

ELIQUO WATER & ENERGY
LYSOTHERM®
 A novel approach to thermal sludge hydrolysis
 01.07.2015

ELIQUO WATER GROUP FACTS AND FIGURES

STAFF
 >200 employees
 ■ Engineers
 ■ Technicians
 ■ Sales, commercial staff

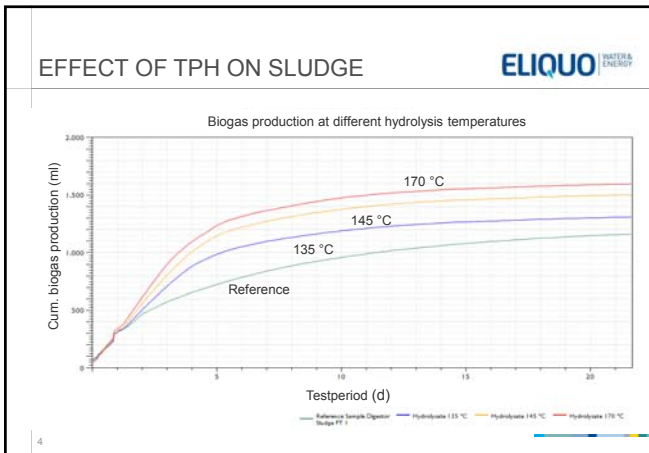
HISTORY
 1986
 ELIQUO WATER GROUP was formed in June 2014 by the acquisition of parts of SH + E GROUP. It combines all activities of SKion GmbH in the area of municipal water technology.
 Our employees are proud of almost 30 years of experience in the design, engineering, manufacturing and construction of municipal water and wastewater systems.

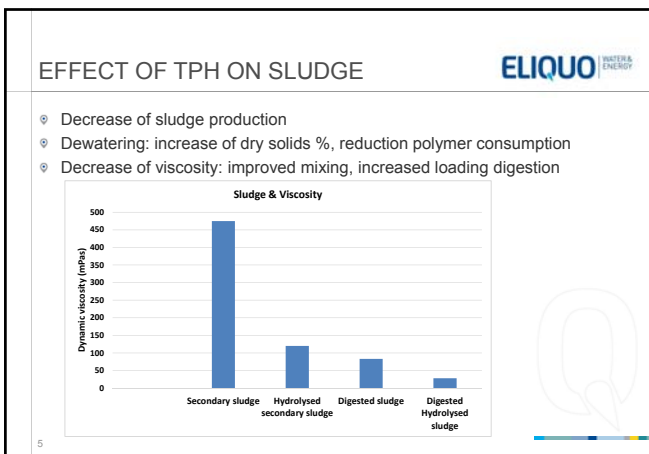
FIGURES
 ~50 Mio. € /a turnover
 With around 50 Mio. € annual turnover we are one of the largest players in Germany. We are planning to become a leading technology provider in other selected countries over the next few years.

EFFECT OF TPH ON SLUDGE

ELIQUO WATER & ENERGY

- Thermal Pressure Hydrolysis (TPH)
- Sludge „cracking“ at elevated pressure and temperature
- Increase of anaerobic conversion of organic matter to biogas
- Reduction of residence time digestion





LYSOTHERM® SLUDGE HYDROLYSIS

BILOGIC WATER & ENERGY


- ◊ 5 years experience with a novel approach on operational savings
 - No steam
 - Standard modules
 - Energy efficient

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LYSOTHERM® CHARACTERISTICS

ELIQUO WATER & ENERGY

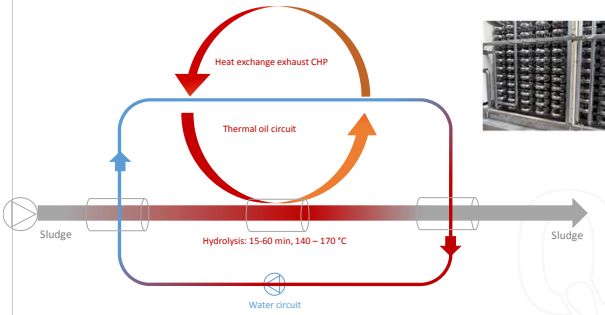
- Thermal hydrolysis of sewage sludge and other organic sludges
- Counter flow heat exchanger for continuous and stable operations
- In-house production, originating from industrial applications
- Heat exchange with flue gas from CHP with thermal oil circuit.
- Energy efficient due to integrated heat recovery
- Patented



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LYSOTHERM® - HOW IT WORKS

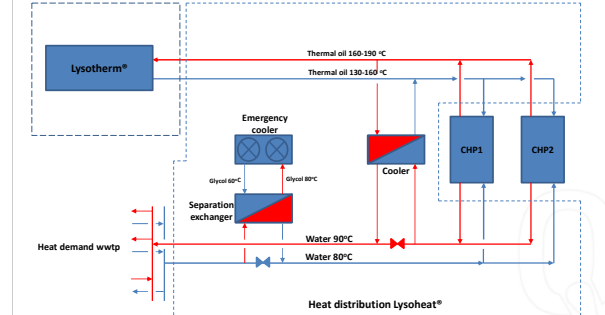
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LYSOHEAT™ & LYSOPOWER™

ELIQUO WATER & ENERGY




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LYSOTHERM® BENEFITS

ELIQUO WATER & ENERGY

- ◊ Indirect heating system, without the use of steam
- ◊ No dilution, water is not added to sludge
- ◊ Steam pressure regulations not applicable, no pressure vessel inspections
- ◊ No special operator education necessary
- ◊ Sludge pre-treatment (fine screening) not required
- ◊ Pressure vessel regulations applicable, TÜV approved

