

# Powering Ahead

Leveraging a century of experience, **NGK Insulators**, based in Nagoya, Japan, has become a dominant force in ceramic products used by the automobile, electronics and power industries.

## AMONG THE MANY PRODUCTS THAT NGK INSULATORS

makes for the power industry, some are designed for the specific purpose of regulating and stabilizing energy output. When it comes to the company's financial performance, however, power surges are much in evidence. In the financial year that ended March 31, 2016, NGK recorded its highest-ever revenue and income numbers with net sales leaping 15% to US\$3.9 billion (435.8 billion yen) and operating income 31% to US\$716 million (80.9 billion yen).

In fact, the company has now logged six straight years of revenue growth and three of income growth. What's behind this outstanding performance? The chief driver is robust sales of ceramics for catalytic converters and particulate filters for gasoline and diesel vehicles, a business that generates 60% of overall revenue. Rising global car demand at plus 3%–4% annually and stricter emission regulations provide a double tailwind. "Our factories are all operating at full capacity," President Taku Oshima explains. "We have around half of total global market share in this area."

While sales of automotive ceramics rose over 10%, sales of electronics-related products, the company's second-largest business group, also went up around 29%. NGK manufactures ceramic components for semiconductor manufacturing equipment, and demand jumped as chip makers purchased new equipment for the next generation of smaller, more densely integrated computer chips.

As the company name suggests, NGK's original business is manufacturing insulators. Power business-related products still account for roughly 20% of sales. While the company supplies its high-spec insulators to more than 100 countries worldwide, a shipment of the company's proprietary large-capacity sodium-sulfur batteries to the world's largest storage battery facility in Kyushu [see box] really supercharged 2015 sales in this area.

## GETTING GLOBALIZATION RIGHT

As NGK expands, it is becoming increasingly global. The



TAKU OSHIMA  
President  
NGK  
Insulators

company now generates 70% of its revenue abroad, and 13,000 of its around 20,000 employees are outside Japan. Oshima's biggest challenge is to maintain rapid growth even as the business becomes larger and more dispersed. "We're well-positioned in high-potential business segments and have the opportunity to keep increasing sales. My job is to make that opportunity a reality," he comments.

His strategy is two-pronged, covering both management and manufacturing. At NGK's Nagoya headquarters, Oshima is personally leading a drive to review and streamline existing processes. He's also working to strengthen headquarters functions so that Nagoya can provide robust support as the company deals with its increasing diversity of customers, markets and governance

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issues around the world.

At the same time, Oshima is aggressively ramping up production. To meet booming demand in automotive ceramics in Europe and Asia, the next two years will see NGK opening a second plant for diesel particulate filters in Poland, and breaking ground for a new manufacturing plant for ceramic substrates for catalytic converters in Thailand.

## TECHNOLOGICAL EXPERTISE

Of course, NGK can only win such hefty market shares because, says Oshima, it offers unique technology at competitive prices. All of its products draw on the ceramics know-how the company has built up since it was founded in 1919. Oshima compares making ceramic industrial products to making a china teacup. The manufacturing process is punctuated by kiln firings that cause shrinkage at every stage. "Producing one teacup is simple enough, but producing millions of identical items is extremely hard, especially when they're catalytic substrates with a complex cellular structure," he explains. "We're experts in selecting, combining and processing materials to bring out their inherent properties, whether that means heat-resistance for automotive products or corrosive-gas resistance for semiconductor manufacturing equipment."



Auto-ceramics, such as those used in this three-way catalytic converter, account for 60% of NGK's revenues. Above: Chip-type ceramic batteries for wearables promise significant growth

wafers that could replace sapphire and silicon as a base for light-emitting diode elements, and chip-type rechargeable ceramic batteries for smart cards and wearables. "As the 'internet of things' takes off, all sorts of everyday items will need their own power source. Our ceramic batteries are the perfect solution," he comments. "And we anticipate significant growth."

From communications to clean energy, NGK is ideally placed to address some of the most pressing challenges and opportunities of the 21st century. "We're pleased with our positioning," Oshima concludes, "NGK's whole history is about making useful infrastructure. We feel the responsibility to work hard and continue innovating en route to becoming a truly world-class company." ●

## MAKING RENEWABLES FEASIBLE

*NGK Insulators began marketing large-capacity sodium-sulfur (NaS) batteries under the NAS® trademark in 2002. President Taku Oshima explains why they are the most widely used large-scale batteries in the world.*

### Tell us about the history of NAS Batteries.

Various firms tried to develop them after the Ford Motor Company announced the principles of the technology in the late 1960s. NGK was relatively late to the game, teaming up with Tokyo Electric Power company in 1984. Nonetheless, we ended up being the first and only company to achieve commercialization.

### What are NAS Batteries used for?

They're primarily used for stabilizing the energy output from renewable sources like wind and

solar. Because renewables' output is unsteady, generating more electricity when it's sunny or windy, you have to store that energy so it doesn't go to waste.

### What are the strengths of NAS Batteries?

They have a 15-year life, a six-hour-plus discharge time and large capacity from tens to hundreds of megawatts. Our batteries come in container format, so they're compact, quick to install and allow for easy system expansion.

### Where are NAS Batteries used?

Our batteries are in use in 190 locations worldwide, from a 1 MW system in Reunion in the Indian Ocean to a 50 MW/300 MWH system in Kyushu, Japan. They're found in factories, shopping centers, large-scale solar farms and wind farms. As renewable energy targets are adopted more widely, the market can only grow.

The NAS® battery system of Kyushu Electric Power is the largest storage battery facility in the world.



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