TWELVE PRODUCES FIRST BATCH OF E-JET FUEL FROM CARBON DIOXIDE

News / Manufacturer

Carbon transformation company Twelve announced it has produced the first fossil-free jet fuel called E-Jet® from carbon dioxide (CO_2) electrolysis, demonstrating a scalable, energy-efficient path to the de-fossilization of global aviation. This project was supported through funding from the U.S. Air Force and produced fuel globally applicable for both commercial and military aviation.

Global aviation produces 1.2 billion tons of CO_2 emissions per year and represents one of the hardest-to-abate sectors, since it is technically unfeasible to electrify long-haul planes at scale due to power density challenges. Twelve's jet fuel, produced using its carbon transformation technology in partnership with Emerging Fuels Technology, is a fossil-free fuel that offers a drop-in replacement for petrochemical-based alternatives without any changes to existing plane design or commercial regulations.

“Electrifying planes with batteries has proven unfeasible for at-scale decarbonization of aviation, necessitating the production of fossil-free jet fuel,” said Twelve Co-Founder and CEO Nicholas Flanders. “We've essentially electrified the fuel instead through our electrochemical process, and the fuel drops right into existing commercial planes, allowing operators to instantly reduce their carbon footprint without any sacrifice to operating quality. Since you can’t electrify the plane, we’ve electrified the fuel.”

Twelve’s proprietary technology extends beyond fuels, and also transforms CO2 into critical chemicals and materials that are conventionally made from fossil fuels. It can scale to fit any need and offers an energy-efficient alternative to biofuels, which require significant amounts of land and energy to produce. The process is powered by clean low-carbon electricity and is a promising route towards carbon-neutral aviation.

Creating jet fuel from CO2 enables the Air Force to increase energy independence and reduce risk in fuel logistics without compromising on fuel quality or reliability. Twelve worked in partnership with the Air Force’s Operational Energy office through a joint contract with AFWERX, a program office at the Air Force Research Laboratory, and SBIR, the Small Business Innovation Research program.

“One of our main goals with this project was to create a clean jet fuel that enhances security and energy independence without sacrificing operational readiness. The successful completion of the project proves that efficiency and environmental responsibility are not mutually exclusive,” said Roberto Guerrero, Deputy Assistant Secretary of the Air Force for Operational Energy.

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