



Krieg & Fischer Ingenieure GmbH

KRIEG & FISCHER INGENIEURE GMBH
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35 YEARS
OF EXPERIENCE
WORLDWIDE

TECHNOLOGY
TAILORED TO YOUR NEEDS

BIOGAS

BIOMETHANE

HYDROGEN

Expert engineering company



Krieg & Fischer Ingenieure GmbH

Krieg & Fischer Ingenieure GmbH is an expert engineering office with more than 35 years of experience in biogas technology.



■ Based in Germany

■ Tailor-made solution

■ 178 references worldwide

MORE INFORMATION



Our Team



Krieg & Fischer Ingenieure GmbH



ENGINEERING MADE IN GERMANY

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Krieg & Fischer Ingenieure GmbH

Management

Raphael Thies is a process engineer with extensive experience in biogas since 2007. He has been the managing director of Krieg & Fischer since March 2017. His areas of expertise are biogas plant design and occupational safety, construction supervision, commissioning and start-up of biogas plants, control and electrical automation. In 2016, Raphael Thies was accredited by the Chamber of Engineers of Lower Saxony as an expert in the field of biogas.





Krieg & Fischer Ingenieure GmbH

Company History

FOUNDED 1999

Foundation of Krieg & Fischer Ingenieure GmbH

AWARD FOR INNOVATION 2003

Innovation award of the district of Goettingen for the fermentation of energy crops without liquid

SWORN EXPERT IN BIOGAS 2009

Torsten Fischer is sworn in as the first publicly appointed expert for biogas of the Lower Saxony Chamber of Engineers on March 24

FIRST BIOMETHANE/ RNG PLANT 2009

Biogas plant with gas upgrading and feed-in into the natural gas grid in Germany

WORLD BIOGAS AWARD 2020

Krieg & Fischer becomes winner of the AD & Biogas World Biogas Expo Award 2020 in the "Circular Economy Award" category

20 YEARS COMPANY ANNIVERSARY 2019

In June Krieg & Fischer Ingenieure GmbH celebrates its 20th anniversary. 160 Biogas Plants References worldwide

HYDROGEN 2023

Contract for planning services for the construction of an electrolyser in Germany

NEW SHAREHOLDER 2023

Raphael Thies and PlanET become shareholders! This strong cooperation within the biogas industry makes the company resilient for future challenges. K&F is still an independent engineering company.

FIRST PROJECT WITH

CO₂ LIQUEFACTION 2022

Biogas upgrading and CO₂ liquefaction plant, food-grade quality CO₂ and dry-ice production

POLSKA 2025
C...

