ClaroDry®

Continuous sludge dewatering &

low temperature sludge drying Systems

InnoTech Partner for Engineering:

Bio-Ingenieurtechnik GmbH

ISO 9001
BUREAU VERITAS
Certification
Sewage sludge dewatering, an increasingly important cost factor

In the communal as well as in the industrial waste water treatments result daily considerable quantities of sludge, in most cases from the digestion tank. Gas recovered by the fermentation process in the digestion tank, covers usually a part of the energy needed in the waste water treatment. However, it can only partially be used, especially in summer time, since a large part of the energy results as warmth.

The surplus, activated or anaerobic digested sludge resulting during the waste water purification needs to be dewatered and must be burned in some European countries.

The burn effected either in waste combustion plants, in particularly central established sludge combustion plants or in the cement industry. In all cases both transportation and disposal fees have to be paid.

Today, the costs of the sludge disposal a substantial cost factor in the waste water treatment.

As the calorific value of dried sewage sludge (10,500 - 16,500 kJ/kg) is at a similar or higher level than the calorific value of wood (air-dried: 14,600 - 16,800 kJ/kg) or brown coal (8,400 - 11,300 kJ/kg), dried sludge become increasingly interesting as a replacement of fuel (e.g. use in modern fluidized bed burner plants); sewage sludge is therefore no more considered as waste, but increasingly as source of energy.

Dried sewage sludge can be stored odour and dust free and can be used seasonal (in cold seasons) for heating purposes in central combined heating and power stations.

In countries with those the agricultural use of sewage sludge is still permitted, a storable, dust free and high-quality fertilizers can be manufactured (according to local requirements).

A decentralized sludge drying system (to >90%TS) is worthwhile today, thanks to modern and efficient drying technology for sewage plants starting from 15,000 PE.

**ClaroDry®** sludge dewatering and sludge drying systems are energy efficient solutions for a sustainable treatment and use of sludge.
ClaroDry® sludge treatment: the process

The sludge processing up to the use as replacement of fuel or high-quality fertilizers takes place in 3 steps:

1. Dewatering with the continuously working ClaroDry® screw press
2. Drying with the ClaroDry® low temperature drying system
3. Seasonal use as fuel replacement or high value fertilizer

Simple, solid technology and the use of most modern heat pump technology guarantee low need for energy and maintenance as well as a 24h/7day operation without permanent monitoring.

This keeps running cost (Energy, personal and maintenance) at lowest level and makes the use of this technology financially interesting for small sewage plants as well.
The continuous dewatering process with the ClaroDry® sludge screw press

Whether digested or not digested sludge the ClaroDry® dewatering system extracts the necessary daily quantity of sludge from the waste water treatment process.

Contrary to common systems the ClaroDry® technology is a continuous process, as the sludge is drained constantly in a continuous slowly running sludge screw press extruder and a twice per day feed of the low-temperature drying system.

The slowly turning (starting from 1 U/Min) sludge screw press extracts the daily necessary sludge quantity (starting from 2% TS) from the sludge pile and drains the sludge to 25 - 35% (depending upon sludge quality).

The ClaroDry® sludge screw press has a module-like construction and can therefore be adapted optimally to actual requirements (sludge consistency/quality):

- different sizes of press cylinders
- up to 3 stainless steel sieve cylinders with different dewatering gaps can be combined
- manual or automatic cleaning of the dewatering sieve cylinders during operation
- individual adjustable throughput and rotating speed (starting from 1 U/Min)

By the simple structure and the low speed of the moving parts, a safe, wear resistant operation is possible. The filter insets and other parts can be removed with little effort for necessary maintenance. The energy consumption is low.
The continuous drying process with the **ClaroDry®** low temperature drying system

The **ClaroDry®** low temperature drying plant dries the dewatered sludge up to the desired dryness between approx. 40 - >90% TS. The weight of the sludge will be reduced up to one third of the original weight (= dewatered sludge with 25% TS).

The **ClaroDry®** low temperature drying plant works with most modern and energy efficient heat pump technology. Therefore the energy consumption of the drying process is very low with 400 W per litre water respectively <600 Watt per litre for the whole process (drying and mechanical treatments and movements within the process).

Additional modules such as sludge shelter (for the daily volumes) and a granulation mill (adjustable between 2-10mm), de-dusting unit and filling station for big bags or containers are available.

- energy efficient (sewage) sludge dewatering & drying up to >90%TS
- significant volume & weight reduction and therefore reduced disposal costs (incl. transportation)
- robust and simple technology: low maintenance and costs for maintenance and spare parts
- simple in operation and maintenance – safe in 24h/7d operation
- module type construction – low need for space and simple capacity expansion possible
- low volumes of exhaust air because of closed recirculation process= low odour emissions
- scalable granulation, de-dusting and big bag filling station as options available

**The ClaroDry® low temperature drying towers** are available as standard modules with a drying capacity of 2000 / 3000 und 5000 litres of water per day.

Footprint of drying tower: 1.5 X 1.5 m to 2.0 X 2.0 m
Heights (incl. Sludhe shelter): 5.5 m.

The energy consumption for the evaporation of 1 litre water = 400 Watts.
The total consumption of the drying unit plant for the evaporation of 1 litre water = <600 Watt.
The degree of drying can be adjusted between 40-> >90% TS.
“Our environment is fragile and precious. Our clients are more than ever aware of this and therefore decide in favour of technologies which are not only economical and innovative, but also sustainable.”

**Guaranteed Quality & Safety**

Quality & Safety, for us, means we supply products which, even in difficult conditions, give a high performance without generating extra costs or using complicated operation processes. Sturdy, but innovative and sustainable technology.

We are able to supply this quality:

- due to our many years of experience
- because our products fulfill the EU requirements & directives for waste water treatment and are designed and taken into operation by ISO certified, experienced partners
- by the use of high quality parts and components

Quality also entails constantly searching for new solutions and technologies, testing or having them tested and making them available to our clients as soon as possible (see: innovations)

Guided by these principles, **Innprotech Partners** offer fitting solutions, supplying quality coupled with safety.