FY2020 1st 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 1st 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)

NGK INSULATORS, LTD.

FY2020 1st Half Consolidated Financial Results

FY 2020 1st half Presentation

(¥ Bil.)		FY2019 1st half	Announcement June→September	FY2020 1st half	FX	Growth ratio
Net Sales		219.8	190.0→195.0	194.9	-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* Infrastructure: Both insulators and NAS remained weak and were roughly same as the previous year.
- ■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 Technology: Both sales and income from semiconductor manufacturing equipment increased for such as an increased investment for 3D NAND.
- ■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」

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First, I would like to explain the 1H performance results.

As you can see, sales and income decreased year on year.

Net sales decreased 11% year on year to 194.9 billion yen.

Process Technology's sales of products for semiconductor manufacturing equipment rose due to increased 3D NAND capital investment, but Ceramics' sales of automotive-related products decreased significantly due to a global decline in the number of passenger cars sold as an effect of COVID-19.

Operating income fell 63% year on year to 11.6 billion yen due to decreased demand in Ceramics Business and increased depreciation cost.

Profit decreased 66% year on year to 7.3 billion yen.

NGK INSULATORS, LTD.

Forecasts for FY 2020

FY 2020 1st half Presentation

(¥ Bil.)		FY2019	Announcement June→September	FY2020	FX	Growth ratio
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.

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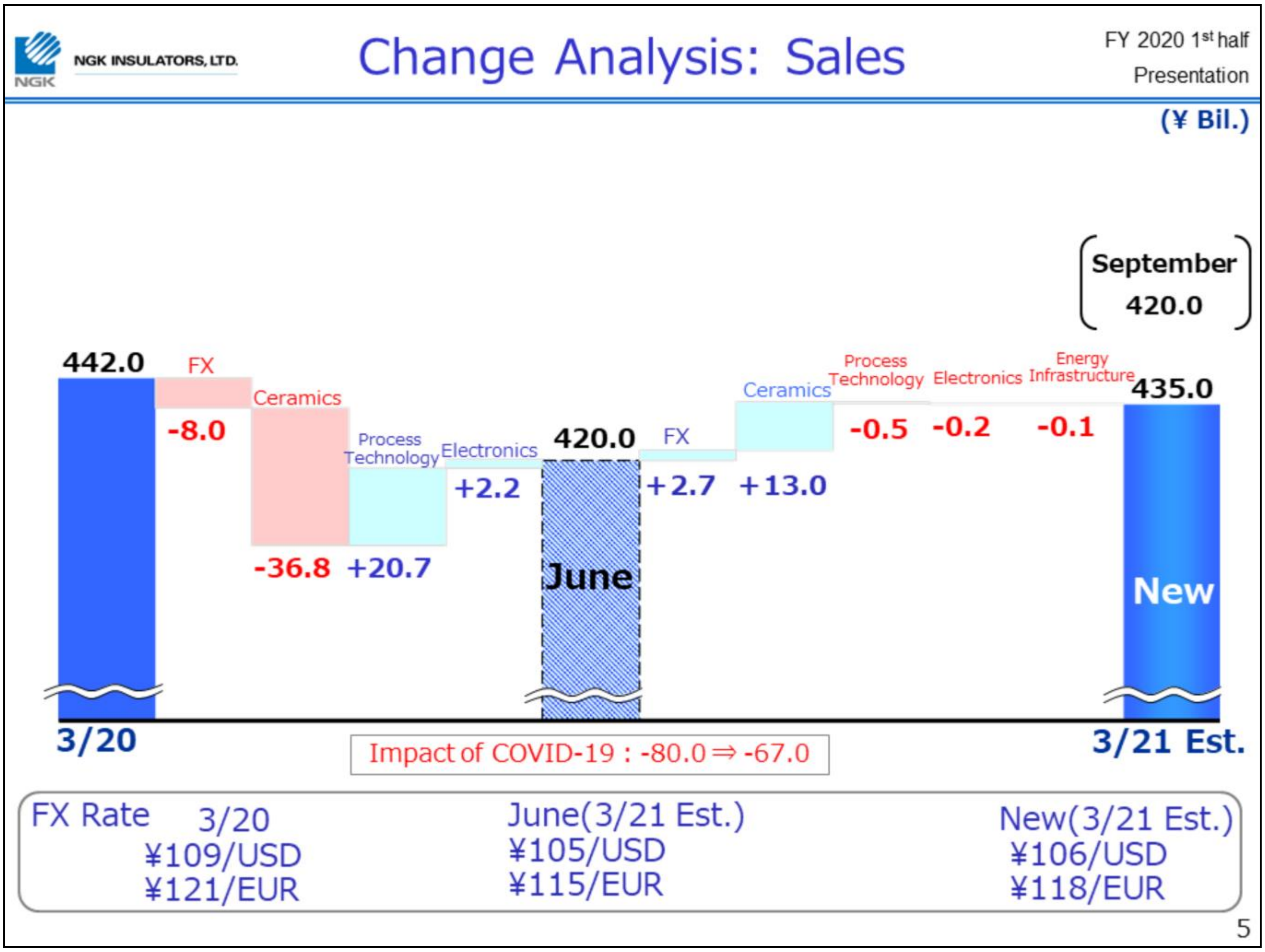
This page shows full-year performance forecast. Sales and income are expected to fall year on year, with net sales of 435 billion yen, operating income of 42 billion yen, and ordinary income of 43 billion yen.

Profit is expected to increase slightly year on year. This is because we posted a large amount of extraordinary losses last year.

Compared with the performance forecast we announced in September, Ceramics performance is anticipated to improve. Therefore we have revised it upward.

Assumed exchange rates we use are 105 yen per USD and 115 yen per EUR for 2H and 106 yen per USD and 118 yen per EUR for the full year.



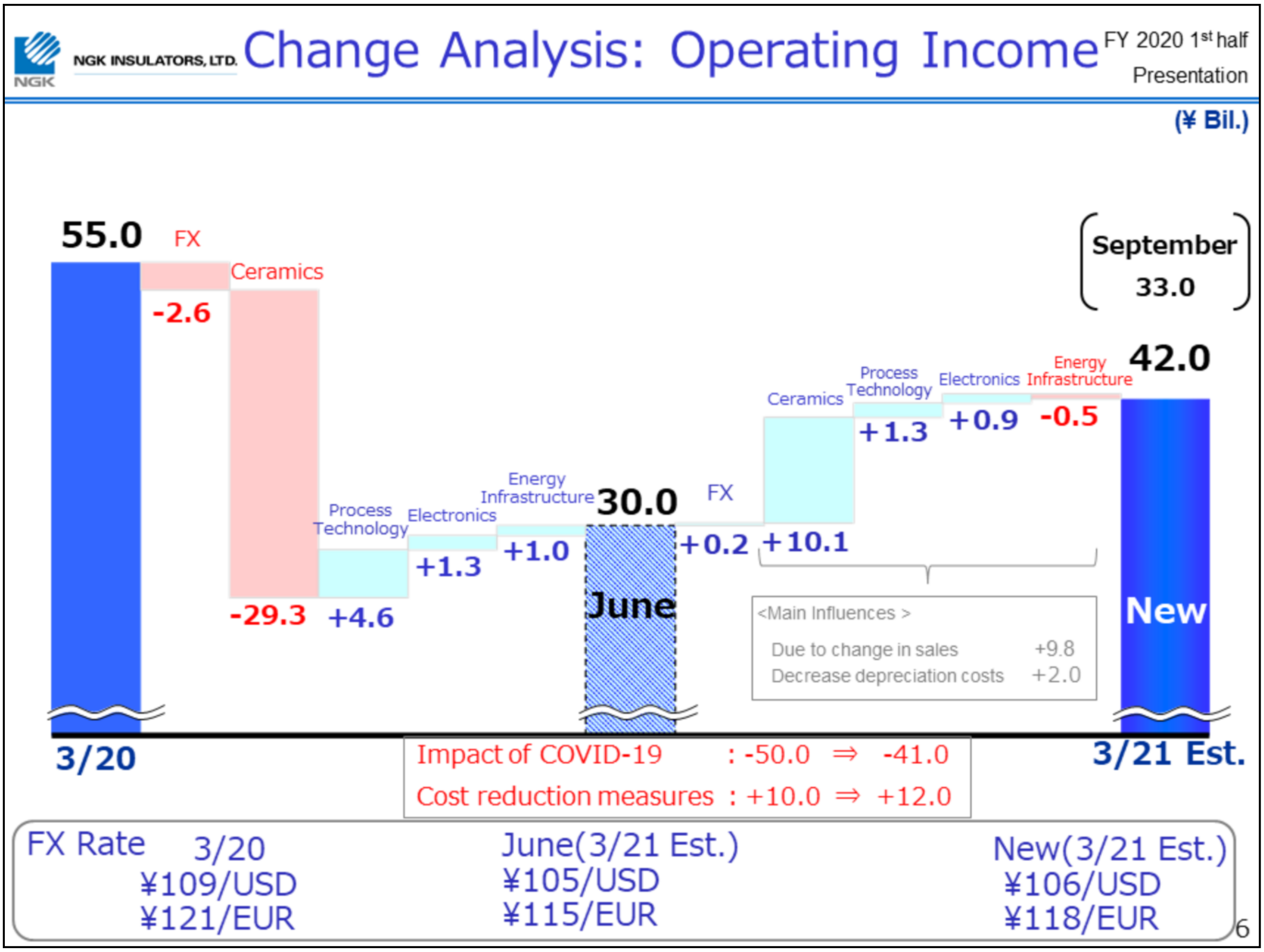
This page contains a graph showing year-on-year changes of full-year sales forecasts.

