

# Guimbal Cabri on the way to New Zealand

**TWO CABRI G2** helicopters are scheduled to arrive in New Zealand in mid September. They are being imported by Pacific Aircraft Sales who have been appointed as exclusive distributors for Guimbal in New Zealand. The Cabri is a new design with a strong pedigree, offering a host of modern features to enhance safety and reduce operating costs. As expected, interest has been high and there is already a waiting list of potential customers who are keen to look over and fly the aircraft as soon as they arrive. Type Acceptance has been granted by NZ CAA in June of this year.

## The Cabri G2

The Cabri G2 is a two seat piston engined helicopter designed and constructed using many of the same technologies used in larger turbine powered helicopters. It features a fully articulated main rotor system, infinite life carbon composite blades, a fenestron tail, composite fuselage, modern avionics, and many other innovations.

An over-riding factor in the design of the Cabri G2 was safety. It is the only piston engined helicopter to be certified under stringent EASA CS-27 and FAA FAR 27 rules. An example of advances that have been incorporated in the design are the seats which have been shown in testing to be survivable in impacts as large as 2000 feet per minute. Another example is the fuel tank which utilises the same technology as Formula 1 race cars and has been shown to survive similar impacts without rupturing.



*The Guimbal Cabri G2 is a new, state of the art helicopter design, featuring best in class safety characteristics.*

Operating economics were also a major factor in the Cabri's design which has no fatigue life limited components!, all components including rotor blades and flight controls being maintained on condition. The engine and two gearboxes have 2200hr TBO lives specified and the fuel bladder has a 15 year finite life limit.

## Construction and rotor system

The main structure is of carbon composite construction which is maintenance free and very resistant to accident damage. A three bladed, soft-inplane, fully articulated rotor system provides for a wide flight envelope including strong winds and turbulence – normally the domain of larger turbine helicopters.

Carbon composite rotor blades are of high inertia design, are damage tolerant, and have been tested to achieve a on-condition maintenance regime, with no fatigue life limit. The Cabri boasts class leading auto-rotational characteristics.

## Fenestron Tail

The inclusion of a Fenestron tail is another first for this class of helicopter. Bruno Guimbal was extensively involved with tail rotor design during his time with Eurocopter. Together, Bruno and Eurocopter jointly hold several Fenestron tail rotor patents which has allowed the Cabri G2 to utilise this technology. Seven injection

## The evolution of a modern two seat helicopter

**IN THE** 1990's during his time at Eurocopter as one of the design engineers working on the EC120 program, Bruno Guimbal developed a working demonstrator of a two-seat piston helicopter. This machine incorporated technologies and safety features that were common place on modern turbine helicopters, but were at the time out of the reach of piston engine helicopter owners and operators.

Bruno was determined to show that it was possible to design and build a small piston engine helicopter with the levels of safety enjoyed by those who could afford a larger turbine machine. In addition to incorporating advanced safety concepts he also took advantage of several technologies that provided the superior flight characteristics found in larger turbine helicopters.

Helicopters Guimbal was established in the year 2000 with the purpose of certifying the Cabri G2 and putting it into commercial production. Research and production facilities were established at Aux-en-Provence in southern France.

In March 2005 the company achieved the first flight of F-WYHG, serial number 1001 and in December 2007, following six years of development and 300 hours of flight testing the Cabri G2 was awarded its EASA Type Certificate.

In May 2008, Eurocopter signed an order for a Cabri G2, and in September of that year the first customer delivery was made.

The two aircraft on their way to New Zealand are serial numbers 24 and 25. To date 25 aircraft have been delivered, with the high hour machine having flown in excess of 900 hours.

moulded blades are used in this design.

Aside from reducing the helicopter's noise signature appreciably (most helicopter noise is generated by the tail rotor blades), the Fenestron design provides for much safer operation in confined spaces and in high winds. Fine manoeuvres were accomplished in testing with crosswinds exceeding 50kts.

