

Soloy Mark II 206 mod affords peppier, quieter ride

HANDS-ON REPORT

by Matt Thurber

Cessna's 206 piston-powered single is a great airplane, but replacing the original Continental Motors or Lycoming engine with a smooth-running Rolls-Royce 250 makes the 206 a powerful performer that is quieter and easier to fly.

Soloy Aviation Solutions has been stuffing the RR250 (formerly Allison) into the 206 since the mid-1980s, and demand for the extensive modification along with other 206 upgrades continues to grow. Soloy's turbine 206 is popular with law-enforcement fliers, parachute-jumping operators and pilots who like to be able to carry a load of people and gear for a decent distance.

Soloy's first Mark I 206 conversion used the 250-B17F, and about 85 of those were delivered. The Mark II using the 250-B17F2 was certified in 2008, and the 11th conversion was under way at the Soloy hangar last month. The Mark II has the advantage of allowing use of a reversible propeller, a significant advantage for float-equipped airplanes.

AIN had an opportunity to fly the Soloy turbine 206 Mark II at Soloy headquarters in Olympia, Wash. Chief pilot Paul Hagglund flew right seat while I explored some of the turbine 206's attributes.

Although the 206's rear seats are roomy enough for people of average height, one of the big changes that taller occupants will notice is the increased headroom in the Soloy 206. An option includes moving a wiring harness and installing four-point pilot and copilot shoulder harnesses, and this removes a

hump in the headliner and adds about four inches more headroom.

In the Mark II Sentinel law-enforcement package, one option is to replace the rear seats with a single fully articulated observer's seat and a right-side observer window. Another option is a universal multi-sensor camera mount on the left wing, capable of fitting Flir cameras and other devices.

Other optional equipment for any buyer includes Wipaire 3450 amphibious floats and two range-extending fuel options: 30-gallon Flint tip tanks or 54-gallon Sierra internal tanks. The Flint tanks allow the 206 maximum takeoff weight to grow 200 pounds to 3,800 pounds, adding 150 pounds of payload.

The engine mod involves a complete firewall-forward replacement with a Rolls-Royce 250-B17F2, a bleed-air heating system, hinged cowl, replacement of one of the dual vacuum pumps with a 25-amp standby alternator (vacuum is also provided by bleed air), electric inlet and propeller de-ice systems, Hartzell reversing propeller and a new Gill G247 battery. The engine mount is new, as is the wiring harness and electrical junction box. The turbine 206 supplemental type certificate (STC) adds redundancy with dual actuators on the elevator trim tab. Engine operation is made easier by installation of Soloy's STC'd digital TOT gauge kit. The turbine STC is also available for the Cessna 207.

Solid Feel in Flight

Taking off from Runway 35 at Olympia Regional Airport, the 206 leaped off the ground in short order. While the 206 always has felt lumbering and nose-heavy to me, the Mark II 206, which has

The Mark II 206 weighs about 170 pounds less than the standard model, so it leaped off the ground from Runway 35 at Olympia Regional Airport and wanted to fly as soon as the 417-shp RR250 spooled up.



Soloy's Mark II Cessna 206 modification involves a complete firewall-forward replacement with a Rolls-Royce 250-B17F2 turboprop, a bleed-air heating system, hinged cowl and reversing propeller.

an empty weight about 170 pounds lower than the standard 206's, felt much lighter.

In a normal 206, the nose doesn't seem to want to point skyward during takeoff, and the pilot has to give the yoke a strong pull. The turbine 206 wanted to fly as soon as the 417-shp RR250 spooled up, and away from the runway the rate of climb quickly exceeded 2,000 fpm. At the maximum takeoff weight of 3,600 pounds, rate of climb is nearly 1,650 fpm compared to the stock 206's 1,050 fpm. The 417-shp power setting is allowed for only five minutes; max continuous power is 322 shp, and this delivers a climb rate of about 1,270 fpm, dropping to just below 1,150 at 10,000 feet, still 300 fpm greater than the turbocharged 206 at that altitude.

In the air, the turbine 206 feels no different from a piston-powered 206, but the smooth-running RR250 provides a much more solid platform. The turbine 206 noise level is 72.4 dBA at 100-percent power (2030 rpm), compared to 88 dBA for a Lycoming-powered 206H at full power.

The lower noise level is apparent when flying without a headset and is also an enhancement enjoyed by law-enforcement customers who need quieter aircraft for surveillance and to fly neighborly. "Even the dumbest bad guy knows to run and hide when he sees a helicopter overhead," said a state police operator that is considering replacing its Cessna 182s with the turbine 206 after a demonstration flight. "But the very quiet noise signature of the Soloy turbine and the unthreatening sight of a typical Cessna aircraft has taught us that surveillance suspects do not perceive the airplane as a threat to their activity." This operator estimated that the turbine 206 would have direct operating costs a third lower than those of its camera-equipped helicopters.

Compared to the piston 206, the Soloy 206 does burn more fuel per hour. At 6,000 feet fuel burn ranges from 28.7 gph at fast cruise (157 ktas) to 17.9 gph at a loiter speed of 93 ktas. Slow cruise is 136

ktas, burning 23.3 gph. At 10,000 feet, fast cruise of 167 ktas results in fuel consumption of 27.6 gph. By comparison, a modern turbocharged Lycoming-powered 206 consumes about 20 gph of avgas cruising at 165 ktas at 10,000 feet.

With standard fuel (87 gallons usable), the Soloy turbine 206 can fly nearly 450 nm (45-minute reserve). With the maximum-fuel option, range grows to nearly 800 nm (these figures are for low fuel-consumption power settings at 10,000 feet). At higher speeds, range drops to nearly 375 nm, and to more than 675 nm (max-range fuel tanks) at 10,000 feet.

Low Direct Operating Costs

Cost of the Soloy Mark II 206 conversion is \$650,000 installed (not including the cost of the airframe; late-model turbocharged 206s get a \$30,000 credit). Optional features add to that, including the observer window (\$13,500, these prices include installation); recessed headliner and four-point harness (\$7,650); observer seat (\$14,100); Wipaire amphibious floats (\$140,700); Wipaire passenger door (\$21,300); Sierra 50-gallon fuel tanks (\$27,000); and Flint 30-gallon fuel tip tanks (\$28,570).

TBO of the RR250 is 3,500 hours, with a 1,750-hour hot-section interval. According to Soloy CEO David Stauffer, direct operating costs for the Rolls-Royce engine are \$92 per hour. "There is no turboprop that is comparable," he said. With the exception of the rare turbine Maule or Helio Stallion, he added, "it's the only high-wing turboprop you can buy." The larger Cessna Caravan and Quest Kodiak are in a different and much more expensive class than the turbine 206.

The turbine 206 is just one of many modification programs offered by Soloy, which was founded by Joe Soloy in 1969. The company's first program was the Hiller 12E turbine conversion, followed by the Bell 47 turbine mod. Others include Eurocopter AStar retrofits with Honeywell's LTS101 and Rolls-Royce 250-C20R upgrades for Bell 206s. □