The center of the graph shows the 420 billion yen sales forecast that we announced in June. This amount will increase by 2.7 billion yen due to the effects of a weaker yen in 1H, and in and after 2H, Ceramics will see stronger automotive-related product demand than anticipated against the backdrop of recoveries in vehicle sales and production.

There will be no major changes in other business sales forecasts that we announced in June.

Negative effects of COVID-19 will be smaller than those as of the beginning of the fiscal year. These effects will be a factor that drives down our sales by about 67 billion yen.

When it comes to foreign exchange sensitivity, if the yen becomes weaker by 1 yen against USD and EUR in 2H, sales will increase by 0.6 billion yen in USD or 0.3 billion yen in EUR.



This page shows an analysis of operating income. We announced operating income of 30 billion yen in June. This amount will increase by about 12 billion yen as a whole due to higher Ceramics sales and lower depreciation and other costs at each business division.

Regarding the sensitivity of USD and EUR exchange rates, if the yen becomes weaker by 1 yen in 2H, operating income will increase by 0.21 billion yen in USD or decrease by 0.02 billion yen in EUR.

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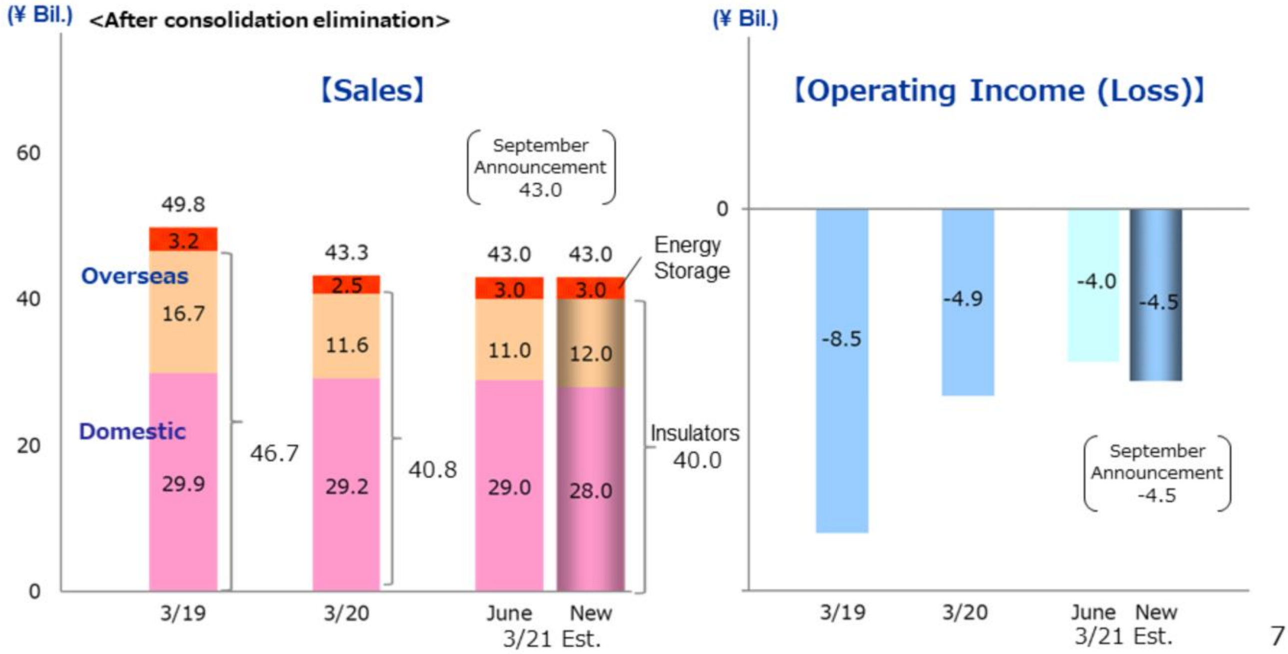
Energy Infrastructure Business(Changes from June)

FY 2020 1st half Presentation

- **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.



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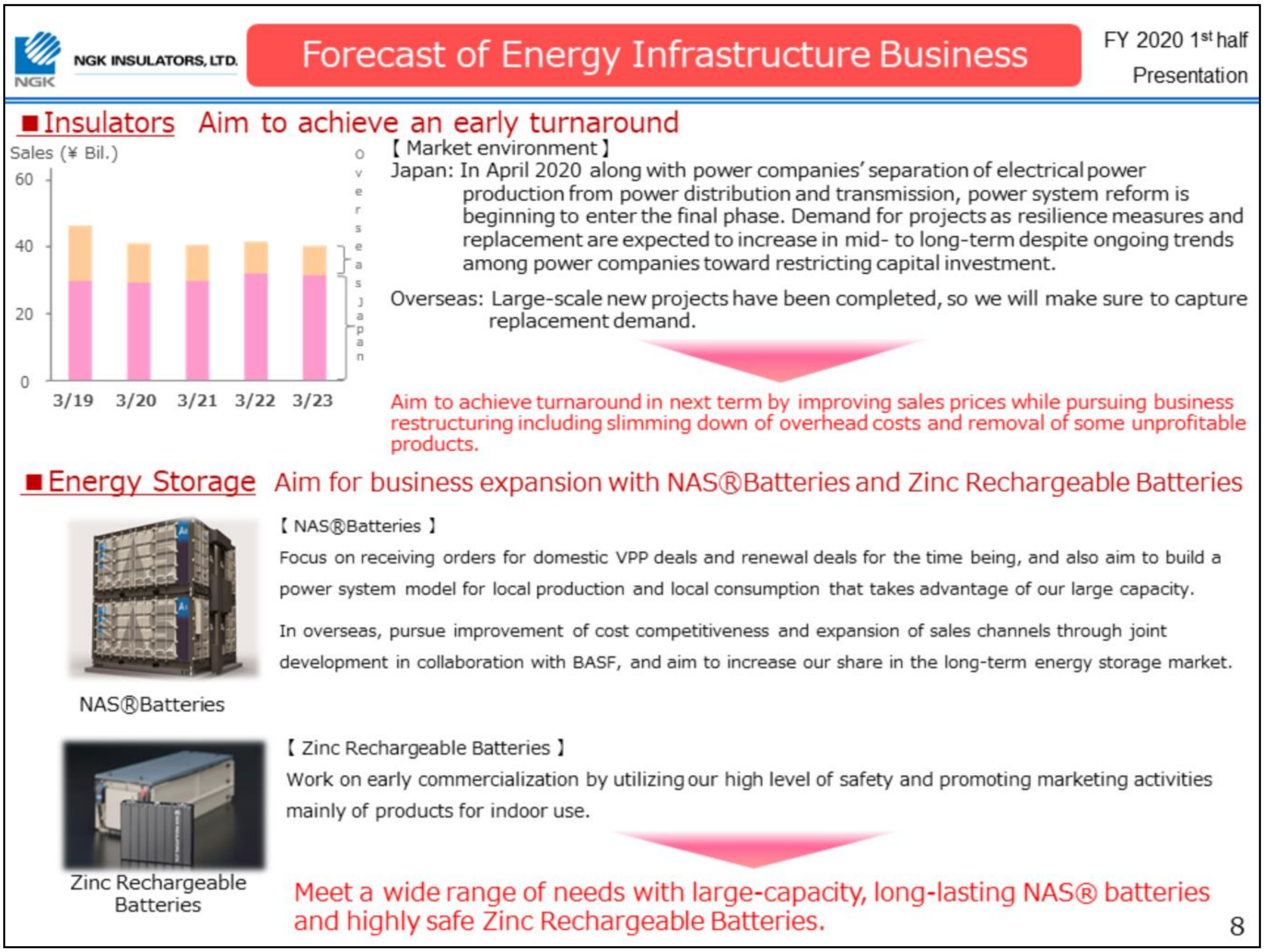
Next, I would like to explain each segment's performance forecast, business environment and business issues, focusing on changes in forecasts we made in June.