MORE INFORMATION





Krieg & Fischer Ingenieure GmbH

Our partners worldwide



CES
Polen, Podłęże



ELECTRIGAZ
Kanada, Quebec



INTE. CO.
Italy, Pordenone



ECOBIOGAS
Spanien, Vilasana,
Lleida



LYS Enterprises
USA



**EMS Eco Metan
Solutions**
Ukraine



ECO HEART INC.
Japan



MORE INFORMATION



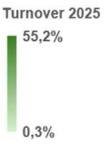
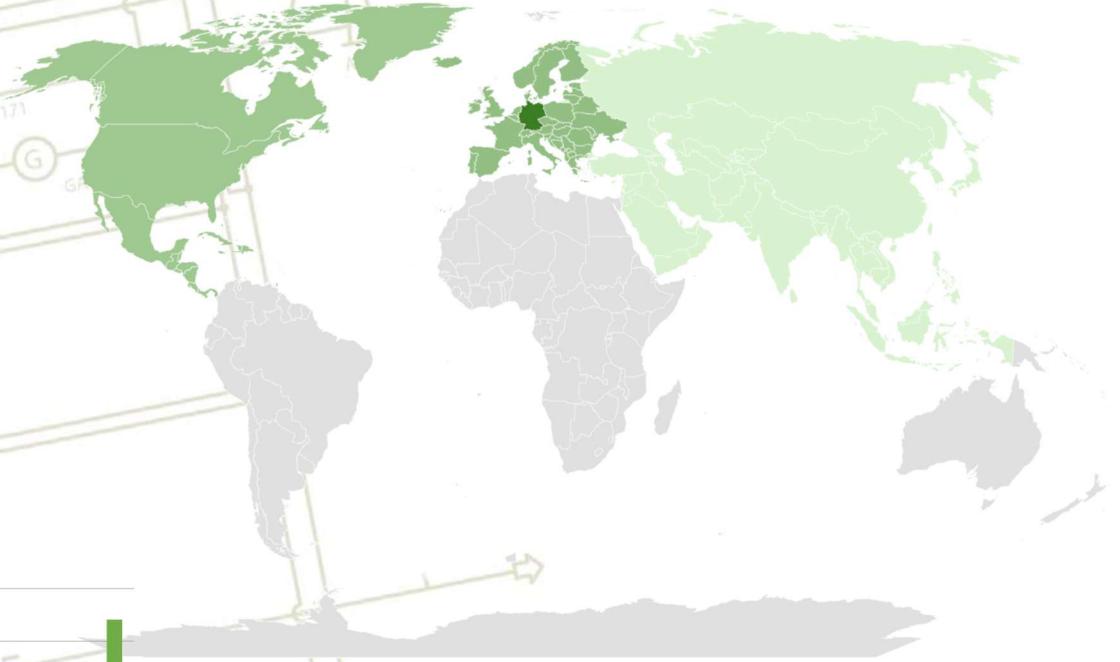


Krieg & Fischer Ingenieure GmbH

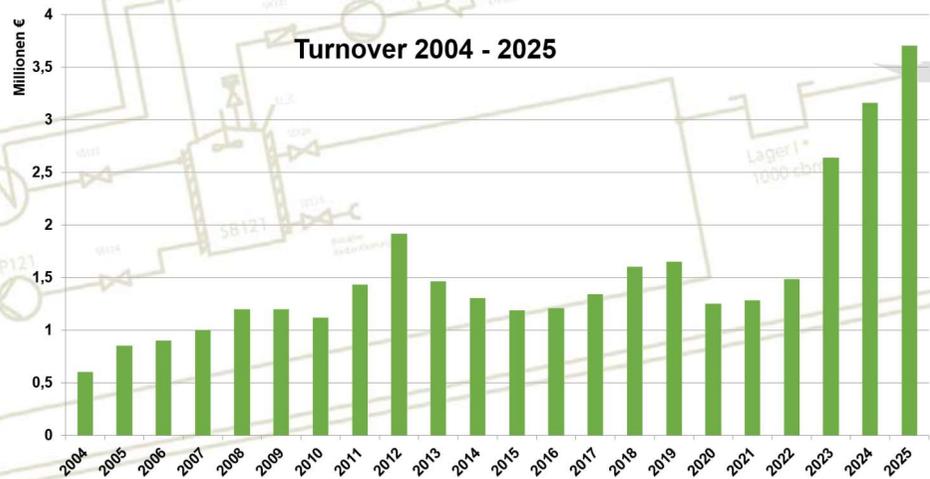
Turnover 2025

TURNOVER 2025

- GERMANY
- EUROPE
- NORTH AMERICA
- ASIA



Turnover 2004 - 2025



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Unterstützt von Bing

MORE INFORMATION





- ✓ Studies
- ✓ Concept development
- ✓ Process technology
- ✓ Cost determination/ Calculation Permission
- ✓ Planning
- ✓ Construction management
- ✓ Start up
- ✓ Optimisation
- ✓ Due diligence
- ✓ Expert Opinion
- ✓ Operator Service

MORE INFORMATION



100% Independent

Solutions



Biogas

- Agriculture plants
- Industrial plants
- Biowaste plants
(Organic residuals)



Biomethane

- Biogas upgrading
- CO₂-liquification
- Retrofitting CHP plants
to Biomethane



Hydrogen

- Electrolysis
- Methanation





Biogasplant for Agriculture



Krieg & Fischer Ingenieure GmbH

FALKENSTEIN
Biogas Plant, Germany



Input: Corn silage, whole crop silage, sweet sorghum silage
Digester: Steel tanks 2 x 3,100 m³
Co-generator: Gas engine 2 x 716 kW_{el}

