

Consistently reliable solids measurement

Teqwave MW 300 improves process stability at Bad Vilbel's wastewater treatment plant



The wastewater treatment plant in the German town of Bad Vilbel went into operation in 2001 and is designed for a capacity of 89,000 PE. It handles 9,000 cubic meters or so of wastewater every day, around 50 percent of which is made up of industrial wastewater, mainly from the mineral water industry.

"The new measurement technology gives us a reliable way of keeping an eye on the solids content at all times. At the same time, maintenance requirements have dropped significantly, making day-to-day operations noticeably easier."

Hans von Dungen
Plant Manager
Bad Vilbel wastewater treatment plant



Hans von Dungen, Plant Manager



The plant handles 9,000 cubic meters of water every day.

Municipal wastewater treatment plants need reliable solids content measurement in order to stay resilient and efficient. However, the optical measuring systems being used in Bad Vilbel's plant were proving to be maintenance-intensive and easily affected by contamination. Now, an in-line measurement process that uses microwave transmission has introduced a reliable method of continuously monitoring the total solids content. Proline Teqwave MW 300 delivers stable real-time data taken directly from the process, reduces maintenance work, and allows quicker intervention if changes to the process are required.

The challenge

Previously, two optical measuring systems had been used to monitor the solids content of digested sludge during sludge dewatering in the wastewater treatment plant. Deposits being left on the sensors led

repeatedly to measuring deviations from the specified limit value of four percent solids content (TS). Dirty sensors also provided incorrect values, resulting in actual values below the limits going undetected in some cases. Regular cleaning, calibration, and manual checks were required to make sure measurements were accurate. Not only that, but changes in the sludge quality – such as color, particle size, or composition – had an impact on optical measurement methods, leading to additional work for operating staff and making process monitoring less reliable.

Key challenges:

- Maintenance-intensive optical measuring systems
- Measurement deviations due to dirty sensors
- Values below limits not identifiable
- Great amount of time spent on cleaning, calibration, and checks
- Measurements affected by fluctuating sludge quality

Our solution

To increase process reliability and simultaneously reduce maintenance costs, Endress+Hauser has installed two Proline Teqwave MW 300 devices for continuously determining the solids content of sludge. The in-line meters use the principle of microwave transmission, which guides microwaves through the medium. The precise solids content of the sludge can be determined from a change in the signals. As this process is not based on optical properties, it is much less sensitive to changes in sludge quality, making it less prone to errors caused by contamination.

Measurements are taken consistently in the process itself, which means that operating staff always have access to the latest measured values. Changes in the solids content are instantly visible, making it possible to intervene in specific areas of the process if required, for example, to adjust the flocculant dosage.

The result

- Reliable real-time monitoring of the total solids content (TS) during sludge treatment
- More stable process control during sludge dewatering
- Significantly reduced maintenance and cleaning effort compared to optical measurement
- Faster responses to process changes due to continuous in-line measurement
- Less work for operating staff



Reliable real-time monitoring of solids content



Proline Teqwave MW 300 in use

Proline Teqwave MW 300 – in-line solids meter

The measuring system makes it possible to continuously determine the solids content of sludge, right in the process itself. Measurement based on microwave transmission and delivers stable real-time data, regardless of any changes in the sludge quality.

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