MTM
Anlagenbau GmbH

Die Turbomaische® (The turbo masher)

More gas – better gas – faster gas

ABOUT US

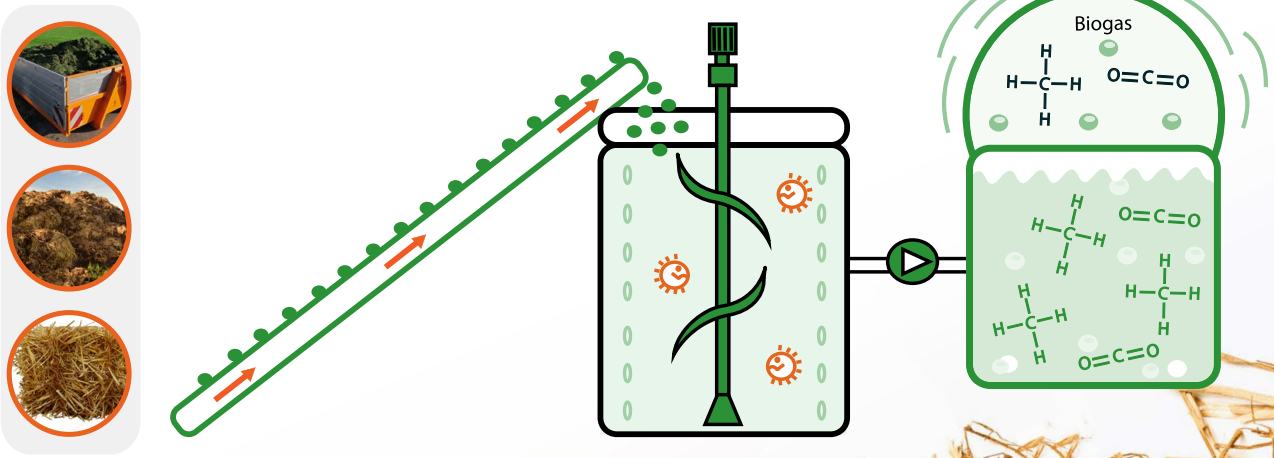
As a young and dynamic biotechnology company in the biogas sector we make a contribution to a modern and sustainable way of providing energy. Our goal is to design biogas plants that are efficient and economical because we are convinced that bioenergy is an essential factor in the energy transition.

With our patented Turbomaische® technology, we ensure that biogas plants are no longer based on a feeding with corn and grain. To that purpose, biogas plants are adapted with a minimal effort to the challenges of a flexible plant operation and the use of different feedstocks.

THE PRELIMINIARY STAGE FOR RAW FIBRE DEGRADATION

The Turbomaische® is based on a highly effective biological process for the pre-digestion of materials containing raw fibres. The flexible and fast reacting biology enables efficient biogas production from biomass that is difficult to decompose, such as straw, hay, dung, deep litter, and landscaping materials.

The result of the process is a uniform mash that can be easily converted in the digester. This allows short-term and flexible biogas production in such a way that it can be adapted to the electricity demand in the market. By treating the biomass, the required retention time in the digester can be significantly reduced.



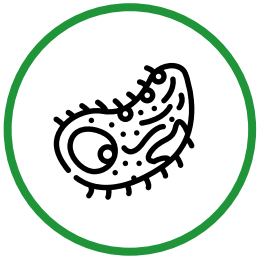
THE BACTERIA TAKE CARE OF IT

«Instead of using complex technology that is prone to wear and tear, we leave the work to nature - with better results.“

Due to the aerobic stage of the process, acetate, a direct precursor of methane, is formed in 1-2 days instead of more than 100 days under anaerobic conditions. The pre-fermented material from the Turbomaische® can be used immediately by the methane bacteria in the digester.

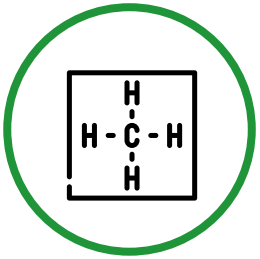
Inoculation

The patented process is initiated by the introduction of a carefully selected mixture of highly specialized bacterial strains.



