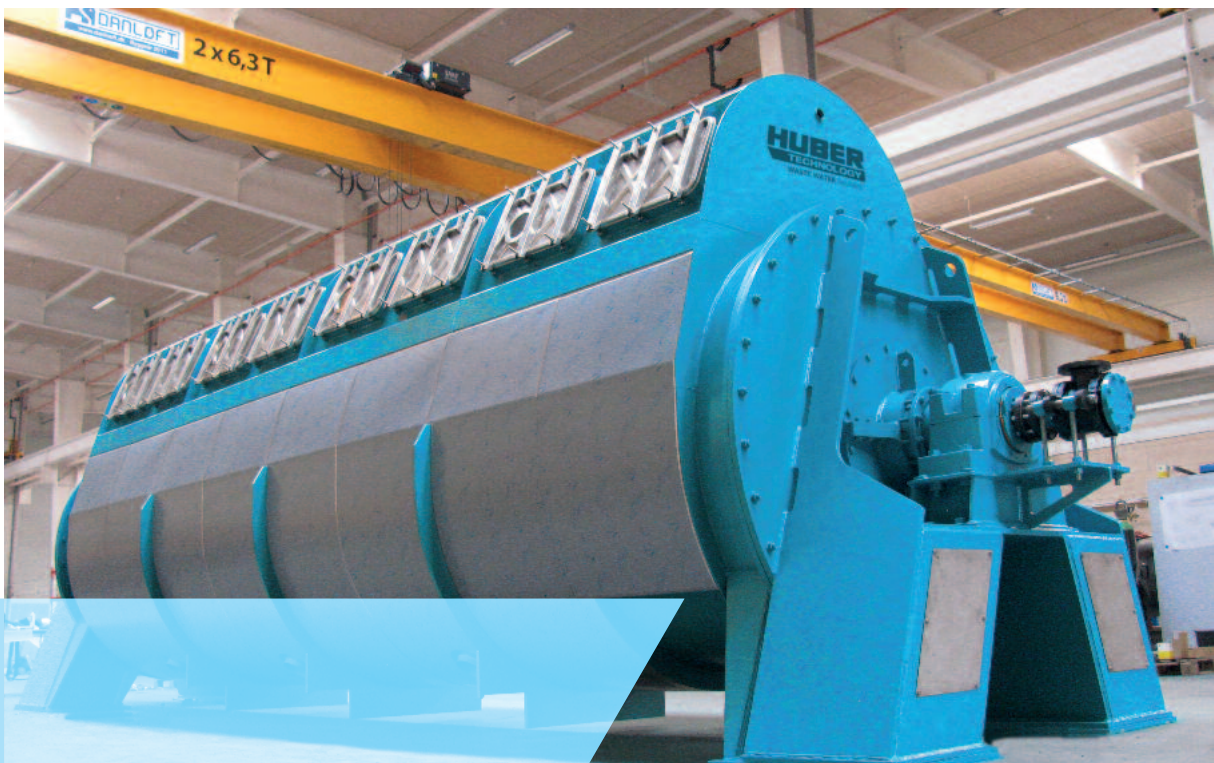


HUBER Disc Dryer RotaDry® Contact dryer for sewage sludge



Partial drying of sewage sludge for recycling in
fluidized bed incineration plants

