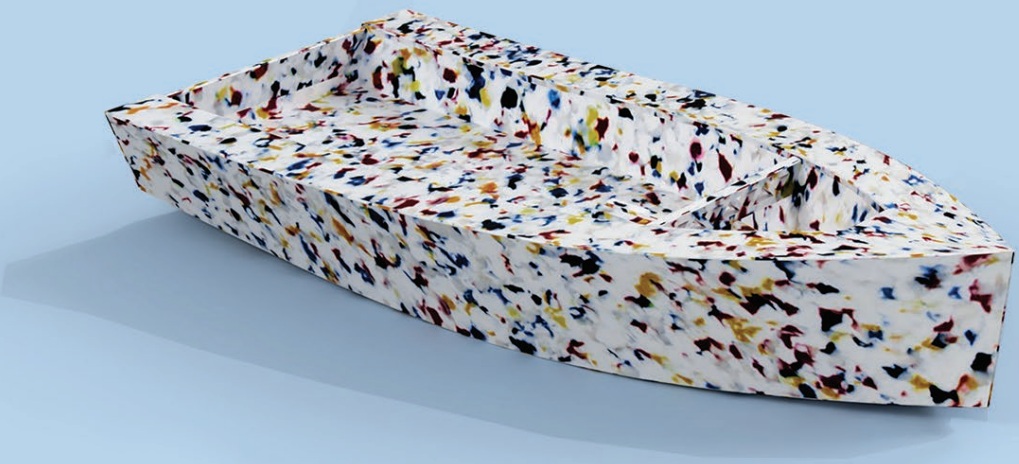
VAU.R 308

LOGBOOK



October 2019 - June 2022

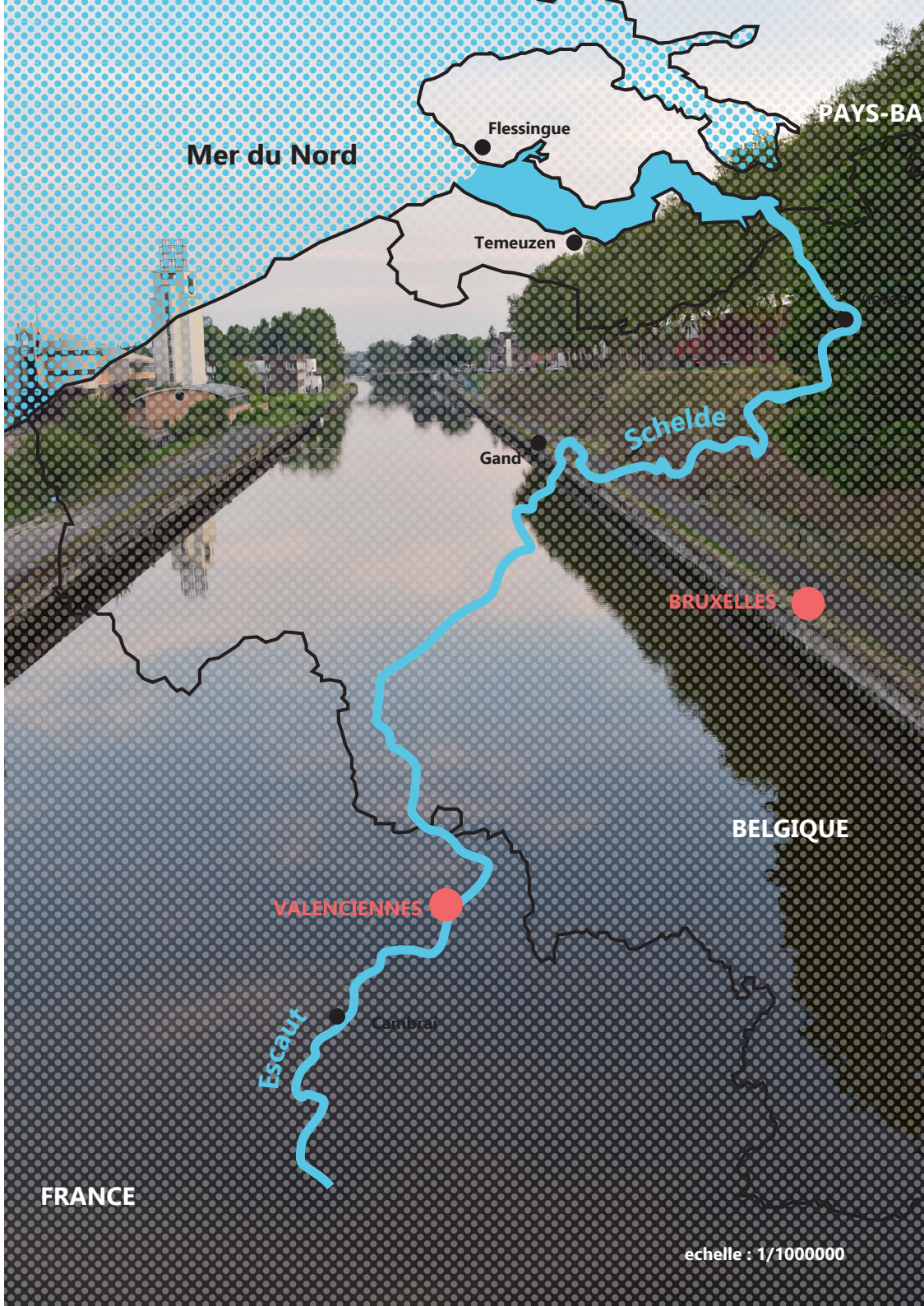
«It is from a study of a small sailing boat: the Vaurien, designed by Jean-Jacques Herbulot in 1951, originally conceived to make sailing accessible to the working class and built with the remains of post-war plywood, that Arthur Grethen and Léo Sprimont devoted their second cycle to a common reflection: that of a new sailing dinghy. After two long internships, they crossed their views and concerns about the life cycle, reuse, and recycling in design, with that of the position of ESAD Valenciennes, anchored on the banks of the Scheldt river. The significant presence of plastic waste, in the waters and on the shores, led these two designers to question the collection and reuse of this waste to confront our place in the cycle of materials and our capacity to act as consumers and users»

Elizabeth Hale

STARTING POINT

This project originates from a theme: «making visible what is invisible about the Scheldt». The Scheldt is a 355 km long European river that flows through the Netherlands, Belgium, and France and passes through Valenciennes. Its mudflats, coastal habitats composed of natural sediments, are rich in ecological value. To research the «invisible of the Scheldt», a walk was organized on its banks. Finally, without being invisible, we noticed a large amount of plastic waste littering the ground. This led us to specify our project on this subject: to question our relationship to materials and our global consumption patterns, by questioning them on a local scale

