

FY2022 Results (From April 1, 2022 to March 31, 2023)

This is a translation of materials used for the analyst meeting held online, Japan on April 28, 2023



Shigeru Kobayashi





NGK INSULATORS, LTD.

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 FY2022 (Ended March 31, 2023)

Forecasts for FY2023 (Ending March 31, 2024)

Forecasts for Each Business Segment
Improving Enterprise Value

R&D/ Capital Expenditures & Depreciation Costs

Capital Policy/ Total Assets & Dividend/ Summary of Cash Flow

Increase Non-Financial Value by Promoting ESG Management

Summary of Financial Results for FY2022



	(Bln. Yen)	FY2021	Forecasts In March	FY2022	YOY Change
Net sales	(Billi Tell)	510.4	550.0	559.2	FX Impact +37.9 +10%
Operating In	come	83.5	65.0	66.8	+15.5 (20%)
Ordinary In	come	86.2	63.0	65.9	(24%)
Net income Attributable to Owners of the Parent		70.9	51.0	55.0	(22%)
Exchange	USD	113 yen	135 yen	135 yen	+22 yen
Rate	EUR	131 yen	140 yen	141 yen /	+10 yen

Income Decreased Year on Year, Despite Record-High Sales due to the Effect of the Weak Yen

- Environment

 Although there was the impact of restrictions on economic activities in China, shipments remained firm, and sales increased due to the effect of the weak yen. Income declined due to soaring labor costs, raw material and fuel prices caused by inflation.
- Digital Society

 While sales increased due to the positive effect of the weak yen, income declined as a result of a decline in demand against the background of not only sluggish sales of smartphones but also stagnant investment in semiconductors that became obvious from the second half of the fiscal year as well as shrinking investment in data centers.
- Energy &Industry Sales increased due to stronger demand for firing furnaces for positive electrode materials for lithium-ion batteries and the effect of the weak yen.
- Extraordinary Loss Recorded extraordinary loss accompanying the optimization of production capacity in the Environment Business.
- Net Income

 Recorded income taxes-refund and the reversal of estimates related to transfer price taxation (a total of 11.8 billion yen).

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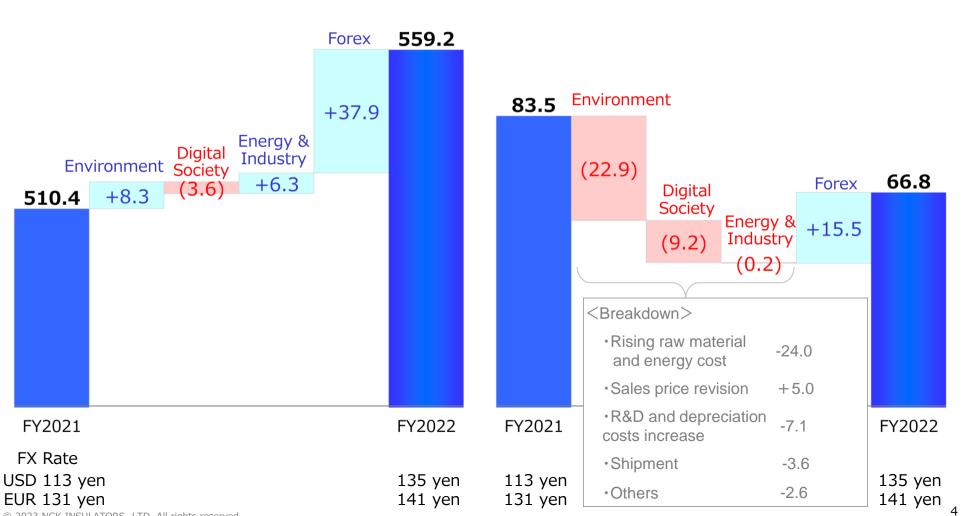
Change Analysis for FY2022



(Bln. Yen)



Op. Income



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Forecasts for FY2023

NGK

	(Bln. Yen)	FY2022	FY2023	YOY Change
Net sales	(Dill. Tell)	559.2	565.0	FX Impact (6.9) +1%
Operating Income		66.8	56.0	(0.8) (16%)
Ordinary Income		65.9	53.0	(20%)
Net income Att to Owners of the		55.0	38.5	(30%)
Exchange	USD	135 yen	130 yen	(5 yen)
Rate	EUR	141 yen	140 yen	(1 yen)

YOY Sales Will Increase; Income Will Decrease The Environment Business Remains Firm, the Performance of the Digital Society Business Will be Poor in the First Half

Sales will increase due to an increase in demand for various products resulting from more strict emission standards, coupled with a recovery in automotive production against the background of an easing of component shortages including semiconductors. Income is expected to remain almost unchanged from the previous fiscal year due to higher labor costs, raw material and fuel prices caused by inflation.

■ Digital Society

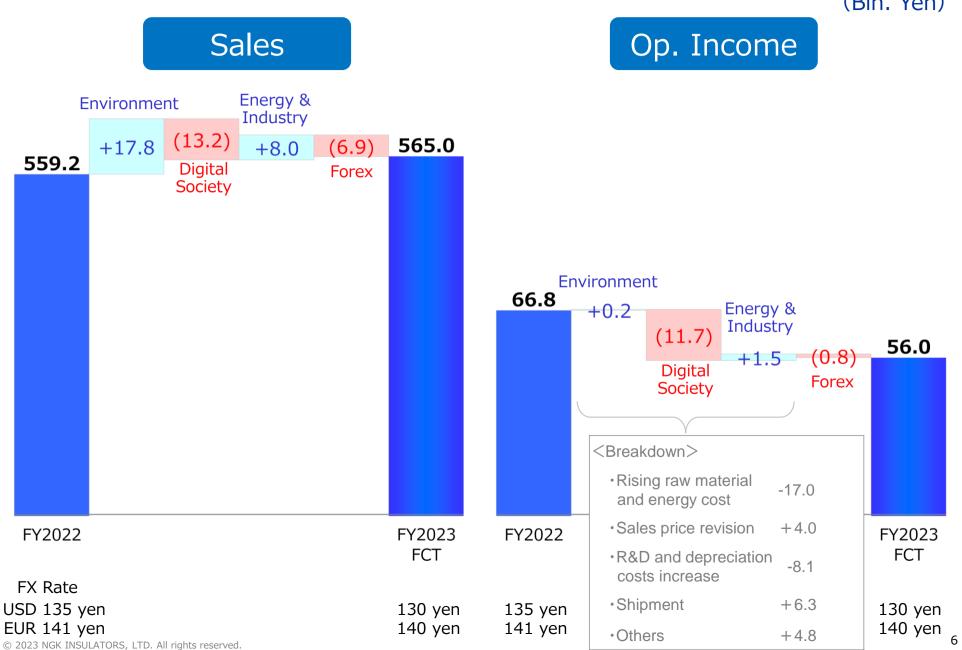
Although the electronics market is expected to recover gradually from the second half of the fiscal year, a sales increase and an income decline are projected since the demand decline in the first half will weigh heavily.

