

Zickert™ Rotating Sludge Scraper

New, unique circular sludge scraper

The Zickert™ Z3700 has been developed by Nordic Water and is powered by a new, innovative sludge transport mechanism. The sludge scraper is designed to remove bottom sludge in circular shaped sedimentation tanks in wastewater treatment plants and can be retrofitted into existing tanks without the cost of extra concrete works. The new design can also tackle floating scum with an optional addition to the unit's standard operation.

The new Z3700 is both lightweight and easy to install making it the economical choice for both new and retrofit applications.



Drive shaft and wheel

A vertical shaft connects the gear motor to the drive wheel assembly at the bottom of the tank. The drive wheel consists of a specially designed sprocket, powering a circular drive ring along the tank wall. The drive wheel assembly is connected to a support bracket assembly attached to the chamber wall. The drive wheel is turned by the motor and powers the circular drive ring, with the wheel bearing handling loads in both directions.

Benefits

- Easy electrical supply, maintenance and repairs
- No requirements on the concrete at the tank side makes retrofitting easy and cost effective
- Ice and snow pose no problems
- Easy to cover at low cost
- Low service and maintenance costs
- Efficient sedimentation process

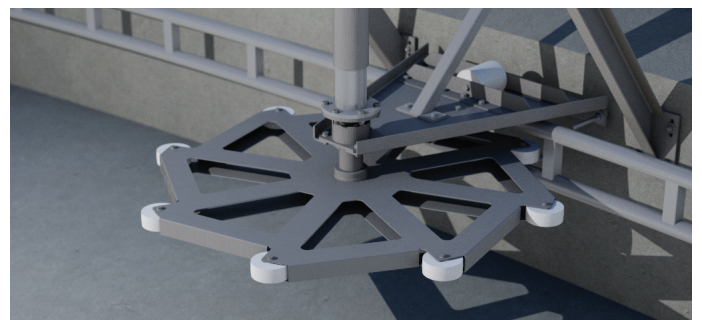
Slick construction

The extensive development of the Z3700 has resulted in an efficient and simple design. Removing the need for the traditional large and heavy bridge structure has resulted in simpler service and maintenance needs. There is no need for a fixed chain rail or wheels on top of the tank edge, ensuring simple construction of new tanks and problem-free operation in harsh winter conditions. Consideration for varying site conditions has resulted in all components being installed within the tank, a feature particularly useful for low profile tank covering systems and odour control.

Unique fixed drive unit

The drive unit is fixed at the chamber wall, eliminating the need for a travelling bridge structure and reducing the need for maintenance in the centre of the chamber. The motor is mounted on a small platform at the periphery of the chamber and connected directly to the vertical drive shaft, transferring the motion from the drive, at the top of tank, to the drive wheel and drive ring at the tank bottom. A force sensor protects the unit from overload.

The platform enables full access around the drive unit.



Advantages

- No bridge
- No chain rail
- Low weight - easy to install
- Low height - easy to cover
- Low wear
- Minimal disturbance to sedimentation process

Surface Scraper & Scum Beach

The new Z3700 allows removal of surface scum with a scraper blade mounted to support framework assembled on top of the bottom scraper arm. The blade assembly consists of one angled scraper which transports the sludge towards the outer edge, and one blade, perpendicular to the tank wall, which removes sludge to the scum beach.

The scum beach is equipped with a scum box for collection of surface sludge and is attached to the existing tank structure, whether that be the tank wall or outlet channels.



Scraper Arm Unit

The scraper arms are attached to the centre frame using flexible joints allowing them to adapt to the slope of each individual tank. The underside of the arms are supported by wheels that travel along the bottom of the tank. These scraper arms carry the rubber blades used for sludge removal.

Drive Ring

The circular drive ring consists of a simple ladder assembly along the tank wall. The drive ring is supported at equal distances along the wall with glide blocks, and is pushed ahead by the drive wheel, rotating the drive ring to which the scraper blades are attached. The scraper unit is also supported by the the centre column, further reducing wear on all components.

Centre Frame

Instead of the traditional bridge and drive unit in the centre of the tank, the Centre Frame rotates around the central structure. This Centre Frame is specially designed for each individual tank and is supported and guided by glide blocks. The frame rotates around the centre to which the scraper structure is attached.



Technical Specifications of the Z3700

Application	For bottom sludge and, if required, also floating scum transportation in circular sedimentation tanks for local authority wastewater treatment plants, drinking water plants and industrial processes.
Type of sludge	Suitable for most types of bottom sludge and floating scum.
Variation in water level	Standard ± 25 mm for surface scraping.
Materials	Stainless steel ASTM 304 L or acid-resistant steel ASTM 316 L.
Diameter	Standard sizes: 18-50m. (Larger than 50m available on request.)