Features:
2 digester, 2 secondary digester, thermophilic operation, heat utilisation

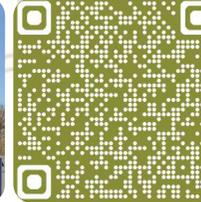
FORCATE
Biogas Plant, Italy



Input: Grass- and corn silage
Digester: Steel tank 1,730 m³
Co-generator: Gas engine 365 kW_{el}

Features:
1 digester, 1 secondary digester, separation, thermophilic operation

VELEN
Biogas Plant, Germany



Input: Pig and cattle slurry, pig, cattle, horse, chicken and turkey manure and dry chicken droppings
Digester: 2 x 9,500 m³ steel tanks, new construction of two fermenters

Gas utilization:
Gas treatment with pressure swing adsorber (DWA) for an extended biogas plant, 1,860 Nm³/h biogas, 945 Nm³/h biomethane, biomethane up to 2,000 Nm³/h is planned

ED GOPAC
Biogas Plant, Ukraine



Input: Corn silage
Digester: Steel tank 5,670 m³
Co-generator: Gas engine 1.5 MW_{el}

Features:
1 digester 1 secondary digester with gas holder roof, mesophilic process

WOODCREST
Biogas Plant, USA



Input: Straw and manure
Digester: Steel tank 6 x 8,000 m³ + concrete tank 5000 m³
Biogas utilisation: Biogas upgrading system 600 m³/h

Features:
1 digester 1 secondary digester with gas holder roof, mesophilic process, digestate heat recovery and dewatering system, external biological desulphurisation

MORE INFORMATION →





Biogasplant for

Industry



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References

PRINCE EDWARD ISLAND
Biogas Plant, Canada



Input: Potato raw material, oil, potato sludge
Digester: Glas coated steel tanks
4 x 5,500 m³
Gas utilisation:
Steam generation

Features:
1 Hydrolysis tank, 4 digester, 2 secondary digester, mesophilic operation, separation, heat utilisation

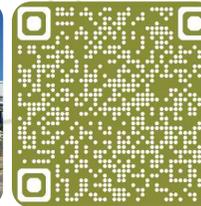
RIO CUARTO II
Biogas Plant, Argentina
Low-Carbon-Ethanol



Input: Thin stillage, a residual material from bioethanol production
Digester: Glas coated steel tank, 8,000 m³
Biogas output:
6 MW; 2 x 1.2 MW_{el} in CHP

Features:
Biogas plant digesting energy crops and organic waste (expansion); Reception tank (pH, temperature), secondary digester with gas holder roof, solid input device, external desulphurization, heat usage in bioethanol plant

POLSKA
Biogas Plant, Poland



Input: Sugar Beet Pulp
Digester: Enameled steel tank, 4 x 10,000 m³
Biogas output:
45 MW

Features:
4 digester, 2 secondary digester biogas upgrading unit (8.500 Nm³/h) digestate treatment system, external gas holder

VIERVERLATEN
Biogas Plant, Netherlands



Input: Sugar beet pulp, sugar beet fragments, potato waste
Digester: Glas coated steel tanks
4 x 4,600 m³
Gas utilisation:
Biogas upgrading system, injection into the gas grid

Features:
4 digester, 1 secondary digester with gas holder, digestate treatment, gas cooling system, mesophilic operation, biogas upgrading system and injection into grid

MORE INFORMATION →





Biogasplant for

Biowaste



Krieg & Fischer Ingenieure GmbH

References

HUNTSTOWN

Biogas Plant, Ireland



Input: Anaerobic fermentation of 92,000 t/a of waste (42,000 t/a biowaste and 50,000t/a organic waste from supermarkets and restaurants)

Digester:
2018/19: 4 x 4,900 m³ digester

Features:

4 digester, 2 secondary digester, external gas holder, special grit removal, Thermal pressure hydrolysis process, input material cooling, 2 buffer tanks

