



PRESS RELEASE

14 September 2023

90% of CO₂ emissions prevented: launch of the ChOC pilot, A low-carbon industrial gas boiler



- 16 partners launch construction of the industrial ChOC pilot;
- Winner of the France 2030 DEMIBaC call for projects – development of technological building blocks and pilots – creation of first industrials combining supply and demand –;
- Prime Minister Elisabeth Borne has allocated €1.2 million to the project of the €2.9 million that it requires.

In a letter sent to several members of the consortium this summer, the Prime Minister paid tribute to the high quality of the project previously examined by the ADEME. She also emphasised that the pilot is "fully in line with France's targets to reduce its emissions by 2030, and the strategy of speeding up decarbonisation of industry set by its national low-carbon strategy".

The ChOC CO₂ emissions by more than 4 million tonnes annually in France

The boiler will be designed and built at the Babcock Wanson plant in Nérac (Lot-et-Garonne). Fives will design and supply the Pillard[®] combustion system integrated into the boiler.

In early 2024, the 3 MW boiler and the CO₂ capture / liquefaction system built by VERDEMIBIL BIOGAZ will be delivered to the Villers-Saint-Paul (Oise) industrial site operated by ENGIE Solutions. This is where the pilot will be tested. Naldeo Technologies & Industries will coordinate the project's engineering throughout its duration. The ChOC boiler could go on sale starting in 2025. **Replacing 1000 industrial boilers with this new one could prevent 4 million tonnes of CO₂ emissions per year¹.**

An innovative and high-performance technology to capture and make use of CO₂

What is innovative about the ChOC boiler is the fact that it uses oxygen instead of air during the combustion process: this is what is known as oxycombustion. In addition to improving the boiler's performance, the process concentrates the CO₂ produced with a view to capturing and then making use of it. The boiler, used in conjunction with the CO₂ capture and liquefaction system, could reduce the direct CO₂ emissions² generated by industrial boilers to produce steam and hot water by more than 90%. In so doing, it would meet the stringent requirements currently weighing on manufacturers in terms of decarbonisation. A technology that is being closely monitored by manufacturers in the paper / cardboard, chemicals and agri-foods sectors.

Decarbonising industry effectively: 16 players brought together to create a sector of excellence in France

The consortium, run by Naldeo Technologies & Industries, is made up of energy specialists, equipment builders, scientific experts and manufacturers. Babcock Wanson, ENGIE Solutions, Fives, GRDF, GRTgaz, TotalEnergies, VERDEMIBIL BIOGAZ are partner members involved in the project. Agrial, Agro mousquetaires, Bonduelle, Carboneo, Coca-Cola, Constellium, Eiffage Énergie Systèmes and the University of Paris are observer members.

¹ Assumptions adopted: 1000 3 MW gas boilers operating 7000 hours per year: associated gas consumption: 21 TWh (billions of kWh); 90% reduction in direct CO₂ emissions resulting from this consumption compared with a traditional gas boiler.

² The emissions taken into account are direct emissions (scope 1).

About Naldeo

With nearly 300 employees spread over 12 sites in France, engineering and consultancy company Naldeo has expertise in all climate-related issues (energy, water, waste, environment and biodiversity) and operates on behalf of manufacturers, regions and stakeholders (investors, banks, insurance companies). In 2023, the Naldeo set itself the target of reducing its clients CO2 emissions by at least 150,000 tonnes.

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About Babcock Wanson

The Babcock Wanson group is a major international player involved in the energy transition and provider of equipment and solutions for industrial boiler plants. With more than 100 years of experience, the group provides custom solutions for reducing its clients' energy consumption and environmental impact.

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About ENGIE Solutions

ENGIE Solutions is the long-term ally of cities, industries and tertiary companies on the road to decarbonisation. To accelerate their energy transition and better combine economic performance and energy efficiency, our 16,000 employees work every day in the heart of the regions to devise energy mixes and facilities to meet our clients' needs, according to their resources, through a palette of complementary solutions such as local energy networks, on-site production of decarbonised energy, or our energy performance services.

ENGIE Solutions is a brand of ENGIE Group, one of the world's leading low-carbon energy and service groups, committed to accelerating the transition towards a carbon-neutral world. ENGIE Solutions recorded turnover of 6.2 billion euros in 2022.

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About Fives

Fives is your partner for industry that is more virtuous and more efficient

From the very first railway lines to the lifts in the Eiffel Tower and factory 4.0, for more than 200 years, Fives has been designing breakthrough solutions and technologies for use in industry. As a forerunner in decarbonisation and digitalisation, Fives is always one step ahead of its clients thanks to its ability to anticipate their needs. By catering to the specific features of each market on a local basis, Fives employs 8500 people in 25 countries and combines economic and environmental performance. For more information, visit www.fivesgroup.com

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About GRDF

As France's main natural gas distribution system operator, **GRDF** distributes natural gas to more than 11 million customers every day for heating, cooking, mobility and industrial processes, regardless of their supplier. To do this, in compliance with its public service remit, GRDF designs, builds, operates and maintains the largest distribution network in Europe (205,809 km). It delivers gas to more than 9500 cities, towns and villages, ensuring safety for people and property, and guaranteeing the high quality of the gas distributed. Gas is a modern, available and economical form of energy that is increasingly environmentally friendly. With the boom in green gas, a locally produced renewable gas, the gas network is now a vital component of the ecological transition. GRDF is a key partner, supporting regional communities and helping them to achieve their net zero targets via their energy and sustainable mobility policies.

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About GRTgaz

GRTgaz is Europe's second-largest gas carrier, with 32,618 km of pipes and 640 TWh of gas transported. The company has 3330 employees and generated nearly €2.1 billion in turnover in 2022. GRTgaz has a mission statement: "Together, we enable an energy future that is safe, affordable and climate neutral". GRTgaz is an innovative company undergoing a major transformation to adapt its network to new ecological and digital challenges. It is committed to a 100% carbon-neutral French gas mix by 2050. It supports the hydrogen and renewable gas sectors (biomethane and gas from solid and liquid waste). GRTgaz carries out public service missions to guarantee the safety of gas transmission for its 879 clients (shippers, distributors, industrial companies, biomethane plants and producers). With its subsidiaries Elengy, the European leader in LNG terminal services, and GRTgaz Deutschland, operator of the MEGAL transmission network in Germany, GRTgaz plays a key role on the European gas infrastructure scene. The company exports its expertise internationally, in particular services developed by its research centre, RICE.

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About TotalEnergies

TotalEnergies is a global multi-energy production and supply company for oil and biofuels, natural gas and green gas, renewables and electricity. It has more than 100,000 employees, all committed to providing energy that is more

affordable, cleaner and more reliable, and that can be accessed by as many people as possible. TotalEnergies operates in nearly 130 countries and places sustainable development in all its dimensions at the core of its projects and operations to contribute to people's well-being.

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About VERDEMOBIL BIOGAZ

Located in Montaigu-Vendée, VERDEMOBIL BIOGAZ specialises in the design, manufacture, maintenance and operation of units to recover gas of renewable origin. Its subsidiaries use the energy that these units produce.

The company has a dynamic team of more than 35 people. It is constantly growing to support BioCH₄, BioCO₂, BioGNL and BioHydrogen projects in France and internationally.

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