October - December 2020

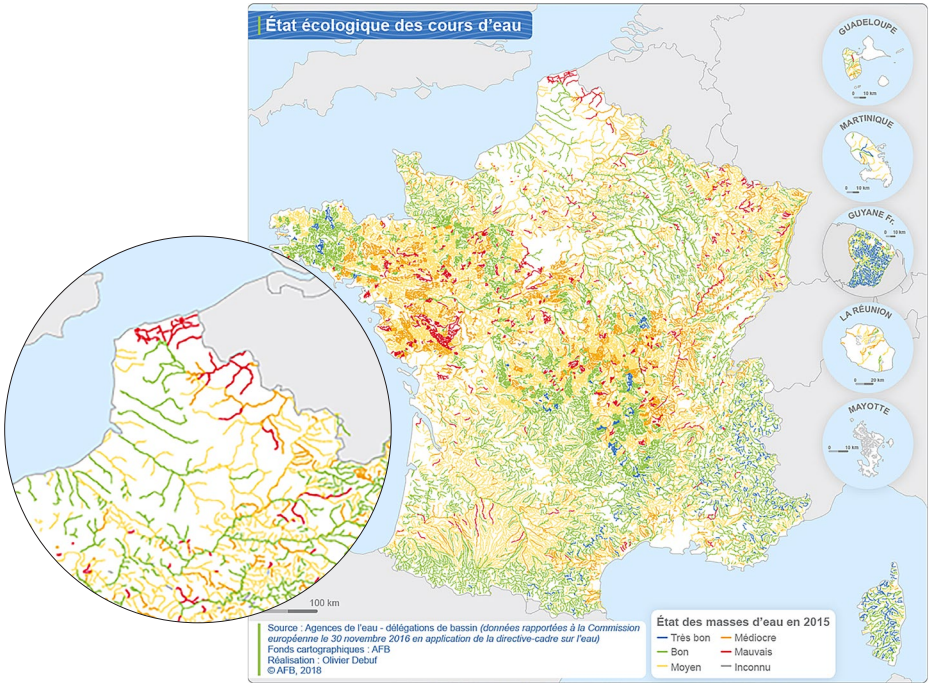


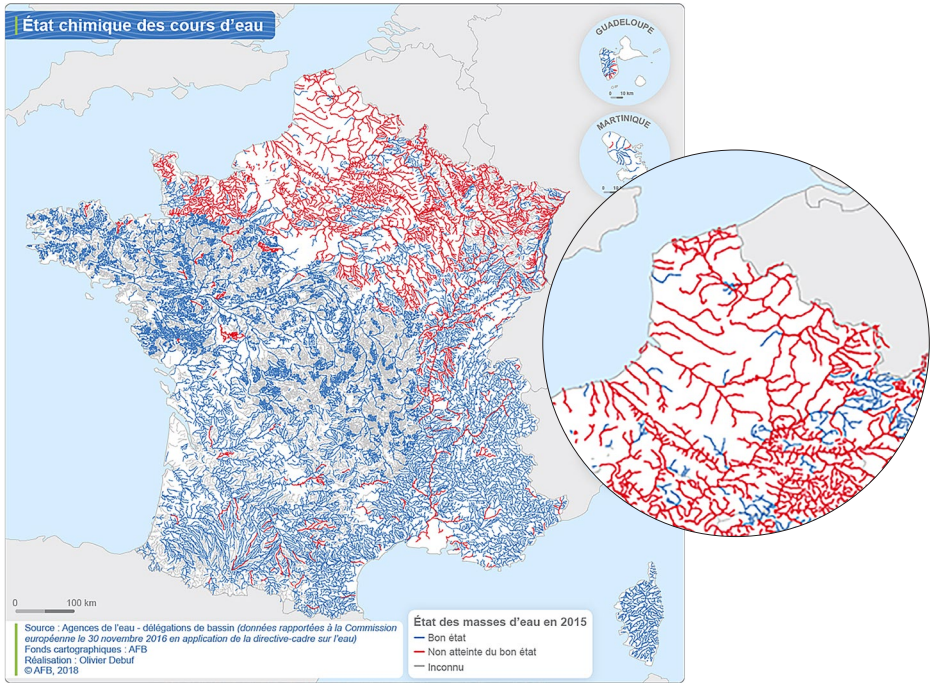
SPYGLASS

After having seen the state of the dikes, we asked about the state of the river. Although the Scheldt has an important role in European biodiversity, it flows through industrial and intensive agricultural areas. Its waterways have been and still are polluted: the natural habitats have often been severely degraded and have completely disappeared for some. Its ecological and chemical status are significant.

The initiative of this project consists of participating in the removal of new plastic inputs that are extremely harmful. Intending to support the recovery of the Scheldt's biodiversity and raise awareness of the care of watercourses.

October - December 2020





CAPE

After noticing all this plastic waste we wanted to signify it by using it as a material. The project's starting point is to recycle the plastic waste from the Scheldt into an object that can materialize their quantity.

We decided to create a small sailing boat that could easily sail on the route of the collected materials and, at the same time be a manifest object. The creation of this dinghy aims to raise awareness of the amount of waste thrown into waterways. But also to demonstrate that it can be put back into another life cycle; and not only as a new raw material but as a material that can be used for the creation of objects with complex specifications.

The objective is to create a hull made of recycled plastic inspired by the «Vaurien», this dinghy was one of the first to be built in a «social» and «eco-responsible» logic.

October - December 2020

VAURIEN

«The Vaurien is a monohull dinghy designed by Jean Jacques Herbulot. It was designed in 1951, prototyped the following year, and was internationally recognized in 1957 as a production boat. It was designed in response to a request from the Comité des Écoles de Voile de France (French Sailing Schools Committee), which expressed the need for a robust, light, and inexpensive boat for introductory sailing courses.

This boat is a symbol of social innovation after the Second World War; designed to be manufactured with a minimum of waste. It was almost five times cheaper than the dinghies of the time: it had to cost no more than two bicycles. It is one of the first boats accessible to all and quickly built-in series. Sailing is no longer elitist but becomes popular. The Vaurien was born.

