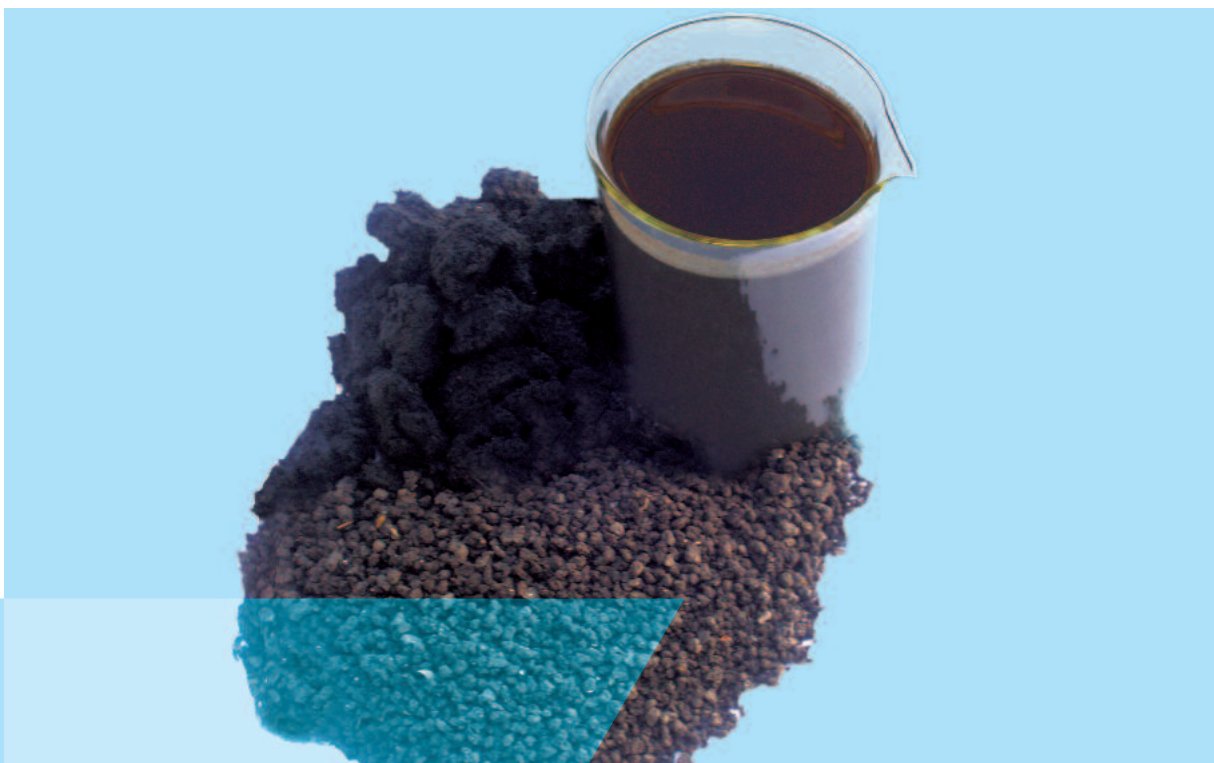


HUBER Sludge Treatment



Screening – Thickening – Dewatering – Drying – Utilisation

... from one source

►► Sludge treatment

Sewage sludge is continuously generated on municipal and industrial wastewater treatment plants during the process of organic pollutant degradation. In the past years, the annual volume of municipal sewage exceeded 10 million tons dry substance in Europe alone, and the trend continues upward. Due to the very different rates of connection in the individual countries, with e.g. a rate of virtually 100 % in the EU member states, and therefore regionally very different sewage sludge volumes it is only understandable that there are controversial approaches as regards sludge disposal ways.

In some countries, due to new legislation and eco-political consideration, some disposal methods have been prohibited or at least restricted, such as landfilling of sewage sludge. For many states the recovery of materials contained within sewage sludge still plays an important role. This applies to both landscaping and sludge spreading on agricultural land.

The fertilization effect of sewage sludge and especially its phosphorus content is normally sufficient to cover the nutrients demand of typical agricultural land. On the other hand, there are a lot of countries where the agricultural application of sewage sludge is met with much scepticism due to its potential heavy metal pollution and content of organic pollutants, such as PFT. In these countries there has been a clear trend towards concepts for thermal sewage sludge treatment for some years already, partly combined with the approach to recover the phosphorus contained within sewage sludge.

Many of the decentralised concepts for thermal sewage sludge utilisation also provide for the sensible use of heat and avoid expensive sludge transports. Incineration of dried sludge means high disposal safety for operators. In addition, mono-incineration allows for optional phosphorus recovery from sewage sludge ash. Another factor in favour of incineration is the fact that it allows to recover the amount of energy consumed for sludge drying.

