Openfoil Open Source Hardware Project

Product name: OF2

Product definition: Hydrofoil for nautical sports such as kitesurf.

Release: 28.01.2018

// Content

0/ License and certification

The product OF2 is placed in open-source hardware released under the license "Creative Commons Attribution-ShareAlike 4.0 International Public License" in attachment. All the "open source" and "open source hardware" elements of this documentation refers to this license.

OF2 is certified as "open source hardware" by the Open Source Hardware Association. The ID number of this certification is "FR000004". It is listed in the certification to this address:

http://certificate.oshwa.org/certification-directory/

1/ Introduction

OF2 is a hydrofoil designed for the sport kitesurf. It may be used for others nautical sports such as wakeboarding. A hydrofoil applies a vertical force on the kitesurf-board which allows the board to take off from the water surface. In front view, OF2 is a triangular-shaped hydrofoil which is fixed to the kitesurf-board. In side view, the hydrofoil OF2 is slanting: the lower part is more on the back (considering the direction of the foil) than the upper part.

2/ Advantages of OF2

- The board is fixed under the top-edge of the triangle-shape of OF2. So the hydrofoil doesn't impact the bottom part of the board, which is an advantage when the board touch the water.

- As the shape of OF2 is triangular (in front view) the two down-edges of the triangle are inclined. This provides an auto-stabilization concerning up-down motion. Indeed, when the hydrofoil goes up, the part of the foils in the water decrease, and the lifting force decrease, so the hydrofoil goes down. When the hydrofoil goes down, the part of the foils in the water increase, and the lifting force increase, so the hydrofoil goes up.

- The fact that the shape of OF2 is slanting (in side view) provides an auto stabilization of its incidence. As model-tests showed, if the shape is not slanting, the hydrofoil incidence varies a lot (points in up and down directions) in a way which is difficult to control. But if the shape is slanting (case of OF2), the hydrofoil incidence is more stable.

- OF2 doesn't present sharp corners because its shape is a closed loop. As a result, it is much safer than classical hydrofoils: it present round corners which cannot cut the rider easily.

3/Construction

The four foils of OF2 are aluminum profiles which have the shape of a wing.

The connection parts are in plastic. They can be 3D printed (the .stl file is shared in open source).

4/ How to use the files

All the conception files are available on the public Facebook page "Openfoil". There are:

- A 3D file (in 3dm and dwg format) of OF2. It can be used for visualization, measurements, and export of stl format for a 3D print. It is also the support of the "grasshopper" definition.

- A 2D file (in dwg format) with front and side views, and dimensions of the foils in order to cut the aluminum profiles.

- .stl files which contain all the needed information to 3D-print the connections parts between the foils. The geometry is compatible with the foils described in the 2D and 3D files.

5/ Specific points concerned by the certification Open Source Hardware

Are specifically declared in open source hardware the following elements:

- The geometry of the three foils. Especially the inclination of the two bottom foils in front view and the slanting of the two bottom foils in side view.
- The geometry of the connection parts between the three foils.
- The fixation of the hydrofoil to the board by the upper part of the board.

6/ Responsibility

Kitsurfing and windfoiling is dangerous. OF2 is designed to be as safe as possible, however it is still dangerous to use. Openfoil and the author Ludovic Regnault decline all responsibility of any damage, physical or corporal, caused by OF2.