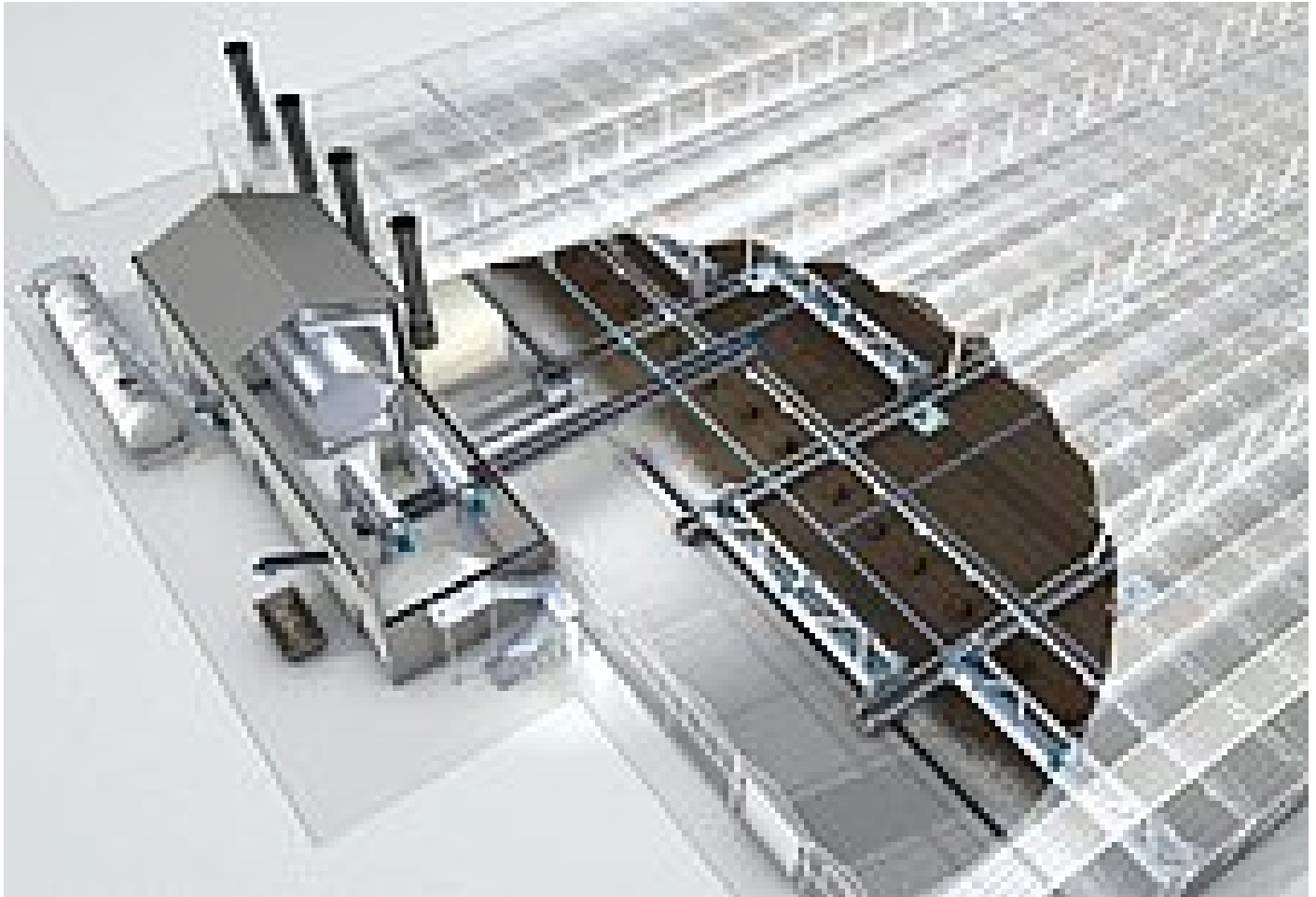


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[Largest solar sewage sludge drying site in Southern Germany fully equipped by HUBER](#)

Largest solar sewage sludge drying site in Southern Germany fully equipped by HUBER



The sludge drying process in detail

In a new sludge treatment plant in Bayreuth the sludge from 300,000 PE is dewatered and dried – fully automatically, with the use of exhaust heat and exhaust air treatment. The project is still in the construction phase. The new plant will process the generated sludge from 2016 on.

