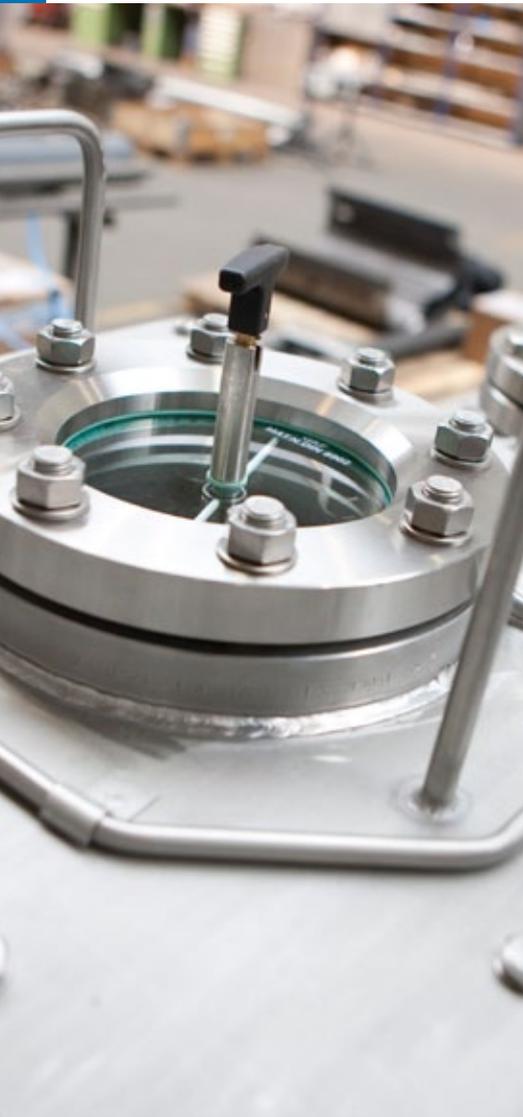


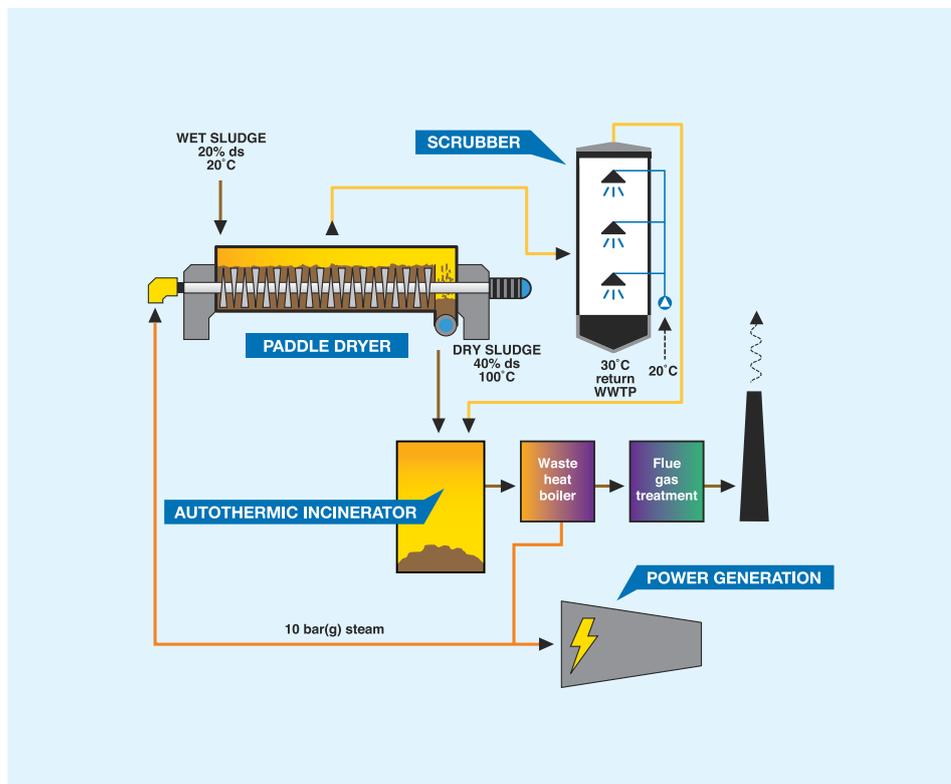
Partial sludge drying

35-40% dry solids



Drying digested sludge

Thermal treatment prior to incineration



▲ Partial sludge drying process

Many wastewater treatment plants handle a waste stream of digested sludge. The sludge is normally dewatered on a centrifuge or belt filter press. After dewatering, the sludge has a typical dry solids content of approx. 20-25%, which is very suitable for thermal treatment in an ANDRITZ Gouda paddle dryer. More and more sludges are being incinerated, requiring a partial drying process to 35-40% dry solids to make the sludge auto-thermic.

The heart of the installation consists of a trough containing two counter-rotating shafts, arrayed with paddles. Thermal oil or saturated steam at 180-250 °C flows continuously through the jacket, hollow

shafts, and paddles. As the sludge is fed in, the wedge-shaped paddles provide perfect local mixing and mechanical fluidization. The shafts are precisely aligned and thus enable the paddles to interweave as they turn. This ensures the ideal surface-to-product contact and sludge flow, resulting in high evaporation rates per square meter inside the machine.

Indirect dryer

The paddle dryer is based on a system of indirect sludge heating. The indirect heat transfer avoids air flows, while fully enclosed operation enables safe treatment of any type of sludge. Due to the low operating speed of the shafts, wear on the installation

is reduced to a minimum. Another advantage of the indirect drying system is its low energy consumption because all the heat generated is used to evaporate the water.

The ANDRITZ Gouda paddle dryer

Flexible on different sludges



The ANDRITZ Gouda paddle dryer also has many references for full drying (90% dry solids) based on a once-through drying process without back-mixing. The plastic phase in sludge around 45-60% DS never causes problems in this dual shaft machine. The self-cleaning effect of the two shafts with intermeshing paddles deals easily with the plastic phase without any difficulty.

