3178-1505

Summary of Public Release

Air Company partners with Argonne National Laboratory to continue development of CO2-derived sustainable aviation fuel (SAF)

Air Company's AIRMADE™ CO2-to-fuel conversion technology for sustainable aviation fuel (SAF) can significantly contribute to the decarbonization of the aviation sector. For this Department of Energy (DOE) Funding Opportunity Announcement (FOA), Air Company has partnered with Argonne National Laboratory (ANL) to build a pre-pilot plant to produce AIRMADE™ SAF and to generate critical data for scaling the technology.

Air Company's proprietary AIRMADE™ technology and process converts biogenic waste CO2 into 100% drop-in SAF and co-products such as low-carbon naphtha and low-carbon diesel, through direct CO2 hydrogenation. The process utilizes green hydrogen, which is produced through water electrolysis using renewable power. According to an initial lifecycle analysis (LCA) by ANL, AIRMADE™ SAF can reduce lifecycle greenhouse gas emissions by over 95% compared to traditional petroleum-based jet fuel. Pre-screening testing by Washington State University (WSU) shows that AIRMADE™ SAF can meet compositional requirements and other physical properties of conventional jet fuels. Additionally, AIRMADE™ fuel has been validated by the Air Force Research Lab and demonstrated operationally with the U.S. Air Force, Navy, and Special Operations Command.

The work to be conducted in this project will focus on scaling up the CO2 hydrogenation reactor, with special focus on catalyst yields and overall reactor flow scheme. This information will be critical for estimating and planning capital expenditures and equipment. As part of the project, Air Company will generate AIRMADE™ SAF samples to be used in an ASTM International qualification program. The potential impact of AIRMADE™ SAF for decarbonizing aviation is significant. With an estimated 50 million metric tons of biogenic waste CO2 produced annually from U.S. ethanol plants alone, the AIRMADE™ process could help produce over 2.5 billion gallons of SAF per year.