

PRESS RELEASE

Circular Economy: TotalEnergies and Air Liquide innovate to produce Renewable, Low Carbon Hydrogen at the Grandpuits Zero Crude Platform

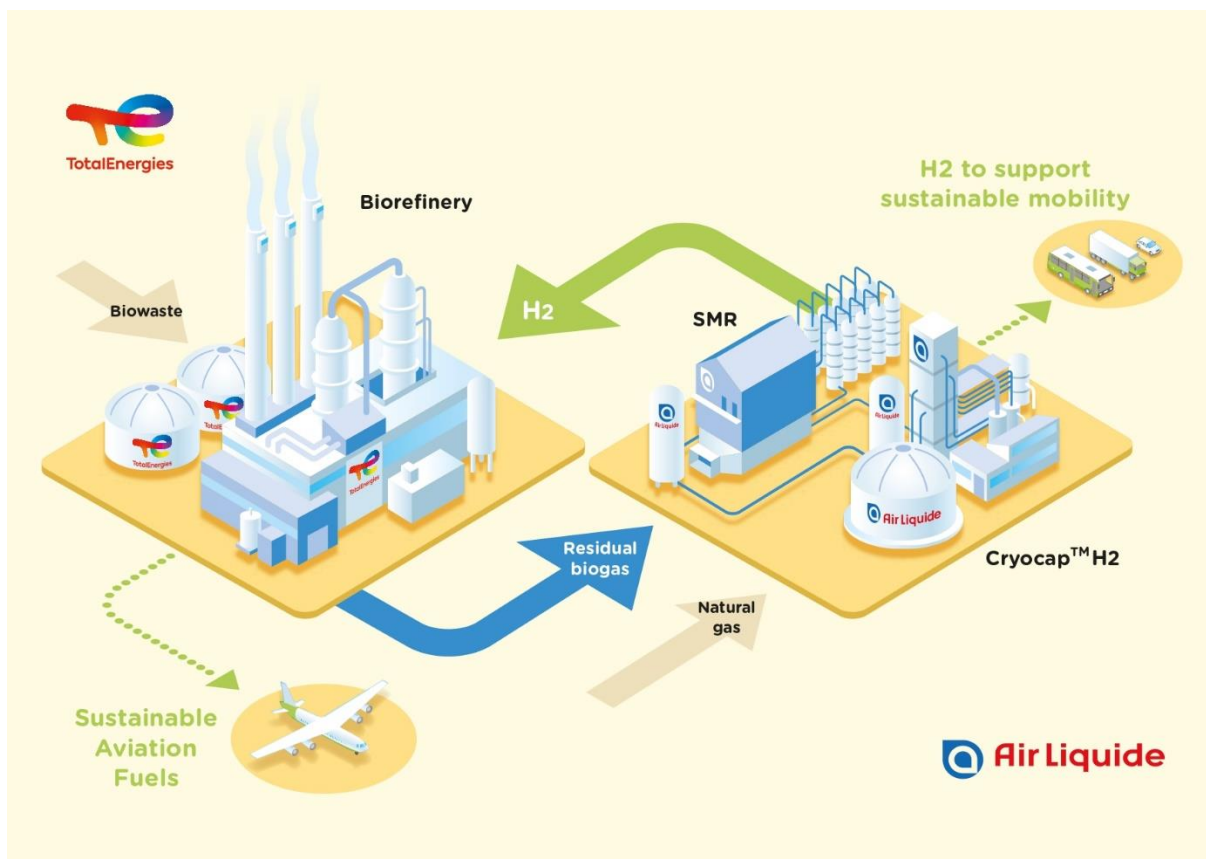
Paris, November 22, 2022 – TotalEnergies and Air Liquide are innovating to produce and valorize renewable, low carbon hydrogen at the Grandpuits zero crude platform. Under a long-term contract committing TotalEnergies to purchase the hydrogen produced for the needs of its platform, Air Liquide will invest over €130 million in the construction and operation of a new unit producing hydrogen. This unit will partly use biogas from the biorefinery built by TotalEnergies and will be delivered with Air Liquide's carbon capture technology Cryocap™. These innovations will prevent emissions amounting to 150,000 tons of CO₂ a year compared to current processes. TotalEnergies' biorefinery will use the unit's hydrogen to produce sustainable aviation fuel.

In line with the two companies' shared ambition to get to net zero by 2050, the project includes sustainable and circular innovations:

- The **new hydrogen production unit**, with the capacity to produce over 20,000 tons a year will produce hydrogen that is partly renewable, thanks to the recycling of residual biogas from the Grandpuits biorefinery, in place of the natural gas that is normally used.
- This unit will be delivered with a **carbon capture technology**, allowing it to help reduce the platform's carbon footprint, by capturing over 110,000 tons of CO₂ a year for reuse in food and industrial applications.
- Most of the unit's renewable, low carbon hydrogen will be used by the biorefinery itself, to **produce sustainable aviation fuel**, but it could also be used to support sustainable mobility in the Ile-de-France region.

