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Since the last newsletter our main drive here has been on the fuselage production (Stage 3).

The first task was to sort out the actual composite moulds. This has included modifying the top moulding so that it fares in with the current swept fin shape, remember we shortened it by 5" and swept it back early in the development programme. The cockpit module tool has also been altered to give both pilot and passenger more leg and 'bum' space. We have done this by reducing the width of the wheel well/arm rest. The bottom fuselage mould has also been modified to incorporate the tailplane fairing blocks rather than fitting separate parts to blend the tailplane to the fuselage.

Once the actual mouldings were done we researched the 'pre-preg' market and conducted several tests from 3 different manufacturers. For those who do not know what 'pre-pregs' are, it is the system whereby the glass cloth is already pre-impregnated with the epoxy resin during the manufacturing process. This is opposed to the wet layup system of wetting the cloth out in the mould or on the foam core as you do with your flying surfaces. To stop the 'pre-preg' from curing before use it is kept in a freezer until ready for use.

The advantages are a more consistent quality product re the glass to resin ratio, improved ease of manufacture and safety for our technicians. Once the laminates have been laid up in the mould they are vacuum bagged down and cured in a high temperature oven. This is the standard aerospace system for producing high quality parts. The down side is the higher cost of the materials and the necessity to then oven cure them. We have decided that the advantages outweigh the disadvantages and it has always been our policy here to produce a first class kit which we can all be proud of. The Europa is technologically, both in aerodynamics and structural innovation ahead of the field.

The fuselage mouldings come complete with built in hard points for engine/main gear mount, control system, wing attachment and seat belts. We have now produced all the mouldings for two fuselages and are presently awaiting delivery of 'pre-preg' from our chosen supplier, S P Systems, so that we can commence production for kit deliveries.

In the last newsletter we told you that we were working on the fuel tank tooling. We spent a whole month producing this so that we could take advantage of all the available space. The tooling was very complex with four tubes moulded through the tank from front to back for the pitch system, rudder and flap cables.

Well!! it didn't work - to guarantee having a suitable wall thickness within the tubes meant having a tank which weighed in at 25 lb and so much material that we lost 4 gallons of capacity. Then, to add insult to injury, when the moulded tanks come out of the mould they shrink 3%, something that the moulders omitted to tell us. The answer to the problem was to remake the entire metal mould 3% larger and doing away with the "too clever by half" moulded tubes and replacing these with a larger cutout. We have now received a tank which weighs 12 lb and the good news is that it holds 18 imperial gallons/80 litres.

Development work is often one step forward and two steps back!!

Our only remaining task to complete before we can start delivery of our fuselage (Stage 3) is to complete the control system within the fuselage. Our design review and stress calculations have been completed and we are making the parts for assembly. Once we have satisfied ourselves that everything fits and works ok, then we can go ahead and have our first 50 shipsets produced.

We estimate that it will be the beginning of May before we start delivering fuselage kits. To keep every one busy until then the flap and outrigger attach instructions will follow this newsletter within a few days, closely followed by aileron balance weights. For anyone who still finds themselves kicking their heels give Roger a call and he will ship you an instrument panel.

The tailwheel and mainwheel assemblies have been designed and are at the contractors. We are having our own wheels and tailwheel forks cast in alloy.

Tailwheel

The Europa started life with a 4" solid tailwheel. We have since increased this to 5" then 6". Our latest and final version is an 8" pneumatic tyre and alloy wheel. We have found this to be superior in every aspect - soft field, noise on hard runway - without any reduction in performance.

Gear and flap operation and 'the ground flight lever'

There are only two types of pilot who fly retractable gear aircraft. Those who have landed wheels up and those who have yet to!! I'll come clean straight away and admit to being in the former class. In mitigation, it was whilst dead sticking my TwinEze to a landing after a double engine failure.

I did pump the main gear down but got distracted and forgot about the nose gear. 99% of all the LongEze, VariEze pilots I know have at some time forgotten to put the nose gear down and had a rather embarrassing arrival. Experience appears to have nothing to do with it as several are airline pilots in regular practice and used to complex retractable aircraft. Even warning devices seem of limited value. A close friend was so convinced that he had put the nose gear down on his LongEze, a mind set, that even when the warning light flashed and bell sounded, he said "Ah shut up" pressed the warning defeat button and landed wheel up!

So what to do?

The flaps are always used on the Europa for both take off and landing because the outriggers are operated by the flap actuation. The main gear down is also the preferred mode for both take off and landing also. Initially we had the flaps and gear separate, the thinking being that we could have flaps 25o for take off and a further stage of flap (30o or 35o) for landing. Over the last two months we have done extensive flight testing at various flap settings from 20o to over 30o. 20o of flap simply increased both take off, landing distance and speeds so there were no gains at all. 30o of flap was more interesting. In the single place take off the aircraft took off too soon!! Sounds silly? Well let me explain. It is no good taking off in an aircraft only to find that the ailerons have not started working yet and that your yaw control is similarly somewhat weak. The Europa wing with 30o of flap generates so much lift that at light weight the aircraft can lift off before you have sufficient roll and yaw control. This was ok in smooth conditions but in turbulence or a cross wind you were starting to get into a tricky corner of the flight envelope. Gross weight take offs were better control wise but neither the angle or the rate of climb were increased, if anything there was a slight decrease and when levelling off and accelerating from 50 to 60 knots to retract the flaps the rate of acceleration was definitely reduced. The approach could be flown a little steeper but not by any significant amount. At forward c of g the tailplane still had plenty of power to flare for landing but once in the landing attitude there was a feeling that the tailplane was being affected by either blanking or a vortex from the flap. On one landing, at forward c of g, during one point in the deceleration the aircraft lightly rocked from main wheel to tail wheel and back 3 or 4 times with the stick held back all the time. It is worth remembering here that during the development and test flying of an aircraft the aim is to achieve a safe flight envelope which the aircraft can be operated in. This means probing every aspect of the flight and ground handling beyond the safe envelope that we want to demonstrate and want you to operate your Europa within. We have now completed over 200 hours of actual test flying during which time the entire flight envelope has been thoroughly explored.

