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# Avoid overdosing chemicals in wastewater treatment

Over the past 20 years, phosphorus and BOD levels have successfully been reduced in effluent discharged into the gently meandering Tualatin River in northwest Oregon. Water management utility, Clean Water Services, has played a significant role to improve water quality in the Tualatin. In fact its Durham and Rock Creek plants have been named EPA Plant of the Year in 2005 and 2006 respectively.

The water treatment facility's high degree of performance is the result of overcoming several challenges over the years. One of the biggest challenges was to find parts for 11 obsolete 14-year-old 3-phase VFD diaphragm alum pumps and hypochlorite pumps used for chemical dosing. Clean Water Services was able to optimize their dosing operation by installing Grundfos DME dosing pumps.

## The Situation

By optimizing dosing processes, Clean Water Services has reduced dosages of alum and hypochlorite. The former peristaltic and solenoid dosing pumps couldn't be turned down far enough to deliver the lower dosages. They risked overheating at low speeds or in some cases became airlocked at low stroke lengths. Dosages therefore had to remain unnecessarily high simply on account of the pump.

Clean Water Services asked around for pumps with a wide operating range. They looked for a solution that could deliver low dosages to meet current needs and later be turned up as demand increases in the future.

## The Grundfos Solution

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**TOPIC:**

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**LOCATION:**

USA

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**COMPANY:**

Clean Water Services

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On the recommendation of Oregon-based Pacific Service & Supply, the Rock Creek facility tested a Grundfos DME 150-4 pump against a peristaltic pump on the hypochlorite disinfection system.

The Grundfos DME 150-4 has an operating range of 0.02 – 39.5 gph, which gives a turndown ratio of 1:800. The pump is remote-controlled via a ProfiBUS 0/4 to 20 mA control signal or manually at the pump itself.

As a result of the test, Clean Water Services installed 11 Grundfos DME 150-4 pumps for both alum and hypochlorite processes.

#### The Outcome

The issues that Clean Water Services once experienced with overdosing and airlocking at low dosages have been resolved.

Even in periods of lowest demand, the Grundfos DME pumps can be turned down to deliver the lowest dosage necessary to do the job. The pump system is nevertheless also geared for the projected higher demand in the future. “A Grundfos Digital Dosing pump can act as a small pump initially and then be adjusted to full capacity later,” explains operations analyst, Rob Baur.

Since a single pump model has such a wide operating range, the same pump can be used for other applications despite different dosage levels. “We installed the same model for both alum and hypochlorite at different flow rates,” says Baur. “Fewer pumps mean fewer parts to inventory.” It also means that only one spare pump is needed for maintenance purposes as it can be slotted into multiple applications each with a different dosage level.

Unlike previously, the new dosing pumps can be operated from any SCADA terminal without having to physically attend each pump and manually adjust stroke setting.