In the case of the Energy Infrastructure Business, there will be no change as a whole because overseas insulator sales are expected to increase due to advanced handling of deals, although domestic demand of power distribution products for general customers declined as a result of COVID-19.

The Energy Storage Business will continue to remain in deficit because there is no major change in the NAS Batteries business either.

This business will generate sales of 43 billion yen this fiscal year, but post an operating loss of 4.5 billion yen.



Next, I will explain the outlook for the Energy Infrastructure Business.

The Insulator Business will continuously see restricted capital investment for a while. This is because domestic power companies have started separating electrical power production from power distribution and transmission this year, and the power system is being reformed.

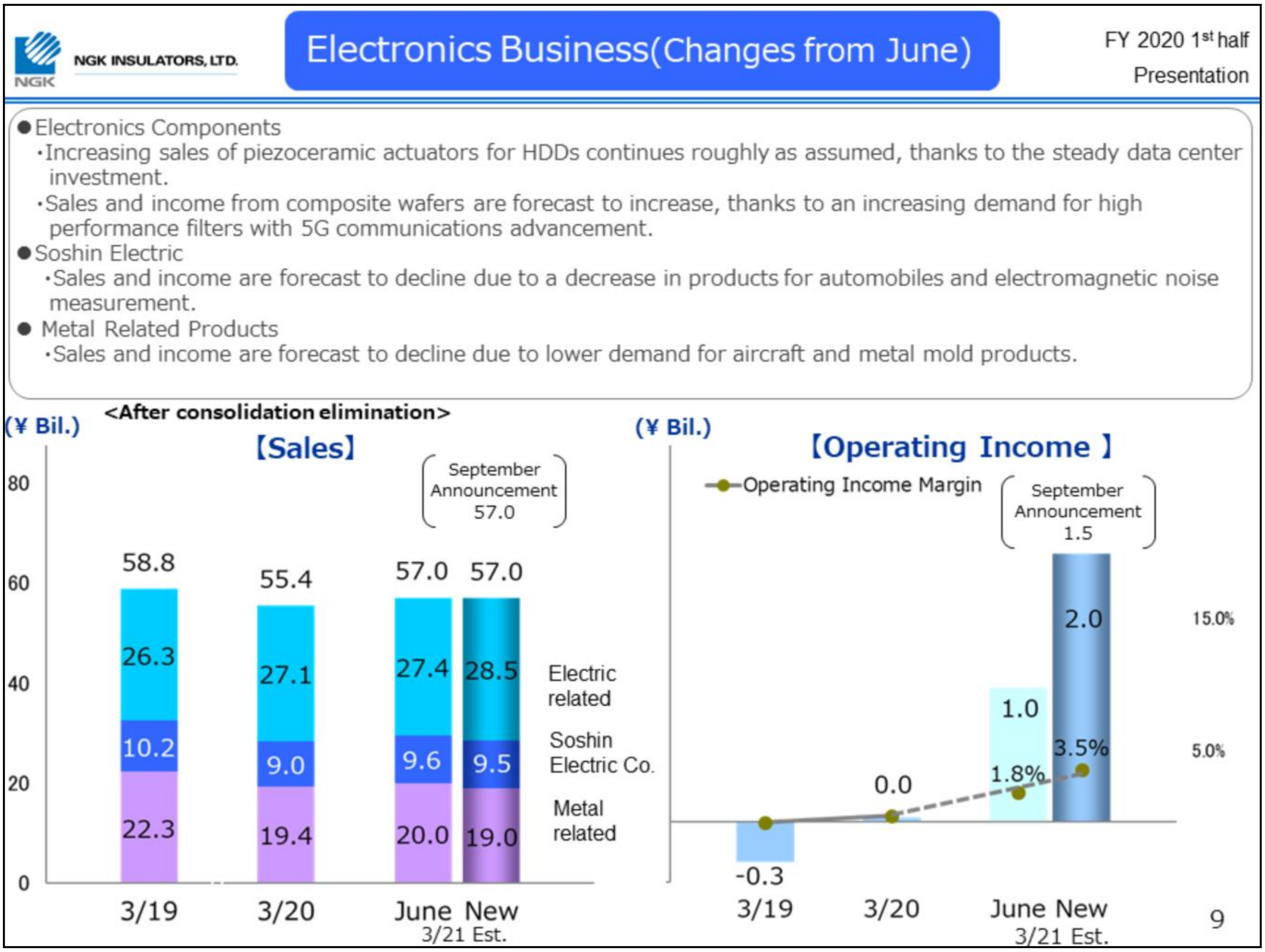
Under such business environment, we have striven to pursue business restructuring including slimming down overhead costs and removing some unprofitable products, and the effects of that are gradually emerging. As a result, the amount of loss is beginning to decrease although sales are still declining. We have also actively striven to improve sales prices, aiming to achieve an early turnaround next fiscal year.

The Energy Storage Business is continuously facing a period of changing demand for NAS Batteries because needs for large-capacity, long-lasting batteries have not yet become apparent.

To expand future demand, we will focus on receiving orders for domestic VPP deals and renewal deals for the time being, and also aim to build a power system model allowing local power production and consumption by taking advantage of the capacity of NAS Batteries.

Overseas, we will aim to gain the highest share in the market for long-lasting storage batteries in future by expanding sales channels and improving cost competitiveness in collaboration with BASF.

As Zinc Rechargeable Batteries are very safe products, we are striving to commercialize them early by conducting marketing activities mainly targeting users that place importance on safety and security, such as schools, hospitals, commercial facilities and mobile phone base stations. We are also striving to meet wide-ranging needs for these products as well as NAS Batteries.



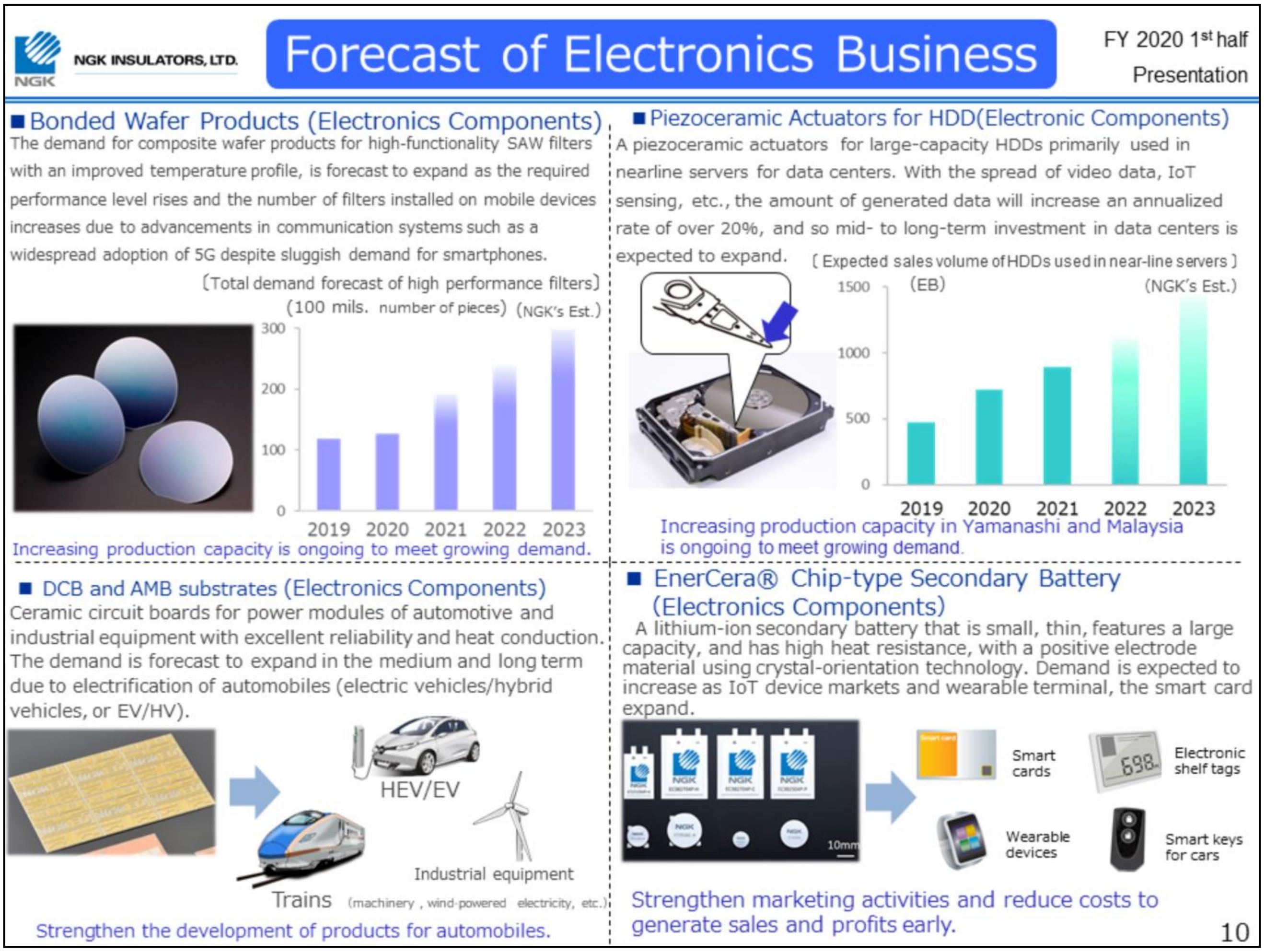
Next, I will explain the Electronics Business.

