

Have you vaguely considered building an aircraft but quickly dismissed the idea because you have so many unanswered questions? If so, hopefully our Q&A will allay some of your concerns and allow you to reconsider.

Every year a substantial number of LAA members take up the challenge of building their own aircraft, and since the advent of kit aircraft, most of them complete the task in a reasonably short period – usually one to four years, depending on the level of pre-construction of the kit. Around 100 newly-constructed aircraft are added to the LAA fleet each year.

A much smaller number of members decide to build from plans, and these aircraft almost invariably take much longer to complete, as the builder must source raw material and produce all the parts that would normally come pre-made in a kit. Spreading the cost over a longer period, the sheer enjoyment of crafting individual components, or the mere fact that the type of aircraft you choose to build is not available as a kit are some of the reasons you might choose to go the 'scratch-build' route.

The available range of kits and plans to choose from is extensive, from low-powered, single-seat microlights to sophisticated, high-performance four-seaters. Fighter replicas from WWI and WWII, gyrocopters, amphibians, biplanes and triplanes, pushers and tractors, trikes and taildraggers – there will almost certainly be a design for every taste and every pocket.

CAN I BUILD WHATEVER I LIKE?

Not exactly. In the UK, the Civil Aviation Authority dictates that UK-registered aircraft have to be shown to meet minimum design and airworthiness standards. The LAA is tasked with ensuring that amateur-built designs meet those standards before they can be approved to be built in the UK. But there are still plenty to choose from with currently over 200 LAA-approved designs and around eight new types added each year.

HOW DO I FIND OUT WHAT IS APPROVED?

A comprehensive list is available on the LAA website at www.laa.uk.com – click on 'LAA Aircraft' and you will then be able to access the list. In general, of the many approved designs, perhaps about 90% of builders choose from around 30 designs because these are the contemporary types.

ARE ALL THE DESIGNS AVAILABLE IN KIT FORM?

No. The kit revolution really didn't take hold until the early 1990s. Prior to that, most amateur-built aircraft were built from plans, the builder sourcing his materials from suppliers of aircraft-quality stock in the UK and abroad, typically the USA. For the last twenty years though, kits have taken an increasing share of the market because they dramatically cut down the amount of work and time needed to complete a project. They do of course work out more expensive because the kit supplier is doing much of the work that a plans builder would have to do.



The Basics of Building

Brian Hope answers the basic questions about building your own aircraft – and stresses that help is always at hand



The LAA runs a number of workshop courses covering subjects including metalwork, engines and avionics to help builders with their projects

The impressive Trail is one of the many kit aircraft available to homebuilders, with the complete aircraft costing less than £30,000

information on submitting a new design, or even designing your own aircraft, can be found in the 'LAA Aircraft' section of the LAA website www.laa.uk.com

HOW DOES THE BUILD SYSTEM WORK?

Having selected a design and bought either a complete or part kit package, or a set of plans, you register your project with the LAA Engineering department. You will then receive a project pack, which will contain details of the inspection schedule that will need to be followed as the build progresses.

You then need to contact a local LAA inspector; there are 400 inspectors covering the UK, so it's highly likely that there will be several in your locality. A list of inspectors can be found via the 'LAA Aircraft' link on the LAA website. Work cannot commence until an inspector has agreed to oversee a build and has inspected the build workshop and the kit if appropriate, and discussed procedures with you. Inspectors are a great source of advice as well as being the overseer for the build and the builder/inspector relationship should be one of trust and friendship.

DO I HAVE TO BUILD IT EXACTLY AS STANDARD?

It's certainly easier to build the aircraft as the designer intended, but you can make changes, either major or minor, subject to approval by LAA Engineering. You should discuss proposed changes with your inspector, who will offer advice on the suitability of your proposed changes, and if you decide to go ahead you must submit your modification via the Mod Forms available on the website. Be advised though that as with submitting a new type, the onus will be on you to provide any stress data required to support the suitability of the modification.

Previous builders of the same aircraft type may well have already successfully applied for modifications such as using a non-standard engine or propeller, or fitting strobe lights, etc, and these mods may be available as Standard Mods which you can easily incorporate.

I AM VERY NEW TO AIRCRAFT BUILDING, IS HELP AVAILABLE?

The prospect of building an aircraft can seem very daunting but plenty of help is at hand. Your inspector will be a mine of information and always ready to offer help and advice. The LAA Educational Trust also runs a number of engineering courses where you can learn the basic skills that will give you the confidence to make that first wood joint or buck that first rivet. 'Working in Aluminium', 'Aircraft Woodwork', 'Aircraft Electrical Wiring', 'Avionics' and courses in Rotax and Jabiru engines are just some of the available courses that will help you along the way. In some cases, you will have the kit or plans supplier to fall back on too; many offer an email or even telephone help line.

Fellow builders are also usually keen to help. You can find out who near you is)

CAN I SUBMIT AN UNAPPROVED DESIGN FOR CONSIDERATION?

Yes you can, the LAA approves seven to ten new designs every year and each will have been submitted by a member. However, although the Association does not allot charges for the approval process, as the proposer of a new type you will have to supply a significant amount of design data in the approval submission for the type. Much of the required information may be available from the aircraft designer; if not, you may have to contract an aeronautical engineer to produce it. Alternatively, it may be possible to load test a completed example of the aircraft, or in the case of a design that has been operating abroad for some while, prove compliance based on a satisfactory service record. More

“Building and flying your own aircraft is an exercise that few other aspects of modern life can equal”

building a similar type of aircraft, so you can arrange to visit for inspiration and guidance.

And finally there is the Internet. Most of the popular kits and plan types have builder or owner forums where technical queries will elicit almost immediate responses from those builders who have gone before and know how each and every component can be made or fitted. Many builders also have their own websites where they detail their build and post a great many photographs which can be of great help when you are uncertain of how to do a particular job.

CAN I MAKE THE FIRST FLIGHT IN MY NEW AEROPLANE?

That depends on your level of experience. If the Engineering department considers you have sufficient recent time in an aircraft of the same or similar type, it may permit you to carry out the test flying. If you do not have the required experience, or prefer not to carry out the test flying, you can nominate another pilot or Engineering can suggest a suitable person.

HOW MUCH FLIGHT TESTING IS REQUIRED?

For a new design, or highly-modified example of an existing design, the Engineering department will stipulate a minimum number of hours of flight testing within a limited area – say 25nm radius of base. For an already-approved design it will be five hours, two hours of which will be required as a single 'endurance' flight.

I hope the above at least gives you the basics of building your own aircraft. I think



The impressive RV-12 come from the Van's stable of successful and popular kitbuild aircraft which includes touring and aerobatic aircraft

“You will not be on your own; many have gone before and are willing to help fellow builders”

the most important thing you can take away from this article is that you will not be on your own; many have gone before and are willing to help fellow builders, and the Inspectors and LAA Educational Trust (ET) courses offer practical help to get you started. Building and flying your own aircraft is an educational and character-building exercise that few other aspects of modern life can equal; it's an achievement that will stay with you for the rest of your life. Good luck with that build!<



Plans-build aircraft include a variety of vintage-styled models, including this single-seater Flitzer biplane