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100% ITALIAN TECHNOLOGY

29-30.05.2025 Wieliczka/Cracow

9th Rotopol Meeting 2025

TECHNOLOGIES - let`s talk in a good company!

CHALLENGING THE LIMITS:

Technical Insights into Complex Rotomoulding Projects

ABOUT US

Welcome in ‘Boca’

Based in
San Pietro Mosezzo
Novara - Italy

Models for foundry
CNC Aluminium moulds
CAST Aluminium moulds
Steel moulds
Patterns and moulds for
composities materials
Thermoforming moulds
Thermosetting moulds

Design, furnishings,
automotive, lighting,
nautical and sectors
like medical equipment
and eco-solutions.

Boca can follow his
customers from a
project, drawing, 3D
simulation and FEM
analysis,
until the final product.

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CASE STUDIES

CAST ALUMINIUM MOULD: Pedal boat for 4 people with slide

CNC ALUMINIUM MOULD: Filicudi Sofa

STEEL MOULD: 15,000L tank with dual filling system

CARBON FYBER MOULD: Agricultural tank

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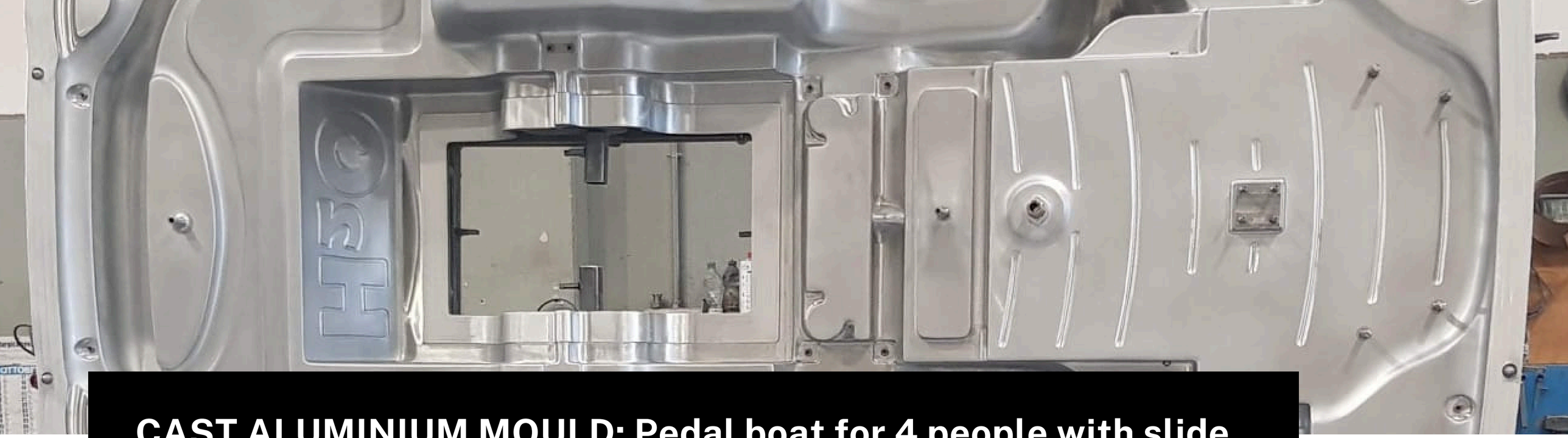


CAST ALUMINIUM MOULD: Pedal boat for 4 people with slide

CAST ALUMINIUM MOULD

Pedal boat for 4 people with slide

Customer request

Two-part mold for the production of a pedal boat designed to carry 4 people + slide

Initial 3D model of pedal boat designed for two people (+ slide) to be converted into a pedal boat for 4 people (+ slide)

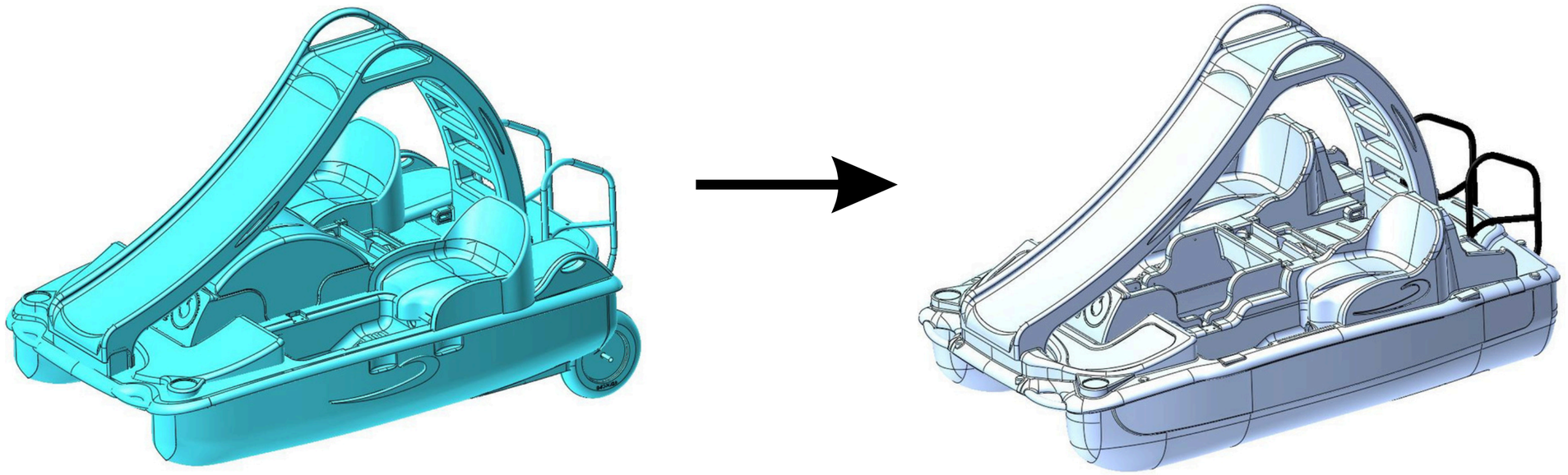
TECHNICAL CONSTRAINTS FOR DESIGN

Maintain overall dimensions unchanged

Two-part mold

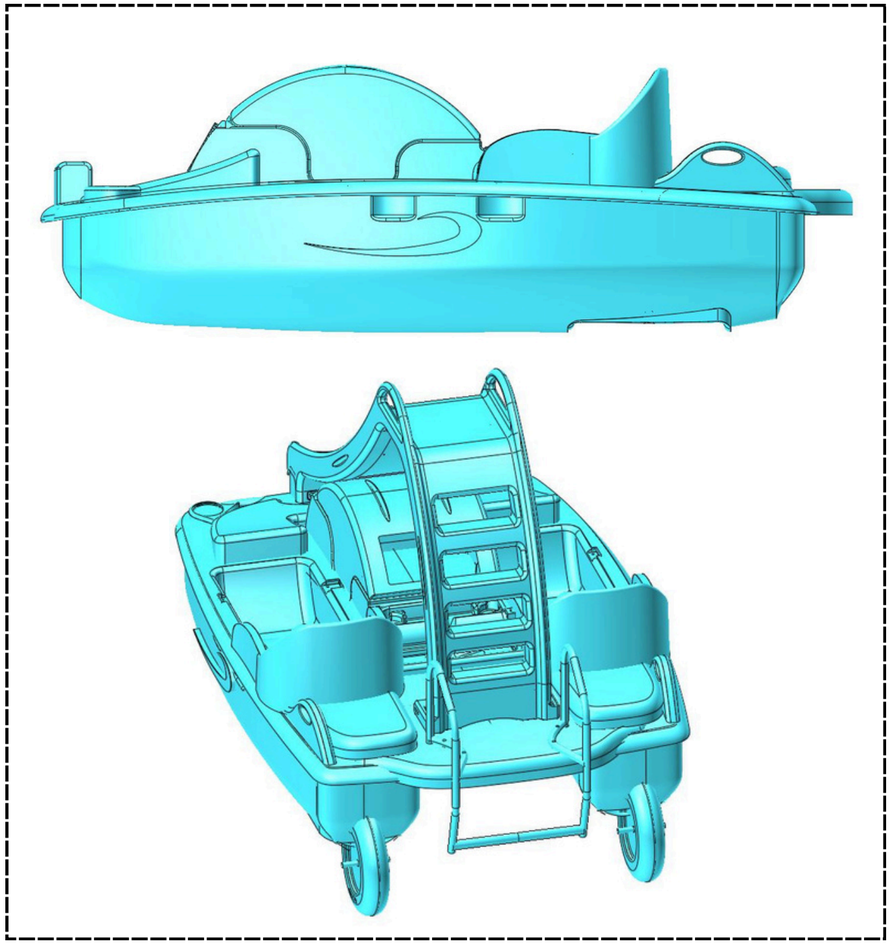
PROJECT CONVERSION

The initial design was modified to go from 2 seats + slide to 4 seats + slide by shifting the existing seats backward and creating two additional spots, along with the housings for all components (wheels, pedals, etc.)

