

HUBER Solar Active Dryer SRT



- Backmixing prevents odour and dust
- Backmixing accelerates drying
- Efficient sludge turning ensures complete sludge bed aeration
- Flexibility of sludge feeding and removal
- Floor heating for constant drying and maximum efficiency

➤➤ Solar drying of sewage sludge

Solar drying of sewage sludge is a technology developed from sludge drying beds. The principle is drying of sewage sludge distributed in a greenhouse using incident solar radiation.

There are good reasons to dry sludge:

- Mass reduction
- Reliability of disposal
- Produce storable and easy-to-handle dried biosolids

Operation costs for solar sludge drying are low as the required evaporation energy is delivered by the sun and the easy principle of operation minimises operator attention.

➤➤ HUBER SRT system

The special sludge turning system of the HUBER SRT performs spreading, granulation, turning and mixing of sludge. The sludge becomes open-porous, new contact surfaces for evaporation are continuously created.

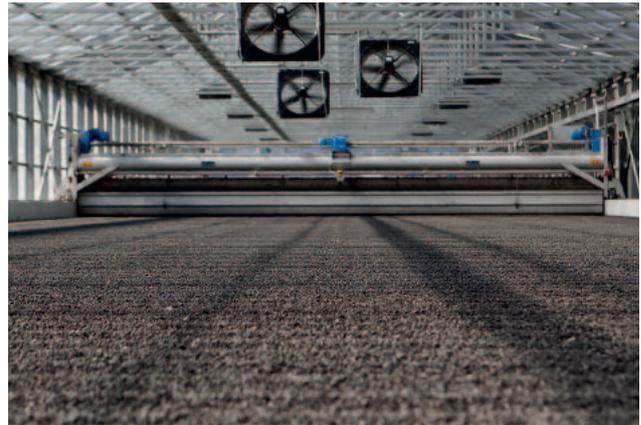
The SRT solution allows for continuous system operation. The sludge is transported through the thermo shell construction from one end to the other: Dewatered sludge is continuously fed on one end, dry granulate is produced at the other end. The sludge bed height is adjustable via the electrical control system. Varying drying efficiency can partly be compensated.

Due to the special features of the sludge turning assembly, particularly its backmixing function, an open-porous and slightly wet sludge bed is maintained, generating neither odour problems nor dust. The sludge is dry enough to prevent odour-generating biological processes, but still wet enough to prevent generation of dust under mechanical stress.

➤➤ Sludge feeding and removal

Sludge feeding and removal can be adjusted to suit customer-specific requirements. Sludge can be fed and removed with a wheel loader, or automatically through special screw or belt conveyors to reduce operator attention.

The dried sludge produced is a stable, pea-sized and free flowing granulate and easy to handle due to its high solids concentration.



Independent sludge turner operation over the entire greenhouse width



Free-flowing dried granulate



Automated sludge feeding with screw conveyors from the dewatering system

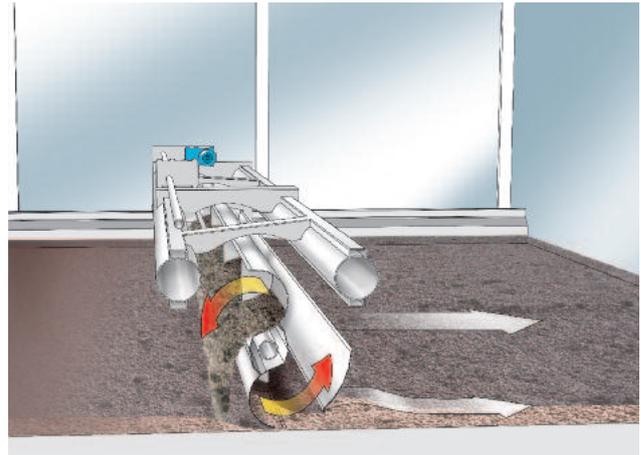
➤➤ Sludge turning and mixing device

The sludge turning and mixing device is the core of the drying system and consists of a rotating double shovel mounted on a travelling frame. The double shovel fulfils two functions:

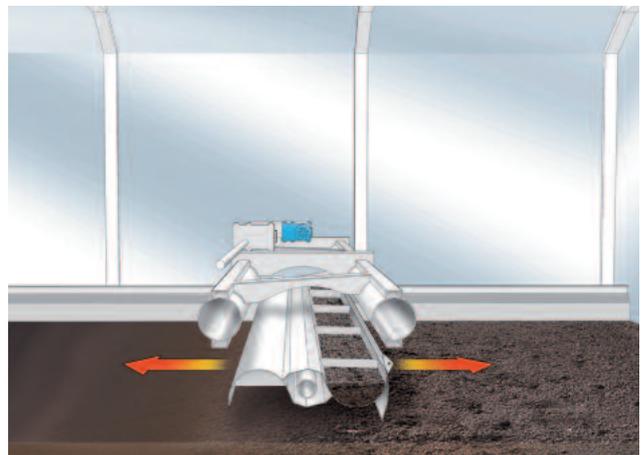
- **Sludge turning:** As the sludge turner travels forwards with the rotating double shovel, the sludge is being mixed, broken up, aerated and transported. The sludge is completely restacked within only half an hour. This is ideal for a good drying result and prevents odours.
- **Backmixing of sludge:** The sludge turning and mixing device takes up some sludge at a defined point and transports it inside its shovel to another point. The adjustable backmixing function permits backmixing of dry sludge into wet sludge and produces an ideal sludge bed right from the beginning of the drying process.