This page shows sales of 57 billion yen and operating income of 2 billion yen for the fiscal year under review. Compared with the figures announced in June, sales will remain unchanged, but income will increase slightly.

Sales and operating income of the Electronics Components Business are forecast to grow because sales of piezoceramic actuators for HDDs will expand as scheduled and sales of bonded wafer products will also increase driven by stronger demand for high-performance filters along with the spread of 5G smartphones.

Soshin Electric’s sales and income are expected to decline as sales of in-vehicle products and noise measurement equipment will decrease due to the effects of COVID-19.

In the case of metal-related products, sales and income will also decline due to decreasing demand for aircraft-related products and die products.



This page explains the outlook for the Electronics Business.

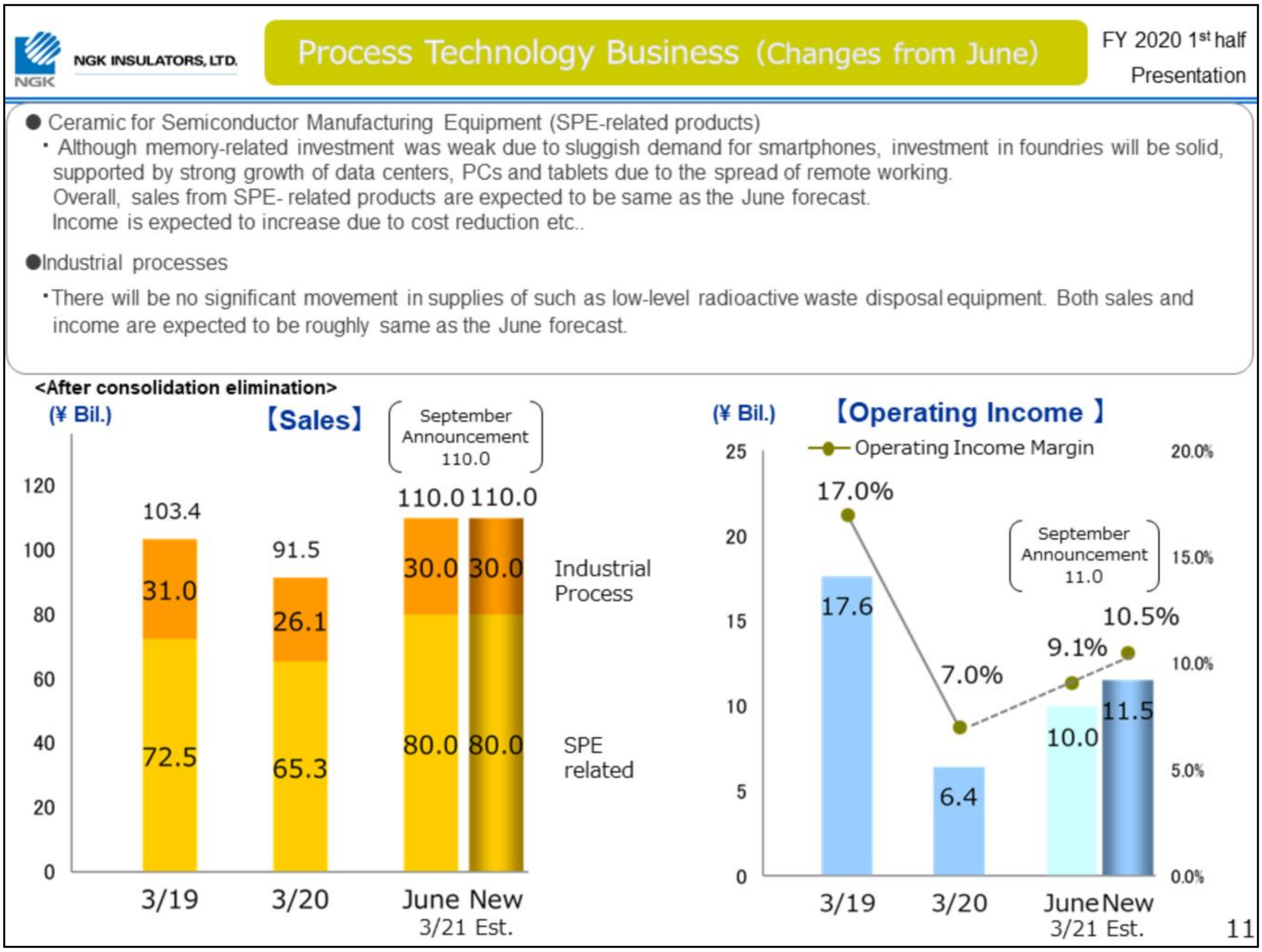
As described on the upper left, we will strengthen our capability to produce bonded wafer products used for SAW filters. Demand for our bonded wafer products is expected to increase year by year because the required level of filter performance is rising and the number of filters installed in mobile devices is increasing due to advancements in mobile communication such as a widespread adoption of 5G although smartphone demand is currently stagnating.

As described on the lower left, DCB and AMB substrates for power modules are highly reliable, highly thermal conductive ceramics substrates installed on vehicles and industrial equipment. Demand is expected to grow significantly driven by future progresses in vehicle electrification.

We will strengthen the development of in-vehicle products as well as products used for industrial purposes.

As described on the upper right, demand for our piezoceramic actuators for HDDs will grow steadily because demand for these products for large-capacity HDDs, which are used as data center storage, is increasing along with the spread of video data, IoT sensing, etc. and the larger capacity of HDDs. We will meet growing demand by strengthening domestic and overseas production capacity.

A chip-type secondary battery is a small, thin lithium-ion secondary battery featuring a large capacity and high heat resistance, as described on the lower right. Along with the spread of smart cards, demand for such batteries is expected to increase. In addition, we are expanding our lineup of coin-type batteries. Therefore, we will strengthen marketing activities to generate sales and profits early.

