

Steam process DryD

Thermal wastewater treatment with smart energy concept

*The awama DryD steam process is the "turbocharger" for wastewater treatment:
More power with less consumption and lower CO₂ emission.*

The potential of **high-temperature heat** often "fizzles out" unused in the exhaust gas of the CHP unit, because it is usually only used as low-temperature heat. Low temperature heat can only be used once - high temperature heat several times.

What is it about?

Convinced by the idea that the conventional wastewater treatment processes can be made much more efficient, we have developed the awama DryD steam process.

awama DryD provides improvements in four ways:

- Odorless and safe drying without oxygen or air
- Highest capability to use all energy sources of the plant, because the self-generated energy is used with a higher degree of efficiency
- Smart energy concept for the entire wastewater treatment plant through more consistent use of the individual energy sources
- More efficiency in the standard mechanical-biological processes through thermal process engineering

For this purpose, a Fluidized Bed Superheated Steam Dryer (FB-SSD) (sectional view on page 2) developed by BMA AG is integrated into the wastewater treatment plant.

How exactly does awama DryD work?

The FB-SSD ① dries sewage sludge odor-free and energetically neutral and obtains the heat ② from a CHP unit or alternatively from the incineration.

The extracted heat is then available again, in the form of saturated steam ④ with virtually no losses, for heating office space and digesters ⑤.

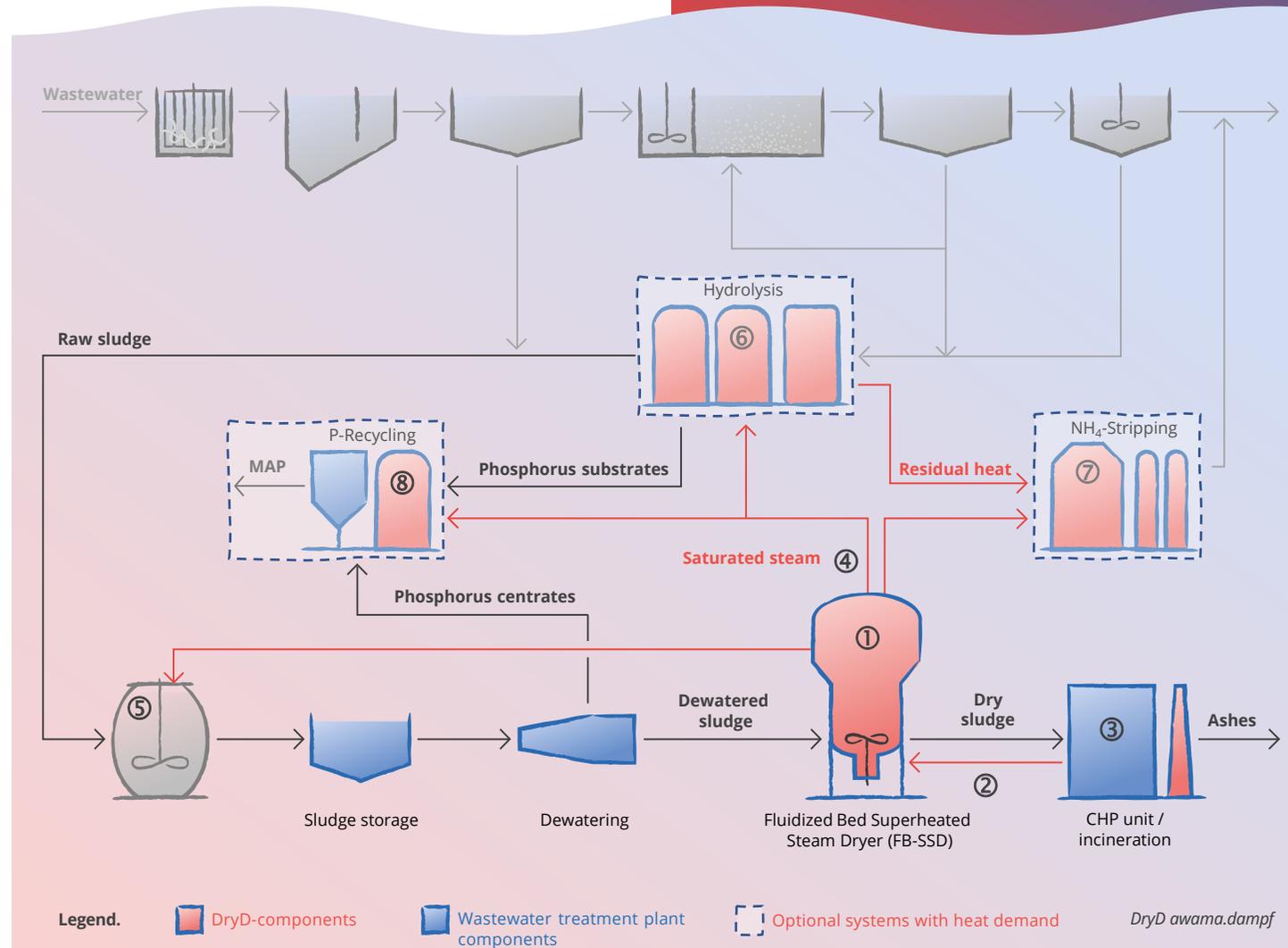
Excess steam can be used in other plants with heat demand, e.g. hydrolysis ⑥ and NH₄ stripping ⑦. It can also be other appliances such as district heating - talk to us.

