FLIGHT TEST: Tecnam P2010 triumphs

By: **PETER COLLINS**

The Tecnam P2010 is on course to receive European and US Part 23 certification this month.

In May, I travelled to the Tecnam production facility in Capua, about 25km (16 miles) north of Naples, to fly and evaluate the production standard P2010 prototype that was being used for the European certification programme.

The high-winged, four-seat P2010 is planned to fill a defined gap in the Tecnam product line-up that now ranges from the twin-engined P2006 to various two-seat very light aircraft that include the P2008 and from which the P2010 was developed.

With a similar price, as well as external dimensions, weights and powerplants (variable pitch propellers, diesel engine and turbo petrol engine versions are already planned for after certification), the P2010 is aimed squarely at being the first, all-new, direct competitor to the Cessna Skyhawk and Skylane piston singles that first flew nearly 60 years ago, and which remain successful and in production today.

The simple objectives for the short test flight were to evaluate just how well Tecnam had engineered the P2010 to compete with the Cessna duo and whether it truly represents a step change in four-seat, high-winged design and operation, as befitting a 21st century aircraft.

The P2010'S fuselage is made entirely from carbonfire, but the wings are constructed from conventional aluminium alloy

CARBONFIBRE FUSELAGE

The first and one of the biggest advantages of the new P2010, is that the fuselage is made completely from carbonfibre. This provides considerable basic weight savings, an aerodynamically complex and streamlined shape and a perfectly smooth surface. That Tecnam have mastered the manufacture, maintenance, repair and EASA/US Federal Aviation Administration certification of large, carbonfibre structures is significant and this expertise will bring the company considerable benefits in future. Tecnam estimate an initial production rate for the P2010 of 20-30 units per year. The aircraft will be certificated for day and night, VFR and IFR operations and for flight outside of known icing.

The wing construction remains conventional aluminium alloy, as does the all-moving horizontal stabiliser. The engine (for initial certification) is a four-cylinder Lycoming IO-360-M1A, driving a twin-blade fixed-pitch propeller (again for initial certification) and developing 180hp (134kW) at 2,700 rev/min. The tricycle gear is faired and fixed.

COCKPIT FEATURES

The cockpit avionics will be certificated with three options: analogue IFR, a Garmin G500 IFR or the large, twin-screen Garmin G1000 IFR with integrated autopilot. The G1000 IFR's digital power and flexibility of display makes it the likely choice for most customers will choose and was the avionics configuration fitted to the aircraft for the evaluation.

As presently set at initial certification level, maximum take-off weight is 1,160 kg (2,557lb) with a basic empty weight (BEW) of 710kg. This gives the aircraft a maximum useful load (passengers, baggage and fuel) of 450kg. Fuel capacity is 240 litres (63USgal), while baggage capacity is 80kg. The P2010's maximum range fully fuelled is 715nm (1,325km), allied to a service ceiling of 15,000ft. Cruise speed (75% power at 6,500ft) is 133kt (256km/h) with a fixed-pitch propeller, and 143kt with a variable-pitch propeller. Vne (never exceed) will be set at 171kt.

From a hard dry surface, the take-off ground roll is 800ft (245m) with a take-off distance of 1,260ft to clear a 50ft obstacle. On landing, the ground roll is 660ft, with a landing distance of 1,030ft from 50ft over threshold. Initial climb rate at maximum take-off weight is 850ft/min (4.3m/s) with a fixed-pitch propeller or 1,050ft/min with a variable-pitch one. All these figures add up to an aircraft that has exceptional short-field performance, combined with excellent cross-country touring capability. The maximum demonstrated crosswind is 20kt.

To set this into a real-world context, full fuel (equalling 96kg), two adults and two children (weighing an assumed total of 270kg) and 80kg of baggage would still allow for full range (715nm). These real-world figures equate to outstanding aircraft useability for future private owners and flight schools.

Cabin dimensions are also critical to comfort and the P2010 cabin is 1,807mm (71in) long internally from instrument console to the rear passenger cabin compartment wall and 1,140

mm (45in) wide. The rear seats feature their own large, separate third entry door on the right hand side of the fuselage, as well as an external access door to the baggage compartment, set on the same side.

The price quoted for the P2010 with the G1000 IFR option, is €269,900 ($328,000) and indicates that “affordability”, for such a new four-seat aircraft, remains comparable with its competition.

Pilots Marco Locatelli (left) and Peter Collins

SLEEK SHAPE

My Tecnam safety pilot for the evaluation was Marco Locatelli, a graduate experimental test pilot and former Italian Air Force Lockheed F104G and AMX International AM-X pilot. Marco would handle the navigation/air traffic control and I would fly the complete evaluation from the left-hand seat, including formation flying of a chase aircraft. The sortie was flown from grass runway 26 at Capua (LIAU). Weather was OAT +24C, QNH 1,015hp and CAVOK. The aircraft was P2010 registration I-EASA. The aircraft’s all-up weight at take-off was 1,060kg including two pilots with 100 litres of fuel (the prototype being heavier at a BEW of 760kg plus 60kg of ballast).

