



FUTURE-ORIENTED,  
EFFICIENT AND  
SUSTAINABLE

## BIOGAS TECHNOLOGY

- Biogas technology of the future
- Waste digestion plant
- Classic biogas technology

# OUR SERVICES



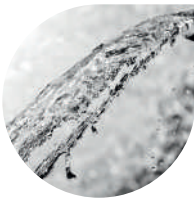
## Waste water treatment

The unique FlexBio wastewater treatment plants work energy-efficiently and cost-effectively in all areas of application. Whether you want to clean weakly polluted wastewater on a farm or heavily polluted wastewater from industry, the FlexBio portfolio always offers a suitable solution.



## Biogas technology

The FlexBio biogas process developed by us is suitable both for use in agriculture and in waste management. Our fixed bed technology convinces with very high flexibility - e.g. suitable for on-demand biogas production without large gas storage - as well as with high process stability and efficiency.



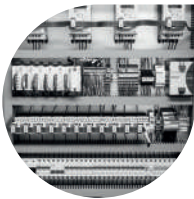
## Water treatment

FlexBio Technologie GmbH offers compact and modular water treatment plants as container solutions. The container plants for water treatment are delivered turnkey and ready for use.



## Pilot plants

As a plant manufacturer, we offer a wide range of test facilities. In addition to our standardized test facilities, we also provide individual customer solutions. Having your own prototype gives you great flexibility in the development and optimization of your processes.



## Control and measuring technology

As a manufacturer of waste water treatment plants, water treatment plants, biogas plants and experimental plants of all sizes, we are very familiar with the production of control systems including development, planning, design and programming.



## Service

FlexBio Technologie GmbH is your contact for the first consultation on the planning, construction and commissioning of the unique FlexBio technology systems.

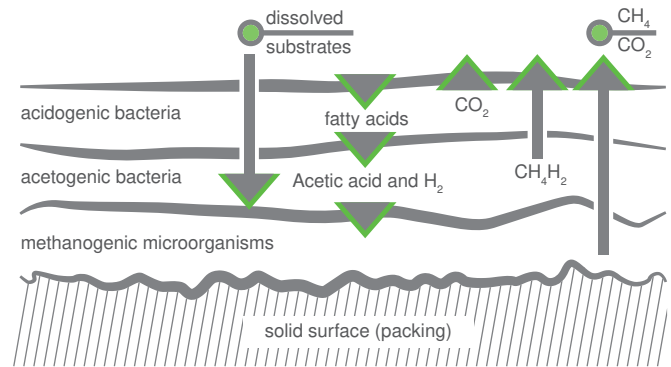
# FLEXBIO BIOGAS TECHNOLOGY

The future energy supply is based on a high proportion of fluctuating sources, as e.g. wind and solar energy. In order to compensate for weather-related fluctuations in the energy supply, controllable energy generation plants are required. Biogas offers the advantage of being able to provide electricity from renewable sources independently of the sun and wind. In order to generate electricity flexibly, a demand-oriented biogas supply must be guaranteed. Biogas can either be stored and / or produced as needed.

FlexBio technology has a comprehensive know-how on biogas. Our core competence lies in the field of anaerobic fixed bed technology, which is ideally suited for the fermentation of organically loaded liquid substrates. The FlexBio biogas process developed by us is suitable for both, use in agriculture and in waste management. Our fixed bed technology convinces with very high flexibility, e.g. for production on demand without large gas storage, and high process stability and efficiency.

Fermenters with a large specific settlement surface such as fixed bed reactors allow enrichment and retention of the microorganisms necessary for biogas formation.

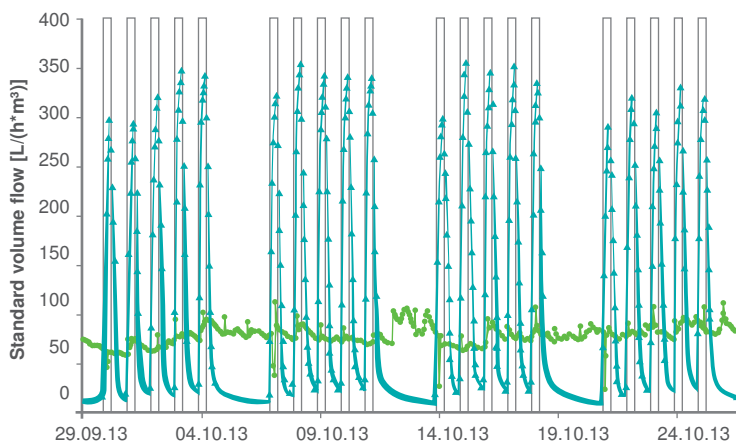
## SYNTROPHIC LIFE COMMUNITIES, SITTILES GROWTH IN BIOFILM



The microorganisms are fixed on the carrier material and thus make it possible to decouple the generation time from the residence time of the substrates. Optimal properties of the carrier material promote the settlement of syntrophic communities.

