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Conn Center's technology helps AliphaJet make advanced renewable drop-in Jet Biofuel
Breakthrough Commercially-Scalable Process Produces Jet Fuels at Costs Competitive to Fossil Fuels

AliphaJet, Inc. announced that the company has successfully licensed and demonstrated a highly cost-effective catalytic method (BoxCar™) for making jet biofuel from renewable products such as plant and animal triglycerides and/or fatty acids.

The catalytic method was developed at the University of Louisville's Conn Center for Renewable Energy Research by Senior Research Scientist, Paul Ratnasamy, PhD, who patented the process in 2010. The licensing of Dr. Ratnasamy's process is a major success for the Conn Center, which conducts and facilitates R&D on potentially commercializable renewable energy and energy efficiency technologies.

This technology uses catalytic de-oxygenation process that significantly reduces capital and operating costs because it does not require hydrogen to remove the oxygen from the feedstocks. One method of unlocking hydrocarbons from oils is to add hydrogen to remove the oxygen as water. This method is expensive because it requires large quantities of hydrogen supplied by a refinery, which also makes the fuel production facility location-dependent. This technology named by AliphaJet as BoxCar™ introduces a catalyst to remove the oxygen as CO_2. This fundamental change requires almost no hydrogen and allows the facility to be located anywhere. This key technology shift unlocks several areas of capital and processing cost savings compared to competing technologies:

(a) Processing facilities are less complex, thereby reducing capital costs,
(b) Zero variable costs for expensive production of hydrogen,
(c) AliphaJet facilities can be located where the renewable inputs are produced, versus the logistics and transportation costs of dealing with a fossil fuel-based refinery.

The net effect is that AliphaJet's process offers significant capital expenditure and operating expense advantages over current practices that all require significant quantities of hydrogen.

"Our strategy fundamentally improves the economics of making 100% drop-in renewable jet biofuel," said Jack Oswald, CEO of AliphaJet. "The breakthrough AliphaJet BoxCar™ catalytic de-oxygenation process removes 100% of the oxygen without the need for aggressive and expensive hydrotreating. Our approach is radically different and unlocks a new industry that can meet the U.S. Navy's goal of replacing 50% of its liquid fuels with renewables by 2020."

AliphaJet has successfully produced renewable jet biofuel using both plant-based oils and animal fats such as beef tallow. Samples were tested at Southwest Research Institute and met or exceeded D-1655 requirements including net heat of combustion, freezing point, smoke point and sulfur levels.

The AliphaJet process can also produce renewable drop-in diesel fuel, gasoline and other hydrocarbon molecules usually derived from fossil fuel oil.

Renewable oil feedstocks can be sourced from plants, animal processing or emerging oil production sources such as algae and genetically modified organisms: seeds/vegetables (camelina, pennycress, palm, soy, corn), animal fats (beef, chicken), algae (Sapphire, Solazyme), GMO (Amyris, LS9, Genomatica).

“Renewable jet fuel represents one of the best yet elusive opportunities in the advanced biofuels space,” said Michael McAdams, President of the Advanced Biofuels Association (www.advancedbiofuelsassociation.com). “AliphaJet is one of the leading companies working in this space with a smart innovative management team that is focused on the target!”

“More than 30,000 jet powered aircraft operated by 2,000 airlines around the world are adding to the carbon footprint at an unprecedented level. Visionaries like Sir Richard Branson have recognized that the only solution to this environmental dilemma is to gradually switch from fossil derived products to biofuels,” notes Oswald.

"Development of this technology and its licensing to Aliphajet advance University of Louisville goals to discover solutions to societal problems and to translate these into commercial practice,” explains Dr. Thomas Starr, Associate Dean for Research in the J.B. Speed School of Engineering at UofL. “This success and other previous innovations in solar energy materials result from UofL's and Speed School's commitment to the Conn Center and from the leadership of Dr. Mahendra Sunkara.”

A 2009 grant from the Kentucky Renewable Energy Consortium (KREC) helped fund Dr. Ratnasamy’s and Dr. Sunkara’s initial research for this innovative biofuel process. “KREC is proud to have helped fund this kind of cutting-edge, commercially viable research through its competitive grants program,” noted Cam Metcalf, Executive Director of the Kentucky Pollution Prevention Center (KPPC) at the J.B. Speed School of Engineering. KPPC administers the KREC grants program.

About
AliphaJet is a collaborative venture between SynGest Inc. and Unitel Technologies, Inc.

The development of the AliphaJet process was led by Dr. Ravi Randhava in collaboration with Dr. Paul Ratnasamy at the University of Louisville’s Conn Center for Renewable Energy Research.

The Conn Center was established in 2009 in response to the Commonwealth of Kentucky’s mandate to develop a renewable energy research center. With a pledge from alumni Hank and Rebecca Conn, the University of Louisville has committed to establish the necessary translational research facilities, i.e., pre-commercial prototyping manufacturing R&D facilities in solar, biofuels, energy storage, energy efficiency, and advanced energy materials, to address grand challenges in renewable energy conversion and storage.

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