



# On-site valve overhaul helps major outage at nuclear power station

*The overhaul programme included a wide range of valves*

**Almost 750 valves were successfully overhauled recently, on-site, at the UK's largest Magnox nuclear power station in Wylfa, North Wales. The work was carried out by specialist engineering and technical services company Furmanite, which helped to keep the major shutdown on-schedule.**

The contract was undertaken during the annual outage of the plant, and involved work in the turbine, boiler and numerous other areas of the plant. The substantial valve overhaul programme included safety valves ranging in size from 1.5 to 10 inches, isolation valves from 0.5 to 21 inches, and butterfly valves up to 50

inches in size. The majority of these valves were overhauled on-site, including disassembling, inspection, lapping and reassembling, representing efficiency savings by avoiding the need to remove several hundred valves to the workshop. The remaining valves were taken to Furmanite's Warrington workshop to be

overhauled and to allow insurance witnessing and approval by Zurich following commissioning on Furmanite's test rig.

The work was carried out by Furmanite SQEP (Suitably Qualified and Experienced Personnel) technicians. They were supported by a site management team



(comprising a site manager, quality engineer, health and safety engineer, supervisors and a technical clerk) who were on site before, during and after the outage. Furmanite outage manager Gary Marsh explained: "We were called in to undertake this work as a result of our excellent track record in previous shutdowns on the site. Our site team was able to meet Magnox North's stringent safety requirements and successfully complete the scope of works."

### **In-situ and offsite**

Work was undertaken in-situ to wedge gate valves (up to 24 inches in size), butterfly valves (up to 50 inches), screw down non-return valves, parallel slide, non return, globe, and by-pass valves. In each case, the procedure began with the removal of the valve bonnet, requiring craneage or lifting from appropriate supports with suitable lifting tackle on the larger valves, where the bonnet is too heavy for manual removal. This was followed by cleaning the body and bonnet to allow close inspection, and checking of the sealing arrangement to obtain like for like replacements. All valve components were checked for wear, corrosion, cracking, and so on, and the valve seats or discs were then lapped as required, utilising a specialist portable lapping machine, with fine grained abrasive discs for minor imperfections and coarse grained for rough surfaces. The valves were then re-assembled using new joints and seals, and fasteners fitted and tightened as required, generally using Furmanite's controlled bolting service to ensure the flange fasteners were tightened to the correct torque settings, with added safety benefits.

Safety valves requiring offsite overhaul were safely removed (and the flanges cleaned, inspected and blanked off), and transported to the workshop where they were pre-tested, and the relevant information recorded. The valves were then fully disassembled, cleaned, and all



### **About Wylfa**

Wylfa is one of ten Magnox sites in the United Kingdom at various stages of their operational lifecycle being managed by EnergySolutions on behalf of the owners, the Nuclear Decommissioning Authority (NDA). The site started generating electricity in 1971 and on a typical day it supplies 23 million kWh – enough to meet the electricity needs of two cities the size of Liverpool or Manchester.

### **About Furmanite**

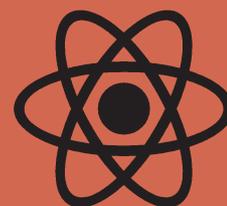
Furmanite is a specialist engineering and technical services company, offering end-to-end management and maintenance solutions, services and products across the globe. Its business goal is to maximize asset uptime for customers in a wide range of industries, including nuclear power generation.

components closely inspected for wear, corrosion, cracking or other damage. Any damaged items were replaced, the nozzle disc lapped (either by hand or machine), and the valves re-assembled using new joints and seals. The valves were then tested and the lift and re-seat pressure recorded, with a third party insurance company witnessing the final test to satisfy the statutory requirements for plant safety valves, before the valves were returned to site and reinstalled into position, with the flange fasteners tightened to specified requirements.

### **Statutory checks and maintenance**

Commenting on the programme, Magnox contract manager Peter Malone said: "The annual outage is an extremely important period for Wylfa site. It enables us to carry out vital statutory checks and maintenance that we are otherwise

unable to do when the station is on-load. Any work by our contractors that reduces the amount of time we spend not generating electricity is extremely useful and contributes to our overall efficiency and performance. Furmanite provided excellent site management, site support, technical knowledge and safety culture to ensure a successful outage."



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