

FLYING THE

Why Warren Kay, a life-long opponent of gliding with engines, considers FES the most useful soaring invention since the variometer



LAK 17B FES-equipped demonstrator



Warren Kay took up gliding at Dunstable in 1977 aged 25 and has remained a member ever since. He has 2,500 hours P1, but only 700 or so launches having been bitten by the cross-country bug early. Highlights include a 400km triangle in an Olympia 419 in 1979, a 500km triangle in a Libelle in 1980, jointly winning a Standard Class nationals in the 80s and twice representing GB in the Standard Class in the Europeans. In 2015 Warren completed a 600km task in an ASW 24 after 20 years of trying

IF YOU'RE a glider pilot and you haven't heard of FES, give yourself a slap! The Front Electric Sustainer (or Self-Launcher for Annex II gliders) is quite likely the most useful soaring invention since the variometer! That's a strong opinion, and strongly held despite very little practical experience, here's why...

Thanks to Ron Bridges of Baltic Sailplanes, on 26 June I was able to fly the LAK 17B FES-equipped demonstrator at Husbands Bosworth. The flight wasn't long (less than three hours), I didn't go far (a 100km triangle) and I didn't use the FES until I completed the task. So what happened to convince a life-long opponent of gliding with engines to so completely change such prejudice?

The LAK 17B is EASA type certificated as a development of the LAK 17A. It is, in fact, almost an all-new, modern design 15m/18m/21m sailplane, which embodies the current low wing area, high wing loading philosophy of such designs as the ASG 29. The fuselage is plenty big enough, even for someone with my portly stature, while the instrument panel lifts with the forward-hinged canopy and the controls are conventional in position and action. The factory-fitted electric motor sits in front of the rudder pedals, while the battery packs are located in the fuselage behind the wing. The whole installation weighs about 38kg and the maintenance instructions consist of labels which say 'breaking this seal invalidates the warranty', ie there are none! I had a briefing on the glider and the FES, which lasted about five minutes!

I flew in 18m mode without wing ballast, but with the fin tank full (to compensate for my stomach loading!), making the wing loading about 41kg/m. In flight, I found the stick and flap forces very light: finger and thumb job really, only the airbrakes requiring any effort to unlock and deploy. In straight flight in zero flap the glider felt happiest at 80kts, while 50kts was possible with full aft trim. I found my normal flapped

glider approach of centring in zero flap unnecessary as the aileron response in plus one or two flap was still very crisp. Once cored and in plus three I could circle at 45kts.

By the time of my take-off at 14:30, the sky was overcast with embedded cumulus. Finding a decent climb after release proved elusive, but I eventually climbed to cloudbase at 3,500ft and set off on task despite no visible sun on the ground and no obvious source of lift. Suffice to say that conditions improved after Northampton and a very enjoyable flight ensued, culminating in my starting a final glide with 800ft in hand. Cue extreme, extended sink using up most of the height in hand. I could have got back, but chose to stop in a weak climb and finally crossed the finish line at 600ft. Nice flight, nice glider, great fun, but...

On the final glide I switched on the FES controller in the panel, but waited until 'Task Complete' appeared on the LX before throwing the FES battery master switch and turning the power rotary switch (throttle) clockwise. There was a clunk as the propeller unfolded (centripetal force) and three seconds later I was climbing at 400ft/min at 160 Amps (about three-quarter throttle).

Climbing to 1,000ft, I throttled back (anti-clockwise on the rotary switch) to 100 Amps where I was still climbing at about 1kt; a further reduction to 50 Amps (about a quarter-throttle) saw the glider maintaining height. I cruised off for a couple of minutes to the nearest cloud where I found another climb which I centred with the FES running. Yes, that's right, you can hear the vario over the noise of the engine and it still works!

I was going to shut down the FES before I realised that if I left it on at 25 per cent power (duration is about one hour at 55kts at this setting) I would be able to experience what it was like to fly an EB29. Needless to say, the climb rate was impressive!

Shutting down the FES was simple – anti-clockwise on the rotary switch until the propeller stopped and the blades fold back around the nose (no centripetal force). I did jump, mind, when the FES rotated the blades to get them into their 'closed, quarter to three' position. A normal circuit and landing ensued.

FES

Back on the ground I found I'd used about 10-15 per cent of the available battery capacity.

So why the change in attitude? The clues are in the text above.

