



ELIQUO | HYDROK

EloDry®

Highly efficient sludge drying



EloDry®

IS A LOW-TEMPERATURE BELT DRYER OF THE LATEST GENERATION, IN PARTICULAR FOR DRYING SEWAGE SLUDGE.

DUE TO THE SPECIAL DESIGN THAT IS OPTIMALLY ADAPTED TO THE RESPECTIVE CONDITIONS, **EloDry®** DRYING SYSTEMS PROVIDE RELIABLE AND HIGHLY ENERGY-EFFICIENT, ECONOMICAL DRYING AT LOW DRYING TEMPERATURES.



EloDry®
Efficient sewage sludge drying

Objective

The objective of using EloDry® is reliable and highly energy-efficient, economical drying, in particular drying of dewatered sewage sludge, and thus:

the reduction of disposal costs

the production of safe dry material

the production of an economic substitute fuel

the production of a storable resource for phosphorus

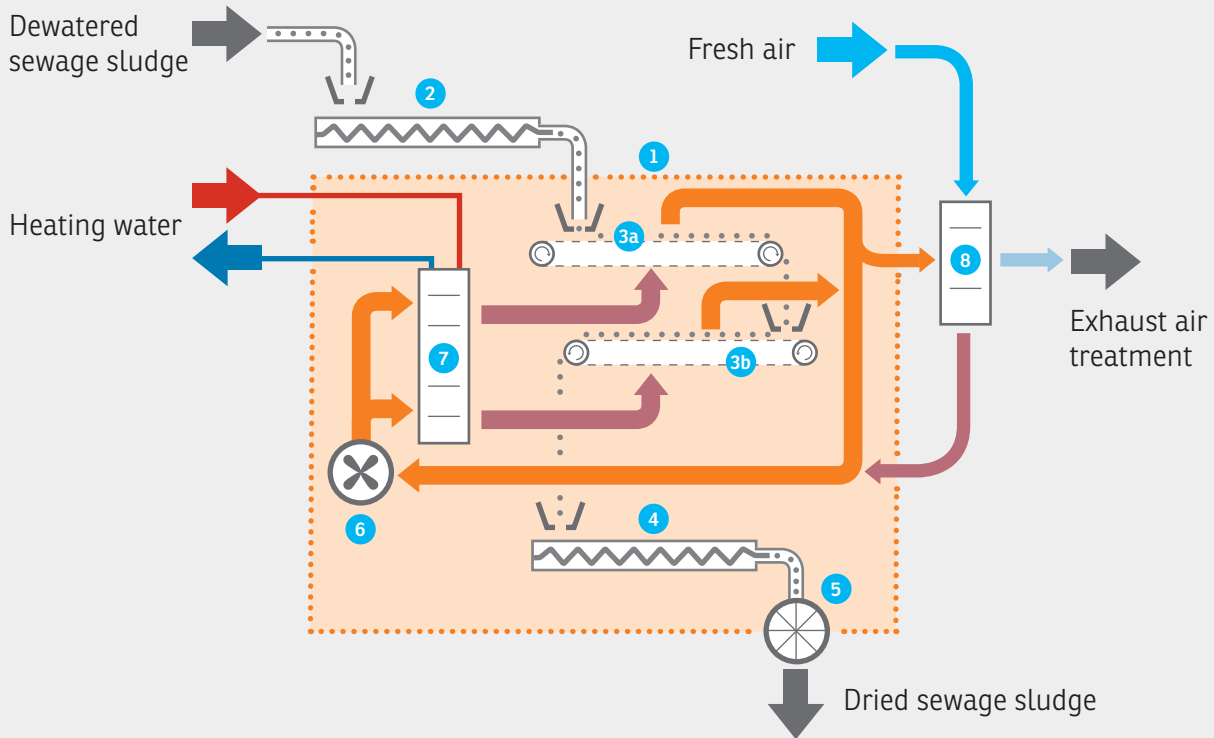
through:

integrated, optimal pre-treatment and preparation of the material to be dried

individual customization of the degree of drying in the range of approximately 60 - 92 % dry matter (DM)

efficient use of heat sources starting at a temperature level of approximately 50 °C combined with an intelligent, holistic heat utilization and heat recycling concept

Operating principle



The dewatered sludge is optimally supplied to the EloDry® low-temperature belt dryer according to demand.

For example, the feed can be carried out via a storage tank with pump and extruder. The extruder may be necessary in order to convert the sludge into a crumbly structure.

Alternatively, the sludge feed can be done via a storage tank with push floor and discharge screw and mixing screws. In parallel, dried sewage sludge is added and mixed with the fresh feed. Older external sludge and poorly dewatered sludge is converted into a manageable form this way.