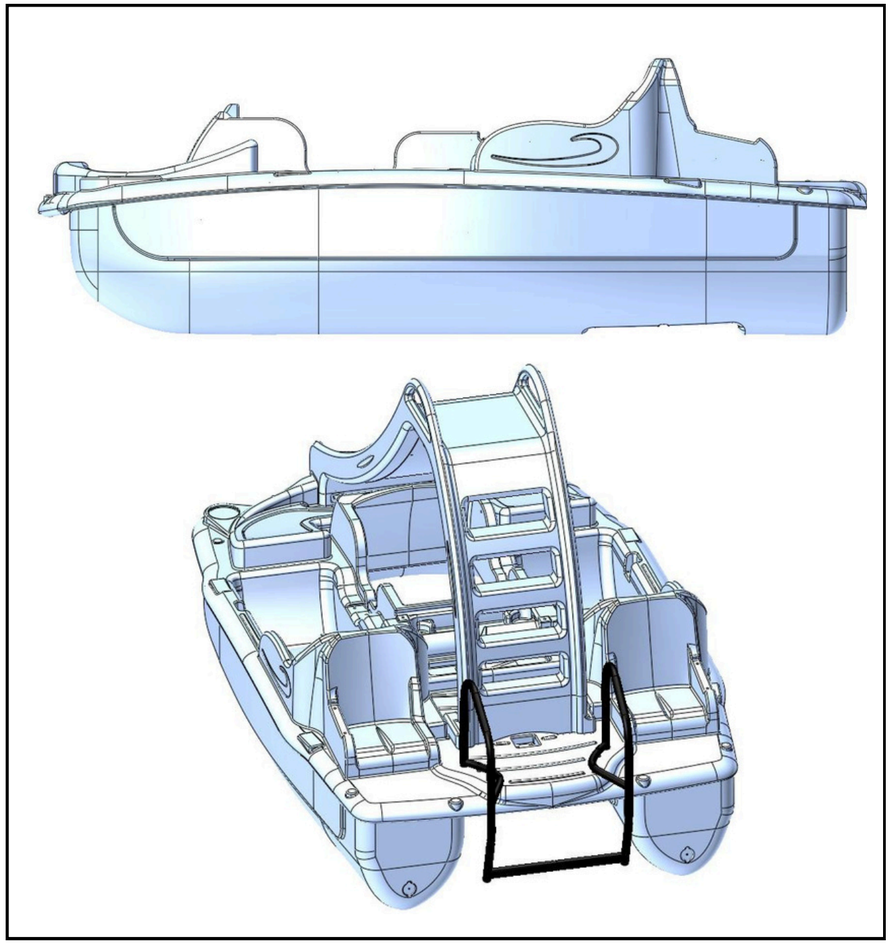


PROJECT CONVERSION

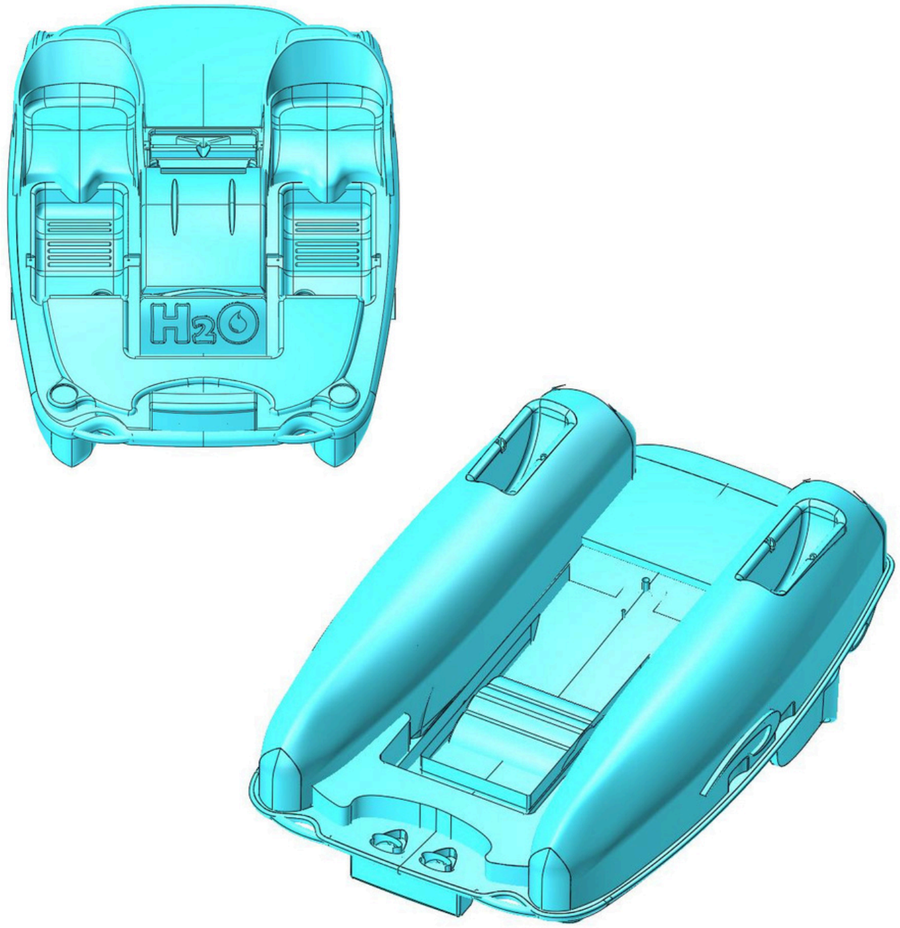
OLD DESIGN

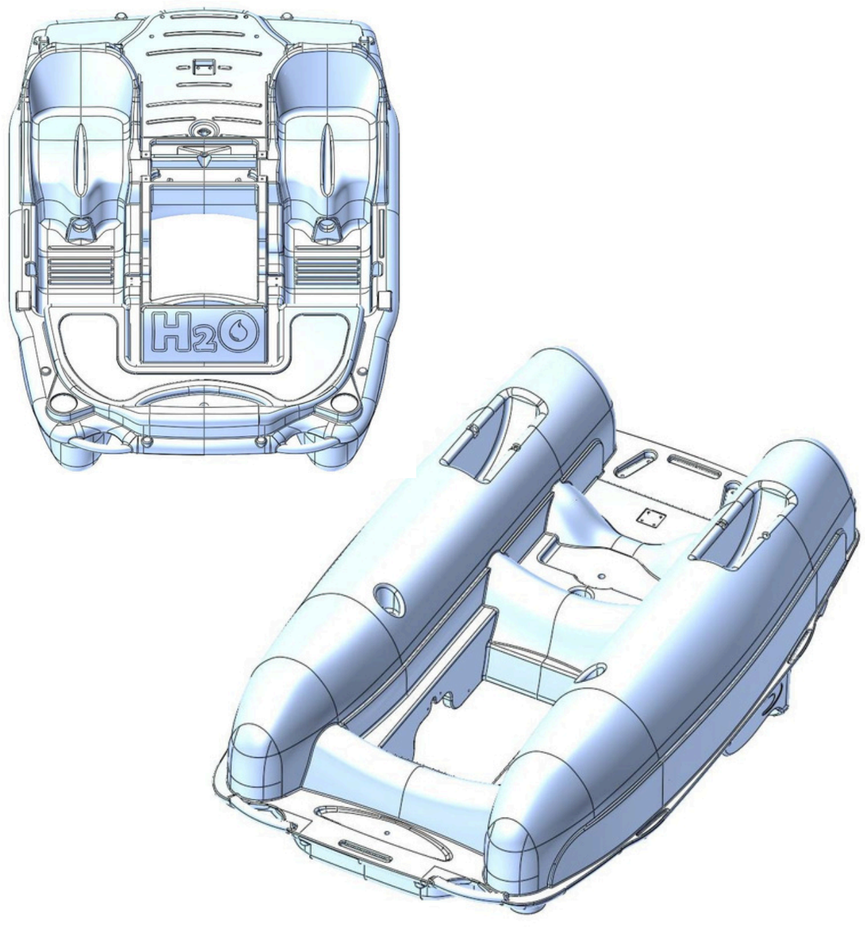


NEW DESIGN ADAPTED TO THE CUSTOMER'S SPECIFIC REQUIREMENTS



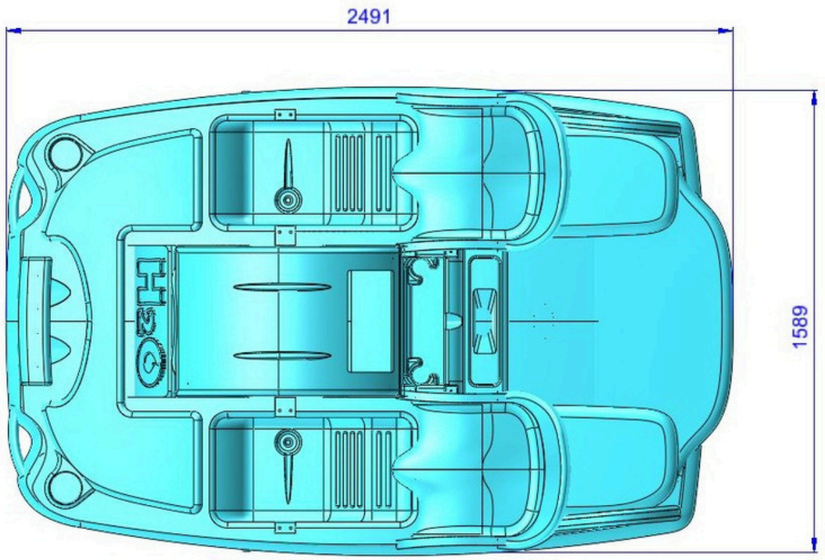
PROJECT CONVERSION

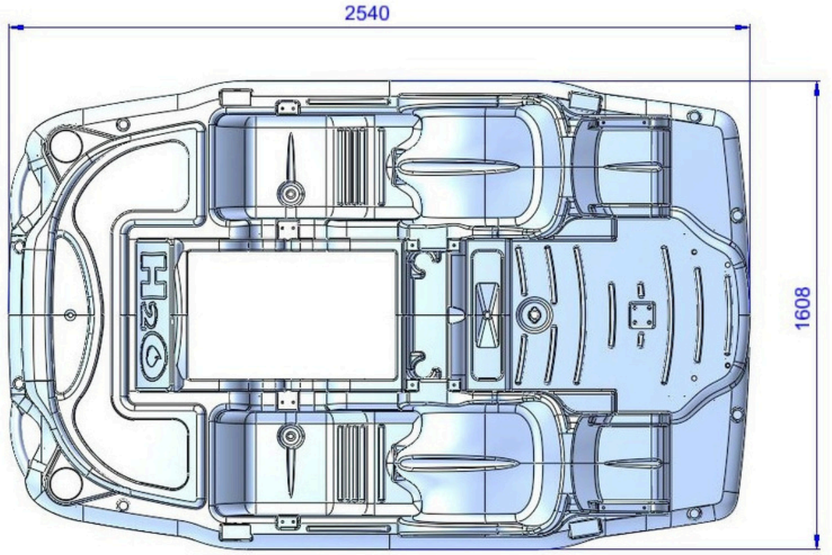




OVERALL DIMENSIONS UNCHANGED

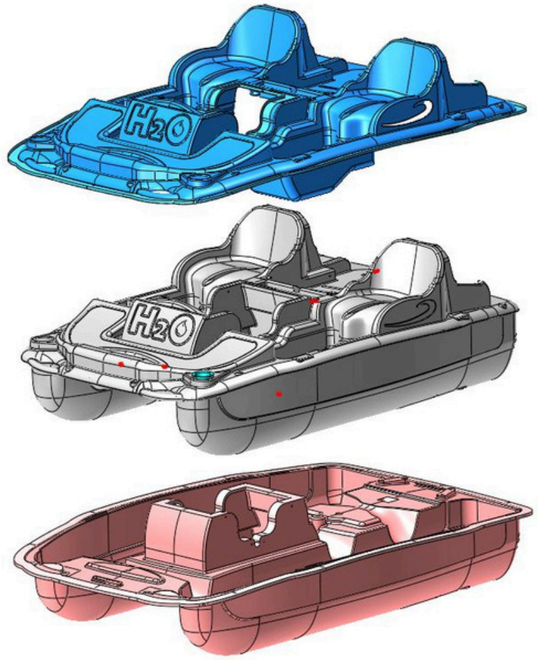
