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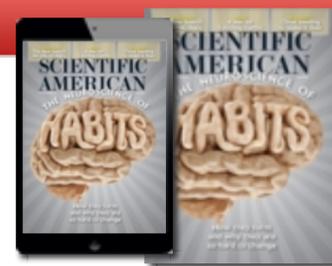
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Biodiesel Takes to the Sky

An unmodified Czechoslovakian jet flew burning nothing but cooking oil

Nov 30, 2007 | By [David Biello](#)

Biodiesel may not become the airplane fuel of the future but it did prove effective enough to recently power a 1968 L-29 Czechoslovakian jet—dubbed BioJet 1—up to 17,000 feet (5,180 meters) over 37 minutes. A three minute, 15-second test the day before was the world's first flight entirely fueled by cooking oil.

"She flew and she flew just fine," says physicist Rudi Wiedemann, president and CEO of Biodiesel Solutions, Inc., whose company provided the fuel for the historic October flight: fresh canola oil refined into biodiesel. "We wanted to show that it was doable by just going out and doing it."

Specifically, Doug Rodante, president of Green Flight International (a company in Florida that promotes alternative aviation fuels), and chief test pilot Carol Sugars, a senior pilot with the United Parcel Service (UPS), conducted extensive fuel tests on the ground, beginning with a 20 percent blend of biodiesel and [normal jet fuel](#) (kerosene known as Jet A) and progressing to 100 percent biodiesel (B100) as their confidence increased.

Revolutions per minute in the engine on B100 were at 98 percent, Rodante notes. "We didn't get full power, but we got an acceptable amount" he says. "It was a nonissue in climb performance and time to altitude."

The L-29 jet (acquired from the Ukrainian military) is one of the few planes capable of burning biodiesel at present, thanks to a built-in fuel warming system. Biodiesel can



COURTESY OF RUDI WIEDEMANN

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gel at cooler temperatures, such as those experienced on a winter's day or at high altitude. "Jet fuel and biofuel mix is something that is easily done. I don't believe 100 percent biofuel is the answer," Rodante says. "We can implement a 20 percent mix with no modifications in other aircraft."

Such a blend would offer significant environmental benefit—most notably **reduced emissions of carbon dioxide**, the most common greenhouse gas. "As little as 20 percent biodiesel in petroleum diesel fuel will reduce carbon emissions by 50 percent," Wiedemann says. Airplanes emit roughly 12 percent of the man-made greenhouse gas emissions from transportation, but they are among the fastest growing sources and, potentially, the most damaging because of their release higher in the atmosphere. And the U.S. Air Force has been evaluating **alternative fuels**, including biofuels from animal fats, going so far as to certify the B-52 bomber to burn such synthetic fuels.

The Green Flight team is currently evaluating the exact emissions of the biodiesel burning as well as how it affected the various seals and rings in the L-29's jet engines. Until the latter testing is wrapped up and Biojet 1's safety is confirmed, the Federal Aviation Administration has grounded the plane. But Rodante says the evaluations could be completed within the next few weeks, after which he plans to fly the experimental jet from Reno, Nev., to Orlando, Fla.—the first transcontinental biodiesel flight, in eight stops. And, eventually, he hopes to fly a similarly fuelled plane around the world. "Aviation emissions are something that needs to be addressed," he says. "We're not moving fast enough."

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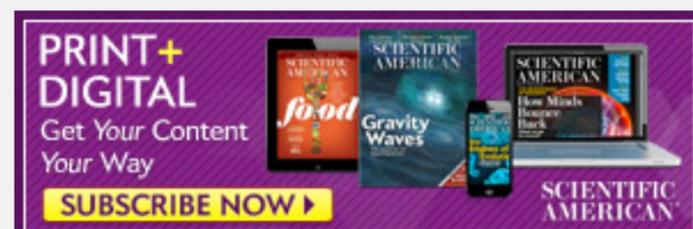
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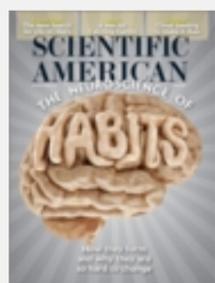
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