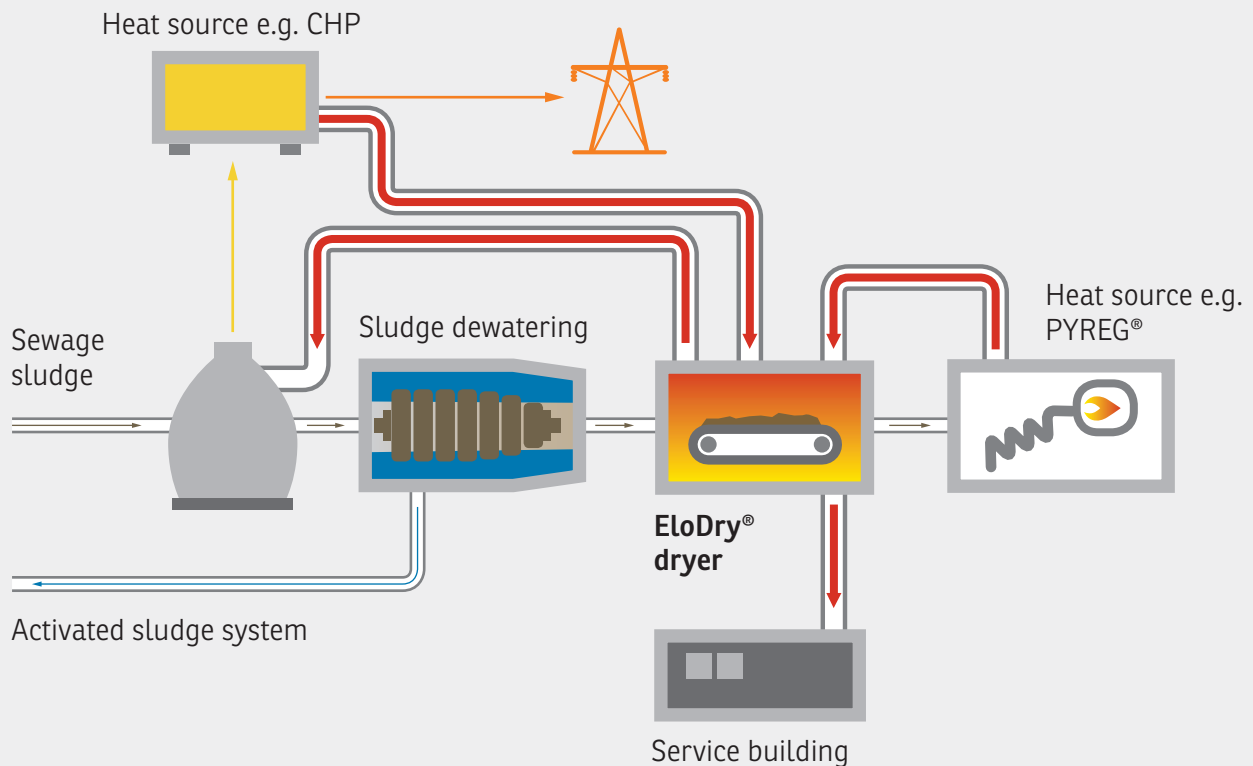
In the EloDry® belt dryer (1) the granular sludge is distributed evenly onto the dryer's upper belt (3a) by a distribution screw (2). The upper belt moves the sludge forward from the head of the dryer to the dryer end, where it is thrown onto the lower belt (3b). From the lower belt, the sludge is returned to the discharge screw conveyor (4) and discharged via the rotary valve (5).

The drying of the sludge is performed using hot air, which is supplied by a circulating-air fan (6) and heated to the desired temperature by a heat exchanger (7). The fresh air supplied to the dryer is pre-heated by means of heat recovery (8) from the exhaust air and then added to the circulation flow.

Dry material measurement allows for automatic adjustment of the drying process to changing DM contents in the sludge supply and ensures a very uniform drying result.

The dryer in operation is permanently kept in vacuum to prevent fugitive emissions. The exhaust air is fed into the exhaust air treatment.

Design concept



TECHNICAL DATA

EloDry® sewage sludge drying systems intelligently integrate the highly energy-efficient EloDry® belt dryer into a holistic heat utilization and heat recycling concept. This ensures optimal use of the energy resource heat.

SEWAGE SLUDGE DRYING WITH EloDry® DRYING SYSTEMS

Key benefits

Optimally tailored pre-treatment and preparation of the material to be dried

Individual customization of the degree of drying in the range of approximately 60 - 92 % dry matter (DM)

Use of highly efficient EloDry® dryers with low specific heat demand from approximately 750 - 850 kWh/t H₂O_{vapour}*