All design modifications were carried out while keeping the overall dimensions originally specified by the client virtually unchanged





TWO-PART MOLD

The design was aimed at creating a two-part mold with a flat parting line to simplify the molding process given the large size of the product



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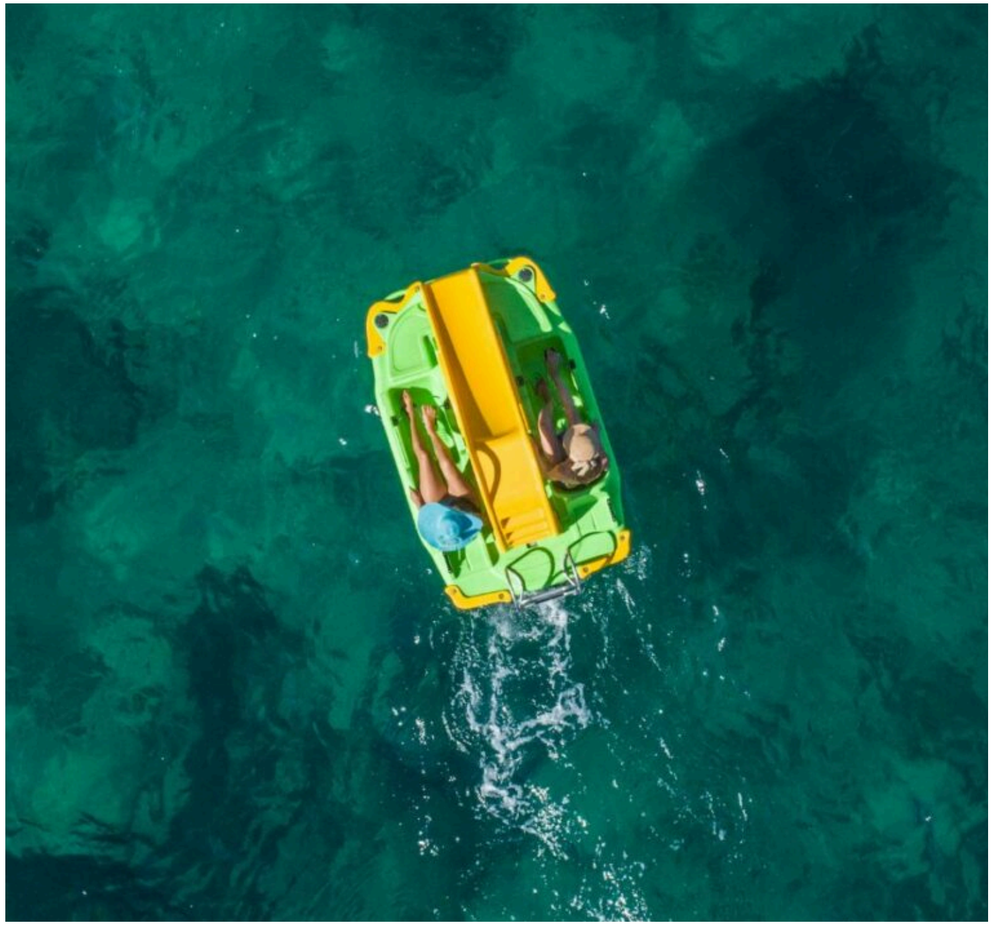
H20 PEDAL BOAT



