



# It's a Breeze!

**Paul Bennett** (below) gets reacquainted with old friend the Breezer



I WAS first introduced to the Breezer over 10 years ago when I was working with Aerosport at Halfpenny Green.

Aerosport was the main dealer for Comco Ikarus, which produced the C42, and Comco had taken on the world distribution of the Breezer, which was being manufactured in Dresden. So Aerosport had automatically become dealers for the UK.

Designed by Ralf Magnussen, the Breezer made its first flight in December 1999 and went into production in 2001. It arrived in the UK in 2006 and was displayed at the Flying Show at Telford that year.

Being chief test pilot for Aerosport, I had to put the aircraft through its paces, and clocked up numerous hours of assessment and many demonstration flights, including flying over to Enniskillen in Northern Ireland and then finally flying her back to Dresden in 2007.

However, it quickly became apparent that it was not going to meet the UK microlight weight require-

ments, since at that time the maximum all-up weight was 450kg and no parachute, meaning we had to keep the empty weight to 268kg with the Rotax 912. Today you are allowed a MAUW of 472.5kg with ballistic recovery system, and since that weighs only 10-12kg, you have up to 12.5kg extra payload.

At the time, Aerosport decided that the Breezer would best fit into the American LSA category with a MAUW of 600kg and stall speed without flaps of 45kt.

This required more tests, which showed that the Breezer stalled at around 50kt, but we solved the problem by attaching vortex generators to the top of the wing, bringing the clean stall speed down to 44kt.

Today, the Breezer factory is in Bredstedt, just south of the Danish border, in a stunning area worth a visit.

Geoff Hill, our laid-back but diligent editor, had been on my back for ages about doing a flight test

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of the aircraft, and a gap in my workload finally coincided with decent weather to let me jump in my Jabiru Calypso and fly up to Luke's Field in Kent, the home of Breezer and EuroFox importer and builders Ascent Industries.

Roger Cornwell's the chief executive and chief test pilot, Steven Williams is the production manager, and Steven's wife Sue runs the office.

Ascent has just reached an agreement with Breezer to also supply and support the Breezer LSA 600kg ▷



Importer Roger Cornwell with the Breezer, happy to show off its sleek lines and a finish that is a marked improvement on that of its predecessor



▷ in 51% kit form, which Roger and Steve will be doing through the BMAA.

Their factory is spotless and well organised, with everything in its rightful place, and I couldn't help but be impressed.

Aircraft arrive at the facility as kits on a rolling chassis of fuselage on two wheels, which then require engine installation, panel, all electrics, brake system, complete nosewheel gear assembly if applicable and fuel system. The wings and fuselage are already painted in the customer's chosen colours.

### First impressions

The Breezer's a great looking aeroplane, with a beautiful long nose, lovely proportions and a sliding canopy. Walking around, you cannot help but admire the finish, which is far superior to the original aircraft many years before.

The ailerons and flaps look similar width, between them spanning the whole trailing edge.

The flaps looked as if they should be effective, as they are Fowler flaps, a system invented in 1924 by Harlan D Fowler whereby the flaps effectively extend as they are lowered – ever looked out the window at the flaps of a 747?

The ailerons should also work well, as they are large and operate differentially to reduce adverse yaw.

The nosewheel is connected to the pedals, so ground handling should be positive. The original aircraft back in 1999 had a castoring nosewheel, but that was changed sometime in the early production years. I much prefer a nosewheel connected directly to the pedals.

The 76 litre fuel tank is located between the engine and the cockpit, where the filler cap can also be found.

The cowl over the engine is easily removed by undoing the few camlocks, and underneath is a spacious, well organised compartment, with everything looking easily accessible and nothing cramped.

You get into the Breezer from the front, climbing onto the leading edge with the help of a step mounted on the fuselage. This works really well, as you can support yourself holding the outer reinforced section of the front screen.

One advantage to getting in from the front is that both occupants can climb aboard at the same time, as you will not overbalance the aircraft and put the tail on the ground, as with many of its contemporaries.

As with all low-wing aircraft, you step onto the seat as you climb in, so it is advisable to have a piece

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of matting available to avoid large footprints on your nice upholstery.

The cockpit is large, 1.16m wide with a large luggage area behind the pilot seats, obviously limited by the MAUW.

There's a fairly conventional panel and layout inside, with two control sticks and a single push-pull throttle with friction dial in the centre of the panel.

Hydraulic brakes are controlled by a single lever incorporating a parking lock, located in the forward section of the centre console in front of the flap lever. The latter reminded me of an old-fashioned car handbrake, nicely positioned and easy to use, with four positions: 0 (clean), 1 (15°), 2 (25°) and 3 (43°).

