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Planes Powered By Coal

Written by [Chris](#) on May 28, 2010 – 11:53 pm

The Department of Defense will likely set its standards for synthetic jet fuels in 2013, and CEO Tim Vail claims that Accelergy's fuel will be able to meet those standards.



The key is a process fine-tuned at ExxonMobil in the mid-1990s that turns coal or plant matter directly into a liquid, according to Vail. Unlike the often-criticized Fischer-Tropsch process devised in the 1920s, Accelergy's process does not get convert coal into a synthetic gas before transforming it into a liquid. Eliminating gasification greatly reduces carbon dioxide emissions, as well as the total amount of coal (or biomass) consumed to produce liquids, he said. And it's cost-effective.

"You can be profitable in the \$50-to-\$60-a-barrel range," extrapolating from the mathematical models devised by Exxon in the '90s, Vail said. "In the crude environment we have today, you have the opportunity to create a very favorable business."

The fuel can also absorb heat generated by air friction at supersonic speeds, thereby allowing the fuel system to act as a radiator. The thermal range for Accelergy's fuel is higher than conventional petroleum.

By contrast, biofuels aren't as dense. The aviation biofuel tests conducted thus far have involved blends where biofuel represents 50 percent of the fuel at best.

"We are the only one that can go 100 percent jet. Everything else has to be blended 50/50," he said. "Think of a predator drone. You can have more energy in the same amount of weight. "

Another potential bonus: Accelergy's fuel can be made economically in modular plants. A 10,000-barrels-a-year facility will be feasible, he said.



Planting jet fuel: Ben Oster, a research engineer at the Energy and Environmental Research Center at the University of North Dakota, holds a sample of jet fuel made from plant oils. Accelergy has licensed the technology used to make this fuel. Credit: Energy and Environmental Research Center at the University of North Dakota

Here is roughly how it works: A slurry of pulverized coal is mixed with hydrogen and a proprietary catalyst and is then subjected to high temperatures and pressures. The combination of the catalyst, hydrogen and heat break down the elaborate carbon/hydrogen molecules that make up coal into a petroleum distillate that can then be spun into a synthetic jet fuel or other liquid fuels.

The hydrogen comes from cracking methane found in coal seams and the catalyst, he added, gets consumed in the chemical reactions. Sludge that comes out the other end can be converted to asphalt.

“Accelergy utilizes advanced catalysts and state-of-the-art process technologies to transform coal and biomass into clean liquid fuels. Furthermore, our highly efficient Coal-Biomass-to-Liquids (CBTL) process emits fewer greenhouse gasses than any comparable industry process, ultimately leading to a wide range of fuels fit for our transportation infrastructure”.

accelergy.com

“We don’t destroy the molecule in coal. Instead we massage it, inject hydrogen into it, and rearrange it to form the desired hydrocarbons,” says Timothy Vail, Accelergy’s president and CEO.