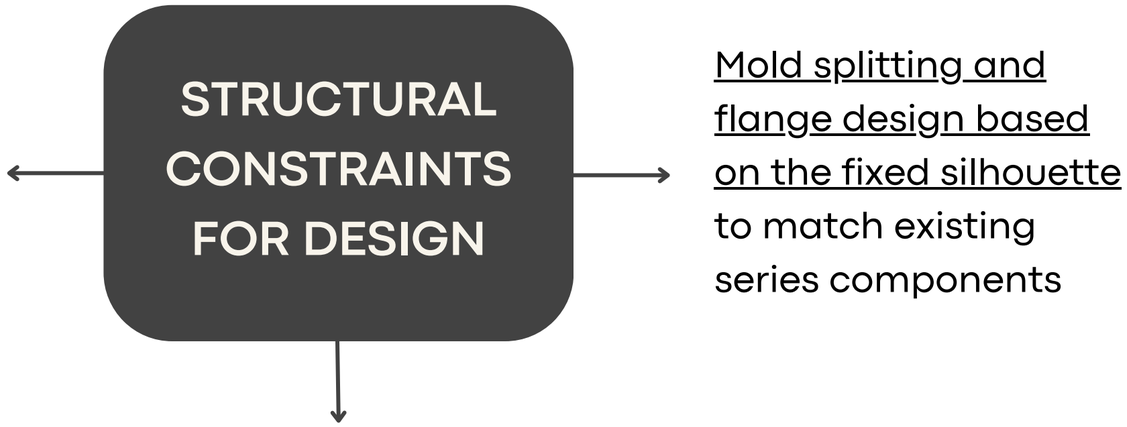
CNC ALUMINIUM MOULD: Filicudi Sofa

CNC ALUMINIUM MOULD

Filicudi Sofa

Customer request

Aluminium mold for design sofa to be integrated into the FILICUDI series



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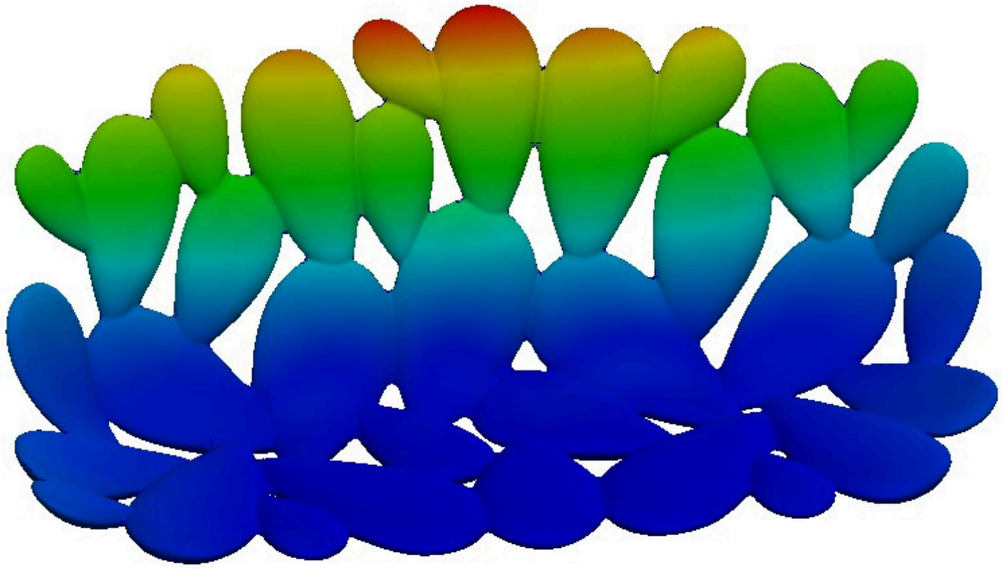
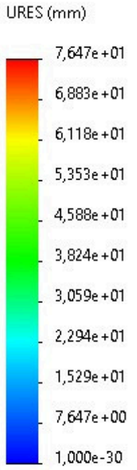
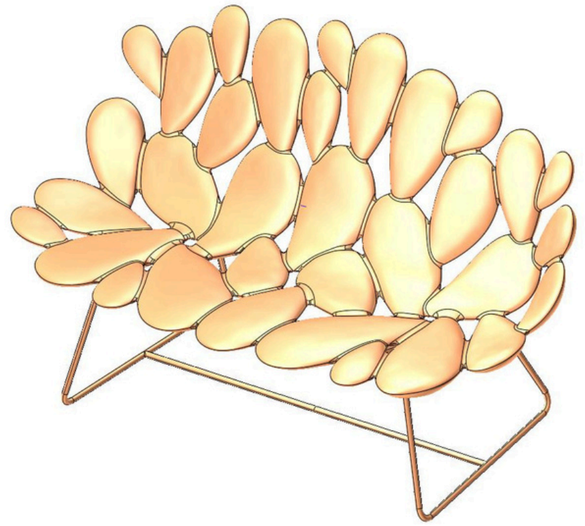
DEFORMATION ANALYSIS

In the preliminary phase, a FEM analysis was carried out on the product to verify the strength of the seat and the stability of the backrest under the load of two people

