



# APPLICATION REPORT

Water & Wastewater

## Measurement of flow and total solid content for a flocculant station

- Control loop for the efficient use of flocculants
- Flowmeters fitted to a sludge thickener
- Increased stability in sludge thickening operation

**FILTECH**  
ENTWÄSSERUNG

### 1. Background

Filtech AG specialises in products and services for sludge dewatering. The long-standing Swiss company develops and sells turnkey systems such as screw extruders, decanters, centrifuges, screen filter presses, gravity tables and drum filters as well as the associated peripherals such as pumps and flocculant stations for sludge treatment.

### 2. Measurement requirements

Filtech was contracted by a municipal wastewater treatment plant in eastern Switzerland to supply a gravity belt thickener for mechanically thickening the waste activated sludge in order to optimise subsequent digestion of the sludge.

Medium:	Waste activated sludge
Flow rate:	20 m <sup>3</sup> /h / 706.3 ft <sup>3</sup> /h
Suspended solids:	0.6...1.2 g/l

For efficient use of the flocculant, the system also had to be fitted with a flow measurement for the sludge and the flocculant as well as a measurement of the total solid (TS) content. The measured values needed to be sent directly to the programmable logic control (PLC) in order to automate flocculant dosing as a control loop.

**KROHNE**

## 3. KROHNE solution

Filtech fitted the OPTIMASS 7400 C Coriolis mass flowmeter to its sludge thickener. KROHNE's device records both the flow and the density with just one device. The measuring device determines the TS concentration based on the density. A device version with titanium measuring tube was chosen to enable optimum density measurement. The single straight-tube measuring device does not have any sensors that come into contact with the media and could thus get clogged. It is maintenance-free and self-cleaning. The measuring device was installed directly in a pipe tapered from DN80 to DN50. The size of the measuring device is DN40 which is below the flange size (DN50). Inlet and outlet runs are not required for the mass flowmeter. The OPTIMASS 7400 sends the flow and concentration to the PLC via two current outputs.

The customer also uses the OPTIFLUX 1050 C (DN15) electromagnetic flowmeter to close the control loop. It transmits the flowrate of the flocculant to the PLC.



Flow and TS measurement of waste activated sludge with the OPTIMASS 7400 C

## 4. Customer benefits

Thanks to the combined inline measurement of the TS content and flow, the sludge can now be optimally conditioned with flocculants. This optimised dosing increases the process stability. Thanks to the OPTIMASS 7400, Filtech was able to offer the plant operator a solution which could dose the flocculant according to the actual requirement. This leads to reduced costs for the operator in the long term.

The OPTIMASS 7400 works continuously and is, therefore, the ideal solution for the control loop in this application. There is no manual labour required – either for sampling and laboratory analysis of the TS content or for regular cleaning of the sensors. Compared to a conventional solution with two individual measuring devices for flow and TS or an online analysis of the TS content, the KROHNE device is self-financing.



Flocculant measurement with the OPTIFLUX 1050 C

## 5. Products used

### OPTIMASS 7400 C

- Coriolis mass flowmeter for mass and volume flow, density and concentration of waste activated sludge
- With titanium measuring tube for stable and accurate measurements
- Single straight-tube design: self-draining and maintenance-free
- Maintains operation even with entrained gas of up to 100% (EGM™)



### OPTIFLUX 1050 C

- Electromagnetic flowmeter for simple applications
- Low-cost measurement of conductive liquids



### Contact

Would you like more information about this application or others?  
Do you require technical advice for your application?  
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