Site report

Reception, storage and incineration of sewage sludge at the Pro Rheno sewage treatment plant in Basel

The sanitation of sewage sludge which are collected in both municipal and industrial plants has now become an important issue for sewage treatment companies. The pressure on local authorities and industrial companies to choose thermal incineration as a means of disposing of sewage sludge is increasing because of political considerations (prohibition of sewage sludge dumping, limitations placed on agricultural use, etc.).
Pro Rheno AG in Basel also disposes of sewage sludge in this way.

KOS 1050 high density solids pumps

Reception bin is loaded by skip truck

Pro Rheno AG cleans municipal and industrial waste water in the Basel area of Switzerland. It consists of the Basel waste water treatment plant (municipal waste water treatment), the Basel chemical waste water treatment plant and a sludge processing plant (incineration of sewage sludge).

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To ensure that the three multiple hearth furnaces are used to full capacity, the plant not only handles sewage sludge but also receives sludge externally from near waste water treatment plants. Putzmeister has supplied a complete sludge handling system for the plant.

The sewage sludge (imported sludge) is mechanically dewatered, delivered by truck and unloaded into two receiving silos (30 m³). To improve plant monitoring and control, each truck driver is given a chip card in order to enable the reception silos.

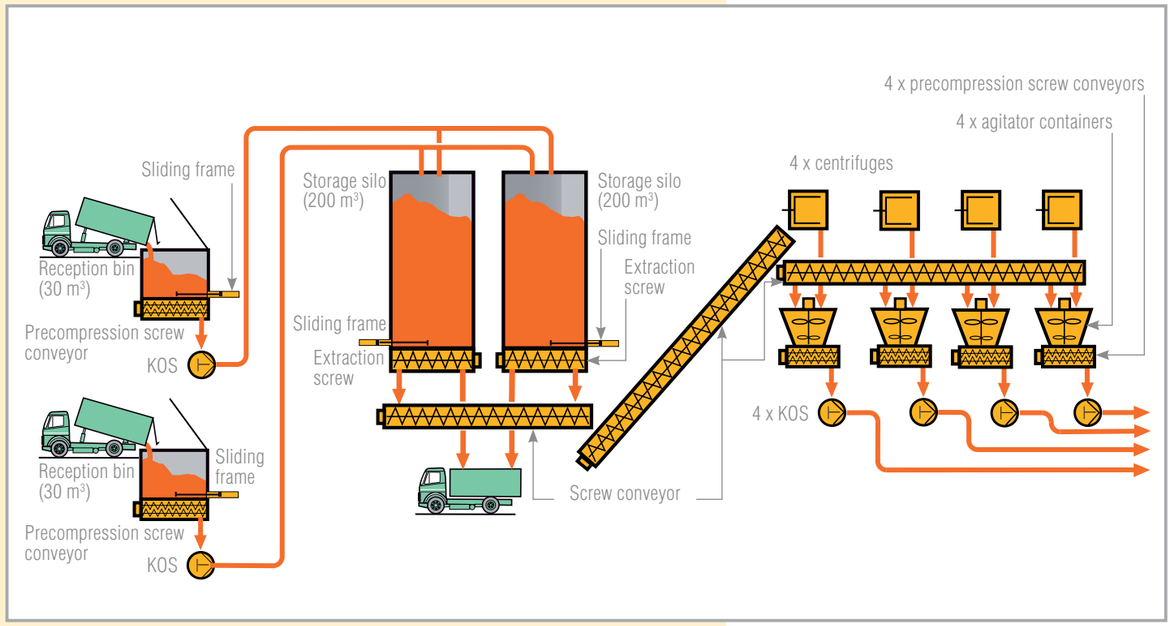
A traffic light system tells the driver which one of the two reception silos can be approached. Both reception silos are placed on load cells in order to be able to determine the exact quantity of sewage sludge delivered, thus ensuring correct financial settlement with suppliers.

The base of the silo accommodates a hydraulically driven Putzmeister extraction system whose sliding frame and screw conveyor feed a downstream Putzmeister high density solids pump with sewage sludge. The KOS 1470 LCB high density solids pump is an S tranfer tube model without valves, which can provide a maximum unobstructed opening cross section for any foreign materials contained in the sewage sludge. This technical feature is especially favoured in the sewage sludge reception area.

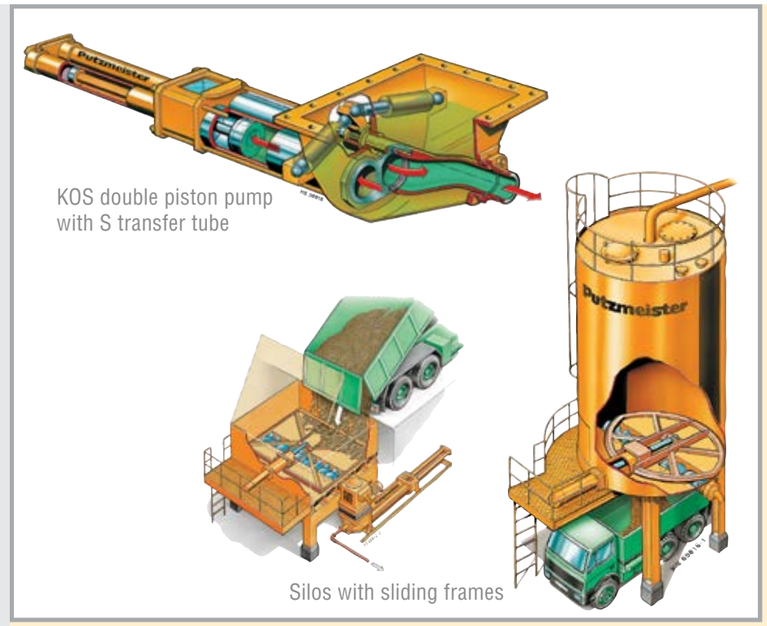
Above: Sludge reception bins 1 and 2
Below: Display of the quantity of sludge still present in the reception bin

Pressure measurement in the precompression zone for optimised regulation of the precompression screw conveyor

KOS 1470 high density solids pump in LCB version



The two KOS 1470 LCB piston pumps convey the material (max. 30 m³/h) through an approx. 55 m long pipeline (DN 200 PN 100) into 2 storage silos. The two storage silos are used in order to empty the reception silos as quickly as possible. This avoids subsequent vehicles having to endure unnecessary waiting times. Furthermore, a storage silo decouples the process between reception and further processing. A sewage sludge storage tank is also available, which covers the periods when no sludge is being delivered, thereby maintaining the firing process.



KOS double piston pump with S transfer tube

Silos with sliding frames

The Putzmeister extraction mechanism via sliding frame and screw conveyor is comparable to that of the reception silo. The sewage sludge is then transported via conveyor screws to four mixing hoppers. At this point, locally collected sewage sludge, which was earlier dewatered via centrifuges, is mixed together with animal slurry and chemical sludge by means of an agitator. This sludge mixture is carried to four high density solids pumps downstream from the mixing hopper. These are KOS 1050 high density solids pumps, which are fed via precompression screw conveyors. The S transfer tube pumps convey the material (max. 20 m³/h) via a pipeline (DN 125 PN 100) to the three multiple hearth furnaces.

Above: Two storage silos (insulated), each holding 200 m³ – for storing the sewage sludge

Left: KOS 1050 high density solids pump with hydraulic power pack

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