



Swiss Solar Boat

PARTNERSHIP BROCHURE
2022-2023

ONE TEAM
ONE BOAT
ONE GOAL



Copyright Photo: Hironobu Akiyama

THE 2021-2022 TEAM



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In 2014, a team of students from EPFL decided to take part in HydroContest, an innovative student competition focused on maritime energy efficiency. HydroContest is an educational, awareness-raising tool and incubator of ideas and technologies, that brings together the engineers of tomorrow around this issue. Inspired by this experience, the desire to participate in the Monaco Energy Boat Challenge (MEBC) marked a new chapter for this team: the construction of a boat with a pilot propelled by solar energy. The Swiss Solar Boat association was born in 2019, with the objective

of taking part in the 2021 edition of the MEBC in the solar category, to represent Switzerland and EPFL in this international competition. After its second participation in 2022, the association is evolving and is looking for a new challenge by applying its know-how in new technologies that are in phase with marine transportation's future constraints.

The common passion, technical challenge and human adventure represented by this objective is a strong stimulation in the professional lives of each member of the Swiss Solar Boat team.

+60
Team members

9
EPFL sections
represented

5
Boats built

OBJECTIVES



Strengthen learning:

To give students the opportunity to apply the skills acquired during the EPFL courses in a concrete way through Bachelor and Master projects.



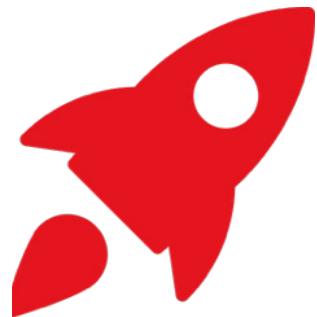
Share a human adventure:

To exchange knowledge between members of the association and join forces to accomplish a common project. To be part of a collective vision.



Raising awareness of green energy:

Demonstrate the power of renewable energies by using hybrid technologies such as solar panels and hydrogen energy to power our boat.



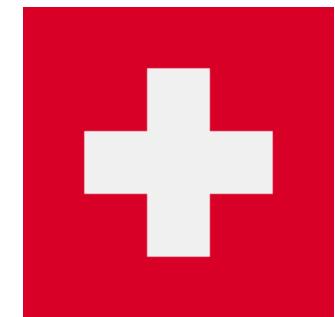
Conceive an innovative concept:

Create a boat with a unique design and implement the most advanced technologies on it.



Perform while achieving our objectives:

Obtain results that demonstrate the student's capacities.



Represent Switzerland abroad:

Exhibit our know how in international competitions and ambitious challenges while affirming the leadership of Swiss schools in cutting edge technologies.

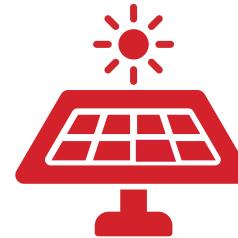
CONCEPT

Distinguishing itself from existing concepts, our prototype is developed on the basis of a prao: an asymmetrical Polynesian canoe. Foils are implemented to minimize drag and friction of the hulls with the water surface.

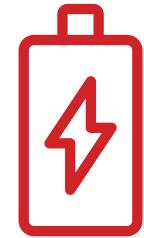
The development of an active flight control system ensures a stable flight and thus the best performances while sailing.

With composite materials combining fine-ply carbon and woven linen fibers, the boat's structure has been greatly optimized in terms of both lightness and mechanical properties, guaranteeing the safety of the pilot in all circumstances.

The integration of solar panels, the final challenge in designing this type of boat, completes these innovations.



6 m²



1500 Wh



13 kts cruise



25 kts top



200 Kg



7 m



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THE DAHU

The boat was named Dahu, inspired by the Alpine region where it was born. The Dahu is a legendary animal similar to the ibex, which is said to live in the Swiss Alps. Legend has it that it has shorter legs on one side than the other to move around on the steep mountain slopes. The name of this creature was a perfect fit to honour the asymmetrical design of the boat.



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2021 AND 2022 RESULTS

In July 2021 we managed to take part in the 8th edition of the Monaco Energy Boat Challenge and obtained amazing results for a first participation: 2nd position in the solar class and a special jury distinction for eco conception.



Copyright Photos: SSB



Special eco
conception dis-
tinction 2021



Second place
solar class 2021-
2022



First place
championship race
2022

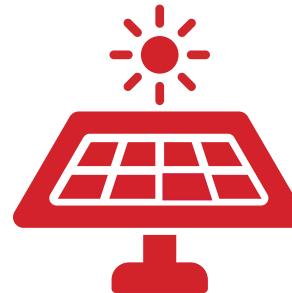
After optimizing the Dahu for a year, Swiss Solar Boat came back to the MEBC in july 2022 and obtained once again a silver medal in the solar class while, this time round, winning the championship race, a series of duels that puts to test the speed and maneuverability of the boats in the Yacht's Club harbor.

NEXT STEPS

The Dahu has proven its worth on more than one occasion, but it has a major weak point, being its endurance. Indeed, the solar panels and lithium battery combination does not allow for enough energetic density for a continuous navigation at a fast pace.