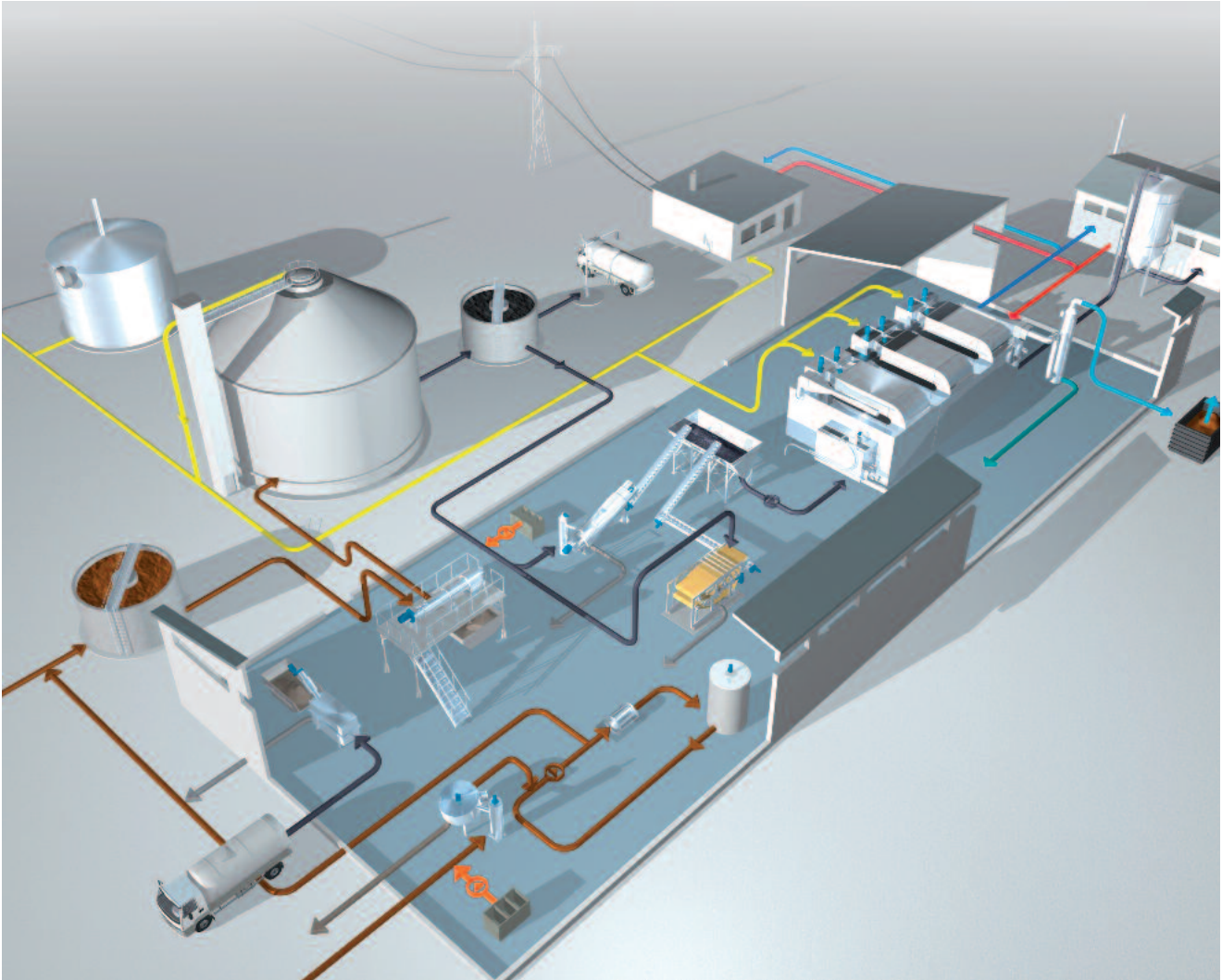
For an optimised energy balance, process steps upstream of the incineration plant must be designed as energy-saving as possible. Best case, the incineration of sewage sludge can show a positive energy balance and make an eco-friendly contribution to the generation of regenerative energy.

Against this political and economic background it is understandable that the sewage sludge disposal issue can be discussed quite controversially. Even if there is no generally accepted concept for future sewage sludge disposal existing presently, adequate sludge pre-treatment is required with all concepts described above.

A major pre-treatment step is to reduce the water content of the sludge. Sewage sludge generated on wastewater treatment plants typically shows a DS between 1 and 5% depending on where exactly it is generated. The average DS content of digested sludge is 4 %. This means that one cubic metre of digested sewage sludge contains 960 l, which would permanently have to be transported without prior dewatering. The major benefits of dewatering and drying are weight and volume reduction and the increased thermal value.

Consequently, the process chain that allows for later thermal utilisation of dried sewage sludge comprises the steps of prior screening, thickening and drying.