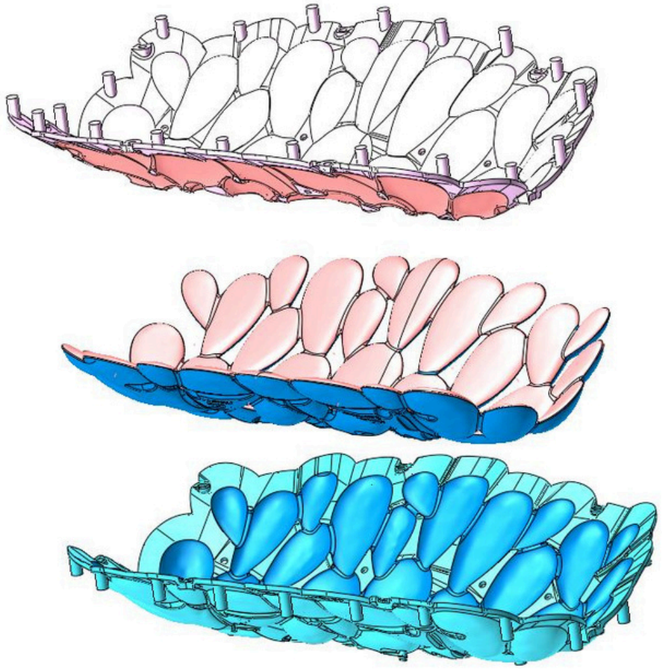


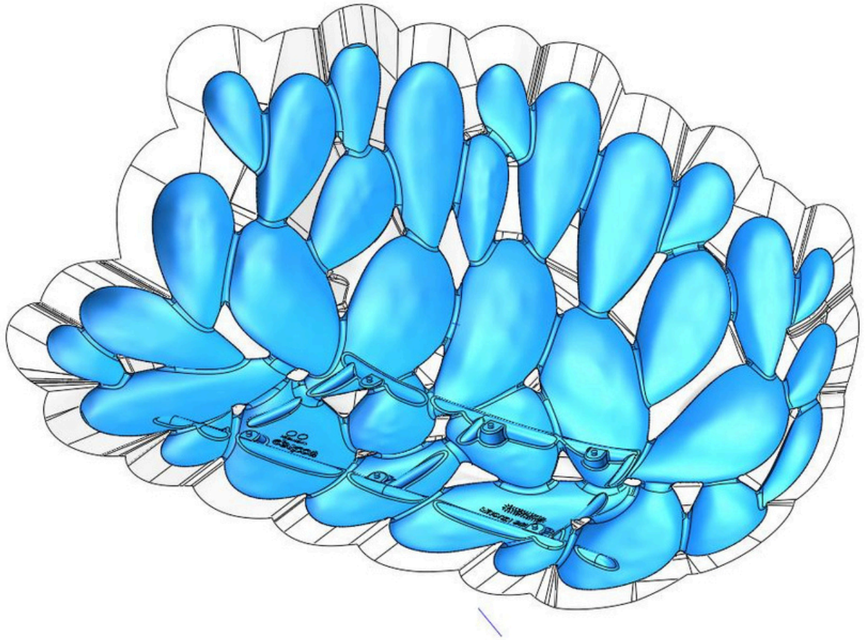




MOLD SPLITTING AND FLANGE DESIGN

Starting from the 3D model provided by the customer, the mold was built with a two-part technical split, without adding inserts to simplify the molding process and without altering the product’s geometry.

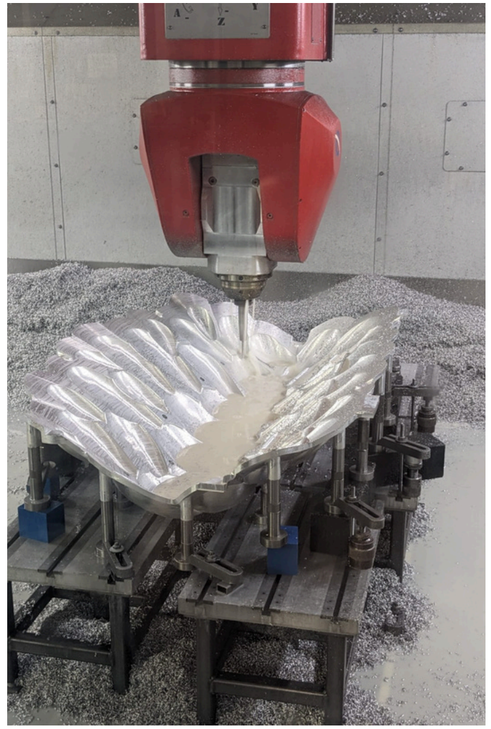




WORK IN PROGRESS

FROM THE ALUMINIUM BLOCK TO THE FINISHED PRODUCT



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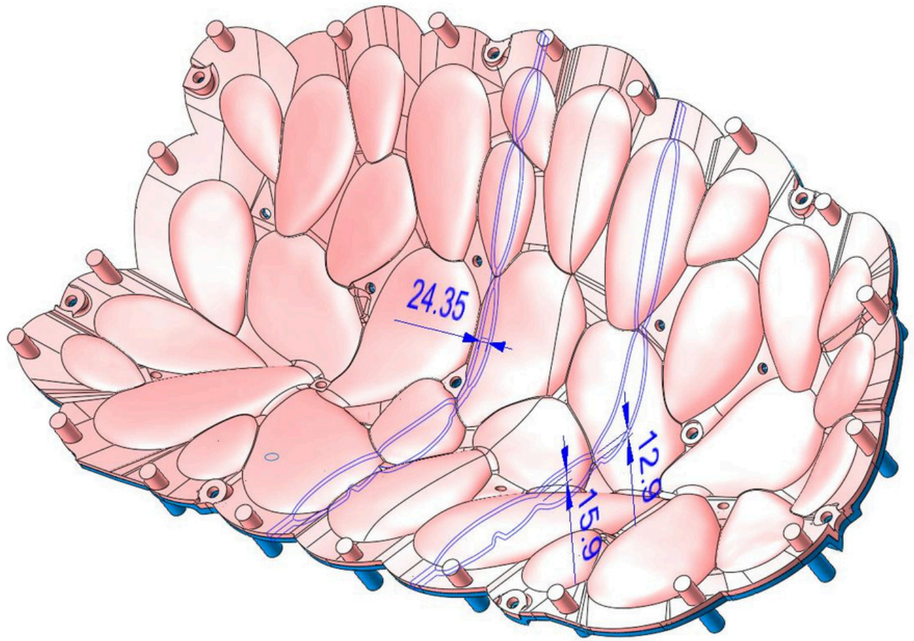
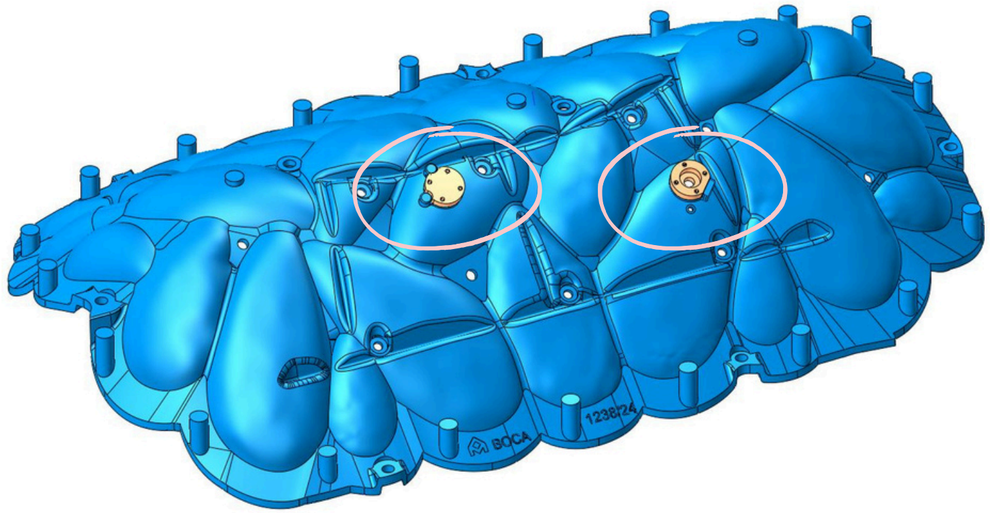
MOLDING OF LOW-THICKNESS CHAMBERS

Given the complexity of molding the product, the design was developed in collaboration with the molder, with whom it was agreed to add two rear loading caps positioned to facilitate material loading and ensure proper PE distribution across the entire surface of the product





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FILICUDI SOFA

STEEL MOULD: 10,000-15,000L tank with dual filling system

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STEEL MOULD

10,000 - 15,000L tank with dual filling system

Customer request

Modular mold for 10,000 - 15,000 liters tank with dual filling system

STRUCTURAL CONSTRAINTS FOR DESIGN

Size of the warehouse building height and installed crane height for vertical part extraction