In 1953, shortly after its construction, the «AS Vaurien», an association dedicated to information sharing between boaters was created. Very quickly, this dinghy became a reference in the nautical world. Projects for autonomous construction of the Vaurien were born through the exchange of open-source techniques between these members. It is manufactured in many amateur garages throughout Europe. The Vaurien becomes a public element of culture and heritage.

Le Maraudeur, un day-boat qui fera école. Construit à plus de 2 000 exemplaires, il poursuit sa carrière de croiseur très abordable. Dans les années 60, il était même vendu au BHV.

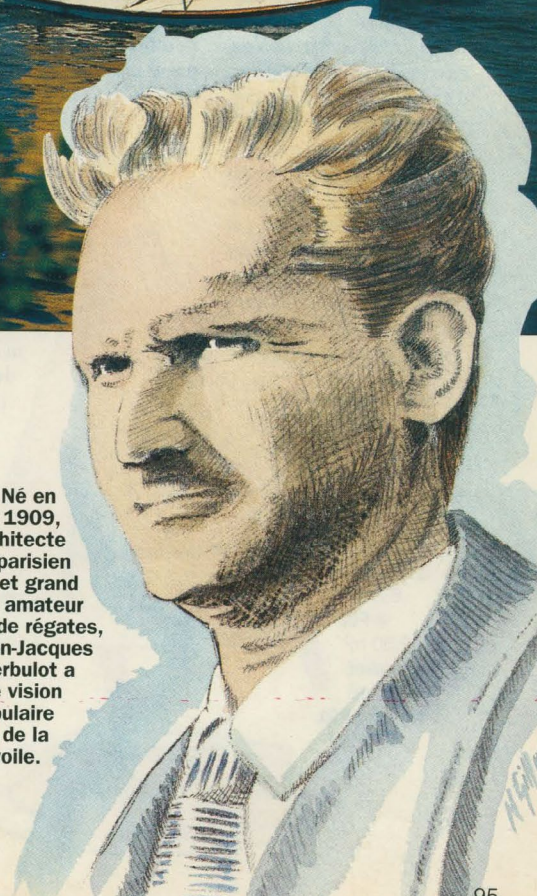
ce matériau, les fameux bouchains qui accompagneront la quasi-totalité de sa carrière.

Au fil des années, le contreplaqué s'adapte, les colles deviennent de plus en plus performantes, le joint-congé se développe et, avec un peu de métier, on parvient à arrondir les angles – comme sur la série des Beaufort – jusqu'à faire disparaître les bouchains vifs.

Mais cette fidélité à un matériau qui l'a fait roi de la plaisance démocratique lui vaut d'être détrôné par le « dieu polyester », une technique pour laquelle il n'a pas la même fibre créatrice. Dans les années 70, il connaît un bref retour en grâce, avec le Figaro, un croiseur côtier destiné à la construction amateur.

Dans les années 70, le Figaro signe son retour

Mais le cœur n'y est plus. On reste bien loin de la « folie » des années 50. A cette époque, la Redoute vendait des draps et des saladiers portant la silhouette du Vaurien en effigie. La grande distribution comme panthéon de la plaisance pour tous. ■

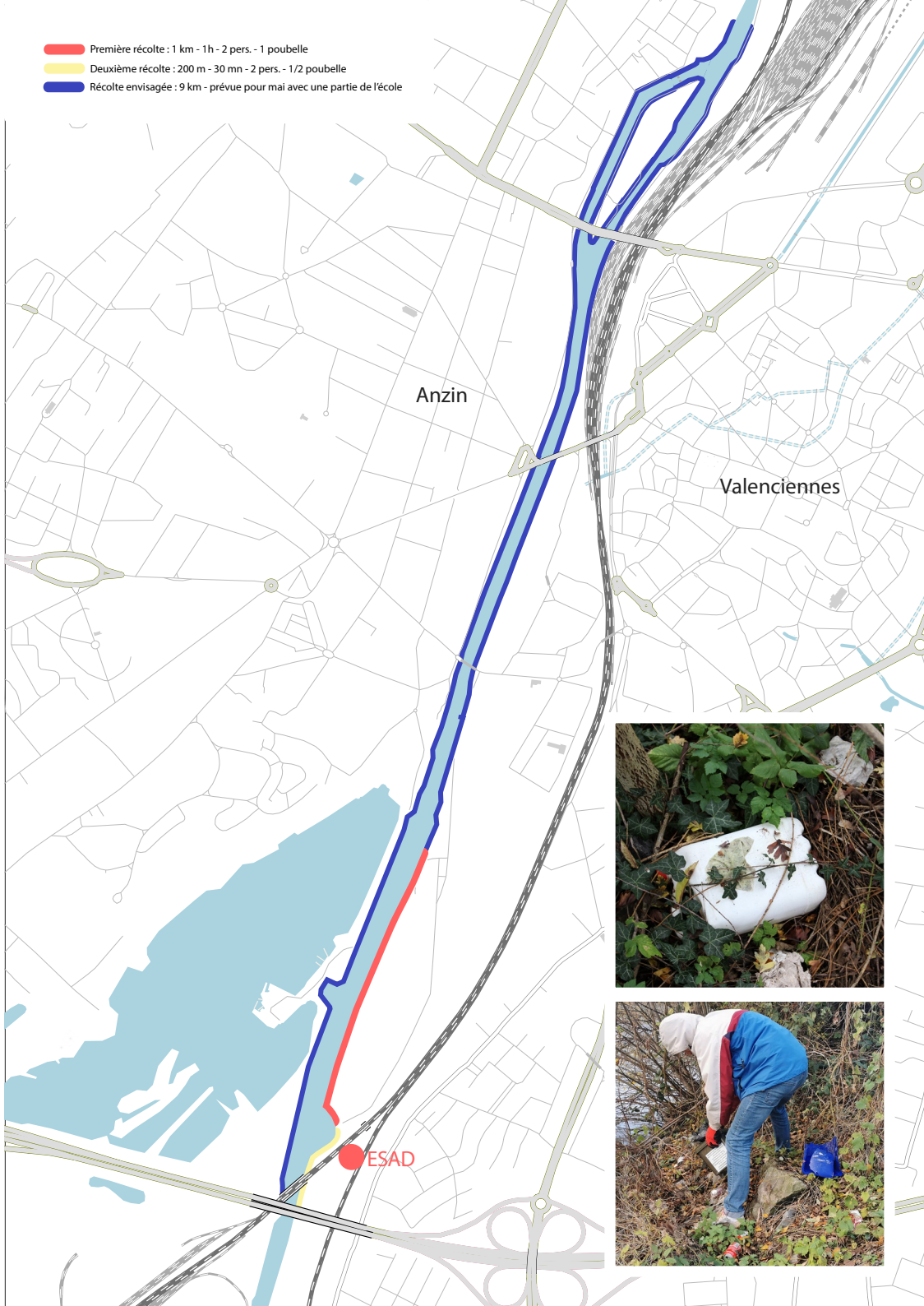


Né en 1909, architecte parisien et grand amateur de régates, Jean-Jacques Herbulot a une vision populaire de la voile.

