Driving Greater Growth with the First New Business Group in a Quarter Century

Fiscal 2017 results

Net sales	Operating income
94.7 billion yen	17.1 billion yen

Fiscal 2018 outlook

Net sales	Operating income
110.0 billion yen	19.0 billion yen

Newly established in April 2018, our business group features the combination of the HPC-related (ceramics for semiconductor manufacturing equipment) business previously handled by the Electronics Business Group and the industrial process business previously handled by the Ceramic Products Business Group. For the first time in a quarter century, NGK group started up a new business group.

Our aim is to realize further growth of the rapidly growing HPC-related business, which is becoming the second backbone after the automotive-business group, and the industrial process business, which has the high potential of business development in a wide range of fields.

From the strong growth of the HPC-related business, the results for fiscal 2017 based on new segment were promising, achieving net sales of 94.7 billion yen and operating income of 17.1 billion yen.

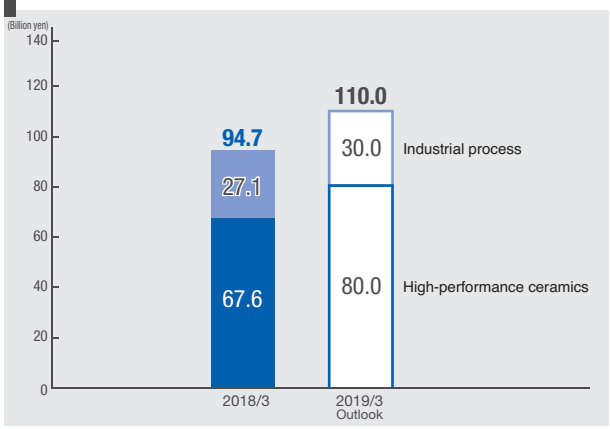
In fiscal 2018, we expect the increase in revenues and profits compared to the previous fiscal year, with net sales of 110 billion yen and operating income of 19 billion yen.

Revenues and profits for the HPC-related business are expected to increase as a result of increase in capital investment by semiconductor manufacturers. Industrial process business is also expected to see increase in revenues led by the continuous investment in lithium-ion batteries on Chinese automobiles and the installation of low-level radioactive waste treatment equipment used to process logging trees for the Fukushima Daiichi Nuclear Power Station.

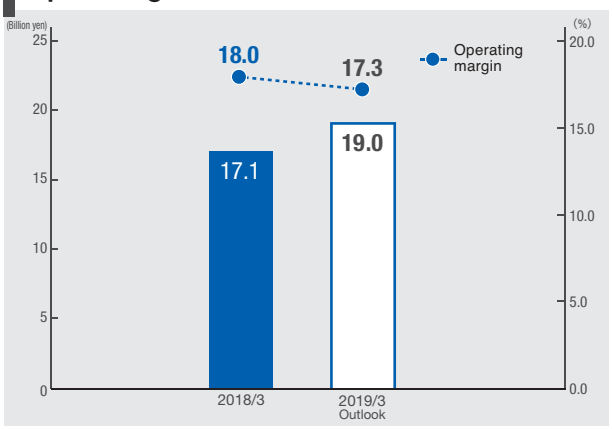
Director and Senior Vice President; Group Executive, Process Technology Business Group **Ryohei Iwasaki**

Financial results

Net sales (Billion yen)



Operating income (Billion yen/%)



Process technology business

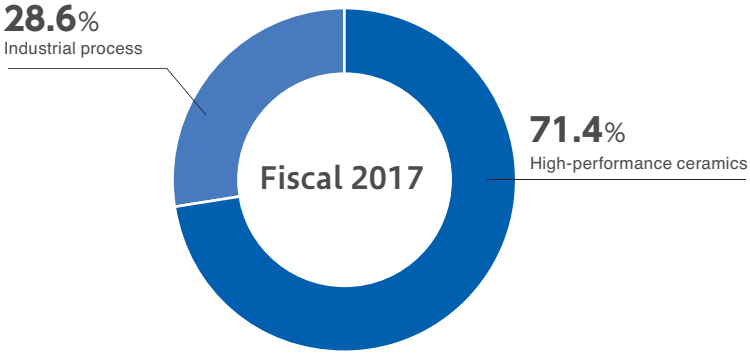
High-performance ceramics (ceramics for semiconductor manufacturing equipment)

We provide chamber components and ceramic functional components (susceptors) that support silicon wafers as a semiconductor material inside semiconductor manufacturing equipment. In the face of the increasing integration of semiconductors, our products respond to increasing demand for memory as well as miniaturization and energy conservation needs for electronic components.

Industrial process products

We offer a lineup of ceramic products—including heating devices, kilns, refractories, ceramic membranes, separators, corrosion-resistant equipment, and low-level radioactive waste treatment systems—that serves a broad range of industries and provides smart solutions for environmental protection and energy conservation.