If waste heat is generated again at downstream processes, this can also be used for energy generation, e.g. in generating cold or phosphorus recycling processes ⑧.



Keyfacts

- Odorless sludge drying:
- 50 - 85% Smaller carbon footprint:
- 25 - 30% Capacity expansion
- Energy-neutral steam generation
- More efficiency in standard processes through thermal process engineering and steam
- Higher performance through smart utilization of all available energy sources



What is so special?

Clean solutions are already in demand in wastewater treatment in several respects: The treated water should be free from multi-resistant germs, drugs, hormones and microplastics as far as possible. This also includes that phosphorus is increasingly recycled from the sewage sludge. In addition, the most efficient and low-carbon solutions are required. DryD meets these requirements:

- Our thermal processes have been proven to increase the efficiency of wastewater treatment. The sewage sludge sanitized at high temperatures via the FB-SSD achieves a dry substance content of approx. 95%. It is almost odorless, not self-igniting due to lack of volatile components and therefore it has very good storage properties.
- This goes hand in hand with more safety and flexibility in disposal: With DryD, the wastewater treatment plant operator is less dependent on the capacities and prices of the mono-incineration plants. The depletion of phosphorus, for example, also enables the material and thermal utilization of sewage sludge in the cement industry.
- The FB-SSD is emission-free. There is no fire hazard due to lack of air supply. And: Due to the energetic integration of the FB-SSD into the entire wastewater treatment plant, the thermal treatment becomes economically interesting.

Why is awama DryD the turbocharger of wastewater treatment?

awama DryD is the most efficient wastewater and sludge treatment approach, which is at the same time a smart energy concept. awama DryD becomes a turbocharger of the wastewater treatment in another way with the FB-SSD ①:

