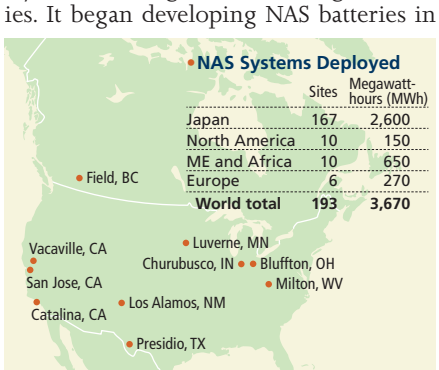
Kyushu Electric Power Co., Inc.'s new 300,000-kilowatt-hour NAS storage array, supplied by NGK Insulators, Ltd., helps balance supply and demand amid Kyushu's surging growth in solar generation. (NAS photo courtesy of Kyushu Electric)

NAS Batteries—*Making Renewables More Renewable*

Fulfilling the potential of renewable energy sources will depend heavily on ensuring steady output. Large-capacity storage batteries hedge power grids against the output fluctuations inherent to wind and solar generation. Thus are power industry eyes worldwide focused this month on a massive new battery installation in Japan's Fukuoka Prefecture.

The new battery installation, supplied through Mitsubishi Electric Corporation, is at Kyushu Electric's Buzen Power Station. Its storage capacity, at 300,000 kilowatt-hours (kWh), is enough to serve 30,000 households. At the heart of the installation are sodium-sulfur (NaS) batteries supplied by NGK Insulators. NGK is the world's only commercial supplier of NaS batteries, which the company markets under the brand name NAS®.

NGK, established in 1919, is a leading supplier of electrical insulators, ceramic substrates for automotive catalytic converters, and ceramic components and equipment for the electronics industry, as well as grid-scale storage batteries. It began developing NAS batteries in cooperation with Tokyo Electric Power Co., Inc., in 1984 and began marketing the batteries, which incorporate leading-edge NGK expertise in ceramics, commercially in 2002.



NAS batteries store nearly 3,700 MWh (530 MW) of power at more than 190 sites worldwide, including 10 sites in North America.

Compelling Advantages

Heading the list of NAS advantages are long discharge time, six hours and more, and long life, rated at 15 years. The batteries' advantages also include high energy density and high charge-discharge efficiency. NAS batteries are economical, too, since their principal materials—sodium, sulfur, and ceramic—are plentiful and inexpensive.

NGK's new container configuration allows for deploying NAS batteries quickly and easily to accommodate the rapid growth in renewable power generation. That was especially important to Kyushu Electric, which was racing to keep up with surging growth in solar generation in Kyushu. And the power utility's huge, 300,000 kWh installation was in place just six months after NGK received the order.

A Prototype for California

NGK delivered the first NAS system outside Japan in 2006: an installation at an American Electric Power site in West Virginia for storing power during off-peak hours. The global array of NAS installations has since grown rapidly as users have adopted the systems for diverse needs.

Interest in NAS technology is especially keen in California. The legislature there has passed legislation that calls for securing 50% of the state's electric power from renewables by 2030. That will result in occasional over-generation, since wind and solar generating facilities, unlike thermal power plants, cannot modulate their output.

California will require massive storage capacity to keep the power generated at times of excess capacity from going to waste. And the state's three largest utilities face a legal mandate to add 1.3 gigawatts of storage capacity by 2020. Kyushu's evolving power mix is analogous to California's. So Kyushu Electric's new storage installation could well be a harbinger of things to come in the Golden State.

Exciting Prospects

The global market for stationary storage batteries presently centers on installations for providing short-term discharge of up to about two hours. Demand for long-term discharge capacity is poised to burgeon, however, as renewable power generation continues to grow and as users discover in NAS batteries an economical solution to their storage needs.

NGK is the world leader in storage battery installations for long-term discharge. It will continue to build on that leadership by promoting its NAS batteries in their easy-to-assemble container configuration.

NAS storage solutions
Optimizing the future of energy

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