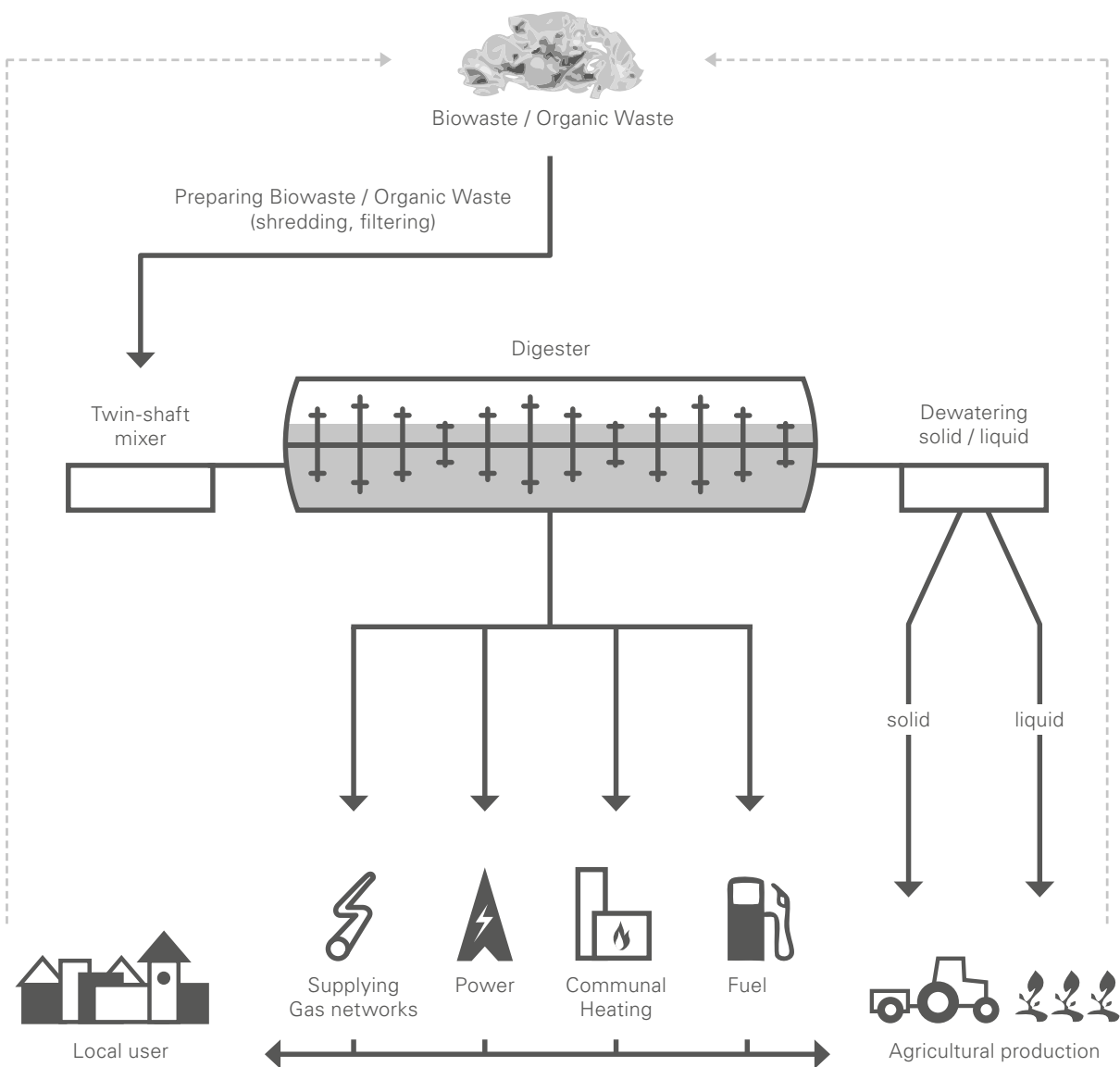


# High solids anaerobic digestion from Thöni (TTV)

Convert Waste to Energy



**thöni**®



The TTV Process produces Energy, Heat, Bio-Methane and Fertilizer from Waste.

## With us you transform waste into energy. Thöni – your capable partner!

### Put waste in, draw energy out

Our society supplies more and more people with consumer goods: in turn generating volumes of waste that increase daily. Such waste has enormous hidden potential! Thöni Environmental Engineering takes advantage of this potential and provides society with clean energy: returning valuable resources back into the environmental cycle.

