



Automatic Circuit Reconfiguration 'Connects' with Automatic Source Transfer for Improved Power Reliability

S&C Featured Solution: Remote Supervisory PMH-9 Pad-Mounted Gear

Location: Midwest United States

Customer Challenge

A large Midwestern utility was asked to improve power reliability for a manufacturer of electrical connectors. The manufacturer was experiencing huge losses in process time and material as a result of utility outages and in-plant cable and equipment faults. With no on-site personnel trained in medium-voltage equipment to make repairs, lengthy delays in restoring power were commonplace.

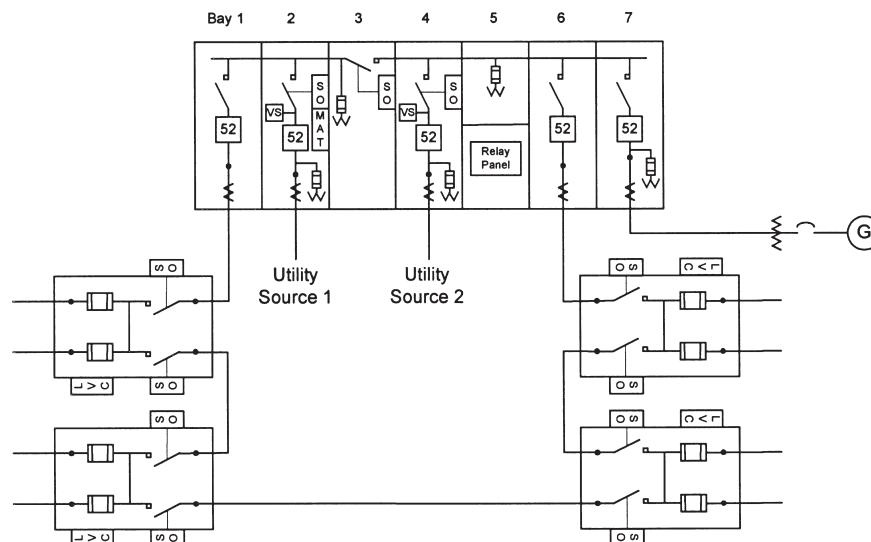
The existing 12-kV plant distribution system consisted of a single underground radial feeder serving a number of transformers, which fed several buildings spread out over a large area. Power was provided by a single utility source.

S&C Solution

The utility requested S&C's assistance in providing its customer with a state-of-the-art system to minimize power outages. The new system was to be fully automatic, without the need for human intervention.

Working together, S&C and the utility determined that for heightened reliability, an additional power source would need to be brought in. New S&C Metal-Enclosed Switchgear would provide automatic transfer between the two sources. At the manufacturer's request, provisions would be made in the main switchgear for a future on-site generator to provide power in case both utility sources were lost.

The loop would use four new S&C Remote Supervisory PMH-9 Pad-Mounted Gear units for economical switching and protection of the load.





It was determined that reliability would be further enhanced by converting the radial feeder to a looped system. The loop would utilize four new S&C Remote Supervisory PMH-9 Pad-Mounted Gear units for economical switching and protection of the load. One of the pad-mounted gear units would have a normally open switch. In the event of a cable fault in the loop, switches on either side of the fault could be opened and the normally open switch closed so that the remainder of the load would derive power from the other side of the loop.

The utility specified circuit breakers on the incoming sources of the main switchgear (Bays 2 and 4) to allow the future generator (served by the breaker in Bay 7) to parallel with the utility sources. S&C Mini-Rupter® Switches on the incoming sources and the bus tie (Bay 3) operate in conjunction with an S&C Micro-AT® Source-Transfer Control for automatic transfer between the two utility sources.

Circuit breakers are used for protection of the loop (Bays 1 and 6) because of their ability to clear a fault, and then reclose. Each circuit breaker is controlled by an ABB overcurrent relay, housed in the relay panel (Bay 5). The aforementioned Mini-Rupter Switches permit isolation of the breakers for maintenance.

Automatic reconfiguration of the loop is achieved by use of an automatic switch control featuring the IntelliTeam® Automatic Restoration System in each of the S&C Remote Supervisory PMH-9 Pad-Mounted Gear units. The switch controls work together as a team, exchanging information by radio to quickly isolate a fault from the circuit and restore service to as much of the load as possible, using the Mini-Rupter Switches in the gear. The IntelliTeam system uses true distributed intelligence, requiring no central processing or SCADA.

A WinMon Graphical User Interface was furnished, allowing plant personnel to communicate with the switch controls for remote monitoring and on-line adjustment of system set points.

A unit of S&C Remote Supervisory PMH-9 Pad-Mounted Gear featuring an automatic switch control is shown below.

Results

The new looped system with automatic circuit reconfiguration and automatic source transfer is efficiently protecting the connector manufacturer's plant from utility outages and cable failures.

S&C Remote Supervisory PMH-9 Pad-Mounted Gear featuring an automatic switch control.

