

CAAFI input

LARGE BIOFUEL PURCHASES REPORTED NEAR

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At least two commercially viable biofuel off take agreements with suppliers are expected to be announced this year with airlines, according to Airline Association VP & Economist, John Heimlich. This information was relayed to AUTOMOTIVE INDUSTRIES by Richard Altman, Executive Director of CAAFI(Commercial Aviation Alternative Fuels Association).

The biofuel suppliers and nature of the technology each will use was not revealed. (Lufthansa & algae discussed separately below) It was explained, that both buyer and seller have agreed that price of the fuel will be on a down sliding scale in recognition that costs will drop as fuel production quantities and experience increase.

At the least, this news suggests that biofuels suitable for use in aircraft have proved satisfactory from numerous in-flight tests by many airlines and that fuel production technology has reached the stage of proof that it is on target for commercial production at scale.

As an indication of the progress being made with economic biofuel technology, Chicago based UOP teamed with Montreal based Ensyn Corp, recently announced successful demonstration of RTF(rapid thermal processing) by which all manner of biomass can be converted in 2 seconds at 500C into bio crude oil for refining into petroleum alternative fuels.

The UOP/Ensyn team have indicated that bio crude by this system is in the cost range of \$1/gal. (compares with about \$2.40/gal for petroleum crude). The degree of cost difference, if any, between refining bio vs. petroleum crude could not be learned for this report

Another illustration of bio fuel progress is planned start up this year of the KiOR production scale thermal catalytic processing of Southern soft wood biomass into diesel fuel. The KiOR 500 bdt/day plant in Columbus, Mississippi, has off take agreements in place with FedEx, Catchlight and Hunt Refining for the plant's entire output.

An interesting sidelight to the KiOR operation is a recent statement by its highly successful venture capitalist developer, Vinod Khosla. Mr. Khosla has suggested that many of the nearly 100 paper mills now out of business in the Southern soft wood area could be retro fitted on a cost effective basis for production of bio fuel since wood gathering, intake and initial wood processing capabilities are already in place. Experienced labor from the paper mill days apparently remain available.

Also focused on the need for economic, reduced carbon aircraft fuel is a recent MOU between Lufthansa and AlgaeTec by which the two firms will explore how AlgaeTec's unique way of producing aviation fuel can fill Lufthansa's needs.

The AlgaeTec system is packaged in 40 ft. standard shipping size container modules each capable of producing 40,000/gal/yr fuel and 130 ton/yr by-product biomass via non GMO algae fed with CO₂, fresh or saline water and solar energy. Basic cost of oil from the AlgaeTec system has been indicated to be potentially in the \$1/gal range.

A 250 AlgaeTec module system is now being built for assembly in Dongying, Shandong Province, China, in a 50/50 effort with Shangdong Kerui Holdings Group, an oilfield and petroleum equipment firm with offices in 16 countries.

AlgaeTec units are also being installed in one location of Holcim, the world's largest cement and building products firm. The algae units will convert large amounts of Holcim waste CO2 into diesel fuel for operation of its heavily used delivery trucks.

Demonstration soon of an AlgaeTec module is planned at a location near Nowra, NSW Australia at which representatives of the Qantas airline are expected to be interested attendees.

Unknown is status of planning at the U.S. military for its escape from dependence on foreign sourced petroleum which carries a very high price for the fuel, protection of supply lines and the cost of supply disruption. For many, it also means escape from petroleum related environmental problems and provide new jobs for Americans..