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innovations in the BIOMETHAne uniVERSE

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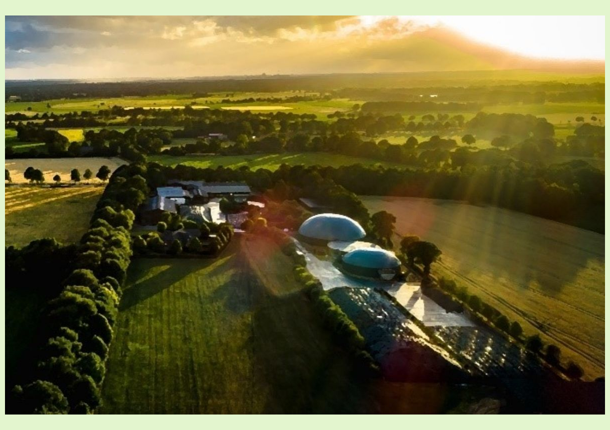
September 2024



BIOMETHAVERSE (**Demonstrating and Connecting Production Innovations in the Biomethane Universe**) sets out to **diversify the technology basis for biomethane production** in Europe, increase its cost-effectiveness and contribute to the uptake of biomethane technologies.
To this aim, **5 innovative biomethane production pathways** will be demonstrated in five European countries: **France, Greece, Italy, Sweden and Ukraine**.

News from the biomethane universe

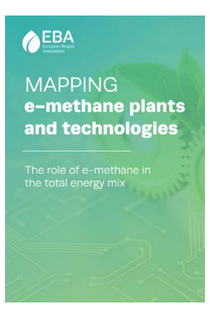
Find out what is tending in the biomethane, biogas and renewable energy sector

First assessment of European e-methane rollout released

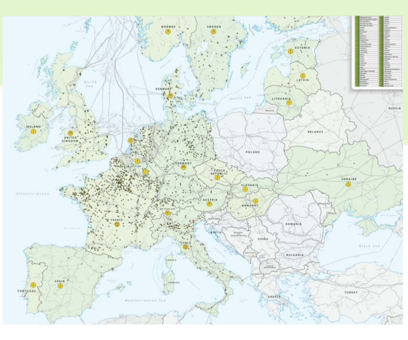
The European Biogas Association, in collaboration with experts in biogas and methanation technologies, has launched the first assessment of the rollout of e-methane in Europe. This synthetic renewable fuel will play a key role in Europe's electricity grid, scaling up biomethane production in the coming years, and enabling innovative synergies between biogases and hydrogen production in the **future energy mix**.

According to the white paper *Mapping e-methane plants and technologies*, **e-methane production in Europe is expanding rapidly**. There are currently 35 operational plants, 33 of which are fully renewable. Germany leads the way with 14 facilities. Additionally, 20 new e-methane plants are either planned or under construction in Europe, indicating further growth in the sector.

Methanation has proven successful in various **pilot and demonstration projects**, including our BIOMETHAVERSE project, which showcases innovative biomethane production pathways. One notable example is our case study in Sweden. "*Our demonstration plant is showcasing biological syngas methanation to produce 16 kW of methane from forestry residues and renewable hydrogen between 2024 and 2026*", explains Karin Berg, R&D Engineer at RISE Research Institutes of Sweden.



The **EBA White Paper** is available, here.



The new edition of the Biomethane Map shows a 37% increase in biomethane capacity in the EU compared to the previous map

According to the European Biomethane Map released in July 2024, Europe has reached an installed capacity of 6.4 bcm of biomethane per year. 81% of the capacity corresponds to plants located in the European Union (5.2 bcm). The EU-27 countries' growth has reached 37%, while the capacity of the non-EU countries analysed grew by 20% compared to the 2022-2023 dataset.

The map features **1,548 biomethane plants**. This represents a 32% growth in the number of plants in Europe compared to the previous edition, which featured 1,174 units. Over 80% of the reported biomethane plants are now connected to the gas grid, with nearly half of them (49%) connected to the distribution grid and 14% to the transportation grid.

Explore the interactive Biomethane Map

> *"The 2024 Biomethane Map highlights the significant growth of the biomethane sector, demonstrating industry's determination in achieving the REPowerEU targets. To sustain this progress, it is crucial for EU member states to identify clear targets and pathways and for the EU itself to support the sector with long-term policies and administrative simplification for operators. This commitment will ensure a robust and resilient energy transition across Europe."*
>
> **Giulia Cancian, EBA Secretary General**

Pills from the project

Discover project activities and insights coming from BIOMETHAVERSE's research team

BIOMETHAVERSE joins the EBA in designing effective European R&I investments for biogas production scale-up

To safeguard Europe's strategic autonomy in biogas technologies, consolidate existing production capacities, and ensure technical, economic, and political efficiencies, investing in innovation and demonstration projects is crucial.

BIOMETHAVERSE is proud to announce its participation in a forward-thinking initiative spearheaded by our scientific coordinator, the European Biogas Association. EBA has recently (May 2024) published the document *Scaling-up Biogases Production. Shared recommendations for the design of future EU research and innovation investments*, focusing on scaling up biogas production by **promoting better management practices and enhancing circularity** within the industry.

This actionable document is the result of a **collaborative effort** that unites esteemed universities, leading research institutes, committed associations, and various R&I initiatives. Together, they are working towards improving the sustainability and efficiency of the biogas sector. As a Horizon research project dedicated to advancing biogas technologies, BIOMETHAVERSE is excited to be among the signatories of this influential statement.

