



A PATENTED SYSTEM FOR THERMAL HYDROLYSIS WITHOUT STEAM AND WITHOUT CHEMICALS

Increase digester capacity

Increase volatile solids reduction (VSR) and
gas production

Optimized for small to midsize plants

Reduce polymer consumption for
dewatering

Simple and easy-to-operate

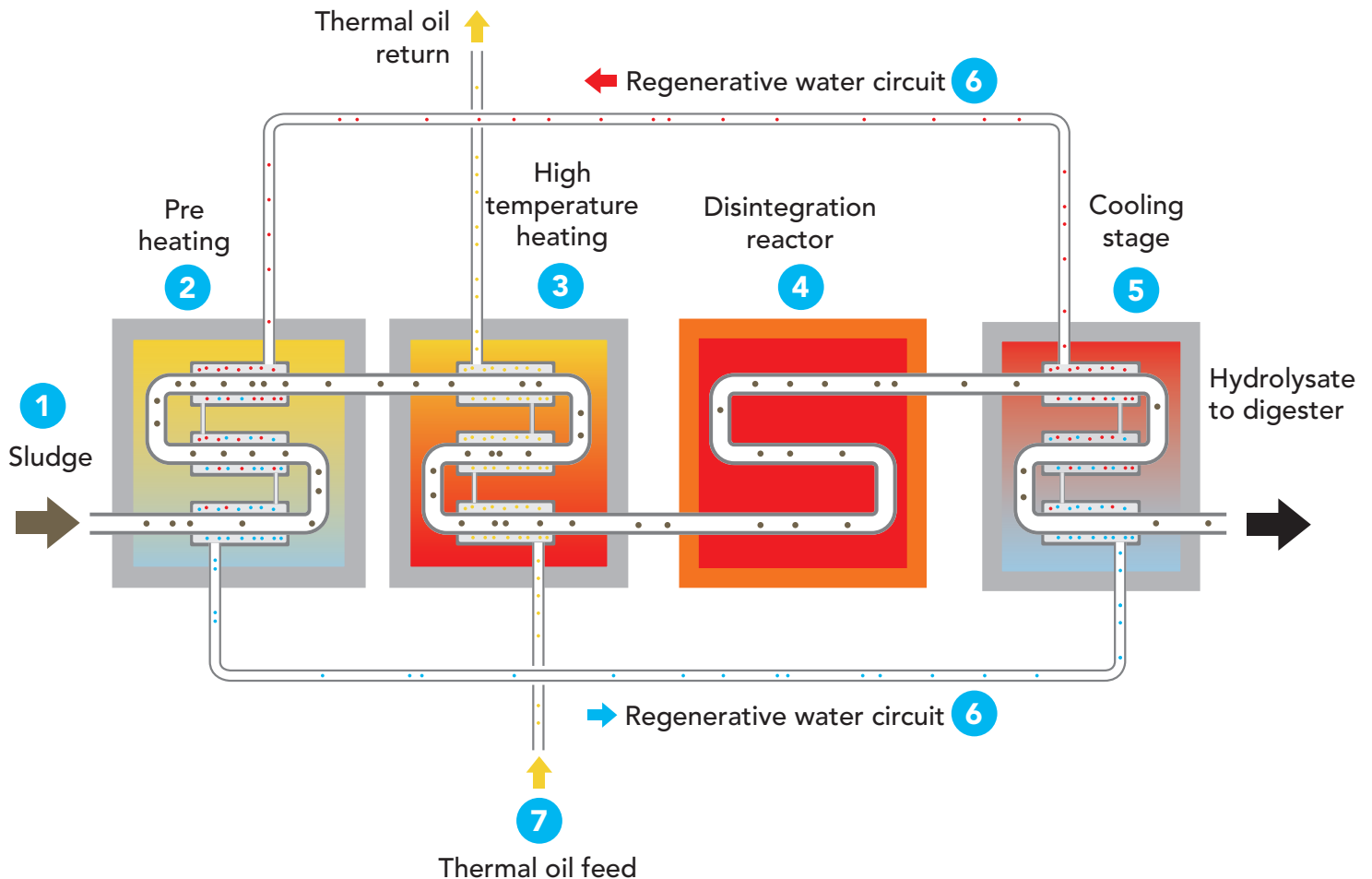
Small to midsize plants

Achieve Class A Biosolids



LysoTherm™ Process

OPERATING PRINCIPLE



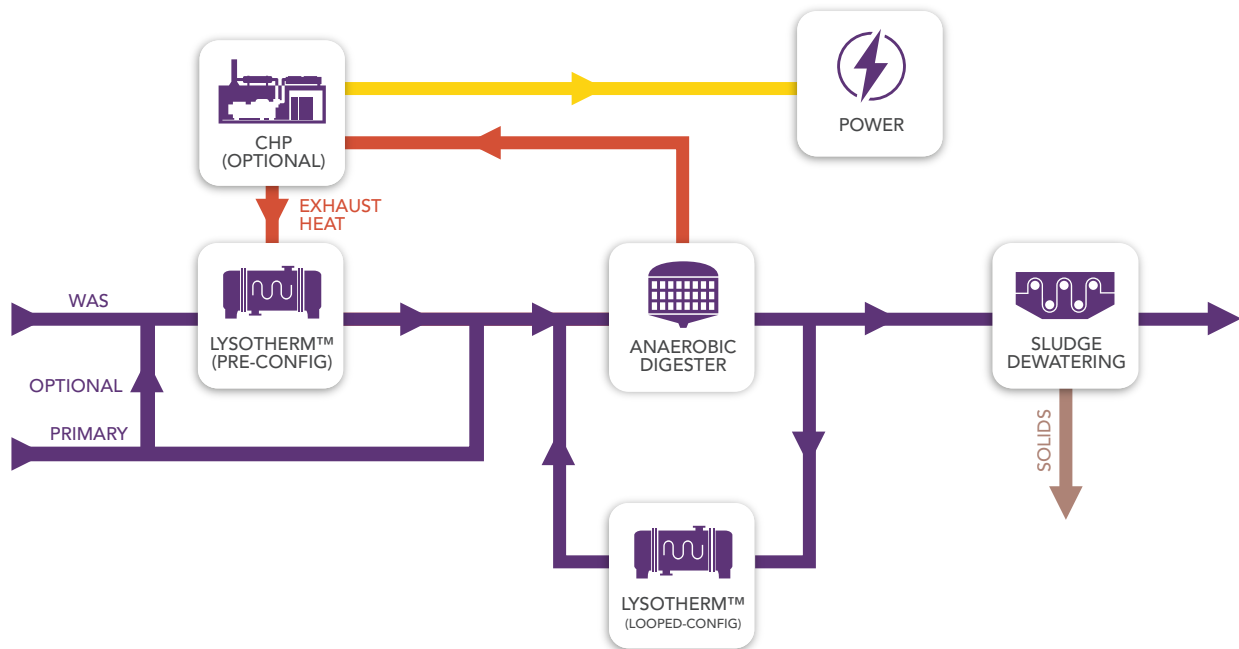
- 1 The sludge is pumped continuously via a sludge pump and then it passes through a multi-stage heat exchanger system.
- 2 Pre-heating takes place in the first stage of the tube-in-tube heat exchangers (to reach $\approx 295^{\circ}\text{F}$)
- 3 In the high temperature stage the sludge is heated to $\approx 316^{\circ}\text{F}$
- 4 The thermal hydrolysis takes place in the reactor at $\approx 316^{\circ}\text{F}$ with a retention time of 30 - 60 minutes.
- 5 After the hydrolysis is completed, the sludge is cooled down in the cooling stage to the temperature required for entering the digester. Therefore, the LysoTherm™ system helps reduce/eliminate digester heat demand.
- 6 In the regenerative water circuit, water is the heat transfer medium. This system recovers heat and transfers it from the cooling stage to the pre-heating stage. This heat recovery mechanism provides up to 90% of the heat needed to operate LysoTherm™.
- 7 The thermal oil circuit provides the necessary process heat in the high temperature stage. The additional process heat can come from the exhaust gas from the combined heat and power units (CHP) or a boiler.

APPLICATION

The LysoTherm™ process is flexible and versatile and operates without the need for steam or chemicals. In addition to the thermal disintegration of excess sludge

