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ITALY**

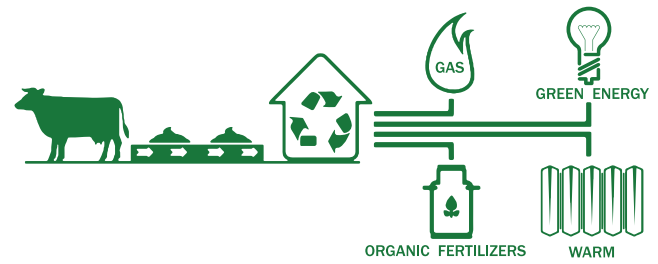
**COMPRESSOR UNITS FOR
BIOGAS AND BIOMETHANE
BIOMETHANE LIQUEFACTION
EQUIPMENT**



What Biogas and Biomethane are?

Biogas is an alternative renewable energy source from agricultural, food and organic waste. In Italy, energy from biogas is part of the decarbonization strategy, since it is a sustainable gas and it is “CO² neutral”.

This type of biogas comes from biomass **anaerobic digestion**. Anaerobic process occurs into an oxygen-free digester and causes the degradation of organic compounds by means of bacteria. The energy released by the chemical bonds in the form of biogas is composed mainly of methane and carbon dioxide and then, in minor parts, by carbon monoxide, hydrogen, nitrogen, water vapour and hydrogen sulphide.



For biomethane production can be used agricultural biomass, both from dedicated cultures (corn and sorghum) and agricultural byproducts, agroindustrial waste, wastewaters and sewage, food waste, garden waste and organic fraction of municipal solid waste (OFMSW).

What's the difference between Biogas and Biomethane?

Biogas is the raw gas, produced by the fermentation process occurring in the digester, while Biomethane is a biogas byproduct that was submitted to a refining and upgrading process with the consequence of a CO² reduction.

Advantages of Biogas and Biomethane

Biogas and Biomethane potentialities are many and its production from food and agricultural waste is a great chance that we can resume in the following table:

ADVANTAGES	
FLEXIBLE	It is used for electric energy production, heat production, transport fuel. Biomethane can be also injected into national gas grid.
RENEWABLE AND PROGRAMMABLE SOURCE	It contributes to the emission reduction and it is similar to natural gas.
SUSTAINABILITY	Biomethane uses, disposes and converts waste material that otherwise would have been wasted.
INCENTIVE	Since it is a renewable source, biomethane takes advantages of incentives, managed by GSE, in the form of economic compensation for electric energy production.
CIRCULAR ECONOMY	The waste turns into resource, improving the environmental sustainability of the supply chain and improving farmers' income.



Decrees and Incentives

Thanks to law n. 145/2018, biogas plants with power less than 300 kW can keep on enjoying the incentives in agreement with the decree DM 23th June 2016, “*Incentivazione dell’energia elettrica prodotta da fonti rinnovabili diverse dal fotovoltaico*”, that substituted DM 6 July 2012. The access to these incentives is conditioned to the self-consumption of the thermal energy produced in this way for industrial use. **These incentives depend on the production plant power and the gas biological origin.**

During the last years the incentives mechanism changed and the existing plants now enjoy different type of benefits: SSP On-site exchange, plant qualification IAFR, powered by renewable sources, TO all-inclusive tariff o CV Green certificates, Incentives GRIN o CIP6/92.

Biomethane decree was issued in 2018 (DM 2 marzo 2018) and promotes the use of biomethane in transport sector, regulates its production, its injection in the gas grid and incentivation by CIC (Certificati di Immissione al Consumo). Meanwhile, the same decree also rules the fulfillment of new plants and the reconversion of the existing ones into biomethane plants.

N.B.: The upgrading plant license owner is the one who enjoys the incentives.



Our Oil Free Compressor Units

Aspro Italy compressor units of series **HRC115** are available also in oil-free version with “distance piece” for all those applications where any oil presence in the gas must be avoided.

This version is not to be mistaken with “non-lube or dry” compressor units, that are used in different activities such as gas turbine plants and biogas compression units installed before upgrading systems; in this latter case, the compressor unit lifts the biogas pressure from a starting value of mbar to the pressure needed for membrane correct application.

Available with different compression stages and motor type, oil-free compressor units have direct motor-compressor coupling or belt drive and they can be equipped with air-cooling or water-cooling system with closed loop circuit.

Remote control allows us to monitor equipment working parameters, to make a real-time reporting to aftersales service in order to promptly fix any problem and reduce any possibility of downtime.

MAIN CHARACTERISTICS	
Number of compressor stages	1 ÷ 4
Inlet pressure range	0 ÷ 75 bar
Outlet pressure	Up to 300 bar
Throws number	2 - 4
Capacity	Up to 1'500 sm ³ /h
Motor power	Up to 400 kW
Cooling type	GAS/AIR - GAS/WATER
Coupling type	Belt / Direct
Starter	Soft-Start / INVERTER
Stroke	70 ÷ 115 mm
Tension / Frequency	400 Vca / 50 Hz
Speed	670 ÷ 1'000 r.p.m.

Our Liquefaction Equipment

Biomethane liquefaction unit on-site represents an efficient application for the reconversion of biogas production plants, where the injection to gas grid is not possible.

Our liquefaction equipment uses the isentropic expansion process and effect Joule-Thomson finding therefore its application after the upgrading plant. Biomethane liquefaction equipment is usually supplied inside soundproof metallic cabinets. This plug-in solution makes easier and faster its installation, start-up and training. The equipment also includes CO² filtration system with CO² concentration not higher than 2.5%.



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Who is Aspro Italy

Aspro Italy S.r.l., company of **GRAF Group** with more than **25 years of experience** in natural gas compression, offers its know-how in supplying compressor units, systems for biomethane frid injection as well as liquefaction equipment.

Thanks to its technical department, Aspro Italy is able to offer high-tech solutions in agreement with all valid regulation, **Aspro Italy is the ideal partner for your liquefaction equipment and customized alternative mechanical compressor units for pressure until 300 bar.**

GRAF Group is located in Nonantola (MO) with 20000 m² production area and 230 employees. It is composed of different business units, including an advanced automation system engineering unit and a laboratory accredited to the Ministry of Univeristy and Research.



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