Energy & Industry Sales are expected to increase, and income is forecast to improve, as a whole, primarily due to the price revision of sales are expected to increase, and income is forecast to improve, as a whole, primarily due to the price revision of insulators, LTD, All rights reserved.

Change Analysis for FY2023



(Bln. Yen)



Forecasts for the Environment Business

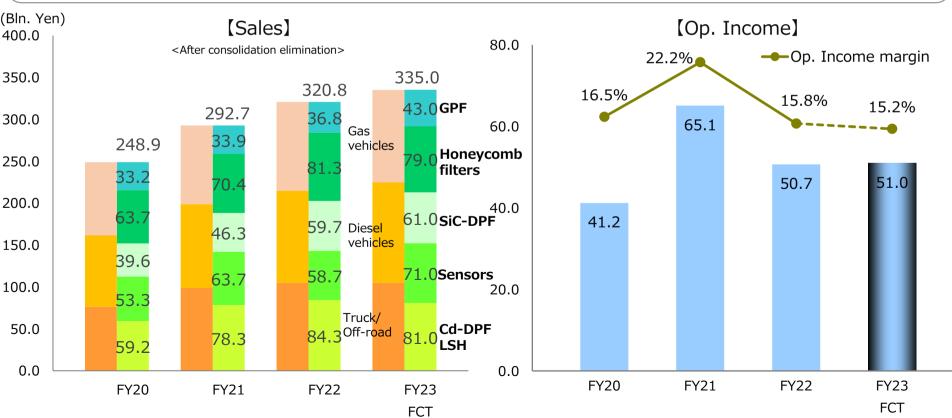


Automotive related

Demand for each product is expected to increase because of a higher GPF installation rate due to stricter emission standards in China (China 6b), a gradual recovery in component supply issues, particularly the shortage of semiconductors, and an increase in global passenger car sales. While truck sales in China are expected to remain at the same level as the previous fiscal year, demand for products centered on SiC-DPF is projected to expand due to China's stricter off-road emission standards (China IV). Income is projected to grow only slightly from the previous year due to the impact of rising labor costs, raw material and fuel prices caused by inflation despite the effort to maximize cost reductions and sales price revisions in addition to larger volumes.

- Honeycomb filters/GPF (for gas passenger vehicles)
- SiC-DPF (for diesel passenger vehicles/trucks)
- Sensors (for diesel passenger vehicles/trucks)
- Cd-DPF/LSH (for trucks)

- : Demand is expected to increase mainly due to a recovery in passenger car sales and stricter regulations.
- : Demand is expected to increase due to a recovery in passenger car sales and China's stricter non-road emission standards.
- : Sales are projected to increase mainly due to price revisions coupled with a significant year-on-year increase in volumes as customers end their inventory adjustments.
- : Volume will remain at the same level as the previous fiscal year but income will decrease due to the effect of the assumption that the yen remained high.



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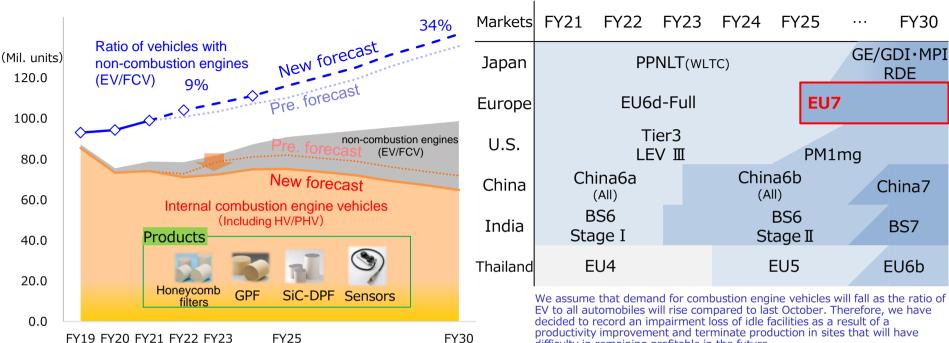
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The future perspective for the EN Business



[Forecast for passenger car sales] (NGK's Est.)

(Forecast for emission regulations) (NGK's Est.)



Impact of the new European standards (Euro7)

Expectation of total demands
of NOx sensors for gasoline
NGK's Est.

Several tens
of billions yen

European
Market

NOx sensors
for gasoline ...

The European Commission has announced a draft of the new Euro 7 standards that will be introduced in 2025.

Demand for NOx sensors for gasoline that we are developing is expected to start rising as NOx emissions will also have to be measured at all times with gasoline engines.

Market launch in 2025 Capture demand without fail while proceeding to optimize the production system.

New products

Advance business transformation by developing other applications of existing technologies.

For HV/PHV

EHC

(Electrically heated catalyst)

difficulty in remaining profitable in the future.

