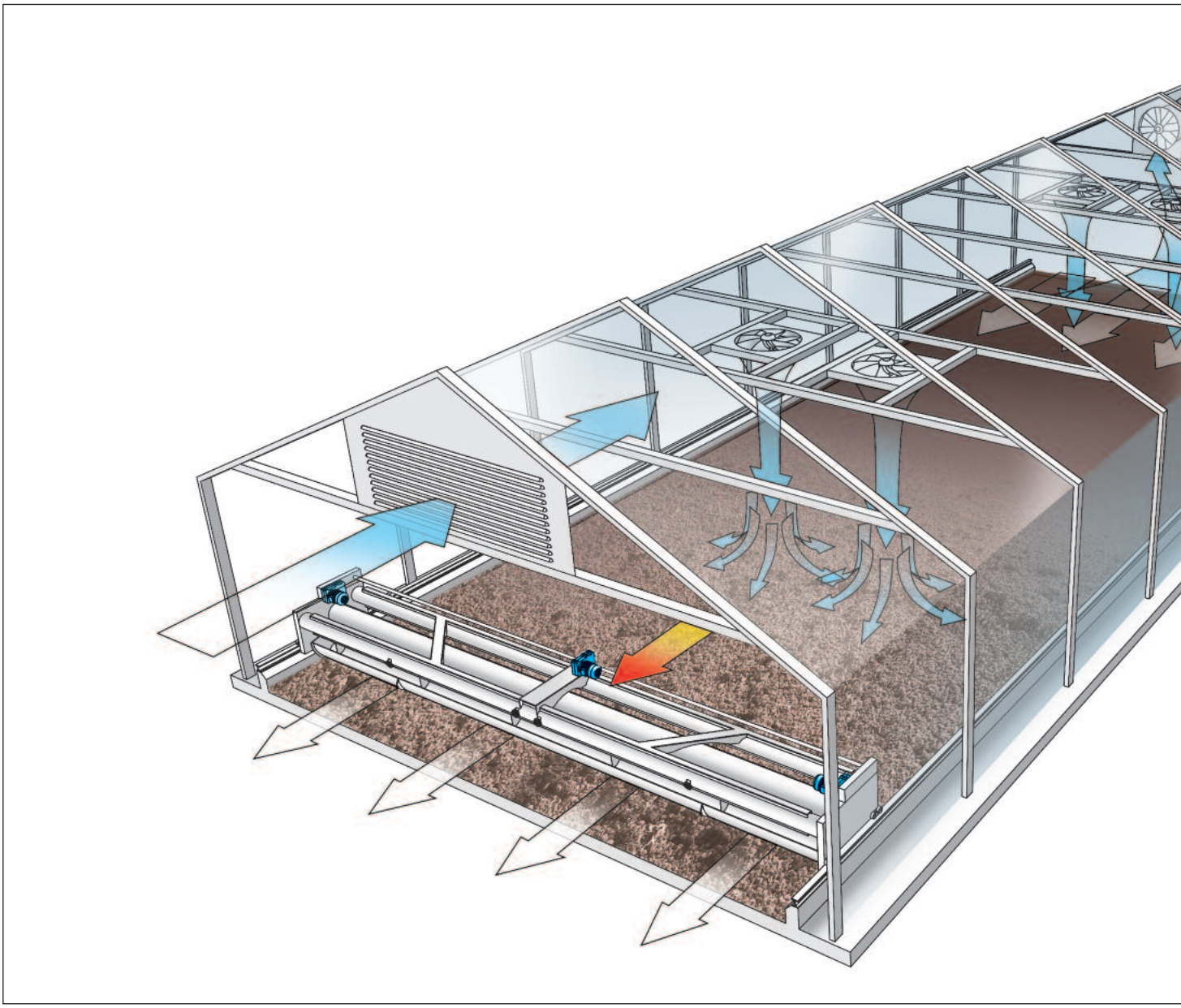
HUBER TECHNOLOGY
WASTE WATER Solutions

HUBER Sludge Turner SOLSTICE®
Solar sewage sludge drying

– sustainable, eco-friendly process
– best mixing and aeration of the complete sludge bed
– minimised odour development and dust formation due to effective backmixing
– optimised evaporation efficiency with low energy consumption

