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ELECTRICAL GENERATING SYSTEMS ASSOCIATION
1650 South Dixie Highway, Suite 400
Boca Raton FL 33432

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Emergency preparedness is a critical component for public utilities

Year in and year out, from coast to coast we are reminded how absolutely dependent we have become on the underlying infrastructure that delivers the clean water, electricity, and communications we Americans have come to take for granted.

It is in moments such as when a hurricane, tornado, flood, ice storm or earthquake suddenly knocks out our community's utility services that we realize the implications of losing our access to these fundamental services.

The City of Gretna is all too familiar with these catastrophic occurrences. Seven years to the day after Katrina, Hurricane Isaac's impact on the gulf coast region left more than 900,000 customers without power for up to six days. After experiencing the devastation of Katrina, the City of Gretna had improved their backup power generation systems and found themselves much better equipped to handle the power outages this time.

After Isaac knocked out utility power, the City's preparedness plan was put into action at their water wastewater treatment plant with crews rotating four portable generators among eleven lift stations several times a day. By connecting portable generators to the permanently installed manual transfer switches, power was quickly restored to the city's potable water supply and sewer systems. Without power the potable water won't flow and the sewer system is subject to spills. By installing a pre-engineered solution, the small staff at the City of Gretna was able to easily utilize the back-up power equipment and minimize service interruption and prevent spillage.

Restoring power has not always been a quick and simple process for the City of Gretna. In August of 2005, Hurricane Katrina delivered a brutal reminder of just how critical it is to have a robust emergency backup power solution like the one the City has in place today. The devastation caused back then was so vast that when Katrina hit the New Orleans region, the City of Gretna experienced wind speeds in excess of 120 MPH. As a result of the hurricane, the city saw its potable water plant, wastewater treatment plant and network of fourteen sewer lift stations go completely without electrical power, bringing down the entire system which operates and controls the potable water supply and sewer system serving over 17,700 residents.

Due to area flooding, wind damage and generator failures, 75% to 100% of the city's water and sewer system was down for more than four days. Working 16 to 20-hour days the Public Utilities Division team managed to restore service after a very trying week and half. "The wastewater plant went down and the master lift station generator failed, but we didn't find out about these failures until the storm had passed," recalled Mike Baudoin, Director of Public Utilities for the City of Gretna.

"I know what it's like to experience a true catastrophe," noted Baudoin whose own home was totally destroyed by the hurricane. "People can't come back to their homes unless we have city infrastructure up and running. In the hurricane's aftermath, both our wastewater plant generator and the 250 kW generator for the master lift station were found to be under-sized and aged, requiring upgraded solutions."

Utilizing a $1.8 million Mitigation Funding Block Grant that was approved by the State of Louisiana and FEMA, the City of Gretna contracted engineering firm Burk-Kleinpeter Inc. (BKI) to upgrade and modernize the pump stations. This included designing a cost-effective emergency backup electrical power solution that could be easily managed by the four-person Public Utilities sewer collection department.

According to Bart Mullis, Associate-Electrical Engineer for BKI, the fact that the City of Gretna is a small municipality with a modest budget necessitated design of an emergency backup power solution that could be easily and quickly connected without reliance on electricians.

"For wastewater facilities, backup generators serve the purpose of maintaining a safe flow of wastewater (sewage) not associated with flood control," explained Mullis. "In this case, because of the City of Gretna's limited resources and very small staff, we decided it would be best for our client to rely on quick-connect portable generators which eliminates the cost of permanently installed generators. That's why we specified the StormSwitch™ manual power transfer switch system from ESL Power Systems which is shipped pre-wired for very quick installation."

Burk-Kleinpeter's scope of deliverables for the City of Gretna encompassed significant improvements and upgrades to the electrical infrastructure for the wastewater treatment plant. An important part of the project included replacing one failed permanent generator and installing a second generator for redundant power at the two primary lift station facilities. A critical design choice was adding ESL's manual transfer switch to eleven sewer lift station pump sites and to the raw water intake location.

Mullis noted that BKI had previously worked with ESL Power Systems for seaport/shipyard electrical power projects. When he contacted them about the City of Gretna project, Mullis emphasized the need for a very cost-effective manual transfer switch system that delivered fool-proof operation without the need

for a professional electrician or extensive employee training. Because very basic training is required to operate ESL's emergency backup power connection equipment once installed by a certified electrician, the product provided an ideal solution.

"Our experience with ESL has been consistently good and dependable," said Mullis. "We selected their quick-connect transfer switch unit for this project because of its ease of operation – which provides standardization across all lift station locations. It is also very cost-effective – we found the separate pieces alone cost more than ESL's complete pre-wired system."

According to Mullis, the ESL product provided an ideal off-the-shelf solution while eliminating the added costs for a custom-engineered system. "The StormSwitch unit allows City of Gretna workers to easily add emergency generator backup power to numerous pumping system locations needing different amperages, while at the same time meeting the UL1008 standard with a robust NEMA-3R-rated enclosure and complying with National Electrical Code® Article 702 requirements for optional standby systems," said Mullis.

According to Tom Zinchuk, Manager of Engineering for ESL Power Systems, the StormSwitch™ solution is a fraction of the cost of a permanent onsite back-up power generator system. "The use of portable back-up power generators is growing quickly in answer to natural disasters that have led to long-term power outages," said Zinchuk.

Baudoin's advice after rebuilding the City of Gretna's wastewater facilities is simple, "You can never have enough backup systems." ■