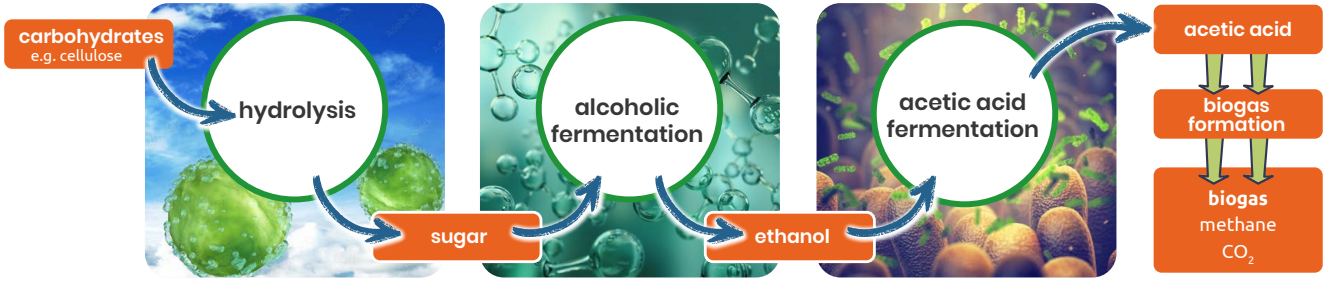
Process

Fermentation takes place in alternating aerobic and anaerobic phases. Sugar, ethanol and acetic acids are formed. The fibre matrix is broken down, shortened, and an easily fermentable mash is formed.



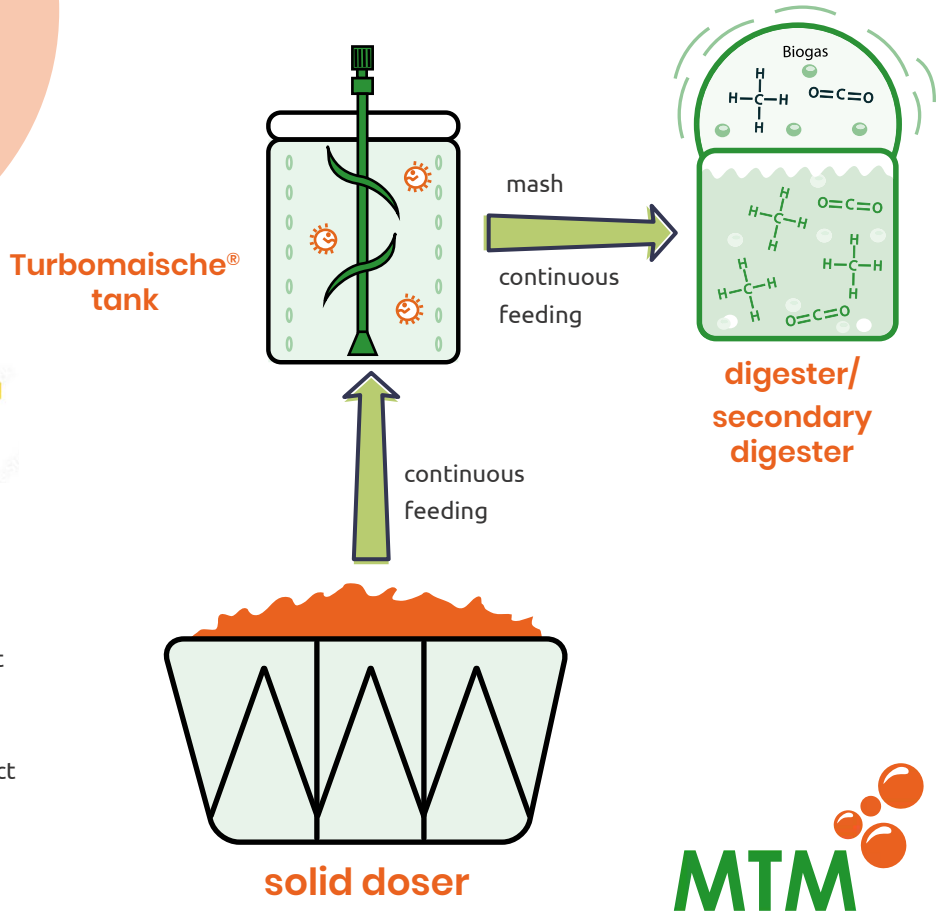
Effectiveness

The high proportion of easily degradable acids in the bio-mash results in the rapid production of biogas in the digester. The risk of an acid accumulation can be minimized. At the same time, the share of methane in the biogas increases by about 5% – 8%.



TECHNOLOGY

The solid input material is fed into the Turbomaische® and mixed with fugate (liquid phase of the fermentation residue) to form a stirrable porridge. The process is operated at 30 - 36°C and requires little external heating. An industrial compressor is used to add air during the aerobic periods. The exhaust air, which largely consists of oxygen, carbon dioxide and nitrogen, is cleaned using an innovative biofilter. This filter removes ammonia, odours and hydrogen sulfide while not requiring sulfuric acid. Thus, odour emission can be avoided.