That is the reason why we are betting on hydrogen as an energetic vector. The Swiss Solar Boat team has set itself a new objective, which is to develop a new hydrogen-solar hybrid boat, to be launched on water in 2025.

To do so, the Dahu will be used as a testing platform, which will allow us to acquire expertise on hydrogen propulsion and continue to develop this prototype.



~200 W/m²



Li Battery :
0.2 kwh/kg



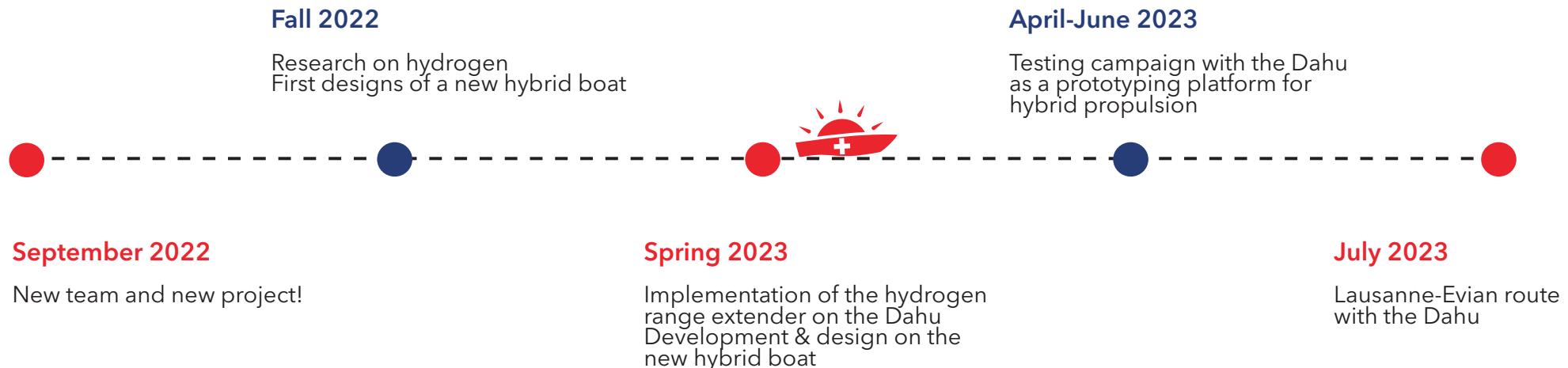
Hydrogen :
33.3 kwh/kg



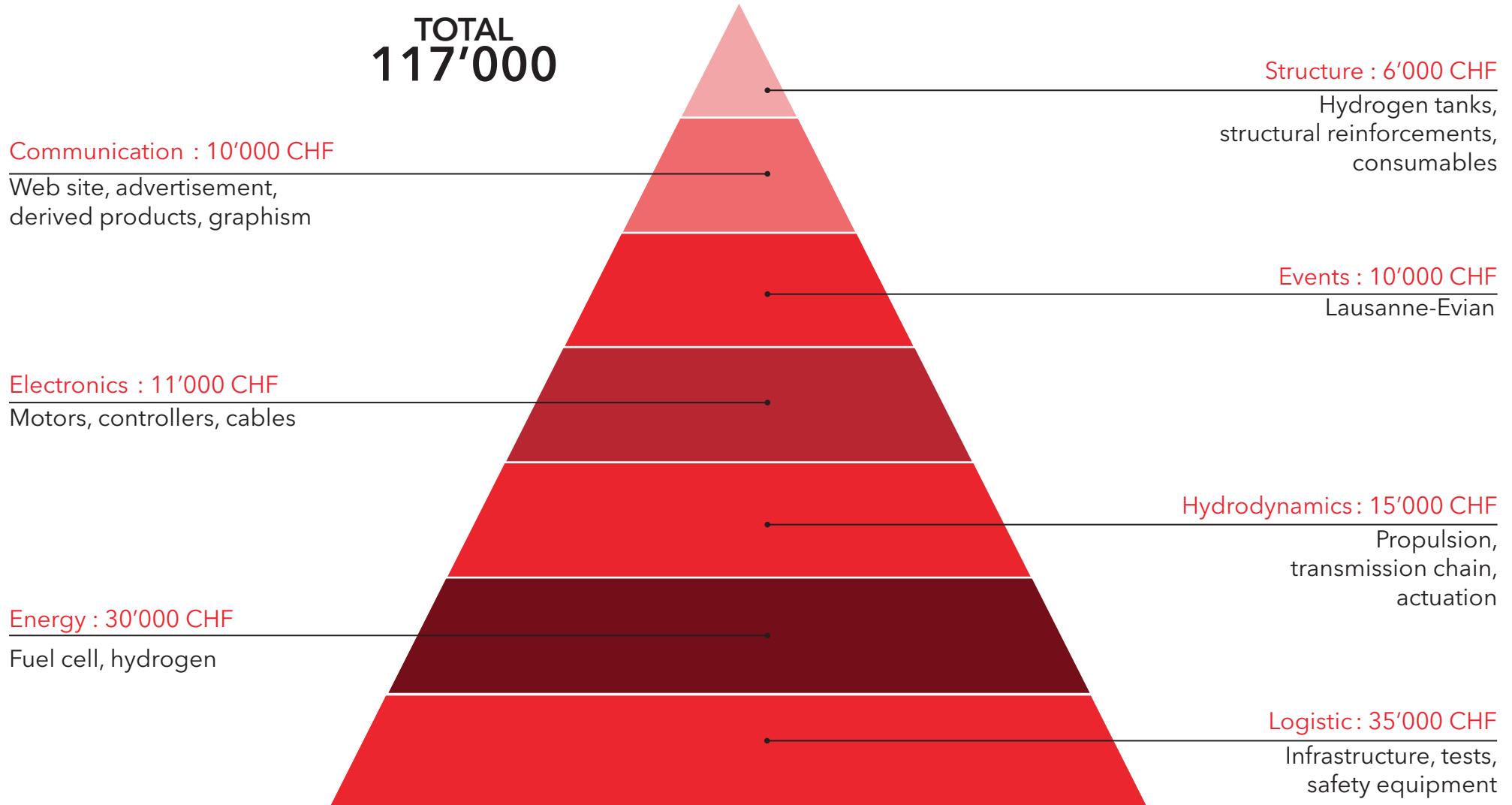
ACADEMIC YEAR 2022-2023

We are going to work on two key points:

- Integrate a hydrogen range extender on the Dahu in order to complete the Lausanne-Evian route which represents more than 40% of the public transportation on the Lake Geneva.
- Develop the design of a new hydrogen-solar hybrid boat with an autonomy of 150km, while always keeping technological innovation and durability in mind.



BUDGET



A sponsoring budget estimated at 117'000 CHF will be necessary for the hybridization of the Dahu, the tests on the lake and the record on the Lausanne-Evian route. In parallel, the team will also start working on the design and development of the new hybrid boat.

Building and optimizing the Dahu required more than 300'000 CHF. This includes the production of the boat in composite, the machining of mechanical parts such as the rudder and propellers, and various electronic components such as PCBs, battery and motors.

To optimize the boat after our first participation in the MEBC, we made new foils and carbon verticals, improved the propulsion chain and worked on the control system, notably by developing the altitude measurement. We also organized events around the Dahu.

In addition, the logistics surrounding the trip to Monaco required specific expenses, such as the acquisition of a trailer to transport the boat.

These financial means allowed us to live this adventure, by building a boat powered by solar energy in an eco-responsible way.

For the coming year, we are keeping the same boat, so what's all that money for? The transformation of the boat's propulsion with the addition of hydrogen will require several acquisitions, such as a fuel cell to convert hydrogen into electricity, but also structural reinforcements to implement the hydrogen storage and associated systems on the boat.