An electric toggle trimmer and indicator on the panel directly in front of the P1 position operates a trim tab on the left elevator.

The P1 rudder pedals are adjustable, and the P2 ▷

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▷ ones fixed. The adjustable ones are operated individually by a looped cable – brilliant if you have one leg shorter than the other!

There’s loads of headroom, and I would have thought even our illustrious editor at 6ft 7.5 in would find it comfortable.

The seating is nicely padded, well finished and fitted with shoulder harness safety belts. This aircraft is fitted with a BRS system operated by a large red T-handle to the right of the centre panel. Roger told me he always leaves the safety pin in, as he thinks it possible to confuse the handle with a brake and accidentally pull it.

The sliding bubble canopy operated easily from a single cam lever situated centrally at the front of the canopy. There is also a sprung pull-knob on the canopy at the bottom on the P1 side, to allow you to lock the canopy partially open during flight. Yes, you can fly with the canopy open! I remember from before that you needed to lock it open otherwise it will close itself – previously I’d used a short piece of wood.

A retractable sun shade for the top of the canopy is normally fitted, but wasn’t to the aircraft I tested.

Right, nothing else for it but to go flying.

### Clear prop!

After a bit of experimentation, Roger set the pedals in the short position and we taxied out.

The turning circle was very good, even on a really narrow taxiway. The brakes also worked well, with no tendency to pull left or right even when applied from a fast taxi. Locking the brakes full on, I applied full power, 5000rpm, and the brakes held. Very good.

The ASI is in mph, which is unusual for me, but with one stage of flap applied, we lined up and applied full power.

Initial acceleration was good, and we rotated at less than 50mph using a little over half the runway length and climbed away at 60mph.

Raising the flap to clean, we maintained a climb at 70mph with the tachometer reading 4500rpm. Our measured climb rate from 500ft to 1500ft was 65, or 900ft/min.

Levelling off below the cloudbase at just over 90mph and 4200rpm, I did notice a little fishtailing in the mild turbulence, which is quite normal on low-wing microlights and less pronounced than most I have flown.

Next on our list was speeds in level flight, so firstly at 75% power, approximately 4600rpm, we achieved 105mph and then at full power 132mph at 5440rpm.

Settling back to around 90mph, next on the agen-

da was roll rate 45° to 45°. Right and left were similar, at just over 2s.

Next were stalls, and with flaps up, I closed the throttle, maintaining the attitude and allowing the speed to slowly come back.

Raising the nose only slightly, she benignly nodded at an indicated speed of 36mph and recovered immediately when I relaxed the stick pressure and applied power.

That indicated stall speed was remarkably less than the earlier Breezer I’d flown all those years ago.

I tried a power stall at 75% (4600rpm) and gradually raised the nose; with the engine speed dropping to 4400rpm as the attitude approached 40/45°, it stalled at an indicated 33mph.

With full flap applied, trimmed at 60mph, power idle, I gently raised the nose. The controls felt quite sloppy and the nose nodded at 32mph. Relaxing the stick pressure, not applying power, the aircraft pitched forward surprisingly fast.

I had noticed that you only required very small adjustments to the trimmer throughout the entire speed range, including with flaps, so I decided to look into this further.

From level flight at an indicated 90mph, I toggled the trimmer to fully nose-down, holding my attitude, then gently relaxed the stick forward. Speed increased, and as we reached  $V_{ne}$  at 152mph there was still a lot of forward pressure on the stick. If I had released the stick we would have shot through to somewhere I definitely didn’t want to go.

On the other hand, trying the test with the trimmer set fully nose-up took the aircraft to the stall.

When I asked Roger about this, he told me this aircraft had a much larger trim tab than normal, so they had ordered a standard elevator with the standard (much smaller) trim tab to sort out this characteristic. The Breezer I had previously flown was absolutely fine, so I am confident this change would resolve the problem.

