Twin safety on

Geoffrey Boot renews his MEP and IR in this stylish Tecnam twin and finds it very much to his liking. Photos: Flyer magazine

Followers of my flying exploits may recall an appetite for two engine flying. Of late, however, even our venerable Twin Comanche, which has sadly been grounded for some months, has come under suspicion for being fuel hungry (now more per litre than cheap wine!) so much so that we have been using our SF260 for hops across the Irish Sea from the Isle of Man. However, one engine with the 60-plus miles of rough Irish Sea below, particularly in winter, requires faith and courage. I know, the engine doesn't know it's over water — but we do!

My colleague Andy Cragg, with whom I have owned aeroplanes for many a year, has been suggesting we cast our eyes over the miniature version of the Partenavia, the new Tecnam P2006T, for some time. To be honest, in my ignorance I had dismissed it simply because it featured Rotax engines. My early encounters with the two stroke versions had not been that happy.

However, the requirement for an IR and MEP renewal prompted me to phone Tim Orchard, ex-Concorde pilot, venerable examiner, better still an operator and also agent for Tecnam in the UK and Ireland. After some frustrating delays over the winter with the snow and cold weather conspiring against us we finally got together in January on a sunny, but later very wet and overcast day, providing an opportunity for me to test the aeroplane and for Tim to test me.

Let me set the scene. Tim arrives, we have a cup of tea; Andy arrives, we walk round the aeroplane, Andy takes off for a few circuits; Tim returns and in the meantime I've planned the IR test; another walk-round and briefing and I'm in the hot seat lining up straight into the missed approach then ILS

single money

procedure at Lydd.

Before you get too worried – or perhaps not – yes I did pass the test, but before I go into the foibles of the aeroplane which unfolded during the process, I would reiterate Tim's comment as we left the first hold into the procedure. It is probably indicative of how easy this new generation of twin engined aircraft are to fly: "You're obviously having to work hard with the glass cockpit you're not familiar with, but incidentally are flying the aeroplane very accurately". Handling the aeroplane was definitely not the hard part.

Background

It has been fairly obvious for some time, especially for those who own and operate twins – and in these I include training organisations – that the cost of fuel is fast becoming prohibitive. When you factor in the cost of new aircraft and their continuing maintenance, is there any wonder that £300/£400 an hour is becoming de rigueur. There has long been a gap in a market looking for an economical twin that will provide a safe transport platform, while displaying all the characteristics required for multi engine training.

The Diamond D42 Twin Star started to tick some of the boxes but the hiccup with the diesel engines, its long wingspan, and a high purchase price, has been a barrier to many potential owners. Taking on board the 'do you need six seats' question (which you don't when you're training, or there's two of you and all you've got is your luggage), but you want that other engine for IFR or sea transit security, the only way of bringing down costs dramatically is and has been to identify efficient, reliable engines then combine them with an even more

Top: 'a miniature version of the Partenavia' from the pencil of the same designer
Above: fuselage extensions allow for a wide and stable main undercarriage

efficient airframe. JetA rather than Avgas with the Diamond solved part of the problem but a new, expensive engine design conspired to keep the cost up.

That's where Professore Luigi Pascale entered the fray. The designer of the Partenavia obviously recognised that scaling down the concept and combining it with the now very successful Rotax 912S four-stroke was a recipe for an efficient, frugal but very capable aeroplane. The Rotax 912 has evolved beyond my early Rotax scepticism and now sports a TBO of 2,000 hours or 15 years, and of course is in use and well proven in many light aircraft throughout the world.

The aeroplane

There's a lot to be said for conventional aluminium construction. It's stood the test of time, is relatively easy to maintain and that's where this aeroplane sits. The fairly lightweight construction avoids looking or feeling tinny: a clever combination. The aeroplane looks uncannily like a smaller version of the Partenavia, combined perhaps with a Dornier 228.

The compact Rotax engines seem to sit into the wing structure, presumably reducing drag and weight, and the wing tips sport very distinctive upturned winglets. The cockpit area is suspended below the main spar, with much of the load forward of the centre of gravity. Two 100 litre wing tanks sit within the wing. Strangely they are unpainted – apparently something to do with EASA and the conductive qualities of the paint used on the wings. I know, don't ask me, Tim wasn't really sure why either. A small stepladder is supplied with the aeroplane to make visual inspection of the tanks as well as checking of the oil possible.

The cabin/cockpit inside is much larger than anticipated. There is a door on the left side for pilot access and the seats slide well back, making access easy. On the right side there is a further door to the rear to load passengers and luggage. I sat in the rear cabin and even with the pilot seats reasonably well back there is plenty of space for two adults, behind which there is a cavernous area capable of taking another 80 kilos.

This is not a cabin class twin: putting it in perspective, the overall cabin area is probably a little larger than a PA28, particularly taking into account the baggage area at the rear. The seats, whilst modern, were a little on the hard side but in practice proved comfortable.

