Ultralight planes for fun and research

With Jean-Christophe Zufferrey, we started to look for ultralight planes in 2002. They were made possible with Didel motors and gears, and new light Li-poly accumulators. JC built the 50-grams C4 with an original direction control: the motor and propeller were turning letft and right. The C4 ended up to carry a camera and was the first indoor flying robot. See http://lis.epfl.ch/research/projects/BioinspiredFlyingRobots/index.php and Toward Indoor Flying Robots IROS2002
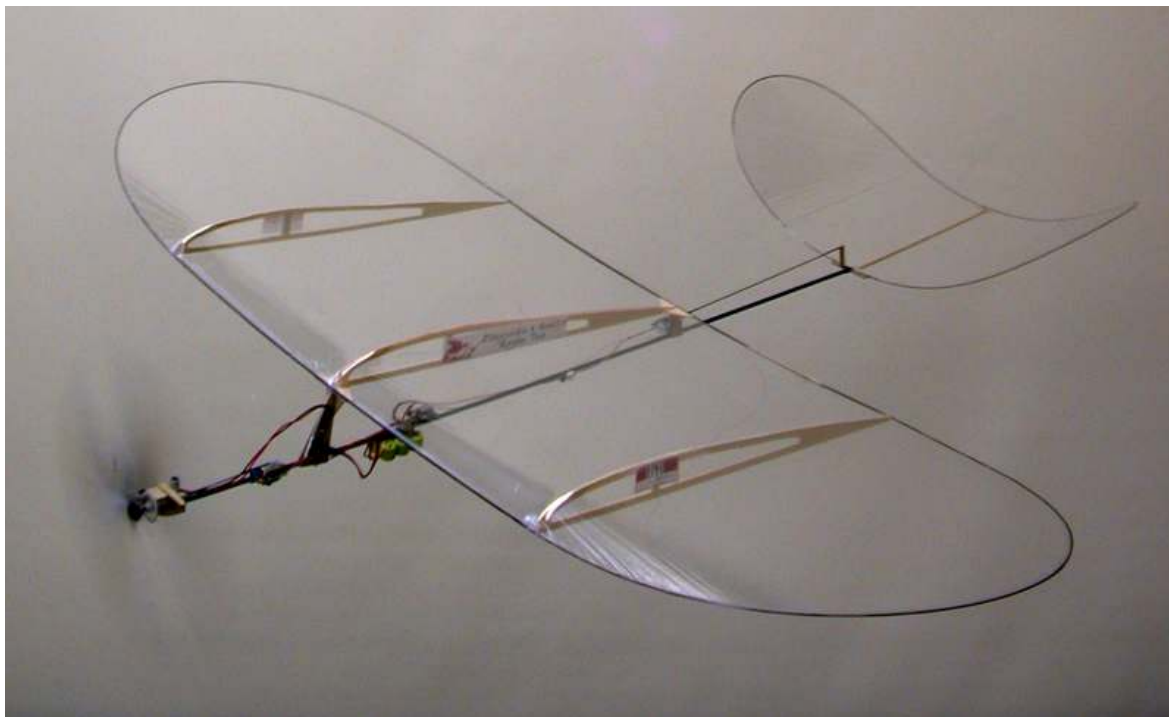

The 10-grams Celine followed in 2003, it was a kit made of many small balsa pieces and carbon rods. The 6-grams miniCeline was developped 2004 and used small molded pieces holding thin carbon rods. The objective was to lower the weight for a better manoeuvrability at home. The new 20 mAh cells and mod 0.2 gears, in addition to a new concept for hinged magnetic actuators (that does not really save weight but makes for a clean low friction construction) were the major changes.
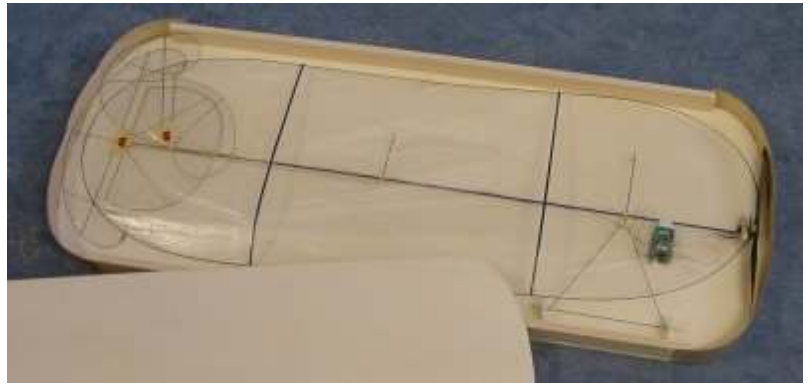

