



GREEN METHANE MAIN REFERENCE LIST



GM Green Methane srl is on the market for the design, construction, start-up as well as routine and extraordinary maintenance of **biomethane production plants by separating CO₂ from biogas generated from agricultural waste or from OFMSW** (Organic Fraction of Municipal Solid Wastes).

In view of the **minimal release of methane (methane slip)** with the outgoing CO₂, GM's technology is attracting increasing interest, as the impact of methane on the greenhouse effect is 25 times greater than that of CO₂.

Thanks to the simplicity of the process, the GM unit is **productive for more than 99% of the time** in a fully automated manner and can be stopped and restarted quickly and easily.

The technology applied to the plants built and in operation, not only fully **meets the performance requirements**, but has also proved suitable for feeding the produced biomethane into the network with a very **high level of purity** and because the plants - which are characterised by high efficiency and **low operating costs** - are perfectly compatible with those for liquefying methane and generating hydrogen from methane. In addition, the CO₂ separated from the biogas is of high purity and suitable for subsequent uses or purposes (**CCU or CCS**) without further treatment.

Biomethane injected into the gas grid

The Biomethane, after a final conditioning in order to meet the local grid specification (drying, odorization and Wobbe index), can be injected into the natural gas grid connected to the civil and/or industrial consumers.



Biomethane as vehicle fuel

Biomethane after compression can be utilized as substitute of the natural gas (Biofuel) for cars, trucks and tractors with a further benefit in reducing the greenhouse impact.



Biomethane for cogeneration

Biomethane can be utilized for high efficiency cogeneration units for combined heat/power production (CHP) owing to the higher energy value compared to the Biogas and to the most efficient reutilisation/integration of the waste heat.



Utilization of removed CO₂

The CO₂ removed by utilizing the GM process to upgrade the Biogas to Biomethane, can be totally recovered at high purity and reutilized as raw material for multiple uses (food grade included).





REFERENCE LIST

updated 02 February 2024

Plant Code	Description	Main Contractor	Owner	Location	Feedstock	Biogas Flow Rate (Nmc/h)	Biomethane production (Smc/h)	Extension of supply	Status	Year (completion)	After Market Services
111	Biogas upgrading plant	Tonello Energie	Renerwaste	Anzio (Rome) Italy	Municipal organic solid waste	750	485	Biogas pretreatment Biogas compression Biogas upgrading package Biomethane dehydration Biomethane compression Utilities Biomethane measurement and delivery	In operation	2019	Plant remote control Predictive maintenance Breakdown maintenance
216	Biogas upgrading plant	n.a.	Mater Biotech	Bottrighe (Rovigo) Italy	Agroindustrial waste	750	495	Biogas pretreatment Biogas compression Biogas upgrading package Biomethane dehydration Flare Utilities Biomethane compression Biomethane measurement and delivery	In operation	2019	Predictive maintenance Breakdown maintenance
218	Biogas upgrading plant	IES Biogas	Renerwaste	Albairate (Milano) Italy	Municipal organic solid waste	1.700	1.050	Biogas pretreatment Biogas compression Biogas upgrading package Biomethane dehydration Biomethane compression Utilities Biomethane measurement and delivery	In operation	2020	Full services & global maintenance Plant Management
343	Carbon Capture Pilot Plant	Confidential	Confidential	North Italy	Waste to Energy flue gas	100 Nmc/h flue gas 6-10% CO2 content	n.a.	Flue gas Compressor Carbon Capture unit	In operation	2021	Full services & global maintenance Plant remote control
251	Biogas upgrading plant	n.a.	Azienda Agricola Leona	Codigoro (Ferrara) Italy	Agricultural Waste (straw)	600	390	Biogas pretreatment Biogas compression Biogas upgrading package Biomethane dehydration Biomethane compression Flare Utilities Biomethane measurement and delivery	in operation	2021	Plant remote control Predictive maintenance Breakdown maintenance



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276	Biogas upgrading plant	n.a.	En Ergon	Ostra (Ancona) Italy	Municipal organic solid waste	750	485	Biogas pretreatment Biogas compression Biogas upgrading package Biomethane dehydration Biomethane compression Utilities Biomethane measurement and delivery	in operation	2023	Under definition
249	Biogas upgrading plant	Tonello Energie	Etra	Bassano Del Grappa (Vicenza) Italy	municipal organic solid waste	850	550	Biogas pretreatment Biogas compression Biogas upgrading package Biomethane dehydration	in operation	2023	Plant remote control Predictive maintenance Breakdown maintenance
329	Biogas upgrading plant	n.a.	Aciam	Avezzano (L'Aquila) Italy	Municipal organic solid waste	950	550	Biogas pretreatment Biogas compression Biogas upgrading package Biomethane dehydration Biomethane compression Utilities Biomethane measurement and delivery	start up phase	2023	Under definition
224	Biogas upgrading plant	n.a.	Sorgenia	Marcallo con Casone (Milano) Italy	Municipal organic solid waste	850	550	Biogas pretreatment Biogas compression Biogas upgrading package Biomethane dehydration Biomethane compression Utilities Biomethane measurement and delivery	In operation	2023	Plant remote control Predictive maintenance
351	Biogas upgrading plant - Line #1	n.a.	Bioland	Casal Cermelli (Alessandria) Italy	Municipal organic solid waste	1.600	1.050	Biogas pretreatment Biogas compression Biogas upgrading package Biomethane dehydration Biomethane compression Flare Utilities Biomethane measurement and delivery	In operation	2022	Under definition



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351	Biogas upgrading plant - Line #2	n.a.	Bioland	Casal Cermelli (Alessandria) Italy	Municipal organic solid waste	1.600	1.050	Biogas pretreatment Biogas compression Biogas upgrading package Biomethane dehydration Biomethane compression Utilities	start up phase	2023	Under definition
231	Biogas upgrading plant	Tonello Energie	Alia	Montespertoli (Firenze) Italy	Municipal organic solid waste	2.500	1.500	Biogas pretreatment Biogas compression Biogas upgrading package Biomethane dehydration Biomethane compression Flare Utilities Biomethane measurement and delivery Biomethane cylinder filling unit	In operation	2023	Under definition
232	Biogas upgrading plant	IES Biogas	Albe	Peccioli (Pisa) Italy	Municipal organic solid waste	1.700	1.000	Biogas pretreatment Biogas compression Biogas upgrading package Biomethane dehydration Biomethane compression Flare Utilities Biomethane measurement and delivery Biomethane cylinder filling unit	to be started up	Planned 2024	Under definition
423	Biogas upgrading plant	n.a.	A2A	Corte Olona (Pavia) Italy	Sewage water treatment slug	750	350	Biogas pretreatment Biogas compression Biogas upgrading package Biomethane dehydration Utilities	test phase	Planned 2023	Under definition
435	Biogas upgrading plant	Bioenerys Agri	IES Biogas	Ostellato (Ferrara) Italy	Agricultural Waste (mix)	2.650	1.500	Biogas pretreatment Biogas compression Biogas upgrading package Biomethane dehydration Utilities	Under Construction	Planned 2024	Under definition