



# ADVANCED DIGESTER TECHNOLOGY

ANAEROBIC DIGESTION OF ORGANIC RESIDUES



**IN TANK  
H<sub>2</sub>S REMOVAL**



**HIGH  
CONVERSION RATE**



**ADVANCED  
DIGESTER MIXING**



**INNOVATIVE HEAT  
RECOVERY SYSTEM**



**24/7 SERVICE &  
MAINTENANCE**

# HIGH-TECH BIOGAS PLANTS

## FOR MAXIMUM PROJECT PROFITABILITY

Through innovative and advanced technologies, HoSt anaerobically digests organic feedstocks and beneficiates biogas as a renewable natural gas (biomethane) and bio-CO<sub>2</sub>. HoSt is your one-stop-shop for technologies which are robust, designed to improve project profitability, and to maximise CO<sub>2</sub> emission reduction. Empowering sustainability ambitions since '91, headquartered in the Netherlands, and operating worldwide.

### Innovation leader with continuous focus on R&D

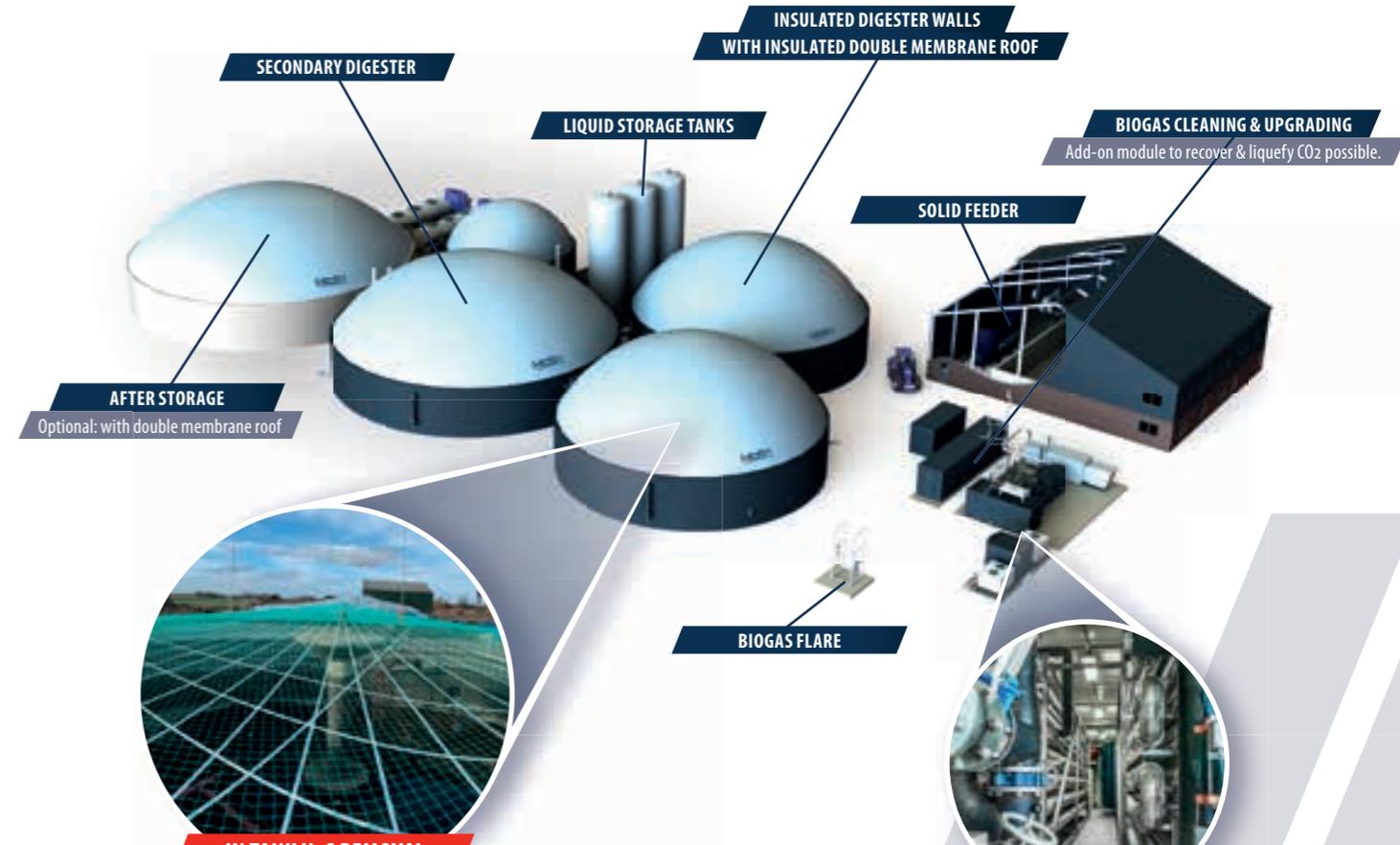
As bioenergy technology industry leader with a full technology portfolio under one roof, HoSt has built up extensive experience in engineering, constructing, and maintaining highly efficient biogas plants. Our biogas plants are designed to accommodate numerous different feedstocks including industrial waste, agricultural by-products, cow and poultry manures, slaughterhouse waste, food waste, FOGS and grasses. Feedstock menu mixing and dosing optimisation is one of the key drivers for the output efficiency of the plant.

