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SAILPLANES AND SELF BUILD KITS

Have you ever thought about building your own?

At most, there has only been two sailplane kits imported into New Zealand in the past 30 years. It seems Kiwi's cannot be regarded as the "do it yourselfer" when it comes to building your own.

Sailplane kits is a subject Gliding Kiwi has not previously addressed with any degree of encouragement, so this article from a U.S. correspondent explains what is involved in putting together an Italian "SILENT IN" motor glider.

I have dreamed of owning a self-launching sailplane since I started flying, but they were way out of my reach at \$120K - \$150K. When the relatively inexpensive *Silent In* came along, I was hooked!

I ordered mine with the enclosed trailer. This saved considerable shipping costs. The entire kit was packed in the trailer with almost no crating. The trailer was shipped in a large container with other freight to a warehouse in San Jose California.

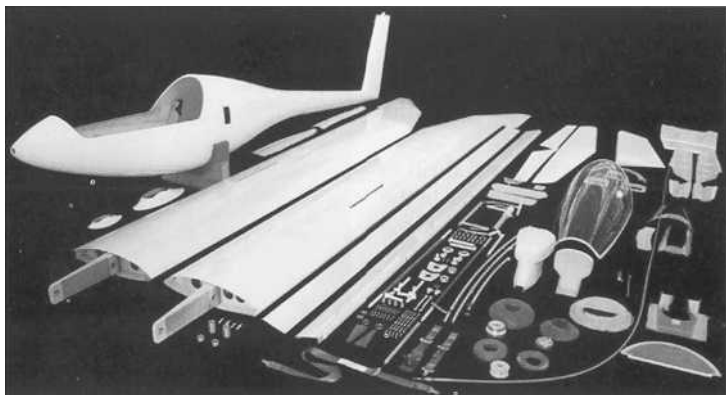
The kit comes very complete with everything including basic instruments. You will need to only buy paint and abrasives, and maybe metal and wood for tooling

(more on this later). I particularly enjoyed having every metal part come either painted, plated or anodized. This saves hours of tedious sanding, priming and painting little bits of hardware.

There is no lay-up work as

the wings, fuselage and tail group come already bonded and gel coated. There is a jagged flash on the leading edge of the wing and the seam down the middle of the fuselage that needs to be knocked off with a Vixen file, then sanded and filled. There were also a few blemishes on the upper surfaces of the wings that had to be filled with Superfil, but there were no pinholes anywhere!

The canopy is often the hardest part of building a kit. The canopy for the *Silent* comes already completed and even has a yaw string attached! You do have to install the tip up canopy hardware. This is a fairly intricate task that I have not attempted yet.





The manual is one of the best I have seen. Each building step is described with text and pictures in one or more chapters. Each chapter starts with a picture of all the parts required for the step, laid out in the order they are assembled. Below it, is a parts list with quantities and descriptions. The parts are also packaged so that all of parts for a particular step are together in a plastic bag. A bag number associated with a "bill of materials" spreadsheet easily locates the plastic bag of parts. There were a few missing or wrong parts in my kit, but the factory very quickly sent replacements at no charge.

I enjoyed the variety of building tasks afforded by working on the wings, fuselage and engine pylon simultaneously. Most of the fiberglass work consists of trimming pre moulded parts that are supplied rough (as removed from their moulds). Fortunately, there are accurate scribe lines on each part. I found the easiest way to trim these parts to size was to use a Dremel tool with a reinforced cut-off wheel to cut on the scribe lines, and then sand the edges.

I found it to be a real thrill to cut the big engine-bay hole in the fuselage after agonizing over the task for days. It turned out to be easy thanks to good scribe lines, and a sharp blade in my sabre saw. The wooden stiffeners are supplied in the kit and are temporarily hot glued to the fuselage to

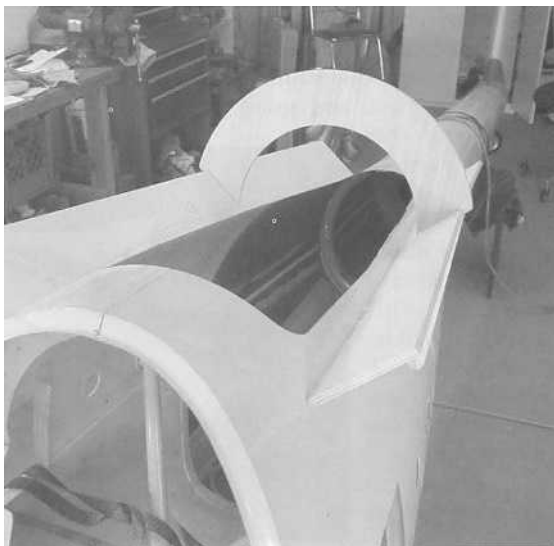
keep it straight until additional structure is bonded into the engine bay. Of course purists that opt for the standard un-powered glider don't have to deal with this step!