COLLECTION

We carried out two collections time to quantify plastic waste. The first one has done in one hour over 1 kilometer with two people; it was enough to fill a 340-liter bin. The second collection took place over half of a kilometer in 30 minutes; one-half of the bin was filled. We estimate at more than 50% of the quantity of plastic waste in the collected deposit. The rest is mainly glass, furniture, and other waste.

These collections have enabled us to define plastic as the majority of discarded objects, particularly and mainly single-use packaging made of PET or HDPE.



October 2020 - April 2021

PRACTICE

To change the original shape of the waste and achieve unification of this resource, the type of plastic must first be identified before it is pelletized. Every plastic has different materiality. Plastic collected in nature is also dirty and therefore needs to be cleaned.

Melting -by heat diffusion- allows the plastic to be fluidized before it is inserted into a mould or pressing plates. As it cools, its molecules shrink and it may lose some of its qualities if it is not heated precisely. For example, it may lose flexibility and become dry and brittle.

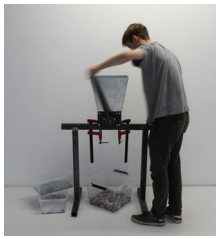
The main types of plastics collected are :

-(PET), polyethylene terephthalate: milk bottles, water bottles, food trays, etc.

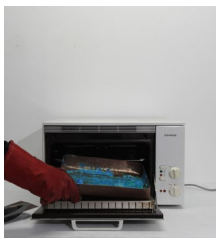
-(HDPE) (LDPE), high and low-density polyethylene: shampoos, caps, chairs, etc.

October 2020 - Febuary 2022





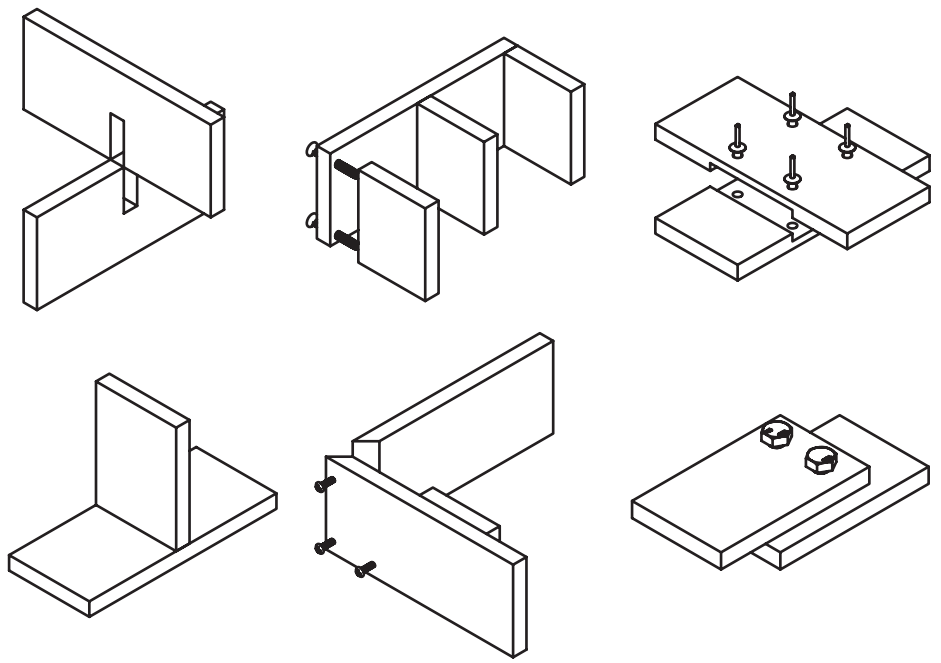



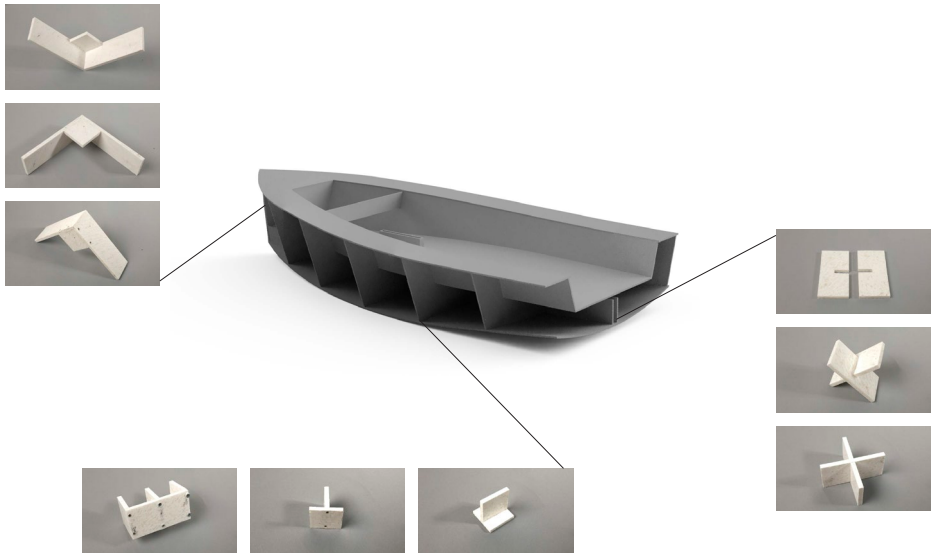
ASSEMBLIES

Following our first successful processing and harvesting of plastic, we approached a recycled plastic processing company to be able to access formats adapted to the project.

This company processes plastic in the form of large sheets. Taking care of the dimensions of their products, we researched the principles of assembly that would allow us to glimpse the architecture of our prototype.

This period was a state of the study of shapes, techniques, and materials. Throughout this stage of the project, we have kept the objective of limiting the number of materials that will make up the yacht to facilitate its recycling; this is a recurrent problem in the nautical industry.





