

Ceramic Products Business

Offering more high-performance products to satisfy increasingly stringent exhaust regulations and achieve greater growth

Current Situation and Future Outlook

■ Laying the groundwork for dramatic growth amidst a period of increased revenues but decreased profits

Although the period ended March 31, 2020 saw a slight increase in sales revenue, operating income over the same period decreased. This reflects the impact of not only the global economic slowdown, which began in the latter half of the fiscal year but also the outbreak in China of COVID-19 at the end of the period. Nevertheless, the groundwork for dramatic future growth has been laid in the system of manufacturing facilities, such as with the start of operations at our second Chinese plant for gasoline particulate filters (GPFs), which represent an area of anticipated future growth, as well as with the completion of a production system encompassing the plants in China, Thailand, Poland, Ishikawa Prefecture in Japan and other areas, thanks to the past several years of large-scale capital investment.

However, the COVID-19 pandemic since the start of 2020 has resulted in stagnation within the global automotive market, and this has an inescapable impact on NGK as well. While the impact on business has been extremely large, I believe that demand will rebound once conditions in society have returned to normal.

Growth Strategy


■ Delivering high-performance products to grow business

With a marked increase in exhaust regulation stringency being predicted worldwide, it is not just regulation leaders, i.e., Europe and the U.S., who are implementing tougher standards but also China and India. Thus, requirements are expected to become stricter for ceramic substrates for catalytic converters, exhaust filters, and NOx sensors, all of which are our core products in vehicle emission control systems. We therefore expect a significant increase in demand for lighter, thinner substrates and sensors for gases other than NOx. Naturally, this will mean greater manufacturing difficulty accompanied by a lower yield with higher costs. The number one challenge for us, therefore, is finding ways to overcome these challenges. While the costs should be better controlled, the products' higher performance should help customers recognize added value. I feel that such efforts will help to ensure profitability.

With regard to volume, by increasing the number of units installed per vehicle and the number of vehicles with installed units, an upward trend for sensors and GPFs is forecast to continue for the time being.

Although momentum towards EVs (electric vehicles) is strong, the recommendation is being made that CO₂ emissions volume needs to be assessed from the standpoint of LCA (life cycle assessment).

It is in this context that the synthetic fuel, or "e-fuel," being developed in Europe is garnering interest. Electricity created from renewable energy is used to generate hydrogen via water electrolysis, and when this hydrogen reacts with atmospheric CO₂, or CO₂ from factory emissions or other sources, it turns into methane via the methanation process which can, ultimately, be used as a synthetic fuel. If we switched over to this sort of fuel, the automobiles we currently use to drive about our cities would immediately become carbon-free. Practical implementation is a topic that still needs to be addressed, but if it were achieved, it would provide us with a reasonable solution to global warming. NGK can contribute to achieving this solution by providing substrates and filters that thoroughly ensure carbon-free automobiles are not emitting NOx and other harmful exhaust.



Main market

【Market for NGK products for emission control systems】
Global market size: 500 billion yen
(2019 NGK estimate)

Main customers

【Products for emission control systems】
Manufacturers of cars, trucks, and agricultural and construction equipment in and outside Japan

Core products

■ Gasoline particulate filters (GPFs)

These particulate filters for gasoline-powered vehicles are used mainly in direct-injection gasoline engines that provide high horsepower and excellent fuel economy.

■ In-vehicle high-precision NOx sensors

These sensors contain elements that utilize zirconia's oxygen pump function. They are now incorporated in clean diesel vehicles around the world because of their superior detection capabilities and greater durability.

■ HONEYCERAM®

In addition to the square-cell configuration, this product comes in a hexagonal configuration that is effective in reducing the amount of catalyst used. Used by the world's automakers, HONEYCERAM cumulative production has reached 1.6 billion units.

Initiatives to Address Social Challenges

■ Towards a carbon-neutral manufacturing process

All of the products we handle are products contributing to environmental protection. However, the manufacture of ceramic products requires the firing process for which natural gas is used as a fuel, and this produces a significant amount of CO₂.

Moving forward, we are looking for ways to further cut CO₂ emissions from the manufacturing process so that we can move closer to the goal of being carbon neutral.

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