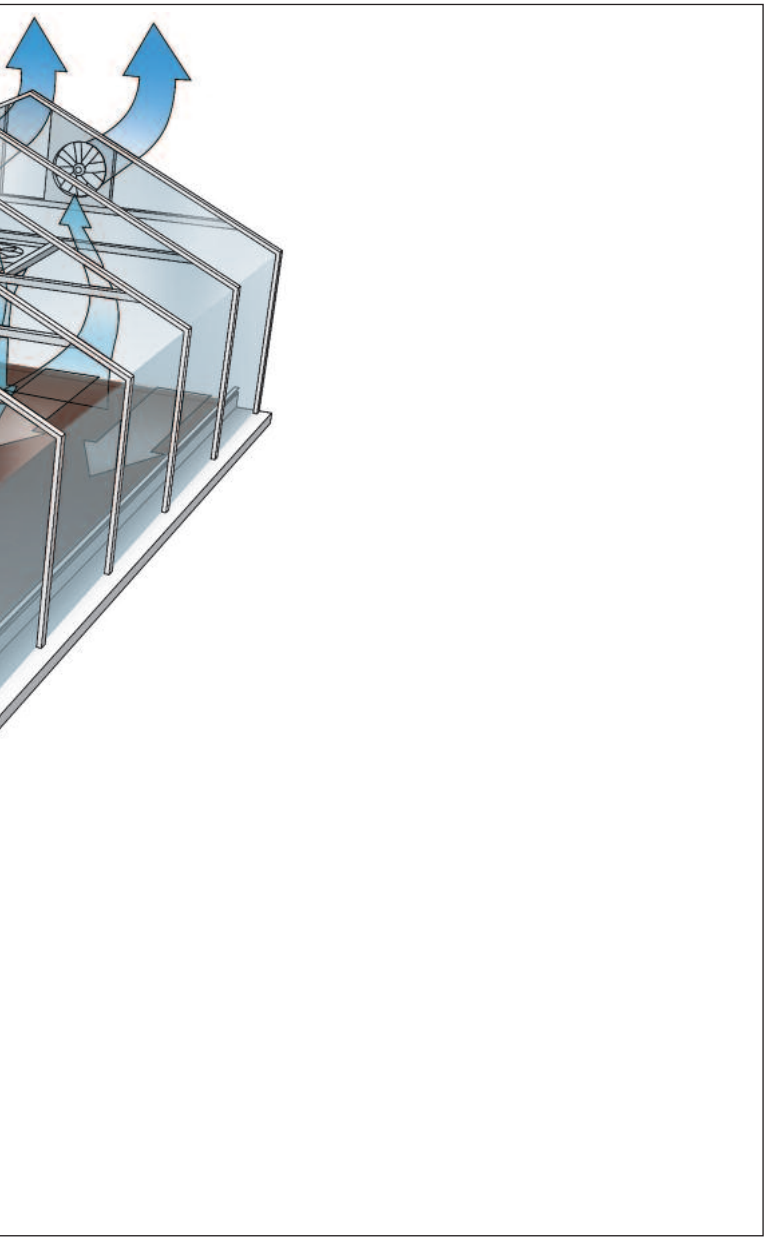
Supply of fresh air to the greenhouse

Parallel operation of HUBER Sludge Turner SOLSTICE® units



HUBER SRT system – solar sewage sludge drying with the HUBER Sludge Turner SOLSTICE®

Recirculation air ventilators and optional air heaters



HUBER Sludge Turner SOLSTICE®

Exhaust air ventilators

Solar drying of sewage sludge

Solar drying of sewage sludge is a technology developed from sludge drying beds. The dewatered sludge is distributed inside a greenhouse and dried by solar radiation. The dry end product is a stable, odour-free granulate.

What are reasons to dry sludge?

- Reduction of disposal costs – mass and volume reduction
- Uniform drying results – stable product for versatile use
- Produce storable and easy-to-handle dried biosolids

The solar drying process is simple, the required evaporation energy is provided for free by the sun. Operating costs are low and plant operators profit from a sustained reduction of disposal costs.

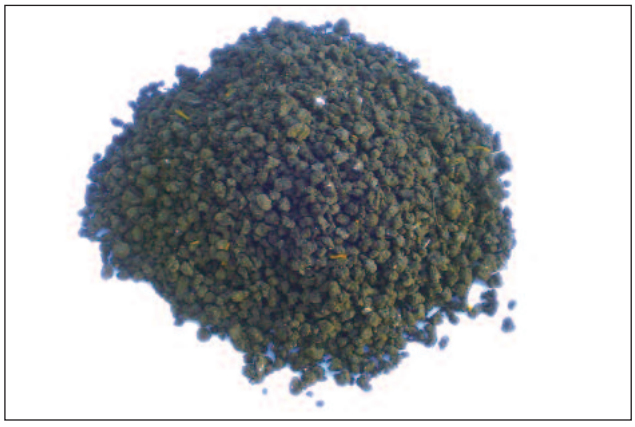
HUBER SRT system for solar sewage sludge drying

What makes the HUBER SRT system special is the HUBER Sludge Turner which performs spreading and granulation of the sludge in the greenhouse and aeration, turning and mixing of the sludge bed. Even problematic sludge becomes open-porous when processed by the HUBER Sludge Turner SOLSTICE®, new contact surfaces for evaporation are continuously created.