The aeroplane sits close to the ground and you notice this, not only as you enter but when you are seated. Whilst the

TECNAM P2006T

AIRCRAFT	
Basic price :	€305,500
Glass IFR version price :	€358,484

POWER
Engine 2 x Rotax 912S, four cylinder, producing 98hp each
Prop 2 x MT 2-blade constant speed, full feathering.

DIMENSIONS	
Wingspan	10.6m
Wing area	14.4sq-m
Length	8.66m
Height	2.58m
Cabin width	1.2m+
Seats	4
MTOW	1180kg (in 2011 MTOW 1230kgs)
Empty weight	760kg
Max payload	420kg
Fuel capacity	two 100l fuel tanks

PERFORMANCE	
Vne	168kt
Cruise	145kt
Range	710nm
Ceiling	15,000ft (single engine 7,000ft)
Take-off roll	225m
Landing roll	180m
Rate of climb	1260fpm

All specifications and performance figures are supplied by the manufacturer. All performance figures are based on standard day, standard atmosphere, sea level, and at gross weight unless stated otherwise.

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Above: interior feels spacious, with plenty of room for the rear seat passengers
Left: 'cavernous' baggage compartment can accommodate 80 kilos of luggage
Right: doors cannot be opened when the engines are running, luckily

visibility is good forward, it is slightly more restricted to the sides due to what one assumes are structural pillars ahead of the side windows.

The entry doors are exceptionally close to the propellers but Tim assured me that there is a clever mechanism that does not allow them to be opened whilst the engines are running. I didn't put it to the test!

For the more technically minded, the wings are of a laminar flow type, fitted with Frise ailerons and electrically operated slotted flaps. The aircraft sports a stabilator à la Piper and the fin and rudder are of conventional construction. The overall dimensions are quite small, with a wingspan of 11.4m and length of 8.66m. The Rotax engines are fitted with fully feathering two blade MT props which are geared to the Rotax engines.

Internally the cockpit and cabin are well trimmed and finished. Up front the panel is dominated by the glass screens of the Garmin G950 integrated flight deck system with a GMA1347 audio panel sitting between the screen. As alluded to earlier, this was my first experience of this new generation of kit. The engine instrumentation was of an analogue type.

The controls themselves are conventional yokes, standard rudder pedals and toe brakes. Below the Garmin screens there are three standby flight instruments, the sort that I understand well, as well as a clock and fuel pressure gauges.

As the aeroplane is used primarily for training, no autopilot is fitted, but the factory option is an S TEC 55 which combined with the Garmins is about as good as it gets for us lower-end GA pilots. The central quadrant sprouts the usual three pairs of levers but because of the Bing carburettors that deal with mixture adjustments automatically there are just throttles and prop control, the other pair being carburettor heat. Below the levers are choke controls and parking brake.

The undercarriage is an electro hydro operated system. If this fails to operate the emergency system uses a nitrogen bottle to send extra hydraulic fluid into the lines. The emergency selectors are on the floor to the front of the pilot's seat.

In terms of load, with two pilots and full fuel it's best to have some luggage in the back to stay within the C of G but you'll go 650 nautical miles. On the other hand if you start filling the seats and baggage compartment then the trade off is going to be fuel but even then with four up and

some baggage, the range, depending on weight, will be 300/400 nautical miles. Ranges will increase following an impending increase of the MAUM to 1230kgs (current and future P2006T's)

Getting going

Having briefed on the Garmin, starting the Rotax engines is akin to starting my car. After selecting fuel pumps and ignitions both engines started instantaneously; taxiing with the conventional rudder pedals and toe brake pedals is simple, with a reasonable turning circle. Pre departure checks are pretty standard for a light twin and we were soon lined up and ready to roll. Acceleration doesn't exactly kick you in the pants, it doesn't need to because it doesn't take long to reach rotate at 65 knots, the nose wheel comes off earlier, and we were airborne shortly thereafter in around 300m. Take off flap is recommended for all take offs. Tim had briefed 80 knots for initial climb, which is coincidentally blue line speed (Vy and Vyse) but to be honest that felt slow and nose high so I naturally reduced the angle and settled at around 95/100 knots, which just happened to be the recommended en route climb speed.

By this time I was not really worried about the view ahead as I was concentrating hard on the Garmin display, working out my altitude and speed. This proved surprisingly intuitive and it wasn't long before I had mastered the display and was able to concentrate on identifying the requisite beacons for the test.

Needless to say, all went well and after the first ILS Tim perpetrated the required engine failure, and with quadrant covered simulated failure of the right engine. This was not the drama it can be in many older twins; with a reasonably light application of rudder the engine identified and shut down (touch drills). We continued to climb at blue line speed as Tim set zero thrust on the so called dead engine. At the 80-knot blue line speed we were climbing at over 200ft a minute. While it took me a second to decide where the balance ball was, as it's actually a small rectangle set above the HSI on the screen, we continued with the asymmetric NDB/DME procedure which proved no more difficult to fly than the ILS.

