

APPLICATION GUIDE- AG257

TURNKEY RETROFIT AND UPGRADE OF BREAKERS AND CONTROLS

Products: SAI AGC-4 Generator and Main Control, Schneider Electric Masterpact NW Breaker

Issue: A major midwestern U.S. hospital needed to address their aging electrical infrastructure. Their controls were obsolete, replacement parts were difficult to come by and very expensive, and the existing equipment was incapable of providing the real time information and communications the hospital was looking for in their new building automation, control and monitoring systems. As they were under severe budgetary restrictions, they could not afford the cost of a complete system replacement. And because this system provided virtually all of the critical power for their facility, they could not run the risk of the extended downtime that it would take to replace all of their existing equipment.

Solution: SAI reviewed the existing equipment and the available documentation, and as an alternative to a complete equipment replacement, provided an upgrade of only the controls and breakers. This met the hospital's objective of obtaining a more powerful controls platform, a sophisticated communication network, and modern circuit breakers. More importantly, it dramatically reduced the overall project timeline and cost, as there would be no requirements for standalone, temporary emergency systems, removal and disposal of any existing equipment, or the complete installation of new equipment.

In order to successfully execute the upgrade, SAI sent a team to the site to take inventory of the existing wiring and components, review the complete sequence of operations as it pertained to the hospital's use of the equipment, and took measurements of all the enclosure compartments and bus bar connection points to the existing switches. SAI determined that for this application, the best replacement breaker choice for form, fit, and function was the Schneider Electric Masterpact NW draw-out insulated case circuit breaker. As a result, new bus and steel elements were designed to fit in the existing cells and allow for the connection of this particular breaker. SAI designed new control doors and interior control pans to replace the existing components. SAI also identified all the communication protocols, monitoring and control signals, and wire access points, and designed a new state of the art control system that took all of this into consideration, including large touch screen HMI displays for better local monitoring and control. The equipment was built and tested at SAI as complete assemblies before shipment, in order to ensure all inputs and outputs and sequences operated exactly as required.



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The installation required the replacement of four generator circuit breakers, their associated controls, and the retrofit of the master control enclosure in the lineup. Based on the hospital's expected lowest power consumption times, SAI scheduled three overnight shutdown periods to perform the upgrades, and SAI engineers and technicians returned to the site to perform the work.

By isolating and performing the upgrades on one breaker and set of generator controls at a time, and by initially integrating the new master controls into the system as the first step, the hospital was able to keep their existing breakers and generator controls in use until the complete retrofit had been performed. In the event emergency power was required, bus links could be installed back into the sections so that three of the four generators could be brought online at any given time. The completed system was inspected and tested, and training of the new controls and operating modes was provided by SAI to the hospital maintenance staff.

Results: The hospital now has in service a modern and reliable standby emergency power system, installed within their budget, and without any disruptions to service to the facility.