### All from a single source

Based on its 25 years of experience and specialist knowledge, Thöni Environmental Engineering designs, constructs and operates plug flow high solids anaerobic digestion plants for biogas production. We create innovative system solutions, worldwide, for using organic waste and biodegradable material as sources of renewable energy, with biosecurity a high priority.

Our team of highly qualified specialists will advise and support you from design to the successful commissioning of your biogas plant. We know every detail of our plants and can thus react quickly and flexibly to meet your needs.



Thöni TBM silo module

### Finely tuned technical components

The core of the Thöni process is the unique plug flow digester capable of treating relatively dry, high-solids, material. A slowly rotating paddle-shaft ensures the optimal mixing of the digestion substrate, ensuring a high biogas yield. Heating elements, through which hot water flows, heat up the substrate.

A piston pump transports the digestion residue from the digester via a system of pipes to the next treatment step.

Part of the digestion residue is returned to the digester as inoculum, enriching the fresh input material with a defined quantity and quality of micro-organisms.

#### Raw material waste

Methanogenic micro-organisms as energy producers

Energy and heat as key-outputs from the process

Fuel from waste: for future mobility of society

Phosphorous for agriculture

#### Know-how from A to Z

We manufacture key components ourselves

Design and planning of plants

Completion, assembly and commissioning

Service and advice from concept to operation, customer training, biological support, after-sales service

#### Digestion plant

Continuous anaerobic digestion in the plug flow digester for biological waste, kerb-side greenery and organics from municipal solid waste, including foodwaste

Plant sizes from 20,000 t per year input

Digesters with steel floors (can be safely checked from outside via an accessible inspection hatch)

Digester heating using an externally accessible heat exchanger

High-performance paddle-shaft

Dewatering technology for digestate residue



TTV digester - internal view

## TTV digester: the optimum biogas system

The TTV plug flow digester is ideal for dry organic waste, even if it contains a high level of impurities. Key components such as the accessible, heated, digester floor and the robust and powerful paddle-shaft are proven and patented: unique to Thöni.

Thöni paddle-shafts are characterised by their ability to handle difficult materials and to carry out the stable and continuous digestion of variable substrates.

The dimensions of the paddles and shaft guarantee high mixing efficiency and a virtually unlimited service life: even under the highest loads. This is achieved by the special shape of the paddle head which is made of highly wear-resistant steel. The special combination of paddle design and configuration prevents sedimentation by up to 100% and continuously transports sediment to the digester outlet while simultaneously counteracting the formation of floating layers. Overall, the digester needs minimal maintenance in the long-term – even if input material contains significant contaminants.

The shaft mechanism is driven by a planetary gearbox which efficiently powers the shaft at a gentle 0.3 rpm.

### Digester

Maximum biogas yield using efficient, unrivalled, mixer technology

Unaffected by high percentages of impurities and the sturdiest technical construction available on the market

Economical power consumption thanks to the low speed of the paddle-shaft

Paddle-shaft with boost compensation (without additional support inside the digester)

Mixing in the digester even at reduced fill-level

Key-components patented

Standard sizes (nominal digester capacity)  
1,400 m<sup>3</sup>, 1,650 m<sup>3</sup>, 1,850 m<sup>3</sup>, 1,950 m<sup>3</sup>,  
2,100 m<sup>3</sup>, 2,250 m<sup>3</sup>

Other sizes on request

## Technical expertise for total solutions

Thöni's knowledge does not end with the digester: Thöni is also a specialist when it comes to techniques of treating digestate output.

Digestate, potentially with an extremely wide range of dry substance content, can be dewatered in Thöni screw presses in a standard or bespoke configuration. The result is solid compostable digestate-residue and top-quality liquid fertiliser for agricultural use. On the basis of its 25 years of experience, Thöni can even provide solutions for liquid-free operation. These use innovative technologies for digestate treatment, tailor-made to customer requirements.



Thöni TSP 350C screw press

### Thöni TSP 350C screw press

Power consumption: approx. 11 kW

Output: 30-50 m<sup>3</sup>/d

Input DS content: 20-25%

Output DS content: approx. 35 - 40%

References: over 150 presses in operation all over the world



Biogas plant with gas storage unit

## Reliability down to the last component

The Thöni plug flow high solids anaerobic digestion process is characterised by its high performance and ease of maintenance. This is the result of many years of experience in the construction and operation of such plants.

In designing our plants, we pay great attention to robustness of technology and the whole-life design of critical components. This means we can guarantee a minimum of down-time, even during service and maintenance.

## Partnership with quality Supplier and technology partner

Thöni provides turn-key, highly-efficient plant technology that is excellent value for money. Not only that: as a specialist technology partner, Thöni can also provide customers with the know-how needed to erect their digestion plant themselves.