QINHUANGDAO

Biogas Plant, China



Input: Kitchen waste

Gas utilisation:
Biogas upgrading system, biomethane used as vehicle fuel

Digester:
2013/14: 2 x 3,400 m³ digester

Features:

Biogas plant digesting kitchen waste: pre-treatment with hydrocyclone, one hydrolysis tank, two digester, one storage tank, digestate treatment, mesophilic process, external heating and cooling

IM BRAHM

Biogas Plant, Germany



Input: Food waste

2005: 1490 m³ digester, 760 kW_{el}
2011: Additional digester & 2 CHP
2013: Storage tank with gas holder roof (6,000 m³)
2016: Digestate separation
2024: Expansion to include a biogas upgrading plant for biomethane

Features:

Digester mixed with side-mounted mixers, gas holders on top of all tanks, secondary digester, esophilic operation, heat utilisation (pasteurisation kitchen waste, heating of buildings)

NOYON

Biogas Plant, France



Input: Sludge, fat, process water, cofermente, food residues

Gas utilisation:

Gas engine 716 kW_{el}
Digester:
Steel tank 3,500 m³ digester

Features:

Gas holder above secondary digester tank, mesophilic operation, separation of digestates, recirculation of process water, compost works, external heat use

MORE INFORMATION →





Biogasupgrading for

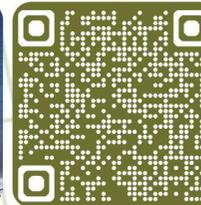
Biomethane / Renewable-Natural-Gas



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References

NEW YORK STATE 2
Biogas Plant, USA



Input: Dairy manure
Gas production:
600 m³/h biogas
Digester:
Extension of existing
agricultural biogas plant,
Steel tank 8,000 m³

Features:
1 digester, 1 secondary digester
with gas holder roof, mesophilic
process, digestate heat recovery
and dewatering system, external
biological desulphurisation

JCBE DERBY
Biogas Plant, UK



Input: Hydrolised kitchen Cat. 2,
paper & cardboard waste, straw
Gas production:
1,200 m³/h biogas,
over 6 Mio. m³/a RNG
Digester:
Concrete steel tank 2 x 5,300 m³

Features:
Industrial biogas plant:
digestion of hydrolysed waste.
Thermal pressure hydrolysis
process, buffer tank, cooling
tank, mesophilic operation

ANKLAM
Biogas Plant, Germany



Input: Sugar beet, vinasse
Digester:
Glas coated steel tanks
4 x 4,600 m³
Biogas utilisation:
Biogas upgrading system,
injection into the grid

Features:
Industrial biogas plant:
4 digester, 1 secondary digester,
gas holder above secondary
digester, digestate treatment,
mesophilic operation, biogas
upgrading and injection into grid

WUHU
Biogas Plant, China



Input:
Kitchen waste
Digester:
Steel tank welded 2 x 3,400 m³
Biogas utilisation:
Biogas upgrading system

Features:
Biogas plant digesting organic
waste: 2 digester, 1 storage tank
(by client), 2 hydrolysis tanks (by
client), oil separation with heat
recovery system

