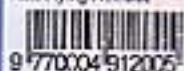


AUSTRALIAN

651 \$6.50

Aviation News/Dec



GG
51
22/10

WIN
SKY SUPPLY
SPENDING SPREE
SEE PAGE 41 FOR DETAILS *CONDITIONS APPLY. AUSTRALIAN RESIDENTS ONLY.

NOVEMBER/DECEMBER 2004

THE REAL THING
**FORCED
LANDINGS**

AIRCRAFT DOWN!
MID-OCEAN NIGHT
OF TERROR

IN THE DEEP END
**ROOKIE PILOT'S
FIRST JOB**

New generation of
**sports
aircraft**

★ALLEGRO ★TECNAM ★SPORTSTAR

\$6.50 / NZ \$17.50 (INCL. GST)
06
9-770004-912005
PRINTED IN AUSTRALIA BY PUBLISHING HOUSES AUSTRALIA



Czechmate!

A stunning new entrant in Australia's booming light sport aircraft market, the two-seat Allegro 2000 from the Czech Republic has proved a strong seller on performance and appearance. Allegro is Italian for "happiness," which as we're about to find out, is a condition induced by flying it. **Paul Phelan**

Imported by Michael Coates' Burleigh Heads based X-Air Australia, a total of 11 copies of this delightfully zappy little aeroplane have been ordered, with three factory-built aircraft and two kits already delivered.

Czech designer-builders Fantasy Air have opted for an unusual combination - metal wings and tail for lighter-weight structural strength in critical load areas, welded to a bonded two-shell composite fuselage for truly streamlined aerodynamics surrounding the cabin section. Composite work is subcontracted to a specialised Czech composite structures manufacturer who already produces a range of fibre reinforced plastic (FRP) components for other Czech sport aircraft manufacturers. The wing, with a huge 10.8 metre span, has a plan form similar to that of the Cessna 150/172 range, with outboard sections slightly tapered, and also a similar single-strut configuration. The wingspan provides for very large ailerons without sacrificing flap area, and wing loading is 45.73 kg/sq metre (9.36 lb/sq ft), a relatively high value for an ultralight, which accounts for its quite good ride in turbulence.

Under the two-section composite cowd is a 100 hp Rotax 912S driving a 3-blade Woodcomp composite propeller with fixed pitch, but which is ground adjustable to cater for preferred performance features. Simply, some owners are happy to sacrifice a few knots at cruise to get off the ground in short distances, while others who have ample strip length available, don't mind using more takeoff metres to gain higher cruise speeds and longer range.

Allegro's engine installation radiates the impression of superior workmanship, as does the rest of the airframe, instrument panel, and exterior and interior finish. The radiator is atypically mounted horizontally low at the rear of the engine compartment, which the manufacturer says ensures a constant, smooth airflow through the cooling system, and certainly also allows for a shapely nose cowl, which is neatly held in place by camlocked catches. Propeller clearance is good - an important quality for aeroplanes that are likely predominantly to fly from un-paved strips.

Standard fuel in the fuselage tank is 55 litres, and the fuel on/off lever is



Imported aeroplanes of this genre are increasingly popular and the Australian market is lapping them up.



Everything on the panel is well located, well labelled, and easy to read.

mounted on the instrument panel. All fuel lines are either under the floor, or forward of the firewall - a sound safety feature - and a long-range fuel option of two wing tanks, gravity feeding into the main tank, increases capacity to 105 litres.

A pair of rugged-looking composite main gear legs and attachments promise (and deliver) a hump-smoothing ride. The nosewheel, steered through the rudder pedals, provides a quite small turning radius, and positive tracking. It is slightly offset from the centreline to provide for the optional alternative fitment of a 65 hp Rotax 582, and the hydraulic disk brakes, unusually operated by a stick-mounted hand-brake style lever, are effective and smooth. The stick, (dual) throttles, flap and other primary controls are located so that everything can be easily used from either seat, but an alternative Y shaped stick is available for training.

Michael Apps, owner-operator of Cooma's Polo Flat airfield, provided the aircraft I tested from his airfield - see our *Pilots* section. Apps is mightily impressed by the aeroplane's performance, and keen to share the experience.

But first, a good look around this neat, sleek airframe.

From the outside

Up front, it's fair to say the overall design appears to have benefited from earlier FRP design work by Bundaberg-based Jabiru, who have now been building aeroplanes in this format since 1988. The only visible major design/configuration difference between an equivalent Jabiru and an Allegro is the latter's T-tail configuration. But there's nothing to prevent imitation of a successful design. If there was, Boeing and Airbus would be suing one another on a weekly basis.

