

CASE STUDY



CUSTOMER

Leading Gas Supplier

SECTOR

Industrial & Manufacturing

SERVICE

HV Testing and Site Services

Electric Motor Testing

In order to ensure consistency across all their sites, an industrial gas specialist is introducing a program of electro mechanical testing with consistent testing methods and criteria across their many sites. The aim is to establish a baseline for performance across sites and optimise resources by minimising unplanned downtime.

Houghton International was initially contracted to carry out the onsite inspection and testing of high voltage motors at the company's North East site, beginning with four compressor motors to be inspected and tested during a scheduled maintenance period.

WHY HOUGHTON INTERNATIONAL?

- With extensive experience and technical support capabilities, Houghton International's site services team provides expert on-site inspection and testing services.
- Houghton International is equipped with state of the art test equipment including a Megger PPX40 Power Pack for testing of motors and generators up to 11kV.
- Offering a wide range of services from standard machine overhauls to complex high voltage rewinds, Houghton International can offer comprehensive support for electro mechanical repair and maintenance needs.
- Houghton International had already demonstrated the quality of service they provide through a range of previous projects with this leading gas supplier.

www.houghton-international.com



Houghton International
Electro mechanical innovation



THE SOLUTION

During a maintenance shutdown period Houghton International site engineers attended the facility to carry out testing and inspection of four motors. The testing specifications were defined by the customer in order to ensure consistent testing standards for machinery across different sites. Electrical tests, mechanical checks and visual inspections were carried out.

Houghton International provided a range of high voltage electrical testing to meet the needs of the customer, including phase resistance and inductance, insulation resistance and polarisation index (IR/PI), HiPot, surge and partial discharge (PD) testing.

During testing the engineers found low PI readings on one motor, a potential sign of contamination or insulation degradation. Based on past experience with this issue, the site team initially used heaters to increase the temperature of the motor and remove any surface moisture to see if this would increase PI readings to an acceptable level. As the customer had reported prior issues with this motor, the site team recommended the motor be transported to Houghton International for more in depth inspection and testing.

In addition to electrical tests, mechanical checks and visual inspections were carried out on each motor. Mechanical and visual checks included bearing checks, inspecting for oil and water leaks, and visual inspection of the stator for signs of contamination or partial discharge. New, spare bearings were also manufactured and supplied.

On one motor the visual inspections highlighted signs of overheating and corona discharge. The site team recognised these signs as early indications of HV electrical insulation deterioration that would ultimately lead to machine failure, and advised that the stator to be rewound rather than risk in-service failure of the 11kV motor at a critical moment. The motor was subsequently received into Houghton International's works and a full rewind carried out, before being returned and recommissioned at the site.

THE RESULT

A full range of tests were carried out and reported, including electrical and mechanical checks and visual inspections conducted by an experienced team. This included the checks and tests specified by the customer as part of their standardised maintenance program.

Conducting a wide range of tests allows engineers to build a better picture of the condition of the machinery. Standard onsite tests, such as phase resistance and inductance and IR/PI are useful but insufficient for finding all possible faults in motors. Additional tests requiring specialist equipment and expertise are able to detect turn-to-turn issues as well as phase-to-phase and provide more information on the condition of the motor. Not only will this reduce the risk of unexpected in service failure, but it also provides a more thorough baseline for periodic testing and ongoing condition monitoring.

With expertise in a full range of electro mechanical services, Houghton International provide both ad-hoc repairs and scheduled maintenance, and so can resolve issues identified during testing, from minor adjustments through to major overhauls or full rewinds.

Houghton International

Ronnie Mitten Works,
Shields Road, Newcastle upon Tyne,
NE6 2YL, UK.

T: +44 (0)191 234 3000
E: info@houghton-international.com
W: www.houghton-international.com



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