

## Sludge drying and vapour condensation in sewage clarification plants

### Valve designs for modern sludge recycling

In light of the amendments to German ordinances on fertilizer and sewage, an increasing number of sewage clarification plant operators are faced with the question of what to do with the sludge. Large sewage clarification plants, such as the in-house Stadtentwässerung Stuttgart (SES [Stuttgart municipal drainage]) plant in Mühlhausen, have already begun to invest in sewage monocombustion plants.

When recycling sludge in this way, GEMÜ valves are implemented in plant designs in order to ensure that sludge drying processes are carried out safely.

### Process description

Currently, over 150 tons of dried sludge are thermally recycled every day in the central combustion system in Mühlhausen. Before sludge can be incinerated, the moisture must be removed from the mixture of solid and liquid material in a number of steps. First, centrifuges concentrate the sludge to 25% dry material. Next, a disc dryer that is heated by steam concentrates it further to 45% solid content. Once this concentration is reached, the sludge is ready for incineration.

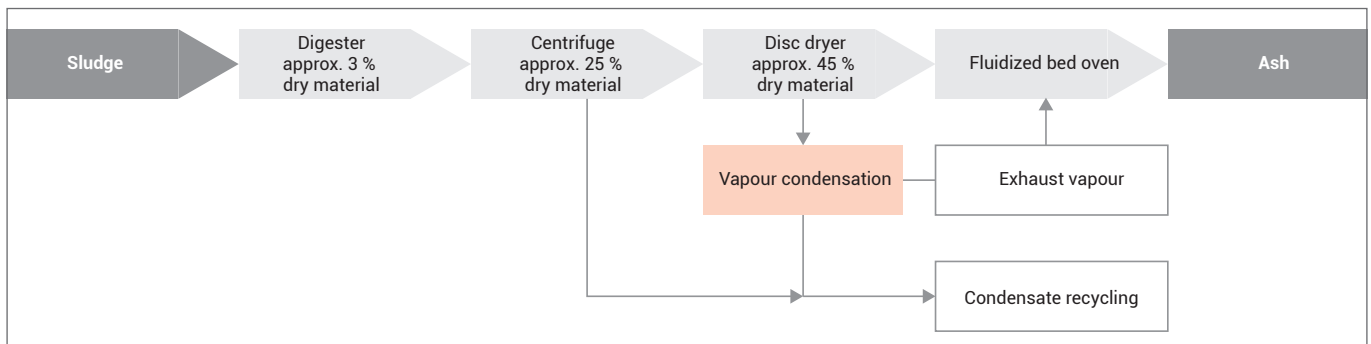
The drying process generates a by-product known as "vapour" – a mixture of substances consisting of gases and air saturated with water vapour that contains liquid and gaseous impurities. For additional recovery of vapour, the chemical resistance of all components must be taken into account in the plant design. In the case of the valves, the acids and lyes contained in the medium may attack the sealing materials of the butterfly valves. In such a case, a PTFE liner protects the elastic backing from high temperatures and corrosive media.

### Suitable GEMÜ products

- GEMÜ butterfly valves from the 490 Edessa series with PTFE liner
- Electrically operated butterfly valves with GEMÜ 498 Edessa spring force function

### Key process data

- Medium:  
Waste steam, mixture of liquids and solids
- Operating temperature:  
90 to 100 °C, over 100 °C in case of failure
- Operating pressure:  
2 bar (abs)



## Why GEMÜ?

With the GEMÜ 490 Edessa series, GEMÜ is offering highly resistant butterfly valves that can be equipped with the most varied seal materials and coated discs. The version with PTFE liner ensures maximum safety in the Stuttgart sewage clarification plant. Even plant faults that cause the system to reach temperatures above 100 °C will not damage these valves, as the PTFE liners are sufficiently resistant to the substances contained in the vapour.

Furthermore, an electrically driven butterfly valve with spring force function is installed near the dryer for maximum safety. In case of power failure, this butterfly valve opens automatically. This means that, in case of malfunction, the steam in the disc dryers will not cause pressure to build up, thereby avoiding damage to apparatus and piping.



GEMÜ 497

**GEMÜ Gebr. Müller Apparatebau GmbH & Co. KG**  
 Fritz-Müller-Straße 6-8 · D-74654 Ingelfingen-Criesbach  
 Phone +49 (0)7940 123-0 · info@gemue.de