Starting this year, the team will invest resources in the development-and presentation of the new project.

We also have infrastructure costs, such as the need for a space. Finally, we would like to present to the public the possible innovations in the field of maritime efficiency and renewable energies by participating in boat shows, among others.

The whole team of Swiss Solar Boat is committed to one goal: to take up new technical challenges while promoting nautical sustainability on Lake Geneva and elsewhere.

BEING A PARTNER

Sponsoring the SSB Team is a commitment to the development of tomorrow's naval technologies. There are many opportunities for you to join this project:

- To be associated with one of the most prestigious schools in Europe, recognised for the quality of its teaching, and representing a training center for the engineers of tomorrow.

EPFL is one of the 100 best universities in the world, ranked 18th in engineering and technology and 38th overall by The Times Higher Education in 2022.

- Support a young and dynamic team of passionate engineers seeking to promote the green technologies of tomorrow.

- To highlight your company's identity by supporting an innovative project offering the opportunity to anchor yourself in the European university nautical horizon.
- Partake in the accomplishment of famous routes in record breaking time, while demonstrating the efficiency and offering visibility to performant renewable energies



Events



Presence on the
EPFL campus



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PARTNERSHIP OPPORTUNITIES

The SSB team offers many sponsoring levels. All the categories can be financed in donations or services of same value.

	White <CHF 7'000	Bronze >CHF 7'000	Silver >CHF 15'000	Gold >CHF 25'000	Platinum >CHF 40'000
Website logo	✓	✓	✓	✓	✓
Social media		✓	✓	✓	✓
Logo on t-shirt edition 2022-23		Small	Medium	Big	Main
Presence on the roll-up			✓	✓	✓
Logo on the boat			Small	Medium	Big
Presence on flyers and presentations				✓	✓
Visit and presentation of the boat, organized by the association, at the EPFL				✓	✓
Presentation of the company during the public trials of the boat					✓
Presentation by the association of the project in the company					✓

SPONSORS 2021-2022

Platinum sponsors :



Gold sponsors :



UNION BANCAIRE PRIVÉE

Silver sponsors :



Bronze sponsors :





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