



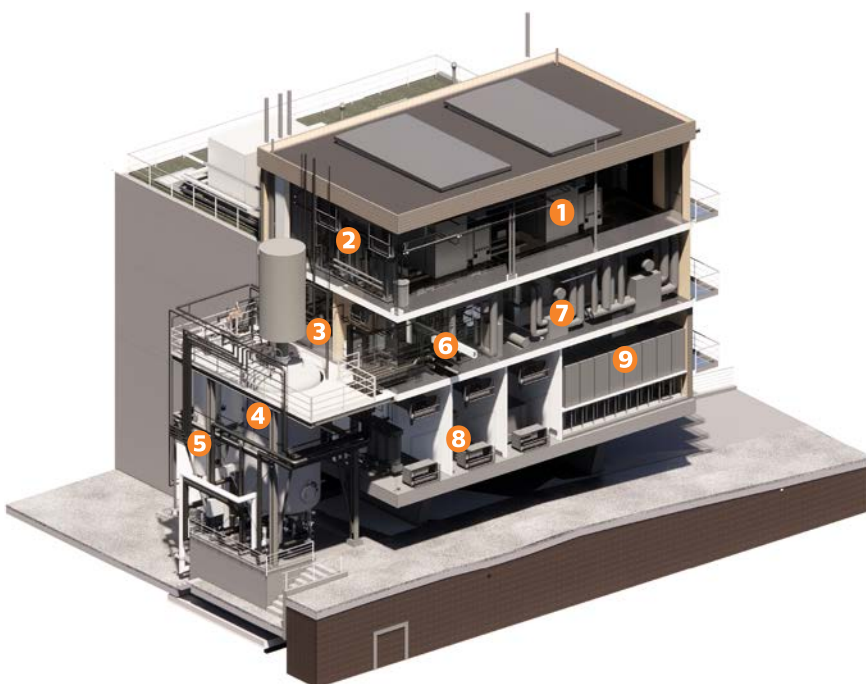
Limeco Power-to-Gas Facility

Limeco worked with its partners to develop the first ever commercially operated power-to-gas facility in Switzerland. Electricity produced from the waste incineration (WI) plant is converted to hydrogen and mixed with sewage gas from a sewage treatment (ST) facility. This produces renewable methane that can be fed to the gas grid.

Project goals

- The technical systems for electrolysis and methanation are integrated into the existing wastewater treatment and waste incineration infrastructure and operated automatically.
- The expected annual renewable gas yield of 18 GWh shall be fed into the local gas grid.
- If there is sufficient demand and the plant is expanded, additional hydrogen can be produced for use as fuel.
- The successful continuous operation of biological methane production and usage of sewage gas has been demonstrated.
- The suitability of PtG plants for flexibilising electricity production in WI and the provision of secondary control power are confirmed.

Plant overview



Electrolysis

1. Electrolytic stacks
2. Water treatment

Biological methane production

3. Gas treatment
4. Methane reactor
5. Gas purification

Building technology

6. Media distribution
7. Heating/cooling distribution

Electrical

8. Transformers
9. Control (Electrical, Measurement, Control and Regulation Technology)

Key figures for power-to-gas plants

1.8 million Nm³

of sewage gas (65% methane/ 35% carbon dioxide) are processed annually.

2,800 Nm³

is the volume of the sewage gas storage tanks to allow a flexible operation of the facility.

10 – 15 GWh

of CO₂ neutral electricity is provided annually by the WI.

2.5 MW

represents the power consumption for electrolytic hydrogen production, i.e. 450 Nm³ H₂ per hour.

50 m³

is the size of the methane reactor in which micro-organisms convert carbon dioxide and hydrogen into synthetic gas.

2%

is the maximum hydrogen concentration that can be fed into the gas grid. One membrane suffices to ensure this.

18 GWh

of renewable gas is fed by the plant into the gas grid annually.

0.8 MW

represents the usable heat which the plant produces for Limeco.

4,000 – 5,000 t

CO₂ are captured each year, corresponding to the output of about 2,000 households.

80%

is the overall efficiency of the plant with waste heat utilisation (without such utilisation it is nearly 45%).

14 million Swiss francs

is the total investment in the project.

15 years

is the minimum working life of the plant.

A project by




in cooperation with






in collaboration with






Hitachi Zosen Inova Schmack GmbH
Siemens Energy AG
TBF + Partner AG

Technology Partner for Methane Production and System Engineering
Technology Partner for Electrolysis
Overall management

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