

FACTSHEET

Green gases in the pipeline

FIT FOR THE ENERGY TRANSITION: Transmission system operator GAS CONNECT AUSTRIA

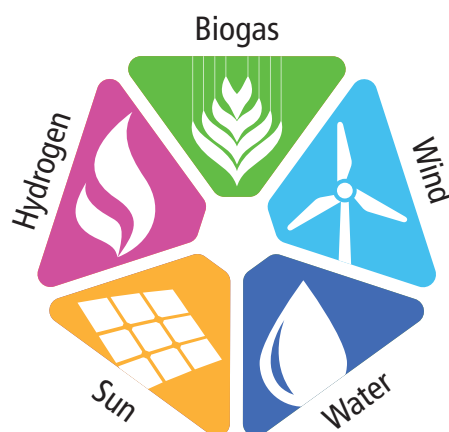
Gas Connect Austria's modern and high-performance infrastructure makes an important contribution to the security of energy supply in Austria and Europe. In the future, it will make a significant contribution to the success of the energy transition. On the one hand, it will act as an infrastructure interface between electricity and gas (with the help of power-to-gas technology). On the other hand, more and more renewable energy sources can flow through the underground gas pipelines alongside today's classic natural gas – particularly biomethane and hydrogen. The fact that enormous amounts of energy can be stored in the gas infrastructure, which can help to compensate for the significant fluctuations in the generation of renewable energies, makes it an indispensable component for the energy transition.

What are green gases?

Biogas is a gas produced from biomass and/or the biodegradable parts of waste through fermentation. Possible sources come from agriculture (e.g. pig and cattle manure), agricultural residues (straw and wood waste), biogenic residues from industry and commerce (e.g. food and beverage waste, waste from animal recycling, wastewater) or municipal waste and sewage sludge.

Biomethane is biogas that is prepared to “natural gas quality” and can be fed into the gas grid. Through the controlled fermentation of agricultural residues in biogas plants, it is even possible to reduce the methane emissions produced through agriculture.

Woodgas is a gas that is produced either by thermochemical pyrolysis or in so-called wood gasifiers.



Hydrogen (H₂) is the most common and lightest chemical element, but it is mostly found in a compound and must therefore be separated from water (H₂O) by electrolysis. If electricity from renewable energies is used, the result is green hydrogen. This can then either be used directly or fed into the gas grid.

Synthetic methane is produced when green electricity is converted into hydrogen using power-to-gas plants and carbon dioxide is added to it. Industrial processes and sewage treatment plants can serve as CO₂ sources or CO₂ could also be extracted from the air in future.

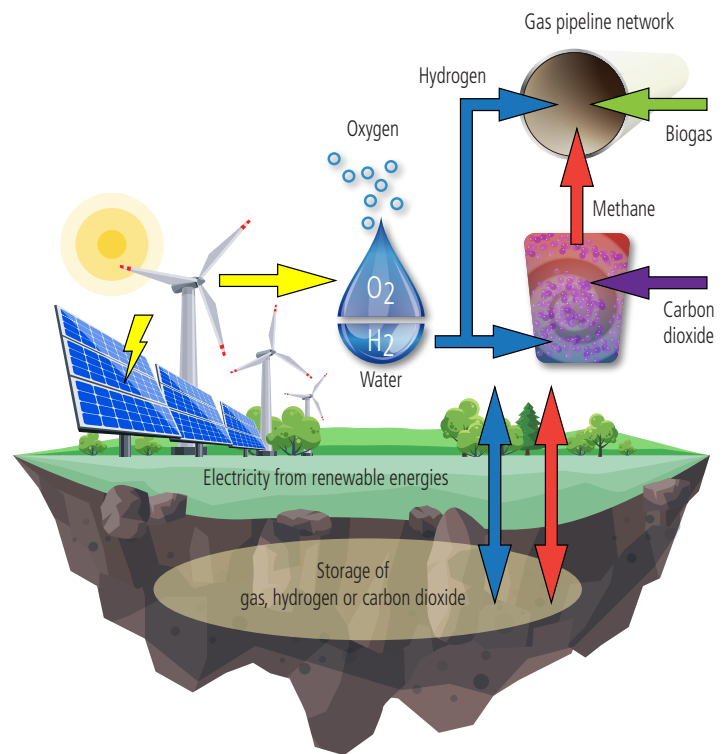
Ready-to-use infrastructure for transporting green gas

Gas networks and flexible gas storage systems are the backbone of a climate-neutral energy system. They make a rapid and (cost)efficient transition possible and contribute optimally and directly to the achievement of European and Austrian climate goals. In the future, transmission operators want to focus more on transporting green gases such as biogas, synthetic gas or hydrogen. The feed-in of biogas as well as the addition (so-called “blending”) of 4% moles of hydrogen in the existing gas network is possible right away. At the current transport volume, this corresponds to approx. 6 TWh or the output of six new Danube power plants. This share could be doubled in two years and could even increase sixfold by 2030.

Gas Connect Austria initiatives for Hydrogen transport

- From 2014 to 2017, electricity from wind turbines was converted into hydrogen at the Auersthal site using a unique electrolysis process – „Wind2Hydrogen“ – and this was then added to natural gas in the existing grid (blending).
- Based on this, a process was developed within the framework of the „HylyPure“ project with the Vienna University of Technology that can remove the hydrogen from the gas pipeline in its pure form in a very energy-efficient manner (so-called “de-blending”).
- Through the „H2EART“ project, the plan is to bring hydrogen to Europe and redistribute it via Austria as a regional hub to neighbouring countries.

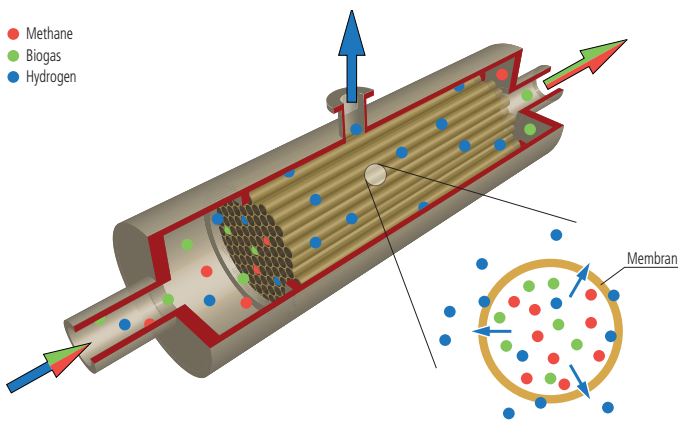
- The joint project with the Austrian electricity transmission system operator APG „P2G4A“ aims to convert green electricity into gas using power-to-gas technology for direct use or feed-in into the gas grid.



Baumgarten natural gas hub as Europe's future hydrogen hub

In order to ensure that the energy supply in the EU remains guaranteed across borders in the future, the long-term aim is to establish Baumgarten as a hydrogen hub or European distribution centre for hydrogen.

Over the decades, the **Baumgarten natural gas hub** has established itself as one of the most important energy hubs in Europe and, represents an important supply hub for Austria as well as for neighbouring countries such as Slovakia, Hungary, Slovenia/Croatia, Italy and Germany. GCA and TAG are working to increase the transportable hydrogen content from 4% to 10% by 2024 and to 25% by 2030. Both companies are part of the European Hydrogen Backbone (EHB) initiative, which is working on the development of a European hydrogen network and is drawing up concrete plans with the European transmission system operators.



Schematic representation of de-blending