Carbon Neutrality related



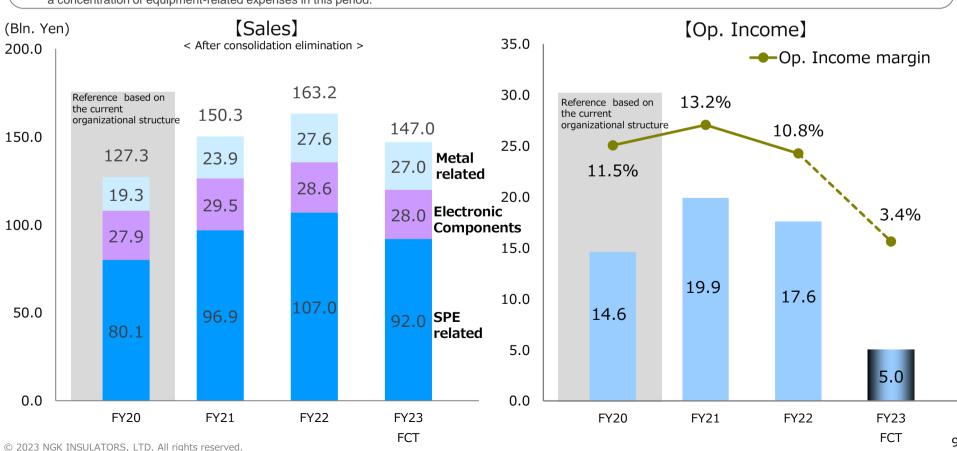
Honeycomb filters for DAC*

Promote commercialization with the Corporate NV Creation.

Forecasts for the Digital Society Business

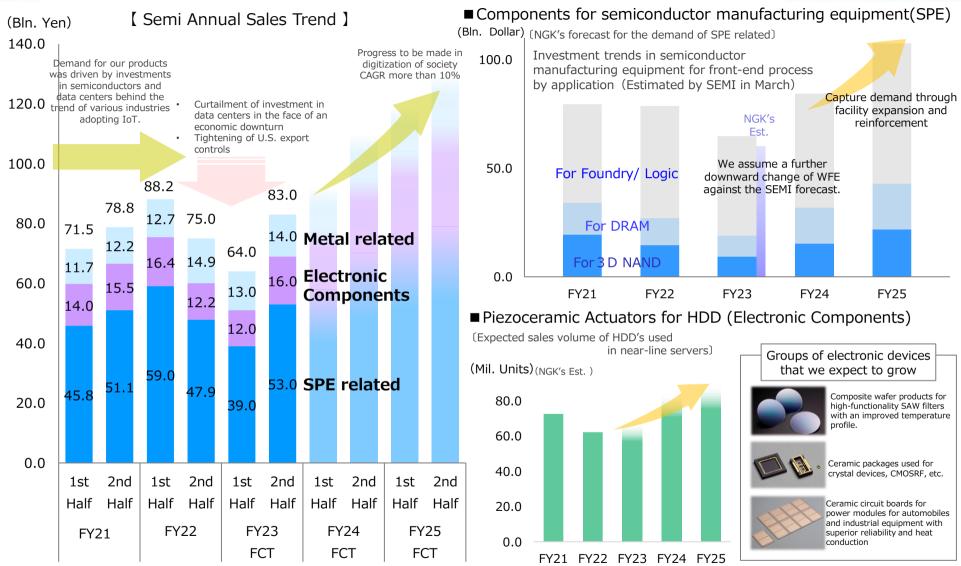


- SPE Related (Components for semiconductor production equipment)
 - Demand for semiconductors has slowed down as the poor performance of the U.S. major tech industry has become obvious amid a prolonged slump in smartphone and PC sales. Business conditions in the semiconductor equipment market also have worsened as major semiconductor manufacturers too reduced production and postponed capital investment. Demand for products of NGK is expected to fall sharply in the first half of the fiscal year. On a full-year basis, sales and income are expected to decrease considerably due to the impact of the significant decline in the first half of the fiscal year although demand will gradually rise in sync with a market recovery that will start in the second half.
- Electronic Components
 - Both sales and income of piezoceramic actuators for HDDs are expected to reach the same level as the previous fiscal year as demand will recover gradually toward the second half, although demand is weak due to hyperscalers' curtailment of investment in data centers.
 - Ceramic packages for crystals are expected to be at the same level as the previous fiscal year, as a whole, due to a fall in demand resulting from sluggish sales of smartphones despite a rise in demand for short distance wireless communication and automotive use.
- Metal Related
 - Although shipment volume will remain unchanged from the previous fiscal year, sales will decline due to fluctuations in copper prices. Income is expected to decline due to a concentration of equipment-related expenses in this period.



The future perspective for the DS Business





Against the backdrop of a macroeconomic deterioration, investment in semiconductors and data centers has remained held down since the second half of 2022. Although there are downside risks mainly due to restrictions on exports to China and the continued inflation, demand for semiconductors and high-capacity HDD storage will pick up from the second half of 2023. Consequently, demand for products of NGK is forecast to rise. Furthermore, from 2024, NGK expect business growth at an annual average of 10% or more as demand for our telecommunications-related products and EV-related products will expand, too.

