CHILLI 2

Mainly thanks to Karel Svoboda, CHILLI 2 is now completed and ready for its maiden flight. After several discussions and once my requirements had been taken into account, I received a kit in this configuration.

As expected, the kit features accurately CNC-cut parts made from high-quality materials, a well thought-out design and, of course, a detailed building plan.

I have already described and documented the construction process in detail in my original CHILLI 1 build thread, so many aspects remain unchanged. Therefore, I will focus mainly on the modifications and improvements made compared to the original version.

The most important change is the reinforcement of the wing centre section. In the original version, this area tended to flex noticeably, especially during hard hi-start launches. Structurally, it was perfectly adequate and never caused any problems, but the flexing was always noticeable. For an electric version this is probably less critical, but for a pure glider it becomes more important.

The size and position of the spoilers have also been revised, and the wingtip design has been updated.

I made several changes to the fuselage as well. The inside has been reinforced with 0.6 mm aircraft plywood and, most importantly, I used a new boom supplied by Ivan Trégr, resulting in a useful weight saving. The tow hook has also been modified and is now made from 2 mm steel wire.

The horizontal stabiliser can be built in two versions: either as a conventional straight tailplane or as a gull-tail version with an 8-degree anhedral angle. Since I enjoy a challenge, I chose the latter option. Naturally, this solution is more complex both structurally and in terms of weight, but I also plan to build a conventional straight tailplane for comparison.

I had some concerns about the tailplane mounting and the linkage arrangement for both elevator halves. In the end, everything worked out well. I am pleased with the solution and it functions exactly as intended. The details can be clearly seen in the accompanying photos. As always, I used 0.8 mm carbon rods for the control linkages. This time I managed to source 1.5 m long rods from Hollein.

For covering, there was really only one choice: Oralight. Since the colour selection is somewhat limited, I chose Transparent Blue/White and Chrome Red. The complete covering weighs just 37 grams.

I made things more complicated for myself with the fuselage because I simply do not like film-covered fuselages. After sanding and filling, I covered it with medium-weight paper. This was followed by several coats of clear dope with sanding between coats, then a primer coat, further wet sanding, and finally the top coat. It is neither simple nor lightweight, and certainly requires a considerable amount of time, but this is the finish I prefer and I am very pleased with the result.

For the radio installation, I used four identical Chaservo HV06 servos. Mounts for both the wings and fuselage were designed and printed from my favourite ASA/ABS material using a 3D printer.

Power is supplied by a 500 mAh 2-cell LiPo, and the receiver is a JETI R5L. In every model of this size, I use a Pico Switch from PracticalRC (Hyperflight). Compared to similar magnetic switches, it offers an important advantage: it cannot be switched off by an accidental movement of the magnet. The magnet must be held in position for at least three seconds before the system powers down. This virtually eliminates the risk of an unintended shutdown, something that has caused me problems in the past. I can definitely recommend this solution.

After final assembly, the model weighed 465 grams. However, to achieve the desired centre of gravity at 87 mm, an additional 42 grams of ballast had to be added. The gull-tail stabilizer is naturally heavier, which contributes to this difference. With the

conventional straight tailplane, I expect to save some weight and move the centre of gravity further aft. The recommended CG range is 85–100 mm, but for a maiden flight I always prefer a conservative setup with the centre of gravity positioned towards the forward end of the range.

As always, my goal is to achieve the lowest possible weight while maintaining adequate structural strength.

To be honest, I would have liked the final weight to be even lower. The wings are already close to their practical limit, but there is still some potential for weight reduction in the fuselage. However, achieving that would require a more comprehensive redesign, and I am not sure whether the effort would be worthwhile.

For any future development, I would suggest using high-quality carbon tubes of the largest diameter that the design allows. In an electric-powered version, a flying weight well below 500 grams should certainly be achievable, which would be excellent for a model with this wing area. Besides, most examples built today are electric versions anyway.

Now the final challenge lies ahead: the maiden flight, evaluation of the basic flight characteristics, and any adjustments necessary to make the model perform exactly the way I want it to. Hopefully, I will be able to report on that very soon.

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