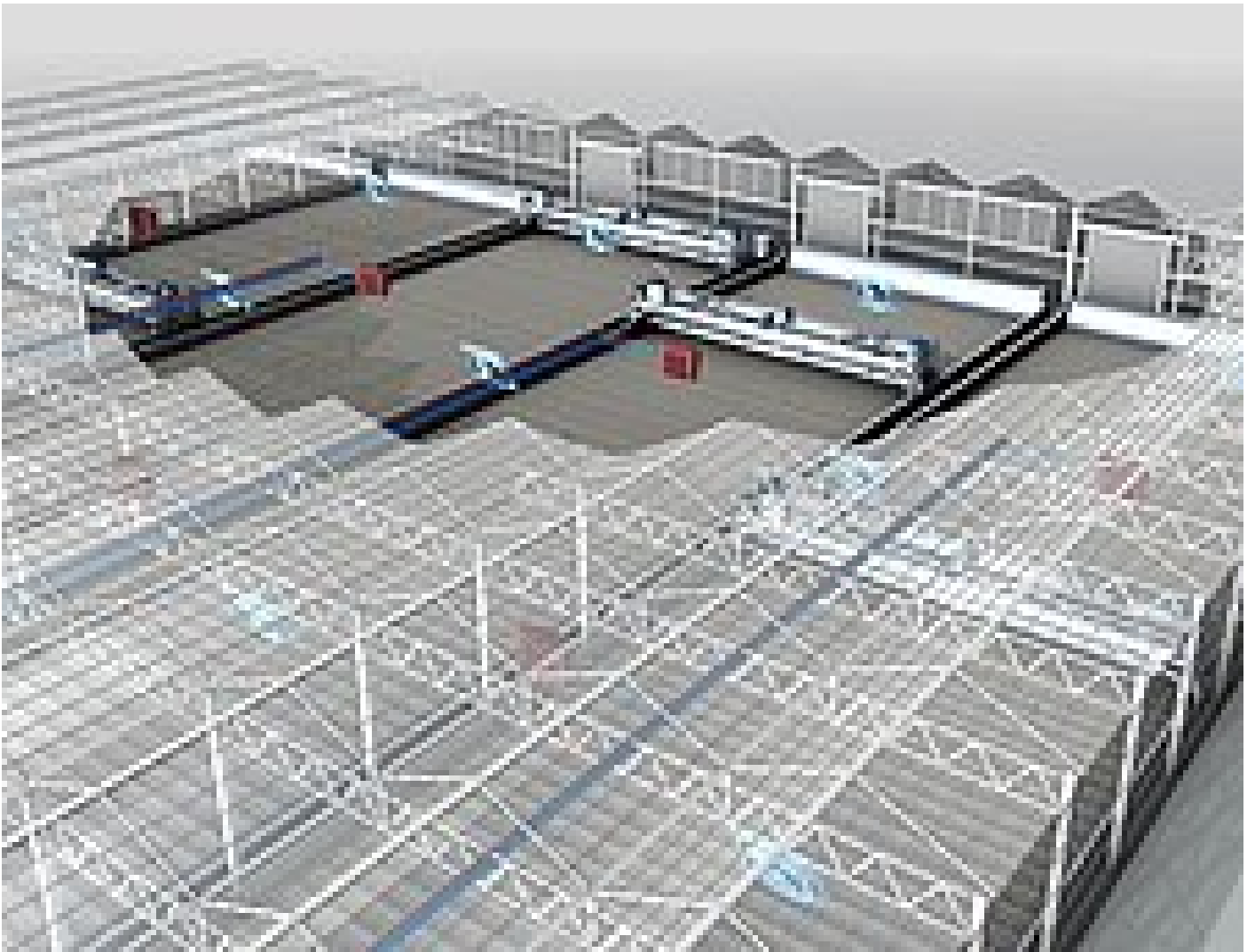
From the dewatering system into the dryer

The digester sludge with a DR content of between 2.5 and 3.5% is dewatered by two centrifuges and automatically transported into the solar dryer by screw conveyors. The dry residue is measured automatically by a probe so that polymer consumption can be optimized and dewatering efficiency can be regulated. The downstream screw conveyors are frequency-converter controlled to ensure that wear is reduced to the minimum with the selected transport capacity. The plant operators also have the possibility to adjust varying throughputs on the centrifuges and screw conveyors.

Inside a Venlo greenhouse the press cake is evenly distributed onto five individual lines. If one or several lines should fail, the electrical control system automatically changes the feed to the plant so that the remaining lines process the generated sludge. The dewatered sludge can optionally be conveyed directly into a container if necessary.