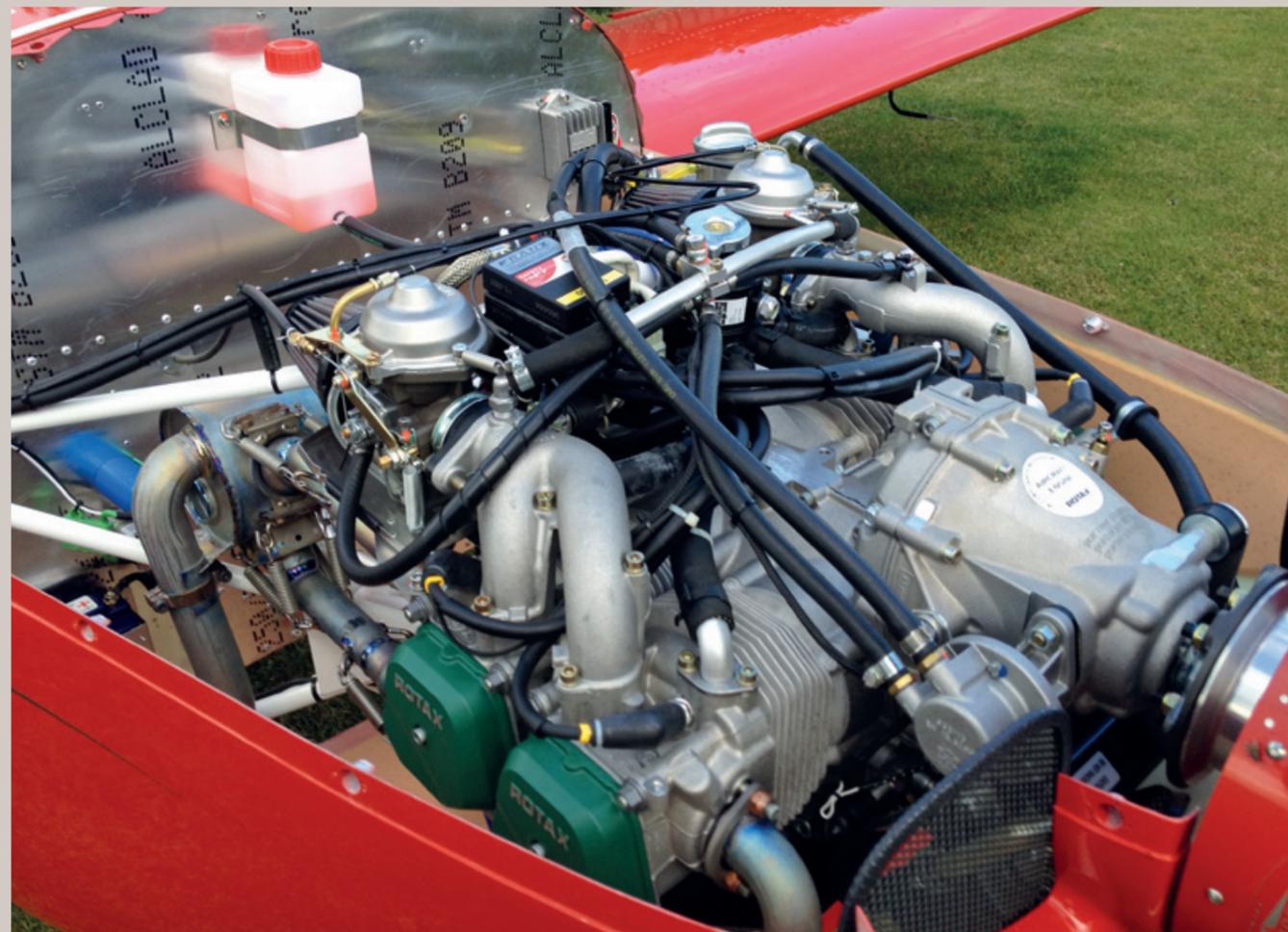
With that sorted, it was on to stalls in the turn, which I did with the airframe clean and at a back angle of approximately 30°. In the left turn, the stall was at 39mph, and right turn 41mph.

Throughout all the stalls, the Breezer did not demonstrate any discernible buffet, but was very benign, recovering instantly.

To check basic stability, I set the aircraft up at 90mph in level flight, then gently pushed the stick forward, increasing speed to 100mph before releasing the stick. The nose came back up through the original set attitude, slowing to around 80mph and then settling back down to the original attitude and speed.

Finally, sideslipping. In the approach configuration, idle power, 60mph and full flap, the indicated descent rate was 400ft/min. Applying right rudder and left aileron, that increased to 600ft/min and recovered well on releasing the controls.

During the flight, the aircraft had demonstrated a slight turn to the right, as it had been set up with the aileron trim tab adjusted for just one person. This is a problem experienced in many aircraft when you ▷



**Photos**  
**Top** A neat installation with everything accessible  
**1** The Breezer factory in Germany  
**2** How the Breezer arrives from Germany  
**3** Nice touch: instruments have Breezer logo  
**4** Well finished, well stocked and with two sticks



## Technical data

# Breezer M400

Standard engine is Rotax 912 UL, test aircraft had optional 912ULS engine. Where different, data for 912ULS in parentheses

### Manufacturer

Breezer Aircraft, Jens-Patent-Weg 1, 25821 Bredstedt, Germany. Tel +49 (0)4671 7979 120; fax +49 (0)4671 7979 122; info@breezeraircraft.de; breezeraircraft.de.

