



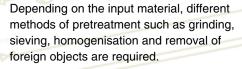
Biogas: Energy from Waste







Biogas is obtained from the anaerobic treatment of agricultural and industrial organic wastes. This gas, which has a high methane content, is used to produce electricity and heat.



The centre of each biogas plant is the fermenting tank (digester), where the biodegradation process occurs. In this process, organic components are broken down by micro-organisms. Biogas is produced at the end of this food chain.

Subsequent to the fermentation process, the fermented material receives post-treatment. Customary treatment procedures are simple storage before direct agricultural application, dewatering, curing of solids, and process water recirculation, or complete treatment up to drinking water quality.











Our Service Offering



Krieg & Fischer Ingenieure GmbH is an engineering office for biogas engineering that has more than 15 years of experience in cost calculation and quotation preparation, planning, designing, obtaining approval, construction management and start-up of biogas and fermentation plants.

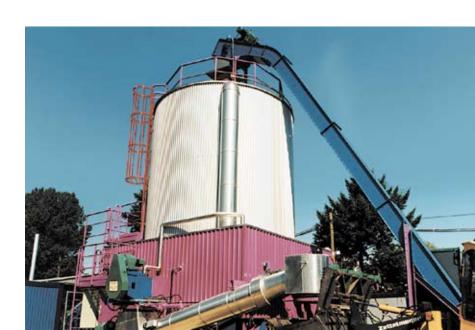
Our highly qualified team has extensive experience with different process techniques and input materials – from complex pretreatment techniques for biowaste to fermentation techniques up to the desired post-treatment. Our many years of practical experience ensure that our customers receive the best possible results.

We plan and construct agricultural farmscale biogas plants and large cofermentation plants, as well as biowaste and residual



waste plants. In this context, we see ourselves as a service provider for our agricultural and industrial customers. We consider service to be our most important product. Just give us a call. We will gladly inform you about our service offering.

- Studies
- · Concept development
- Costdetermination/calculations
- Approval
- Planning
- Construction management
- Start-up
- Optimisation





References – Experience

Krieg & Fischer Ingenieure has approximately 100 reference plants to its credit: agricultural and industrial one- and two stage, mesophilic and thermophilic wet and dry fermentation plants; biogas plants for fermenting cattle, pig and poultry manure; cofermentation plants; and biowaste fermentation plants. The fermentation of extremely different substrates such as biowaste, manure, fats, kitchen wastes and many other organic wastes are part of this spectrum. Our plants are located in Germany (D), Japan (J), Italy (I), Lithuania (LT), Slovakia (SK), Switzerland (CH), Netherlands (NL), Spain (E), France (F), Canada (C) and the USA.

Reference List (extract)

- HEYNOLD, built 1986, manure, 60 m³ digester volume, HPP (heat and power plant)
 15 kWel, D
- SCHLÖTTERER, built 1991, manure, 80 m³ digester volume, HPP 27 kWel, D
- TU HAMBURG-HARBURG, built 1993, biowaste, 100 m³ digester volume, D
- KRAFT, built 1994, cattle manure, fats, 800 + 1.000 m³ digester volume, HPP 800 kWel, D
- BÖCKERMANN, built 2001, pig manure, cofermentation products, 2.500 m³ digester volume, HPP 320 kWel, D
- STANGE, built 2000, pig manure, turkey dung, 450 m³ digester volume, HPP 45 kWel, D
- NIJ BOSMA ZATHE, built 2000, cattle manure, grass, 2 x 80 m³ digester volume, HPP 30 kWel, NL
- BEKKAI, built 2000, cattle manure, cofermentation products, 1.500 m³ digester volume, HPP 200 kWel, J
- PRAD, 2001, cattle manure, cofermentation products, 2 x 735 m³ digester volume, I
- VAN GENNIP, 2003, pig manure, dung, corn silage, 4.300 m³ digester volume, HPP 167 and 344 kWel, D
- HOLLANDHOF, 2004, pig dung, turkey dung, grass and corn silage, 350 m³ digester volume, HPP 60 kWel, D
- FREY, 2004, corn silage, grass silage, wheat silage, 1.530 m³ digester volume, HPP 330 kWel, D
- MILLER, 2005, corn silage, clovergrass silage, 1.470 m³ digester volume, HPP 360 kWel, D
- BAESWEILER 2006, corn silage, wheat silage, 2.155 m³ digester volume, HPP 536 kWel, D
- PORTA, 2006, pig manure, waste, 1.360 m³ digester volume, HPP 191 kWel, E





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