

IFAT, Munich exhibition centre, Hall A5, Stand 243

## **Waterworks upgrade supports regional economic regeneration**

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**A water treatment works (WTW) in South Wales has had its control system completely upgraded, without any disruption of supply to the 70,000 people it serves. The new control system is built around automation equipment from Mitsubishi Electric that has delivered increased reliability and performance, which in turn has allowed the plant to achieve its maximum processing capacity.**

The Nantybwhc WTW is owned and operated by Dwr Cymru Welsh Water (DCWW) and has been supplying potable water to local towns in South Wales since the works was first built in 1993. However, by 2013, the original control system was beginning to show its age and was in need of an upgrade. Not only did DCWW want to ensure ongoing reliability, but it also needed to make sure the facility could meet the capacity of a growing population in the local area.

To help with the design, installation and commissioning, a local system integrator Oasis Software Solutions (OSS) was brought in. The team at OSS soon realised that enhancements could be made on multiple levels using state-of-the-art Mitsubishi Electric control systems.

To assure reliability of the water treatment process, system redundancy was a necessity. To meet this requirement, OSS decided to base the upgrade on two pairs of redundant Mitsubishi Electric MELSEC-Q Series programmable logic controllers (PLCs). Each redundant system would have two central processor units (CPUs) and a mix of traditional

I/O and remote I/O. The remote I/O would be connected via a number of different networks, some using fibre optic MELSECNet/ H and others using Profibus.

The dual redundant CPUs (control and standby) mean that any failure of the control CPU causes immediate transfer of control to the backup, preventing system failure or interruption. Switchover time is typically around 20–40ms, ensuring a smooth and near instantaneous transfer. Because the CPUs reside on physically separate racks, the control CPU can also be replaced while the backup maintains system operation. Most parts are interchangeable with standard Q Series systems, which helps to control both purchase cost and total cost of ownership.

Neil MacDonald, Managing Director of Oasis Software Solutions, explained: “The mixture of technologies used for the remote I/O solutions demonstrates the flexibility and versatility of the Mitsubishi Electric MELSEC-Q Series solution.

“Where the system required low density I/O and a Profibus network was already available to interface with inverter drives, we used a slice I/O solution.” This guaranteed component compatibility across the network and also saved both time and money at the commissioning stage.

“For critical areas of the process, a fully redundant MELSECNET/H solution was provided with the capability of utilising high density I/O modules, connected to a high speed, high integrity fibre optic network. A fibre optic Ethernet ring was installed to provide peer to peer PLC communications and SCADA networking, offering a modern, future proof interface that adhered to the DCWW AS427 Industrial Network Communications standard.”

Other aspects of the project that contributed to the overall upgrade included augmenting existing instrumentation, replacing existing variable-speed motor drives, modifications to improve the water treatment process, replacing local loop controllers and panels, plus a new SCADA (supervisory control and data acquisition) system.

The design and planning stages of the project ran smoothly and the decision to go for a Mitsubishi Electric solution meant many of the supply and integration issues with legacy equipment were easily addressed.

Today the redundant systems ensure that Nantyburch's daily potable water requirement of 20 megalitres is satisfied, while the improvements to the control system and processes mean that the plant is easily capable of increasing supply to 30 megalitres per day in order to take care of future demands.

First released in the United Kingdom in October 2015

**Note:**

See how Mitsubishi Electric is able to respond to today's automation demands in the water industry:

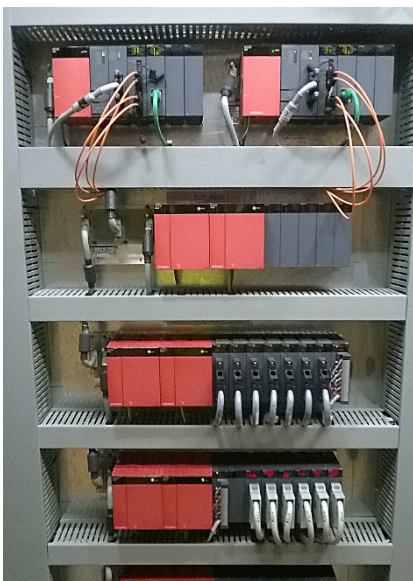
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**Image captions:**



**Picture 1:** A water treatment works (WTW) in South Wales has had its control system completely upgraded, without any disruption of supply to the 70,000 people it serves.

[Source: Dwr Cymru Welsh Water]



**Picture 2:** To assure reliability of the water treatment process, system redundancy was a necessity. To meet this requirement, OSS decided to base the upgrade on two pairs of redundant Mitsubishi Electric MELSEC-Q Series programmable logic controllers (PLCs).

[Source: Dwr Cymru Welsh Water]



**Picture 3:** Mitsubishi Electric MELSEC-Q Series PLCs are designed to provide a high functionality platform for automation, suitable for a wide range of applications across the full spectrum of industrial sectors.

[Source: Dwr Cymru Welsh Water]



**Picture 4:** Today the redundant systems ensure that Nantylwch's daily potable water requirement of 20 megalitres is satisfied, while the improvements to the control system and processes mean that the plant is easily capable of increasing supply to 30 megalitres per day in order to take care of future demands.

[Source: Dwr Cymru Welsh Water]

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**Note to Editor:** if you would like the text in another language please contact Philip Howe at DMA Europa – [philip@dmaeuropa.com](mailto:philip@dmaeuropa.com).

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With over 90 years of experience in providing reliable, high-quality products to both corporate clients and general consumers all over the world, Mitsubishi Electric Corporation is a recognized world leader in the manufacture, marketing and sales of electrical and electronic equipment used in information processing and communications, space development and satellite communications, consumer electronics, industrial technology, as well as in products for the energy sector, water and waste water, transportation and building equipment.

With around 129.000 employees the company recorded consolidated group sales of 36,0 billion US Dollar\* in the fiscal year ended March 31, 2015.

Our sales offices, research & development centres and manufacturing plants are located in over 30 countries.

Mitsubishi Electric Europe B.V., Factory Automation European Business Group (FA-EBG) has its European headquarters in Ratingen near Dusseldorf, Germany. It is a part of Mitsubishi Electric Europe B.V., a wholly owned subsidiary of Mitsubishi Electric Corporation, Japan.

The role of FA-EBG is to manage sales, service and support across its network of local branches and distributors throughout the EMEA region.

*\*Exchange rate 120 Yen = 1 US Dollar, Stand 31.3.2015 (Source: Tokyo Foreign Exchange Market)*

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**Press contact:**

**Mitsubishi Electric Europe B.V.**

Factory Automation European Business Group

**Monika Torkel**

Expert Marketing Communications

Mitsubishi-Electric-Platz 1

40882 Ratingen, Germany

Tel.: +49 (0)2102 486-2150

Fax: +49 2102 486 7780

[Monika.Torkel@meg.mee.com](mailto:Monika.Torkel@meg.mee.com)

**PR agency:**

**DMA Europa Ltd.**

**Mr. Roland Renshaw**

Europa Building, Arthur Drive, Hoo Farm Industrial  
Estate, Kidderminster, Worcestershire, UK

Tel.: +44 (0)1562 751436

Fax: +44 (0)1562 748315

[roland@dmaeuropa.com](mailto:roland@dmaeuropa.com)

[www.dmaeuropa.com](http://www.dmaeuropa.com)