

Delta Mobrey's MSM400 suspended solids monitoring system helps to modernise our water supply

A UK water company supplies top quality drinking water to more than 2.2 million customers, in one region. The water comes from two hundred and fifty boreholes, six rivers and six reservoirs and is treated by over ninety water treatment plants. The extraction, treatment and distribution must be managed and controlled in the most effective and efficient manner ensuring the quality of the water is never compromised.

One particular site nestled in the English countryside has recently undergone modernisation to ensure it can continue to meet the growing demand for clean water into the future. As part of the upgrade the plant chose to use Delta Mobrey's MSM400 suspended solids monitoring systems to help automate the clarifiers' de-sludge operation. This eliminated both the need for manual intervention and the waste of clean water during the de-sludge cycle.

As part of our continued product development, Delta Mobrey can now detect smaller percentages of suspended solid concentrations, down to approximately half a percent of undissolved solids, using this system, which gives greater confidence when measuring a specific change within the clarity of the water. Ensuring correct water quality is delivered at each stage of the treatment process is essential, as any contamination of water would close a treatment site until the problem was rectified.

The Treatment Process

At this plant water is pumped from the nearby river in accordance with the Environmental Agency's legislation. It is held in a man-made reservoir so demand can be continuously met, and where nature is encouraged to flourish. The water then enters the plant, is tested for quality, and is then pumped up into the clarifiers, or settlement tanks. Here the clearer water spills over the surrounding weir and on to the next stage of filtration. The solids, however, are combined with polymers and sink to the bottom where they settle over time. This creates a sludge blanket which increases in level and weight. The weight of the sludge is continuously monitored and when it exceeds a pre-set value the system begins a de-sludge operation to remove the unwanted sludge from the bottom of the tank.



Wall mounted MSM400 assisting the de-sludging process



One of six man-made reservoirs



Clean water removed from the dirty water

During pump down the sludge passes through Delta Mobrey's MSM448 pipe section. This, combined with the MSM400 control unit measures the solids content and is used to determine when the fluid being pumped down changes from sludge to clear water. This signal is then used to stop the de-sludge operation. The sludge is then taken away and used in alternative ways such as fertiliser for the surrounding fields or taken to a Biomass facility for burning to create energy.

For the remaining clean water, further stages of treatment include RFG (Rapid Gravity Filters), GAC (Granular Activated Carbon) and Ultraviolet Light to kill off remaining bacteria. Throughout these processes acceptable chemicals are added to the water, it is then tested for turbidity and eventually acidity and alkalinity. It is then pumped out and distributed throughout the piping network.

The Solution

The MSM400 system uses the principle of ultrasonic attenuation to determine the solids contents of the liquid passing through the pipe. Before installing the MSM400 solids monitoring system, the de-sludge operation was controlled by a timed interval resulting in a loss of clean water with each cycle. Furthermore, problematic equipment often needed manual intervention.

The water treatment business is of course highly regulated with stringent penalties if performance quality standards are not maintained. It is therefore essential the water treatment process is monitored on a continuous basis from reservoir input to turning on the tap with the customer. Clean and safe water supply is of paramount importance to all water companies in ensuring uninterrupted supply nationwide.

The use of solids monitoring instrumentation on clarifier outlets gives the ideal solution for controlling a sludge pump down sequence. Delta Mobrey has seen an increasing need for specialised instrumentation to ensure the correct and efficient operation of such water treatment facilities. Delta Mobrey will be pleased to discuss any similar applications and to help provide your ideal solution.



Clarifer 1 remote status screen



Screen close up



MSM400 pipe section with integral sensors in operation

