

## Biomethane - HYSYTECH's technology

### **Biomethane - HYSYTECH has always been at the forefront**

HYSYTECH has been at the forefront of new technologies related to green chemistry and the circular economy for years, in particular on the subject of biofuels.

On the subject of Biomethane, in 2014 HYSYTECH, together with Acea Pinerolese Industriale, built the first biogas upgrading plant in Italy obtained from the anaerobic digestion of MBW.

In 2016, together with EGEA, FCA and CNH, it inaugurated the first full tank of biomethane intended for the refueling of bio-CNG vehicles.

In 2020, thanks to the continuous collaboration with Acea Pinerolese Industriale, a new biomethane plant came into operation, which treats up to 1,500 Sm<sup>3</sup> / h of biogas and feeds the biomethane into the natural gas distribution network for automotive use.

This new plant represents for HYSYTECH a further step forward in the wake of the green economy, in particular in the development of leading technological solutions in sustainability for the production of biofuels and biomethane.

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Hysytech's hybrid process is based on the optimization of water washing and membrane treatment. The right combination of these two treatments allows to avoid other pre-treatments, minimizing operating costs and the environmental impact of activated carbon.

How does it work?

The first stage of treatment takes place through washing in water, without the addition of any chemical agent and in a closed cycle. Subsequently, the biogas, now completely pre-treated and enriched in CH<sub>4</sub>, is sent to a separation section in diffusion membranes. Here the CO<sub>2</sub> permeates faster than methane, allowing to obtain a Biomethane current in network specification.

The hybrid process of HYSYTECH for the production of biomethane combines the robustness of washing with water with the simplicity and compactness of the membranes and is able to minimize the economic impact of pre-treatments, reducing up to 90% the consumption of activated carbon, not only for the removal of H<sub>2</sub>S, but also for the reduction of VOCs and ammonium abatement, without the use of additional equipment (this particular performance is extremely important in plants where biogas is characterized by high contents of these types of impurities, as in the case of the MBW).

It does not end here: the hybrid process of HYSYTECH allows you to optimize energy consumption and significantly reduce the amount of membranes required for purification and the problems related to the pre-treatment of the Biogas arriving at the plant.

In summary, it is a complete system from raw biogas to biomethane ready for use.

The capabilities of HYSYTECH do not stop at the design and construction of plants, they also include the management and maintenance necessary for the activities for industrial and production purposes.

### **Biomethane - The new plant born from the HYSYTECH-ACEA collaboration**

During 2020, a new Biomethane plant came into operation. It is the result, as well as the natural continuation, of the partnership between HYSYTECH and Acea Pinerolese Industriale, started in 2014 with the first biomethane plant by MBW in Italy and confirmed by the results and performances obtained on the field.

The new plant, installed in the Ecological Pole of Acea Pinerolese Industriale, in Pinerolo, treats up to 1,500 Sm<sup>3</sup> / h of biogas, produced by the anaerobic digestion of the organic fraction of waste from separate collection (MBW), and feeds the biomethane into the distribution network of natural gas for automotive use.

The new plant is able to intercept a greater quantity of biogas, thus allowing to reallocate that part that is currently used for cogeneration in order to generate biomethane, which is a more efficient and sustainable energy vector.

This project represents an important step forward in the virtuous cycle of converting waste into resources and is at the forefront in a concrete way: the electrical load necessary for the entire waste treatment and management cycle is supported by cogeneration.

The important plant innovation is also of considerable interest, which allows the exhaust gases of biomethane to be suitably and accurately mixed with other energy flows of the Pole (purifier, landfill, etc.), in order to feed the biogas cogeneration units originally present in the Polo.

This innovation makes it possible to combine a methane recovery of over 99% in the production of biomethane with the enhancement of the existing plant assets.

### **Biofuels - HYSYTECH's commitment**

Not only Biomethane: HYSYTECH has been at the forefront of biofuels for years.

The first plant for the production of bio-hydrogen from biogas produced by the anaerobic digestion of the organic fraction of waste from separate collection (FORSU) was put into service by HYSYTECH in 2020, thus further enriching the Turin company's experience in field of biofuels.

HYSYTECH is also investing in new applications related to Bio-LNG together with Stirling Cryogenics, a Dutch company that has been part of the same group since 2018. In this context, in September 2018 it inaugurated in Troia (FG), within the EU STORE & GO project, the first CO<sub>2</sub> methanation plant in Italy for the production of Bio-LNG.

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**Hysytech S.r.l.** is an engineering company founded in 2003, specialized in the design, development and industrial implementation of new turn-key process technologies and equipment. Our skills start from the know-how in chemical and process engineering, up to commissioning, monitoring and maintenance. We operate mainly in the field of generation, treatment and recovery of industrial gases, organic liquids and energy, according to the best engineering practices, also through the implementation of our technologies.

### **Biometano - Link:**

[INFOGRAFICA](#)

<https://www.hysytech.com/Video/biometano-impianto>

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