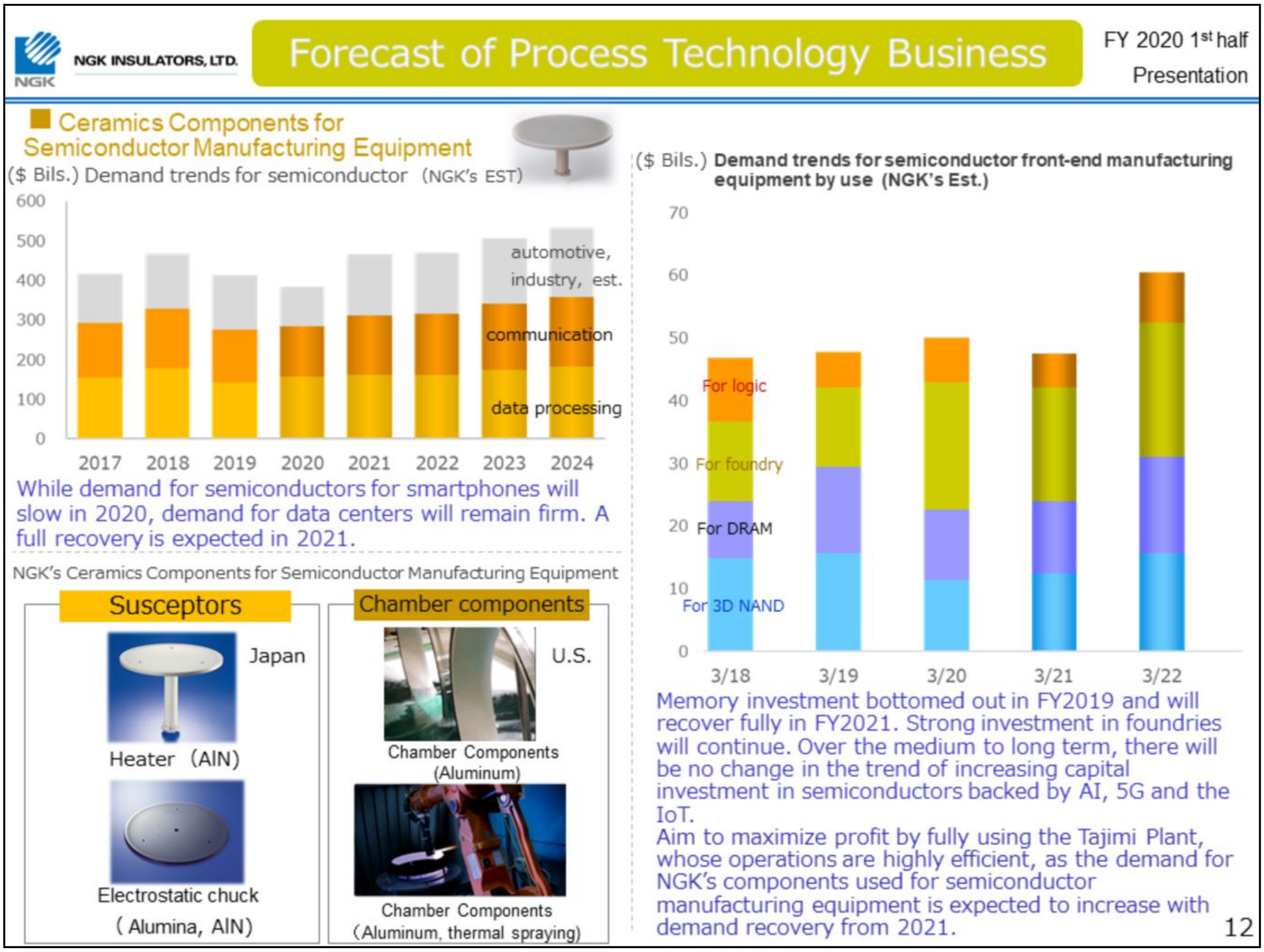


This page is related to the Process Technology Business.

This page shows sales of 110 billion yen and operating income of 11.5 billion yen for the fiscal year under review. Compared with the figures announced in June, sales will remain unchanged, but operating income will increase.

Regarding the products for SPE (semiconductor manufacturing equipment), sales and income are expected to increase year on year although they are on a par with the figures announced in June. This is because investments in foundries are solid thanks to strong data center, PC and other businesses driven by telecommuting, etc. amid the COVID-19 pandemic although investments in memories have remained sluggish against the backdrop of a fall in smartphone demand, etc.

In the case of industrial processes, both sales and income will be almost on a par with those announced in June.

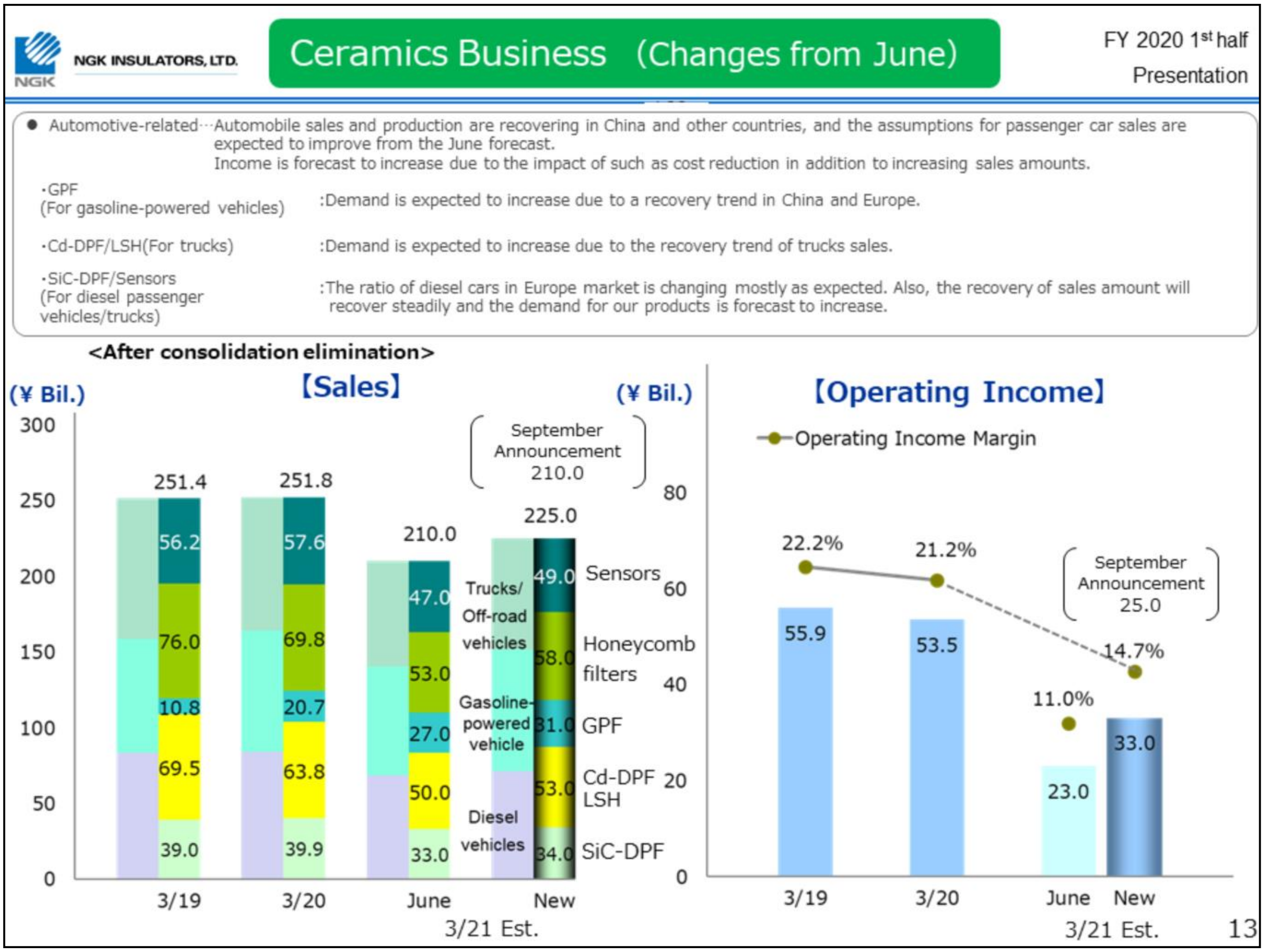


This page describes the future outlook for ceramics components for semiconductor manufacturing equipment that the Process Technology Business handles.

As the graph on the upper left shows, semiconductor demand has slowed down in 2020 due to sluggish smartphone demand. However, demand for products used in data centers or installed in PCs and tablets has been growing along with the spread of 5G and telecommuting. A full-scale recovery will begin in or after 2021.

The graph on the right shows investment trends for semiconductor manufacturing equipment by use. Investments in memories bottomed out in 2019 and are on a recovery track now. Investments in foundries will continue to remain at a high level. In the medium to long run, investments in semiconductor equipment will be rising along with the widespread use of AI, 5G and the IoT. This outlook remains unchanged.

Demand for our ceramics components for semiconductor manufacturing equipment is expected to increase in or after the next fiscal year. Therefore we will aim to maximize our profit by fully using our new plant that has been in operation since October last year.