Dimensions of the customer's rock'n'roll machine

Required drop box capacity:
85 liters

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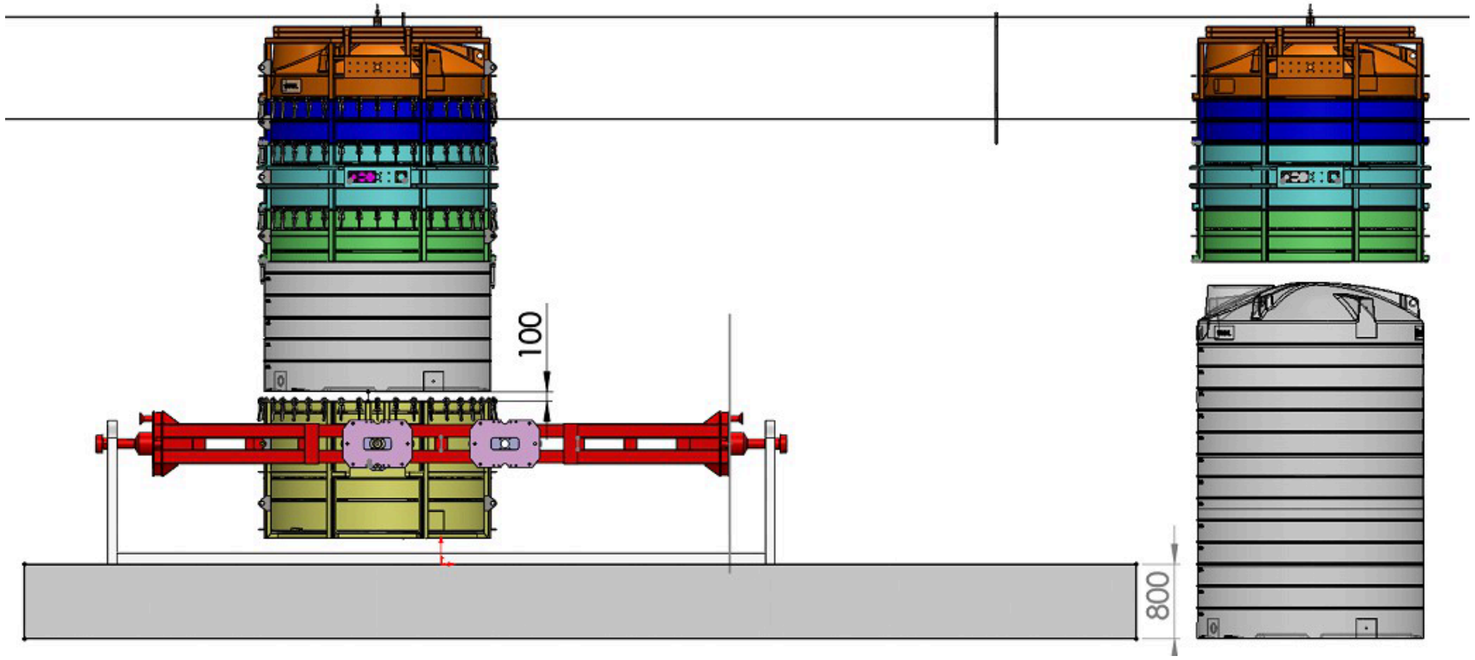
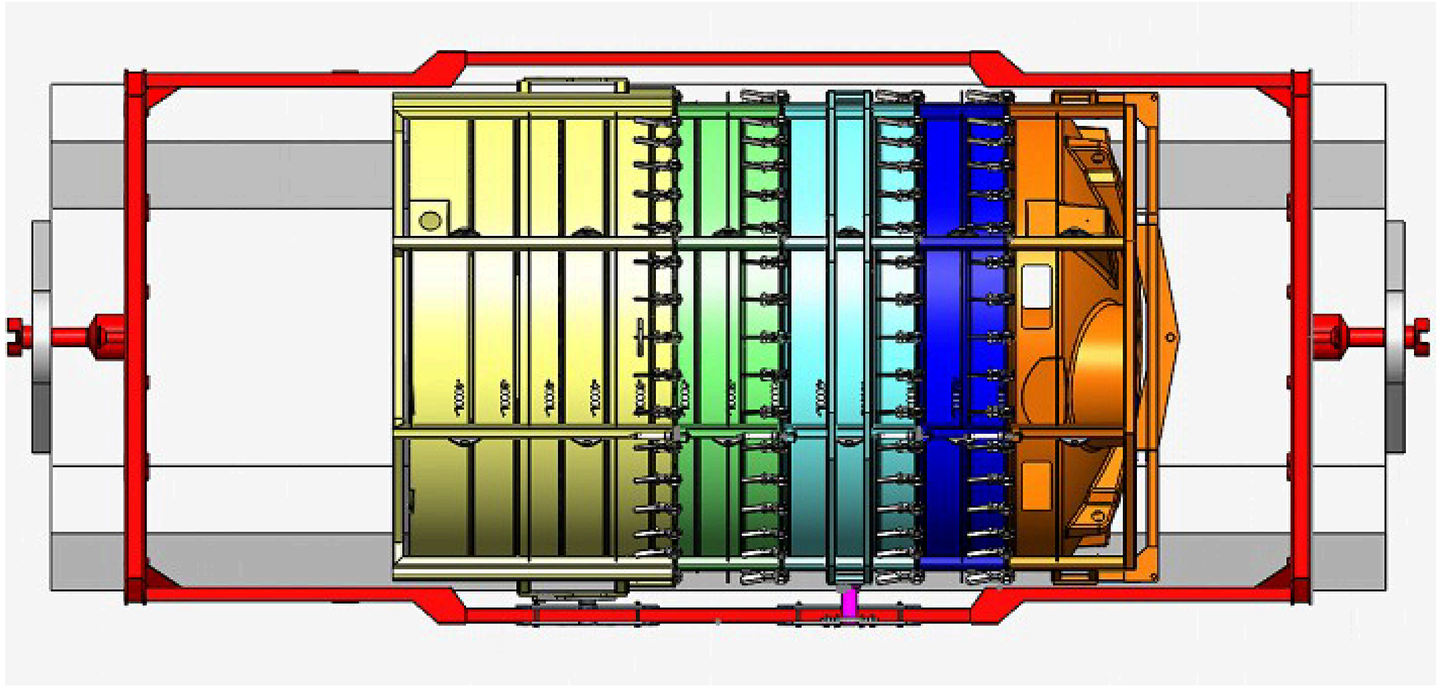
SIZE OF THE WAREHOUSE FOR VERTICAL PART EXTRACTION

The mold split and modularity have been designed to allow the customer to extract and handle the plastic part vertically, as per their request



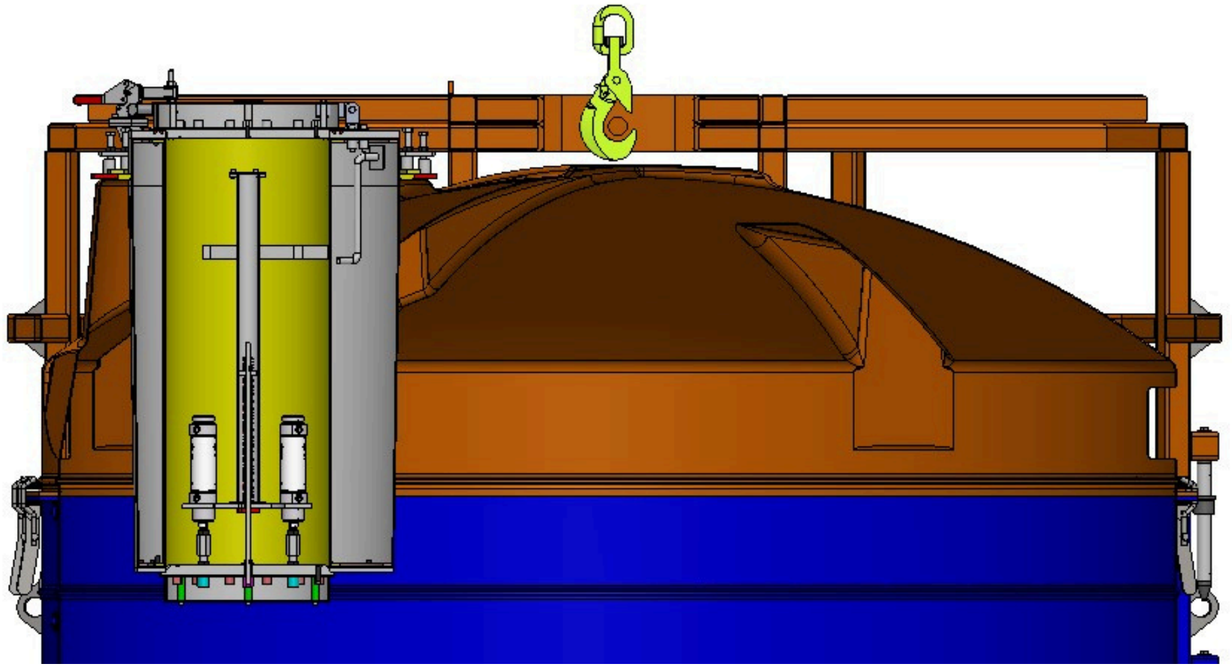
DIMENSION OF THE MACHINE

The mold handling trolley in the machine has been custom-designed and built based on the dimensions of the oven and the cooling chamber, to allow for the molding of the tank, whose diameter did not allow it to be mounted on the existing trolley