Biogas upgrading technology, CO<sub>2</sub> liquefaction and digestate treatment technologies are all available through the HoSt holding company, making HoSt the ultimate one-stop-shop for your project technology needs.

### Service and maintenance

HoSt offers 24/7 local service and maintenance services. In addition to our locally based field technicians, our experts can remotely monitor the performance of your plant in real time. Our technicians can be connected to your operator through 'smart glasses' which the operator wears on site. These glasses include a camera, earphones, and a microphone which allows for incredible live and real time communications between our team and yours.

## TYPICAL BIOGAS PRODUCTION & UTILISATION FACILITY



### IN TANK H<sub>2</sub>S REMOVAL

H<sub>2</sub>S in the raw biogas is removed within the digester tanks through a combination of a biological and biochemical means. Our biological process utilises an extensive netting below the membrane roof. The result is that only a small polishing step is needed for the remaining H<sub>2</sub>S prior to the upgrader, which saves on total OPEX costs.

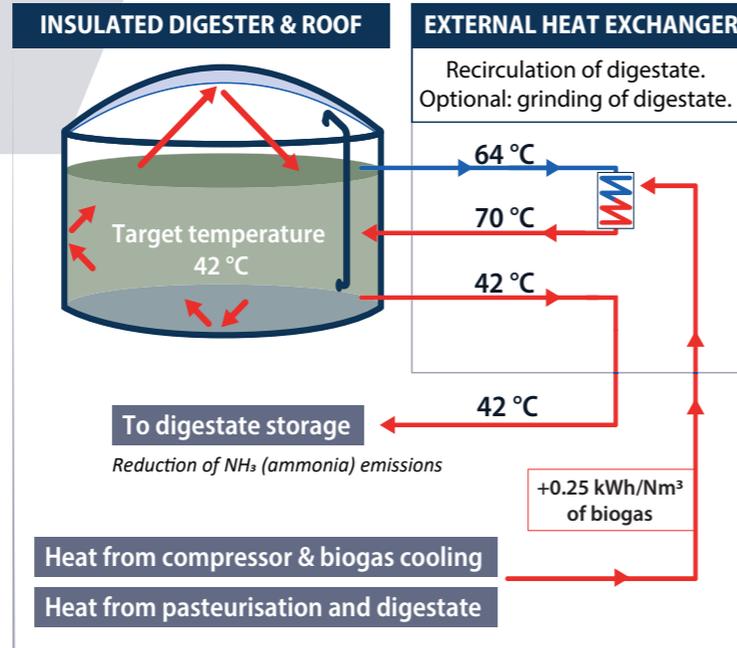
### INNOVATIVE HEAT RECOVERY

By engineering and designing our digester systems to incorporate an external heat exchanger, we limit heat loss, down time, and costly repairs.

