Microlight Flying

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With a well-established manufacturer selling a well-established product with flawless handling and good performance, it appeals to both head and heart, says **David Bremner**

IT would be hard to think of three more experienced people in the microlighting world than Paul Dewhurst, Rob Grimwood and John Waite.

They all have a lifetime of experience competing at the highest level, managing the BMAA, running schools and importing microlights, including the Skyranger range (which Paul's company Flylight now owns) and the Delta-Jet which John and Rob's company Exodus builds, and which is reviving the flexwing market.

So if the three of them decide to import a little-known Czech three-axis model, it's probably a good idea to sit up and take notice.

When I visited Sywell, Paul and Rob were standing by their new toy, the DirectFly Alto NG. The first thing that grabs your attention is that glorious paint job. It's a deep, lustrous red with black trim, and if my wife had been there, she'd have bought one on the spot.

The Alto airframe is all-aluminium construction apart from the cowlings and fairings, which is why you have greater freedom of choice than with composite construction, which requires light colours to limit the build-up of heat in the sun.

One potential downside with aluminium is the potential for corrosion, and I was told that all parts are painted internally before assembly and painted externally afterwards. The paint finish on this aircraft looked flawless.

The basic layout is similar to a Eurostar: low wing side-by-side tractor monoplane with tricycle undercarriage, and the most obvious difference is the canopy, which slides forward for access instead of hinging upwards.

Over a cup of tea, I learned a bit more about the DirectFly factory at Brno in Czechia (formally the Czech Republic). It's a small organisation formed in 2000 that started production of the Alto in 2008, and the UK example is serial number 256.

Czechia has a long history of light aircraft manufacture, and DirectFly is located close to many other manufacturers and able to share expertise.

Rob, who has a Masters in Aeronautical Engineering and should know, said that the quality control in the factory is very impressive: well-laid-out shop floor and full traceability of every part throughout manufacture, all identified using QR codes. ▷

The Alto NG is an upgrade of the original Alto to meet the new 600kg microlight regulations in place throughout much of Europe, and it's been approved by Czechia, Canada, Germany, Poland, Turkey and Ukraine.

Apparently DirectFly has just delivered 10 Alto NGs fitted with glass cockpits to the Ukrainian Air Force through a public funding initiative called 'a Gift for Putin' which was matched by the Czech government.

A closer look

So let's take a closer look. The riveted all-aluminium construction limits the use of compound curves, but although the sharp corners are extended well into the cowlings, the overall effect isn't in any way boxy. The rectangular openings in the cowling are reminiscent of the current generation of cars, and add to the overall look.

Starting at the front, the e-Prop Durandal three-blade propeller is driven by a 100hp Rotax 912S.

The top cowling comes off with several Camloc fasteners, and if you look at it closely, you'll see that the engine is offset to the right by a degree or so to counteract the right pedal you normally need on climbout. The left opening is tightly ducted to the engine airbox, and the right is tightly ducted to the cylinder cooling ducts.

The radiator is in the lower cowling opening. Carb heat, if you need it, is fed directly from the engine compartment. Access to the engine top is good, although those ducts might make it necessary to remove the lower cowling for access underneath. However, there's a quick access hatch to check the oil level.



The seats are lightweight, but very comfortable

The nosewheel is connected to the rudder pedals, and has bungee suspension. The mainwheels are mounted on composite half legs that provides suspension, and they're fitted with Beringer brakes.

The wings are constant-chord, with a pretty standard section and small root fairings. Fuel tanks containing 46 litres on each side form part of the leading edge, but are a separate part, enabling them to be tested and fitted separately.

There are very fancy optional landing lights fitted in each leading edge, with a unique wig-wag function that operates the landing lights alternately to maximise your visibility in the circuit.

> 10 have just been delivered to the Ukrainian Air Force

Unlike the Eurostar, the electric flaps are slotted, hinging down and back to open up a gap that allows high pressure air from the underside of the wing through to the top of the flap. The Frise-type ailerons are larger than the Eurostar, and include an electric trim tab for roll trim; something pretty unusual in microlights.

The rear fuselage is rectangular section with a semicircular turtle deck. Small quarterlights and the ballistic chute are fitted behind the cockpit. There's a nice curved fairing for the good-sized fin, and the rudder has a ground-adjustable trim tab.

The elevators have counterbalance weights in the tip fairings and *two* trim tabs. Paul explained that one is for use by the pilot as normal, and the other is connected to the flaps to counteract the trim change caused by them.

All aboard

Getting in is via a small step below and behind the flap to a walkway on the wing root. As usual, there's a knack to getting in, owing to the limited number of hard points that will take your weight. But it's not too difficult, and once installed, it's a nice wide cockpit allowing plenty of elbow room.

The canopy slides back and forward on rails





"David, are you sure you haven't done this before?" says Paul Dewhurst



One modification to the NG version was to move the engine further forward to reduce the tendency of the aircraft to tip on its tail as you get in. We established that with empty fuel tanks and parked on an uphill slope, it's still possible, but hardly the end of the world, unless you have a very nervous first-time passenger.