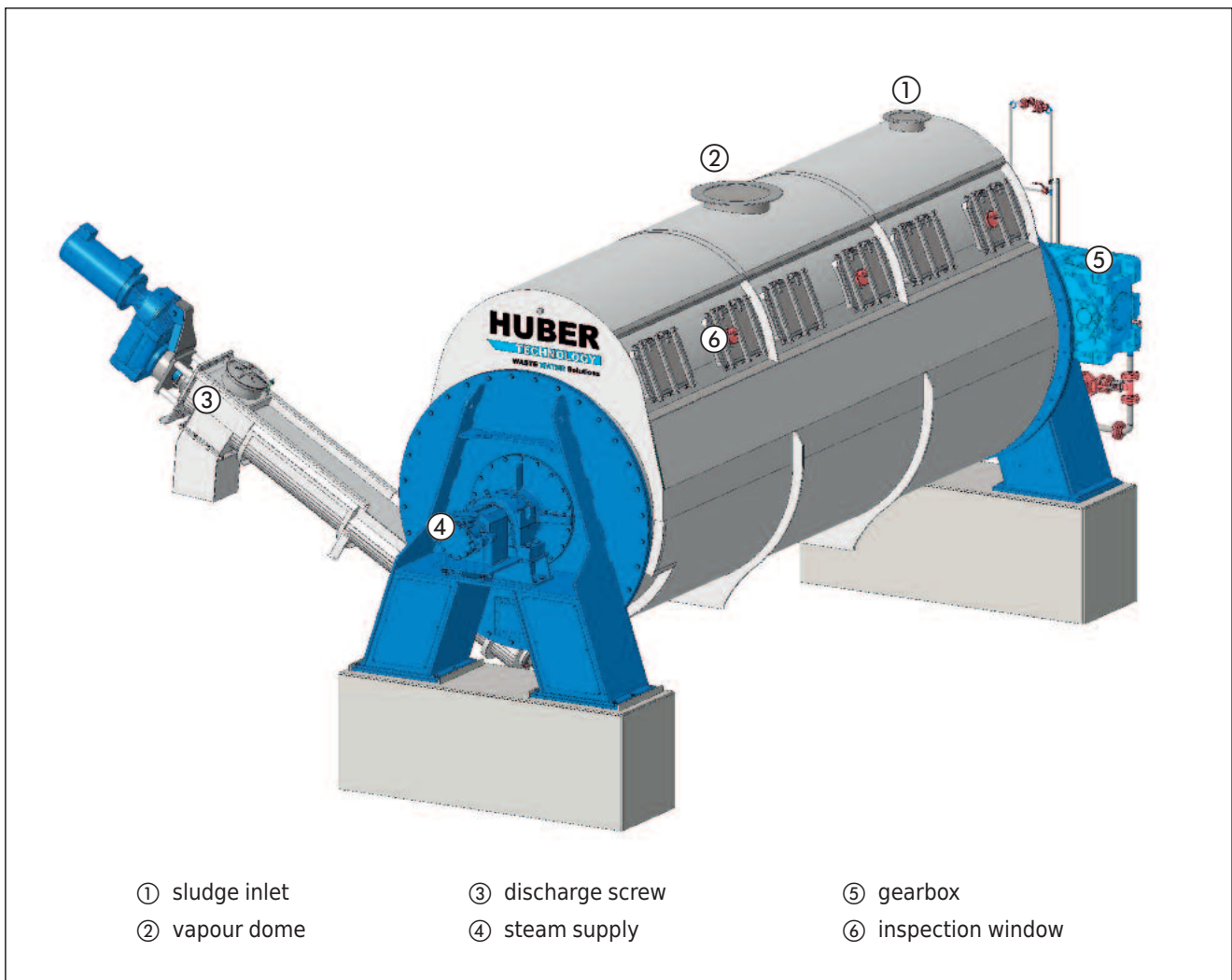
►► Contact drying of sewage sludge

The HUBER Disc Dryer RotaDry® is designed for homogeneous partial drying of dewatered sewage sludge. Due to its compact design and high specific water evaporation, it is not only ideally suited for use in new sewage sludge mono-incineration plants, but also for capacity expansions of existing plants. The dryer can dry exactly to the required DR content and thus enable a self-sustaining combustion in the fluidized bed incinerator. The HUBER RotaDry® is available in different sizes, so that a water evaporation of two to six tons per hour and dryer can be achieved. By using different disc diameters and numbers of discs, the dryer surface can be optimally adapted to the amount of generated sludge and the dryer can be operated in the ideal capacity range.

Thermal drying of sewage sludge is an indispensable process component to ensure the sewage sludge has the right dry residue. The subsequent mono-incineration of the sewage sludge achieves an enormous reduction in volume and mass and provides for the recovery of phosphorus. At the same time, the heat required for drying is provided and, depending on the size of the plant, electricity is also generated by means of a steam turbine.

A reliable condensate removal system, an innovative concept for moisture control, an optimised feed and a steam control line with minimised pressure loss characterise the HUBER Disc Dryer RotaDry® as the perfect sewage sludge dryer in combination with a mono-incineration plant.

We would be pleased to advise you individually, and you are also welcome to send your inquiry to sludge@huber.de.



HUBER Disc Dryer RotaDry® with screw conveyor for the discharge of the partially dried sewage sludge

➤➤ Function principle of disc dryer & vapour condensation

- Feeding from the sludge bunker optionally via an impurity separator
- Sludge drying by steam-heated rotor and optionally steam-heated jacket
- Vapour condensation for heat recovery
- Optional condensate treatment
- Delivery of dried sludge and non-condensable residual vapours to the incineration plant

From a sludge bunker, the sludge is delivered to the dryer by a pump in the standard case. Inside the dryer the sludge is heated, turned, dried and conveyed towards the dryer discharge. Between 40 and 64 hollow discs are welded onto the dryer rotor. Saturated steam streams through the discs and heats them. Before entering the dryer, the steam must be conditioned so that it flows into the interior of the rotor as saturated steam or only slightly superheated.