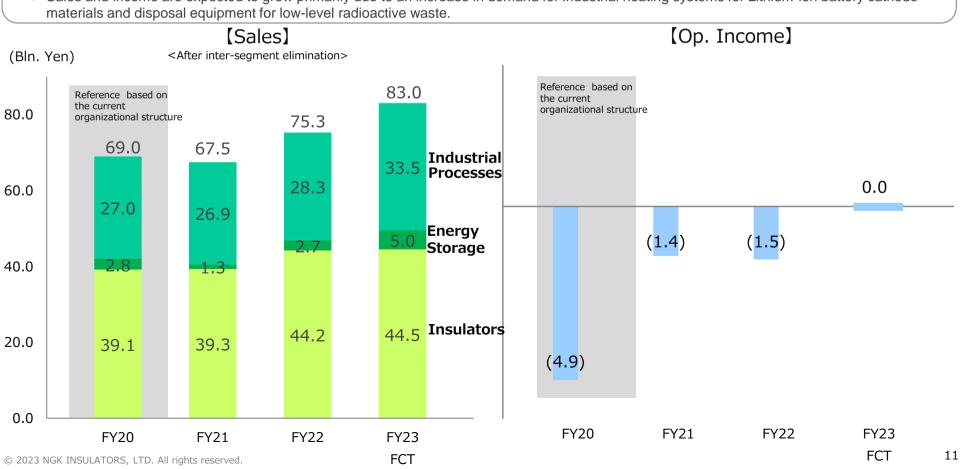
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Forecasts for the Energy & Industry Business



Insulators

- Despite a decline in the export business, we expect sales and income to remain almost unchanged from the previous fiscal year through implementing sales price revisions, which will ensure that business is in the black.
- Insulators produced in the Chita Site had faced the situation where insulator products for domestic substations were rapidly changing from ceramic insulators to polymer ones, in addition to fierce competition with overseas competing manufacturers. Against this background, in March, 2023 NGK has concluded that a recovery in earnings is difficult and decided to phase out the production and sales of insulator products over the coming few vears.
- Energy Storage
 - Although shipments will increase for domestic and overseas users, the deficit is expected to persist due to soaring raw material and fuel prices.
- Industrial Processes
 - Sales and income are expected to grow primarily due to an increase in demand for industrial heating systems for Lithium-ion battery cathode materials and disposal equipment for low-level radioactive waste.



The future perspective for the E&I Business

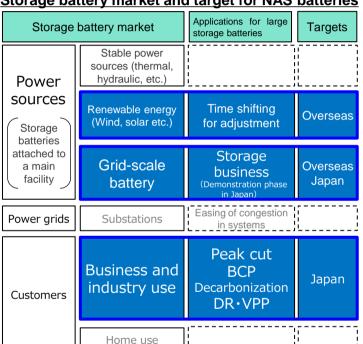


■ NAS® batteries (Energy storage)

In response to the greater utilization of storage batteries in the wake of spreading adoption of renewable energy. NGK aims to raise the presence of NAS batteries by capturing orders for overseas projects and building a business model that helps boost the adoption of renewable energy in Japan.



Storage battery market and target for NAS batteries



Business start of joint venture NR-Power Lab Co., Ltd.

Provide services for the popularization of renewable energy by combining our storage battery control technology with the renewable energy distribution recording platform possessed by Ricoh Company, Ltd.

We aim to commercialize the VPP service and electric power digital service for carbon neutrality in

NR POWER Lab

Operate as VPP in

combination with IoT

technology

Avoid imbalance. Trading based on price

Electric power reserve

Output suppression

Visualization service

Certificate of renewable

Promotion of local production and consumption

Digital Electricity

VPP Service

difference.

avoidance

market.

Services

communities and corporations at an early stage.



Clients

Power retailers/providers, transmission system operators/market, renewable energy providers



Regional power provider Municipalities, Customers





Sales expansion to overseas markets through sales alliance with BASF

As the adopted volume of renewable energy rises, storage batteries will take over the central role in renewable energy reserve from gas-fired power generation, and demand for long-hour storage batteries will expand in and after 2025. At the same time, potential demand for "everyday/100%/continuous/full charge-discharge" applications that can bring out the strength of NAS batteries is expected to increase. NGK will utilize the sales alliance with BASF, thereby aiming to win and increase orders for overseas large projects mainly for application of storage batteries attached to renewable energy facilities.

Prediction of storage equipment volume in the U.S. Pumped-storage hydropower 10 hours 8 hours 6 hours 100 4 hours 2 hours 2020s 2030s 2010s 2040s

Source) National Renewable Energy Laboratory

Improving Enterprise Value



- Enhance capital profitability via corporate management that is conscious of the formula, Equity spread = ROE - Cost of shareholders' equity.
- Ensure growth potential through advancing business portfolio management, and investment in intellectual capital (R&D, etc.) and human capital for growth.
- Upgrade non-financial value primarily via an effort to reduce environmental footprint and respect human rights.

Estimation of the NGK's Capital Cost After-tax 1.0% Debt Cost Capital Cost **9.1%**(CAPM) D/E Ratio 0.4WACC 6.9%

Pre-tax WACC **10.0%**(Hurdle rate)

Aim to increase enterprise value by enhancing capital Relations between Enterprise Value and Management Indicators profitability, growth potential and non-financial value Market value I_ower Higher as of Mar 31, 2023 Shareholders' equity PBR 0.84 Market **Enterprise** Financial Value Non-Financial value Value PER 9.87 (on book value basis) premium **ESG Management** Management ROE 10% or higher Business portfolio policy Policy Increase the profitability of existing businesses and Management focused on capital efficiency create new businesses ♦ 10% or higher CAGR 5% or higher NGK NGK Sales **Capital Policy** Value-added (Financial Leverage) Growth ROIC Management **Indicators** (KPIs) Commercialization Return to Leverage **Improve Improve** Research & The Reduction of **Stockholders** interest-bearing Asset **Profitability** Development **Environmental Turnover Ratio** debt Burden

Performance target for 2030

Dividend Payout Ratio30% DOE3% (3-year average) Acquire treasury

shares flexibly

Maintain Financial soundness D/E Ratio 0.4

ROIC hurdle rate 10% Capital turnover rate X 0.67 or higher 15% or higher

(FY2025 Performance Targets)

NewValue1000 New products Sales 100 billion ven or higher (DS50%, CN30%) to be invested in CN & DS)

R&D Expenses Inject 300 billion ven over 10 years (80% or more

CO₂ Emissions a reduction of 50% compared with 2013

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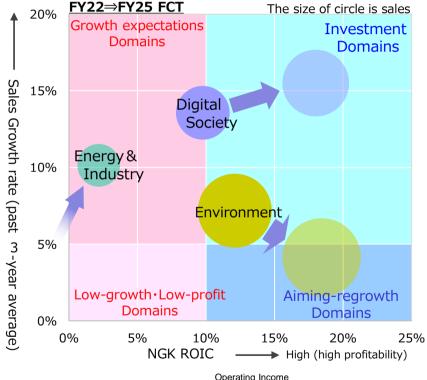
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Capital Profitability and Growth Potential of Existing Business



Business portfolio policy

- Portfolio management pivoting on profitability and growth
- Scrutinize each product by using NGK-version of ROIC of 10% and a sales growth rate of 5% as the criteria.
- Inject management resources into investment domains and domains where we expect growth.
- Consider deciding whether or not to continue the business of each product that belongs to low-growth and low-profit domains.

