

SAILPLANE & GLIDING

VOL. 62 NO. 1



**FIND OUT WHICH GLIDER
FINISH FARED BEST IN A
SEVEN-YEAR EXPERIMENT**

**FITTING THE FRONT
ELECTRIC SUSTAINER**

**WORLD RECORD TRIANGLE
AND A 2,000KM DIPLOMA
FLIGHT ON CHRISTMAS DAY**

DOUBLE THE FUN

Beat the winter blues – try your hand at a new skill

FITTING THE FES

Chris Nicholas explains why he is looking forward to a rejuvenation of his flying with the decision to fit a Front Electric Sustainer (FES) to his LAK 17A



(Above and below) The Front Electric Sustainer system: an electric motor with foldable propeller can be started at a low altitude (photos courtesy of Baltic Sailplanes)



TWO features of sailplane engine developments attracted me to the idea of one day having a self-retrieving glider. One was the Stemme folding propeller in the nose cone, which would produce no extra drag unless the engine fired up, allowing perhaps a later decision. The other was the growth in development of electric motors fed by lithium polymer batteries, as exemplified in gliders such as the Antares. I was singularly unattracted to the idea of an internal combustion engine, or of a high drag pylon, which apparently needs a decision to be made considerably above the height at which I usually decide to abandon a flight and land out.

To my surprise, my two ideal features were brought into reality by Luka Žnidaršič, a Slovenian owner of a LAK 17A, like mine. The development has been reported on before in *S&G* (June/July 10, *Aero 2010*, p13), but I first heard of it before that from the UK LAK agents, Baltic Sailplanes Ltd. I expressed an interest in having my glider converted as soon as this was possible.

The reasons

Everyone has their own reason for deciding whether to have a self launcher, a self sustainer, or a pure glider. In my case, the choice of a LAK 17A in 2005

meant either a pure glider, one pre-equipped for a turbo engine to be added later, or to go for the turbo at the outset. I went for the middle road, pre-equipping, because I reckoned I would get a lot of road retrieves for the price of an engine, but it might be easier to sell the glider later if a turbo was an easy retrofit option for a second owner.

While I might have afforded the extra cost of the turbo (about £10,000 or more at the time), which I was "saving" by not buying a West German glider, I also didn't want all the hassle that I thought went with the internal combustion engine/pylon arrangement.

Since then, however, I have felt increasingly inhibited from doing cross-country flights when the crops are too high, and fields in East Anglia suitable for landing

are almost non-existent.

In Competition Enterprise, which I have been to for many years, I have not been competitive in the last few because I got fed up with all the hassle of road retrieves, of which I typically did between three and five most years. They usually ended up for me with a return at midnight, which is not much fun for crew (or me!) when you have to be up rigging at eight o'clock the next morning. (Evidently, I am not alone – see Adrian Emck's article, *S&G* Dec 2010/Jan 2011, *Comfort Zone*, p35.)

Furthermore, in recent years, the advantages of a turbo seem to have gained prominence. Several people come to competitions without needing a crew. Several leading competitors undertake tasks, or do an extra leg in pilot-selected tasks, with a reasonable assurance that it won't result in an outlanding.

(For what it's worth, I was in a minority of one for years on the Enterprise Committee in thinking that gliders with engines should be scored separately. I thought they had a very considerable advantage over pure gliders in Enterprise-type pilot-selected tasks.)

I have also found rigging and derigging increasingly difficult, partly just through age, and partly with the onset of some medical problems. Walking across a farmer's field, or latterly anywhere, has now become difficult for me, and I'm heavily dependent on other people to do all the lifting and carrying. Until this year, I could rig and derig on level ground on my own, using one-man rigging aids. Now, I can't even do that. With the front engine sustainer (FES), I will normally only have to rig/derig where I have friends easily available for a few minutes.

The performance of the latest development is either a climb rate of over 3.5kts for about 1,500m (4,921ft) climb, or level cruise for an hour. I think the latter will get me home from almost all cross-countries. And if not home, to a friendly gliding club where at least the logistics of a retrieve can be more easily sorted out.

