



S&C Pad-Mounted Gear Connects Generator Farm to Power Grid

S&C Featured Solution: PMH Pad-Mounted Gear

Location: Southeastern United States

Customer Challenge

Satisfying peak demand has become a challenge for some electric utility companies. One utility in the southeastern United States determined that they needed 50 MW of additional capacity that could be brought on-line quickly, as dictated by demand. Diesel generators were the only option.

Since the largest commonly available diesel generator only develops about 2 MW, a farm of 30 units would be necessary to meet the 50 MW requirement. Metal-enclosed switchgear or pad-mounted gear would be used to switch and protect the generators and their step-up transformers.

S&C Solution

The utility had good experience with S&C PMH Pad-Mounted Gear and preferred it for this application. After it was determined that the gear could be manufactured in time to meet the utility's tight delivery schedule, the utility turned to S&C for help with the system configuration and resolution of transformer-inrush and fault-protection issues.

Thirty 2 MW generators were procured, divided into six groups. Each group consists of five generators, each with a step-up transformer, and three pad-mounted gear units. A riser connects each group to double-circuit, 13.2 kV, 1200-ampere bus running overhead. The top photo shows the two circuits running one above the other, on the utility pole crossarms in the background.

A 30-unit generator farm.



Two pad-mounted gear units are located between two generators (generator on right is not visible).



S&C Pad-Mounted Gear was delivered and installed in accordance with the utility's aggressive construction schedule, and has provided excellent performance in this application.



The generator farm is located adjacent to a bay, and the water table is only 2 feet (30 cm) below grade. As a result, the trenching required for foundations and cables was not possible. Each unit of switchgear was placed on a conventional pad, which was then placed on a concrete apron for stability. Wooden platforms were utilized for switching purposes.

The circuit configuration for each of the six generator groups is shown in the single-line diagram below. A Model PMH-12 serves three of the generators, and a Model PMH-7 serves the other two. Each unit features S&C Type SML-20 Power Fuses and an S&C Mini-Rupter® Switch.

Both switchgear units are connected to a second Model PMH-7, equipped with S&C Fault Fiter® Electronic Power Fuses. Instantaneous-type control modules were selected, featuring 8000-ampere instantaneous pickup. These particular Fault Fitters were chosen because they can handle the inrush current from the group of three step-up transformers totaling 7,500 kVA, whereas typical current-limiting fuses can only handle the inrush current of transformers totaling 2,500 to 3,000 kVA.

Results

The S&C Pad-Mounted Gear was delivered and installed in accordance with the utility's aggressive construction schedule. The gear has provided excellent performance in this application.

Circuit configuration for each of six generator groups.