The fixed bed fermenter is fed at given times with specified substrates. To illustrate the performance of the fixed-bed fermenter, the biogas formation of a flexible biogas plant was re-

## HOURLY BIOGAS PRODUCTION AT AN 8-HOUR FEEDING TIME AND 16-HOUR BREAK



## OUR SERVICES

- Modern biogas technology in Industry 4.0 standard
- Planning and licensing procedures
- Modeling and visualization
- Plant construction as general contractor
- Standard-compliant documentation based on actual regulations
- Procedural advice over the entire term

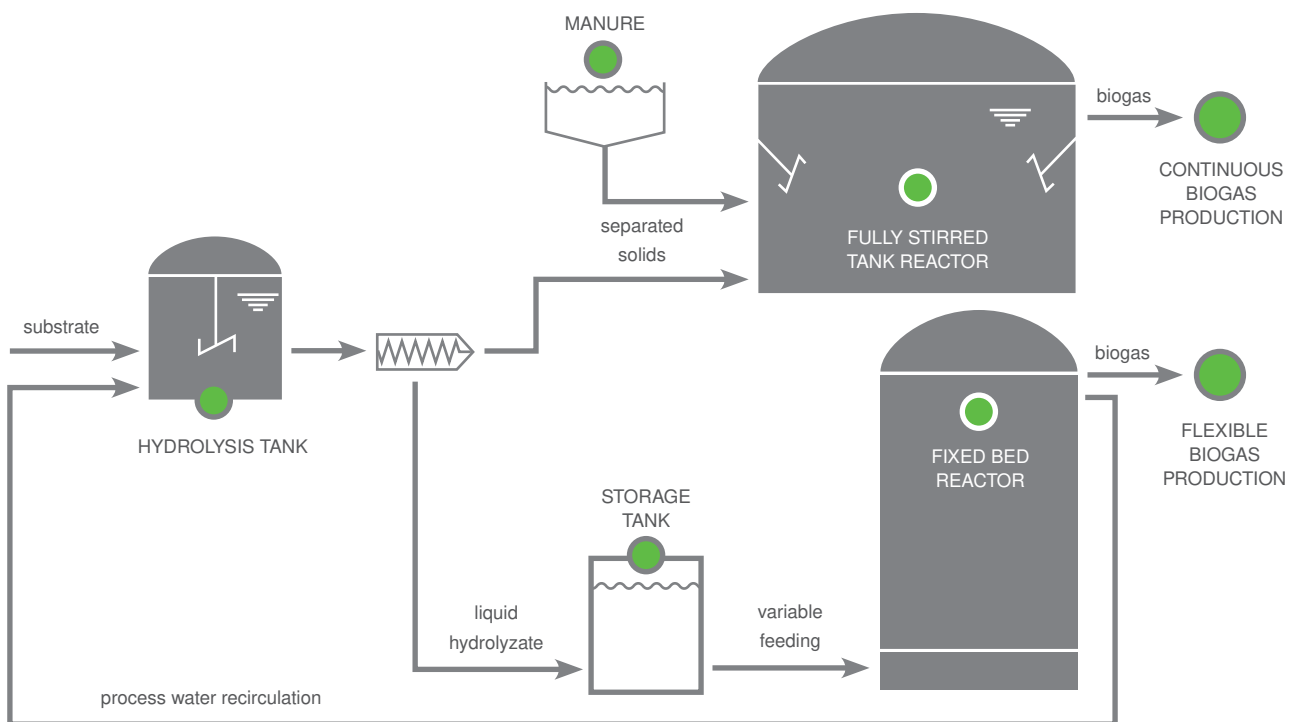
corded. This way, a precise curve of gas production could be documented. The figure "Hourly biogas production with an 8-hour feeding time and 16-hour break" shows that gas production of the fixed-bed fermenter can be increased significantly within a few hours. This makes it possible to shift the gross gas production to a few hours a day. In practice, this means a reduction in the required biogas storage capacity and an overall higher flexibility of power generation.

Further research showed that gas production can be interrupted for several days and resumed in the shortest possible time. Thus, overall, a higher flexibility of energy generation can be achieved. A key advantage of the proposed technology is the possibility of interrupting biogas production for several days and re-starting it within a few hours.

### ADVANTAGES

- Innovative biogas technology
- Biogas production on demand ("at the push of a button")
- Maximum flexibility
- High yield
- Modern manure fermentation
- Multi-stage fermentation lines

#### SCHEMATIC DIAGRAM OF AN EXEMPLARY FLEXIBLE BIOGAS PLANT



## BIOGAS TECHNOLOGY OF THE FUTURE

In order to be able to provide electricity flexibly, the energy source must always be available at the appropriate time. This is not possible with classic biogas plants. Thanks to the modern fixed-bed technology, FlexBio biogas technology enables biogas production at the touch of a button. Thus, the power can be produced on demand. Expensive and bulky biogas storage is a thing of the past. In addition, the FlexBio biogas plants can be built much more compact due to the specific surface enlargement through the packing. A combination with existing biogas plants is just as possible as a complete new construction of the biogas plant.



## WASTE DIGESTION PLANT

In gastronomy, food industry such as vegetable and fruit processing, the sugar or potato industry, slaughterhouses and distilleries, organic residues are produced which, due to their energy content and their dry matter content, are ideal for the production of regenerative energy in biogas plants. However, the consistency, impurities and components inhibiting the biological process often lead to problems in conventional plants. FlexBio technology offers in its portfolio a compact and reliable solution for the fermentation of organic residues. The FlexBio-SmartFarm container system is designed for decentralized use and can be flexibly adapted to the operating conditions or modularly extended. Thus, you have the perfect solution for the use of your organic waste, even if you expand your production.



## CLASSIC BIOGAS TECHNOLOGY

In the biogas segment we represent an innovative biogas technology of the new generation. Our biogas technology allows efficient use of substrates that are currently under-utilized for biogas production. Another focus of our biogas technology lies in the field of flexible biogas production. Our biogas technology can provide real flexibility without large gas storage tanks. In addition, our system concept is suitable for small distributed applications, such as pure manure plants (75 kW liquid manure biogas plants), small HTK biogas plants, use of silage-acid juice at larger farms (livestock) or pure and co-fermentation of renewable resources with emphasis on the greatest possible flexibility.



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