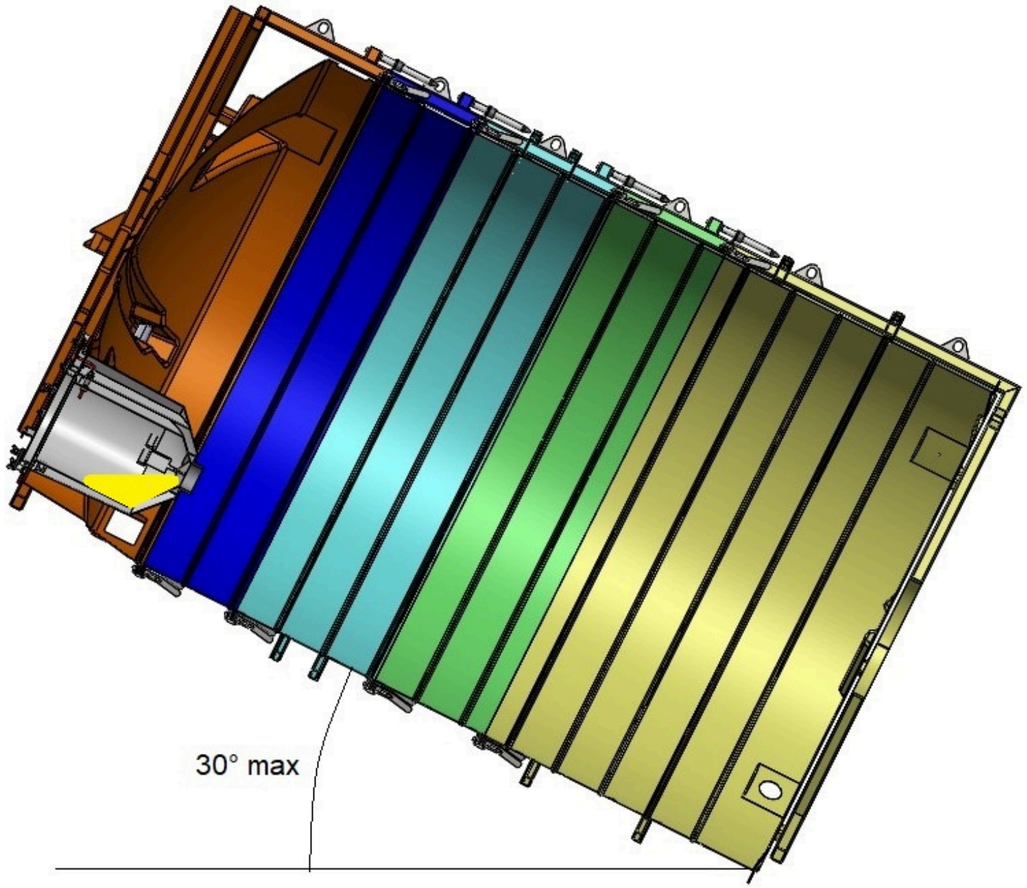


85- LITER DROP-BOX

Given the space constraints in the machine, both the drop box with a capacity of 85 cubic decimeters of PE and the vent had to be integrated inside the mold, through the hole of the only available access port. The vent was designed to be interchangeable, allowing for cleaning without stopping production.

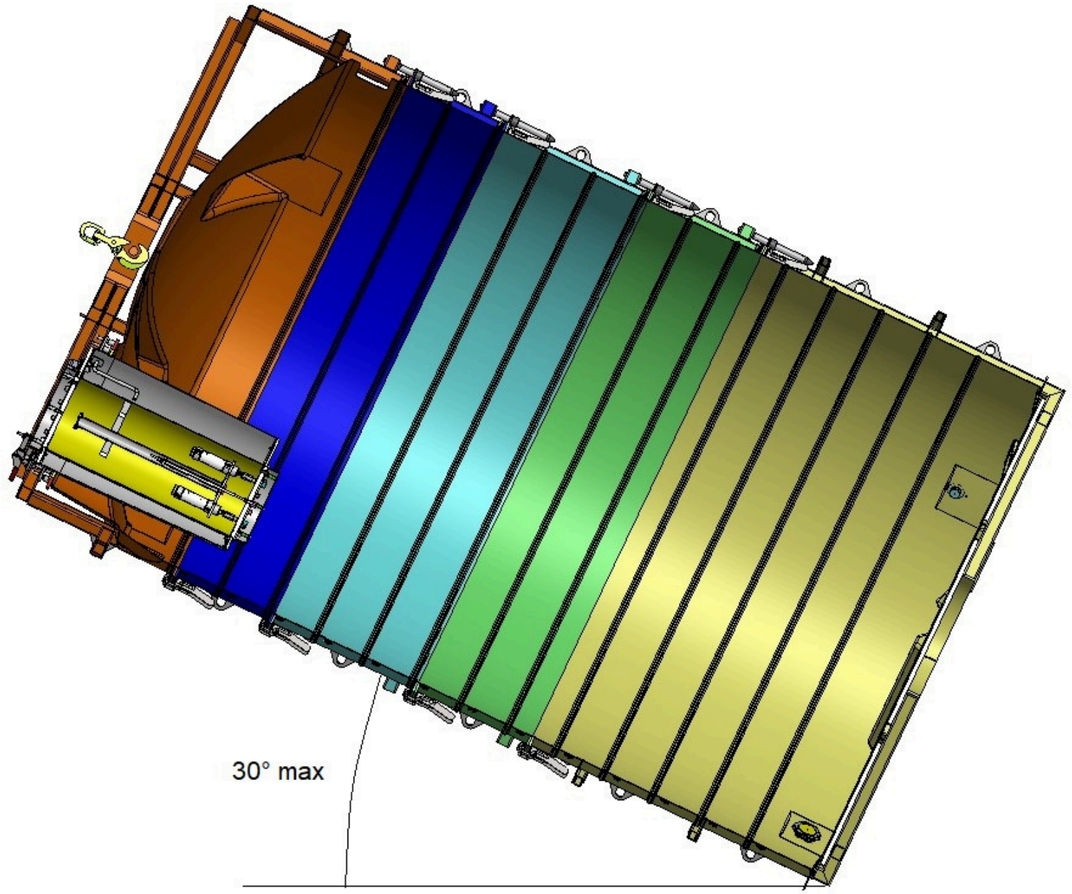


DROP-BOX CAPACITY



In its classic funnel shape, however, the drop box did not allow the PE to discharge due to the limited tilt angle of the R&R machine once the conical section was exceeded.

DROP-BOX CAPACITY



A fully custom drop box was therefore designed, featuring a flat-bottom full-opening discharge system, to allow the complete release of the PE content at any arm angle.