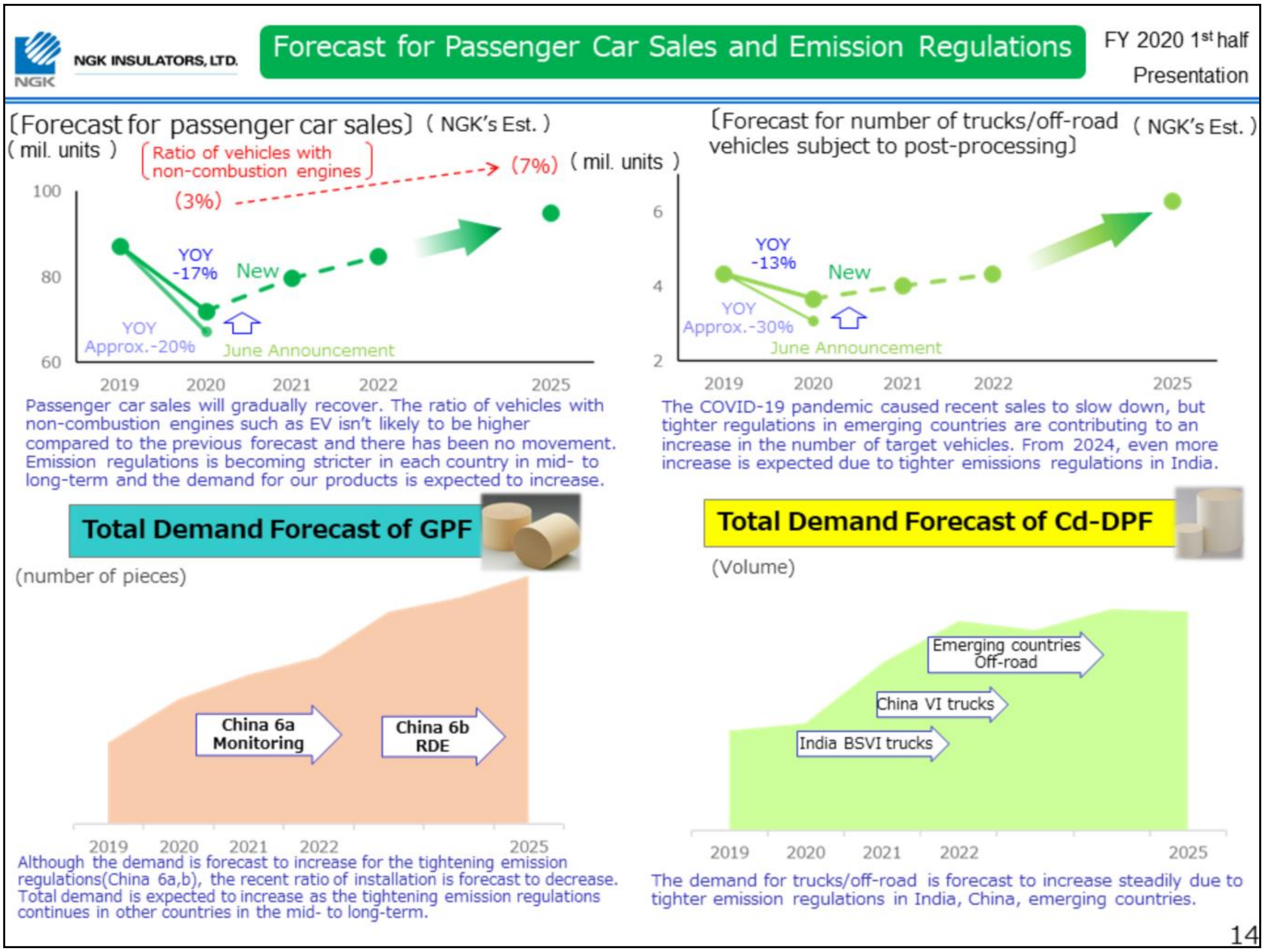


This page is related to the Ceramics Business.

Compared with the figures announced in June and September, both sales and operating income for the fiscal year under review are expected to increase, with sales of 225 billion yen and operating income of 33 billion yen.

From the standpoint of the entire automotive market, vehicle sales and production are recovering in China and other countries, and the number of passenger cars sold, which is a prerequisite we use, will be larger than the June estimate. Income is expected to increase due mainly to increased sales amounts and cost reduction effects.

When it comes to the outlook by product, demand for GPF is expected to increase as it is on a recovery track mainly in China and Europe. Demand for Cd-DPF and LSH will also increase as the number of trucks sold has started to rise. Regarding SiC-DPF and sensors, we will not change our assumed ratio of European diesel vehicles, and the number of these vehicles sold is steadily recovering. Therefore, demand for our products will also increase. Regarding honeycomb filters, sales are expected to increase due to a recovery in passenger car sales.



This page describes our forecast for automotive sales, which is used as a prerequisite for our performance forecast. It also describes the outlook for GPF and Cd-DPF products, sales of which are expected to increase significantly.

The forecast for sales of passenger cars, trucks and off-road vehicles is shown on the upper part of the page. Sales of passenger cars and trucks are larger than those announced in June. This is because the automotive market is recovering at a faster pace than expected in China and other countries. This market will recover gradually in and after 2021, but it will take 2 to 3 years to surpass the 2019 sales.

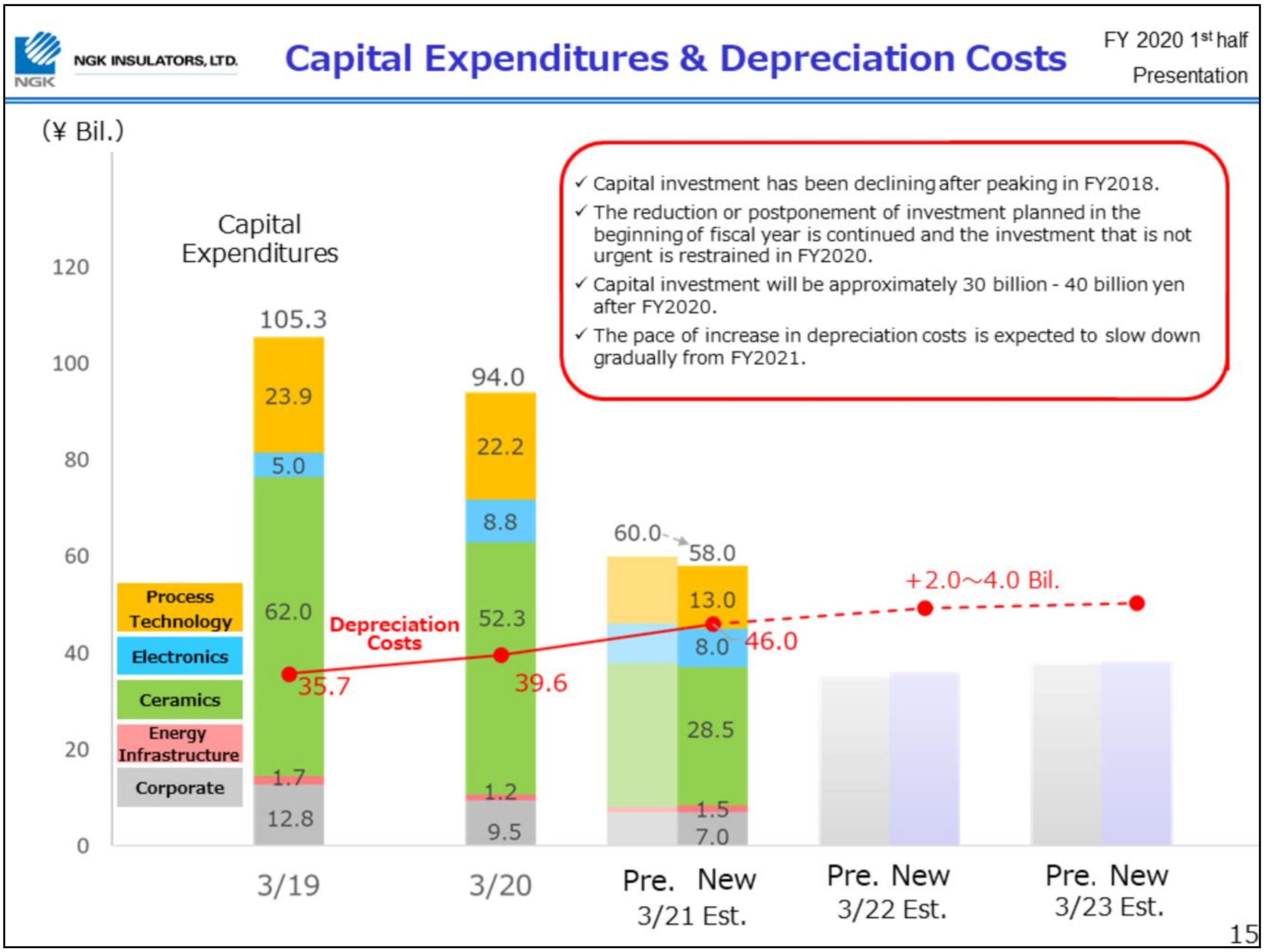
The ratio of non-internal combustion engine vehicles to all passenger vehicles is considered to be about 7% in 2025 because there will be no major change in those development policy due to the effects of the COVID-19 pandemic.

The rate of installing GPF in gasoline-powered vehicles decrease compared with previous forecast, but aggregate demand will expand due to strengthened emission regulations in China and other countries such as Japan, the U.S. and India.

As shown in the upper part, the numbers of trucks and off-road vehicles subject to post-processing is expected to increase due to strengthened emission regulations in emerging nations.

Under such business environment, demand for Cd-DPF used for trucks and off-road vehicles is expected to grow.

Demand for other products will also increase due to a recovery in sales of passenger cars, trucks and off-road vehicles and stricter regulations in each country.