The rotor is driven by a gear motor, the speed of which can be changed by a frequency converter. From a sludge bunker, the sludge is delivered to the dryer by a pump in the standard case.

Dewatered sludge is normally supplied with a DR of 20 - 30%. The (partially) dried sewage sludge leaves the dryer with 40 - 45% DR via the discharge screw. The vapour dome serves to draw off the water vapour produced. In a condenser, the condensation heat of the vapour can be partially recovered and fed into a district heating network, for example.

➤➤ Advantages of the Disc Dryer

- **Compact design**
The HUBER Disc Dryer RotaDry® convinces by its compact design, which allows the dryer to be installed even on a small footprint or to be integrated into existing plants.
- **Proven and durable technology**
The many years of successful use of disc dryers in combination with sewage sludge incineration plants demonstrates the robust technology of the process.
- **High specific water evaporation capacity**
By heating the rotor discs and optionally the jacket, a high volume-specific water evaporation can be achieved.
- **Uniform and homogeneous drying**
The sludge is mixed by the rotation of the rotor and blades mounted on the outer end of the discs.
- **Heat recovery through use of condensation heat**
The water evaporated from the sewage sludge can be precipitated again in the vapour condenser, whereby part of the energy used for thermal drying can be recovered.
- **Reliable condensate removal**
The condensate is removed from the rotor by a process-safe variant without a welded siphon tube
- **Optimised humidity control for the partially dried sludge by integrated DR measurement at the dryer inlet and outlet**
The control of the disc dryer is dependent on the detected DR content at the inlet and outlet. This provides the possibility to react to fluctuating DR contents of the dewatered sludge.

►► Vapour condensation

Thematically, a contact dryer also always includes the treatment of the vapour condensate. Depending on the project-specific conditions, there are various possibilities here.

- **Tube bundle condenser** (indirect condenser)
Compact design to maximise the extraction steam for district heating, as heating water is generated directly in the condenser.
- **Injection condenser** (direct condenser)
Circulating and cooled vapour condensate is sprayed in the head of the condenser to knock down the condensable vapours.
- **Multi-stage condensation system**
Consisting, for example, of a sludge preheater (for energy optimization and polymer consumption reduction in the dewatering process) and a residual cooler.

►► Steam control system

In order to operate the dryer as efficiently as possible, steam pressure control is necessary for various load cases in addition to steam cooling. The different steam volumes at different pressures must be taken into account. Due to the ideal configuration of the controlled system, both pressure-loss-minimized operation at nominal load and reliable regulation to the required steam pressure can be achieved. Even after it has passed the dryer, the liquid condensate does not remain energetically unused and is returned to the water-steam system.

►► Unit sizes / performance

Size	1854	2050	2064	2264
Maximum water evaporation	3,300 kg/h	4,000 kg/h	5,000 kg/h	6,000 kg/h
Disc diameter	1.8 m	2.0 m	2.0 m	2.2 m
Number of discs	54	50	64	64

►► Vapour condensate treatment

Due to the high contact temperatures of the disc surface and sewage sludge, a high load of ammonium as well as particulate and dissolved COD is produced in the vapour condensate, which does not allow for immediate indirect discharge into the municipal sewage network and requires separate treatment

Here, too, HUBER SE offers you a suitable solution with its own proven technology. A combination of the different processes of mechanical filtration, adsorption and stripping is used to purify the vapour condensate to a degree that the required limit values are met.

►► Technical data

- **Water evaporation per dryer:**
2 to 6 t/h
- **Dewatered sludge throughput per dryer:**
6 to 12 t/h*
- **DR throughput capacity per dryer:**
1.5 to 6.0 t/h*
- **Heating medium:**
Saturated steam up to 10 bar(a)

*dependent on inlet and outlet DR

HUBER SE

Industriepark Erasbach A1 · D-92334 Berching
Phone: + 49 - 84 62 - 201 - 0 · Fax: + 49 - 84 62 - 201 - 810
info@huber.de · Internet: www.huber.de

Subject to modification
0,0 / 1 - 6.2020 - 6.2020

HUBER Disc Dryer RotaDry®