For local-authority clients we understand the challenges you face. We analyse your current situation and consider your personnel and strategic issues, the medium-term predicted development of the region and relevant environmental factors. This helps you to identify the best technical solution to meet your requirements: a bespoke, perfect plant.

### Functionality

Robust, durable plant technology  
Low susceptibility to malfunctions

High operational reliability

Modular, expandable plant concept

Efficient and precise plant management

### Economic viability

High flexibility when it comes to  
waste composition

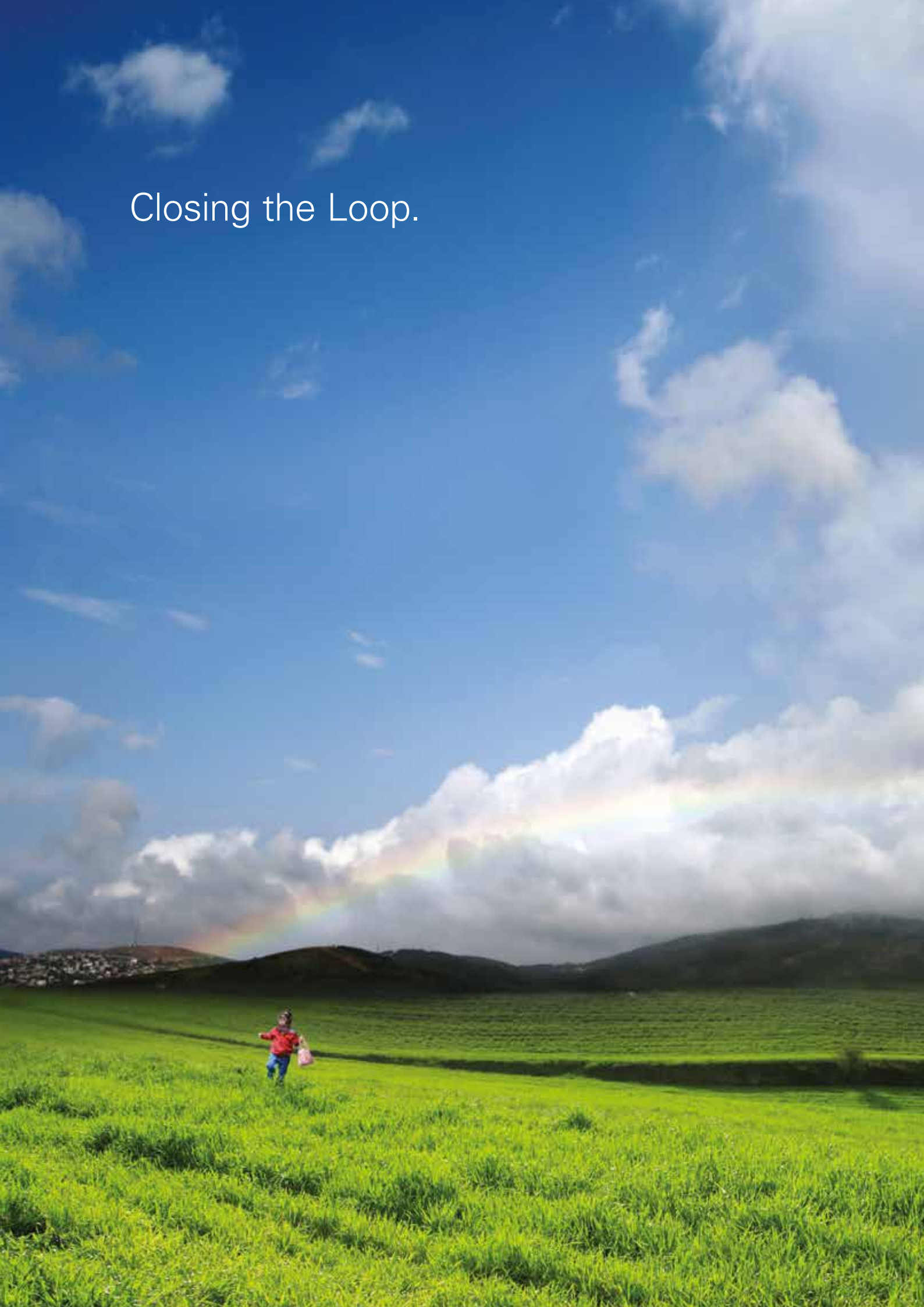
The perfect expansion of an existing  
composting facility

Low maintenance and operating costs

Complete solution from a single source

Competent and experienced partner

Closing the Loop.



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