

# PowerRing

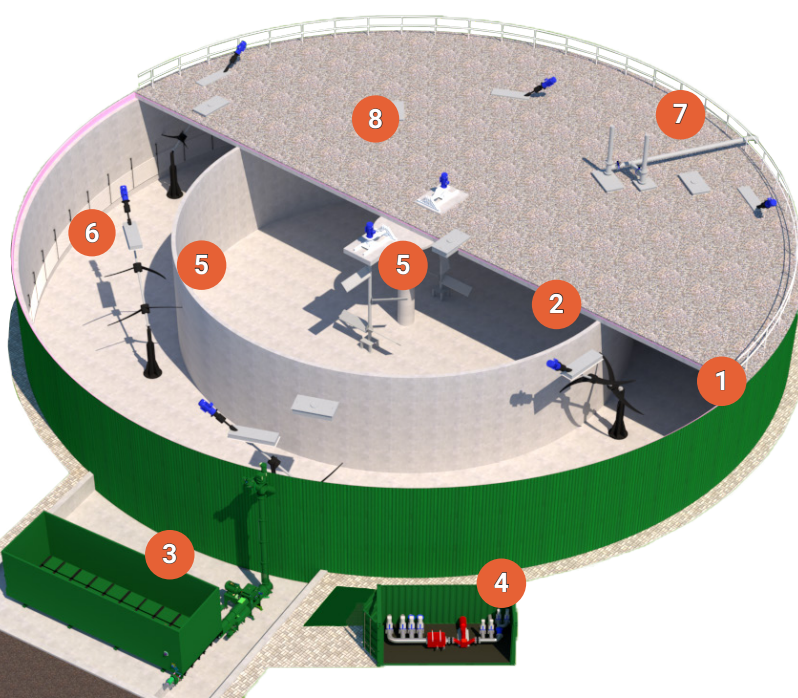
Technical Data Sheet

## The Efficient Allrounder

### Advantages

- High feedstock and dry matter flexibility
- Reduced heat loss and electrical consumption
- Allows for easy access to all equipment
- Simple maintenance
- Outstanding reliability and operational stability
- High total full load hours
- High degradation rates and therefore low feedstock consumption
- Standard designs ranging from 500 - 5,000 kW<sub>th</sub> per module

The versatile PowerRing digester was developed as a modular tank-in-tank system to overcome all challenges of a modern biomethane or biogas plant.



- 1 Primary digester
- 2 Secondary digester
- 3 Feeding system
- 4 Central pumping station
- 5 Agitation system
- 6 Heating system
- 7 Pressure relief valve
- 8 Digester inspection port

## Range of applications

The outer ring, being the primary digester of the PowerRing, is designed to fundamentally improve the mixing efficiency. In contrast to a classic tank design where complete homogenization of the digester volume can present operational challenges, the feedstock in the ring-digester is naturally led through the digester due to its channel-like shape. As a result, the PowerRing is suitable for a wide variety of feedstock including lignocellulosic feedstock with high dry matter that can be used and efficiently processed.

## Proven, outstanding efficiency

Compared to first-generation biogas systems, PowerRing reference plants demonstrate the following scientifically proven advantages:

## High degree of degradation

There is no substitute for digester volume. Up to 80% of the degradation takes place in the primary digester, while an optimum residual breakdown is ensured by low overall volumetric loading and selective biological activation of the secondary digester, resulting in lower feedstock costs.

## Low energy consumption

With the PowerRing, the agitation system and digester geometry are perfectly matched, so that highly efficient mixing can be achieved while consuming less energy. Once the feedstock is fed into the digester, the overflow system works by gravitational flow through the two digestion stages, instead of pumping; this contributes to an even lower energy consumption. Heat losses can be minimized thanks to the thermally insulated digester cover. The plants are perfectly suited for use in continental climate conditions which are characterized by hot summers and cold winters, because the heat can be used for other purposes within farm or factory applications.

## High performance numbers

More than 90% of full-load hours per year have been achieved at our reference plants. This result is attributable to the high level of availability, operational safety and our fully automated control system. The external gas storage facility enables early identification and automatic balancing of any fluctuations in gas production.

## Mesophilic/Thermophilic Ring-in-Ring digester

The sizing of the PowerRing digester is based on recent scientific studies conducted at the University of Natural Resources and Life Sciences, Vienna (BOKU). The aim was to achieve a more stable and effective biological degradation process resulting in state-of-the-art biogas plants which have been proven with over 8,300 successful operating hours on more than 160 reference plants.

## Top components, best-of-class technology

Biogest uses plant components which have been optimized to process all types of waste and by-products, in addition to agricultural feedstock. Biogest operates as a manufacturer, design and construction contractor, biogas plant owner and operator, and uses its experience to provide only proven technology which assures a robust durability of the equipment and low maintenance costs on a long term basis.

## Various designs

The PowerRing standard plant is available in various standard designs with power outputs ranging from 500 to 5,000 kW<sub>th</sub> (100 to 1,000 Nm<sup>3</sup> biogas/h) per unit. Combination of digesters and future expansion of existing facilities can be easily achieved due to the modular design of the plant. Given the unique situation and circumstances of each farm or company, Biogest will develop specific plant solutions to exactly meet your requirements regarding the feedstock availability, heat, electricity or methane demand at your site.

## Covering the entire value chain

Our cost-effective and resource-saving solutions, based on technically advanced designs, contribute to an environmentally friendly future by providing green and sustainable energy. The scope of Biogest services range from project feasibility studies, design development and business planning to turnkey construction and commissioning of plants.

## Service and maintenance

Our clients also trust our expertise when it comes to operation and maintenance, for which we offer tailor-made service agreements. Furthermore, we offer an eShop for our clients, where our customers can order spare and wear parts on a one-click basis via an app on your smartphone or desktop computer.

### Headquarters

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