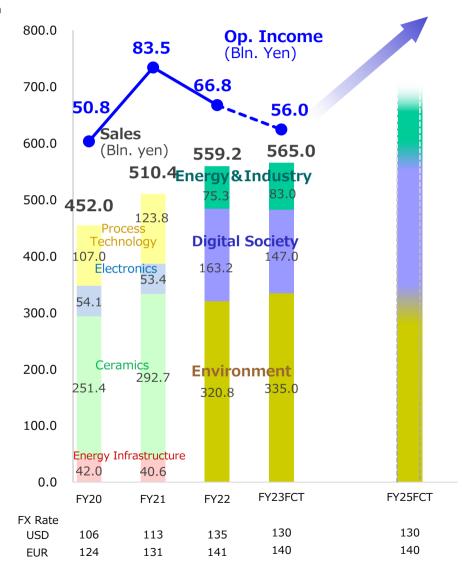


* NGK ROIC = Accounts receivable + Inventories + Fixed assets

Instead of "capital" and "liabilities", this is calculated based on business assets (accounts receivable, inventories, fixed assets) that can be managed by business divisions

The Environment Business will shift to a highly profitable and efficient business structure as growth slows down. Have overall sales and income grow by developing the Digital Society Business, which we expect to expand, and trying to change the business portfolio.

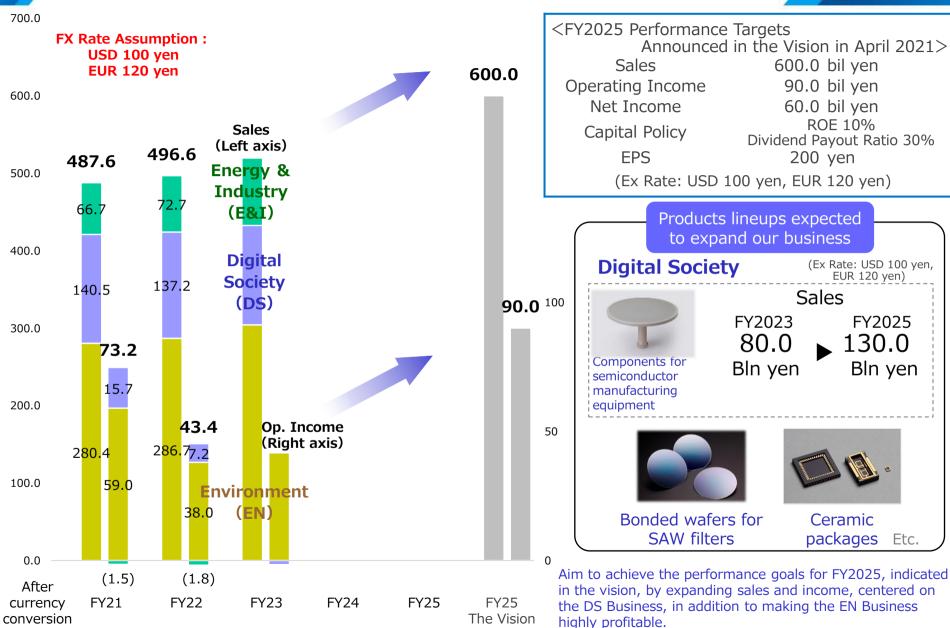
Consolidated performance trends



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Medium-term Targets (Business Portfolio & Performance)





Aiming for creation of new products & businesses

R&D

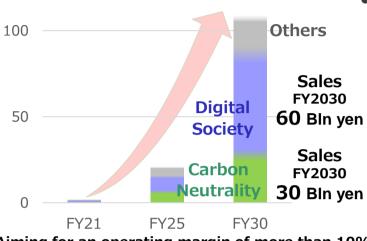
Air $(Co_2 = 0.04\%)$



Samples for DAC

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(Bln. Yen) <Forecast for NV1000 Sales>



Aiming for an operating margin of more than 10%



Outline of the new R&D building

Location Nagoya City, Japan (Head Office Site)

Building area Approx. 1,800 m²

Total floor area Approx. 7,200 m²

Development of new

Purpose Development of new DS-related products

CAPEX Approx. 10.0 Bln. yen

Start of June 2025 operations

Commercialization

 Push forward with the early commercialization of development themes by drastically strengthening the ability to gather information and the ability to cultivate markets. Do this through the Corporate NV Creation, which was <u>established anew with 100-strong members</u> in FY2021. Step up creation and development of new products through alliance.

• Investment to VC fund and Startups

 Participation in green innovation fund project by NEDO

External technologies Drive/Promote

✓ Collaboration and coordination with alliance partners, academia, etc.

▼

✓ Internal coordination

Business Corporate Groups M&E

Corporate R&D Incubation Themes

New

Themes

Market Review/Feedback

EX: Development of Direct Air Capture

Co₂ free air

- Review of the market needs (from the viewpoint of marketing and technology)
- Reflecting needs in development plans

Explore/Create

- Exploring needs for the creation of ideas
- ✓ Creation of co-creation themes

■ R&D

- Inject **300 billion yen over 10 years** from FY2021 (80% or more to be invested in CN and DS).
- (80% or more to be invested in CN and DS).