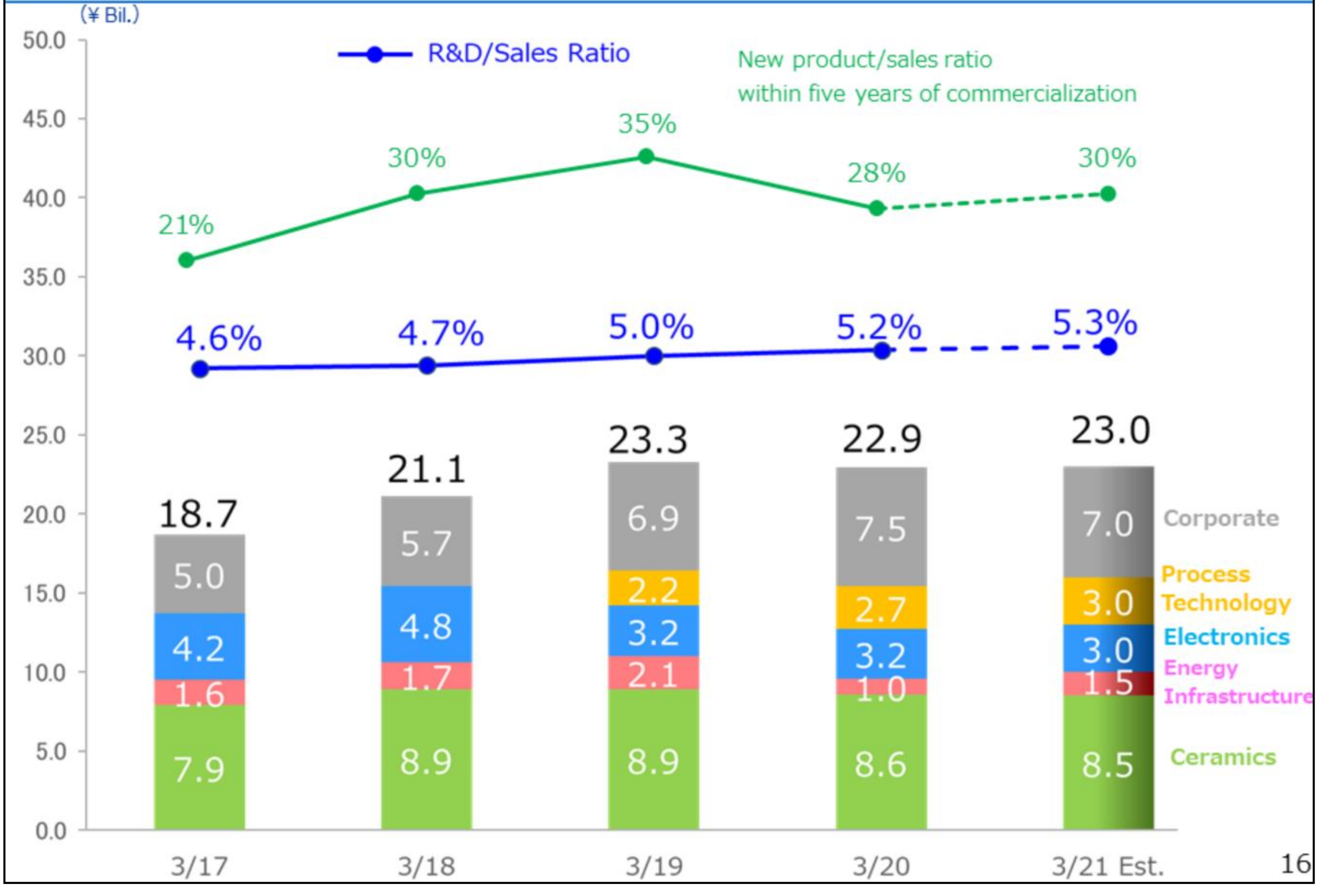
A total of 58 billion yen is scheduled for capital expenditures during the fiscal year under review. The reduction or postponement of investments initially planned at the beginning of the fiscal year continues.

We will control the expenditures, limiting the amount to the 30 to 40 billion yen level, while paying attention to a demand recovery in and after the next fiscal year.

Depreciation costs will increase by 6.4 billion yen year on year to 46 billion yen in the fiscal year under review.

We will pause large-scale capital expenditures in and after 2021, and therefore depreciation costs will increase by about 2 to 4 billion yen only.

R&D Input

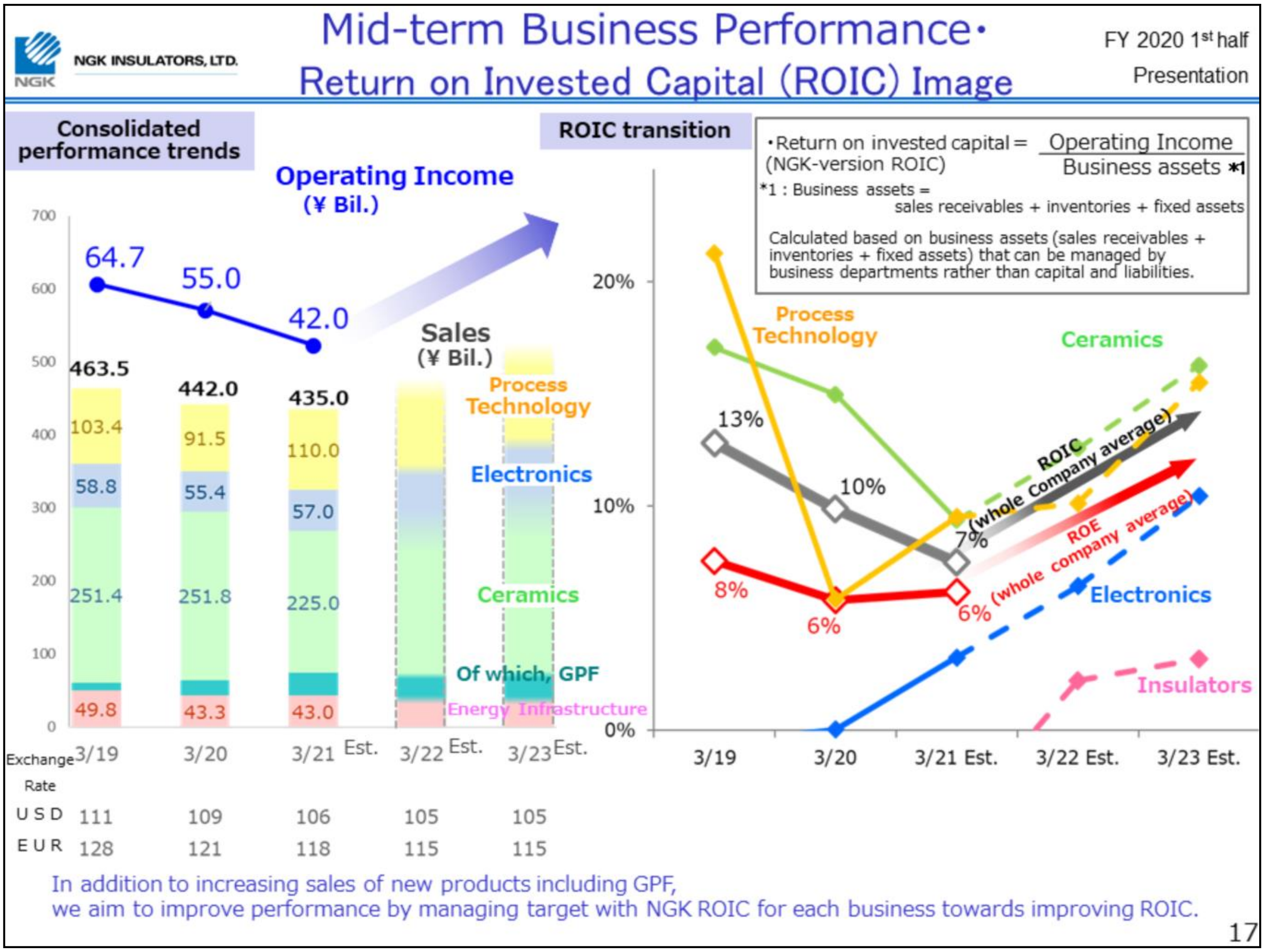


R&D input will be on a par with last fiscal year and amount to 23 billion yen.

We use 4 to 6% as a target for the R&D/sales ratio.

We will control the amount of R&D without slowing down the R&D speed so that the total amount becomes close to the prior year level.

We will continue investment in R&D from medium- and long-term perspectives without changing our goal to keep the new product/sales ratio within five years of commercialization at or above 30%.



This page shows how the medium-term performance and ROIC will change.

The graph on the left side shows the future changes in our sales and operating income by business division. We will strive to surpass the current-year performance in and after the next fiscal year because demand for automotive-related products and products for semiconductor manufacturing equipment is expected to continuously recover.

The right side graph shows actual figures and future forecasts of ROE and the return on invested capital (ROIC). We keep in mind that we will maintain 10% ROE at least from medium- and long-term perspectives. To achieve this goal, we manage it using ROIC by business.

We will increase sales and profits by promoting GPF, which is a product with growth potential, as well as new products, and will also improve business efficiency by enhancing the profitability of each business and keeping inventories and other assets at an appropriate level.

