

TOTAL SOLIDS MEASUREMENT ON PRIMARY SLUDGE

Process optimisation through online
%DS concentration measurement



 **BERTHOLD**

TOTAL SOLIDS CONCENTRATION IN THE WASTEWATER TREATMENT PLANT

A wastewater treatment plant usually consists of a mechanical, biological and chemical treatment step. These three processes produce sludges of different types that require special treatment. In order to perform an optimal purification, it is essential to know the concentration of dry matter. Berthold's LB 566 provides the total solids content which facilitates the calculation and optimises the use of polymers and flocculants.

Online measurement of primary sludge

After the separation of large contaminants, grease and sand, undissolved particles are brought to sedimentation in a clarifier. These deposited substances are referred to as primary sludge.

The primary sludge is conveyed either directly to the digester or to the thickener for further treatment. In the case of direct sludge pumping to the anaerobic digester, it is important to measure the exact dry matter content, which provides an accurate sludge load calculation, thus achieving optimal digestion efficiency.

During further thickening of the sludge, flocculants are added to the process, which leads to optimised dewatering grades. The MicroPolar LB 566 measuring system was developed especially for these applications. The microwave transmitter measures reliably the dry matter content and offers excellent accuracy. Representative measurement results are achieved due to the fact that the entire material flow in the pipeline is detected, even for large pipeline diameters.

Measuring principle

The MicroPolar measuring system uses the special dielectric property of water. It generates microwaves that interact with the water molecules. This interaction induces a weakening of the microwave energy, which can be detected as phase shift and attenuation. As the phase shift and attenuation change is directly proportional to the water content, this allows the determination of the concentration of the medium with high accuracy. Berthold's superior multi-frequency technology guarantees highly stable and reliable measurements that are unaffected by interferences caused by reflections or resonances. The microwave power of a MicroPolar system is so low (max. 10 mW) that the material to be measured is neither heated nor changed in any way.



Measurement of primary sludge with a FlowCell and additional (upper FlowCell) conductivity compensation with sampling valve.

Customer Benefits

- Determination of the total solids to the digester
- Optimisation of the anaerobic digestion process
- Cost reduction through optimised use of flocculants
- Optimised pump utilisation avoids blockages and ensures optimum efficiency
- Non optical measurement, not sensitive to contamination therefore no maintenance required

Technical features

- High accuracy < 0.2 wt. % dry matter content (standard deviation)
- Representative measurement results due to detection of the entire material flow in the pipeline
- No wear of components
- Reliable measurement with only one calibration factor, even with different sludges
- Suitable for industrial or municipal waste waters



Schematic representation of a pipe installation with a FlowCell



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