October 2021 - June 2022

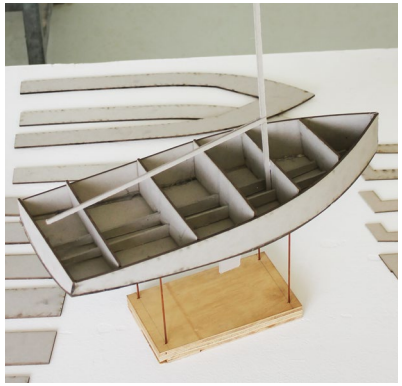
DESIGN

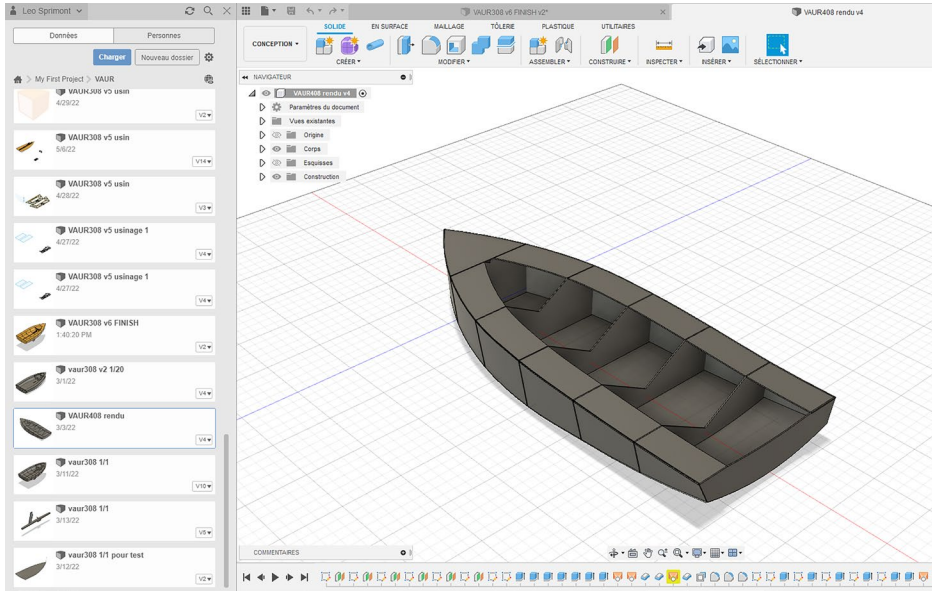
After researching the different designs and construction methods of modern hulls, we made many paper models based on J.J. Herbulot's plans for the Vaurien and then transcribed them into new plans according to the results obtained.

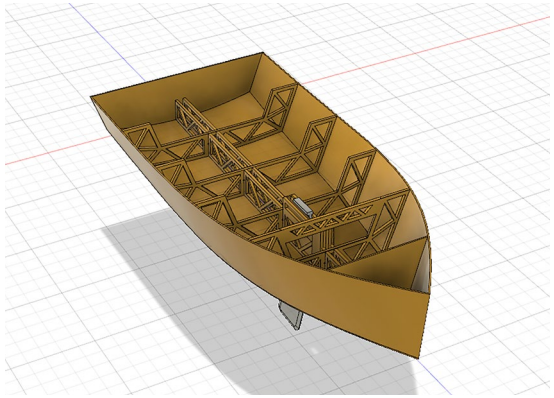
Through an empirical process, we alternated between numerous models and plans, models, and then three-dimensional prints to analyze and retain the best options concerning the material used and the means of production at our disposal. The plan is called «hard chine» like the Vaurien: it is made from plates and its edges are sharp.

Our boat will have a double hull to trap air and ensure optimum buoyancy. We then reduced it from 408 to 308 cm to use as few material resources as possible while keeping the same function: to sail one to two people.

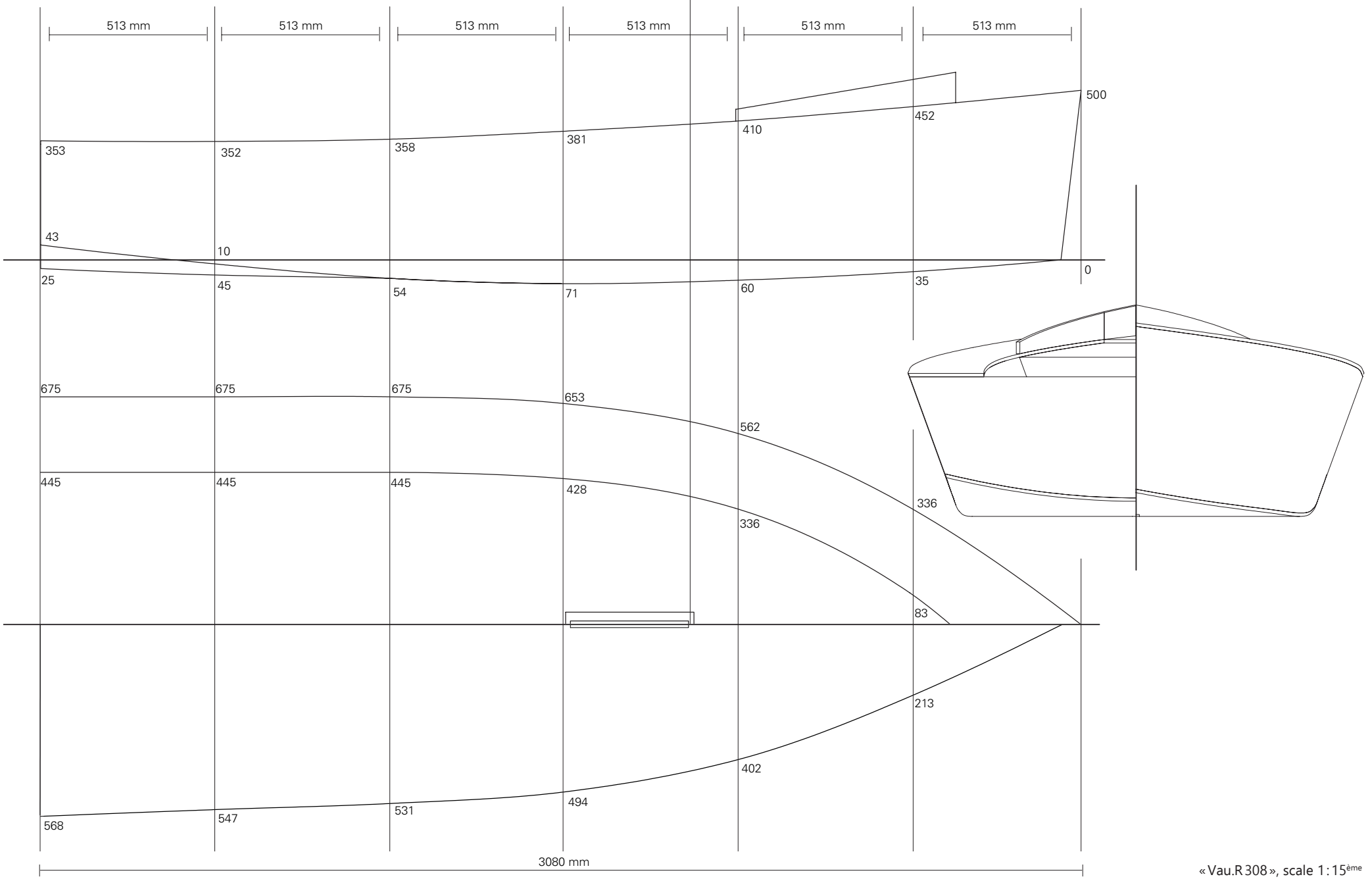
In parallel, we contacted the naval architect Antoine Sarrat to benefit from his vision before building the future «Vau.R 308».