### Importer

Breezer Aviation (part of Ascent Industries, CAA-approved manufacturer A10070/15), Wanshurstgreen Farm, Battle Lane, Marden, Kent TN12 9DF. Tel 07739 670585 or 07813 138897; breezeraviation.co.uk. Directors Roger Cornwell, Steve Williams.

### Summary

Side-by-side two-seat low-wing monoplane with conventional three-axis control. Wing has unswept leading and trailing edges, constant chord. Pitch control by elevator on tail; yaw control by fin-mounted rudder; roll control by ailerons; Fowler flaps (settings 0°, 15°, 25°, 43°). Cantilever wing; wing profile NACA 4414 mod; 100% double-surface. Undercarriage has three wheels in tricycle formation; n/a suspension on nosewheel, composite bow suspension on mainwheels. Push-right go-right steering connected to aerodynamic controls. Hydraulic disc brakes on mainwheels. Aluminium monocoque construction with integral parachute rescue system. Engine mounted at wing height, driving tractor propeller.

### External dimensions and areas

Length overall 6.73m. Height overall 2.14m. Wing span 8.05m. Constant chord 1.36m. Dihedral n/a°. Sweepback 0°. Wing area 10.95m². Aileron area 0.93m². Flap area 1.14m². Horizontal stabiliser area 2.40m². Elevator area 0.43m². Fin area 0.82m². Rudder area 0.46m². Aspect ratio 5.9/1. Wheel track 2.12m. Wheelbase 1.67m. Mainwheels 400-6. Nosewheel 400-4.

### Powerplant

Rotax 912UL (912ULS) liquid-cooled engine. Max power 80 (100)hp at 5500 (5800)rpm. DUC Swirl or Woodcomp Propuls propeller, diameter 1.74m, pitch 27°. Gearbox reduction, ratio 2.27 (2.43)/1. Power per unit area 6.15 (7.69)hp/m². Fuel capacity 76 litre.

### Weights and loadings

Empty weight 292.5 (291.5)kg. Max take-off weight 472.5kg. Payload 180 (179)kg. Max wing loading 43.3kg/m². Max power loading 5.91 (4.73)kg/hp. Load factors +4 -2g recommended, n/a ultimate.

### Performance\*

Max level speed 132mph. Never exceed speed 150mph. Economic cruising speed 105mph (4400rpm). Stall speed 39mph. Max climb rate at sea level 950 (1100)ft/min. Min sink rate 350ft/min at 65mph. Best glide ratio with power off 10/1 at 65mph. Take-off distance to clear 15m obstacle\*\* 245 (215)m on grass. Landing distance to clear 15m obstacle 380m on grass. Service ceiling 10,000ft. Range at average cruising speed 609 miles. Noise level n/a.

\* Under the following test conditions

Airfield altitude 360ft. Ground temperature 12°C. Ground pressure 1016mB. Ground windspeed 7mph. Test payload n/a.

\*\*Includes a safety factor of 1.3

### Price including VAT

£79,800 (£81,600).

n/a = not available

Data above provided by manufacturer

Data in text is tester's experience

▷ are flying solo one day and dual the next, and it's even more noticeable in an aircraft with a very wide cockpit.

Not to worry, though, because Roger tells me that in future the Breezer will be fitted with an electric aileron tab.

## Approach and landing

On left base, I brought the speed back and applied one, then two stages of flap, trimming at 70mph.

Turning onto final, I applied full flap and trimmed at 60mph. Then, maintaining 55-60mph, I came in low over the hedge, rounded out, power off, held off and touched down, coming to a stop using just over 200m of the 350m strip. Job well done. Roger seemed happy too.

## Conclusion

I thoroughly enjoyed flying the Breezer and, happily, the only snags I noticed are already being remedied. It's viceless, comfortable and easy to fly, making it a great tourer.

It would also make a good trainer, as the control harmony and the relationship between pitch and roll is quite good even at low speed throughout the approach and landing. □

### I liked...

- The sliding canopy
- Capability to fly with canopy open
- Having two control sticks
- Adjustable rudder pedals on the P1 side
- Flap lever position and operation
- Large fuel tank
- Interior and exterior finish

### I would have liked...

- Middle position on the adjustable pedals
- One for my collection