st</sup> . Half	2 <sup>nd</sup> . Half
Insulators	20.2	20.5	18.8	21.2
Energy Storage	0.4	2.1	0.3	2.7
Energy Infrastructure Business	20.6	22.7	19.1	23.9
Honeycomb filters	37.2	32.7	25.1	32.9
GPF	9.3	11.4	13.7	17.3
Cd-DPF / LSH	34.2	29.7	22.4	30.6
SiC-DPF	18.8	21.1	14.9	19.1
Sensors	28.8	28.8	22.2	26.8
Ceramics Business	128.2	123.6	98.3	126.7
Metal related	9.9	9.5	8.8	10.2
Electric related	14.0	13.1	13.6	14.9
Soshin Electric CO.	4.4	4.6	4.4	5.1
Electronics Business	28.3	27.2	26.8	30.2
Industrial Process	12.9	13.3	10.7	19.3
SPE related	29.8	35.5	40.1	39.9
Process Technology Business	42.7	48.8	50.7	59.3
Total	219.8	222.2	194.9	240.1

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.: + 81-52-872-7210 Fax.: + 81-52-872-7160

E-mail: [ir-office@ngk.co.jp](mailto:ir-office@ngk.co.jp)

NGK Website (English Version) :

<https://www.ngk-insulators.com/en/>

