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Wessex Water Completes Multiple Site SCADA Migration

Wessex Water is a major utility providing almost 1.3 million customers with around 285 million litres of water a day, as well as removing and treating over 481 million litres of sewage from around 2.67 million people at 405 treatment works, seven days a week.

A technology framework agreement was established between Wessex Water and Siemens some seven years ago, hence from 2010 all control and monitoring systems for Wessex Water's capital programme made heavy use of Siemens PLC, WinCC SCADA, HMI and communications products.

Wessex Water's engineering and construction in-house automation team led by Dave Mining (Technical and Development Manager - Automation), in collaboration with technical support staff from Siemens have developed standard PLC software, standard SCADA / HMI configurations, standard software / hardware interfaces for Siemens fixed and variable speed drives and standard control system architectures.

A scheme was approved to replace unsupportable legacy SCADA systems on 23 of Wessex Water's clean and waste water sites. By selecting WinCC as the replacement SCADA solution, the company could add to the SCADA systems provided for AMP5 / AMP 6 capital schemes and would have a common SCADA platform across 40 of its largest sites.

Dave Mining explains: "Our legacy SCADA hardware, software and operating systems could no longer be properly supported. In addition it was not possible to accommodate any expansion of site control and monitoring systems within the legacy SCADA systems. Clearly this represented an unacceptable business risk."

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The migration project took place over an 18 month period, with the work carried out by a specially recruited small team. The teams had no previous SCADA experience, but were given intensive SCADA and PLC training by automation staff alongside support provided by Siemens. “It was very rewarding to see how well the training was received and how quickly the team were able to implement and extend standard solutions within the WinCC environment. Within a short period of time, the team were able to procure and configure server hardware, procure software and licensing, carry out the conversion, go through extensive office testing before finally installing and testing on site. Each system was handed over to Wessex Water’s Operations Technical Support Group (TSG) for ongoing maintenance and support.”

The conversion exercise involved the re-drafting of some 2,000 mimics and the migration of almost 100,000 tags. Mimic conversion took advantage of standard smart faceplates that were already in place within Wessex Water but were further developed and extended to increase the efficiency of the conversion. Microsoft Access utilities were developed in-house to migrate the legacy databases including alarms, to the structure required for WinCC. Visual Basic (VB) modules were developed to assist with object substitution and bespoke scripting developed for functions not natively provided by WinCC.

While it was important to take advantage of new functionality provided by WinCC, care was taken to maintain the familiar look, feel and navigation of the legacy system. Site staff in particular found this very helpful, and allowed them to more easily get to grips with the new product.

The installations took place with little or no interruption to the operation of the sites. The new SCADA servers had to interface with ageing legacy PLCs using third party OPC software. As part of site testing, both old and new SCADA systems were run in parallel to make sure that all existing functionality, alarms and archiving had been captured. The old systems were removed when a good level of confidence had been achieved.

A number of strategic goals were also achieved, including the use of centrally managed authentication to the SCADA systems, making it easy to add, remove or change staff access. The new authentication system is also very popular with engineering, operational and scientific staff, often removing the need to visit site by providing remote access to the same functionality and high resolution data

archiving. Dave Mining explains: “All activities are now logged using the individual’s credentials, whether they are carried out locally or remotely. Hence it is possible to determine who did what, when it happened and the position before the action was carried out. Wessex Water is now able to roll out similar access across its Siemens HMIs.”

John Thompson, Director of Engineering and Construction, Wessex Water concludes: “The SCADA replacement project was challenging, requiring the use of modern hardware and software technologies in a diverse geographical environment, connected on site to ageing legacy PLCs and offsite with low bandwidth communication links. However with our in-house expertise and the assistance of Siemens, the team has delivered this complex project on time and within budget. We now have a modern supportable common SCADA platform across our major waste and supply sites which will underpin our operational and performance objectives for years to come.”

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