 Construct a new R&D building

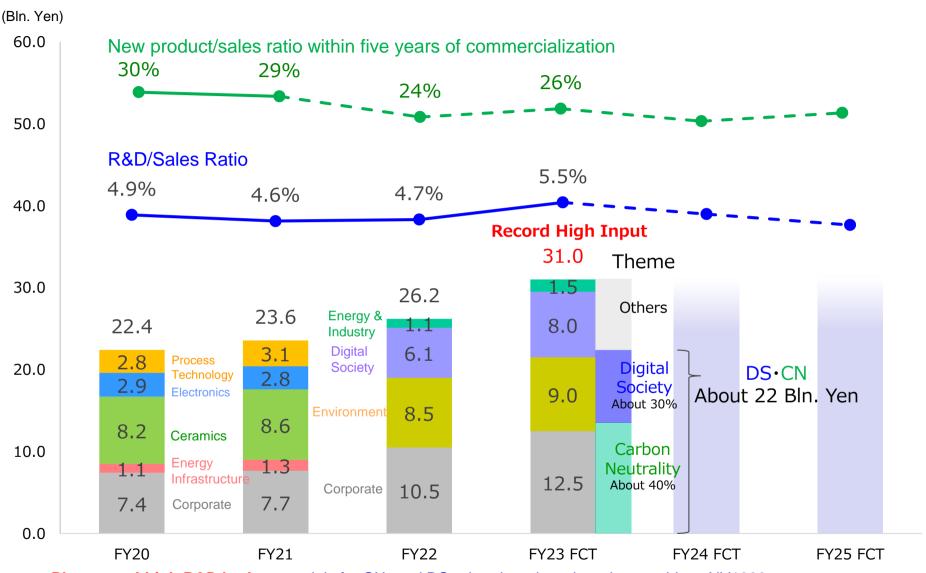
Develop DS-related new products, including new wafers for wireless communications equipment, optical devices, vehicle-mounted sensors for autonomous driving, etc.; micro heaters for semiconductor installation equipment, etc.

• Build a materials informatics (MI) method that leverages our unique data Confirmed the effect of shortening the product development period by building a basic system in FY2022.

Aim to apply the method to material development for all products and shorten the development lead time to one-tenth in FY2030.

R&D Input





- Plan record-high R&D budgets mainly for CN- and DS-related products in order to achieve NV1000.
- To enhance our own technologies, the Corporate NV Creation, the Corporate R&D and the Corporate Manufacturing Engineering coordinate and proceed with the development of new products in each theme steadily. Simultaneously, actively acquire technologies and resources from outside. 17

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Capital Expenditures & Depreciation Costs



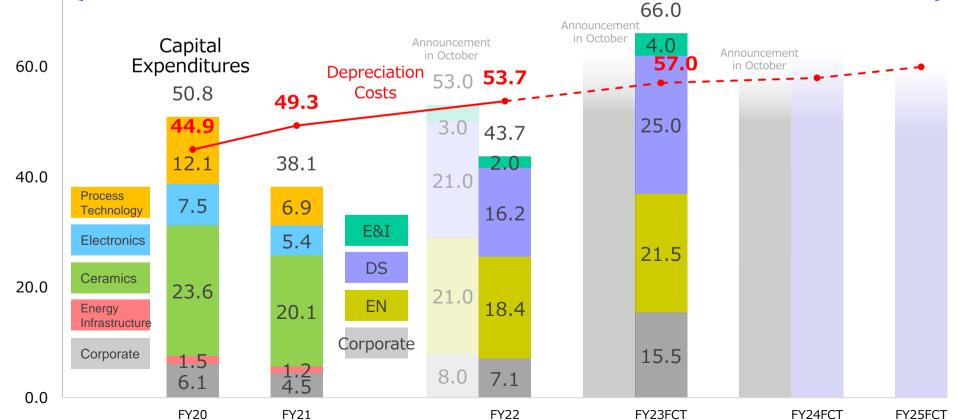


100.0

80.0

Invest funds for expanding sales and income of existing businesses, mainly in DS, and creating new businesses.

- Capital expenditures in some projects for FY2023 were delayed to FY2024 due to the effect of longer delivery times of components.
 After FY2024, we will continue making an investment of 60 billion yen or so mainly for production increases in the Digital Society Business.
- Also step up environmental investment to reach net zero CO₂ emissions. Establish internal carbon pricing (ICP) and judge the economic rationale of investments while factoring in the cost of CO₂ emissions.



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Capital Policy



20%

Estimation of the NGK's Capital Cost

1.0%

0.4

6.9%

9.1%(CAPM)

10.0%(Hurdle rate)

After-tax

Debt Cost

D/E Ratio

WACC

Capital Cost

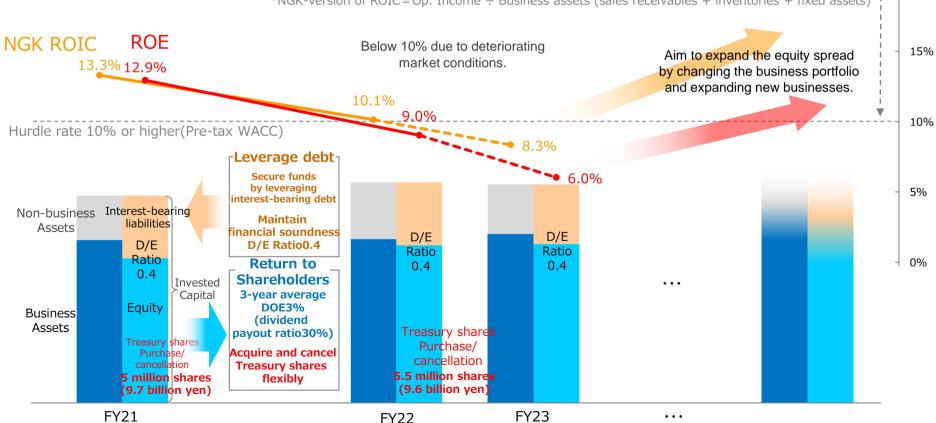
Pre-tax WACC

- Ensure profitability exceeding capital costs and financial soundness at the same time.
 - Focus on capital efficiency with ROE as a management indicator and utilization of interest-bearing debt
- Proactive shareholder returns from a medium- to long-term perspective
 - Pay dividends while targeting a three-year average payout ratio of 30% and a three-year average DOE of 3%, and acquire and cancel treasury shares in a flexible manner.
- Keep the income rate, assets turnover and financial leverage at healthy levels consistent with business strategy

