

[Home](#) ■ [HUBER Report](#) ■ [Sludge Treatment](#) ■ [Innovative sewage sludge drying on WWTP Balingen](#)

Innovative sewage sludge drying on WWTP Balingen



HUBER Belt Dryer BTplus installed on WWTP Balingen

In 2009, HUBER received the order to supply a sewage sludge belt dryer for WWTP Balingen. Supported by the Federal State Government of Baden-Württemberg, this sewage sludge utilisation project included the new sewage sludge drying plant and the extension of the sewage sludge gasification plant built in 2002.

The total volume of sewage sludge to be dried on WWTP Balingen will be up to 6,700 tons per year. The sludge comes from the municipalities Balingen (124,000 PE), Bisingen (18,700 PE), Hechingen (57,000 PE), Schömburg (6,500 PE), Rosenfeld (7,200 PE) and Binsdorf-Erlaheim (3,000 PE) and is dried from approximately 28 % DS to 90 % DS prior to thermal utilisation in the gasification plant. Presently, the preliminary works for plant commissioning are in full swing. The HUBER Belt Dryer BRplus 2-2 installed on WWTP Balingen has been designed to meet the highest ecological and economic requirements. The primary goal of the plant concept is to ensure the complete utilisation of the exhaust heat generated on site in order to minimise the use of primary energy. The exhaust heat is generated in the block heat and power plants on site and thermal secondary combustion of the sewage sludge gasification plant, with the result of two different temperature levels. Their most efficient utilisation in the drying plant was defined as the primary goal. Consequently the treatment process was adapted to suit the site-specific requirements.

The dryer was divided into two temperature zones to ensure the higher drying velocity at high temperatures is adequately used. The low temperature zone is supplied with the approximately 90 °C flow from the block heat and power plant, while hot water from secondary combustion with 140 °C flow temperature is fed to the high-temperature zone. The previously unused heat discharged to the atmosphere is in this way utilised in the dryer. As it is however impossible to cover the amount of heat required to dry the total sewage sludge volume by using only the exhaust heat generated on site, also the digester gas is used as a heat production source. The heat boiler that normally heats the building and digester supplies the additional energy.

Primary energy in the form of natural gas needs to be added only at very deep temperatures in winter when the digester gas is insufficient to heat the digestors and building. For the maximum reduction of the primary energy to be used on the WWTP it is necessary to consider the system from a holistic point of view. The exhaust heat extracted from the high-temperature zone of the dryer is relatively hot and includes the evaporation energy introduced before that can be utilised through vapour condensation. A heat extraction system integrated in the condenser transfers the heat energy contained within the air flow to the heating system. This increases the return temperature to up to 70 °C.

The innovative system permits to actively contribute to minimising the CO₂ emissions produced on WWTP Balingen and keep disposal costs low. The amount of thermal energy that can be returned to the heating systems is approximately 1,200 MWh/a, which means savings of about 305 tons CO₂/a.

Related Products:

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- [Sludge Drying](#)

Related Solutions:

- [Medium-Temperature Belt Dryers](#)

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