OCTOBER 2021 - MAY 2022



« Vau.R 308 », scale 1 : 15ème

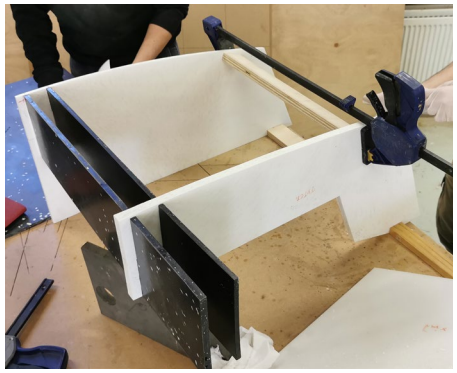
CONSTRUCTION

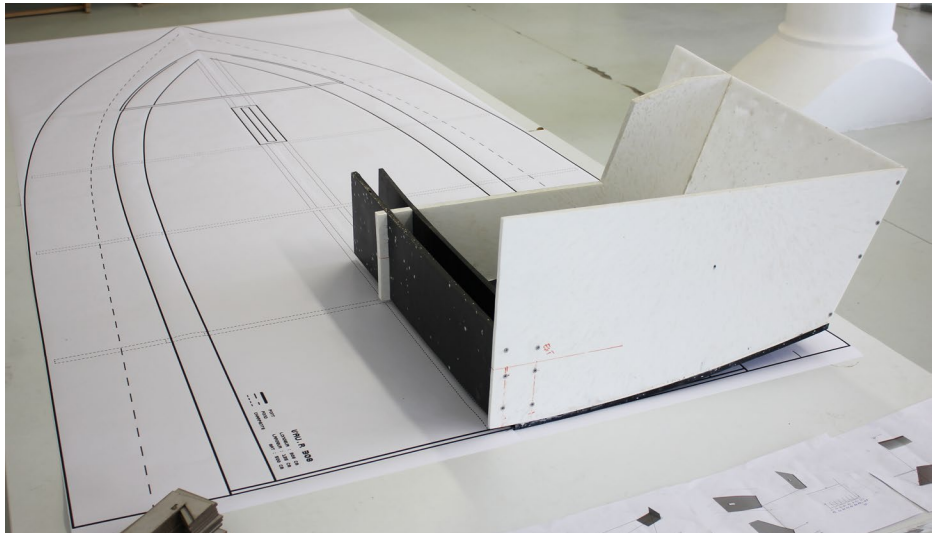
To determine the best working technique and to invest in it as a method, we made different models which question the feasibility of our construction plans and three-dimensional models. We first made a 1:5 scale model in the same material as our prototype. This stage allowed us to check the buoyancy of the boat as well as its balance in the situation.

Taking care of the assembly tests, the model work, and the constant modification of the plans, we produced part of the «Vau.R 308» on a 1:1 scale. This led us to tackle adapted manufacturing techniques such as, for example, deburring: this action consists of methodically chamfering the edges of the plates to ensure a good connection and thus be watertight.

At this stage of the project, we had not yet determined whether the assembly would be done by glueing or by welding; As both of these methods were viable, we needed to check on access to suitable equipment that might be available to us.

JANUARY 2021 - MARCH 2022





PRODUCTION

After assessing the feasibility of the Vau.R 308, we started a collaboration with Bel Albatros, a plastic recycling company based in Brussels. Their members, Guilain Sévrière and Grégoire Hupin have placed their trust in us and have set our project on friendly contract exchange.

Over six weeks, we learned about their production method to define a construction schedule within their organization.

