
Treatment Systems for Drinking Water

Engineered Systems: Clarification and Filtration

Case History: Mayhill Water Treatment Works, U.K

Background

To meet the rising demand for water in the Monmouth area, Dwr Cymru Welsh Water required the refurbishment and uprating of the works at Mayhill to both improve the quality of the treated water and increase production from 2.2 MLD to 5.5 MLD.

Raw water is abstracted from the river Wye and a controlled flow pumped to the works inlet chamber where after the addition of lime and ferric chloride, the flow is split to 2 solids contact clarifiers. Hypochlorite is dosed into the clarified water for disinfection purposes, after which the water flows through 5 rapid gravity sand filters. The filtered water is pumped by variable speed low lift pumps to 3 rapid gravity GAC filters and treated water tank, from where it is further pumped by variable speed high lift pumps to the storage reservoir.

The refurbished plant is fully automatically operated by distributed control system with operator access.

Equipment Installed

- Inlet Pumps Station : Duty/standby horizontal splitcase pumps, type Weir Uniglide SDA 125/150 each rated for 64 litres/second @ 12 m head.
- Removal of existing control equipment and replacement by new MCC/control panel.
- Sand Filters : 5 N^o 3m x 3m rapid gravity filters constructed in reinforced concrete, complete with pipework, automatic valves and flow control.
- Filtered Water Pumps : Duty/standby in-line submersible pumps each rated 64 litres/second @ 5 m head, type ABS AFP1541-2.
- GAC Filters : Conversion and automation of 3 N^o existing 3m x 3m rapid gravity sand filters to GAC filters.
- High Lift Pumps : Duty/duty/standby vertical turbine pumps each rated 32 litres/second @ 50m head, type SPP GR 12A.
- Chemical Dosing : Duty/standby polyelectrolyte pumps Wallace & Teirnan G50V rated 0-10 litres/hour with manual stroke adjustment and variable speed drive.

Duty/standby Ferric Chloride pumps Wallace & Tiernan G50V rated 0-200 litres/hour with automatic stroke adjustment and variable speed drive.

Duty/standby sodium hypochlorite pumps, Wallace & Tiernan G50V rated 0-100 litres/hour with automatic stroke adjustment and variable speed drive.

Control System : Moore Products distributed control system with operator interface.