MADE IN GERMANY

When selecting the technology, we rely on high-quality and proven components **«Made in Germany»**, which are characterised by a long operating life and low running costs. Together with our partners, we also offer plant construction, pipeline construction, concrete tank construction, mechanical and electrical engineering. We are your single point of contact to supply the entire system.

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ADDITIVES IN A PERFECT COMBINATION

For optimal processing and the best conditions for the mash bacteria, **SensoPower Turbo**, developed for the **Turbomaische®** and tailored to the process, is used as an additive. Along with more efficient substrate utilization and increased process stability, the addition leads to a significantly improved tolerance of the bacteria to a high NH_3 concentration.

In conventional biogas plants, when protein-containing substrates are used, amino acids are released, which are further broken down into ammonia during the fermentation. The cell toxin ammonia causes a significant inhibition of the methane bacteria. At the same time, the amino acids that are desirable and valuable for the fermentation process are no longer available to the bacteria.

By using **SensoPower Turbo**, the breakdown of amino acids into ammonia is prevented in the **Turbomaische®** by blocking the enzymes responsible for the breakdown. In this way, the amino acids are preserved and the formation of undesirable metabolic products is avoided. This results in significantly higher bacterial populations and faster division and growth rates.

The combination of SensoPower Turbo and the Turbomaische® enables a significantly increased input of difficult substrates, such as dry chicken manure, which often lead in conventional systems to inhibitions in methane production as well as process instabilities.

THE ADVANTAGES AT A GLANCE

Higher gas yield

The Turbomaische® increases the gas yield from fibrous substrates such as straw by up to 40% compared to standard values. There are also significant improvements in corn, grass, WPS and other silages.

Use of cost- effective substrates

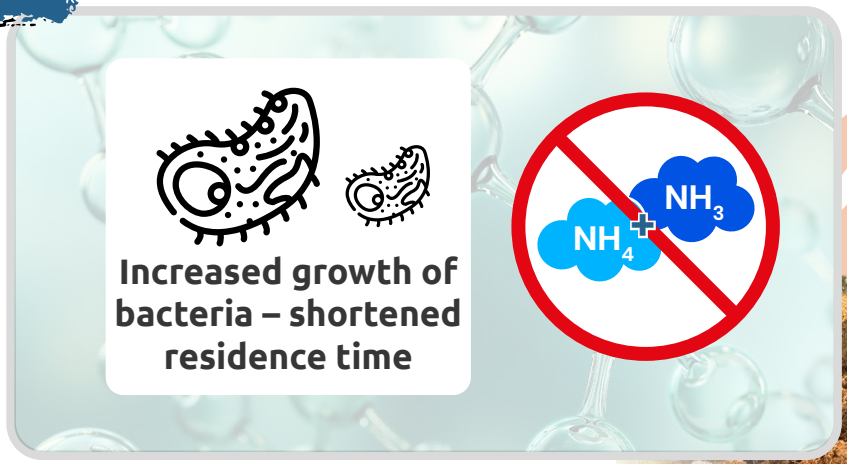
Cost-effective substrates, such as manure, straw, landscape maintenance material, can be fed without any additives. Pre-fermentation allows the digester to be used to a significantly greater capacity. By substituting cheaper substrates, the costs of a 500 kW biogas plant can be reduced by up to EUR 180,000 annually.

Flexible system operation

With targeted controlling the substrate supply from the Turbomaische® to the digester, it is possible to react quickly to fluctuations in the demand for biogas during the day. This makes flexible plant operation possible without huge gas storage capacities.

Higher methane content

The quality of the biogas is increased as some carbon dioxide escapes during mashing resulting in an approximately 5% higher methane content.



Straw, manure and fibrous plants -> no problem for the Turbomaische®!

OUR SERVICES FOR YOU

Our competent team will be happy to help you integrate the Turbomaische® into your existing biogas plant system.

We accompany you from the creation of a process engineering concept through the planning and integration of the Turbomaische® into the existing system up to the delivery, assembly and commissioning of the entire system. We are also happy to find a special solution four your biogas plant integrating the Turbomaische® into the structures of the existing system.

To ensure that the Turbomaische® fulfills our expectations in efficiency, stability and yield, we support you and your system with regard to all possible questions even after commissioning.

Call us today for a non-binding preliminary discussion!

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