Flip-flopping the frequencies on the Garmin with automatic beacon identification is a new luxury — forget the Morse! All combined with the very docile handling characteristics to make a good instrument/training platform and one I'm sure students will adapt to very quickly, as indeed I did.

Internally, the noise levels are low. One criticism is that the undercarriage limiting speed of 93 kt is a bit on the low side. However, later in 2011 this limit will be raised to 119 kt, which will help during instrument approaches where a little bit more speed during the initial approach might be appropriate. This will be retrospective to all P2006Ts.

The MEP renewal also requires some general handling work which enabled me to get to grips with a few steep turns, the

This photo: roll rate is adequate, stalls hold no nasty surprises

roll rate being more than adequate, as well as a dally with the stall. Once again no nasty surprises: the stall warner starts to sound a tad under 70 knots, there is some light buffet and the stall happened at around 60 knots. With first stage approach flap (equivalent to take off flap), the stall speed lowers and the break is a little more pronounced with a tendency to wing drop. Recovery is simple: with the nose down smoothly apply power resulting in a loss of 300/400 ft. The reality is in normal flight you would have to be very distracted or careless to enter a fully developed stall.

In the cruise it's really a matter of deciding how much noise, or indeed fuel, you wish to burn. Flying the procedures I initially had the power back at 20 MAP 2000 rpm which was turning in around 115/120 knots IAS with cruise flight at 24 MAP 2000 rpm. This raised the game to 125 knots, and by pushing the throttles further forward the aeroplane nudged 132/134. Obviously this is at low level; climb a little bit and the modest power setting will true out at more than 135 knots. Not the fastest aeroplane on the block, but plenty for training and comparable to the Grumman Cougar or Piper Seminole. Substantially slower, however, than most of the larger twins and my Twin Comanche, which at low level is a 140 knot aeroplane – but then you have to balance that with the fuel burn.

Tim assures me 40 litres an hour total is really maxing it. They have over 200 hours operational experience and the average is 35/38 litres an hour. Perhaps with the two engine security, taking a little longer to get there on less fuel than any of the competition is worth the trade off.

In the circuit once again I found I had to be careful not to exceed the undercarriage limiting speed: 80 knots with initial approach flap and undercarriage down seems about right with full flap producing a lot more drag on shorter finals reducing speed to 70 knots for the threshold. Crosswind limit quoted as 17 knots demonstrated, more I suspect with a bit of practice, although I am not encouraging anyone to do it.

Where the aeroplane really comes in to its own is its grass field/short field capability though I didn't have an opportunity to wring this out, operating from nearly a mile of tarmac. Tim says: "Bear in mind the factory does all its test flying from a grass strip". The manual reinforces this, and unusually instead of having to factor in grass field performance you have to factor it out for tarmac, so the performance figures just get better.

Fully load the aeroplane and with zero wind on the proverbial grass, in ISA conditions, it will leave the ground in 270m. In same conditions the TODR is 370m. Landing roll is even more impressive sub 200m. Put the aeroplane on tarmac with a head wind and you have STOL like performance. It is rumoured that one individual has been to known to land, come to a full stop and take off on a runway just 550m long. Perhaps I should say, don't try this at home!

Tick box conclusions

Ticking boxes is the name of the game when you're looking for a new aeroplane and for me this is an aeroplane that ticks a lot of those boxes :

1) It's not that expensive for a new aeroplane compared to the competition.

2) Its Rotax engines are proven and with its conventional construction it doesn't look as though it's going to eat lots of money in maintenance.

3) Most of the technology is already proven.

4) It will, and I haven't mentioned this earlier, run on Mogas as happily as it does on Avgas 100LL, something that may become increasingly important particularly as the price of Avgas escalates. If operating from your own strip then there is a Mogas alternative. Also, the hours between oil and plug changes are doubled if Mogas is used – another cost saving.

5) Two engines – this aeroplane burns so little fuel for a twin (in fact it's akin to operating a Cessna 172) that you are in effect almost getting two for the price of one, with that added safety and security.

6) Short field performance par excellence — Small is beautiful. It won't occupy that much hangar room for those who might want to operate from their own strip.

7) It's a great training platform. Not only is it relatively easy to fly, it operates and handles like, and is, a conventional twin — just what we instructors want.

8) It has a very low noise footprint as well. When Andy took off with Tim initially I didn't actually hear the aeroplane go — good for your neighbours.

9) It doesn't look half bad. I mentioned it was Italian and the Italians do have a canny habit of producing good looking aeroplanes.

10) The only box that perhaps doesn't tick is that of speed, but then as I get older do I really need to be there that 10 minutes or 15 minutes earlier? 9/10 not bad!

I owe thanks to Andy, whose insistence and persistence finally persuaded me to give the Tecnam a try. This is really a Flying Farmers-type aeroplane with two engines but at the same time it's an excellent training platform with all the characteristics required to put trainees through an MEP and IR.

I already have a 440m strip and the thought of being able to operate from this and house the aeroplane in my own hangar is an attractive proposition. Watch this space, as they say. ■

Below: the Tecnam really comes into its own on short grass fields