Sales ratio by business



Ceramic heaters

These are used to keep the temperature of silicon wafers constant during the membrane formation process. Our unique heater structure sees a shaft attached to the underside of the heated stage on which wafers are placed. This way, we can protect terminals and conducting wires from halogen gas.

Low-level radioactive waste treatment systems

Our treatment systems are used at nuclear facilities throughout Japan, and are rated highly for their outstanding dust removal performance and steadfast safety. What's more, they make a real contribution to waste reduction.

Wavelength-control drying systems

By selectively irradiating light at specific wavelengths, the unit can dry at low temperatures (approximately 40°C) while limiting thermal damage to products, helping to enhance product quality, and improving productivity.

Manufacturing sites

● High-performance ceramics: Japan, US ○ Industrial process products: Japan, China, Thailand

Creating Synergy from the Fusion of Two Businesses

Future outlook

Capital investment in semiconductors is expected to increase further, driven by the demand for 3D-NAND flash*1 and DRAM*2 memory. Our HPC-related business sells heaters, electrostatic chucks, as well as aluminum chamber components. Susceptors are produced in Japan, while chamber components are produced in the US. Demand for both product groups is growing; therefore, we are conducting production investment and expanding domestic susceptor production on the Tajimi Plant, and chamber component production in the US.

In industrial process division, we are expanding sales of kilns for cathode materials used in lithium-ion batteries to meet the rapidly growing demand in China, refractories used for the manufacture of numerous electronic components in smartphones and other devices, and a new drying furnace that can selectively irradiate light at specific wavelength. In addition, we are also continuing to focus on engineering business such as waste treatment systems capable of processing low-level radioactive materials from nuclear power plants.

Our future goal is to create synergy between HPC-related and industrial process businesses. HPC-related business was originally generated from industrial process business. Although it has grown considerably on its own since then, we hope to maximize the synergies of the both by taking advantage of our compatibility now that we have the opportunity to work together again.

The value of our business group is to find solutions for customers by providing technologies that only NGK can offer. Therefore, we are not only promoting the fusion of highly specialized technology from HPC-related business and potentials of the product development in a wide range of fields from industrial process business, but also working on development themes from the New Business Planning Office and Corporate R&D. We believe that enhancing this value will contribute to stronger and more diverse business foundations.

The Process Technology Business Group is still young but is already an important driver for the future growth of NGK. We want to foster an open and voluntary mind respecting culture that regards maintaining the status quo as risks and challenging new things without being afraid of failures.

Electrostatic chucks

These are used in etching and other processes for the adsorptive immobilization of silicon wafers. We are able to adapt electrostatic chucks to suit their intended use to exponentially improve the semiconductor production process. For instance, we can integrate them with high-precision heaters and attach cooling plates.

Refractory products

Firing jigs are indispensable in firing electronic components and ceramic products. Our incredibly thin and lightweight refractories help to improve productivity and save energy.

*1: Memory cells are stacked vertically in multiple layers to create highly integrated NAND flash memory.
*2: A type of readable/writable semiconductor memory.

TOPICS 1

Enhancing production capacity for products used in semiconductor manufacturing equipment

Our business group is undertaking additional investment of 20 billion yen in three HPC (high-performance ceramics for semiconductor manufacturing equipment) business sites in Japan with the aim to increase the production capacity by 1.5 times compared to the original plan by 2020. Also, the new plant under construction in Tajimi, City, Gifu Prefecture will start production ahead of schedule in October 2019, which was originally planned in April 2020.

The semiconductor market is continuing to grow due to the increase in data volume and other factors led by the spread of IoT and AI. Each semiconductor manufacturer is expected to continue capital investment at a high level. From this reason, there is a strong demand for our susceptors (ceramic functional components that support silicon wafers); however, the production capacity is not catching up.

While implementing the production equipment up to the maximum capacity into the No.1 Building of the new plant in Tajimi, we will maintain manufacturing areas and add facilities in Chita and Komaki plants in Aichi Prefecture. By implementing these additional plans, we will respond to the expanding demand and aim for further growth of our business.

New Tajimi Plant, NCDK

Responding to the growth of the Chinese market for cathode materials used in lithium-ion batteries

In 2019, the Chinese government will enforce a law that mandates automobile manufacturers to manufacture and sell a certain percentage of new energy vehicles (NEV). In order to comply with the law, the demand for cathode materials used in lithium-ion batteries is rapidly expanding.

Our business group has been engaged in the business of kilns for cathode materials (roller hearth kiln), and our group company in China, NGK Technocera Suzhou, manufactures and sells these kilns, maintaining No.1 market share in China.

In order to respond to the demand expansion, we are working on developing and manufacturing a kiln offering greater productivity, as well as on securing external assembly plants and making the other necessary preparations to expand our production capacity.

Roller hearth kilns

TOPICS 2