

CASE STUDY



CUSTOMER

National Grid Grain
LNG

SECTOR

Power Gen

SERVICE

Site Services

On site motor testing

National Grid operates a Liquid Natural Gas (LNG) terminal at the Isle of Grain in Kent, the largest LNG facility in Europe with a throughput capability of 15 million tonnes per annum.

A series of 6.6kV blower motors operate on the site. Given the critical nature of the operations at the site it is essential to minimise unplanned downtime for all assets and carry out planned maintenance in periods when demand is lower.

To enable a planned preventative maintenance strategy, Houghton International was contracted by National Grid to carry out regular testing on a number of motors at the LNG Grain facility as part of a condition

WHY HOUGHTON INTERNATIONAL?

- Expert on-site inspection and testing services
- Houghton International is equipped with high specification test equipment for on site testing
- IECEx certified to carry out repairs of machinery operation in explosive environments
- Comprehensive support and servicing for all electro mechanical repair and maintenance requirements

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Houghton International
Electro mechanical innovation



THE SOLUTION

During periodic site visits, engineers from Houghton International carry out tests on the high voltage motors to monitor and log the condition of the electrical insulation of each asset. By carrying out the testing periodically, the engineers can use the data as a trending measure to identify motors showing high levels of Partial Discharge or other signs of insulation material deterioration or aging.

The test regime consists of Partial Discharge (PD) testing and a range of high voltage Baker tests:

- Low resistance and impedance
- Insulation Resistance (IR)
- Polarisation Index (PI)
- HiPot test
- Surge interturn test

Collectively these tests can identify a range of insulation and winding issues, both turn-to-turn and phase-to-phase, providing a thorough assessment of the motor's condition.

Reports are provided, giving a summary of test results and a clear pass or fail indicator for each test. Further analysis of each motor highlights recommendations for ongoing monitoring, or, where results show signs of insulation aging or deterioration, recommendations for overhaul.

When a scheduled overhaul is required, this is carried out in Houghton International's highly accredited, 120,000 sq ft facility. This could range from minor maintenance to a full rewind, all of which can be carried out in-house.

Rewinds are carried out using Houghton International's HiFLEX coils, which are manufactured in-house for complete control over quality and lead time, better windability, more protection from moisture and

contaminants, and reduced Partial Discharge. In one recent rewind the motor's Partial Discharge reading was independently verified, demonstrating a reduction in PD from 5041PC to 220PC (Pico Coloumbs).

THE RESULT

A proactive maintenance schedule helps prevent costly unanticipated failures, and Houghton International's site services engineers can draw on years of experience to provide in-depth analysis of test results to further inform the maintenance strategy. By carrying out regular testing, we can identify which motors are deteriorating more quickly and therefore should be prioritised for maintenance.

Houghton International's site services team also has comprehensive capabilities to fully manage the process of testing, decommissioning, removal, transportation, overhaul or rewind, reinstallation and recommissioning at Grain LNG, making the process simpler and smoother for National Grid.

With an in-house coil manufacturing facility, Houghton International has complete control over quality and lead times, meaning repairs and rewinds can be carried out to tight schedules in line with National Grid's requirements to minimise downtime.

Houghton International is also IECEx and Achilles UVDB & FPAL accredited, demonstrating proficiency to carry out work for the oil & gas and utilities sectors and to carry out work on machinery operating in explosive environments. All work is carried out in line with the relevant standards, providing added assurance of a quality repair.



Thanks to Houghton International for their continued professional & efficient service. Without HI we would not have identified the deteriorating condition of a number of critical motors that could have failed in service with implications leading to potentially large commercial costs for the terminal.

I would gladly recommend HI to colleagues and others in the industry. It has been a pleasure to work with them and I look forward to our continued working relationship."

Ashley Smith, National Grid

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