



Nature has a lot of power: We use it to generate electricity, heat, natural gas, fuel and fertiliser

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**Thöni Naturgas**  
Powered by nature



**thöni**

Harness the natural cycle



## We think ecologically! Thöni – your competent partner

### Harvesting Green Energy with Thöni Biogas Plants

Thöni Umwelt Energietechnik is the experienced expert in the field of producing bio-energy from energy crops and organic waste.

Our innovative system solutions are based on more than 20 years of experience in the construction and operation of biogas plants.

We work as efficiently as nature itself and convince our customers by providing them with fully-developed and intelligent plant technology.

### Proven Technology for the Highest Possible Biogas Yields

The Thöni Naturgas technology is based on the wet digester which is continuously filled with liquid and solid input materials using a special feeding technology. Slowly rotating paddle agitators ensure an optimal mixing of the substrate and thus enable high biogas yields. The perfect conditions for the biogas production are additionally ensured by means of an integrated heating system.

The digestate is dewatered and can be directly applied to the agricultural land as high-quality fertiliser.



### Feeding Technology

The digester is filled with solid resources by means of the Thöni loading system for solid matter. From there, the material is fed into the digester. The corresponding substrate quantities are fully-automatically metered into the digester via an integrated weighing system according to the required gas production quantity.

As an alternative to the Thöni feed hopper, solid materials can also be fed into the digester via the so-called Thöni feed pit for liquid matter.

#### Your Competent and Experienced Partner

More than 80 MW of installed power

More than 70 successfully realised biogas plants

A team of highly-qualified experts

In-house production of key components

Designing and planning of plants

Construction, assembly and commissioning

#### A Thöni Naturgas Plant

Wet fermentation process for energy crops and organic residues

Automated and highly-flexible feeding technology

High-performance agitator

Efficient fermentation technology

Extremely low own power consumption

Easy to maintain

#### Thöni Loading System for Solid Matter – Optimal Feeding of the Digester

Large-scale, blockage-free screw conveyors (low wear and quiet operation due to plastic inserts)

Push floor system

Surfaces in contact with the substrate are made of stainless steel

High availability

Low maintenance requirements

Long service life and robust structure



### Paddle Agitator

The patented Thöni paddle agitator is ideally suited for efficiently mixing various feeding materials with a very high content of dry matter. Thanks to the specially designed paddles, the material is kept in movement and homogenised in such a way that heavy contaminants are not able to gather at the bottom of the digester while potential suspended materials are not able to form any floating layers. This way, the microorganisms are provided with the best conditions to biologically degrade the material.

Due to the high mixing rate, the contents of the digester do not need to be further diluted using water or recirculates. This provides the advantage of having to pump fewer liquids through the plant resulting in lower energy consumption and lower maintenance costs.

The agitator is powered by a planetary drive with an output up to 15 kW.

#### Optimal use of Feed Stock

Optimal mixing of digester contents (no unstirred areas in the digester)

High degradation rate of the feeding material

Optimal biological conditions due to slowly rotating agitators

Minimum own power consumption of the plant due to best possible agitation efficiency

Low maintenance costs

Durable design

### Digester Heating

The steady heating of the fermentation substrate in the digester is ensured by means of a heating system with two independent heating circuits.

The heating pipes made of stainless steel are flexibly attached to the inside of the digester wall using a patented installation system. This way, the thermal expansion of the pipes is optimally compensated. In addition, the heating pipes are corrosion-resistant and durable since they are galvanically isolated from the rest of the plant by means of plastic bushes.

The Thöni heating system and the Thöni paddle agitator ensure an ideal and even heat distribution within the digester.



### Pumping Technology and Plant Control System

Both the central pump station as well as the electric control system are located under one roof in the Thöni technology container. From this station, the operator is able to centrally control all important factors regarding the operation of the plant and to intervene at all times.

The pump station has been especially designed for this purpose and enables the operator to pump liquids and substrates from one location to another in an economic and rational manner. The pumping system features a very flexible design ensuring that all possible combinations of pumping directions are possible. This saves energy, time and costs and positively affects the plant operation.

Thöni Naturgas plants feature an automatic plant control system. Tested plant components enable a precise plant operation and an exact monitoring of each individual component from input to output. A screen integrated in the switch cabinet provides the operator with a quick general overview of the plant operation and allows a simple control of the plant.

### Service provided by biogas experts

The successful operation of your biogas plants is our main priority. We will provide you with support for your plant even after it has been built and commissioned – throughout the entire year!

Our Thöni Biogas Expert package provides you with comprehensive, process-related services and biotechnological support in order to ensure the successful operation of your plant. With the Thöni Biogas Expert, you will be able to achieve the optimal performance of your Naturgas plant in no time allowing you to make best possible use of the biogas potential of your substrates.

Harvest your green energy with us!

Thöni – your competent partner



#### Providing the Right Heat for Microorganisms

Large-scale heating pipes made of stainless steel

No pumping via heat exchanger required (=> reduces the plant's own power consumption)

Patented installation system for mounting the heating pipes

Galvanically isolated components (electrical corrosion excluded)

Compensation of thermal expansion

#### The Control Centre: The Operation at a Glance

Pre-assembled, ready to operate plant modules ensure maximum flexibility as well as simple and short assembly phases

Robust and low-wear displacement pumps are used for the entire pumping system of the plant.

Proven control technology and modular design of the control cabinets as well as central process control system.

#### Performance that Pays Off

High overall performance of the plant

Perfect monitoring of the digester biology

Maximum energy production

Low maintenance and operating costs

Competent and experienced partner