

Comprehensive load testing for new CCGT Power and SWRO Complex Gas turbines

CUSTOMER

Utility Company via EPC contractor

LOCATION

Duqm, Oman

SECTOR

PCR

SEGMENT

Power

APPLICATION

Load testing of main power
(Gas Turbines)

KEY FACTS

324 MW

Combined Cycle Gas Turbine
Power Plant

15 load banks

54 MW Capacity

N+1

Redundancy

THE CHALLENGE

Precise load testing for new gas turbines in unusual circumstances

An EPC contractor, working on behalf of an Utility Company had completed the construction of a new integrated power and water complex as part of the Duqm Refinery development.

The new development included five, 54 MW gas turbines in combined cycle configuration to power the new Duqm refinery with the long term goal of having a reliable, efficient energy supply without grid back up.

Before these turbines could be used, they would need to pass a Full load Factory Acceptance Test (FAT). This would involve incremental and precise loads of power to put the turbines through their paces.

With the lack of energy outlet and

capacity of these turbines being so high, coupled with Covid-19 and location challenges, this meant that a trusted experienced partner would be required for the load testing of the first two turbines. Someone with sector knowledge that could understand the challenges faced and who could deliver a comprehensive load testing facility solution that not only tested the turbines to required standards, but also ensure the timely deployment and installation of the testing facility within the strict deadlines of the client.

If a partner could not be found, the client would have to run entirely on a temporary power plant – something that could impact capex costs quickly.

THE SOLUTION

Customised load bank package to test gas turbine limits

Our team in Dubai quickly devised a 54 MW, 11 kV centralised load bank test facility.

This wasn't as simple as it sounds though. We took into account many variables so that our solution was the perfect fit for the site and for

the customer's needs. Site layouts, extensive technical design data and the ambient temperature of the site were all factors that our experts made allowances for.

The entire solution comprised 15 load banks, 14 step-up transformers, 11 kV

switchgear, auxiliary generators and thousands of metres of cabling. This would provide for infinite load steps to mimic any required load that the turbines may face. It also included N+1 redundancy – reducing any potential disruption to testing.



THE AGGREKO DIFFERENCE

Aggreko put the power back in your hands

THE IMPACT

Cost and delays reduced, efficiency increased

By enabling the gas turbines to be without a grid, we helped our customer avoid a long-term temporary power requirement that would have resulted in delays, issues with the customer's refinery client and higher costs.

The client is now able to fully test its GTs independently of their

customers and will be ready to supply power quickly and reliably.

The 54MW load bank test facility was mobilised and installed within 4 months and has performed faultlessly to date. The Aggreko team in place at site during our work that mean their own workforce can be trained on operations should the project extend.