

Turbo Generator Major Inspection

Quartzelec disassemble 12.5kW AEI turbo generator for their client, to inspect, test, and perform necessary repairs, ensuring continued reliable operation

POWER GENERATION | SOUTH EAST, UK

Our Customer's Challenge

The client, a resource and waste management company serving the south east, processes approximately 763,408 tonnes of household waste annually. Their operations focus on safely managing waste, minimising environmental impact, and generating electricity for the local community.

To ensure uninterrupted and efficient waste processing and energy generation, the client faced the critical challenge of maintaining their infrastructure, including conducting a comprehensive major inspection on one of their five waste processing lines each year, encompassing both the turbine and generator sets.

The Quartzelec Solution

Working closely with a 3rd party contractor, Quartzelec coordinated work schedules to ensure efficient disassembly and reassembly on-site. After disassembling the generator, Quartzelec transported the turbo rotor and exciter to their Rugby Factory workshop, where they conducted inspections, testing, and cleaning in a controlled, clean environment.

During the inspection of the exciter and rectifier, heavy contamination was discovered, along with a low Insulation Resistance (IR) reading of 3.6MΩ. The rectifier also exhibited damaged copper connection pins and captive nuts, all of which were repaired or replaced. The unit was then thoroughly cleaned, significantly improving its IR.

Upon examining the rotor winding connection to the hub, arcing was noted on all bolted connections to the rotor winding steel band and were overtaped to restore the damaged thicknesses.

On-site, Quartzelec carried out cryogenic cleaning of the stator and performed a detailed stator winding inspection which revealed early signs



The Quartzelec **Solution** (cont'd)

of Partial Discharge (PD) activity in one slot mouth block, which required rectification to prolong the winding's lifespan. Repairs were made by removing the adjacent slot mouth blocks, cleaning back through the top varnish and paint to expose the stress grading tape, which was then reinstated with semiconductive paints.

Additionally, a cracked slot mouth block was found and replaced with a new block, manufactured at the Quartzcoil Fibreglass Workshop, part of the Quartzelec group of companies, and was installed on-site.

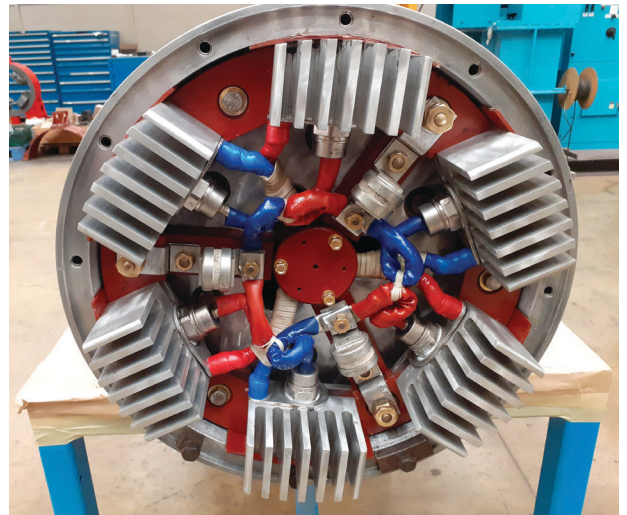
Damage to the stator end winding bracing cord and glass tapes was also identified, causing movement in the top and bottom stator bars, which were repaired to restore the stator bracing to an acceptable standard.

Quartzelec returned to site during the client's generator re-assembly and also supported the commissioning of the generator set, including AVR setting checks and synchronisation and was successfully returned to service without any operational issues.



Key Benefits

- Collaborative Working: Coordinating schedules and workflows to complete the work, meeting clients timelines and minimising operational disruption
- Improved Future Operation: Ensuring reliable and efficient operation for the customer's future needs
- Comprehensive On-site and Off-site Services: leading to an enhanced maintenance effort and improved operational efficiency
- In-House Expertise: By using in-house fibreglass services, Quartzelec demonstrated custom fabrication and replacement of stator slot blocks, ensuring that components were restored to the highest standard



Comprehensive
Repairs &
Refurbishment

Collaborative
Working

In-House
Fibreglass
Expertise