My first impressions when approaching the aircraft were of its very sleek shape, the large size of the three entry doors, the obvious utility of the rear passenger door, the low entry sill height and the massive amount of cabin space and legroom for rear passengers. The cockpit instrument layout with the G1000 was exceptionally neat and uncluttered. Once seated, the front pilot seats had a massive amount of fore and aft adjustment, plus rake and additionally,

a seat raise/lower, which is an enhancing feature in any GA aircraft. The aircraft instrument console had a very low vertical profile giving a superb forward field of view over the nose and the best I have seen in this class of aircraft. The highly raked front windscreen allied with the wing being set well back meant field of view upwards and sideways was still excellent. The very large pilot door side windows extended below elbow level and allowed for panoramic views downwards. The cockpit/cabin felt considerably wider than any other four-seat GA aircraft I have flown before – including my own Piper Arrow IV – and overall, the internal aircraft environment felt exceptionally comfortable, modern and well designed.

Starting was conventional, by key, and the engine started eagerly. The engine controls are set within a control quadrant (rather than being push/pull levers) and were well placed to my right hand in my seating position. The control quadrant, with just throttle and mixture control in I-EASA, had a central space for a propeller lever for later variable-pitch propeller options.

The G1000 aligned rapidly and we were ready to taxi almost immediately. The parking brake is recessed into the side of the central console at the level of the left-hand pilot's right lower leg. My suggestion would be to make the operating handle bigger and more obvious. Ground steering is by differential braking, operated by the rudder pedal toe brakes and a free-castoring nose wheel. The aircraft response was highly accurate to my inputs as I taxied out at Capua on the narrowest tarmac taxiway I have ever seen.

Take-off was made with TO flap. The flap drive is electric, the flap control is a small lever on the lower central instrument console and the flap indications are three individual lights showing UP, TO or LAND – another neat design feature. Take-off acceleration on grass with a fixed-pitch
propeller was moderate but standard for this class of aircraft and engine power. The rotate of 50kt was achieved within 300m and the aircraft climbed at around 800ft/min in chase of the lead aircraft. Tecnam quotes a best angle of climb speed (flap UP) of 78kt (or 76kt flap TO) and a best rate of climb speed (flap UP) of 83kt.

RESPONSIVE HANDLING

After take-off, I immediately noted the aircraft to be highly responsive. Pitch and roll breakout forces were tiny; there was no freeplay at all in the control yoke; the centring in both axes was exact after yoke displacement. The P2010 controls do not use springs for centring or feel but simply use aerodynamic feedback from the control surfaces themselves. Required control displacements at the yoke were small and control loads were light and well harmonised.

The aircraft's response was instant to input and closed-loop tasks, such as close formation, could be achieved with accuracy. The aircraft was, however, slightly lively in yaw and Tecnam is evaluating an electric rudder trim. I liked very much that the control yoke was small, set quite low, very comfortable to hold in my seating position and did not obscure the G1000 display screen in any way.

With distinct longitudinal stability, an effective electric pitch trim, a roll rate in excess of 40˚/s, deadbeat Dutch Roll damping and neutral static stability, the aircraft was simply a pleasure to fly, manoeuvre and cruise. The “flyability” of the P2010 was comparable with a two-seat “sport” type
aircraft and was simply the best I have ever flown in this four-seat GA category, by a very large margin.
Stalls were conducted with all flap settings and showed, with full flap, a stall warning occurring at 55kt (audio tone and buffet) and stall “G” break at 48kt. Two, one-turn spins were also conducted, one in each direction, from an entry altitude of 4,000ft and an entry speed of 70kt. Recovery was rapid and total height loss from entry to level-off was 800ft, in both directions.

On the recovery to Capua, I dived the aircraft to 145kt. There were no additional vibrations, lateral control forces had increased by only a small amount but pitch response had become more sensitive to input. One visual circuit to full stop landing was flown at Capua. TO flap limit is 95kt and LAND flap limit is 83kt. The final turn was flown with LAND flap at 70kt, slowing to 65kt for final approach.

Speed stability was good but the tape airspeed display of the G1000 presentation could benefit from an adjustable blue target speed bug for pilot attention. The approach was deliberately offset by about 164ft down to about 150ft when a S-bend correction was made to final line-up. This offset manoeuvre was flown with ease into a very accurate touch-down at the intended point and landing precisely at the intended speed of 60kt. Ground roll was no greater than 200m.

The G1000 will be able to support systems such as the Traffic Information System, WX pictures overlaid on map display (via Iridium or NEXRAD), modern runway approaches using Satellite Based Approach Systems (SBAS), VFR/IFR approach plates and Safetaxi (airport ground maps). The combination of advanced avionics and docile aircraft handling means the P2010 has high “survivability” built into its design.

GLITTERING FUTURE

The P2010 impressed me from the outset. It looks, feels and flies like a modern aircraft and does represent a step change in this type of four-seat GA aircraft design. I believe the Tecnam P2010 significantly exceeds the “flyability”, “useability” and “survivability” of the Cessna Skyhawks and Skylanes and equals them on affordability.

The P2010 was genuinely a real pleasure to fly and future owners will be inspired by the aircraft’s combination of advanced avionics, very short field performance, exceptional useful load capability and excellent cross-country range. With new powerplant and propeller options planned after certification, the P2010 has a glittering future ahead of it and is likely to become a best seller in its class and within the Tecnam product range. If I could trade my own Piper Arrow IV Turbo, the P2010 is the aircraft I would buy.