S2E
sludge2energy
by HUBER & WTE

Project New**S2E**tter

- Hanover-Lahe
- Halle-Lochau
- Utena

Holistic concepts for
thermal sewage sludge utilisation

The Waste Sewage Sludge Ordinance (AbfKlärV), which enter into force on 3 October 2017 in Germany, will lead to a reorientation of sewage sludge recycling. In addition the revision of the Fertilizer Act and the German Fertilizer Regulation makes the use of sewage sludge for agricultural purposes almost impossible. The restrictions on spreading sewage sludge on land force sewage plant operators and sewage sludge disposal companies to search for alternative ways of recycling.

Due to this and the future obligation to recover phosphorus, the need for capacities for the thermal utilization of sewage sludge is increasing. The incineration capacities currently available in Germany cover only a fraction of the sewage sludge volumes forecast for the coming decade.

The timely implementation of effective and future-oriented concepts for solving the sewage sludge disposal emergency is therefore urgently required.

Energy-optimized sewage sludge incineration at Hanover-Lahe

Plant features

- Optimised, maximum extraction for district heating
- Adapted impurity management
- Thermally and electrically energy self-sufficient

Plant parameters

10.57 MW | 30,000 tDS/a
130,000 t/a

enercity Contracting GmbH has also opted for the disposal path of thermal sewage sludge utilisation. At the beginning of 2020, sludge2energy GmbH was commissioned as general contractor with the planning and construction of a sewage sludge mono-incineration plant at Hanover-Lahe. Both mechanically dewatered and externally fully dried municipal sewage sludge are to be recycled in the plant, which will have a total annual capacity of 30,000 t DS (dry substance). This corresponds to a quantity of approx. 130,000 t dewatered sewage sludge with a dry matter content of approx. 22%.

The main process engineering components of the plant are the two RotaDry® disc dryers, the S2E Fluidizer - a stationary fluidized bed furnace - including boiler, the back-pressure steam turbine for optimum power yield with the greatest possible flexibility in plant operation, and the flue gas cleaning system to ensure compliance with the permissible emission limits.

In addition to thermal and electrical self-sufficiency, the primary premise in the planning and realisation of the Hanover-Lahe waste incineration plant is the maximum possible extraction of environmentally friendly heat, from which approx. 5,000 households are to benefit via the regional district heating network.

The project is currently in the phase of implementation planning; the ground-breaking ceremony for the start of construction work is planned for the fourth quarter of 2020. Regular operation of the plant is scheduled for the turn of the year 2022/2023.

Decentralized sewage sludge utilisation concept at Halle-Lochau

At Halle-Lochau, Saxony-Anhalt, the construction of the sewage sludge mono-incineration plant is in full swing. With a floor space requirement of approx. 6,000m² including the necessary traffic and storage areas, the plant - an investment project of sludge2energy GmbH - can be integrated into the site of the Halle-Lochau Circular Flow and Resource Management Park. By choosing a capacity of <50 t/d sewage sludge in drying and approx. 2.9 t/h sewage sludge in incineration, the plant has to be classified according to the 4th BImSchV, Ordinance on Plants Subject to Approval, Annex No. 8.1.1.4.

The plant is therefore subject to a simplified approval procedure according to § 19 BImSchG (without public participation).

The ground-breaking ceremony for the thermal recovery plant took place on 18 September 2019. The commissioning of the entire plant is scheduled for winter 2020.

In future, 33,000 t of dewatered sludge (25% DR) as well as 2,750 t of externally fully dried municipal sewage sludge (90% DR) can be thermally treated at this sewage sludge utilisation site.

Partial-flow full drying by a HUBER Belt Dryer BT20 and subsequent back-mixing to approx. 45% DR enables a self-sufficient combustion process in the S2E Fluidizer. The combination of belt dryer and stationary fluidized bed incineration with 2-stage dry flue gas cleaning permits a quasi-wastewater-free operation of the decentralized sewage sludge treatment plant. Especially for locations where the treatment or disposal of the condensate has not been clarified, this selected process concept represents an innovative and solution-oriented approach.

Plant features

- Simplified approval procedure
- Quasi-water-free operation
- High level of energy self-sufficiency

Plant parameters

3.5 MW | 10.800 t DS/a

33,000 t/a

First sewage sludge incineration plant in Lithuania, Utena

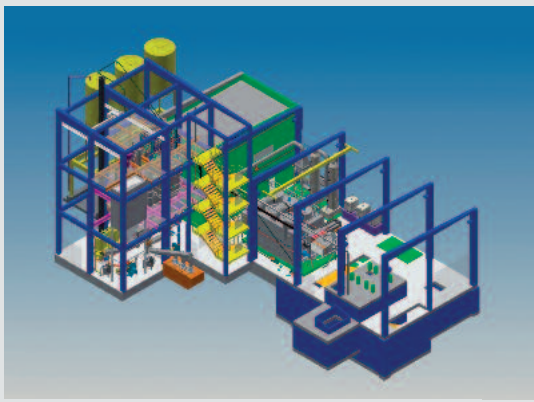
The contract for the planning and construction of the sewage sludge incineration line at the Utena wastewater treatment plant was awarded in March 2019. The entire project includes the construction of the sludge incineration plant and the extension of the existing sewage treatment plant.

In this construction project in the north-east of Lithuania, a sludge incineration plant with a capacity of 9,076 t of dewatered sewage sludge is being built as part of the sewage treatment plant expansion. The sludge2-energy GmbH supplies the plant for thermal sludge utilization.

Apart from the HUBER Belt Dryer BT6 for partial-flow full drying of the sewage sludge and the stationary fluidized bed, the S2E Fluidizer, the plant is characterized by its effluent-free flue gas cleaning. It consists of a cyclone as pre-separator, conditioned dry sorption by injection of sodium bicarbonate and activated carbon, and a downstream fabric filter. This ensures compliance with the required emission limits at low investment and operating costs.

A hot water boiler connected to the furnace transfers the heat released in the combustion process into the hot water circuit, so the heat can be used as energy, for example for the thermal heat supply to the dryer.

The engineering of the incineration plant is currently nearing completion. The start of installation is planned for winter 2020. Commissioning of the sewage sludge mono-incineration plant with a fuel heat output of 0.68 MW is scheduled for mid 2021.



Plant features

- Security of disposal for the region
- Wastewater-free flue gas purification
- Adapted design for municipal requirements

Plant parameters

0.68 MW | 2,160 t DS/a

9,076 t/a

With the sludge2energy process, a secured thermal utilization of the generated sewage sludge quantities can be ensured permanently. The process is designed to recycle sewage sludge in an energy self-sufficient manner. It is based on the combination of a sludge dryer and subsequent combustion in a fluidized bed furnace, the S2E Fluidizer.

sludge2energy GmbH, a joint venture of HUBER SE and WTE Wassertechnik GmbH - a subsidiary of EVN AG - offers competent and customer-oriented support. This ranges from concept development and feasibility, through preliminary planning, approval and detailed planning, to turnkey delivery, installation and commissioning of the entire plant as a general contractor.

In particular through its knowledge of process-technical, energetic and logistical synergies, sludge2energy GmbH can offer an optimized economic and operationally reliable overall concept.

The focus is on the development of holistic concepts for thermal sewage sludge utilisation for different locations and capacity variants while ensuring the highest possible flexibility with simultaneous high plant availability.

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