



Press Release
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ENGIE announces two new major collaborations to foster new innovative green gas production methods across Europe

- Cooperation with Göteborg Energi in Sweden for the industrialization of the dry biomass-to-gas production approach
- Development of the AMBIGO project, the first dry biomass-to-gas project located in the Netherlands

ENGIE reaffirms its commitment to develop new innovative green gas production methods by announcing today two major cooperations. Green gas is a key element of the energy transition because of its potential to significantly reduce CO₂ emissions and provide a sustainable source of energy while contributing to the development of decentralized new energy solutions.

While the classical biomass-to-gas approach uses organic waste fermentation by anaerobic digestion to produce green gas, and is widely developed and known, the "new biomass-to-gas production approach is focused on the gasification of dry biomass, such as wood waste, straw and dry residue from forests, agriculture and paper industry, and is still at its first demonstrations stage. Its technical potential for European countries (EU27) is 880 TWh/year, and like any new technological pathway will rely on the development of a new group of dedicated dry biomass-to-gas industrial players.

ENGIE has therefore first signed a technical and commercial cooperation contract with Göteborg Energi, to push further the industrialization of this dry biomass-to-gas production approach.

The agreement covers 3 main areas of cooperation: sharing industrial know-how on commissioning plants and their operations, commercial cooperation on green gas retailing, and innovation regarding the technologies used.

Göteborg Energi is the energy supplier of the city of Goteborg in Sweden. It has developed the first commercial dry biomass-to-gas production plant in Europe called GOBIGAS with 20 MW_{th} of green gas produced from woody biomass coming from the surrounding forests and injected in the Swedish gas grid. The company aims to increase the content of green gas in the Goteborg city energy mix and deliver greener solutions for heat, power and mobility to their 210 000 customers in Sweden.

Secondly, ENGIE is now also involved in the Ambigo project, the first dry biomass-to-gas project which will be located in Alkmaar, Netherlands.

Ambigo aims at developing innovative gasification technology more focused on waste valorization. With a huge market forecast, the Dutch government wants to accelerate the development of that new green industry and will support the project with a dedicated feed-in tariff for the injection of the produced biogas in the Dutch grid. ENGIE brings engineering and operational know how to the project.

"We are convinced that green gases and new ways to produce them with flexibility at local level, while valorising all types of residues, both humid and dry, will play a major role in the energy revolution we're living right now. We are therefore partnering with the European best in class to accelerate the deployment of our vision. We are a group of forward looking players that need to share their views to make this future happen. It is not about competition, it is about setting up alliances to move together faster and for the benefit of our clients and society at large" says Sandra Lagumina, Executive Vice-President in charge of Infrastructure BUs and China at ENGIE.

"We are investing in new technologies to fuel the market with biogas that has been produced locally in small units starting from dry residues such as wood. These residues do not degrade naturally by themselves in digesters like humid biomass does. They actually need specific technologies based on gasification to produce biogas and serve different uses such as green mobility, heating, industrial processes, etc. to achieve the energy transition" says Thierry Lepercq, Executive Vice President in charge of Innovation, Research and Technology at ENGIE.

To get involved this new technological path, ENGIE has already launched the GAYA dry biomass-to-gas R&D demonstration project in 2010 in France together with 10 other partners, each with its own world-class expertise. With a total investment of €60 million (Including €18.7 million from ADEME as part of its "Investments for the Future" program), and built in the South of Lyon, this R&D platform will be used to test biogas production via gasification on a pre-industrial scale and will be operational mid-2017. The aim is to develop small modular reactors that can have a variable biomass load thanks to an appropriate design of the gasification reactor (circulating fluidized bed).

France has set itself some ambitious targets for the development of green gas with an objective of 10 % in the grid by 2030, and ENGIE has naturally committed itself to develop new technologies with the support of public and private partners to find new ways to produce biogas, beyond the traditional one. This dry biomass-to-gas technology will enter ENGIE portfolio in addition to the other green energies already developed, namely wet biomass-to-gas, hydrogen including power-to-gas, wind, solar and marine energy.

About ENGIE

ENGIE develops its businesses (power, natural gas, energy services) around a model based on responsible growth to take on the major challenges of energy's transition to a low-carbon economy: access to sustainable energy, climate-change mitigation and adaptation and the rational use of resources. The Group provides individuals, cities and businesses with highly efficient and innovative solutions largely based on its expertise in four key sectors: renewable energy, energy efficiency, liquefied natural gas and digital technology. ENGIE employs 154,950 people worldwide and achieved revenues of €69.9 billion in 2015. The Group is listed on the Paris and Brussels stock exchanges (ENGI) and is represented in the main international indices: CAC 40, BEL 20, DJ Euro Stoxx 50, Euronext 100, FTSE Eurotop 100, MSCI Europe, DJSI World, DJSI Europe and Euronext Vigeo (World 120, Eurozone 120, Europe 120 and France 20).

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