The canopy slides back on rails, and there's a big latch in the roof to secure it in place. I assume that the sliding arrangement means that nothing much happens if the latch comes undone in flight, but we didn't test this hypothesis!

Both Paul and I are over six feet, but we found we had adequate head and leg room. Paul's head came closer to the canopy than mine, and my knees came closer to the instrument panel, but neither was an issue.

The seats are lightweight but very comfortable, and there are twin sticks and conventional rudder pedals. The pedals are not currently adjustable, but it ▷

TECHNICAL DATA

DirectFly Alto NG 912S

MANUFACTURER
Direct Fly s.r.o., Špitálka 49/8, 602 00 Brno, Česká Republika
E-mail: info@directfly.co.uk
Phone: +420 777 715 015

IMPORTER
Direct Fly UK Ltd, Plaistows Airfield, Chiswellgreen Lane, St Albans, Hertfordshire AL2 3NT and Sywell Aerodrome, Northamptonshire.

SUMMARY
Two seat, side-by-side, low-wing cantilever monoplane with conventional three-axis control. Rectangular plan wing with generously-rounded leading edge delivers highly-predictable, benign stall characteristics.

The tail is conventional. Pitch control by elevator on tail; yaw control by fin-mounted rudder; roll control by ailerons; three-stage electric flaps with link to the trim system.

Undercarriage has three wheels in nosewheel formation; cantilevered composite suspension on mainwheels. Nosewheel steering connected to aerodynamic controls. Beringer hydraulic disc brakes on mainwheels.

Totally monocoque airframe built entirely from match-hole drilled structural aluminium, all corrosion-proofed prior to assembly.

Engine mounted to the firewall and driving tractor propeller.

EXTERNAL DIMENSIONS AND AREAS
Length overall 6.44m. **Height overall** 2.32m. **Wing span** 8.13m. Parallel chord. **Dihedral** 4°. **Wing area** 10.6m². **Mean aerodynamic chord** 1.32m. **Ailerons area** 0.62m². **Flaps area** 1.19m². **Fin area** 0.99m². **Rudder area** 0.45m². **Elevator area** 0.86m². **Tailplane area** 2.09m². **Aspect ratio** 6.24/1. **Wheel track** 1.67m. **Wheelbase** 1.41m. **Mainwheel tyre size** 14x4. **Nosewheel tyre size** 13x5.

POWERPLANT
Rotax 912 ULS engine. **Max power** 100hp at 5800rpm. E-Props Durandal, three-blade, composite, on-ground adjustable propeller. **Diameter** 1.75m. **Gear reduction, ratio** 2.43/1. **Fuel capacity (wing+wing)** 46+46 = 92 litres.

WEIGHTS AND LOADINGS
Empty weight from 315kg (345kg as tested). **Max takeoff weight** 600kg. **Payload with an hour's fuel** 265kg. **Max wing loading** 55.6 kg/m². **Max power loading** 6 kg/hp.
Load factors +4g, -2g recommended, +6g, -4g ultimate.

PERFORMANCE**
Max level speed 137mph. **Never exceed speed** 165mph.
Economical cruising speed 113mph. **Power-off stall speed with flap** 47mph. **Power-off stall speed without flap** 54mph.
Max climb rate at sea level 1000 ft/min.
Best glide ratio with power off 10/1 at 75mph.
Takeoff distance to clear 15m obstacle 434m on grass.
Landing distance to clear 15 m obstacle 390m on grass.
Service ceiling 10,000ft. **Range at average cruising speed** 594 miles.

*** Under the following test conditions*
Airfield altitude 430ft. Ground temperature 25 °C. Ground pressure1019 hPa. Ground windspeed 10mph. Test payload 230kg. Takeoff weight 575kg.

AVAILABLE AS:
Factory-built ready-to-fly aircraft.
£119,988 + delivery

Quick-build kit: complete airframe, including paint and graphics, ready for installation of the engine and avionics. Price on application.

Basic kit: complete set of CNC machined and match-hole drilled parts to complete the aircraft fuselage, wings, and tailplane together with full set of composite parts, including engine cowlings and wingtips. All parts to complete available as finishing kits. Price on application.





The top cowlng lifts off for ease of engine access

▷shouldn't be a major job to design that in, and I think it would be welcomed by taller occupants. Roll and pitch trim buttons are on the top of the stick, with the PTT on the front.

The central throttle is a push-pull type with a vernier that doesn't require you to push a button before use, and I found this to be a very useful feature. Below it is the flap control, which has four positions. You can confirm the position visually by marks on the flap leading edge. Below that is the fuel selector switch that changes from left to right to off, and close beneath that is the starter button. Standard fit from the factory is a fuel valve which covers the starter button when it's in the 'Off' position, but it doesn't have detents and doesn't meet Section S requirements, so the UK examples have the luxurious Andair selector. The brake lever is between the seats with a latch for braking.

The instrument fit is fully customisable, so there's no point in describing the fit in this machine, except to say that it includes an autopilot, which is an optional extra.

For your comfort, there are very effective cabin ventilators, fed from NACA ducts in the fuselage side and map pockets in the sides, and the roof of the canopy is painted to match the fuselage to stop the follicly-challenged like me from getting sunstroke.