Adopted ROIC, which is highly related to ROE, as an internal management indicator (NGK-version of ROIC*)

Setting fund procurement through obtaining interest-bearing debt as the basis, aim for a debt-to-equity ratio of 0.4 to maintain financial soundness

*NGK-version of ROIC=Op. Income ÷ Business assets (sales receivables + inventories + fixed assets)

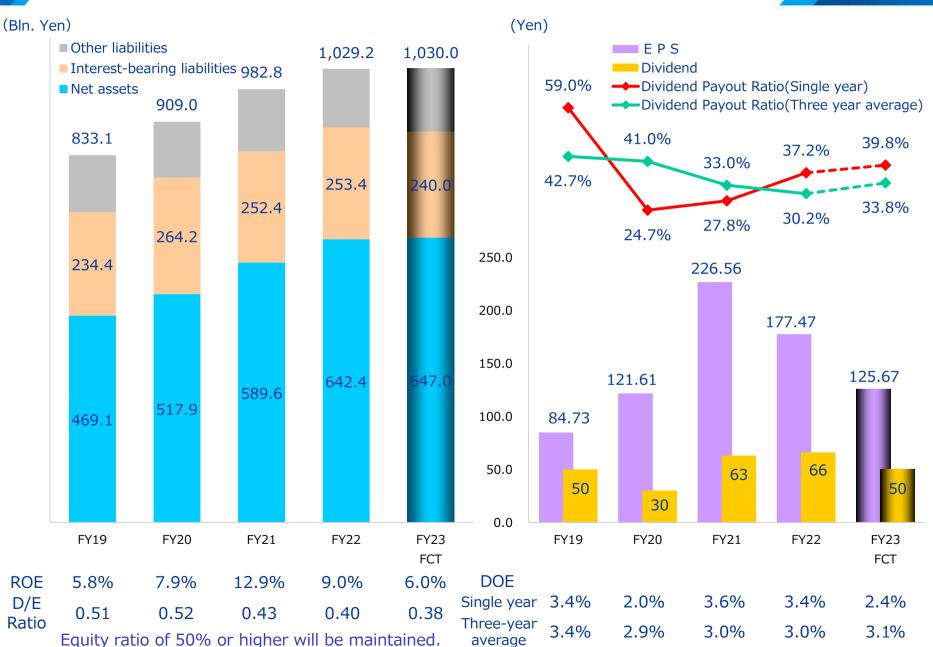


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Total Assets & Dividend





Summary of Cash Flow



(Bln. Yen)	FY20	FY21	FY22	FY23Forecast
Operating Activities	85.6	94.8	97.9	76.0
Investing Activities	(51.7) Investment (53.3)	(46.3) Investment (37.4)	(52.0) Investment (43.1)	(66.0) Investment(66.0)
Financing Activities	12.3 New loans +32.5 Repayment (9.4) Treasury stock Purchase -	(45.3) New loans +15.0 Repayment (34.0) Treasury stock Purchase (9.7)	(34.6) New loans +29.6 Repayment (32.8) Treasury stock Purchase (9.6)	(27.0) New loans+25.0 Repayment (34.1)
Effect of Exchange Rate Changes on Cash & Cash Equivalents	5.2	5.5	2.6	(1.5)
Net Increase (Decrease) in Cash & Cash Equivalents	51.3	8.8	14.0	(18.5)
Cash & Cash Equivalents at End of Period	146.0	154.9	168.9	150.4
Invest funds in growth domains based on a debt-to-equity ratio of 0.4	.5	D/E Ratio 0.4 (Right axis)	0.4	0.4
(Bln. Yen)	.2	Net D/E Ratio 0.1 (Right axis)	0.1	0.1
150.0 EBITD	A		s expected to remain positive digital society (DS), which is	. 33
100.0	CAPEY FOR			·
50.0 -	CAPEX FCF			

Increase Non-Financial Value by Promoting ESG Management



Promote initiatives for "the environment," "society," and "governance," which are the bases of business activities, to solve social issues through products and services

Environment

Carry out various measures to achieve net zero CO₂ emissions by 2050.

- Plan to install solar energy plants totaling 40 megawatts at domestic and overseas manufacturing sites (Press release of November 24, 2022)
- Install a firing furnace for demonstration purposes to commercialize hydrogen combustion firing furnaces (Press release of March 28, 2023)

Social

Respect for human rights affected by business activities and enhancement of human resource investment.

- NGK has formulated "NGK Group Human Rights Policy" in accordance with "the United Nations Guiding Principles on Business and Human Rights," and disclosed a statement regarding the UK Modern Slavery Act.
- Promote CSR procurement based on "CSR Procurement Guidelines" concerning selecting companies and procuring raw materials, etc. Conducted detailed assessments of risks and CSR of business partners and support in improvement.
- In the field of women's active participation, NGK obtained "Platinum Kurumin" certification in recognition of its efforts to support employees' career paths and to make an employee-friendly environment including promotion of parental leave taken by male employees. (Press release of April 13, 2023)

Governance

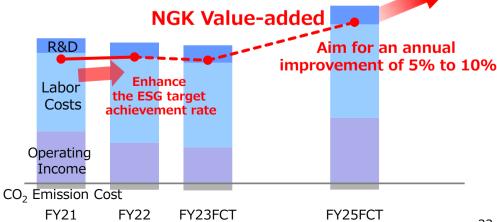
Establish an organizational structure that ensures the legality of business activities and the transparency of corporate management and is capable of swiftly addressing change in the management environment.

