

Troublesome Diaphragm Pump Replaced at South West Water

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South West Water has replaced a diaphragm pump with a peristaltic pump from Watson-Marlow Bredel for dosing coagulant into raw reservoir water for purification purposes. It is thought to be the first time peristaltic technology has been used on a coagulant application, certainly within the South West region.

THE CHALLENGE

Originally the plant, near Falmouth in Cornwall, employed two conventional diaphragm pumps, however, suffering from blocking due to crystallisation, it was decided to investigate alternatives for the critical process of coagulant dosing.

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Michael Galligan
Water Treatment Supervisor
SOUTH WEST WATER

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“The pump has been installed for eight months now and it has proved faultless. In fact as a result of this project, our in-house technical standards officer, who is responsible for reviewing technology suitable for company use, has now added peristaltic pumps to the list. The pump is a good, solid product and we are very pleased with its performance.”

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THE SOLUTION

Following discussion with Watson-Marlow, South West Water took two 520DuN/R2 peristaltic pumps on a trial basis. As peristaltic pumps have no valves, seals or glands, and the fluid only contacts the bore of the hose or tube, there is no risk of the pump contaminating the fluid or the fluid contaminating the pump.

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Within the treatment hall, raw reservoir water is processed through dual stream dissolved air flotation tanks and coagulant (polyaluminium chloride solution) is applied at the front end. The coagulant is applied by utilising a Watson-Marlow 520DuN/R2 peristaltic pump, which doses coagulant between 100-1500ml/min through 12.7mm clear braided hose into the first stage of the purification process via a flow meter. The pump doses at variable rates that are driven by the raw water conditions and the process is monitored continuously so that the optimum amount of coagulant is applied. For instance, in springtime, algae levels in the raw reservoir water are higher due to increasing sunlight levels and the coagulant requires adjusting accordingly, which is where the variable dosing capability of the 520DuN/R2 is invaluable.

Generating a flow rate of between 4µl and 3.5 litre/min, the new 520DuN/R2 pumps have a set speed accuracy of 0.1% and can be calibrated by weight or volume for accurate metering. The pumps provide user feedback via a display and have dual analogue input to control and scale speed. For the first time, the 520 series provides industry with a ‘drop-in’ alternative for diaphragm or piston pumps with variable stroke control.

THE OUTCOME

The trial pumps performed without problem over the trial period and a 520DuN/R2 was subsequently purchased and installed into the treatment hall near Falmouth, one of 30 plants in the southwest region. As the process criticality is high, South West Water has a policy of acquiring a back up, hence two pumps were purchased, one for duty and one for standby. Each day South West Water supplies more than 100 million gallons of water to approximately 1.5 million residents, so there is no margin for error or failure.

“The pump has been installed for eight months now and it has proved faultless,” concludes Galligan. “In fact as a result of this project, our in-house technical standards officer, who is responsible for reviewing technology suitable for company use, has now added peristaltic pumps to the list. The pump is a good, solid product and we are very pleased with its performance.”

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