Screening – thickening – dewatering – drying – utilisation – all from one source



Sewage sludge treatment on a municipal wastewater treatment plant

➤➤ Sludge screening / process water filtration

HUBER Sludgcleaner STRAINPRESS®

- Throughput capacity up to 100 m³/h
- No washwater needed
- Suitable for in-line installation
- Integrated coarse material dewatering
- Completely made of stainless steel



HUBER Sludgcleaner STRAINPRESS® – Continuous pressurised foreign material separation

➤➤ Sludge thickening

HUBER Disc Thickener S-DISC

- Throughput capacity up to 40 m³/h
- Two sizes available
- Simple principle of operation
- Minimised operator attendance
- High operational reliability
- Compact, totally enclosed design
- Accessible for full inspection
- Adjustable for varying degrees of thickening
- Minimum wash water consumption
- Low wash water pressure of only 3 bar
- Low solids load in filtrate
- Wear-resistant stainless steel filter cloth
- No lubrication points
- Virtually noiseless operation
- Specific power consumption < 0.02 kW/m³
- Hundreds of installations worldwide



*Unique sludge thickener:
HUBER Disc Thickener S-DISC*

HUBER Rotary Screw Thickener S-DRUM

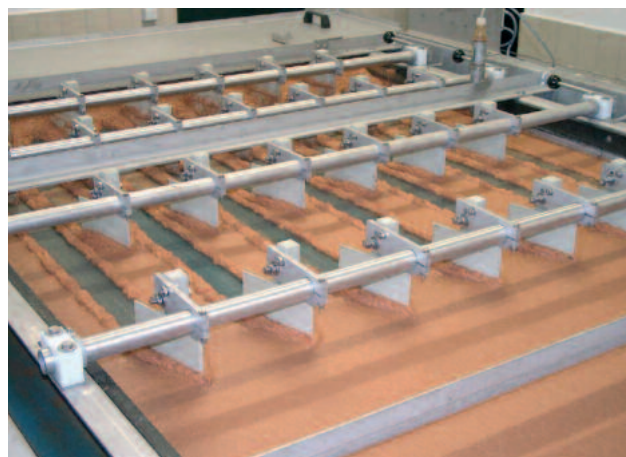
- Throughput capacity up to 110 m³/h
- Two sizes available
- High solids capacity
- Totally enclosed, odour-free design
- Completely made of stainless steel
- Low wash water consumption
- Low energy consumption



*HUBER Rotary Screw Thickener S-DRUM – exceptionally
robust thickener*

HUBER Drainbelt DB

- Throughput capacity up to 100 m³/h
- Four sizes available
- Low polymer consumption
- Minimum operating costs
- Exceptionally high thickening results
- Variable belt speed
- Low energy consumption



*HUBER Belt Thickener DrainBelt – worldwide well-proven
thickener*

➤➤ Sludge dewatering

HUBER Bogenpress B-PRESS

Belt filter press

- Belt filter press with throughput capacity up to 1000 kg_{DR}/h
- Three sizes available
- Versatile sludge press
- High efficiency (low polymer and power consumption)
- High capacity (due to extended pre-dewatering zone)
- Application-optimised design



The HUBER Bogenpress B-PRESS can be combined with the HUBER Belt Thickener DrainBelt unit to further increase capacity

HUBER Screw Press S-PRESS

- Throughput capacity up to 500 kg_{DR}/h
- Two sizes available
- Very robust design
- Especially suitable for industrial sludges
- Proven in hundreds of installations
- Virtually noiseless operation



*HUBER Screw Press S-PRESS
Specific power consumption < 0.01 kWh/kg_{DR}*

HUBER Screw Press Q-PRESS®

- Throughput capacity up to 540 kg_{DR}/h
- Four sizes available
- High dewatering efficiency
- Low energy consumption
- Easy to operate
- Compact, enclosed design
- Optional mobile units



Parallel installation of two HUBER Screw Press Q-PRESS® units

➤➤ Sludge drying

HUBER Solar Active Dryer SRT with HUBER Sludge Turner SOLSTICE®

- Sustainable, eco-friendly process
- Best mixing and aeration of the complete sludge bed
- Minimised odour development and dust formation due to effective backmixing
- Optimised evaporation efficiency with low energy consumption
- Ease of operation and maintenance
- Flexibility of sludge feeding and removal



HUBER Sludge Turner SOLSTICE® for solar sewage sludge drying

HUBER Belt Dryer BT

- Sludge throughput capacity up to 6 t/h per line
- Water evaporation up to 4.2 t/h per line
- Low-dust high-efficiency drying
- Small exhaust air mass flow
- Utilisation of site-specific exhaust heat (e.g. CHP)
- Conforms to EU directive ATEX
- Automatic operation over 24 hours per day
- Thermal energy demand 0.8 - 0.85 kWh/kg water
- Electric energy demand 0.03 - 0.15 kWh/kg water



HUBER Belt Dryer BT for sewage sludge drying up to > 90% DS

➤➤ Thermal sewage sludge utilisation

sludge2energy system for sewage sludge utilisation

- Decentralised thermal utilisation of sewage sludge
- Energy self-sufficient concept of drying and incineration
- Long-term disposal safety and cost control
- Optional phosphorus recovery from sewage sludge ash
- State-of-the-art flue gas cleaning



Innovative concept of decentralised sludge utilisation by generation and use of thermal and electrical energy

HUBER SE

Industriepark Erasbach A1 · D-92334 Berching
Phone: + 49 - 84 62 - 201 - 0 · Fax: + 49 - 84 62 - 201 - 810
info@huber.de · Internet: www.huber.de

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HUBER Sludge Treatment