

Process: Wastewater treatment.
Application: Solids content measurement of dried sludge at a waste water treatment plant.
Product: Senfit BSA–Bio Solids Analyzer. Operating range: 14-45%.

In municipal wastewater treatment plants, drying of sludge is typically carried out in centrifuges and dried sludge is being further processed in number of ways depending on the end use.

In Pulp & Paper industry belt presses are typically used for drying sludge and the resulting dry cake is burned together with bark in a bark boiler.

Occasionally further processing of dry cake takes place outside the actual treatment plant. To keep transportation costs low, high solids content will be a significant factor.

Before sludge is being dried in a centrifuge or belt press, polymer needs to be added in order to remove water out of the sludge. Regardless of drying method or further processing, solids content of pressed sludge needs to be controlled and optimized to a level defined by further usage.

Accurate process control has a significant impact on the entire economy of the plant. Chemical costs, energy costs and transportation costs need to be kept under control.

Typically solids content target of dried sludge varies between 15-45 %, depending on plant design and end use requirements. Without proper control, solids level may fluctuate causing continuous process disturbances and undesired effects in further processing.

Benefits of feedback control of polymer dosage

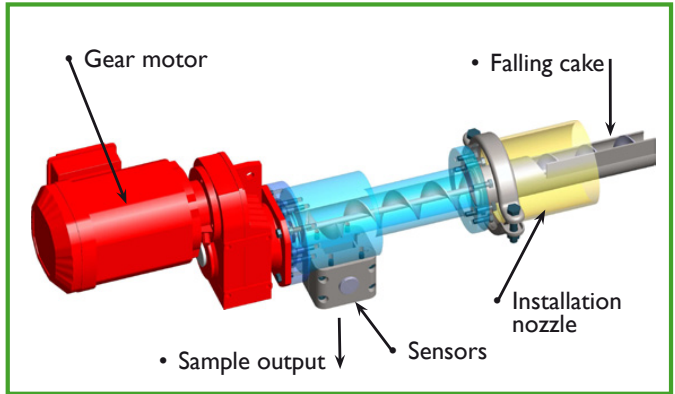
The best end result will be obtained by measuring solids content of dried cake continuously right after drying and controlling polymer dosage on a feedback basis. This provides fast and efficient control to optimize solids content at a desired level.

Typically there is an optimum polymer to mass flow ratio needed to achieve desired drying result. However, it is known that optimum percentage may vary depending on sludge characteristics. By connecting solids content signal of dried cake as a factor in the Polymer control loop, the optimum level can be maintained.

On-Line measurement on dry cake also provides valuable information to the monitor condition and performance of a centrifuge or a belt press and finding right tuning parameters of these process machines.

Traditional way to control polymer dosage is to measure incoming consistency of sludge and use feed forward control. Unfortunately varying characteristics of incoming sludge will cause solids content fluctuations of dried cake which feed forward control is not able to handle.

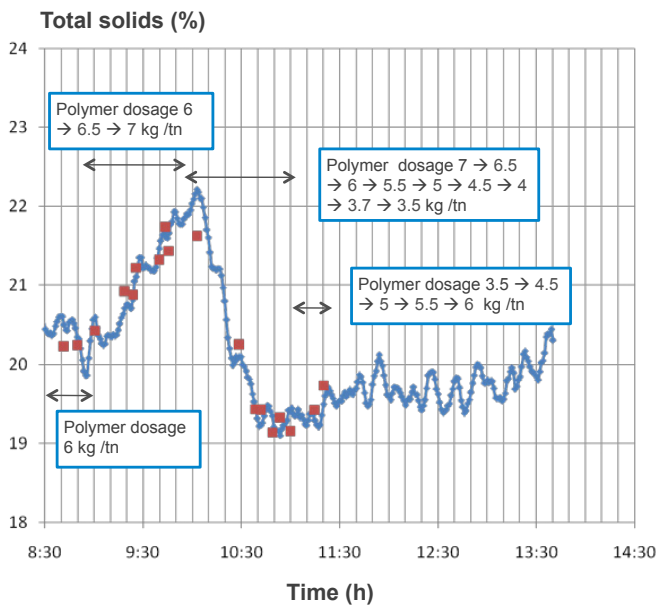
Senfit BSA-Biosolids Analyzer



Senfit BSA measures solids content reliably at a range of **14 - 45 %**.

Wide operating range is achieved by conveying dried cake sample with a screw to sensors located at the rear end of the screw. Sensing is based on microwave method which measures solids content through the material flowing by the sensor chamber. Measurement through the material provides the most reliable result.

Contamination of the sensors is avoided by using hard ceramic sensor materials. Sampling screw is designed to provide adequate flow at all circumstances. The BSA-unit is typically located to the downfall section of the dry cake conveying system. BSA can also be located to any process section where material would be reached by the sampling screw.



BSA Technical data:

- Physical measuring principle: Multi-parameter radio frequency
- Operating voltage: 24 VDC / 230VAC
- Signal output: Ethernet Analog 0 – 10VDC; 4 – 20 mA Isolated
- Solid content measuring range: 14 – 45 %
- Ambient temperature: 0 – 65 °C
- Material temperature: > 0 °C
- Sensor materials: Acid proof steel, ceramics