- With regard to risk management, NGK has established the "Risk Management Committee", which is a supervising committee directly reporting to the President. This is an integrated risk management mechanism that is connected with the Board of Directors from a cross-departmental and company-wide perspective regarding individual risk matters handled by each committee.

NGK Value-added (Operating Income - CO₂ Emission Cost* + Labor Costs + R&D) Short-term Profitability Mid to Long-term Growth Potential X ESG Target Achievement Rate **CO₂ Emission Cost: Calculated based on ICP (\$140/t CO₂) Super Long-term Sociality

ESG Target Achievement Rate

230 larget Hemevernent Rate					
Rating Agencies	Targets	Achievement Rate			
	rargets	FY2021	FY2022		
DJSI	Inclusion to the world	83%	84%		
MSCI	AA Rating	99%	98%		
FTSE	Inclusion to Japan Index	85%	100%		
	achievement rate of nree agencies	89%	94%		



Sales by Product (Annual)

(Bln. Yen)



<after elimination="" inter-segment=""></after>	FY2020	FY2021	FY2022	FY2023 Forecast
Honeycomb filters	63.7	70.4	81.3	79.0
GPF	33.2	33.9	36.8	43.0
Cd-DPF·LSH	59.2	78.3	84.3	81.0
SiC-DPF	39.6	46.3	59.7	61.0
Sensors	53.3	63.7	58.7	71.0
Environment Business*1	248.9	292.7	320.8	335.0
SPE related	80.1	96.9	107.0	92.0
Electronics components	27.9	29.5	28.6	28.0
Metal related	19.3	23.9	27.6	27.0
Soshin Electric CO. *3	6.9			
Digital Society Business ²	134.2	150.3	163.2	147.0
Energy Storage	2.8	1.3	2.7	5.0
Insulators	39.1	39.3	44.2	44.5
Industrial Processes	27.0	26.9	28.3	33.5
Energy & Industry *4 Business	69.0	67.5	75.3	83.0
Total	452.0	510.4	559.2	565.0

^{*1} The Ceramics Business has been renamed to the Environment Business since the beginning of FY2022

Digital Society Business composed of SPE related, Electronics components, and Industry Business composed of Energy Storage, Insulators *2 The Electronics Business has been dissolved and reorganized into the Metal-related since the beginning of FY2022.

^{*3} Excluded from consolidation in the fourth quarter of FY2020.

^{*4} The Energy Infrastructure Business has been dissolved and reorganized and Industrial Processes.

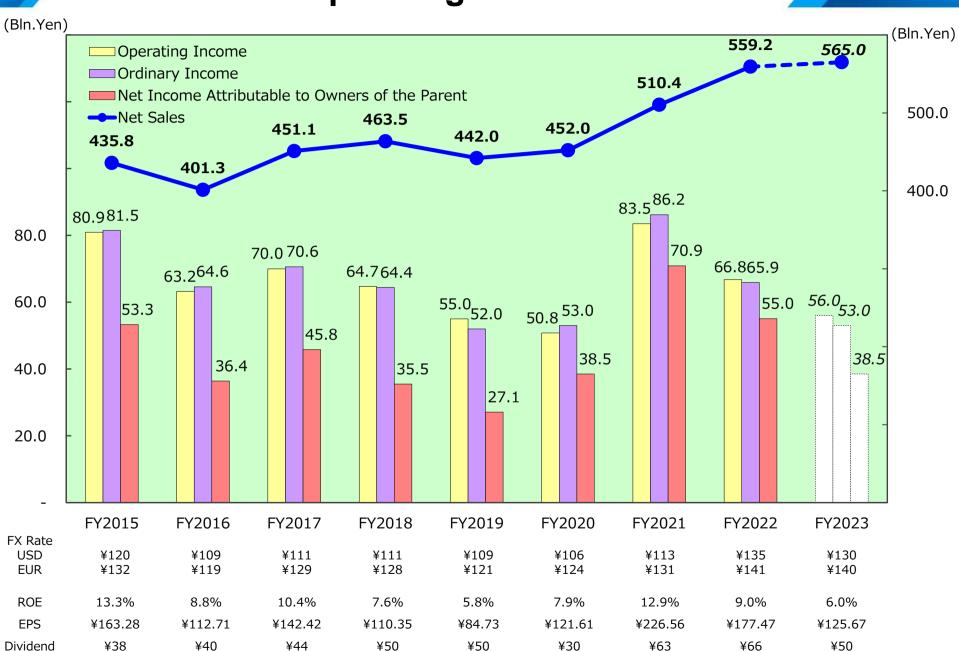
Sales by Product (Semi Annual) (Bln. Yen)



	FY2022		FY2023 Forecast		
〈After inter-segment elimination〉	1H	2H	1H	2H	
Honeycomb filters	40.0	41.4	39.0	40.0	
GPF	18.4	18.4	21.0	22.0	
Cd-DPF·LSH	39.8	44.5	40.0	41.0	
SiC-DPF	27.2	32.5	31.0	30.0	
Sensors	27.8	31.0	35.0	36.0	
Environment Business	153.1	167.7	166.0	169.0	
SPE related	59.0	47.9	39.0	53.0	
Electronics components	16.4	12.2	12.0	16.0	
Metal related	12.7	14.9	13.0	14.0	
Digital Society Business	88.2	75.0	64.0	83.0	
Energy Storage	1.1	1.7	1.0	4.0	
Insulators	20.0	24.2	21.5	23.0	
Industrial Processes	12.3	16.0	12.5	21.0	
Energy & Industry Business	33.4	41.9	35.0	48.0	
Total	274.7	284.6	265.0	300.0	

Consolidated Operating Results





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.



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

NGK Website (English Version):

https://www.ngk-insulators.com/en/index.html

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