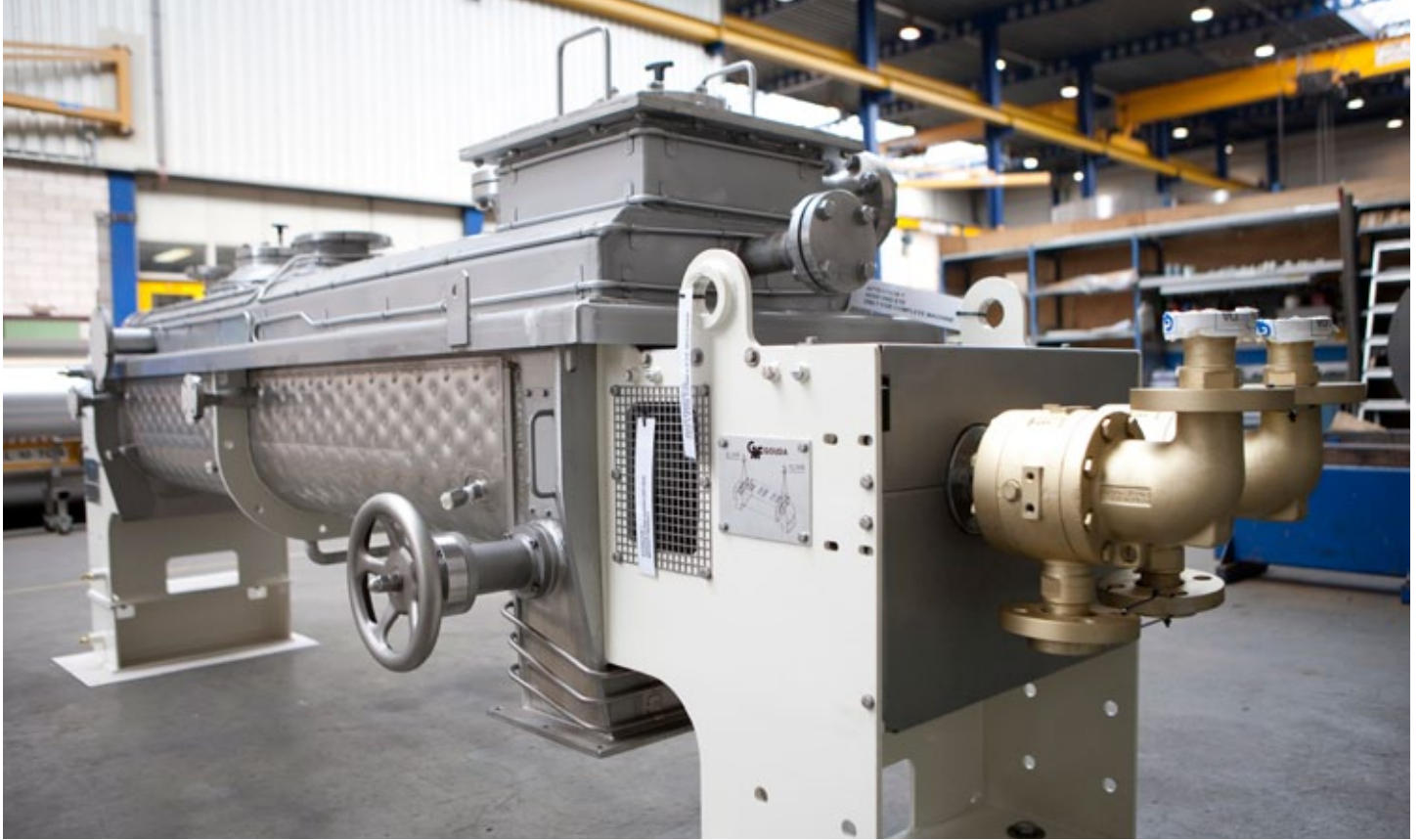


## **Sludge drying process**

Economical, compact, and safe



# Indirect heating to treat sludge waste streams



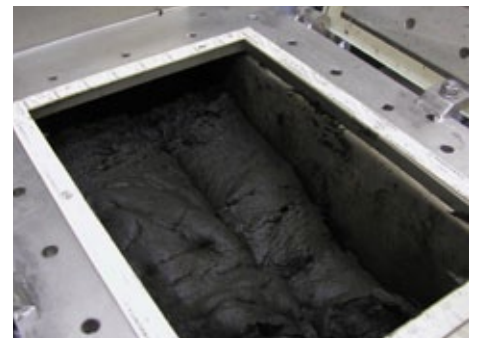
## Economical, compact, and safe

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. 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 ensure 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.