## HEAT EXCHANGER

HoSt's external heat exchanger contributes to maximum degradation of organic inputs.

By stimulating contact between the degrading material and the digesting flora, this technology increases the degradation of the material by a combination of mechanical flow, thermal shock and optional grinding. The complementary external heating is an additional security that optimises the life and durability of the digesters.



### INSULATED DOUBLE MEMBRANE ROOF

MINIMAL THERMAL LOSSES

MINIMAL BIOGAS SLIP

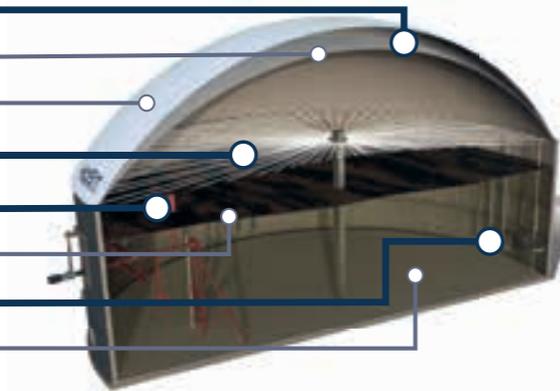
H<sub>2</sub>S REDUCTION IN TANK

GIANTMIX®

SURFACE LAYER AGITATION

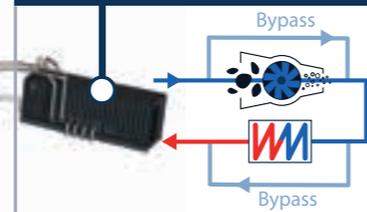
PROPMIX®

REDUCED SILT BUILDUP



Activation of microbial activity

### RECIRCULATION



## INNOVATIVE HEAT RECOVERY

HoSt's innovative heat recovery technology is available in two options: **heat recovery after pasteurisation** or **heat recovery from digestate**. Both recover the heat from liquid waste streams to heat the incoming liquid feed in the anaerobic digestion process. The equipment is specially designed for heat exchange of high viscous liquids and masses.

### ADVANTAGES

- High efficiency, no maintenance.
- Extremely low-pressure loss.
- No blocking / dry matter separation.
- No cleaning, no fouling.
- No gaskets, no contamination.
- Long service life.
- Compact installation.
- Standard insulation.
- Works with different flow rates.
- Operates with heat pumps.

### AFTER PASTEURISATION

#### DESIGN HIGHLIGHTS

- Efficient low-tech solution:** small physical footprint.
- Heating coils:** are placed in the buffertank after sanitation and in the liquid feedstock prestorage tank which are connected with a direct water cycle loop.
- Parasitic digester energy consumption:** the heat recovery after pasteurisation results in lowering the energy demand of the digester.
- High temperature difference.
- Very low energy consumption.
- Attractive payback period.

#### SPECIFICATIONS

- Inlet temperature: >65 °C
- Outlet temperature: project specific
- Heat transfer medium: water

### FROM DIGESTATE

#### DESIGN HIGHLIGHTS

- Forced stirring:** forced stirring with small plates, inside the channels, enabling stirring.
- Switching valves:** 8 pneumatic gate valves which aid switching of direction and sides for the medium.
- Same cross section throughout the channels:** uniform cross sectional along the entire channel length prevents formation of dead zones and minimising fouling. Same cross section throughout the channels enables continuous flow and almost negligible dead zones formation.
- Large channel dimensions:** limiting the chances of clogging in the heat exchanger.

#### SPECIFICATIONS\*

- Design pressure: 0 / 10 barg
- Operating pressure: 0 / 8 barg
- Operating temperature: 0 / 80°C
- Hydrostatic test pressure: 14.3 barg

\*Design and performance are indicative.



### CONTAINERISED SOLUTION

- 40' HC container unit
- 12192 x 2438 x 2591 mm (480" x 96" x 102")
- Weight: 26310 kg (30 tn)
- Insulated enclosure with removable hatch enabling assembly in the container and preventing heat loss
- Cleaning nozzles for flushing
- Utility space for air distribution and air compressor
- Double doors on the container which provide access to each side of the heat exchanger

## DOUBLE MEMBRANE ROOFS | minimum heat loss

Our insulated double membrane roof provides ample storage and buffering of biogas, which allows for operational flexibility of your complete system. The double membrane also provides structural rigidity and ensures the absolute minimum biogas leakage, empowering the profitability of your project.