The FES would appear to cover all my needs, and leave few reservations except the cost.

The decision

So, I decided to spend some of the kids'

inheritance on going for the FES. I suspect it will add almost as much to the value of the glider as it is going to cost anyway, so hopefully it won't deprive the kids too much in the end.

I am looking forward to a rejuvenation of my flying. I expect to have more hours (rarely need to fly for less than an hour in future!), more cross-country kilometres, be happier in competitions, rarely if ever need a retrieve crew, always get away from a wire launch, take fewer or lower aerotows, and thoroughly enjoy myself more.

Some technicalities

The LAK17A/B/19 family lend themselves particularly well to the conversion. They have a bulkhead in the nose suitable for mounting the brushless electric motor, and a sawn-off nosecone can be replaced by one of the identical shape which becomes a spinner, and holds the propeller.

The tail battery, which has to be carried for weight and balance purposes, is retained. Clever switching enables it to be kept on charge from the lithium-polymer batteries that are part of the conversion, via a DC/DC converter. The LiPos behind the wings balance the motor and leave the centre of gravity unaffected.

The LiPos also provide the power for the instrument panel. On my glider, the tail battery fed only the radio, and a separate battery behind the pilot fed all other instruments. The latter battery is no longer needed. The tail battery will act as a backup for the instrument panel, in case the LiPos go off-line and become isolated again by the clever switching.

A full day of instrument panel running will use only about 1/1000th of the LiPo capacity.

The journey

In November, 2010, I decided to take the glider to Slovenia myself. A colleague found that it is possible to ship a glider in its trailer for about £1,000. It would then have to be collected from the freight outlet, by somebody over there.

The ferry and road trip, etc, cost me about £600, plus expenses for overnight hotel, meals, and other incidentals. In my case, to meet winter requirements in Austria and Slovenia, I also had to purchase winter tyres, steel wheels to replace the wide alloys on my car (which cannot accommodate snow chains) and various extras, which cost about £800 but will last for many such trips, or

could be sold afterwards. It is too much to list them all here, but I have posted brief details on gliderpilot.net, and will be happy to email them to anybody else planning a trip to that part of the world.

The trip itself is over 2,000 miles there and back from my home in Suffolk. I spent a day and a half getting most of the way, driving and having catnaps through the first night. I had one night in a hotel, and finished the outward journey the next day. After dropping the glider off, and discussing details which I would not like to have left to just correspondence, I returned home with only catnaps again, and no hotel stop, on the return journey.

The wait

The glider will be at the factory for two to three months at least. Two other gliders were being worked on already. Luka Žnidaršič is effectively a one-man band, with some help from his father, and reckons to be able to do about six conversions a year.

The paperwork

The glider will come back with an EASA "Permit to fly". As I understand it, I will then have to apply to the UK CAA for a UK permit to fly validation. I believe this takes it outside of the BGA glider fleet.

The intention is eventually to have converted gliders covered either by an EASA-approved modification, or by something like that.

The details, apparently, are not yet established. As this will be the first one in the UK, it looks like myself and the glider are going to be guinea pigs.

I just hope it works out all right. I will let you know in the next instalment.

I DECIDED TO SPEND SOME OF THE KIDS' INHERITANCE ON THE FES. I SUSPECT IT WILL ADD ALMOST AS MUCH TO THE VALUE OF THE GLIDER AS IT IS GOING TO COST



Chris Nicholas started gliding in 1970 at Essex Gliding Club. He has a Gold and two Diamonds (500km still to do). A lapsed instructor, Chris has had three spells as deputy chair of the BGA Exec Committee, and several further spells as an exec member; he was Airspace committee chairman for several years and is currently a member of the Safety and Development committees. Chris is a regular competitor in Competition Enterprise and a very occasional (and unsuccessful) entrant in regionals



Chris Nicholas' LAK 17A will be the first in the UK to be fitted with the FES