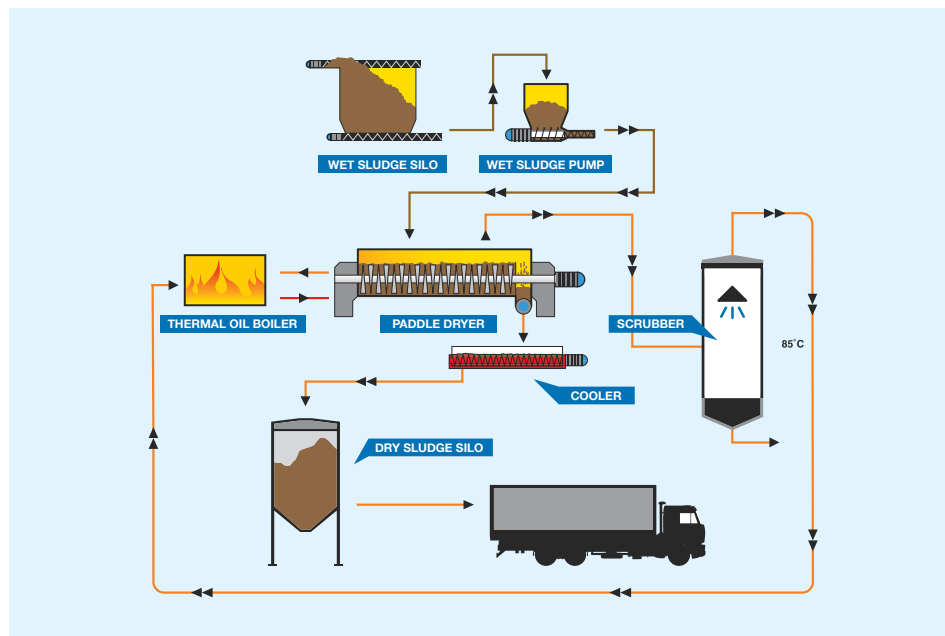
## Indirect drying

The paddle dryer is based on a system of indirect sludge heating. The indirect heat transfer avoids air flows, while fully enclosed operation enables the safe treatment of toxic, noxious, or flammable products. Due to the low operating speed of the shafts, little or no dust is formed during the drying process, while wear on the installation is reduced to a minimum. Another advantage of the indirect drying system is its low energy consumption as all the heat generated is used to evaporate the water.



# Turnkey solutions

## From dump station to loading station



▲ Sludge drying process

Environmentally friendly ►



### Flexible for different sludges

The ANDRITZ Gouda paddle dryer offers once-through drying technology that avoids back-mixing. The long sludge retention time combined with the average sludge temperature of 100 °C make it possible to provide pasteurization and sanitary treatment of the sludge. Due to the type of process, any type of sludge is accepted by this machine, making it extremely suitable for centralized drying plants that handle different sludges from different regions. As back-mixing is not required, any residual moisture content can be chosen for the final product. This makes the machine highly suitable for partial drying to 35-40% dry solids, which is required prior to incineration of the sludge.

### Vapor treatment

All 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 post-treated to keep emissions to an absolute minimum. The entire unit is installed on a slight incline, and the sludge flows by gravity alone to the opposite end of the installation for discharge.

The dried sludge – with a dry solids content of 90-95% – is conveyed by means of cooled conveyers into a dry sludge storage silo at a safe temperature of well below 40 °C. The dried product can be used for several applications, for example as a composting component for agriculture or an alternative fuel for combustion processes.

### Process solutions

The ANDRITZ Gouda paddle dryer comes in a variety of sizes, ranging from 1.5 m<sup>2</sup> of heat transfer area to a mega processor with an interior of 300 m<sup>2</sup> and a water evaporation capacity of 6 t/h for sludge. 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

- High evaporation rates
- Class A end product
- Flexible for different sludges

## 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.



### NETHERLANDS

#### ANDRITZ Gouda

Phone: +31 (182) 623 723

Fax: +31 (182) 619 217

[gouda@andritz.com](mailto:gouda@andritz.com)

### AUSTRIA

#### ANDRITZ AG

Phone: +43 (316) 6902 2318

Fax: +43 (316) 6902 92318

[separation@andritz.com](mailto:separation@andritz.com)

[www.andritz.com/gouda](http://www.andritz.com/gouda)