Imported aeroplanes of this genre are



Owners can opt for two long-range wing tanks, gravity feeding fuel into the main tank, increasing capacity to 105 litres.

increasingly popular, and their attractiveness in the Australian market is detailed by Recreational Aviation Australia (RAA) under the definition: **Imported Factory Built Aircraft** - aircraft from Australian companies who distribute imported, overseas certificated, factory built "fly-away" aircraft, accepted for RAA registration under CAO95.55 paragraph 1.6.

It gets a bit complex here. RAA will only accept such aircraft at an operating maximum takeoff weight (MTOW) which is the *lowest* of:

- The "class legal weight limit" set by CASA for RAA operations. For a land borne aircraft this operating standard MTOW is 544 kg;
- The maximum gross weight permitted by the aircraft designer. An aircraft which by design is capable of operating at maximum take off weights

Allegro's engine installation radiates the impression of superior workmanship, as does the rest of the airframe and instrument panel

greater than the legal RAA limit, may still be able to be registered with the RAA provided that the pilot does not operate it above the legal limit. Some such aircraft are on the RAA Register, but they must carry a cockpit placard stating that the MTOW does not exceed 544 kg.

- The certificated MTOW set by an overseas national authority.

Accordingly, Allegro is permitted to fly in Australia at a generous 520 kg MTOW, its Czech-certified weight, providing a handy 245 kg of disposable load..

A walkaround confirms the first impression of superior all-over workmanship, evident in smooth surfaces, well-fitting panels and door seals, and just plain good looks. The manual provides an excellent preflight inspection checklist which we confirm on the walkaround. The aircraft, with us two reasonably hefty pilots aboard, has been topped up with fuel to MTOW, for an honest appraisal. There's nil wind at Polo Flat (elevation 2,700'), and the temp is around 12 deg Celsius.

From the inside

Getting into the Allegro is the BIF (backside in first) method common in ultralight aeroplanes. There's ample

cabin width, but headroom would have been improved if I hadn't confirmed to Michael that I was comfortable before we took off. Unknown to me, there was a simple seat adjustment available by which to adjust the seat fore and aft, and also its height by about 50 mm.

An ample luggage compartment behind the seats can store 20 kg of luggage, and there's some additional storage under the seats, right on the CofG.

Everything on the panel is well located, well labelled, and easy to read. There's no mixture control - it's automatic - and the Rotax is started with choke. It fires up easily and hums very smoothly while taxiing and at all RPMs in flight. Cabin noise is low enough for conversation, although excellent headsets and voice-activated intercom are provided.

The selector for the two-position electrically actuated flaps is handily located just in front of the control stick. Position 1, 15 degrees, is used for takeoff and position 2 is 48 degrees for landing only. In cruise, the retracted flaps are set at minus 4.5 degrees (negative), a heritage from many high performance gliders. Flap extension is indicated by a red flashing LED, and retraction by a green LED.



The generous prop clearance is an asset when flying from unpaved strips.

Takeoff performance, especially since we're almost 3,000' above sea level and at MTOW, is nothing short of amazing. We rotate with light stick pressure at about 50 KIAS before the first gable marker, in what I estimate to be something like 100 metres from brakes release. With flaps retracted we're climbing at full throttle at 1200 fpm. Michael tells me that at lighter weight solo, this figure can be up to 1,400 fpm, but he favours a less extreme cruise climb at 70 KIAS, which still delivers around 800 fpm.

General handling qualities are excellent, with light control responses creating no need for constant attention to trimming for different configurations. Once in stable, trimmed flight, the Allegro will almost fly hands-off. However the large ailerons create considerable adverse yaw, and you must input rudder

into and out of turns, or the ball will try to escape out the side of the slip indicator - and like many another ultralight or glider, you'll lose aerodynamic efficiency and therefore speed.

At a continuous 75% power setting (5400 rpm) straight and level, you're likely to exceed the Allegro's Vne of 118 KIAS, but at 5200 rpm you'll still indicate 107 kts, and 5000 rpm gets you an impressive 100 kts combined with a modest fuel burn. Throttling back further to reduce fuel burn, 4800 rpm resulted in 95 kts, the aircraft's stated normal cruise, and a modest 13 litres/hour burn.

The low nose provides excellent taxiing and flight visibility, but in steep turns is a little too far below the horizon to make a convenient nose attitude reference. The overhead transparency is also useful in steep turns. Roll rate is brilliant at normal speeds - about 3.5 seconds from 60 degrees left to 60 right. With flaps at the takeoff position this increases to about 5.5 seconds.

