Emergency Power Backup

By Michael Kirchner

Standby power is increasingly important as more businesses and homes depend on electricity for everyday living. Should any type of power outage occur, standby power systems allow all types of businesses, residential homes and RVs to resume most day-to-day functions, offering peace of mind to everyone.

California water district gets a boost from standby system

ARTICLE SUMMARY

Challenge: SEWD switched to electric motor-driven pumps to meet regulatory requirements, leaving the district vulnerable to blackouts and weather-related power outages.

Solution: District officials selected a Generac MPS system to supply backup power for a 60-mgd pumping capacity.

Conclusion: The generators have performed as needed during power interruptions—for 288 hours—since their installation.

Figure 1. Fuel and MPS Ratings

	Generator Modules (kW Ratings)	Combined Output Range
Diesel	300 – 600	300 to 9,000 kW
Natural Gas	100 – 300	100 to 3,000 kW
Bi-Fuel	600	600 to 9,000 kW

The four generators provide enough power to keep the plant running at maximum capacity in the event of an outage.

Over the past 50 years, Generac Power Systems has supplied standby power to every kind of business imaginable. With an aging power grid, more extreme weather conditions and consumers' dependence on all the comforts of home 24-7, it is no wonder the need for standby power systems continues to rise.

In the case of California's Stockton East Water District (SEWD), a Generac standby power system is not only responsible for keeping the SEWD up and running, but also making sure it has enough power to provide water to more than 300,000 homes throughout the city of Stockton. That expectation leaves little room for error. As readers will attest, when the need for backup power arises, reliability is key.

SEWD History

Nestled in California's San Joaquin County, 80 miles east of San Francisco, the SEWD was created in 1948 under the 1931 Water Conservation Act of California to protect and enhance the area's groundwater basin. To benefit the area's only reliable water supply, which is critically overdrafted, SEWD provides surface water to both the agricultural and urban areas.

In 1977, SEWD built a water treatment plant that provided 20 million gal of water per day (mgd) to the Stockton urban area through its retail customers, the California Water Service Co., the city of Stockton and San Joaquin County. Today, the plant supplies a population of 300,000 with more than 60 mgd.

The overall mission of the SEWD is "to ensure proper management of the underground water basin and provide supplemental water supplies," and it has been holding to its word since 1948. From its inception, the SEWD has been tireless in ensuring that its facility is equipped with the necessary equipment to continually provide potable water for citizens.

In 2006, SEWD began a needed $4-million upgrade to its 30-year-old pumping station. The old pump station had relied on diesel-powered engines for daily water production and pumping during electrical power outages.

On Jan. 1, 2007, the U.S. Environmental Protection Agency (EPA) put into place clean diesel regulations requiring compliance by 2010. Faced with these new regulations, which call for a reduction of 2.6 million tons per year of smog-causing nitrogen oxides, SEWD decided to switch to all electric motor-driven pumps.

This change certainly met the EPA's requirement, but it left the district vulnerable to blackouts and other weather-related power outages. Not wanting to take a chance with circumstances beyond its control—especially because an entire city's population depends on it for their water supply—SEWD officials began looking at emergency standby generators to supply backup power for pumping a capacity of 60 mgd.

Call for Backup

When Energy Systems, Stockton, Calif., was called on by long-time customer SEWD, company President Don Richter knew exactly what to do. SEWD officials had asked his advice on a standby power system that was reliable enough to handle SEWD's requirements. Based on the capacity needed, Richter introduced Generac's Modular Power System (MPS) in a 4x600-kW configuration. The MPS is a flexible and expandable backup power solution that offers scalability, redundancy and reliability.

In an MPS system, each genset backs up the others in the system, so critical loads receive redundant protection. The MPS system also allows end-users to quickly and easily add units as additional power is needed. Each MPS generator utilizes an on-board paralleling switch and integrated PowerManager controller that eliminates the need for external paralleling switch gear.

The PowerManager enhances reliability by minimizing component count and integrating multiple generator control functions into a single controller. The PowerManager features a touch-screen interface and advanced diagnostic capabilities that make generator service easy. The MPS system also features load-shedding control and the GenLink interface software for remote generator monitoring.

Depending on fuel preference, a variety of gensets are available as building blocks of the system. They can be combined easily, even if the kilowatt ratings are different. Diesel MPS configurations range from 300 to 9,000 kW; gaseous MPS models cover outputs from 100 to 3,000 kW; and bi-fuel MPS combinations range from 600 to 9,000 kW (see Figure 1).

Implementation & Performance

For this particular application, the system provides 2,400 kW at 480V, which meets SEWD's emergency power needs. It runs on diesel fuel, which is needed to keep SEWD running at its maximum capacity, should an outage occur.

"One of the biggest selling points for the Generac MPS system is scalability," Richter said. "Businesses like to know that if and when they expand, their backup system can expand with them. With [this] system the customer is provided with all of the benefits of parallel generation in a simple, single-source system. We installed four MD600 standby generators, which allows for additional standby generators to be added to the system and still be controlled by the power manager control system."

"Another factor that led to our recommendation of Generac was the fact that the MPS system allows for factory housing, enabling SEWD to keep the decibel level at a minimum, rather than implementing

a single-unit system which requires a separate enclosure, which would add to the total cost," he continued. "The final and most practical reason is that the four MD600 generators offer SEWD the power they need—should they experience an outage—in order to keep water flowing to the city of Stockton with the same volume as it normally produces."

"Due to the load that SEWD supports, the four Generac MD600 generators provide us with enough power to keep the plant running at its maximum capacity in the event of an outage, and the easy-to-use power manager control system gives us peace of mind," said John Vernier, maintenance supervisor for SEWD.

Since the installation in January 2008, the four generators have been put to the test. "Because of the way that we sit on the power grid, we have had over a half dozen blackouts this year alone," Vernier said. "Our Generac generators have worked flawlessly for 288 hours in total. We are now confident that we will be able to provide the city of Stockton with uninterrupted service for years to come." WWD

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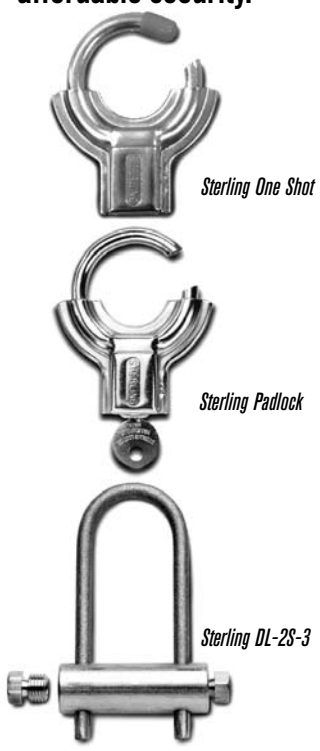

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