BATTERY-POWERED R44 FLIES

News / Business aviation, Manufacturer

Tier 1 Engineering flew a battery-powered, manned Robinson R44 in September at Los Alamitos Army Airfield, Calif. The flights were made under a special airworthiness certificate in the experimental category issued by theFAA's Los Angeles MIDO. The flights were part of a project under contract from Lung Biotechnology PBC to produce an electrically powered semi-autonomous rotorcraft for organ delivery (Epsarod). They were piloted by Ric Webb of OC Helicopters.

Over the course of several flights between September 13 and 21, the modified R44 performed hover, hover taxi and a record five-minute cruise flight to 400 feet altitude with a peak speed of 80 knots.

"I'm very pleased to achieve this historic breakthrough in aviation," said Glen Dromgoole, president of Tier 1 Engineering. "Never before has a conventional manned helicopter performed a vertical takeoff, cruise and landing solely on battery power, and we are thrilled to have further achieved 400 feet altitude and 80 knots during our first full test flight."

The Tier 1 Engineering team designed and integrated all of the helicopter sub-systems, which included 1,100 pounds of Brammo lithium polymer batteries, twin electric motors and a control system from Rinehart Motion Systems. The five-minute flight on September 21 drained approximately 20 percent of the battery energy.

Tier 1's is not the first electric helicopter project. In 2011 France's Solution F achieved a two-minute flight in a manned ultralight untethered electric helicopter. The flight was piloted by Pascal Chretien, an aerospace engineer from the firm. In 2010, Sikorsky unveiled the Firefly project, a

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modified Sikorsky-Schweizer S-300C fitted with a U.S. Hybrid Technologies electric motor and two lithium ion battery packs, capable of flying for 12 to 15 minutes.

Lung Biotechnology PBC intends to apply the Epsarod technology to distributing manufactured organs for transplantation to major hospitals with much less noise and carbon footprint than current technology. Tier 1 Engineering is an aircraft design and development company with operations in Costa Mesa, Calif., and Victoria, Australia. Major clients are BAE Composites, Goodrich Aerostructures, Zodiac Aerospace, Composite Horizons,EAM Worldwide, Mecaer Aviation Group, ATK Aerospace, Panasonic Aviation, Janicki Industries and Lung Biotechnology.

15 OCTOBER 2016

SOURCE: AIN
ARTICLE LINK:
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