From press cake to dry granulate

While the HUBER machine turns and transports the fed sludge through the greenhouse the sludge gives off humidity to the air and arrives as a dry globular granulate at the end of the drying beds. The special feature of the HUBER machine is the unique sludge turner: The sludge is moved by the permanently rotating double shovel of the HUBER Sludge Turner SOLSTICE® so that the sludge is rolled to round compact grains and intensively exposed to air at the same time.



Solar sewage sludge drying with the HUBER SRT process and the HUBER Sludge Turner SOLSTICE®



The sludge turner in the one-way road: The dry granulate is returned to the machine building



Aerial photo of the sludge drying plant in Bayreuth

The double shovel can however also be used to selectively displace the sludge. For this purpose the SRT sludge turner takes up sludge into one of its shovels and places the sludge turning tool into horizontal position. The HUBER SRT can thus not only backmix dry sludge into wet sludge, it also provides the possibility to feed wet sludge and remove dry sludge on the same side of the dryer, like it is the case on the Bayreuth site.

The SRT sludge turner is installed to ensure that 99% of the surface covered with sludge is processed. The double shovel is able to move so close to the boundary walls that virtually no sludge remains in the corners. The turner shovels are driven by high-performance motors so that up to 1,000 m³ sludge can be turned per hour. In the first zone the sludge is still quite wet so that composting effects may start with reduced sludge bed activity. To prevent this HUBER machine moves the organically highly active sludge every 15 minutes and thus eliminates undesired composting effects.

Such intensive and complete sludge bed treatment enhances water extraction, improves the mechanical treatability of the sludge, reduces odour emissions and produces a well dried stable end product – a free-flowing and easy-to-process dry granulate.

Wind and heat dry the sludge

A number of grade heaters are installed above the sludge bed which introduce exhaust heat from a nearby biogas plant into the sludge drying process. The greenhouse is equipped with a special condensate drain system which reduces remoistening of the sludge to a minimum. The grade heaters are made of galvanized steel to prevent corrosion and dimensioned to ensure that the desired amount of heat is supplied even in case of pollution.

Furthermore, ventilators are mounted above the sludge bed, they move the dry and hot air above the drying surface through the greenhouse. The ventilators are speed controlled. As requested, they can rotate very fast and produce powerful air turbulences on the sludge bed or rotate slowly for energy-optimised operation.

When the air arrives at the feed end of the dryer it is saturated due to the moist sludge and removed from the system via an exhaust air treatment system. The two-stage washer was manufactured under factory conditions and only needed to be mounted on site. All sealings are therefore of high quality. The air flow is routed through the washer as cross flow. The pressure losses are reduced through exhaust air treatment with the result of reduced power consumption.

The dry granulate is collected, stored and quickly carried out for removal

Screws transport the dry granulate to a bucket conveyor which delivers the sludge into a horizontal silo. The sludge is quickly removed from the silo. The granulate can be loaded with loading bellows either onto an open dump truck or onto a closed silo truck. The silo is set on weighing cells so that it is possible to control the fill level and avoid overloading of the truck.

Outlook and conclusion

The whole mechanical and electrical equipment is installed centrally on one side of the dryer. All plant components are high quality and designed for a long life. With this new sewage sludge treatment plant the city of Bayreuth decided in favour of an ecological and long-term solution of their sludge disposal problem.

Technical layout data of the Bayreuth plant:

- 8,940 m³/a digester sludge after dewatering (28% DR)
- 3,340 m³/a digester sludge after solar drying (75% DR)
- 5,600 m³/a water evaporation (incl. utilisation of exhaust heat from biogas plant)
- 4,970 m³/a water evaporation (without utilisation of exhaust heat from the biogas plant)
- Without utilisation of the exhaust heat from the biogas plant a DR content of 63% after mere solar drying can be guaranteed.

Land occupancy:

- 7,000 m² for the Venlo greenhouse with integrated exhaust air treatment
- 300 m² on 2 storeys for the machine building with dewatering, chemicals room, heat transfer station, dry granulate storage, and electrical control room

Video of the HUBER Sewage Sludge Drying Plant at STP Bayreuth:



Video: HUBER Sludge Turner
SOLSTICE®

<https://www.youtube.com/watch?v=QdWhhrCOkug>

Related Products:

- [HUBER Solar Active Dryer SRT](#)

Related Solutions:

- [Sludge Drying with Solar and Renewable Energy](#)
- [HUBER Solutions for Sludge Drying](#)

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