

# Autogyro Europe's new Calidus Gyro in NZ

Tony Unwin operates Gyrate at Tauranga, a gyro training centre and distributor for Autogyro Europe's expanding range of aircraft. Their latest offering is the fully enclosed 2 place Calidus – two more of which are arriving in New Zealand in December to join the South Island based one that is already here. KiwiFlyer asked Tony to describe the aircraft and its origins.

IN 1987 I collected a brand new McDonnell Douglas MD-80 (a stretched version of the DC9) from a very impressive high-tech production line in California, then in 1992 I transferred to the A320 and was equally amazed by the scale of the Airbus production facility in Toulouse.

This year it was the turn of AutoGyro Germany to impress with a fantastic new factory that is accelerating production of their most successful aircraft to one a day! Wow, how the gyroplane world is changing.

The MTO3 and MTSport (branded the Eagle in NZ) have been one of the fastest selling models of light aircraft in Europe over the last few years and worldwide over 500 machines are now flying. To achieve even greater production it was necessary to design a new factory complex and more than double the factory. Seven CNC machines have been working 24/7 for months to meet demand and all new paint and composite shops are at full stretch. From some forty technicians a year ago the company now employs 70 on site in Hildesheim and has a working agreement with Rotorsport UK to conduct product development and testing to international standards.

### Calidus Design

The major cause of expansion has been the huge public appeal of their latest design, the all new Calidus. A quick glance might lead to the thought that this is an enclosed version of the Eagle but this is not the case. Clearly there are similarities but under the sleek body line is a very different construction.

Working down from the top we have the same length of rotorblades but colour coded end caps identify a slightly modified design to provide more inertia and stability. The rotorhead is now manipulated by cables instead of push-rods and the mast

### Contributed by Tony Unwin

incorporates nylon bushes to minimise body vibration. Perhaps the biggest design variation is the inclusion of a firewall to separate the body and its occupants from engine activity.

The firewall forward shell is hung to the frame as if it were an engine attached to the front of a conventional aircraft. Likewise the engine mounts behind the main mast act as a counterbalance to the pilot. The passenger and fuel are adjacent to the centre of gravity and so have little effect on the trim of the machine. Both roll and pitch trim are available from a pneumatic system which allows for hands free cruising. Driving force is a choice of 100hp Rotax 912s or 115hp Rotax 914. These can now be offered with in-flight variable pitch Ivoprop propellers which should also be available as constant speed units next year.

Moving forward, the flying compartment is as spacious and comfortable as you could want, with the tandem layout providing excellent efficiency for performance and economy. The aircraft can be fitted with full dual controls, including pre-rotator and trim, which enhances its use in the training role. The rear control stick is easily removed when required for normal passenger or extra luggage applications. Pilots familiar with the Eagle will instantly be at home in the front seat although they can now vary the angle of recline to resemble the feel of a modern sailplane.

### Flying Calidus

I first flew an early production Calidus at the factory twelve months ago and everything fell to hand as expected. The handling was not vastly different but when I came to deliver a machine from Tauranga to Dunedin the benefits of comfort and document handling in an enclosed cabin were immediately obvious. Those of you with sailplane experience will know the problems of summer sun when unflattering protective hats are essential. To address this issue Calidus is offered with a painted roof section and large cutout windows, ideal for hot summer days. Somewhat surprisingly in Europe with a modest



The Calidus on show at Aero Expo 2010 Friedrichshafen, Germany.



Inside the Autogyro Europe factory.



Left: Calidus and MTO3 at Whitianga. Right: Calidus cockpit.



Calidus and MTO3 gyros lined up at the Autogyro Europe factory.

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15C the cutout windows proved quite comfortable. In the rear seat a breeze around the back of the neck reminded me of a sports car but the uninterrupted view was ideal for photography. Should you however want the comfort of a full enclosure and to fully enjoy the optional heating system on cooler days then the interchangeable canopy with just a small direct vision window and adjustable air vents is a must have item. The rear seat in Calidus is wide enough for two children but as this is not allowed a single adult can surround themselves with baggage for a night stop or two and a thermos for in flight refreshment. Yes this aircraft is stable enough for a hostile service but caution, aircraft flight endurance is around four hours which may exceed your preferred time to a comfort stop.

Calidus is a safe, stable, easy to fly machine. It is well equipped and can be configured to a very high specification. However, in New Zealand Calidus is a microlight limited to Day VFR flight rules and this involves a responsibility to maintain a good lookout at all times and not get locked in the 'office'. No aircraft gives better all round visibility which is another excellent reason to fly in a tandem configuration. Handling is superb with very stable flight up to the VNE of 125mph; the machine slips through the air and it is quite easy to allow a small nose down attitude to develop from cruise and see the red line on the ASI approach unexpectedly!

Suitable for local flights or the longer trip in most VFR weather, Calidus has great short field performance enhanced by a >250rpm pre-rotator and has a touchdown speed so slow that the walking group goes faster! Enjoy.

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