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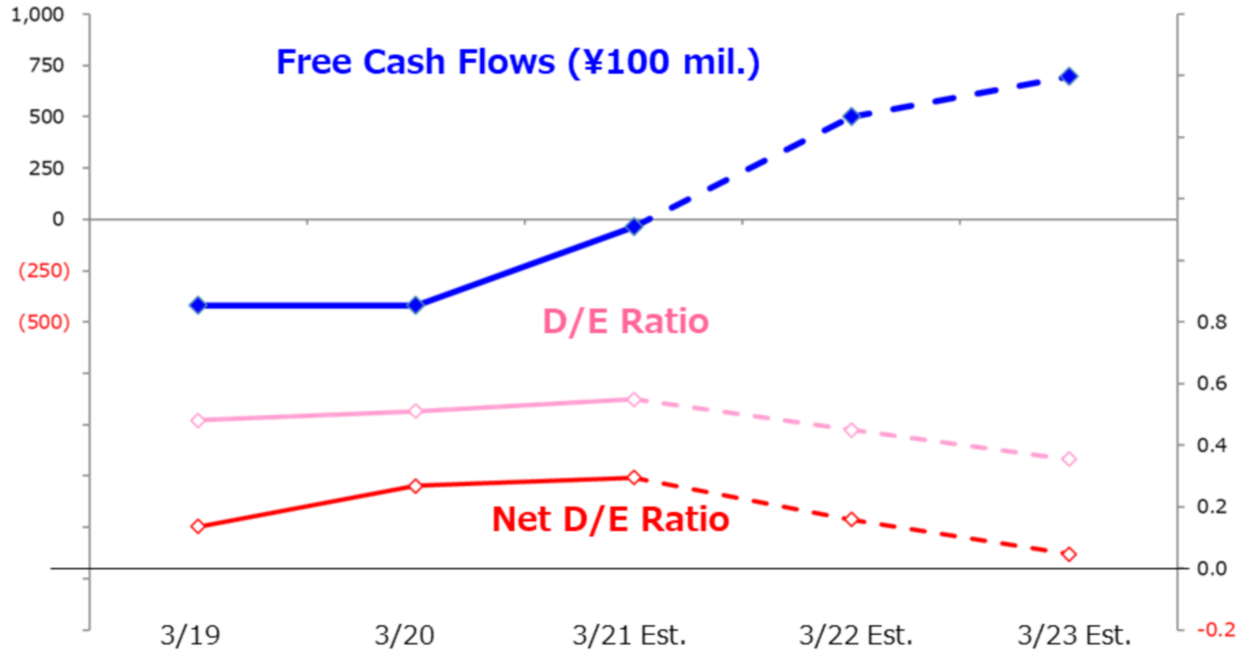
Future FCF and Financial Composition

FY 2020 1st half Presentation



- 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.

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This page describes our future cash flows and financial structure. With capital expenditure preceding, demand has decreased and its recovery has been delayed due to the effects of COVID-19.

Interest-bearing liabilities will exceed outstanding funds for a while.

Free cash flow is forecast to turn positive in the FY ending March 2022 and improve gradually, although it will be negative slightly in the FY ending March 2021 due to delayed investment recovery.

The debt-equity ratio and the net debt-equity ratio will decline after peaking in the FY ending March 2021, and net cash will turn positive in the FY ending March 2024.

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Summary of Cash Flows

FY 2020 1st half Presentation

(¥ 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

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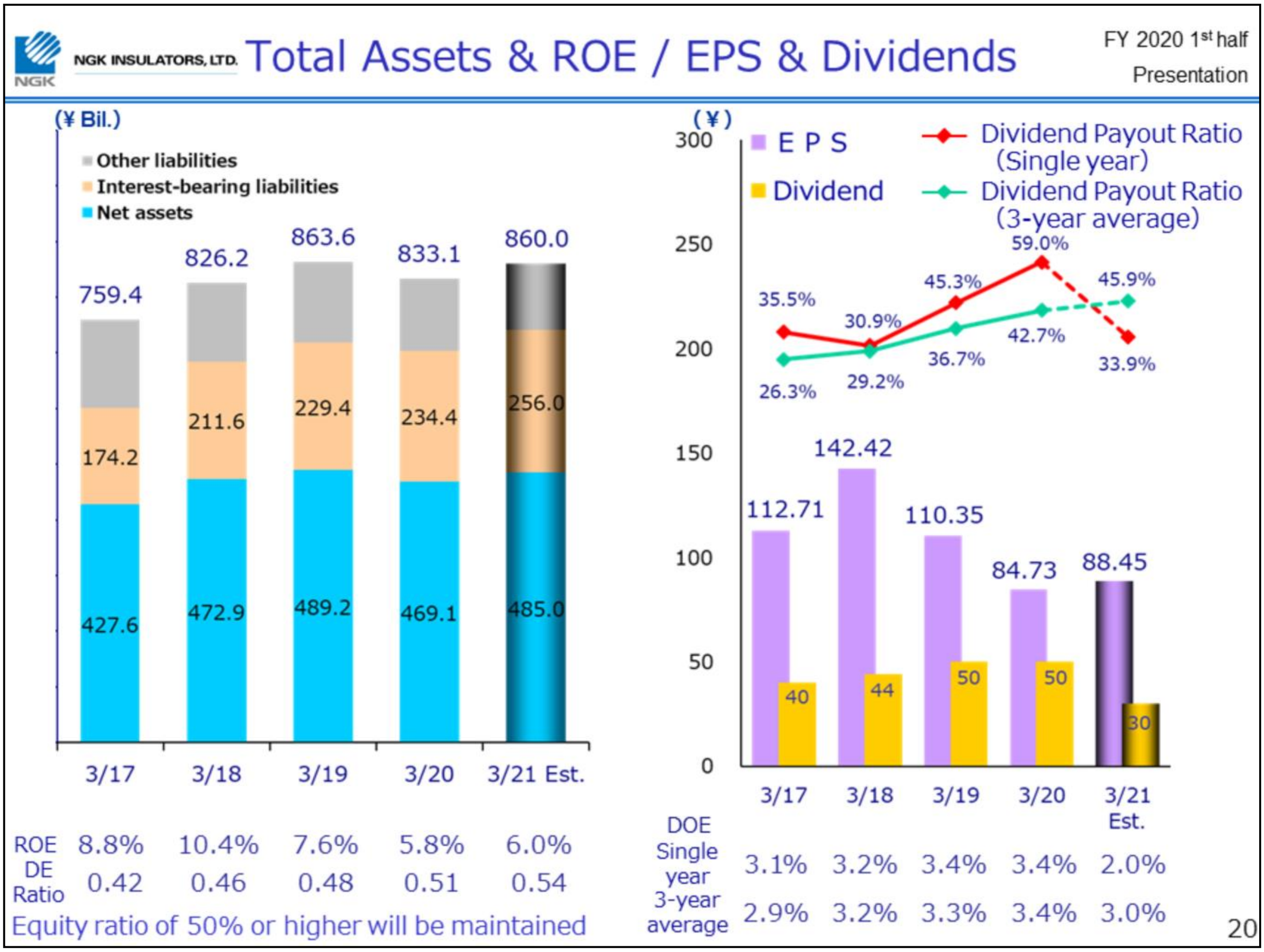
This page shows a summary of our consolidated cash flow.

Cash & cash equivalents at the end of the year (FY ending March 2021) will increase by 7 billion yen year on year to 101.7 billion yen due to loans amounting to 30 billion yen in 1H despite negative free cash flow. Compared with the June forecast, cash flow will increase by 14 billion yen mainly due to a performance improvement.

In addition to cash & cash equivalents of 101.7 billion yen, about 20 billion yen exists as a fund for bonds and other investments, although it is not disclosed in this table. This means a total of about 122 billion yen will be the fund balance.



The final page is related to total assets, ROE/EPS, and dividends.

Total assets for the FY ending March 2021 are expected to increase by about 27 billion yen year on year to 860 billion yen because we will be adding non-current assets to strengthen facilities for the Ceramics Business and the Process Technology Business.

ROE will increase 0.2 percentage points to 6.0% as profit will increase.

The debt-equity ratio for the FY ending March 2021 will be 0.54 as interest-bearing liabilities will increase.

The current fiscal year's earnings per share will be 88.45 yen.

We resolved to pay an interim dividend of 10 yen per share. We will also be paying a year-end dividend of 20 yen per share. As a result, the current fiscal year's annual dividend will be 30 yen per share.

When determining the amount of a dividend, we consider various factors such as net asset management that is focused on changes in business risks, links to performance (ROE) for the period of about 3 years, and our cash flow outlook. For these factors, we use a dividend on equity ratio of 3% and a dividend payout ratio of about 30% as medium- and long-term targets.

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Sales by Product (Annual) (¥ Bil.)

FY 2020 1st half Presentation

<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

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Sales by Product (Semi Annual)

FY 2020 1st half Presentation

<After Consolidation Elimination>	3/20		3/21 Est.	(¥ Bil.)
	1st. Half	2nd. Half	1st. Half	2nd. 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.

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