Wet sludge feeding and dry sludge removal can take place at opposite ends or the same end, as requested. Such maximum flexibility of sludge feeding and removal gives freedom of design. It is for example possible to build up to the boundaries of the WWTP grounds and save space for roads.

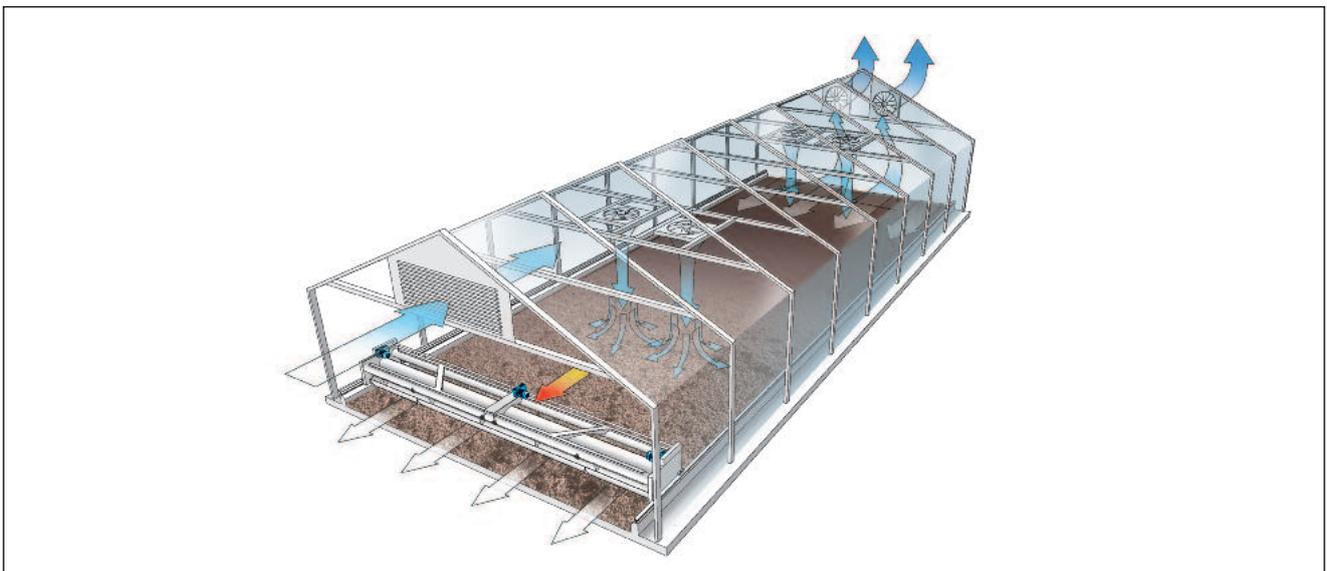
The sludge turning and mixing device is made of corrosion resistant stainless steel and travels on low driveway walls to avoid shadows on the sludge drying bed. The machine pulls itself through the hall along chains and is safely guided. Several sensors measure permanently all relevant parameters to ensure perfect system control.



The rotating shovel of the sludge turning and mixing device takes up sludge and transports it along the granulation plate. As the turning device travels forward, the sludge is transported.



Controlled sludge transport from one place to another as the turner moves with a filled shovel



General view of the system: sludge and air flows

►► Climate control

Climate probes, ventilators and ventilation flaps are installed in the drying plant to ensure ventilation at the right time and generate sufficient air flow on the sludge surface. Plant ventilation is regulated on the basis of the continuously measured water absorption capacity of the outside and inside air temperature, and excessive condensate build-up is prevented. The ventilators blow dry air over the bed of freshly turned sludge. The climate control system uses not only theoretical calculations but also empirical operation and measurement data.

►► Optimised evaporation

Drying efficiency depends directly on the climatic conditions with less water being evaporated in winter than in summer. Different strategies can be applied or combined to process continuously generated sludge volumes:

- A thin sludge buffer tank is used for sludge storage in winter and emptied in summer.
- Operator accepts greatly varying product dryness.
- The sludge is piled up in the drying bed.
- More drying area is provided to ensure sufficient evaporation in winter.
- Solar drying is supported with external energy sources in winter.

►► Additional heat

An eco-friendly method of supplying additional energy is the use of a heat pump, which lifts thermal energy, extracted through heat exchangers from the WWTP effluent, to a higher temperature so that it can be used for sludge drying. Other heat sources can also be used as available (e.g. exhaust heat).

Supply of additional heat through highly efficient floor heating ensures maximum heat transfer with minor losses. Efficient evaporation rates permits space saving system design.



Backmixing and aeration of sludge



Ventilators blow dry air over the sludge bed.



Greenhouse with ridge flap and climate control station

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