Solution

SYNCRAFT®

# The biogas plant of the future.

Reversepowerplant meets biogas plant: Innovative production of renewable energy, Green Carbon, and biomethane.

Case study

# Biogas 2025

## Sustainable yield improvement

Declining electricity compensation coupled with rising operating costs: this problem affects many operators of biogas plants. The long-term economic solution: biomethane combined with sustainable energy production.

## Summary

The combination of a biogas plant and a Reversepowerplant makes optimal use of the existing infrastructure. The biogas plant produces biomethane, the Reversepowerplant supplies heat and electricity for operation, and feeds surplus green electricity into the public grid. In addition, Green Carbon improves fermentation and permanently binds $CO_2$.

- ✓ Sustainable energy supply for biogas processing using regional forest residues and energy wood, including minus
- ✓ Green Carbon promotes fermentation and enables the generation of $CO_2$ certificates.

## Biogas Trattnachtal

System type: CW1800-500
Energy supply level: 100%

## Overview

- Our systems convert around 30% of the wood chips into renewable electricity – less than 1 kg of wood generates over 1 kWh of power.
- Custom heat concepts according to demand. Around 40% of wood chips are converted into renewable heat at 95°C, with up to 180°C available on request.
- Reversepowerplants generate energy and green carbon, typically with around 90% carbon content and a calorific value of 29 MJ/kg.
- If Green Carbon is reused in such a way that it becomes a permanent $CO_2$ sink, negative emissions, i.e., minus $CO_2$, are created, generating $CO_2$ certificates and economic added value.

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## Challenge

Many biogas plants feed their gas directly into combined heat and power plants – the problem here is that falling remuneration and rising costs are neither economical nor sustainable. Biogas plants are technically ideal for biomethane production, which currently offers the highest economic benefits. However, a reliable heat source is required for processing and fermenter operation. This is made possible by combining a Reversepowerplant with a biogas plant – without additional energy costs and with significantly greater economic efficiency.

## Solution

Reversepowerplant meets biogas plant. Efficient implementation begins with the energy output of the SYNCRAFT CW1800-500 plant type. This optimally covers the heat requirements for a biogas plant with a capacity of 500 $m^3$/h. In addition to process heat, renewable electricity and Green Carbon are produced: economical, sustainable, cost-effective. The electricity generated can be used flexibly: at attractive feed-in tariffs for the public grid or for inexpensive self-supply. This is particularly true when a CCS plant for carbon dioxide capture is also operated. This makes the economically and ecologically optimized biogas plant even more economical. Both the Green Carbon obtained during energy production and the CCS plant generate $CO_2$ certificates.

SYNCRAFT develops and builds Reversepowerplants that generate renewable energy and Green Carbon from forest residues and energy wood in a resource-efficient way. With this innovative technology, our clients make use of renewable residual materials while actively producing negative $CO_2$through Green Carbon. Reversepowerplants contribute directly to defossilization and decarbonization – true to our motto: Reverse is Forward.

## Feedback

Ing. Daniel Schürz, MSc
CEO Biogas Trattnachtal GmbH

*"The combination of a biogas plant with biomethane processing and an integrated drying plant with a reverse power plant creates a closed energy cycle: The Reversepowerplant provides the thermal energy required to operate the plant, while the biomethane produced is fed into the gas grid as a high-quality, renewable energy source."*

## Result

Combined with a Reversepowerplant, biogas plants cover their entire energy requirements themselves. The advantages: no additional energy costs, predictable income from electricity generation, improved fermentation thanks to the green carbon produced, increased methane yield by approx. 8%, increased gas yield with ideal conversion, and generation of $CO_2$ certificates through long-term carbon sequestration.[1] Specifically, 500 tons of Green Carbon correspond to 1,500 $CO_2$ certificates. In short: a biogas plant becomes a future-proof, sustainable, and economically strong solution.

**500 kW** electricity

**740 kW** heat

**400 t/a** carbon

[1] MC. Margreiter, A. O. Wagner, M. Probst, E. M. Prem, and A. Hofmann, "Gasification chars and activated carbon: Systematic physico-chemical characterization and effect on biogas production," Heliyon, vol. 10, art. e31264, May 2024.

## Do you have any questions?

Your contact person will be happy to assist you.

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**Reverse is Forward.**