
Food Waste into Green Hydrogen

OWT – GH2

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The main product of any Anaerobic Digestion Plant is Biogas. It could be converted to Electricity or Biomethane, both requiring the necessary infrastructure to transport it a public network. To be more flexible and follow the high demands in this technology VIA Solutions has developed a process which converts Food Waste into Green Hydrogen.



The proven OWT Technology converts the Organic Solid Waste into a high-quality Biogas which contains approx. 62 Vol% Methane and 38 Vol% Carbon Dioxide.

1 The first stage of OWT – GH2 process removes any contaminations in the Biogas using a multi-step technology including a scrubber and several stages of activated carbon filters.

Subsequently, Carbon Dioxide is separated from the Methane using a multi stage membrane filtration process.

Then, the Carbon Dioxide is converted to Liquid Carbon Dioxide (LCO₂) which fulfils the EIGA 70/71 Food grade requirement.



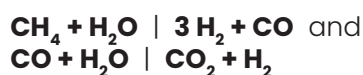
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Then, the Biomethane is converted by a Steam Methane Reforming (SMR) & Water-Gas Shift (WGS) Technology to Hydrogen by using a chemical process:



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Finally, the Hydrogen is cleaned in a VPSA (Vacuum Pressure Swing Absorber) in order to reach 5.0 Quality (99,999% H₂)

The OWT-GH2 Technology generates:

- **Green Hydrogen** (GH₂) in 5.0 (99,999%) EN 17124 quality grade.
- **Liquid Carbon Dioxide** (LCO₂) in EIGA 70/71 food grade.

The complete OWT-GH2 Process is constantly quality controlled and monitored without any gaps as required by the EIGA 70/71 and EN 17124.

The final products are 100% made from Renewable Sources – no external power or any other products are added at any stage of the process.

The produced LCO₂ represents the demand for CCU – Carbon Capture and Use.