MORE INFORMATION →

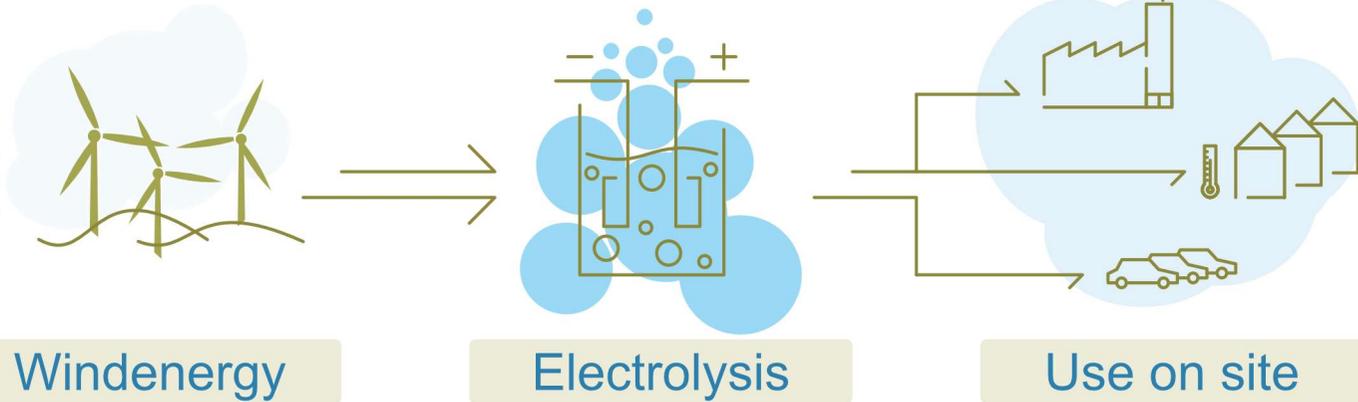


H₂ Hydrogen

STAßFURT Electrolysis, Germany

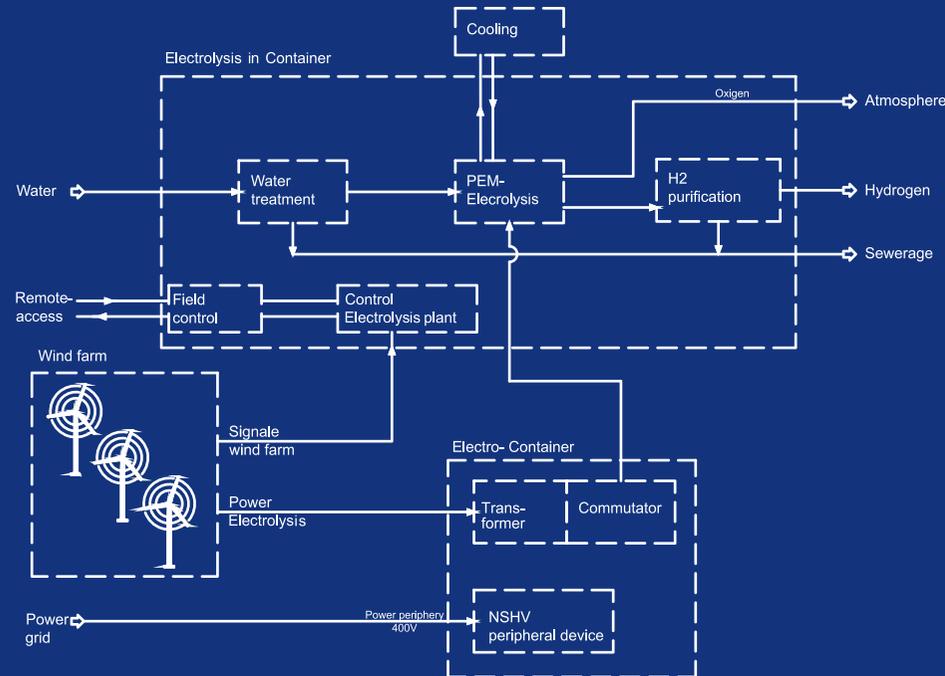
Project:
Energy Region Staßfurt, production of hydrogen from green electricity. The electrolyzer is operated exclusively and continuously by the wind farm with green electricity

Process engineering
Water electrolysis plant with 1 MW water electrolysis system, basic process PEM (Proton Exchange Membrane) H-Tec with an efficiency of 77%.



H₂O Production
1 MW electrical; 130 t/a Green hydrogen from wind power

Use of H₂O
To supply a hydrogen refuelling station on the nearby motorway and to feed into the natural gas grid.