## FLARES | safe flaring of biogas

**HOST OPEN BIOFLARE®** Flaring of biogas during start up and maintenance.

**HOST CLOSED BIOFLARE®** Flare with a non-visible flame.

**HOST SPECIAL BIOFLARE®** This flare meets the local emission standards.

## MIXERS | optimal mixing

### HOST GIANTMIX®

HoSt incorporates a paddle mixer on opposite sides of our round digester tanks which work in tandem with traditional submersible mixers. The paddle mixers are slow moving mixers that are immune to the wear and tear entrapped sand exposes them to, while being extremely effective in keeping sand in suspension as to remove it with the exiting digestate.

### HOST PROPMIX®

In addition to the paddle mixer, HoSt uses propeller mixers within the digester to provide maximum mixing efficiency and thereby ensuring biological stability of the digestion system.

### HOST TOPMIX®

A vertical agitator located centrally within the digester tank, designed for tanks with fixed roofs, ensuring optimal mixing and low energy consumption.

## STORAGE TANKS | storage of liquid products

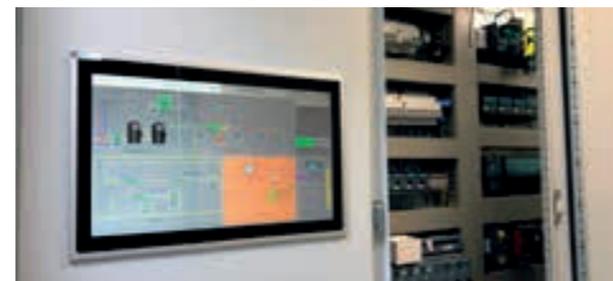
### HOST LIQUID STORAGE®

Polyester silos (heated or unheated) for reception of liquid (waste) products such as manure, de-packaged food waste, glycerine, and flotation sludge.

## BIOGAS PLANT COMPONENTS

HIGH QUALITY

& ROBUST



## FILTERS | optimal protection of the digester

### HOST FILTER BASKET®

This HoSt filter system separates larger particles from the liquid input stream. The filter is designed in such a way that the maintenance and emptying is easy to carry out.

## CARBON FILTERS | carbon removal

### HOST CARBON CLEAN®

Our activated carbon filters are designed as a polishing step after the digester and before an upgrader for the removal of residual H<sub>2</sub>S not removed by the in tank H<sub>2</sub>S system in the digester itself. Effective H<sub>2</sub>S removal improves the longevity of your plant and equipment. Our vessels are available in HDPE or stainless steel.

## SOLID FEEDING SYSTEMS | reliable input systems

### HOST MIXING / DOSING FEEDER®

The most applied solid feeding system is the HoSt Mixing / Dosing Feeder® with integrated screw conveyor. The advantage of this robust system is that it is flexible for different types of input substrates.

### HOST MOVING FEEDER®

Container with moving floor and input screws. Large moving floor for feeding of homogenous streams, such as maize and other loose material.

### HOST BIOMIX FEEDER®

The HoSt Biomix Feeder® is a mixing system in which solid biomass is pre-mixed with liquid digestate to achieve a homogeneous and pumpable input. The Biomix Feeder system includes a HoSt BioCut unit, which is designed to reduce the biomass particle size.

## SPARE PARTS | all the components you need

### HOST SPARE PARTS®

HoSt offers a wide range of smaller components for bioenergy systems such as peepholes, pressure relief valves, blowers, foam detection, sensors, gas detection, and heat distribution.

### HOST ADDITIVES®

HoSt can supply a wide range of consumables and additives for your plant, such as activated carbon, trace elements, anti-foam, iron sludge, and enzymes to optimise the digestion process, and heat distribution.



**FOR MORE INFORMATION CONTACT:**

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