
Dosing accuracy confirmed in university study

Grundfos claims that the SMART Digital DDA-FCM has a dosing accuracy better than +/-1 percent of the set point. This accuracy provides many benefits, among them reduced chemical consumption as well as continuous and precise dosing of chemicals. But is the DDA-FCM really that accurate? A study carried out at the University of Applied Sciences Weihenstephan-Triesdorf by professor Dirk Rehmann set out to investigate this, comparing the Grundfos SMART Digital DDA-FCM 7.5-16 with a previous Grundfos dosing pump (model DMI 3-10) on dosing accuracy and precision.

The DMI 3-10 is a standard dosing pump with synchronous motor and stroke length adjustment. It has a range of 1:10 (300 ml/h to 3 l/h) which can be additionally reduced with the stroke frequency control (start/stop of the motor). The DDA-FCM digital dosing pump has a dosing range of 2.5 ml/h to 7.5 l/h. Using stepper motor technology, the DDA-FCM regulates the dosing quantity by changing the speed during the discharge stroke. Mechanical stroke length adjustment is not required. An integrated sensor in the dosing head of the DDA-FCM measures the dosing quantity and automatically corrects the actual value; at the same time, the sensor monitors the complete dosing process.

The dosing accuracy and precision of both pumps was tested using water and chlorine bleach. The DMI 3-10 dosed water at 20° C with an absolute dosing accuracy of 5.6 percent at 3 l/h (stroke length 100%, stroke frequency 84.5%) and 21% at 0.015 l/h (stroke length 10%, stroke frequency 4.2%). With the DDA-FCM 7.5-16, the deviation between set point and actual value is less than one percent at a flow rate higher than 50 ml/h. At a nominal flow rate of 5 ml/h to 10 ml/h, the value is below two percent.

TOPIC:

Independent university study confirms the exceptional accuracy of the DDA-FCM

LOCATION:

Freising, Germany

COMPANY:

The University of Applied Sciences Weihenstephan-Triesdorf

The repeatability of the DDA-FCM is less than one per cent over the complete dosing range. At a nominal flow rate of 2.5 ml/h, precision was 1.36 percent. By comparison, the dosing precision of the DMI varies from 0.1 to 8 percent.

Chlorine bleach is one of the most commonly dosed chemicals in water treatment. Grundfos claims that the SMART Digital DDA-FCM can dose this degassing chemical (NaOCl 13%, 35° C) without any additional equipment. This claim, too, was verified by the University of Weihenstephan-Triesdorf; the dosing precision of the DDA-FCM for dosing flows greater than 100 ml/h is below one percent. The dosing accuracy of the DMI with chlorine bleach varies between 4.5% and 36.6%, depending on the adjusted flow.

Depending on the proportional dosing quantity, 5 to 19% of chemicals can be saved thanks to the dosing precision of the DDA. When dosing 70 ml/h of flocculants, the DDA-FCM saves 100 litres of flocculant per year.

The conclusion is clear: in terms of dosing precision and accuracy, the SMART Digital DDA-FCM is far superior to traditional dosing technology. The DDA-FCM can dose with extreme precision and accuracy from 5 ml/h to 7.5 l/h. It is also very suitable for dosing degassing liquids with high precision over the entire dosing range and over 0.1 l/h.

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