

Pump Motor Overhaul

Quartzelec completes a full overhaul of the 25 meters deep No.7 pump motor at Empingham Pumping Station, restoring it to full operational capacity and ensuring the continued delivery of 600l/s into Rutland Water, guaranteeing a reliable water supply

ANGLIAN WATER | WATER & SEWERAGE | LEICESTERSHIRE, UK

Our Customer's Challenge

Empingham Pumping Station, managed by Anglian Water, faced a critical challenge due to a serious vibration failure in one of its nine pump sets, vital for the Rutland Water Refill during winter. The pump, located 25m deep with 8 sections of 3m shafts in a confined space, delivers 600l/s into Rutland Water—the largest reservoir in England, supplying potable water to its customers. Condition-Based Monitoring identified a failure in the top two water bearings, requiring immediate isolation and removal. With a typical turnaround in excess of 6 months, the project was time-sensitive, with the critical need to restore the pump to operation before the winter season.

The Quartzelec Solution

Quartzelec provided a comprehensive solution to the critical vibration failure, including a complete overhaul of both the motor and pump, where they were dismantled for initial visual checks including mechanical and electrical inspections.

Static electrical tests were conducted on the motor to assess its condition, followed by washing and baking of the stator windings to remove contaminants and restore insulation. Both end shields were bored and bushed to restore proper alignment and prevent further wear, while the rotor was dynamically balanced to reduce vibration and ensure smooth operation. The stator windings were re-varnished and electrical checks were carried out, including no-load tests, before repainting the motor externally to restore its protective coating and improve appearance.

After all measurements were recorded, the rubber bearings were found to be out of tolerance, so new units were manufactured to specification. Nine liners were machined from the pump housings, and new liners were manufactured to restore proper fit and function. The bottom pump sleeve was machined using free-issue spares, and new locking nuts, screw collars, screw rings, and locking rings were manufactured to replace worn fastenings. The impellers were re-tyred and balanced to ensure



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

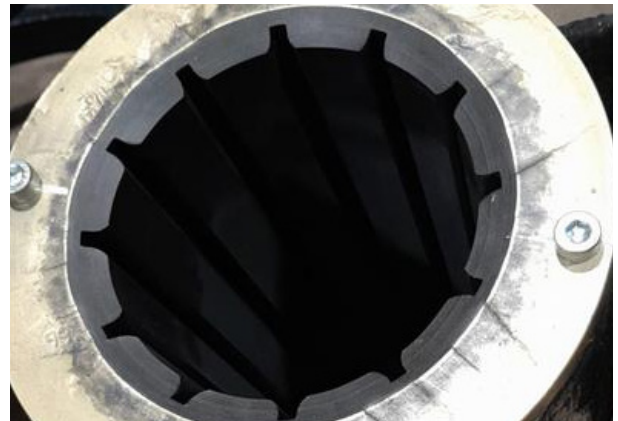
they performed efficiently and smoothly, and the wear rings were skimmed to restore them to their original condition. All threads were dressed to ensure proper fit, and all bolts, nuts, and O-rings were replaced with new components. The parts were shot-blasted and painted to prevent corrosion and further wear, with a primer coating applied for enhanced protection. Both units were reassembled and delivered back to site, ready for operation.

With meticulous attention to detail and a rapid turnaround time, Quartzelec completed the entire overhaul in just 16 weeks, far exceeding the typical 6 months it would usually take for such critical work.



Key Benefits

- **Quick Turnaround:** Rapid 16-week turnaround, ensured that the critical pump was quickly restored to service
- **Expert Technical Support:** In-depth M&E testing ensured that every aspect of the pump and motor was addressed
- **High-Quality Parts and Materials:** Including the manufacture of new, precisely specified components, restoring the pump's reliability and performance to optimal levels, enhancing the overall system's efficiency and longevity
- **Continued delivery of Water:** Ensuring a reliable supply of potable water to its customers



“We're relieved to have the pump back in operation with such a quick turnaround, and we truly appreciate the excellent work and dedication from the Quartzelec team in making this happen”
 Ian Rule – Director, Water Services