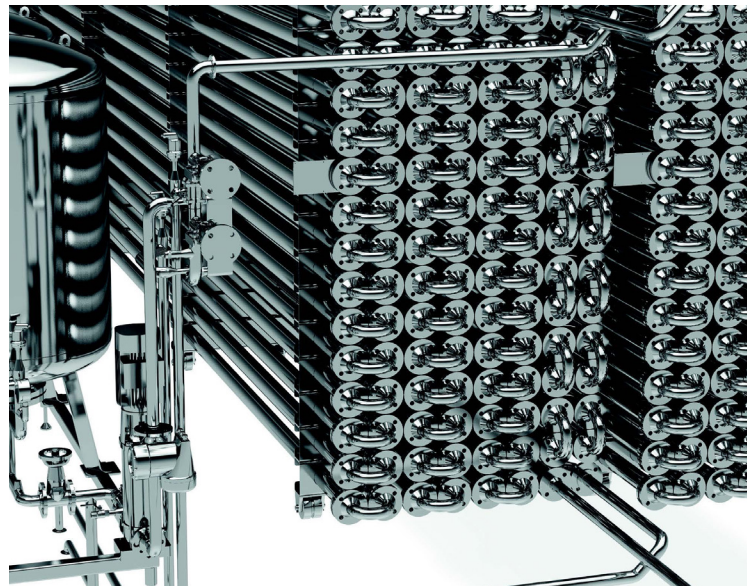
(pre-configuration) to achieve Class A biosolids, it can also be used for the conditioning of digested sludge (looped configuration) to enhance plant's digestion

capacity and increase gas production with improved sludge dewaterability.



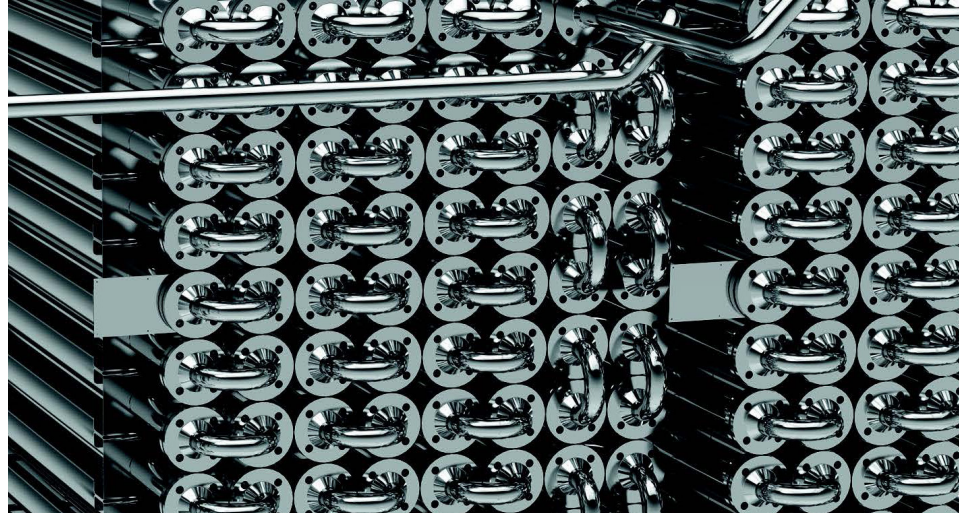
UNIQUE BENEFITS OF THE LYSOTHERM™ PROCESS

- **Minimal Maintenance** – No steam or chemicals required for treatment. Automated Clean-In-Place (CIP) system to prevent fouling and scaling of the heat exchangers.
- **Odor Free Operation** - The LysoTherm™ process is a totally closed process. Therefore, treatment of the exhaust gases from the LysoTherm™ process is not necessary.
- **High Heat Recovery** - A regenerative water circuit provides majority of the heat demand to operate the system (up to 90%) leading to low energy consumption and operating costs.
- **Small Footprint**: LysoTherm™ is a modular system that comes pre-assembled. Installation is fast and easy with minimal construction time and risks for the plant.



CASES WHERE LYSOTHERM™ PROCESS SHOULD BE CONSIDERED

- Reduce total solids and improve volatile solids reduction (VSR)
- Improve sludge viscosity for easier mixing and pumping
- Increase digester loading
- Increase digester capacity within existing footprint
- Increase gas production for energy generation
- Improve dewatered cake solids percent
- Achieve class A biosolids



THE OVIVO DIFFERENCE

200+ YEARS OF HERITAGE • 100% FOCUSED ON WATER

OUR EXPERTISE

Anaerobic Digestion is highly dependent upon effective sludge mixing. Ovivo® sludge mixers are designed to provide powerful mixing, without accumulating stringy or fibrous material. Highly efficient and featuring low maintenance requirements, they can be used for existing or new digesters. Their configuration is adapted to best suit the specific tank design and application.

COMPLEMENTARY PROCESSES/EQUIPMENT

Ovivo can supply all plant required equipment for a complete Sludge Treatment / Anaerobic Digestion plant, including but not limited to:

- Phosphorus Removal/Recovery Removal (Elovac®-P or PhosPAQ™)
- Ammonia Removal (DigestivorePAD™ or AnammoPAQ®)
- Gas Storage (Ultrastore™ Gasholder)
- Digestion Mixing (LM™ Mixer or Eimix® Mixer)
- Digester Covers



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