Other advantages include reduced Foreign Object Damage potential and the elimination of tail rotor vortex issues.

## Engine

The Cabri G2 utilises the venerable Lycoming O360 engine, but in this case including several new innovations. Control is by a digital engine governor and includes startup overspeed protection. Power output is 145hp at 3650rpm.

An STC (Supplemental Type Certificate) embodied on the engine is held by Guimbal and comprises a Plasma electronic ignition with variable timing to replace the right hand retard-capable magneto. This solid-state, maintenance free electronic ignition gives greater reliability and smoother starting.

The exhaust is discharged above the helicopter providing the quietest operation in its class and allowing it to land in long grass without the risk of fire

Lastly, the engine is installed using new vibration isolation mounts, at a more convenient height for maintenance access.

## Performance

The Cabri G2 weighs in at 925lb empty and has a maximum gross weight of 1542lb, for a 617lb useful load. Vne is at 130kts, maximum level speed is 100kts and cruise is 90kts. IGE hover ceiling at max weight is 5000 ft. Fuel capacity is 170 litres and range with a 15 minute reserve is 700km. Maximum endurance (at 50kts with no reserve) is 5 hours 40 minutes.

## Avionics and Instrumentation

A traditional suite of instruments are included along with the usual communication and GPS options. The core of the Cabri G2's avionics suite is an 'EPM' which displays aircraft and engine information in an intuitive manner. Functions include: Current power setting and limitation, automatic carburettor heat, chip

detectors, rotor and engine RPM, fuel level and 'time to stop', flight time, Hobbs time, flight logging and more.

## Luggage

The Cabri G2 has a 200-litre luggage compartment! The compartment can be loaded externally but can also be accessed from inside the cabin. It can accommodate two airline cabin sized suitcases and more, including the helicopter handling wheels. There is additional storage for soft items under the seats, and if necessary, the passenger seat can be removed entirely.

## Cabin and Ergonomics

The Cabri G2 has a spacious cabin with leather seats and ergonomics that have been well praised by pilots to date. Features include: a 4 way trim system with controls for both pilots, a digital engine governor, automatic carburettor heat, a rotor brake, cabin storage space, power sockets, heating and defog systems, adjustable pedals and tool-less duals removal, and pneumatic springs on the remotely lockable cabin doors.

## Optional Equipment

Aside from a variety of paint and trim options, customers can also add optional equipment such as: air conditioning, additional avionics, cargo hook, and pilot installable (and automatically deploying) pop out floats.

## New Zealand Distribution and Support

Pacific Aircraft Sales is a part of the Pacific Aircraft Group which traces its origin back 15 years to when Terry Murdoch purchased Christchurch Helicopters. That business

grew steadily during the early and mid 2000's to the point where it operated some 30 helicopters from bases in Christchurch, Auckland and Invercargill. Aircraft were operated in commercial and training roles, with a significant maintenance operation to back it all up. In 2008 a decision was taken to concentrate on the maintenance part of the business and the commercial and training aspects were sold to Helipro.

Pacific Aircraft Sales was recently incorporated as a result of an increasing number of aircraft sales transactions the company



*Clockwise from top: 1) The first Cabri G2 for our part of the world is this example now flying in Australia. 2) Three bladed, fully articulated rotor head with non-lifed carbon composite blades. 3) An elegant panel features avionics that monitor a variety of engine and aircraft functions. 4) Fenestron tail rotor offers numerous advantages and has been tested in 50kt cross winds.*

was becoming involved in due to the activities of clients of the maintenance business. Having followed the development of the Cabri G2 helicopter in France for some time, Terry believed that this machine would fill a niche in the New Zealand market. Along with Chief Engineer Steve Backhurst, he visited the factory in France earlier this year to get first hand knowledge of the development along with the people and facilities behind it. They were so impressed with what they saw that they negotiated exclusive New Zealand distribution rights on the spot.