"By recycling the biogas produced by the biorefinery into renewable hydrogen, this innovative project makes full use of the conversion of the Grandpuits refinery into a zero crude platform harnessing the potential of biomass, especially in the production of sustainable aviation fuel," said **Bernard Pinatel, President, Refining & Chemicals, TotalEnergies**. "Combined with the production of low carbon hydrogen and the capture of CO₂, this project contributes to TotalEnergies' ambition to decarbonize all of the hydrogen used by its European refineries by 2030."

"This innovative project is characterized by the combination of several solutions in order to produce renewable and low-carbon hydrogen, and contribute to the decarbonization of TotalEnergies' Grandpuits site. It also provides the opportunity to recycle CO₂ as part of a circular economy approach while securing its supply for agri-food applications. This project illustrates Air Liquide's expertise in working with its customers on customized solutions to help them reduce their carbon footprint and actively participate in the fight against global warming. It provides yet another example of the key role that hydrogen will play to succeed in the energy transition," added **Pascal Vinet, Senior Vice President and member of the Executive Committee, Air Liquide, in charge of Europe Industries activities**.



About TotalEnergies in Grandpuits

Commissioned in 1966, Total's Grandpuits-Bailly-Carrois refinery was for a long time the only refinery in the Paris region. In September 2020, TotalEnergies launched a project to convert the site, in line with its strategy to become carbon neutral by 2050. This zero-crude project, with a total investment of more than 500 million euros, is based on the development of several future-oriented activities in the field of biomass, renewable energies, and the circular economy: chemical recycling of plastic waste, production of biosourced and biodegradable bioplastics, production of biofuels for the aviation sector, construction of a solar farm and electricity storage by batteries. The start-up of these new units will begin in 2022, and they should all be operational by 2025.

TotalEnergies and renewable & low-carbon hydrogen

TotalEnergies is convinced that renewable and low-carbon hydrogen will play a major role in the energy transition. The Company is working with its suppliers and partners to decarbonize all the hydrogen used in its European refineries by 2030. This represents a reduction in CO₂ emissions of 3 million tons per year. Further out, TotalEnergies aims to pioneer the mass production of renewable and low carbon hydrogen to meet demand for hydrogen fuel as soon as the market takes off, notably to help decarbonize heavy transport. The renewable hydrogen production capacity currently under development in Europe and India will contribute to TotalEnergies' ambition for new molecules - biofuels, biogas, hydrogen, and e-fuels- to reach 25% of its energy production and sales mix by 2050.

TotalEnergies and Sustainable Aviation Fuels

TotalEnergies is developing Sustainable Aviation Fuels (SAF). These are biofuels produced from waste and residues from the circular economy (animal fats, used cooking oils, etc.) and "e-jets", synthetic fuels for aviation. These sustainable aviation fuels will significantly reduce CO₂ emissions from air transport

About TotalEnergies

TotalEnergies is a global multi-energy company that produces and markets energies: oil and biofuels, natural gas and green gases, renewables and electricity. Our more than 100,000 employees are committed to energy that is ever more affordable, cleaner, more reliable and accessible to as many people as possible. Active in more than 130 countries, TotalEnergies puts sustainable development in all its dimensions at the heart of its projects and operations to contribute to the well-being of people.

About Air Liquide

A world leader in gases, technologies and services for Industry and Health, Air Liquide is present in 75 countries with approximately 66,400 employees and serves more than 3.8 million customers and patients. Oxygen, nitrogen and hydrogen are essential small molecules for life, matter and energy. They embody Air Liquide's scientific territory and have been at the core of the company's activities since its creation in 1902.

Taking action today while preparing the future is at the heart of Air Liquide's strategy. With ADVANCE, its strategic plan for 2025, Air Liquide is targeting a global performance, combining financial and extra-financial dimensions. Positioned on new markets, the Group benefits from major assets such as its business model combining resilience and strength, its ability to innovate and its technological expertise. The Group develops solutions contributing to climate and the energy transition—particularly with hydrogen—and takes action to progress in areas of healthcare, digital and high technologies.

Air Liquide's revenue amounted to more than 23 billion euros in 2021. Air Liquide is listed on the Euronext Paris stock exchange (compartment A) and belongs to the CAC 40, CAC 40 ESG, EURO STOXX 50 and FTSE4Good indexes.

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