

APPLICATION GUIDE- AG255

MULTIPLE UTILITY SOURCES BACKED UP BY A SINGLE GENERATOR

Products: SAI AGC-4 Controller, GE Multilin Relays, SEL Trip Coil Monitors, Shark Power & Energy Meters, 15 kV Metalclad Switchgear

Issue: A public works water filtration plant in the northeast U.S. needed to improve the reliability of their electrical service. Their facility was served by a single utility feed and a single backup generator. They arranged with the local utility for the addition of a second utility feed. Because of budgetary constraints, they needed to find a way to back up this second utility feed without incurring the cost of adding a second generator. They needed a new switchgear and control system that would integrate the new service entrance to the facility's distribution system in a manner that would automatically provide backup power based on a number of different scenarios, without requiring a second permanent generator. The single generator needed to be capable of supporting the full bus in the event of a loss of either utility service, or support both busses in the event of a dual failure.



This would necessitate automatic load shedding of less critical operations so both busses could be supported until at least one utility feed returned. In addition, they needed to be able to perform routine maintenance and load banking of the generator.

Solution: SAI developed a solution using SAI AGC-4 controllers for generator, utility mains and tie breaker control and sequencing, and large touchscreen HMI displays. The SAI solution fully automates all potential scenarios, and provides the load control and communications network, without the need for manual intervention by a facility engineer. In addition, SAI provided a separate freestanding mimic panel with manual status and breaker control that ran through the main controls to prevent operator error, but allowed for additional load add/drops based on available power and real load conditions. Breakers were supplied with GE Multilin 350 feeder protective relays and 889 generator protective relays, Schweitzer 2652A trip coil monitors, and full bus metering utilizing Shark 200 multifunctional meters. Controls were designed, tested and supplied along with 15kV switchgear and vacuum circuit breakers. This solution also included metering cabinets for utility supplied and installed current transformers.

The switchgear was equipped with a dedicated breaker to allow for routine maintenance and load banking of the generator. This dedicated breaker could also be hooked up to a portable gen set in the event of a prolonged dual utility failure, so the busses could be split and full loads could each be supported with its own dedicated generator until one or both utility sources returned.

Results: The solution was installed, put into service, and is performing as expected, greatly increasing the reliability of service to the facility.

