Load bank testing helps utility fulfill its commissioning obligations on time

North America/U.S.

Power Plant

CASE STUDY
UTILITIES

Situation

A large co-op utility had spent two years building a new power plant near Brownsville, Texas. Construction was on schedule and ready for the final, critical step before commissioning: the load bank testing of its new engines, including 12 18.5 MW natural gas generators.

However, two months before the scheduled commissioning, the utility discovered that the existing grid couldn't provide enough power to support the scheduled load testing.

This lack of available power meant the utility faced the possibility of failing in its contractual requirements for the commissioning unless it did something quick.

One option was to assemble a temporary high-output power system, develop a new load test methodology for it, and use that unfamiliar system to conduct the tests and thereby comply with commissioning requirements — within their two-month deadline.

So it wasn't just a matter of finding a company that could provide the load bank equipment, the utlity needed an electrical engineering partner that also had proven expertise to support demanding test procedures.

Aggreko solution

Aggreko had the capability to meet the utility's needs, as well as having the engineering experience to understand how to solve the project's problems.

Aggreko assembled a team from its electrical engineering group to design a plan, and a technical support team to handle logistics and load sequence testing and troubleshooting onsite.

The planning team quickly came up with a plug-and-play load test proposal, whereby all the engines would connect through high-voltage feeders directly to the substation's transformers, rather than simply testing the engines' load capacity.

Although this was a more challenging "real-world" test methodology, it had the advantage of being able to quickly detect any inconsistencies.

The most rigorous aspect of this plan was the incremental step testing of the 12 engines.

Each engine was connected to the substation transformer and submitted to step loads in 1,000 kW increments, held and logged for the same interval, and worked up to the 100 percent load threshold.

Power was then decreased in the same step loads, which was a 16-hour process for each engine.

Engines were also tested in sets and reconnected to different areas of the substation transformer. This exhaustive, labor- and time-intensive process was monitored by Aggreko's technical support team.

Aggreko's technical group also recommended including additional equipment as a safeguard to mitigate load bank derating in the summer heat.

As temperatures reached 100 degrees, the redundant equipment ensured uninterrupted load testing at the maximum rating. Testing was completed within the two-month schedule.

Why was Aggreko chosen?

Aggreko was chosen for both the quality of its work and its proven know-how, which the utility had experienced during a previous partnership project.

A director at the utility recalled that Aggreko focuses on solving problems with a total solution, rather than merely renting equipment. The company also has considerable experience with utilities, and prefers to work as co-contractors rather than dispatchers.

When the grid situation arose, the director was confident Aggreko had the capability to support the utility's needs with the right mix of equipment, strategic partnership, capability and engineering expertise.

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