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Innovative Valve Delivers Safer Surge Vessel Inspections

Natasha Wiseman*

Natasha Wiseman, Former Editor of Water and Wastewater Treatment Magazine, UK

Introduction

Dwr Cymru Welsh Water rolls out PRV installations on surge vessels.

QED's innovative valve technology slashes inspection times.

Surge systems can now be examined on the ground - without switching pressure off.

A major programme to install an innovative pressure relief valve is helping Dwr Cymru Welsh Water to improve the way it maintains surge vessels in South and Mid Wales. Quantum Engineering Developments (QED) has designed a new pressure relief valve (PRV) assembly that means in-service inspections can be carried out without any disruption to the system.

More than half the existing surge vessels in South Wales have now been fitted with Duplex PRVs manufactured by QED in the UK, which means the annual inspections can be carried out in a fraction of the time.

Surge vessels are installed on the water and sewerage network to help reduce pressure surges in pipelines. Uncontrolled surges can cost utilities millions of pounds every year in fixing burst pipes and water wastage.

They also put the network at risk of negative pressure which, in the case of potable water mains, directly contravenes the Drinking Water Inspectorate's requirement for utilities to maintain adequate pressure to reduce the risk of contamination.

Annual working inspections are essential to keep the assets in service and meeting the statutory legal requirements under the regulations for pressure systems and equipment. Traditionally surge vessels had to be depressurized and drained in order to carry out annual third-party working inspections.

The Duplex PRV system replaces the existing pressure valves with a pair of valves which are housed at ground level. Previously, in order to comply with pressure systems safety regulations, inspectors had to access the valve at the top of the vessel once the whole system had been depressurized, posing a working-at-height safety risk.

Safety Enhanced

With the Duplex PRV the insurance company inspector is able to examine the system on the ground - without switching off the pressure - by switching between one valve and another. This eliminates a potential safety risk and significantly speeds up inspection times.

Greg Sullivan, statutory maintenance engineer from Welsh Water said: "A lot of these vessels were built in the 'seventies without really having best maintenance practice in mind. Previously it would take two or three people two or three days to do this job - now one person can do it in half a day. This represents a benefit for the company.

"When I first made the case for this to our business managers they said: 'It's a no brainer.'"

Welsh Water has now replaced 53 surge vessel control systems with Duplex Pressure Relief Valves with another 30 sites to assess on a case-by-case basis. Engineers from QED have fitted Duplex PRVs as each surge vessel comes up for its annual inspection, minimizing the disruption to the network.

The retrofitting programme won the Chairman's Award at the Institute of Water Welsh region annual innovation awards 2014. It was also commended at the Welsh Water's Occupational Health and Safety Conference 2015.

Tim Harper, Operations Manager, QED said: "Well-maintained surge vessels are essential for protecting water mains. Making sure surge vessels are appropriate to the main they are protecting, and correctly maintained, prevents pressure becoming too high or too low. This reduces the risk of bursts and leaks."

He continued, "It is a legal requirement for any kind of pressurised vessel to follow strict statutory inspections by insurance company inspectors, but releasing assets for inspection in it risks disruption of supply and statutory non-compliance.

"The design of the Duplex Pressure Relief Valve means inspectors can switch between one control valve and another - ensuring both are working correctly without the need to isolate the pressure vessel and disrupt the system. We are delighted that Welsh Water has adopted this extensive retrofitting scheme and we believe it will enable them to deliver a better, safer and cheaper service to water users."

About QED

Quantum Engineering Developments Ltd (QED) is an industry leading engineering company specializing in the supply, installation and refurbishment of surge control systems; bespoke compressor packages for DAF and backwashing; and instrumentation and controls. For over twenty years QED has been successfully supporting and servicing all the major water utilities in the UK. To ensure the superior quality of our service QED only uses in-house engineers, specifically qualified and trained in this specialist area.

***Corresponding author:** Natasha Wiseman, Former Editor of Water and Wastewater Treatment Magazine, UK, Tel: +44 (0)1273 721150; E-mail: vnatasha@wiseonwater.com

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