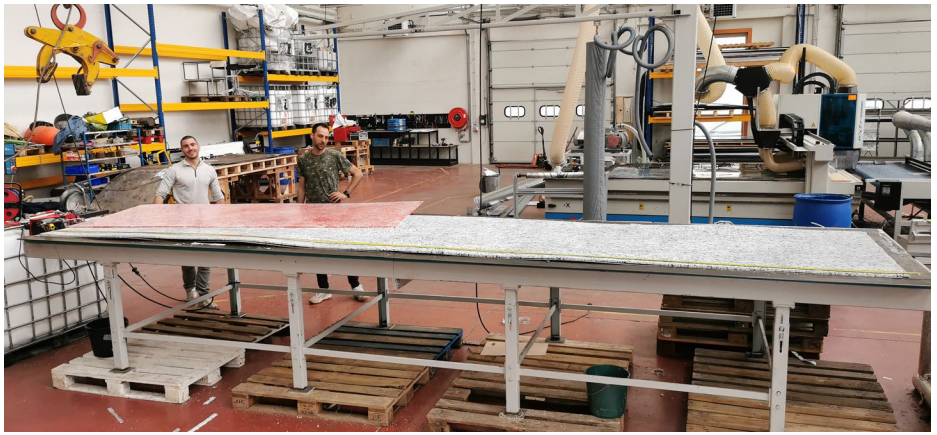
BEL ALBATROS

RECY K,
Birmingham Street, 102
1070 Anderlecht

WEEK 1

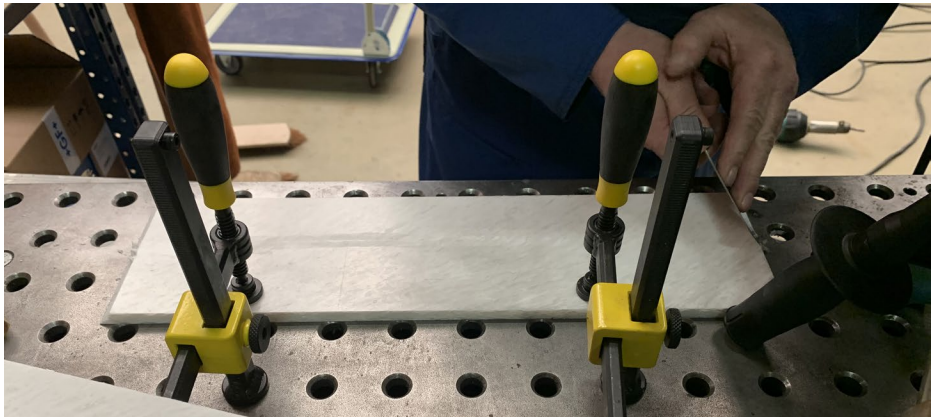
- observation of the premises and the production method: presence of a hot press used for the production of plates
- estimate of the number of plates needed for the construction of the Vau.R 308
- construction of a six-meter long sheetpress: polishing of stainless steel plates that have been decommissioned by the company (i.e. no longer suitable for production) and preparation of a steel frame
- selection of HDPE grains and choice of colour mix
- first printing of a six-meter plate for the company to compose the Vau.R 308

04 - 10 APRIL 2022



WEEK 2

- continued production: printing of the entire plates needed to manufacture the Vau.R 308
- rental of equipment for production: meeting with a company of plastic welders and training during testing of their machines
- strength testing of plastic welds

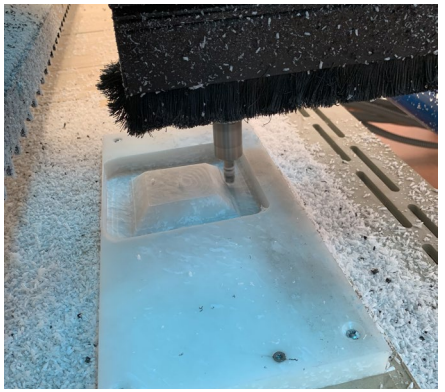


11 - 17 APRIL 2022

WEEK 3

- calibration of the milling CNC (computer numerical control)
- preparation of the necessary deburring: 3D machining tests
- optimization of the weight of the future prototype: research for hollowing out parts of the internal structure
- readings after testing and optimization: modification of the 3D design as a result
- programming milling of workpieces

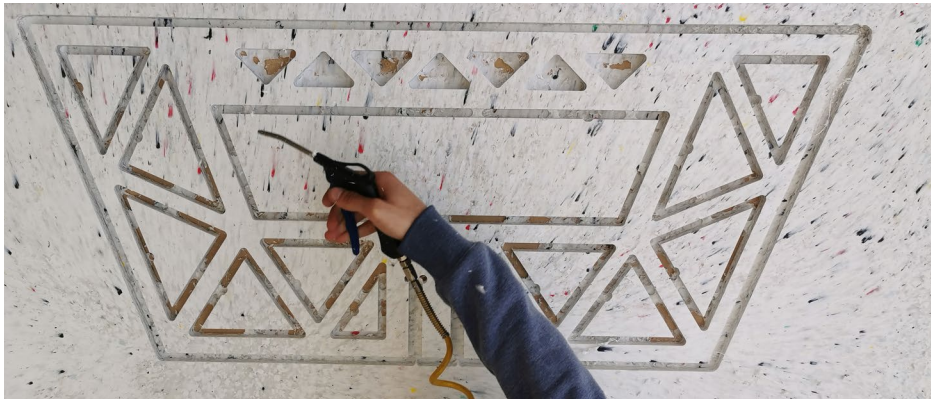
18 - 24 APRIL 2022

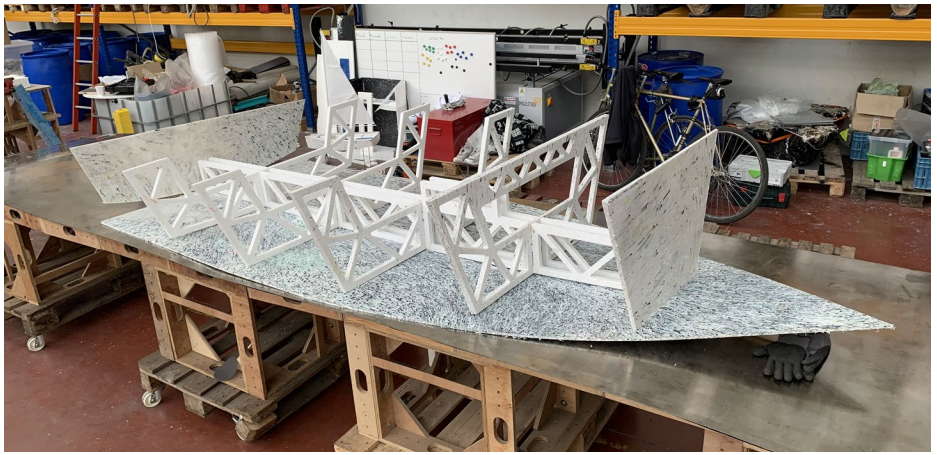


WEEK 4

- machining of the frame: «couples» and «columns» to be assembled
- adjustments and cleaning of parts
- assembly of the frame
- Precise digital cutting off the sides and the bottom to cover possible asymmetries

25 APRIL - 01 MAY 2022

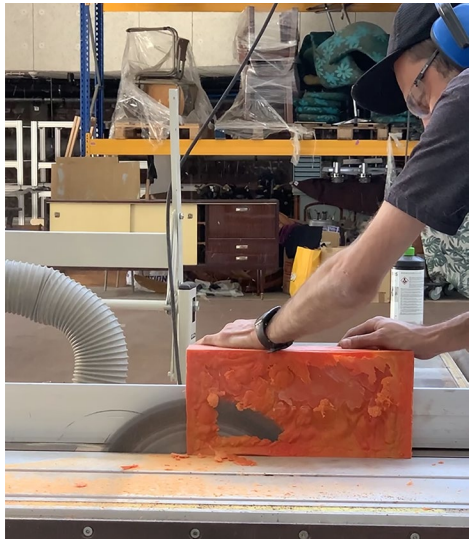




WEEK 5

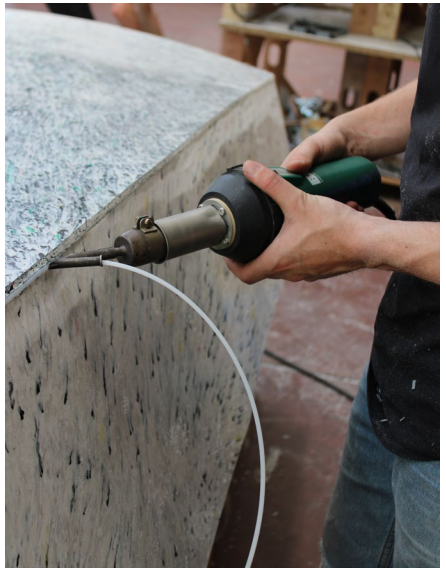
- machining of the last parts
- in parallel: adjustment, cleaning, and assembly
- preparation of the plastic welder's rental: first assembly
- mast box: research and implementation