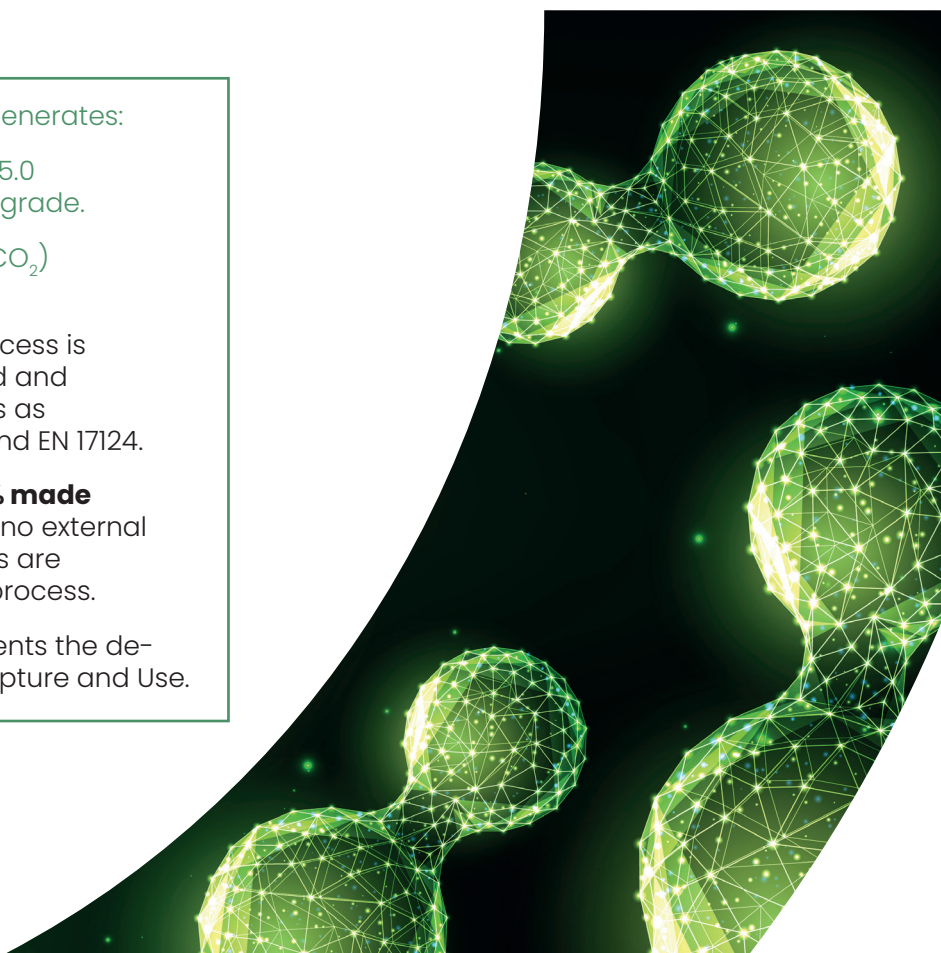
Comparison to Electrolysis Technology

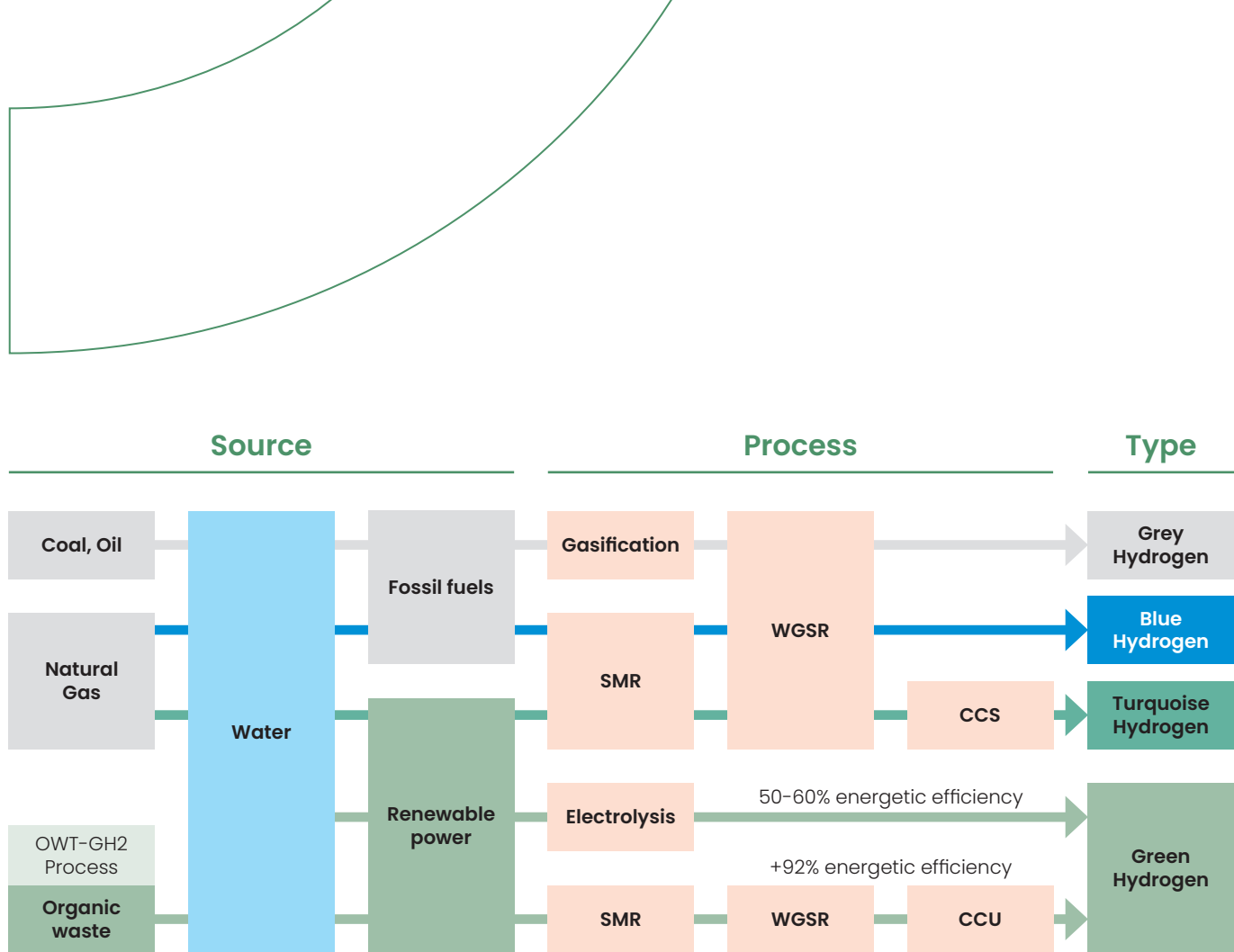
Green Hydrogen produced by **Electrolysis** of water needs approx. **45 – 63 kWh** per produced kg of Green Hydrogen.

Green Hydrogen made from Biomethane by using the **SMR & WGS Technology** needs only **2.6 kWh** per produced kg of Green Hydrogen.

Green Hydrogen made from Food Waste, using the **OWT – GH2 Technology**, needs approx. **7.5 kWh** per produced kg of Green Hydrogen. The required energy is completely produced by the process itself, no additional power supply is necessary.

Additionally, if a Renewable Energy Source like PV, wind or similar is available it would be possible to increase the Production of GH₂ and LCO₂.





SMR: Steam Methane Reforming Process; **WGSR:** Water Gas Shift Reaction to eliminate Carbon Monoxide;
CCS: Carbon Capture and Storage; **CCU:** Carbon Capture and USE

Mass Flow Overview

The OWT-GH2 Technology converts **100 tons of Organic Waste per day** into the following products:

- 60 kg/h or 1,440 kg/day Green Hydrogen in 5.0 quality
- 340 kg/h or 8,160 kg/day Liquid Carbon Dioxide (CO₂) in food quality

THE OWT-GH2 Technology is the most Innovative Development in the field of W2E/Biogas/Hydrogen in the recent years.

This Technology has the potential to secure a major part of the Future Energy Demand in Europe and other parts of the world.

About VIA Solutions GmbH

VIA Solutions GmbH (VIAS) was established in January 2022, by people with decades of experience in Waste Management and plant design, construction and operation.

Originally formed as a Joint Venture between the former Owners of the Czech biogas plant APBB Cayan Holding and "the Goeschl Family". VIAS owns the Know How and Intellectual Property of the highly efficient treatment technology for Organic Waste OWT which has been in successful operation since 2008. Further, they have the long experience in sufficient Solid Waste Treatment and the mining of old landfills.

In the recent years VIA Solutions developed the technology to covert Biogas to other green products such as Green Hydrogen and is presently engaged to establish the first project worldwide using this innovative technology.

The OWT-GH2 Technology was developed by:

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