The joint statement outlines a **shared vision and recommendations for future EU research and innovation investments**. It emphasizes the need to advance sustainable biogas production processes, integrate biogas production with other innovative technologies, and explore new production methods and specific end-use applications. **Read More**

Exploring Biomethane's Future: Insights from BIOMETHAVERSE's 3-Day Event in Thessaloniki

Just before Summer break, BIOMETHAVERSE's large family had the chance to meet up for a 3-day event to discuss the project's progress and continue its exploration of key industry developments and innovations in biomethane production.

As a side event of the project's 4th General Assembly, a workshop on Biomethane & Sustainability brought together 38 industry experts and stakeholders to discuss the role of biomethane in advancing a circular economy, promoting energy independence, and creating green jobs.

The event, hosted by CERTH in June 2024 in Thessaloniki, featured insightful presentations and discussions on the latest developments in biomethane and renewable gases.

Read More and Download Presentations

11th International Conference on Renewable Energy Gas Technology - REGATEC 2025

20-21 May, 2025 - Weimar, Germany
(Hybrid Event)
Website: https://regatec.org

The conference is being organized in partnership with the Swedish BioGenGas Innovation Cluster and the Horizon Europe project, CarbonNeutralLNG. The first day will feature sessions focused on Biogas and Green LPG, spearheaded by the BioGenGas Innovation Cluster. On the second day, the spotlight will shift to the CarbonNeutralLNG project with a symposium dedicated to Methanation and Liquefaction, complemented by sessions on cutting-edge technical breakthroughs and innovations.

Registration is open here.

Flashes from our Demos/Countries

Updates from our pilot demonstration sites, where innovations in the biomethane universe happen!

In-Situ and Ex-Situ Electro-methanogenesis (EMG) in France

The EMG pilot was initially foreseen to be installed at Eppeville site (Haut de France). However, due to operational constraints, a new location was decided in May 2024 with ENGIE BiOZ : Coevron Mayenne.
The new site is very similar to the initial one in Eppeville. It covers 2.6 ha surface and produces 2,000,000 m3 of CH_4 per year. The plant has a capacity of 21 GWh, an amount of gas comparable to the consumption needs of 1,900 homes. Up to 220 Nm3/h are injected into the natural gas grid.
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Ex-Situ Biological Methanation (EBM) in Italy

August saw significant advancements in the Italian case study as the ozonolysis plant installation has been completed, including a 12 m³ liquid oxygen tank, an ozone generator, and most importantly, the contact reactor where sludge and ozone will interact to enhance methane production.
In the upcoming weeks, the oxygen tank will be filled, and the entire system will undergo rigorous testing before the first field trials commence.
Read More

Ex-Situ Thermochemical/catalytic Methanation (ETM) in Greece

Greek Demo Advances Reactor Design. The Greek demo is making significant progress in optimizing its biogas-to-biomethane conversion technology. Our team is currently focused on refining the reactor's design, a key component in ensuring the effective upgrading of raw biogas into high-purity biomethane. The reactor serves as the core of the demo, where biogas undergoes a three-step thermocatalytic methanation process.
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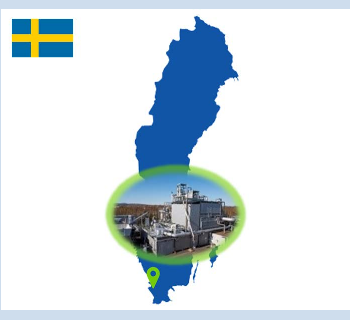
Ex-Situ Syngas Biological Methanation (ESB) in Sweden



Biomethane production has started at the site in Höganäs. In August, an important milestone in the project was achieved when the actual trials in the demonstration plant in Höganäs could begin – biological methanation of syngas from biomass gasification. The Swedish demo plant is now fully installed and long-term trials have begun. The construction has been a collaboration between Wätsilä, responsible for the design and construction of the reactors, and RISE, responsible for the design and construction of the other components.
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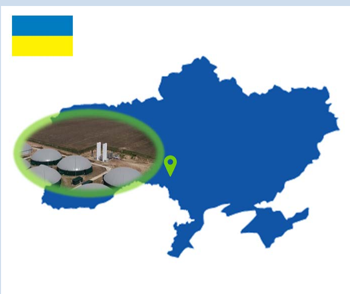
In-Situ Biological Methanation (IBM) in Ukraine



The impact of the war on the Ukrainian biogas sector. Since the beginning of the full-scale Russian invasion, 17 GW of Ukrainian power generation remained occupied. Starting from March 2024, another 9 GW were damaged or completely destroyed on the controlled territory of Ukraine, including:
• 90% of coal and gas power plants,
• 70% of wind farms,
• 50% of hydropower plants,
• 30% of solar PV plants,
• 5% of biogas and biomass plants.
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Ukraine: biomethane export unblocked. In September 2024, the Ministry of Finance of Ukraine published an order defining the procedure for customs clearance of biomethane transported by pipeline. Effectively, this allows the export of biomethane to begin.
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Meet the BIOMETHAVERSE Team

The BIOMETHAVERSE multidisciplinary consortium includes 22 partners form 9 European Countries on a 5-year mission to test and deliver market-ready innovations in biomethane production.

Co-funded by the European Union

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Our mailing address is: info@biomethaverse.eu

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