The end result of our flap testing was that 25o was the optimum setting for both take off and landing. It then appeared sensible to link together the flap and gear lever into a 'ground flight lever'. This we have now done and tested over the last 20 hours. It has simplified the aircraft operation and, at the same time, improved safety or, at least, reduced the chances of having an embarrassing arrival. The visual cues are so clear on the approach that it is very unlikely that a pilot would forget to put the flaps/gear down. On a 3 degree glide slope (300 ft at 1 mile) at 60 knots with the flaps/gear up the nose of the aircraft is high enough to blank out the runway. Pull the lever from flight to ground and the nose pitches down over 10 degrees giving a clear view of the touchdown area and undershoot.

First flight and pilot checkouts

Looking forward to when Europas start taking to the air we consider that having pilots fully and safely checked out to fly their aircraft would be a very sensible thing to do.

Recently Peter Clark of Firefly Aerial Promotions has been doing some customer demonstration flights for us. Andy and I have simply been too busy with the

Peter is a very experienced pilot who apart from doing air displays in the Slingsby Firefly runs an aerobatic school on our home base airfield of Wombleton.

We are working on a package where Peter would be prepared to do the initial test flying on Europas if required and then check out the builder/pilot. For the experienced taildragger pilot this could be no more than a couple of hours in the circuit and some upper air work looking at stalls and departure to a full taildragger conversion course lasting 7-10 hours covering everything from ground operation to flying into and out of farm strips.

The aim is to produce safe competent Europa pilots.

After spending several hundred hours building your Europa a few hours spent learning to operate it with an experienced pilot could be the best insurance you could buy, talking of

which we have been approached by two insurance companies re a group scheme for Europa pilots. It could be that we will be able to negotiate an extra discount for pilots who have been checked out and can demonstrate a safe level of operation. A recent NTSB report on home built aircraft safety stated:-

"Fourteen per cent of homebuilt accidents occurred on the pilot's first flight in the aircraft (not necessarily the aircraft's first flight), and five per cent on the pilot's second flight. Nearly one quarter of the accidents occurred during take-off or landing due to inadvertent stalls, rolls or veering off runways. 'In short' says the FAA's report, 'forty to fifty per cent of the accidents in homebuilt aircraft seem to indicate a lack of familiarity with the flight characteristics of the aircraft.'

'Homebuilt aircraft, on the average, have higher performance than the average GA aircraft, and some pilots are seemingly unaware of these differences... The best hope of improving safety for the new homebuilt aviation pilot appears to be education.'"

We should all do our best to keep the accident rate as low as possible in our 'homebuilt' aircraft and proper pilot checkout is clearly the key to this.

Engine

The Rotax 912 engine is still performing perfectly although we did have some problems starting it in the cold weather. Nigel Beale of Cyclone Hovercraft, the agents, traced the problem to a worn overload spring in the gear box. Apparently later engines have been modified so this should not be a problem in the future.

After 230 hours of flying all we have done is to change the oil and filter every 50 hours and change the plugs at 150 hours. Long may it so continue.

We were promised a Turbo 914 in February and it is now March and still no 914 - we live in hope.

Builder Support

Our builders are our most important people, when you buy a Europa kit you become one of our family and as such will get all the support that we can give you. As many of you who have visited us here know we have three separate industrial units and when builders phone for advice occasionally Andy or I may be in one of our other units. To make things better we have decided to allocate specific times when we will be available solely for builder support queries. Obviously if you are halfway through a layup and up to your armpits in epoxy and suddenly need to contact us, then please do, otherwise please call us on

Monday between 10.00 and 12.00 or Thursdays between 15.00 and 17.00 when both Andy and I will be available to take your calls, construction manuals in hand.

Aircraft Trailer

We are presently re-designing our aircraft trailer. We have really simplified things and hope to reduce rigging/de-rigging times still further. Hopefully the total length of the aircraft and trailer together will be just under 20 feet. This means, of course, that you will be able to park in a 20 foot container at your chosen field or in a standard garage. We intend offering the trailer as a self assembly kit which takes just one hour to bolt together.

Europa Builders and Owners Club

Several of our builders have been really keen to form a Europa builders and owners club. We think that this is a great idea and will give all the support we can. For many years I was a member of the VariEze Hospitality Club, this was a world wide organization which helped bring people with similar interests together. We already have builders in Germany, France, Switzerland, South Africa and the U.S.A. I somehow do not think that it will be too long before we are hosting our first Europa International Fly In!!

Contact the membership secretary Ms K Swinden, 'Nonsuch', Heath Farm Lane, Northleigh, Witney, Oxon, OX8 6RS, UK.

Regards, Ivan