Behind the seats is a baggage compartment rated at 15kg; not as roomy as my Sherwood Scout (which is designed to take a dead deer!), but Rob assured me he'd fitted his camping gear in it for an extended trip away, and some of it is taken up by the ballistic chute, which is an optional extra.

I hadn't realised that fitting a ballistic chute removes the requirement to carry out the very extensive and expensive spin testing, but DirectFly UK decided to have spin testing carried out anyway, so you don't have to have one, saving you huge expense for the retesting required every six years.

The baggage space isn't reachable in flight, and if I have a small niggle, it would be for a bit more storage space that's accessible from the seat.

And they're off

With checks complete and the canopy shut, we taxied out. Sywell has one or two bumps to be aware of, and the Alto rode these with ease thanks to the bungee nosewheel suspension.

The turning circle is good, pivoting round the inner wingtip, and the steering is well balanced, the forces being light but progressive. The central brake lever is easy to access, and they were able to hold against pretty much full power.

As I was coming to expect, takeoff was a breeze despite the minor crosswind, and we tracked straight up Runway 23 with the minimum of control input.

It's probably a bit of a cop-out to forgo a detailed description of the flight, but to be honest, the overall impression was total relaxation.

There were some quite active thermals, but we tracked straight and true in the climb out with a minimum of rudder input required and levelled out, and the electric trim was progressive and easy to use.

I was able to fly hands off more or less straight away. It was fun to try the roll trim, which was gentle but positive and would make life easier on long trips flying solo or dual.

At a leisurely 4,100rpm, we were indicating 95mph. The view is what you would expect from a low-wing light aircraft, though the rear quarter lights are certainly useful. The noise level is dependent on the headsets you use, but the vibration was minimal, and this would make a very comfortable cruiser.

Turns, too, are straightforward, with barely any rudder input required, and there was no fuss about steep turns – and no Eurostar-style wrinkling of the wing skins, either!

Sideslips demonstrated good yaw stability, and weaker but positive roll stability. Pitch stability was positive, with stick fixed and free, the phugoid oscillation damping out after about two cycles.

With the throttle wide open, the speed crept slowly past 125mph, and once again, relaxation was the overriding impression.

So it was back to the stall, and here, at last, was a surprise. The unaccelerated power-off stall was absolutely straight through, generating a gentle wings-level nod and a steady rate of descent.

How they've achieved this with no obvious fancy aerodynamic tricks is a mystery, but it's very reassuring for everyone from a first-time passenger to the most experienced pilot.

We headed back to Sywell and the Alto flattered my landing. I felt instantly at home in the aircraft.

Everyman's aeroplane?

I came away very impressed. Here is a well-established manufacturer selling a well-established product with apparently flawless handling and good performance. The team of very experienced agents will be able to look after your needs from two centres: Plaistows and Sywell.

It looks good, but not startling, and it has good performance and excellent manners in the air.

For many private owners, the no-frills option may be sufficient, in which case the empty weight of 320kg means that you can fill the tanks and still have more than 210kg of payload – which is one of the benefits the 600kg regulations were supposed to give us and so rarely do.

For someone wanting a higher specification, the list of available options should be enough to keep the gadget freaks happy; apart from specifying your own instrument panel, you can choose anything from autopilot to ballistic chute, from wig-wag landing lights to fancy interior.

A variable-pitch propeller is a factory option that's being pursued for the UK approval, and I was interested to know that the factory's kit option is being investigated for UK approval as well.

Building your own aircraft and flying it is a pleasure that isn't particularly well-served in the microlight market at the moment, and it will be interesting to see if this works out.

The all-metal construction has good and bad points: it generally works out lighter than composite construction, and it's often easier to spot incipient failures before they become serious.

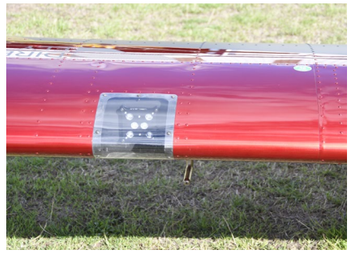
If left outside, they don't gain weight like composites, but may be susceptible to corrosion. Time will tell on the Alto NG, but repairs are certainly going to be simpler and cheaper.

Schools may find this an interesting replacement for ageing C42s and Eurostars. The benign handling will give ab initio students an immediate sense of confidence, and quick and cheap repair costs and 100-hour maintenance intervals will surely be a boon.

All in all, this is a very welcome addition to the UK microlight fleet. Any new microlight will set you back north of £100,000 and last for a quarter of a century, so you should purchase with your head, not your heart, and the Alto appeals to both. □

- *Normally flight tests are only published after approval of the type by the BMAA. As we went to press, formal approval was awaiting the dotting of Is and crossing of Ts, but all the testing has been completed satisfactorily and formal approval is expected within a few weeks. In any case, DirectFly UK has assured us that it's ready to take orders now.*

The engine is offset slightly to the right to ease rudder pressure on climbout



Very fancy optional landing lights



The fuel tanks form part of the leading edge