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Helicopters get full composite treatment



The Adventourer flies more parallel to the ground than many helicopters



Scott Nicholls preparing laminates

helicopters, from pilot and maintenance manager through to developing helicopter accessories. His concept was for a five seat VIP – or six-seat utility – turbine powered, all composite helicopter.

Today's reality is one of the largest aircraft in its class, a 25.87 foot long, 3200lb gross weight helicopter able to cruise at 135 knots for up to 3.6hr with standard tanks (5.26 hours with auxiliary tanks) with a rate of climb of more than 1000fpm to its maximum operating altitude of 14000ft.

The Adventourer is especially notable for its low noise, payload, and luxurious, spacious

cabin, with its empty weight of 1750lb allowing for five six footers weighing 220lb each. An extra seat can be added in the front row. Luggage capacity in four lockers is 300kg.

The initial prototype made its first flight in May last year, and later in the year it was displayed in the New Zealand pavilion at EAA Airventure Oshkosh in Wisconsin last year.

"There was exceptional interest at that show, as well as plenty of aviation media interest," says CHI founder and president Peter Maloney. "We have about 250 fleet owners watching how it goes, and potential

orders for 50 aircraft, which would be three years' production at our present capacity."

Mr Maloney says the company's flight test programme is progressing, with the goal of having the Adventourer gain the US Federal Aviation Regulation Part 27 certification.

Adventourer's manufacturing time is very quick. The airframe is a moulded composite of Du Pont Kevlar (five times the strength of steel) and carbon fibre – materials similar to the Boeing 787 and America's Cup yachts. It takes five days for three people to mould this monocoque fuselage which includes the cabin and rotor sections, before the nose

section is added. All other internal components are then mounted through the doors. The 9m diameter rotor is also made of the Kevlar/carbon fibre composite, and a four blade, carbon fibre, ducted tail rotor provides anti-torque stabilisation.

The Adventourer has been designed to be powered by various Rolls-Royce/Allison civil and military surplus engines in the 320-450 shaft horsepower range. The basic main rotor gear box based on a design by CHI is modular, comprising an Intermediate gear box attached to a bevel gear box. CHI elected for a Time Between Overhaul (TBO)

New Zealand aviation facts

- There are 813 helicopters flying in New Zealand – the highest rate per capita in the world
- New Zealand's aviation industry is worth \$10 billion annually to the economy, and is growing at five percent a year
- The industry is conservatively forecast to grow to be worth \$12.6 billion by 2016
- We export \$3.7 billion of aviation products a year
- Our training, maintenance and regulatory environment provide excellent platforms for integrated aviation solutions
- The industry is scaling up to meet growing international demand for its sophisticated products and services



Various Rolls-Royce/Allison civil and military surplus engines in the 320-450 shaft horsepower range are specified for the KC 518 Adventourer