



CUSTOMER

BOC

SECTOR

Industrial &
Manufacturing

SERVICE

Electric Motor
Overhaul & Repair

7750kW motor refurbishment

BOC operates an air separation plant in Fawley that supplies gaseous oxygen and nitrogen to the Esso plant located close by. The main air compressor (CP11) at the plant is driven by an 11kV 7750kW synchronous motor, which when inspected and tested during a shutdown, was isolated due to high levels of partial discharge.

It was also discovered that the rotor had an earth fault which was due to damaged insulators on the rotor up-shaft bars. The previously retrofitted Rosenberry Hub was found to be excessively corroded and damaged which required replacing too.

Houghton International was awarded the order for the complete refurbishment of the motor and manufacture and supply of all high voltage coils.

WHY HOUGHTON INTERNATIONAL?

- Extended warranty on all works
- Competitive tender in terms of cost and lead times
- Confidence in services, personnel and facilities following site visits from BOC



THE SOLUTION

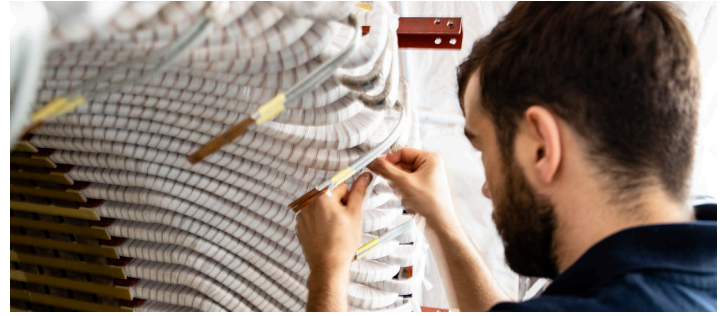
After the motor arrived at Houghton International's IECEx certified large machine shop, an initial inspection and assessment on the condition of it was carried out. Prior to commencement of the works, a dedicated cleanroom area was erected to prevent any contamination of the stator and windings.

The primary scope of the works consisted of refurbishment of the stator and rotor. Firstly the stator windings were stripped out under controlled conditions to prevent any possible damage to the stator core and an assessment was carried out to increase the amount of copper in the stator windings and improve the efficiency of the motor.

Existing blocking, bracing, slot wedges and coils were carefully removed to avoid damaging the slots and laminations, followed by cleaning of the stator core in preparation for the new windings. A core flux test then followed to determine condition of core.

72 HiFLEX coils, manufactured at Houghton International's in-house coil manufacturing facility, were then wound by a specialist winding team. The unique HiFLEX insulation system helps to alleviate any partial discharge emanating from the coils as each individual coil is fully tested at point of manufacture, guaranteeing dielectric integrity. In addition, having the coils manufactured in house allowed for full traceability and assurance on the whole winding process. Following the rewind, the stator was varnished and cured with quality assurance checks and testing conducted thereafter.

In terms of the rotor, coil connections were remade, six new up-shaft leads were manufactured, and new insulators and up-shaft bars were fitted and secured. A new Rosenberry Hub was also fitted. Once the IR tests were carried out on the refurbished rotor, it was fitted into the rewound stator



followed by assembly of the bearings, covers and components and a full external paint job.

THE RESULT

The job was project managed from start to finish by Houghton International, including the collection of the motor, inspection and refurbishment of the motor and transportation back to BOC's air separation plant.

The motor was delivered back to the Fawley site ready for reinstallation and recommissioning by Houghton International's site services team where a complete motor startup and synchronisation test was also carried out.

The works were completed to a project plan requested by the customer and regular updates were provided, keeping BOC informed throughout the process. Houghton International ensured that the job was cost effective for the customer by agreeing the scope of work in advance of work commencing. Moreover, the extended warranty gives that added confidence to the customer in the works carried out.



Houghton International was awarded the order following a tender process to carry out a refurbishment of a 7750 kW synchronous motor. This motor is a critical asset at our Fawley plant, and it was imperative that the job was carried out to the highest standards.

On the whole, I am extremely pleased with the quality of the refurbishment and the competence shown by the team at Houghton International. The communication from the very beginning was excellent and this gave us that added confidence in the team working on the motor.

I would not hesitate to recommend Houghton International and would gladly work with them again in the future."

Steve Wilson, Electrical Engineer, BOC Fawley

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