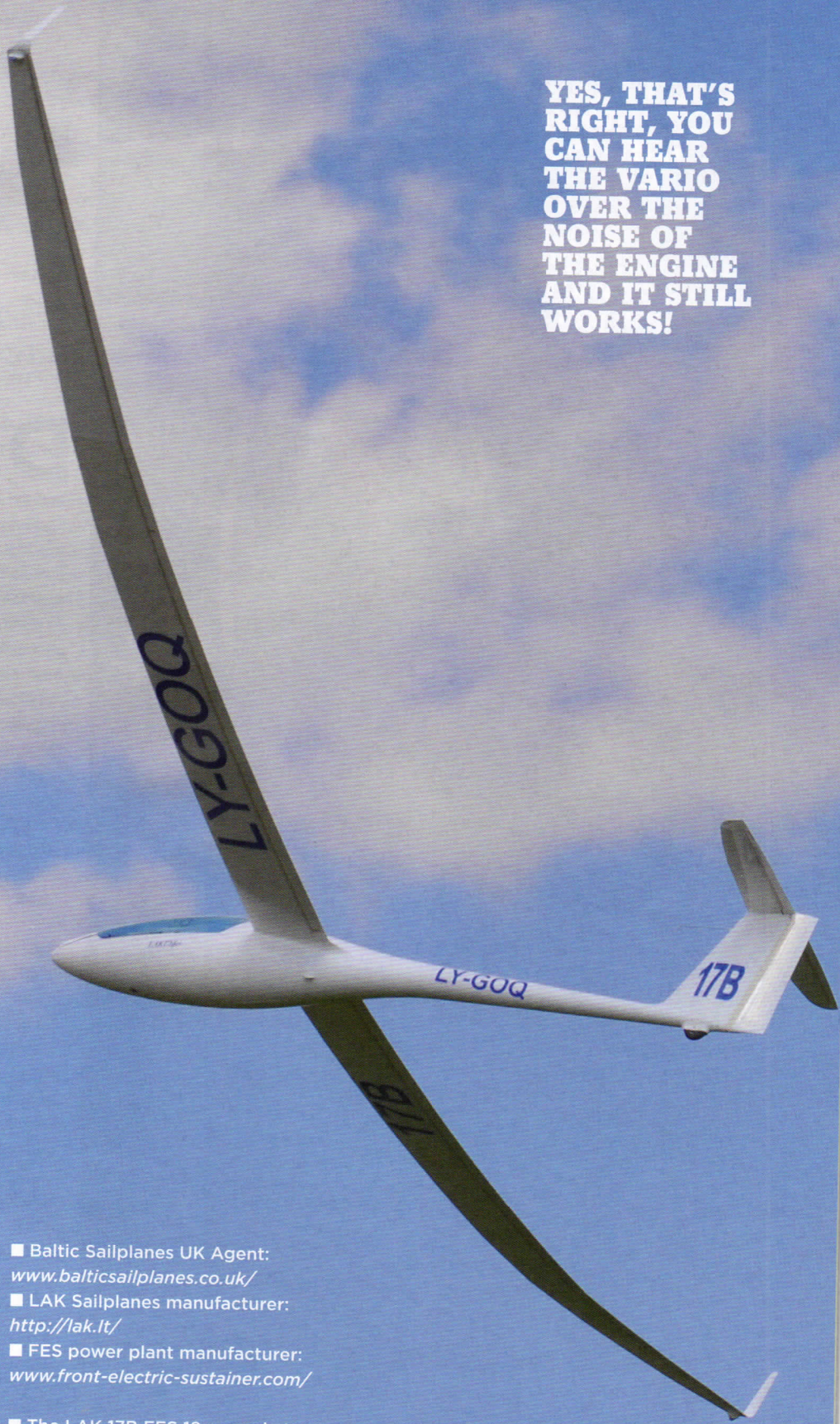
- Pre-flight briefing took a couple of minutes.
- First flight in a new type with an overcast sky and no obvious lift. Would you have gone out of gliding range? I didn't even think about it, I just left.
- As my height margin on the final glide was eroded I was tempted to fire up the FES, but the reliability and speed of deployment convinced me to carry on as a glider when, had I had a pylon-based system, I would have had to use it in order to be safe.
- I've always wanted to fly an EB29...
- Simple in design, maintenance and operation, the FES suits coarse glider pilots, like me.
- The FES does not change handling or instrument characteristics when deployed.
- It does not require location of 10-30kg of highly combustible fluid 30cm from my head.
- The FES is the first system of its kind which does not alter pilot mindset when a low point on a task occurs. A flight can be continued right down to the point of final approach into a field without any of the increased risk associated with conventional pylon propulsion systems when they don't start.

The only downside is the increased drag from the propeller blades, according to Akaflieg Darmstadt, ~1pt at max glide, ~2pts at 100kts, you can read the flight test here (www.front-electric-sustainer.com/Documents/IDAFLEIEG%20test%20LAK17A%20FES_en.pdf).

Just about all modern gliders are fitted with tailwheels, despite the parasite drag caused by a large object stuck in the airstream (try holding a tailwheel out of the clear vision panel to see just how much). We accept the drag for the ground handling convenience. One flight is all it took me to be convinced that an FES-equipped sailplane is a very much bigger step in convenience. If I had one I know I'd fly more!

The LAK 17B is a fine sailplane, the FES is by far the best option to avoid a field landing. Together they make a pretty powerful argument, especially when you factor in the exchange rate.

**YES, THAT'S
RIGHT, YOU
CAN HEAR
THE VARIO
OVER THE
NOISE OF
THE ENGINE
AND IT STILL
WORKS!**

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- Baltic Sailplanes UK Agent:
www.balticsailplanes.co.uk/
 - LAK Sailplanes manufacturer:
<http://lak.it/>
 - FES power plant manufacturer:
www.front-electric-sustainer.com/
 - The LAK 17B FES 18m, ready to fly with Cobra trailer, IMI fittings, full panel, including LX9000 and delivery to the UK inc VAT, will cost you £95,000