



**BLACK & VEATCH**

# **CWELLYN WTW** **CHEMICAL DOSING SYSTEMS**

CLIENT: BLACK & VEATCH  
PROJECT VALUE: £290,000  
LOCATION: CAERNARFON, NORTH WALES  
PROJECT TYPE: WATER & UTILITIES  
DURATION: 20 WEEKS

CWELLYN WATER TREATMENT WORKS (WTW) IS LOCATED NEAR THE TOWN OF CAERNARFON AND SUPPLIES DRINKING WATER TO CUSTOMERS IN NORTH WEST WALES. A MAJOR PROJECT TO ADDRESS THE DETERIORATION IN RAW WATER QUALITY WAS CARRIED OUT BY DWR CYMRU WELSH WATER TO MEET THE REQUIREMENTS OF THE DRINKING WATER INSPECTORATE (DWI).



**Kemada**  
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PROJECT & CONTRACT SERVICES





## A COMPLETE NEW WATER TREATMENT WORKS WAS BUILT WITH THE NEW PROCESS DESIGNED TO MEET THE EXISTING DEMAND OF 20 ML/DAY AND WAS INTENDED TO ADDRESS A NUMBER OF SPECIFIC REQUIREMENTS SUCH AS TURBIDITY, BACTERIOLOGICAL AND CRYPTOSPORIDIUM REMOVAL.

### THE ISSUE

Prior to the investment, the existing water treatment process utilised pressure sand filters along with chemical dosing to clean and disinfect the water before distribution to the supply network. Over recent years the quality of the raw water source had deteriorated, leaving the existing process at the works unable to maintain the required final water quality.

At the end of 2005 an outbreak of cryptosporidiosis in the community was well publicised and was linked to the water supplied by Cwellyn Water Treatment Works. Urgent focus and investment was required to upgrade the treatment process and enhance the works.

### THE SOLUTION

Black & Veatch, Welsh Water's Asset Management Alliance (AMA) Water Process Partner for AMP 4 investigated options and decided to implement DAF, RGF and newer, fully validated, low power UV disinfection systems. A wash water recovery system, using WRc standard thickeners were also provided along with a chemical dosing plant for coagulation, pH control and sludge thickening.

After a rigorous tender process including interviews, presentations and external audits, Black & Veatch appointed Kemada as the preferred contractor to supply all chemical dosing plants associated with the treatment process. Awarded under an NEC3 Option A contract, Kemada's scope of works including the full mechanical and electrical design including all plant, equipment, instrumentation, control panels and final testing and commissioning before putting into service.

The full scope of works included:

- Design, Supply & Installation of Sodium Carbonate bulk storage and conveying system, complete with batching plant, storage tanks and chemical dosing assembly
- Design, Supply & Installation of Sludge Conditioning polyelectrolyte dosing assembly including polymer loading and make-up systems
- Design, Supply & Installation of Coagulant dosing assembly
- Design, Supply & Installation of Coagulant Aid polyelectrolyte dosing assembly including Polymer Loading and make-up systems
- Design, Supply & Installation of Form 4 Motor Control Centre c/ w integrated Programmable Logic Controller
- Supply & Installation of all Instrumentation (weight, flow, level & pressure)
- Testing & Commissioning of the Works

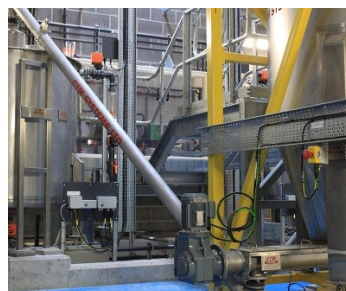
Kemada designed and installed fully operational systems which included a Form 4 control panel comprising of a programmable logic controller (PLC) for complete control over each system and communication to the works complexed SCADA system.

### THE OUTCOME

The full scope of Kemada's supply was supplied, installed, tested and commissioned within the clients original programme and within budgets. Careful liaison with both the customer, end user and other contractors was essential to ensure successful completion of such as prestigious project.

Greg Cropper, Senior Project Engineer for Black & Veatch said;

*"Kemada provided good support from start to finish. Very customer focused."*



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