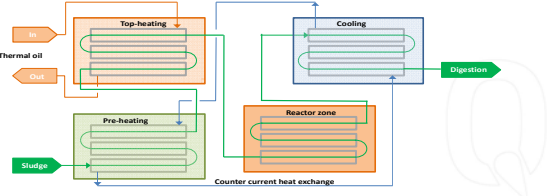


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LYSOTHERM® BENEFITS

ELIQUO WATER & ENERGY

- ◊ Optimised:
 - For heat transfer & heat recovery
 - To prevent blockage/scaling
- ◊ Integrated CIP: Lyso-clean™
- ◊ Fully automated: Lyso-control™
- ◊ Operation and maintenance friendly
- ◊ Easy access to inspect, clean, maintain
- ◊ Small number of potential wearing parts
- ◊ No moving parts in hot sludge zones




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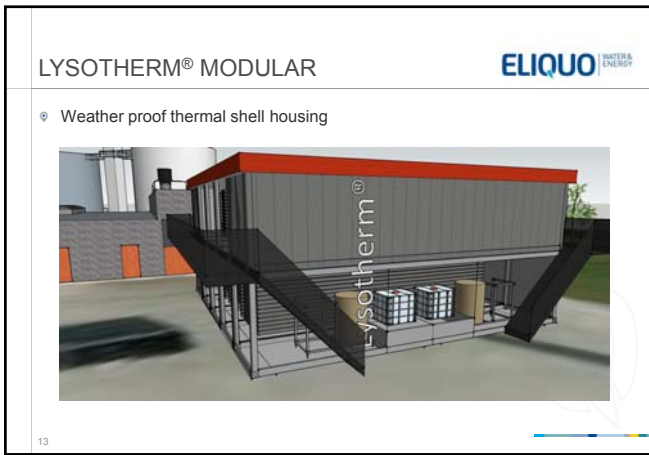
LYSOTHERM® BENEFITS

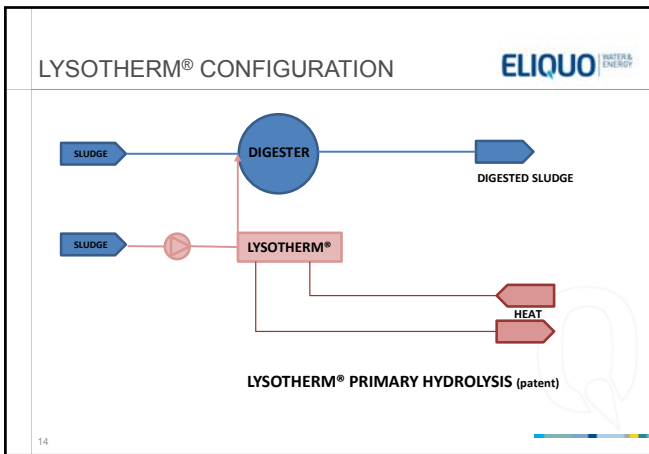
ELIQUO WATER & ENERGY

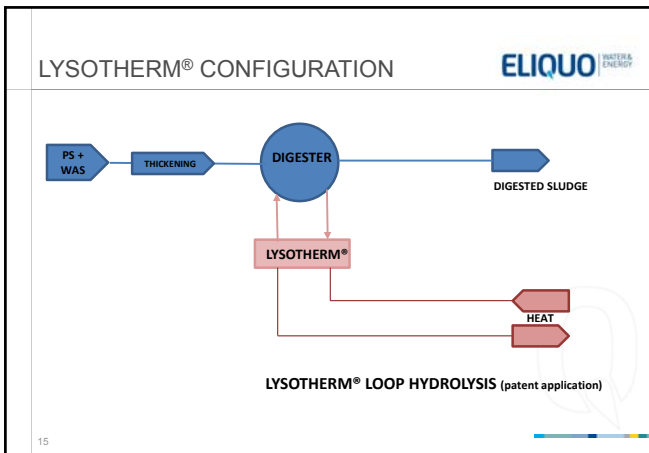
- ◊ Modular
- ◊ Simple construction, standard components
- ◊ Standardised construction (ready made off-site)
- ◊ Plug & Play



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LYSOTHERM® - 5 YEARS OF FULL SCALE EXPERIENCE

ELIQUO WATER & ENERGY

- 55% reduction of organic matter from secondary sludge
- Biogas yield on secondary sludge
 $0.25 \text{ m}^3/\text{kg-ODM-feed} \rightarrow 0.40 \text{ m}^3/\text{kg-ODS-feed}$

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LYSOTHERM® - 5 YEARS OF FULL SCALE EXPERIENCE

ELIQUO WATER & ENERGY

- Performance evaluation supported by mass balance calibration

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LYSOTHERM® 80M3 MODULE

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- Capacity : 3320-1660 ton ds/y
- Electric power demand : 50-100 kWh/ton-ds
- Rinse water (filtered plant effluent) : 0,6-1 m³/ton-ds
- Caustic and acid consumption : 1,4-2,9 kg/ton-ds
- Steam : 0

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LYSOTHERM® AVERAGE PERFORMANCE

ELIQUO WATER & ENERGY

- 6-13 % ds sludge feeding
- 55% reduction organic matter surplus sludge
- 3-5 %-points increase ds dewatering
- Typically 10% decrease polymer consumption
- (Biological) retention time >12 days

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LYSOTHERM® CONFIGURATION

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LYSOTHERM® WWTP AMERSFOORT

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