

ROTAX INTRODUCES FUEL-INJECTED 912 iS

Improved fuel efficiency from the latest 912 variant



The Austrian engine company BRP-Powertrain, or Rotax as it is more colloquially known, has become synonymous with microlight and VLA type powerplants.

Starting with developments of its successful snowmobile two-stroke engines in the mid-1970s, the company quickly rose to dominate first the microlight engine market, and with its introduction of the four-stroke, four-cylinder 80hp 912UL in 1989, the lightweight aeroplane market.

Not content to rest on its laurels, Rotax has adopted a programme of continual development of the 912, taking it through certification for use in certified aircraft and introducing new, higher-power models. The 115hp turbocharged 914 was introduced in 1996, and the 100hp 912 S which saw an increase in cylinder capacity to 1,500cc, in 1998. As the engines have proved reliable in the field, TBOs have risen to reflect those of conventional, air-cooled aircraft engines at 2,000 hours, making the engine competitive on purchase cost as well as its legendary fuel economy when compared to larger-capacity traditional aircraft engines. In 2011, the 40,000th 912 engine left the Gunskirchen factory in Austria.

The latest iteration of the engine, the 912 iS, was officially launched on March 8 and is the obvious next step in development for the engine – moving from carburettors to electronic fuel-injection controlled by an Electronic Control Unit (ECU), similar to current automotive technology. The engine has been under development for



Rotax's impressive engine production



three years, with 10,000 hours of running on the test bench and 700 in the air, and the promise is for lower CO₂ emissions and greater fuel economy – the company quoting up to a 21% reduction over the carburetted engine when cruising at 5,000ft. To maintain redundancy, the engine has two independent ECUs that drive double injectors and double spark plugs for each cylinder.

Official BRP/Rotax fuel requirements for the 912 iS are the same as for the normal 912 S: min MON 85 RON 95* min AKI 91* (*leaded, unleaded, avgas 100LL or E10). BRP recommends using auto-fuel with up to 10% alcohol.

With three electronic 'boxes' needed to make the engine run (containing dual fuel pumps, the fuse box and the ECU), consideration has also been given to an improved electrical system with the alternator now having two stators sharing a single rotor, and it being immersed in the crankcase oil for cooling. One stator is dedicated to the ECU, the other servicing the remaining engine electrics. The battery is used only for starting the engine; if it failed in flight, the engine would continue to run.

The added complexity has added extra weight to the engine – around 15lb including the electronic boxes – something which will make its retrofitability into some current microlight designs impossible as they are already at max allowable empty weight. For VLA types though, the increase is easily offset by the lower fuel requirement.

Performance-wise, the engine develops its 100hp at the same 5,800rpm as the 912 S. Rotax states a torque of 89ft/lb at 5,800rpm, but has not yet released a torque curve to show how the peak torque compares with that of the 912 S.

The all-important question of pricing suggests that the engine will cost between 14% and 17% more than the 912 S. UK agent Skydrive is currently quoting £17,500 incl VAT for the complete engine/electronics package, ready to fit.

LAA Engineering has already overseen the first UK installation by Skydrive and, though technically the engine is more complex than earlier 912 variants, does not foresee any particular problems with approval of the engine in LAA Permit to Fly aircraft, providing it is installed strictly in accordance with the detailed installation manual. ■

Francis takes a close look at the 912 iS