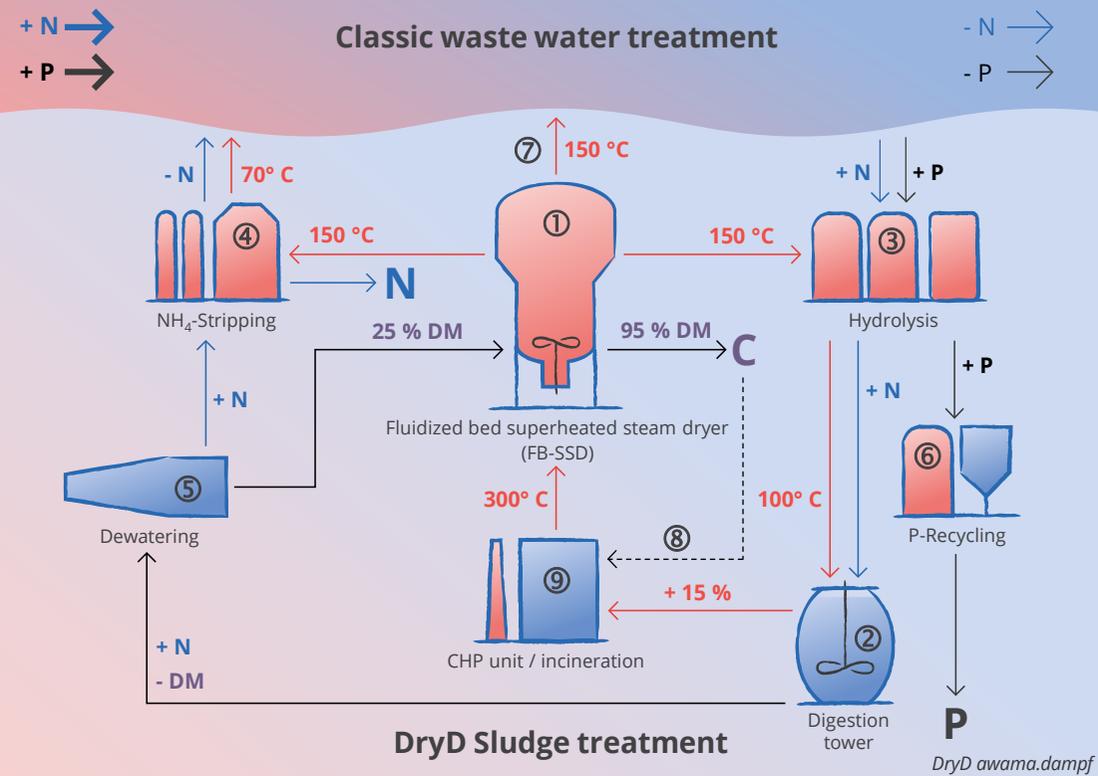
Standard mechanical-biological processes can also become more efficient if the system is used appropriately. For example in the digestion tower ②: Thermal treatment of the excess sludge in a hydrolysis process ③ can shorten the sludge age or free up new capacity by reducing the amount of sludge. Another example is the steam stripping ④ of ammonia-rich centrates from the dewatering processes ⑤: With the combination of DryD and ammonia-stripping, there is less back-loading with ammonia, so that the energy requirement for aerating the aeration basins is reduced. Recycling of phosphorus from the liquid phase of sewage sludge below 20 g P/kg DM can be achieved by means of thermally assisted redissolution ⑥. Further thermal energy ⑦ is also freely available as residual heat.

Last but not least, a (phosphorus-depleted) energy storage is also created: Dry and odorless sludge particles ⑧ with 10 to 12 MJ energy density can generate heat and electricity in a combustion process ⑨ as needed.

When and where can the technology be used?

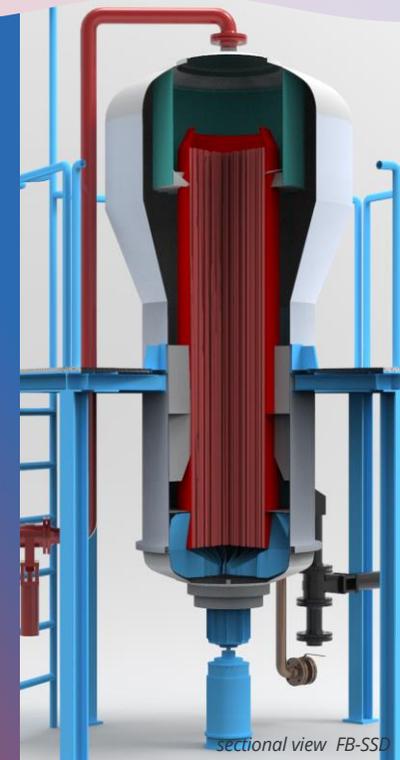
What is the minimum size for DryD in a wastewater treatment plant? How large must the processing capacity be? How much energy does the FB-SSD convert to steam and how efficient is the system applied to our plant? To answer your questions, we can balance the implementation of the process. Experience has shown that this eliminates many uncertainties that inevitably arise from a very new concept such as the awama DryD steam process.

Contact us!



Advantages of DryD

- Multiple utilization of thermal energy with steam from sewage sludge
- Application of smart decentralized, regional and flexible concepts
- Achievement of climate, environmental and economic goals
- Stable charges and Pure water, today and in the future



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