Due to the dual-shafted process, this machine accepts any type of sludge variation, making it highly suitable for centralized drying plants that handle different sludges from different regions. All of the evaporated water is fed to a wet scrubber without any sweep gas being

added. This means that the volume is limited to the amount of water vapor collecting in the dome of the dryer. The small amount of non-condensables in the exhaust vapor can be oxidized thermally to keep emissions to an absolute minimum. The whole unit is installed on a slight incline, and the sludge flows by

gravity alone to the opposite end of the installation for discharge over a mechanical overflow weir. The pre-dried sludge – with a dry solids content of 35-40% – is conveyed to the incinerator by means of a shaftless screw.

The ANDRITZ Gouda paddle dryer comes in a variety of sizes, ranging from 1.5 m² of heat transfer area to a megaprocessor with an interior of 300 m² and a water evaporation capacity of 10 t/h for partial drying. More than 220 ANDRITZ Gouda paddle dryers are in operation around the world, 30 of which are used for municipal sludge drying. Apart from the paddle dryer, ANDRITZ Gouda also provides complete process solutions – from the dump station for digested sludge to the loading station for the dried sludge, including sludge conveyors, wet sludge tanks, vapor handling system, sludge distributor, sludge cooler, pelletizer, and truck silo.

Benefits

- Compact
- High evaporation rates
- Flexible on different sludges
- Indirect drying

ANDRITZ Gouda

ANDRITZ Gouda has been implementing complete process solutions for the environmental, chemical, and food industries for over 100 years. As a machine manufacturer as well as process solutions expert, ANDRITZ Gouda is able to handle all of the stages involved in designing and building plants, including engineering, service, installation, and commissioning.

ANDRITZ Gouda, as part of the international ANDRITZ GROUP, has several pilot plants available to test new materials, generate design data, and provide representative product samples. The proven calculation model for scaling up to industrial size ensures successful application in full-scale processing.



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