

DECANTER CENTRIFUGES & PLANTS FOR SOLID/LIQUID SEPARATION



HILLER LYSAT TECHNOLOGY

Sludge disintegration via centrifuge - advantage based on experience.

Rising sludge disposal costs mean continual pressure to optimise sludge treatment at sewage treatment plants. The approach of using a disintegration process to generate technical and economic advantages for further sludge treatment is not a new one. A wide range of physical and chemical solutions all aim to achieve the following overall goals:

GOALS:

- reduced viscosity and better pumping properties
- increased degradation of the organic part (i.e. extended well time in the digestion tank)
- increase in gas yield
- improved drainage behaviour

As a manufacturer of high-performance centrifuges, HILLER GmbH can demonstrate a specific advantage in this field of application with self-constructed references.

Therefore, the design and process know-how is firmly established in the company.

BASIC PROCEDURAL APPROACH:

Basic procedural approach:

Waste activated sludge (WAS) is generally mechanically thickened prior to mixing with the primary sludge, in order to achieve an optimal consistency in the raw/mixed sludge subsequently before digestion. The amount of sludge added to the digestion tank is therefore reduced by means of a waste activated sludge thickening process. This provides energy savings and better digestion tank utilisation and/or longer detention times in the digestion stage. This results in reduced amounts of digested sludge and improved dewatering properties of the digested sludge

OPERATION:

HILLER centrifuges can be operated with an additionally installed lysing device.

This lysing device is attached in the area of the sludge discharge openings **and uses the existing kinetic bowl energy.**

This means that the additional power consumption of 0.2 to 0.5 kW/m³ can also be kept correspondingly low.

The disintegration effects in the thickened waste activated sludge (WAS) essentially take place by impact and shear forces generated by rotating knife blades in the labyrinth and the lysing chamber at high circumferential velocity. The WAS disintegration is completed in the full flow of the thick sludge entering the lysing device, meaning that only the WAS thick sludge thickened in the centrifuge is lysed **and no lysate enters the separated centrate water.**

NO ADDITIONAL PLANT TECHNOLOGY REQUIRED

Other than the lysing device, no additional plant technology is required.

Equipping a HILLER thickening centrifuge with a lysing device therefore combines the following processes:

- WAS Thickening
- WAS Disintegration
- WAS Liquefaction (change in viscosity of the thickened WAS)

MECHANICAL CONSTRUCTION:

The lysing device consists of a labyrinth with a lysis chamber fitted with window openings. Fork blades fitted onto the centrifuge bowl rotate through the lysis chamber, and these blades are protected against wear with tungsten carbide plating. From the discharge openings of the centrifuge, thickened waste activated sludge thrown out at high speed flows through the lysis chamber in the axial direction.

Easy on-site disassembly of the lysing device and unrestricted operation of the conventional thickening decanter are also possible.