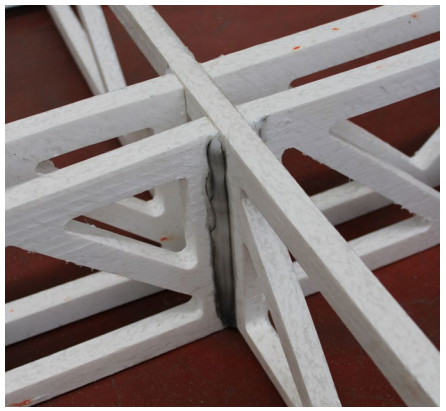
2 - 8 MAY 2022

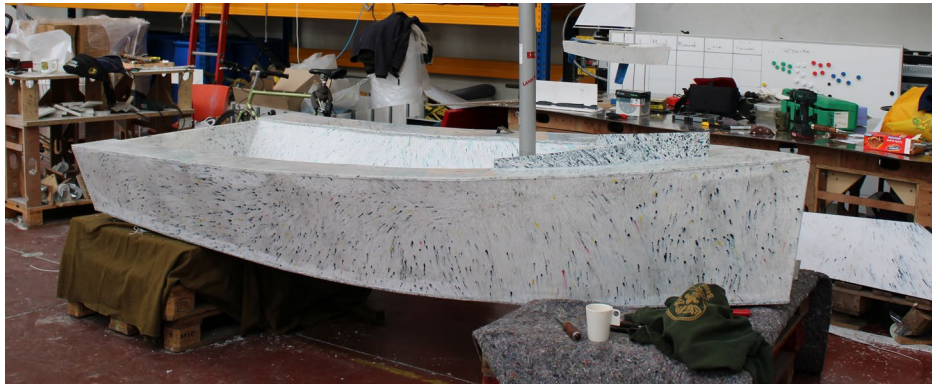


WEEK 6

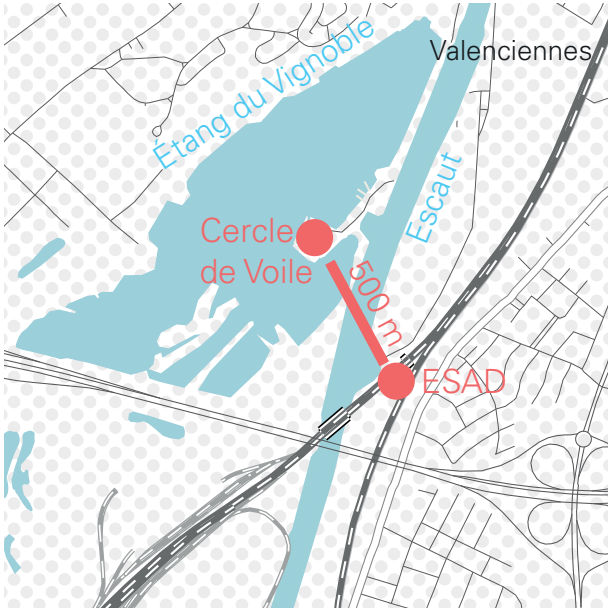
- deadlines: welding of all parts in three days
- two tools: solid structural welding and thinner sealing seam
- transport preparation
- repatriation of the prototype to Valenciennes







9 - 15 MAY 2022



CERCLE DE VOILE

70 Malplaquet Street,
Vignoble area,
59300 VALENCIENNES

NAVIGATION

Once the hull of the Vau.R 308 was built and according to the project deadlines, we transported it directly to the Cercle de Voile de Valenciennes association where we are licensed.

From the beginning of the project, we had the support of the Cercle de Voile. Through discussions with Denis and Frédéric, actors of the association, we were able to test our boat, and have privileged access to the advice and experiences of each one. At the same time, we were able to extend our collaboration by approaching the issues of re-use, which are not very present in the nautical sector.

MOORING

The first step in testing the Vau.R 308 was to put it into the water to check its water sealing and buoyancy.

The boat floats well, its line is high, and we can be two on it. We were able to paddle together.

The Cercle de Voile members are curious to see this prototype on the water; it arouses curiosity and allows us to discuss the different dimensions of the project: from the design and manufacture to the statement of the surrounding banks and recycling. The objective of the prototype seems to have been achieved.

15 MAY 2022

EQUIPMENT

Now we have a hull that floats; we have to turn it into a sailboat to be fully functional according to its nature and our expectations.

During exchanges with the Cercle de Voile de Valenciennes, we learned about the difficulty of repairing and re-using roto-moulded plastic boats. We have partly created the Vau.R 308 to question the recycling of plastic boats -which could be repaired or recycled into Vau.R- to readapt the already made functional and standardized equipment. The aim is to limit the production of these elements, which can also be expensive. The mast and sail will be those of a Laser: a four-meter plastic monohull dinghy.

So we fitted the hull and set off on our adventure! When we tested sailing the prototype, we noticed that the daggerboard and rudder we had created seemed slightly undercut, but the potential of the hull was encouraging. The following day, we fitted the Vau.R 308 larger pieces borrowed from the association: the prototype seems fully functional and is only waiting to be tested in stronger weather.

At the end of May 2022, we are happy to see it and enjoy sailing it. We are full of motivation to continue to develop all the dimensions of the project and to continue the development of the plans and structural studies to design a new version of the Vau.R 308.

16 - 18 MAY 2022


137462

THANKS

BEL ALBATROS

CERCLE DE VOILE

MARTIAL MARQUET

PLASTIC FACTORY BE

ANTOINE SARRAT

ARTHUR GRETHEN

LÉO SPRIMONT

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