CASE STUDY
IMPROVING RELIABILITY

S&C ELECTRIC COMPANY
Excellence Through Innovation

S&C 'Pressed' to Deliver Switchgear Upgrade to Newspaper Publisher… With No Interruption in Service

S&C Featured Solution: S&C Engineering

Location: Mid-Atlantic, United States

Customer Challenge

Remember "Y2K?" As part of their Y2K contingency plan, a mid-Atlantic newspaper publisher installed two 2-MW standby diesel generators. A recent energy audit concluded that, if these generators were used during periods in which the plant is subject to high market energy rates, a significant cost savings would be realized.

The publisher contacted S&C to design an upgrade to its existing 15-kV S&C Metal-Enclosed Switchgear, which would allow connection of the two generators to the plant's electrical system. Unfortunately, the solution wasn't that simple…

S&C's design team determined that switchgear with greater operational capabilities would be required. And because the total electrical load of the plant exceeded the capacity of the generators, a load demand control system would be necessary. Extensive modification of the existing generator controls would be needed, too, to interface with the revised electrical system.

And there was a further complication: The publisher stipulated that no interruption of electrical service would be permissible while these major equipment changes were being implemented. The publisher had never failed to deliver its morning edition since the late 1800s, when the plant was opened!

This last requirement was the most challenging.

S&C Solution

S&C prepared a needs assessment, which concluded the electrical system had to be completely reconfigured. Automatic switching of the two incoming utility source lines would be necessary, with the two genera-tors connected in parallel with the utility sources. A special control system would be required to synchronize the generators with utility circuit breakers.

Extensive changes to protective relaying would be necessary, too. More than 20 different automatic operating sequences had to be considered to address possible equipment and utility source contingencies and maintain electrical service in the plant.

S&C proposed a design-build solution for the project. S&C would be the general contractor and take complete responsibility for management services, engineering analysis and design, equipment procurement, installation, and commissioning.

Careful planning and considerable precautions would be necessary to eliminate problems that could jeopardize delivery of the morning newspaper.

S&C provided an integrated package of new paralleling switchgear and controls that provide increased reliability and capabilities for the plant. It offers an extremely high level of redundancy; the plant can operate on just one standby generator or utility source if the other sources are not available. The project was designed to enable phased construction, so the plant could remain in full operation at all times.

The switchgear includes circuit breakers on the sources, with controls that permit paralleling the generators with the utility sources, and an integral programmable logic controller that controls the

generators, the source breakers, and plant loads for demand control.

The switchgear is housed in a new outdoor prefabricated switchgear and control building. This new building is the service entrance point for the utility sources and generator equipment.

An aggressive timetable was developed for the project. The equipment needed to be up and running before the summer of 2007 to avoid the higher summer energy rates.

Results

The new switchgear, controls, and associated equipment were installed, thoroughly tested under load, and commissioned before the publisher's required completion date. This was the first energy-savings project of its type for the publisher and it indicated other such projects are a possibility in the future.