Stalls

Although there's no electronic stall warning, stall characteristics are such that you're highly unlikely to stall the aeroplane inadvertently. The onset in all flap configurations comes with notable buffeting and aerodynamically-induced stick shake about three knots before breakaway, manifested by a marked wing drop which is easily recovered by lowering the nose and applying rudder, albeit with around 100' height loss depending on your handling responses. Deliberate mis-handling and/or a failure to respond to obvious sink-rate clues, would be required to produce a stall in the approach configuration, and a slight power increase will promptly flatten out the descent.

Stalling at 5400 RPM, (75% power,) is much more of an adventure, and doesn't occur until the aircraft seems to be climbing almost vertically. At (about) 36 knots, without noticeable pre-stall buffet because of the rapidity of airspeed reduction, a major wing and nose drop



The wing of the Allegro has a huge 10.8 metre span, providing for very large ailerons without sacrificing flap area.



Ample cabin width and 20 kg worth of luggage area put this aircraft into the comfortable long trip category.

occurs and the aircraft almost rolls inverted, but normal out-of-spin stick and rudder quickly have you back under control. It's vital to reduce power early in this manoeuvre, to avoid flying into the airspeed indicator's yellow arc. Spins are not approved, and if you've tried a 75% power stall you're unlikely to be tempted.

It's relatively easy because of the large rudder and aileron areas, to enter and maintain a stable sideslip, with up to a 1,500 FPM descent rate, and adequate spare control authority to manoeuvre the Allegro directionally. This capability, along with the highly effective flaps which have a maximum extension speed of 60 kt, provide excellent forced landing safety margins. We prove that by setting the throttle at "zero thrust" and shooting a forced landing. The preferred paddock looked a little too far away, but Michael assured me we'd make it with our sleek, low-drag airframe producing a very flat glide at 60 kt clean and he was right - on base, we had to utilise full flap and some sideslip to position for the hypothetical touchdown.

There was no significant wind at Polo Flat to try crosswind landings, but

practicing them at altitude proved it was easy in all flap configurations, to kick the descending aeroplane into a mild sideslip and hold it there so the upwind main wheel could arrive first.

By now I'm feeling comfortably at home in the aircraft, that comfort enhanced by its low cockpit noise levels, smooth, vibration-free powerplant/prop combination, and excellent ventilation.

Circuits

Back in the Polo Flat circuit, we shoot a few stop-and-go's. Stage 1 flap and around 55 KIAS produces a moderate rate of descent consistent with a normal-looking circuit, and selection of full (48 deg) flap has an almost arrestor-hook outcome, which needs to be countered either by considerably steeper nose-down attitude or (preferably) enough power - quite a lot - to maintain a normal descent profile at the normal 44 KIAS final approach speed.

At this point there's a nice balance between stopping distance and takeoff run, both impressively short. Controllability right down to the touchdown is excellent, without any tendency to over-flare (balloon), and the

low touchdown speed actually enhances your height perception and thus your precision by not blurring the landscape outside. Touchdown at (about) 38 kt provides a landing roll of less than 100 m without undue braking, and the undercarriage produces smooth landings and easy runway handling.

An approach and landing at 48 KIAS with flaps at 15 degrees (Stage 1) is less adventurous, requiring much less power to maintain a normal profile, and only a minimally longer landing roll.

Recommended flapless approach speed is 56 KIAS and produces a very flat glide path due to the clean aerodynamics, and slow deceleration to a touchdown at 46 KIAS, which extends the landing roll notably. I would expect this aeroplane to be very tolerant of crosswinds up to at least 15-18 kt. I'm told it can be operated with the doors off, and vacuumed out with a sideslip. Less dramatically, the windows can be easily opened in flight for photography.

Worthy contender

Allegro, which can be registered AUF and probably soon also GA, has all the handling qualities, operating economics



With pricing starting at \$66,748 - here's an aircraft that's not beyond reality.

and ruggedness in critical structures, to be a highly economical trainer, and it also has the personality, interior comfort and range capabilities to make it a great touring aeroplane.

Pricing of the model I flew starts at \$66,748, fitted with the Rotax 912 100 hp engine and standard options - ASI, VSI, altimeter, slip/skid indicator, and gauges for flap position, fuel, oil pressure, oil temperature, CHT, fuel pressure and tach. The manufacturers recommend

the 80 hp engine as more economical and adequate for cooler climates, and the 100 hp model for "hot and high" operations.

A complete listing of accessories and options includes a ballistic recovery parachute system. If your local airfield charges too much for hangarage, you can remove the Allegro's wings in less than 30 minutes and take it home with you.

I think we'll be seeing a lot of this lovely little aeroplane. ■