The HUBER SRT system is based on continuous system operation. The sludge is fed automatically (e.g. by a screw conveyor) or manually (e.g. by a wheel loader). The HUBER Sludge Turner SOLSTICE® collects the sludge fully automatically and reliably works the sludge into the sludge bed. According to the run times of the sludge dewatering unit and depending on the prevailing climatic conditions the sludge is continuously transported, turned and dried on its way through the greenhouse. Fluctuations in drying efficiency, e.g. due to varying climatic conditions, are reduced to a minimum by the automatic control system. Due to the unique features of the HUBER Sludge Turner SOLSTICE®, particularly its backmixing function in the sludge feeding area, 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. Due to the open-porous structure high evaporation rates and drying efficiency are achieved. The dried sludge produced is a stable, pea-sized and free flowing granulate and easy to handle due to its high solids concentration.

The HUBER Sludge Turner SOLSTICE® is optionally available for batch operation.

HUBER Sludge Turner SOLSTICE®



Dried sludge for a variety of uses

Sludge feeding and removal

Sludge feeding and removal can be adjusted to suit customer-specific requirements. Automatic sludge feeding and removal through special screw or belt conveyors reduces operator attention. The design of the HUBER Sludge Turner SOLSTICE® offers different options. 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 dry granulate produced by the dryer can be used as both fuel and fertilizer.

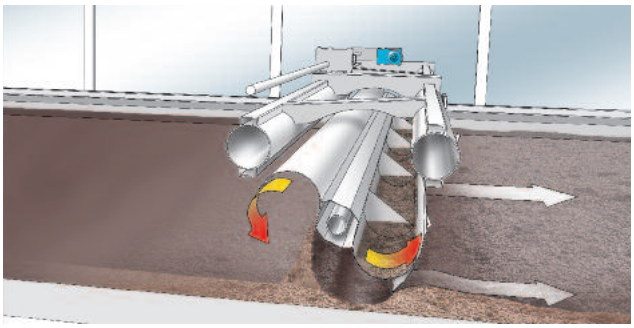
The HUBER Sludge Turner SOLSTICE®

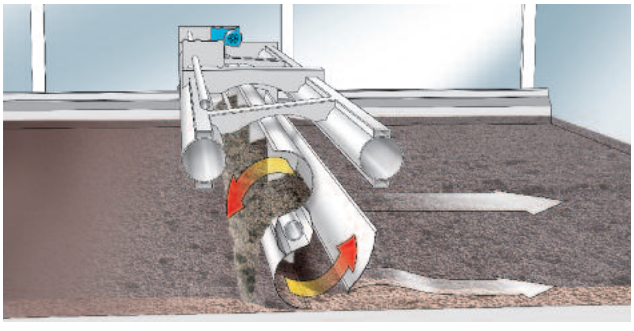
The HUBER Sludge Turner SOLSTICE® consists of a double shovel mounted on a travelling frame. The double shovel fulfils two functions:

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

The HUBER Sludge Turner SOLSTICE® is completely made of corrosion resistant stainless steel and travels on low driveway walls (approx. 30 cm) to reduce shadows on the sludge drying bed to a minimum. The HUBER Sludge Turner SOLSTICE® travels through the greenhouse along chains which rest on driveways outside the sludge bed and is safely guided by chain tension.

Several sensors permanently measure all relevant parameters to ensure perfect automatic system control.





HUBER climate control system

The climate control system of the HUBER Sludge Turner SOLSTICE® ensures optimal and energy-efficient drying of sewage sludge even under greatly varying climatic conditions.

The climate control system uses not only empirical operation data but also the data from extensive scientific investigations.

Robust sensors are used to measure the temperature and moisture inside the greenhouse. Also indirect measurement of the dry residue is possible with these sensors. A weather station installed outside the greenhouse measures global radiation, temperature and moisture and optionally wind and rain.

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 climate control system ensures the protection of the structure and machines.

By simulation of evaporation – depending on power consumption and ideal conditions for evaporation – the system calculates how much air the ventilators have to blow over the sludge bed. Air and dry residue measurement data are also taken into account for the simulation of evaporation to ensure that the run times of the ventilators and consumption of electricity are permanently optimised.

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 to process continuously generated sludge volumes:

- A thin sludge buffer tank is used for sludge storage in winter.
- Additional heat is supplied for drying in winter.
- More drying area is provided to ensure sufficient evaporation in winter.
- The sludge is piled up in the drying bed.
- Operator accepts greatly varying product dryness.

Summary

After more than ten years of experience, solar sludge drying with the use of the HUBER Sludge Turner SOLSTICE® has become first choice, winning the trust of customers worldwide, day after day. But we offer not only machines that meet the highest quality standards, we also have extensive experience in building complete plants and are available for customers as a system provider. We will be glad to give advice and submit detailed proposals and cost estimations for your projects. Contact us!

HUBER SE

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