Orders were placed for two Cabri G2's which are scheduled to arrive in New Zealand in mid September. One of these aircraft has been sold to a local businessman who currently operates an R22. The other machine will be used by Pacific Helicopter Training in a flight training role.

Pacific Aircraft Services engineers have undergone maintenance training on the Cabri and will be able to fully support the type when it becomes operational in New Zealand. They are in the process of establishing a maintenance support network throughout the country by accrediting selected maintenance providers who will undergo factory training.

**What it costs**

Operating costs excluding for capital or insurance are quoted by Guimbal at around NZ\$200+GST per hour. Final pricing for the aircraft in the New Zealand market is yet to be finalised and although the initial purchase price will obviously be at the top of the two seat helicopter marketplace, life cycle costs are expected to be very favourable. Given the Cabri's rotor system, Fenestron tail, maintenance regime, technology, safety, appointments, and friendliness in the training environment, the aircraft is likely to create and occupy a niche of its own for anyone seeking a small helicopter designed with safety foremost in mind and including the latest technology available.

**For more information**

New Zealand's first two Cabri G2s will arrive in September. To arrange a test flight or for any other information on the aircraft, contact Terry Murdoch at Pacific Aircraft Sales. Phone 03 359 6891 or 027 433 2647, email: [terry@pacificaircraft.co.nz](mailto:terry@pacificaircraft.co.nz) or visit [www.cabri.co.nz](http://www.cabri.co.nz)

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# Industry News Briefs

**Cessna 162 Skycatcher lands in NZ**

New Zealand's first Cessna 162 Skycatcher has landed. The two-seater is a clean sheet design, basic flight trainer in the Light Sport Aircraft - Standard category.



The demonstrator aircraft (ZK-DNA) is one of three Skycatcher's on order for the Auckland Aero Club. Chris Barry from Cessna Distributors Flightline Aviation says those who have had the opportunity

to fly the Skycatcher have commented on how impressive the performance is and that it is a brilliant 'stick and rudder' aircraft. Rob George, President of the Auckland Aero Club declares; "This aircraft is a game changer." With a cruise speed of 105 knots, the Skycatcher's Continental O200D burns approximately 16 litres per hour and Garmin G500 avionics provides a minimalist flight deck with easy transition to the Garmin G1000 avionics suites found in larger Cessnas. For more information on the Cessna 162 Skycatcher contact Chris Barry at Flightline Aviation on 0800 Cessna (0800 237762), email [info@flightline.co.nz](mailto:info@flightline.co.nz) [www.flightline.co.nz](http://www.flightline.co.nz)

**Skywork receive second safety award**

Skywork Helicopters Limited have won the annual CAA Aviation Safety Award for an organisation, for the second time.

The awards are presented each year to an individual and an organisation with an overwhelming safety ethos. Criteria require that the winners have gone out of their way to do the right thing, that their actions have directly resulted in safety standards being raised, and that they have

encouraged others in the aviation industry to do the same. The Awards are open to all individuals, and to operators and organisations involved in aviation in New Zealand.

Skywork previously won the award in 2000. The company, which was formed by Roger and Miriam Stevenson in 1997, now covers the full spectrum of helicopter operations using a range of aircraft from H300 to AS350 and a Kaman K-Max.

**Hawker Pacific RAAF King Air 350 Fleet**

The Hawker Pacific fleet of eight King Air 350 RAAF Air Combat Officer training aircraft recently achieved the milestone of 30,000 flying hours in service. The fleet has been operational since 2003 performing a range of training and other roles including Navigator, Observer, Pilot and more recently Air Combat Officer training.

Management of the fleet is provided by Hawker Pacific under a turn-key performance based contract which includes the lease of the aircraft. Hawker Pacific provides all elements of support required such as aircraft supply, special mission modifications, design engineering, maintenance, project management and spares provision.



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