There were several small fixtures and tooling needed to build this glider. Most of these are to hold the engine bay panels and bulkheads in place while the epoxy cures. Other items include drilling guides for the flaperon and rudder hinges, a pedal angle template, and a crossbar to hold the joystick in position while adjusting the controls.

The engine bay aft bulkhead alignment fixture is made of a 2x2 and plywood. It didn't cost much but took a while to fabricate. There are no wing jigs.

I passed on all my tooling for free to the next builder and he is now doing the same for another builder. This saves a great deal of time and some expense.

The instrument pod was fun to build until I discovered that my Ilec SC-7 variometer, located in the upper right hand corner, was too long to fit. I ended up adding a blister to the pod cover to provide room for the vario. This is the larger of two panels offered and I filled it up with a radio, GPS and EGT/CHT gauge. The electrical switch panel below the radio, controls





painted. The exhaust pipe comes as several pre-bent sections that need to be welded together. This was necessary to meet the FAA's 51% rule. I enlisted the help of a friend that TIC welded it together. The process takes time because the pipe snakes around the pylon and it was difficult to get all the angles right. Mine turned out to be perfect thanks to my skilled friend. The factory also has pre-welded replacement pipes available.

the engine and pylon.

There is a fair amount of wiring involved with the self-launching *Silent* and I spent several days on this task. The wiring is relatively simple and the schematics in the manual are clear. All of the wire, connectors and terminals are supplied in the kit. Thankfully the FADEC controlled fuel injection and ignition system comes with a very nice factory wiring harness.

The engine pylon work is comprised of mostly mechanical assembly tasks. The pylon frame arrives completely welded and

By far, the nastiest most frustrating part of the project was painting. Preparation is relatively easy, as only the fuselage seams, wing leading edges and any filled areas need priming. The gel coat is used as the primer everywhere else and just needs scuff sanding.

The manual suggests painting parts as you go. I did this and ended up with parts that were slightly different shades and it tended to spread the misery over a very long period. I highly recommend that the entire glider be built, and then painted, preferably by someone else!

The trailer makes a fine place to work





in the air.

The computer controlled fuel injection and ignition system takes out most of the pain in operating a two-stroke engine. You still have to mix oil and fuel, but there is no messing with carburettor jets or needles. It is truly a one lever, system (throttle).

I have flown the glider with an Outside Air Temperature (OAT) from 40 degrees F to 108 degrees F and powered up 6,500 feet. The CHT/EGT is very

on the flaperon hinges and gap seals. I also stored parts here during the building process.

I enjoyed building the *Silent In* very much. This is my third kit plane and it was the easiest by far. It took me about 420 hours to complete. Part of this time was spent building tooling, providing suggestions to refine the manual, and fixing endless paint ing mess-ups.

Only about a third of the manual had been translated to English when I started. It is now complete except for recent options such as the tip-up canopy and steerable tail wheel.

The second builder (in the USA) has his *Silent In* almost completed and ready for paint at 230 hours. The factory's estimate of 500 hours to build one seems conservative.

The first engine run and taxi tests went well. It wouldn't start at first try and it turned out that I had forgotten to prime the fuel pump after installing the fuel lines. Since then it starts instantly every time, on the ground or

nearly the same in all cases. It also compensates as you climb, and doesn't get rich at higher altitudes.

Flying the *Silent In* has been a real joy. The engine and other systems have been reliable and work as advertised. I have about 10 hours on the engine (due to some ferry flights) and about 21 on the airframe. I have just now installed an oxygen system and am headed to Minden, Nevada to do some serious soaring!

I can be reached at <bezinque@earthlink.net> for details of my building process.

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(Special thanks to Andy Keeskes)

