

Thames Water Use Watson-Marlow Pumps for Ferric Dosing Flocculating Application

Value for life



Leading the way with new sewage treatment methods, Thames Water South East Provinces Waste Water site in Cranleigh is using ferric chloride as a flocculating agent in order to meet the AMP 3 biochemical oxygen demand parameter. For a totally reliable pump that could deal with this highly corrosive chemical, they turned to Watson-Marlow Bredel and their new 520UN/R2 peristaltic pump.

THE CHALLENGE

Moving into the AMP 4 period means tighter consent requirements for water and waste treatment plants, which involves meeting three parameters, including the reduction of biochemical oxygen demand (BOD). In order to do this, Thames Water opted for chemical dosing using ferric chloride.

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The nature of this chemical and the consents regulating the water industry, demands very accurate dosing, not achievable by traditional diaphragm pumps. Peristaltic pumps such as the 520 series from Watson-Marlow Bredel are being recognised by companies such as Thames as the reliable solution to ferric chloride dosing.

THE SOLUTION

There are very few pumps that can handle the corrosive nature of ferric chloride, and even less that can provide flexible control over flow and dosing. The 520UN/R2 from Watson-Marlow Bredel was also selected because of its reliability, critical for meeting the requirements of AMP 3 and 4. Peter Packham, Process Coordinator for Thames Water South East Provinces Waste Water comments: "The ability to handle this aggressive substance, while being 100 per cent reliable is paramount."

Like many other water companies, Thames Water have been using ferric chloride for some time, but only recently have they begun to use the chemical as a flocculent to help them conform to the BOD parameter.

After screening and grit removal, ferric chloride is dosed into the sewage on its journey towards the primary settlement tank. Here the ferric hydrolyses into electropositive ferric hydroxide, attracting negatively charged colloidal substances and thereby forming flocs that clump together and precipitate out. Through this mechanism, ferric chloride reduces BOD as well as removing heavy metals, larvae eggs, pathogenic content, suspended solids and colloidal content. After this process, the sewerage continues through to the primary settlement tanks, and onto the secondary and tertiary treatment stages.

Incorporating high-powered, brushless DC motors and die cast polyester-coated cases, the new 520 series pumps are IP66 rated and have been designed to excel where maximum durability and safety is sought.

Generating a flow rate of between 4µl and 3.5 litre/min, the new 520 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 the pump's own 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.

With the impending introduction of further phosphorus consents, Thames Water has big plans to expand their use of ferric chloride alternative chemical pumps. Using ferric chloride for primary waste treatment has proved to be very successful at this site. It's ability to be an effective coagulant and remove odour-inducing sulphides more efficiently and cost effectively than alum, explains the growing movement towards this method.

THE OUTCOME

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