

Boost to a circular economy project that will convert rice straw into renewable gas

- Enagás, Genia Bioenergy and Naturgy sign a protocol with the Regional Government of Valencia (Generalitat Valenciana) to promote the production of 87 GWh per year of renewable gas from rice straw and introduce it into the gas infrastructure.
- This initiative will also improve the air quality around the city of Valencia and its metropolitan area, as it helps to solve the environmental problem of pollutant emissions associated with the burning of rice straw, thanks to a process of energy recovery that represents a clear model of circular economy.
- By means of anaerobic digestion technology, waste is recovered by converting it into biogas which, following an enrichment or upgrading process, leads to biomethane, a renewable gas that is injected into the gas network to be used for the same end uses as natural gas, and also as a fertiliser that can be reused in agriculture.
- This management model aims to help improve agricultural practices by bringing sustainability to rice farming in the Albufera and allowing the rice straw to be managed sustainably and with minimum environmental impact.

Enagás, Genia Bioenergy, Naturgy and Nedgia, Naturgy's gas distributor, have signed a protocol with the Regional Ministry of Agriculture, Rural Development, Climate Emergency and Ecological Transition of the Generalitat Valenciana to promote a circular economy project. Rice straw will be used to produce 87 GWh per year of renewable gas, equivalent to more than 15% of the natural gas consumption of the city of Valencia. This fully decarbonised gas, which will be purified for injection into the gas infrastructure, will prevent 150,000 tonnes of CO₂ from being released into the atmosphere.

The event was attended by the Regional Minister for Agriculture, Rural Development, Climate Emergency and Ecological Transition of the Generalitat Valenciana, **Mireia Mollà**; the Regional Secretary for Climate Emergency and Ecological Transition, **Paula Tuzón**; the Director General of Environmental Quality and Education, **Joan Piquer**; the Director of Innovation and Renewable Gases of Enagás, **Jesús Gil**; the CEO of Genia Bioenergy, **Gabriel Butler**; the Head of Biomethane Projects of Naturgy, **Marta Peiró**; and the Head of New Business Development of Nedgia, **Francisco Torres**.

The launch of this initiative has its origin in a pilot project promoted by Nedgia with the technology developed by the Valencian engineering company Genia Bioenergy, which was subsequently validated on a pre-industrial scale by the AINIA technology centre. This pilot demonstrated the feasibility of producing renewable gas from rice straw using anaerobic digestion technology, despite the high silica and lignocellulose fibre content of this bio-waste, and the solution it could provide to solve, to a large extent, the environmental problem of rice straw management in a protected area of natural interest such as l'Albufera Natural Park.

Contribution to the energy transition

This project offers a solution to environmental problems. Using the anaerobic digestion technique, the waste is turned into renewable gas, which is injected into Nedgia's distribution network to be used for the same end uses as natural gas, as well as nutrients and fertiliser

products that can be applied, once again, in agriculture, creating a circular economy model. In doing so, the project contributes to advancing the decarbonisation goals and the process of achieving the energy transition.

Likewise, the implementation of this initiative will help to solve, to a large extent, the environmental problem of poor air quality generated by the burning of rice straw in the surroundings of Valencia and its metropolitan area, as well as the problems with irrigation ditches and aquifers, and the degradation of water and soil due to anoxia and greenhouse gas emissions when the straw is left to rot in the open air, facilitating more sustainable agricultural uses in an environment with a high ecological value.

This pioneering initiative, which promotes investments for the improvement and sustainability of agricultural practices, can be applied to other large areas of Spain where rice is grown, such as the Ebro Delta, Extremadura or the Guadalquivir marshes, while promoting sustainable economic development of rural areas and territorial cohesion in areas with demographic challenges.

Green energy

Renewable gas (in this case biomethane) is a green energy with zero emissions balance, which is fully interchangeable with natural gas, so it can be distributed through the nearly 90,000 kilometres of existing gas infrastructure and used with the same energy applications in homes, industries, businesses and also for mobility in transport, helping towards decarbonisation.

The development of renewable gas will contribute to meeting some of the European Union's energy and climate targets, reducing greenhouse gas emissions and increasing the use of renewable energy.

About Naturgy group

Naturgy is committed to the development of renewable gas on a commercial scale and has experience gained in projects launched in recent years such as the Methamorphosis, in Vilasana (Lleida); the Elena plant in Cerdanyola del Vallés (Barcelona), the first facility that has this year injected renewable gas from landfill into the gas distribution network; as well as the one located in the wastewater treatment plant of Bens, in A Coruña, co-financed by the Xunta through ERDF funds to produce biomethane from wastewater for mobility and injection into the network.

It is worth highlighting the company's capacity to carry out this type of project, thanks to its extensive knowledge of the natural gas sector and the strength and capillarity of its networks, which has made it the leading company in the gas distribution sector in Spain. Through its subsidiary Nedgia, it has almost 645,000 natural gas supply points in almost 200 municipalities in the Valencia Region. Its main asset is the almost 9,200 kilometres of networks that nowadays allow the safe and efficient delivery of natural gas energy supply and also the distribution of renewable gas, as well as hydrogen in the future. Innovation, proximity and customer service are part of its *raison d'être* and characterise its activity.

About Enagás

Enagás is a Transmission System Operator (TSO) with 50 years' experience in the development, operation and maintenance of energy infrastructure. The company operates in eight countries: Spain, the United States, Mexico, Chile, Peru, Albania, Greece and Italy. The company has over 12,000 kilometres of gas pipelines, three underground storage facilities and eight regasification plants. In Spain it is the leading natural gas transmission company and the Technical Manager of

the Gas System. Enagás has pledged to be carbon neutral by 2040 and is firmly committed to the decarbonisation process.

The company is behind the development of projects to promote renewable gases — green hydrogen and biomethane — sustainable mobility and energy efficiency, among other areas. Enagás is the world leader in its sector in the latest edition of the Dow Jones Sustainability Index (DJSI) and has received the highest score to date in Spain from S&P Global Ratings according to ESG criteria (environmental, social and corporate governance) in all sectors.

About Genia Bioenergy

Genia Bioenergy is the subsidiary of the Genia Global Energy Group, dedicated to developing, designing, constructing and operating facilities for the production and upgrading of renewable gas. The Group aims to propose new models and technologies for the generation, use and management of energy based on sustainability and renewable sources.

Genia Bioenergy is a company dedicated to bioengineering, specialised in renewable gases, biogas, biomethane and organic waste recovery processes (“Waste2Energy”). It has experience in all stages of the energy business, from conceptual or basic engineering, project development, detailed engineering, construction and operation of biogas and biomethane plants, and has the technical and human resources for the comprehensive development of projects, from the identification of opportunities to the location, promotion and administrative processing, project management, construction and operation and maintenance of renewable gas projects.

Genia Bioenergy has extensive experience in the design and execution of projects of varying complexity involving biogas and biomethane for large national and international clients, as well as participation in various R&D&i projects associated with bioenergy. In 2014, it pioneered the design of Europe’s first industrial plant capable of obtaining biogas from lignocellulosic materials (wood) in Leeuwarden (Netherlands). This technology is the basis for the bio-digestion of rice straw, as it is a bio-waste that also has a high fibre and cellulose content, making it difficult to manage.