aggreko

Testing new gas turbines

CUSTOMER International Oil and Gas Major

LOCATION Egypt

SECTOR Oil & Gas

KEY FACTS

4 x Gas Turbines

4 x Load test Engineers

4 x Transformers Supplied

4 x Loadbanks

1 X Ring Master Range



THE CHALLENGE

Delivery, installation and operation of loadbanks to perform rigorous load test on new gas turbines

An international oil company had discovered one of the largest gas reservoirs in offshore Egypt. To harness this potential energy supply, a production facility is required involving gas turbines that would need thorough testing before commissioning.

When commissioning turbines it is expected that they be tested to their full potential - can they achieve maximum load, do they synchronise if multiple units run in parallel, can they take and shed load without any issues?

All units required thorough testing individually at various step loads - from 10% through to 100% - over a 24-hour period to ensure they were mechanically sound. During this period, the load provided by Aggreko needed to remain consistent and available, if not, the test would need to be restarted - delaying commissioning and increasing the fuel cost. At each load-step, the transient response and effect on voltage and frequency needed to be measured and recorded to ensure compliance with the manufacturer's specification.

Once each individual turbine has completed the "heat-run," a second unit would be brought online and synchronised, gradually taking load from one set to the other.

Not all loads are purely resistive and this is the case with large manufacturing sites that have motors and invertors coming on and off line with the needs of production. This can cause the power factor to lead and lag due to the reactive element of the load.

Aggreko's loadbank had to emulate this load requiring both reactive and resistive elements to ensure a true representation of site conditions was achieved.

Rapid deployment of our mobile, modular transformers, loadbanks and adaptive software

Using our experienced design engineers, we assisted in writing the load profile to demonstrate the tests were rigorous enough, giving the customer the confidence that the turbines could operate under full load conditions once commissioned.

The units are modular in design, allowing for easier shipping and installation, which helped us to meet the tightest of deadlines. Our expert technicians were on site within two weeks and the 16 MVA @ 11 kV loadbank package was commissioned within four days. We also fulfilled a request to provide all ancillaries and cabling for the project, delivered from Aggreko's regional logistics hub.

Working from a central control system, we can pre-determine and programme the load steps before the actual test, this can help minimise operator interface and associated risk, also ensuring the test is consistent and repeatable. Due to the criticality of maintaining the load for excessive periods of time, and in such high ambient temperatures, we added spare capacity into the loadbank package to minimise any downtime due to over-heating.

Some parts of the testing, especially at lower loads, required the finest of adjustments, and with our adaptive software, we could perform those minute changes, down to 1 kVA increments in resistive and reactive loads.

We used the resulting data to enhance our service and adapt to the changes we are presented with, making each solution more optimised.

During testing we can capture and trend the information, allowing us to produce an accurate report demonstrating the outcome of the heat runs, and the transient responses after applying and removing load



KEY EQUIPMENT

1x Diesel Gen set

1x Fuel Tank Supplied

Aggreko supplied a full turn key solution including HV & LV cables with termination kit



THE IMPACT

Project stayed on track thanks to our turnkey solution with fast delivery, expert operation and collaboration with the customers' team Our mobile, modular equipment, intuitive software and expert people combined to meet strict timelines, and we produced a turnkey solution that met the customer's requests. The result is that the customer can now concentrate on producing gas that could help boost growth in Egypt.

THE AGGREKO DIFFERENCE

We deliver in testing circumstances

The Aggreko team have played a significant part in the projects' first major milestone. They have performed to a consistently high standard and we are very pleased with the performance to date.

Project Commissioning Manager