The 2003 Celine with its V-Tail   the 2004 MiniCeline

We kept the requirement for an easy transportation and fast assembly. The Celine packed in a 22x30x5cm plastic box.The miniCelines had a thinner wooden box, but the IR control handle could not fit.
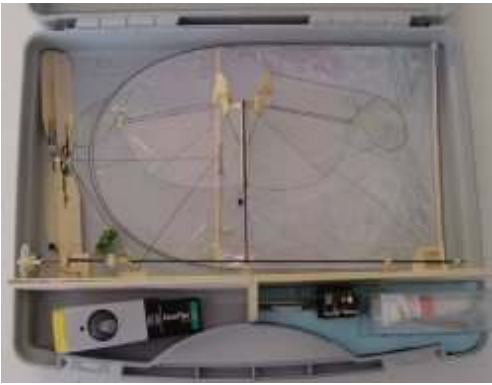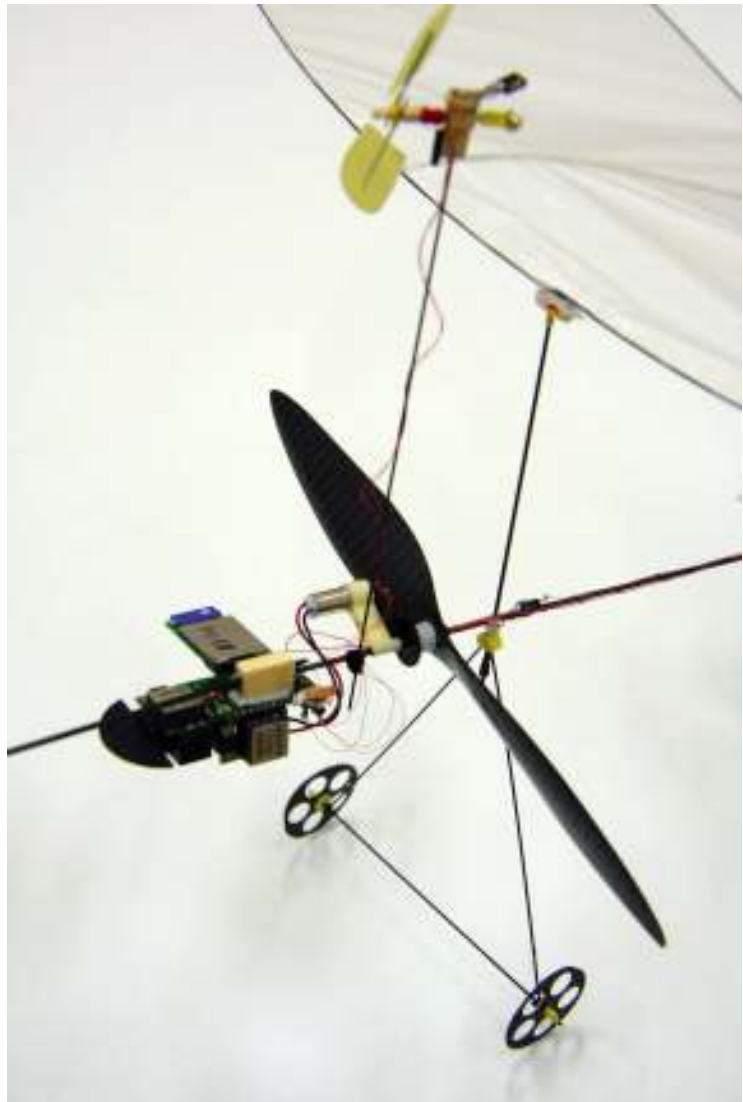
Celine case

MiniCeline box

The microCeline was slightly smaller and had mostly construction details improvements. It was used by Jean-Christophe Zufferey for his research work on flying robot. The advantage is the smaller the plane and its flight speed, the smaller the room for doing the experiments. JC added to a 5-gram microCeline structure a 5-gram payload consisting of a linear camera, an accelerometer, an anemometer, a microcontroller and a 60 mAh lipo. The problem of having to place the camera on a high post was solved by André Guignard who just put the propeller in the middle of the fuselage!

The 10-grams MCI flying robot   The redesigned fuselage.

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