The new HUBER Disc Dryer RotaDry®

HUBER extends its product portfolio by a contact dryer for sewage sludge

HUBER SE has expanded its range of sewage sludge dryers by adding a disc dryer to its future product portfolio. This dryer is based on the principle of contact drying and convinces by its compact design compared to other drying systems.

HUBER Disc Dryer RotaDry® for homogeneous partial drying of sewage sludge

Especially in combination with a fluidized bed incineration system, the HUBER Disc Dryer RotaDry® is the ideal addition to the overall process of a sewage sludge incineration plant. The strength of the disc dryer lies in the efficient, homogeneous and compact partial drying of sewage sludge. Due to its optimized design, a high specific water evaporation related to the disc surface is possible. Combinec with a small footprint, this results in a high evaporation of water per dryer on a small area. The dryer can dry exactly to the required DR content and thus enable a self-sustaining combustion in the fluidized bed furnace. Costly and wear-intensive backmixing, as required for full drying, is no longer necessary. Steam from the power generation turbine serves as heat source for dryer heating. Thus, this waste heat can also be used energetically in a sensible way.

The HUBER RotaDry® is available in different sizes, so that 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.

Basic design of the disc dryer

From a sludge bunker, the sludge is delivered to the dryer by a pump, and there falls through an opening into the cylindrical dryer body.

Inside the dryer, between 40 and 64 hollow discs are welded onto a rotor. Saturated steam streams through the discs and heats them. The steam comes from the turbine, which generates electricity from the heat generated during combustion. Before entering the dryer, the steam must be conditioned so that it flows into the interior of the rotor as saturated steam. On the disc surfaces, the vapour reaches its condensation temperature. The rotor is driven by a gear motor, the speed of which can be changed by a frequency converter. Dewatered sludge is normally supplied with a DR of 20 - 30%.

The sludge heats up in the dryer, and the evaporation of water increases the drying degree of the sewage sludge. 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. Another possibility is the use of a spray condenser, in which the thin sludge can be preheated, thus reducing the polymer consumption for the centrifuge.

Vapour condensate treatment has a special part to play. As a result of the high contact temperature on the discs, the condensate contains an increased load of particulate and dissolved COD and an increased ammonium content. There is a difference here between dryers on sewage treatment plant sites and on power plant sites. While on a wastewater treatment plant, the vapour condensate stream can usually be fed to the wastewater treatment process if the process engineering allows it, this possibility does not exist on power plant sites. Before the condensate can be fed via the sewerage system to a municipal sewage treatment plant, it must be cleaned. Using own well-proven technology, HUBER has developed an innovative process that uses mechanical filtration, adsorption and stripping. The condensate is purified to such an extent that it can be discharged into the wastewater while complying with the required limit values.

A new and yet proven dryer complements the HUBER product portfolio

Disc dryers have been used in conjunction with sewage sludge incineration plants since the 1980s. Especially in large municipal incineration plants the technology is "state-of-the-art". Some of the dryers have been running reliably for over 30 years. Durable and convincing quality thus ideally fits HUBER's corporate mission statement. Partial drying of sewage sludge for self-sustaining incineration will thus in future be covered by the RotaDry® disc dryer within the HUBER product family.

Now, in addition to the HUBER Belt Dryer BT (convective drying with hot air) and the HUBER Solar Sewage Sludge Dryer with the HUBER Sludge Turner SOLSTICE® (drying with solar energy by radiation and convection), the customer has a third option, namely heat transfer by contact with the HUBER Disc Dryer RotaDry®.

With these different drying techniques, HUBER as a system supplier is able to advise its customers in the best possible way to meet their specific needs.

Outlook

Due to the Waste Sewage Sludge Ordinance adopted in Germany in 2017, the need for new sewage sludge mono-incineration plants is growing. It is becoming apparent that other European countries are also tightening their regulations, thus creating the conditions for sustainable sewage sludge disposal in the respective countries. The international interest in a compact contact dryer for partial drying of sewage sludge is rising.

Summary

With the RotaDry® disc dryer, HUBER has put the missing piece of the puzzle into the overall process of thermal sewage sludge utilisation. Thermal drying is an indispensable process component to ensure the sewage sludge has the right dry content and to remove the part of the water that cannot be separated mechanically. The mono-incineration of the sewage sludge achieves an enormous volume and mass reduction and provides for the possibility of phosphorus recovery. At the same time, thermal sludge utilization produces electricity and provides the necessary heat for the drying process.

A **reliable condensate removal system**, an **innovative control system**, an **optimised feed** and a **pressure loss reducing steam control system** make the HUBER Disc Dryer RotaDry® the perfect sewage sludge dryer for subsequent incineration. We would be pleased to advise you individually, and you are also welcome to send your inquiry to sludgehuberde!

Related Products:

- HUBER Disc Dryer RotaDry®

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