Economic use of waste heat from approximately 50 - 80 °C to more than 100 °C

Possible waste heat sources: CHP plants, gas-fired microturbine systems

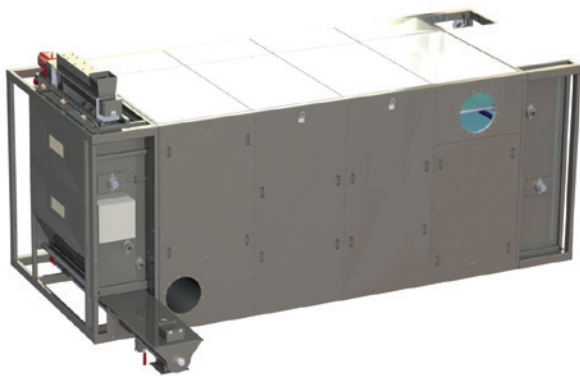
Supply of waste heat from the EloDry® dryers at a temperature level of 55 - 60 °C to other consumers with individual customization of the quantity of decoupled heat according to respective circumstances

Potential use of the exhaust heat of the dryer: Digester, service building of sewage treatment plant

USER- AND MAINTENANCE-FRIENDLY

The EloDry® dryer is very easy to operate and is very low in maintenance:

- Continuous, fully automatic operation
 - 24/7-operation possible, supervision expenditures < 1 h/d, no supervision expenditures during night shift and on weekends
 - Guarantee of the desired degree of drying through continuous automatic monitoring at the discharge
 - Excellent inspection options
 - Very good accessibility of all system components
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| EloDry® NT16

EMISSIONS

EloDry® systems for sludge drying meet the requirements of the German Clean Air Act (TA-Luft).

Prevention of emissions into the environment due to design of the dryer and operation in a slight vacuum. Prevention of air filtration by airlock at the sludge feed and rotary valve at the outlet.

Individually customized cleaning of exhaust air in accordance with the respective sludge quality.

PROFITABILITY

EloDry® drying systems are characterised by a favourable price/performance ratio and low operating costs:

High energy efficiency

The EloDry® low-temperature dryer is characterized by very good use of the available process heat with approximately 60 - 80 °C. The specific thermal energy consumption can, depending on the process, be as little as approx. 750 kWh/t H₂O_{vapour}.

However, the dryer can also be operated with heat carrier systems with a temperature of ≥ approx. 50 °C.

Operation of the EloDry® dryer is possible with electrical energy requirement of as little as approx. 50 kWh/t H₂O_{vapour}.

Modular, standardised construction

EloDry® belt dryers have standardized, identical head and end pieces. In between these, depending on the required drying capacity, several identical intermediate segments are arranged.

Robust, fault-immune design

Conclusion of a maintenance contract ensures the consistent high performance and reliability of the EloDry® dryer for many years.

RELIABILITY

EloDry® drying systems offer a high degree of operational reliability. The minimum system availability is 8000 h/a.

There is very little dust formation in the EloDry® drying systems. Like smoke and temperature, this is constantly monitored. The installed sprinkler system provides additional safety.

The EloDry® dryer is Ex-zone free. This is certified by an authorized company if required.

FEATURES

EloDry® drying systems - Reliable and highly energy-efficient, economical sewage sludge drying at low drying temperatures with the following benefits:

- Reduction of disposal cost by reduction in volume of the sludge during drying by up to 50 %
- Production of safe dry material
- Production of an economical substitute fuel
- Production of a storable resource for phosphorus

Optimal and demand-driven pre-treatment and preparation of the material to be dried that can be flexibly adapted to the respective application, individual customization of the degree of drying in the range of approximately 60 - 92 % DM

Efficient use of heat sources starting at a temperature level of approximately 50°C, intelligent, holistic heat utilization and heat recycling concept

Very uniform drying result due to automatic adjustment of the drying process to changing DM contents in the sludge supply

High degree of operational safety with the highest safety standards in respect of fire and explosion protection

Compliance with the German Clean Air Act requirements

Robust, fault-immune system design

Modular, standardised dryer design

Very easy operation and very low maintenance requirements

APPLICATIONS

Reliable and highly energy-efficient, economical drying of, in particular, dewatered sewage sludge:

- Digested sludge
- Waste activated sludge
- Primary sludge
- Temporarily stored sewage sludge from reception bunkers and silos
- Pre-dried sludge from, for example, solar dryers

Drying of other materials such as fermentation residues, wood, green waste, bio waste, temperature-sensitive products

TECHNICAL DATA

	Water evaporation capacity, kg H ₂ O/h	Belt length, m	L x W x H, m
NT08	220	8,0	4,4 x 3,0 x 2,8
NT16	440	13,2	7,1 x 3,0 x 2,8
NT24	660	18,6	9,7 x 3,0 x 2,8
NT32	880	23,8	12,4 x 3,0 x 2,8
NT40	1.100	29,1	15,0 x 3,0 x 2,8

Material

Frame, cover and heat exchanger: Stainless steel

Belts: Polyester with woven bronze wires

Belt surface area

Distributed on the upper and lower belt

Specific heat requirement

From approx. 750 up to approx. 850 kWh/t H₂O_{vapour}

Required heat level


Low-temperature, heat ≥ 50 °C

Specific power requirement

From approx. 50 kWh/t H₂O_{vapour}

Operating hours

≥ 8.000 h/a



Reliable, highly efficient, economical
sewage sludge drying.

Version 001

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