MORE INFORMATION



Technology

Different types of digesters and mixers



High upright digester



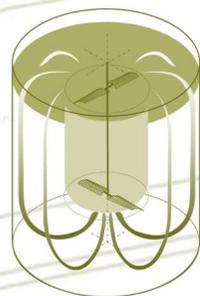
Flat digester with gasholder roof



Horizontal/Plug flow digester

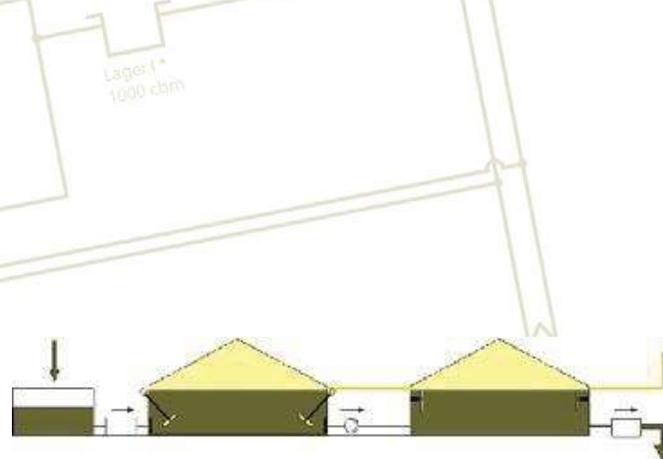
High upright digester/ CSTR

- Designed for large plants up to 10,000 m³.
- Mixing is by means of a top-mounted mixer which operates continuously.
- Constant gas production
- Low heat loss
- Reinforced concrete or bolted steel depending on size.
- Internal/External Heat Exchanger
- One-stage/two-stage digestion



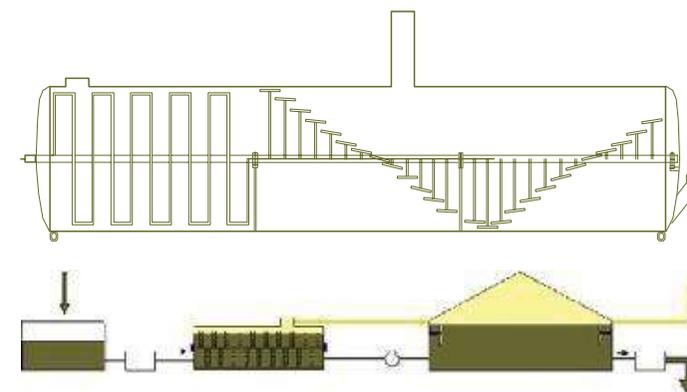
Flat digester

- Best suited for small to medium biogas plants with low dry matter substrates that are easy to mix.
- Integrated gas storage in the gas holder roof
- Cost saving digester tank design
- Easy mixing and heating conditions



Horizontal / Plug flow digester

- Optimum mixing
- High dry matter content
- High sediment content
- For special substrates
- Plug flow
- Paddle mixer



Technology More Details



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Dry Feeder



Pasteurization



Pumping room



External heat
exchanger



Overpressure-
vacuum relief valve



Process control
systems

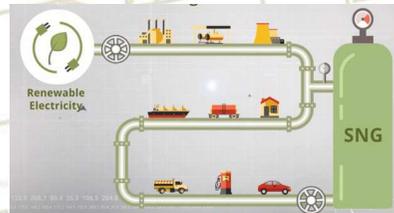
Technology Biogas utilization



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Biogas upgrading



Bio SNG - Possible uses



Cosun Beet



Dry Ice

Biomethane / RNG

CO₂-liquefaction

- Different Biogas upgrading technologies
- Injection into gas grid
- Purification and use as transportation fuel
Compressed natural gas (CNG);
Liquefied natural gas (LNG)
- Methanation

BIOERDGAS ISENHAGEN Biomethane and CO₂- liquefaction plant, Germany

Conversion of 2 existing biogas plants fed with energy crops, chicken and cattle manure into biomethane and CO₂ liquefaction.

Biogas plant output:
1,400 Nm³/h biogas

CO₂ liquefaction plant producing food grade CO₂:
1.1 t/h

Dry Ice production:
1,000t/a

Features:

Biogas upgrading, CO₂ liquefaction, dry ice production, heat recovery for digesters and nearby villages

- Use of by-product in biogas upgrading as biogenic CO₂
- Virtually no emissions or losses
- Reduction of carbon footprint
- Purification and liquefaction of CO₂
- Food grade CO₂

All CO₂-liquefaction plants in Germany



- planned
- under construction
- in operation

MORE INFORMATION

MORE INFORMATION



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