



JAL Biofuel Demo Flight First to Use Energy Crop Camelina

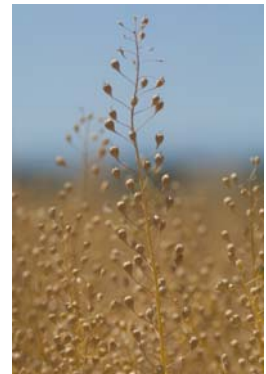
Tokyo, December 16, 2008: Japan Airlines (JAL) announced today that it will be the first airline to conduct a demonstration flight using a sustainable biofuel refined from the energy crop, camelina.



A blend of 50% biofuel and 50% traditional Jet-A jet (kerosene) fuel will be tested in one of the four Pratt & Whitney JT9D engines of a JAL-owned Boeing 747-300 aircraft. The biofuel component to be used will be a mixture of three second-generation biofuel feedstocks: camelina (84%), jatropha (under 16%), and algae (under 1%). This will make the JAL biofuel demonstration flight the first one to be powered by camelina, and the first

using a combination of three sustainable feedstocks. It will also be the first biofuel demo by an Asian carrier, as well as the first one using Pratt & Whitney engines.

Camelina, also known as gold-of-pleasure or false flax, is an energy crop, given its high oil content and ability to grow in rotation with wheat and other cereal crops. The crop is mostly grown in more moderate climates such as the northern plains of the U.S., and originally hails from northern Europe and Central Asia. It can be grown even in dry areas, poor soil and at high altitudes. It is classified as a 'traditional' crop, but is considered next-generation given that its primary use is as a biofuel feedstock.



The camelina to be used in the JAL demo flight was sourced by Sustainable Oils, Inc., a U.S.-based provider of renewable, environmentally clean, and high-value camelina-based fuels. Terasol Energy sourced and provided the jatropha oil, and the algae oil was provided by Sapphire Energy.

JAL, Boeing, Pratt & Whitney, and Honeywell's UOP have committed to the use of second-generation biofuel feedstocks that are more efficient and sustainable energy than first-generation counterparts. Second-generation biofuel feedstocks, such as camelina, jatropha and algae, do not compete with natural food or water resources and do not contribute to deforestation practices.

The approximately 1 hour demo flight out of Haneda Airport, Tokyo operated by JAL staff with no passengers onboard is scheduled for early 2009. The flight will be the final stage in a 12 month process to conclusively confirm the sustainable biofuel's operational performance capabilities and potential commercial viability. The JAL biofuel flight is expected to bring the airline industry significantly closer to finding a suitable sustainable biofuel that will help reduce the impact of carbon dioxide emissions (CO₂) generated by aviation, whilst also reducing the industry's

reliance on traditional petroleum-based fuels.

JAL Environmental Affairs Vice President Yasunori Abe explained, ‘The highest levels of safety will be adhered to throughout the whole biofuel demonstration flight. Prior to takeoff, we will run the No. 3 engine (middle right) using the fuel blend to confirm everything operates normally. In the air, we will check the engine’s performance during normal and non-normal flight operations, which will include quick accelerations and decelerations, and engine shutdown and restart.’”

Once the flight has been completed, data recorded on the aircraft will be analyzed by Pratt & Whitney and Boeing engineers. Several of the engine readings will be used to determine if equivalent engine performance was seen from the biofuel blend compared to typical Jet A-1 fuel.

The fuel for the JAL demo flight was successfully converted from plant-based crude oil to biojet fuel by Honeywell’s UOP, a refining technology developer, using proprietary hydro-processing technology to complete the fuel conversion. The fuel was then blended with typical jet fuel to create the 50% biofuel blend. Subsequent laboratory testing by Boeing, UOP, and several independent laboratories verified the biofuel met the industry criteria for jet fuel performance. Ground-based jet engine performance testing by Pratt & Whitney of similar fuels further established that the biofuel blend either meets or exceeds the performance criteria that is in place for commercial aviation jet fuel today.

“Our feedstock selection was based on firm sustainability criteria designed to avoid the mistakes of preceding biofuel generations,” said Boeing Biofuels Program Manager Tim Rahmes. “Working together with Japan Airlines and our other industry partners we’ve successfully partnered to create a next-generation, plant-derived jet fuel blend that, through extensive testing, has replacement fuel qualities that meet or exceed all of the current jet fuel specification properties.”

"This biofuels program is an important part of Pratt & Whitney's overall commitment to the environment and we are proud to be working with our long-time customers Japan Airlines and Boeing," said Greg Gernhardt, Pratt & Whitney Vice President, Commercial Engines & Global Services, Asia-Pacific Region. "Over the past several months, we have worked together to secure, evaluate and ensure the safety and performance of this biofuel. We are excited to work together in the research and development of sustainable fuels for the future."

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