



Written on 22 June 2023



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News

Innovation and Industry

Biofuels and e-fuels

EDF, Holcim, IFPEN and Axens join forces to participate together in the creation of the French e-fuels air transport industry, with the "Take Kair" project, supported by Air France-KLM.

The objective of this cooperation is to take advantage of the complementary expertise of the signatories in order to contribute to the decarbonization of air transport and to support the emergence of the French e-SAF (Sustainable Aviation Fuel) industry, thanks to an industrial pilot project called "Take Kair", in Pays de la Loire, France. The Air France-KLM Group supports the project.

This cooperation will contribute to the development of the French SAF production industry, a priority raised by the French President of the Republic during his speech on 16 June 2023. The production of e-kerosene will contribute to the decarbonization of air transport and this project anticipates the future European regulation "ReFuel Aviation".

The success of this project relies on the commitment of the partners to explore opportunities for industrial cooperation, based on their respective expertise:

- For the Holcim group, the capture of biogenic CO₂ of its cement plant located in Saint-Pierre-La-Cour in Mayenne, France, in line with its plan to decarbonize its production sites, integrating programs to capture and recover CO₂ emissions to allow the production of green e-fuels for aviation.
- For IFPEN and Axens, the development and integration of low-carbon fuel synthesis processes and their experience in SAF production technologies.
- For the EDF Group, the development of its CO₂-neutral electricity production facilities and the know-

how developed both by its subsidiary Hynamics, specialized in the production of low-carbon and renewable hydrogen by water electrolysis, and by its engineering department allowing the security of its major industrial projects.

The "Take Kair" project, one of the first industrial e-SAF production projects in France, will avoid the emission of more than one hundred kilotons of CO₂ per year. It is therefore in line with the French government's objectives in terms of decarbonizing air transport and it will be a candidate for public financial support for the emergence of a French e-fuel industry, which is why it was presented at the beginning of 2023 to The French Agency for Ecological Transition ADEME and to the French Ministries in charge of Energy Transition, of Industry and of Transport. Provided the necessary financing is obtained, the objective is to start the construction of the industrial pilot in 2026 for a first phase of production in 2028.

A pioneer in the experimentation and use of SAF, the Air France-KLM Group is a partner in the project. As the world's largest buyer of SAF in 2022, the Group aims to incorporate at least 10% SAF into its global flights by 2030, beyond French and European regulatory obligations. The use of e-kerosene from the "Take Kair" project will contribute to the achievement of this objective and the more global objective of a 30% reduction in CO₂ emissions per passenger-kilometer by 2030 compared to 2019. By joining the "Take Kair" project, Air France-KLM gives it the opportunity to access the emerging SAF market in Europe as well as the visibility and bankability that will be necessary for its financing.

Cédric Lewandowski, Group Executive Vice President in charge of EDF's Nuclear and Thermal Assets Department, said: "With the Take Kair project, EDF, the world's first producer of low-carbon electricity, notably thanks to its nuclear power plants, confirms the commitment made, in particular through its hydrogen plan, to accelerate the deep decarbonization of the sectors that contribute at the highest to CO₂ emissions. While contributing to the decarbonization of the industry, it brings a complement to bio-energies for the decarbonization of the aviation sector. Our know-how and expertise combined with those of our industrial partners enables the emergence of a strong and innovative French e-fuel sector. With Take Kair, we are collectively taking another essential step towards the goal of carbon neutrality. »

François Petry, President of Holcim France, said: "The decarbonization of our processes and products is at the heart of our strategic commitment to reach Net Zero by 2050. Beyond the modernization of our production tools, we work on all industrial and technological levers to reduce our emissions and thus decarbonize our industry. With the Take Kair project, we are taking a decisive step in the capture and management of our residual CO₂ emissions and participate with our partners in the emergence of an innovative and sustainable sector serving the country's mobility needs. »

"We are very pleased to contribute, alongside our partners and thanks to our synergies, to the emergence of a new French e-fuel sector. With Take Kair, IFPEN reaffirms its commitment to the decarbonization of the aviation sector and to national energy sovereignty. Synthetic fuels will complement advanced biofuels, an area in which the IFPEN group, especially with its subsidiary Axens, offers several technologies to reduce aeronautics' carbon footprint. " said Pierre-Franck Chevet, President of IFPEN.

Jean Sentenac, Chairman and CEO of Axens said: "Axens is proud to see its expertise and technologies at the center of one of the first industrial e-kerosene production projects' development in

France, alongside emblematic players of the French industry. This marks another step towards decarbonizing the aviation sector."

Fatima Da Gloria de Sousa, Vice President Sustainability of the Air France-KLM Group said: "The development of Sustainable Aviation Fuel production capabilities is essential for the successful decarbonization of air transport. It is also a great opportunity to create jobs and strengthen the energy independence of France and Europe. Air France-KLM actively supports projects like Take Kair which aim to remove the first obstacle to the use of sustainable fuel: its availability."

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About EDF

As a major player in energy transition, the EDF Group is an integrated energy company active in all businesses: generation, transmission, distribution, energy trading, energy sales and energy services. EDF group is a world leader in low-carbon energy, having developed a diverse production mix based mainly on nuclear and renewable energy (including hydropower). It is also investing in new technologies to support energy transition. EDF's raison d'être is to build a net zero energy future with electricity and innovative solutions

and services, to help save the planet and drive well-being and economic development. The Group is involved in supplying energy and services to approximately 40.3 million customers (1), of whom 30.3 million in France (2). It generated consolidated sales of €143.5 billion in 2022.

(1) A customer can have two delivery points: one for electricity and another one for gas.

(2) Including ÉS (Électricité de Strasbourg) and SEI.

About Holcim

Holcim is a global leader in innovative and sustainable building solutions. Driven by its purpose to build progress for people and the planet, its 60,000 employees are on a mission to decarbonize building, while improving living standards for all. The company empowers its customers across all regions to build better with less, with its broad range of low-carbon and circular solutions, from ECOPact to ECOPlanet. With its innovative systems, from Elevate's roofing to PRB's insulation, Holcim makes buildings more sustainable in use, driving energy efficiency and green retrofitting. With sustainability at the core of its strategy, Holcim is becoming a net-zero company with 1.5°C targets validated by the Science Based Targets initiative (SBTi).

Holcim France is the entity of the Holcim Group in France which brings together its two main subsidiaries: Lafarge France (cement, concrete, aggregates, products & solutions) and PRB (building coating products).

To learn more about Holcim, visit www.holcim.com, and follow Holcim France on LinkedIn.

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IFP Energies nouvelles (IFPEN) is a major research and training player in the fields of energy, transport and the environment. From scientific concepts within the framework of fundamental research, through to technological solutions in the context of applied research, innovation is central to its activities, hinged around four strategic directions: climate, environment and circular economy – renewable energies – sustainable mobility – responsible oil and gas.

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About Axens

Axens group (www.axens.net) provides a complete range of solutions for the conversion of oil and biomass to cleaner fuels, the production and purification of major petrochemical intermediates, the chemical recycling of plastics, all natural gas treatment and conversion options along with water treatment and carbon capture. The offer includes technologies, equipment, furnaces, modular units, catalysts, adsorbents and related services. Axens is ideally positioned to cover the entire value chain, from feasibility study to unit startup

and follow-up throughout the entire unit life cycle. This unique position ensures the highest level of performance with a reduced environmental footprint. Axens global offer is based on highly trained human resources, modern production facilities and an extended global network for industrial, technical supports & commercial services. Axens is an IFP Group company.

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22 June 2023

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