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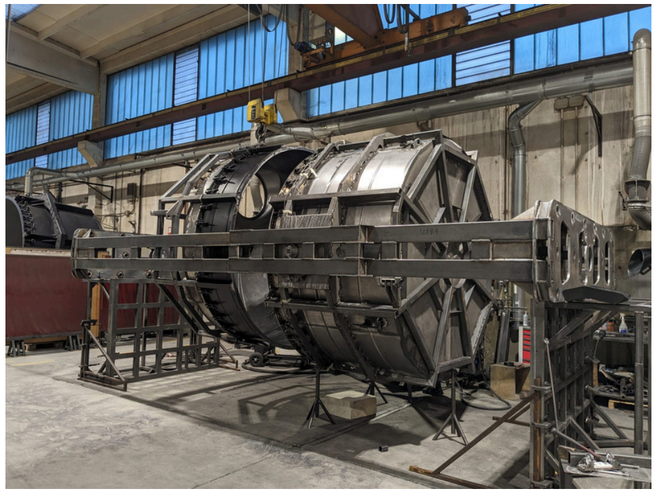
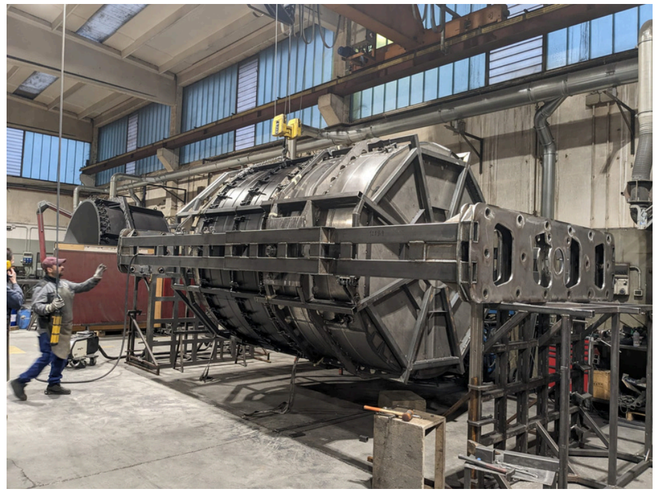
10,000-15,000L TANK WITH DUAL FILLING SYSTEM





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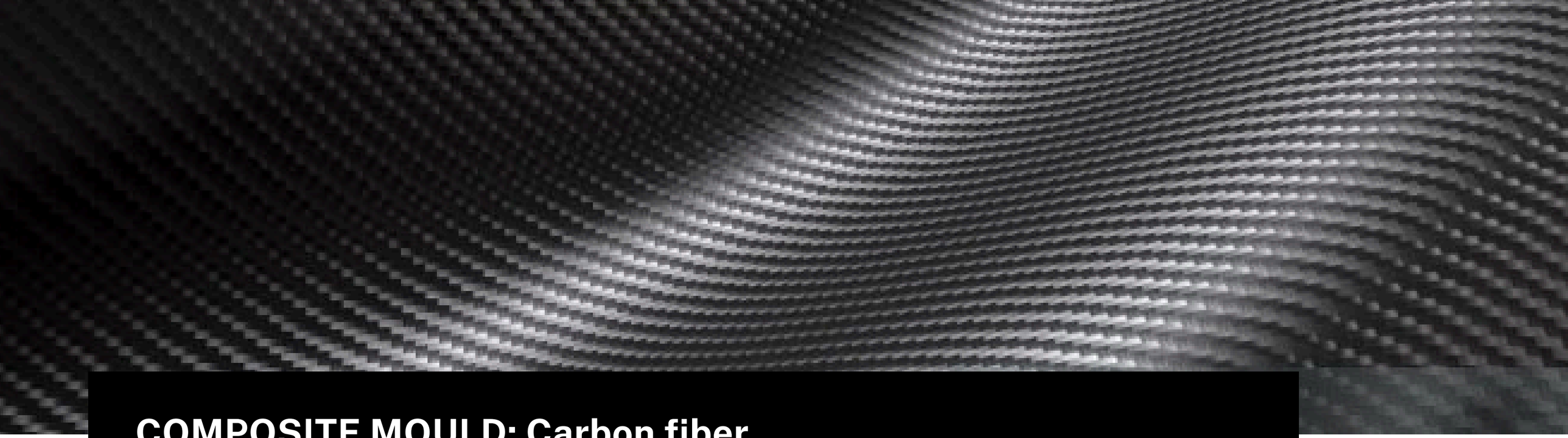


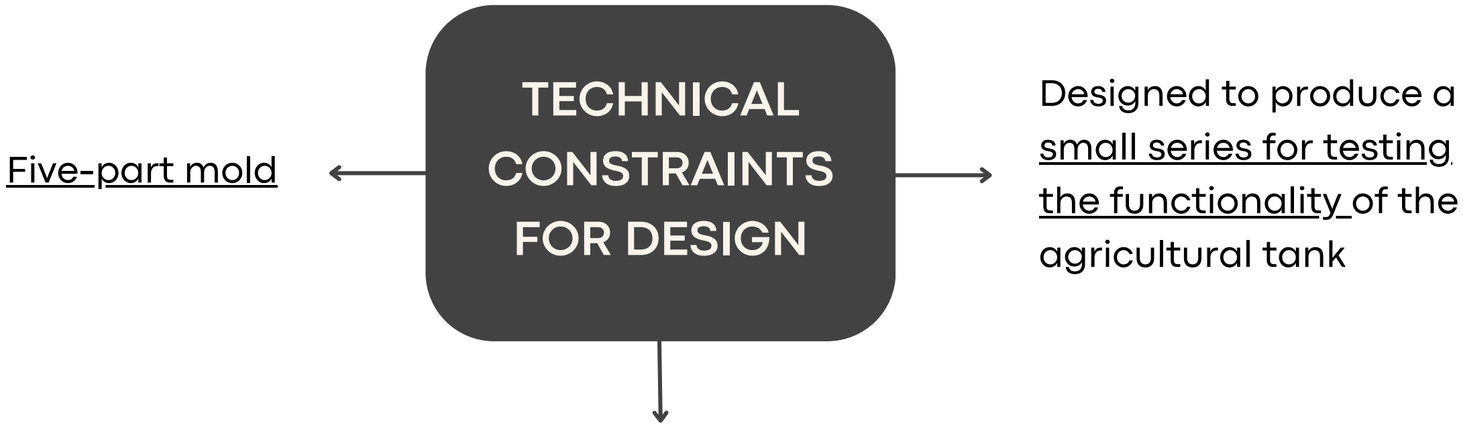
COMPOSITE MOULD: Carbon fiber

COMPOSITE MOULD

Functional Prototype for agricultural tank

Customer request

Design and manufacture of a functional prototype for agricultural tank



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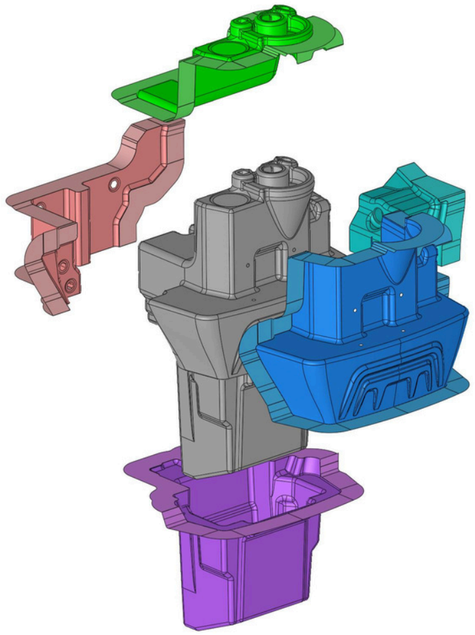
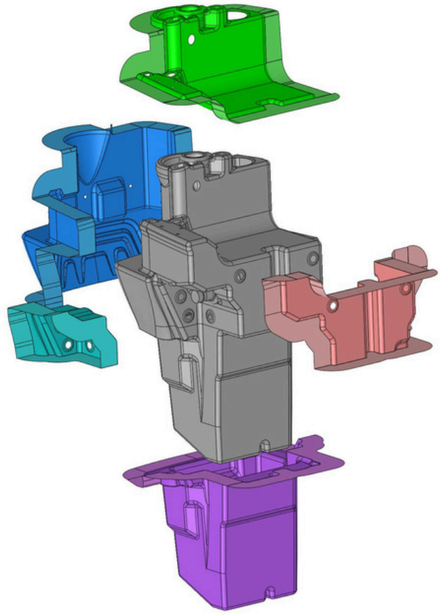
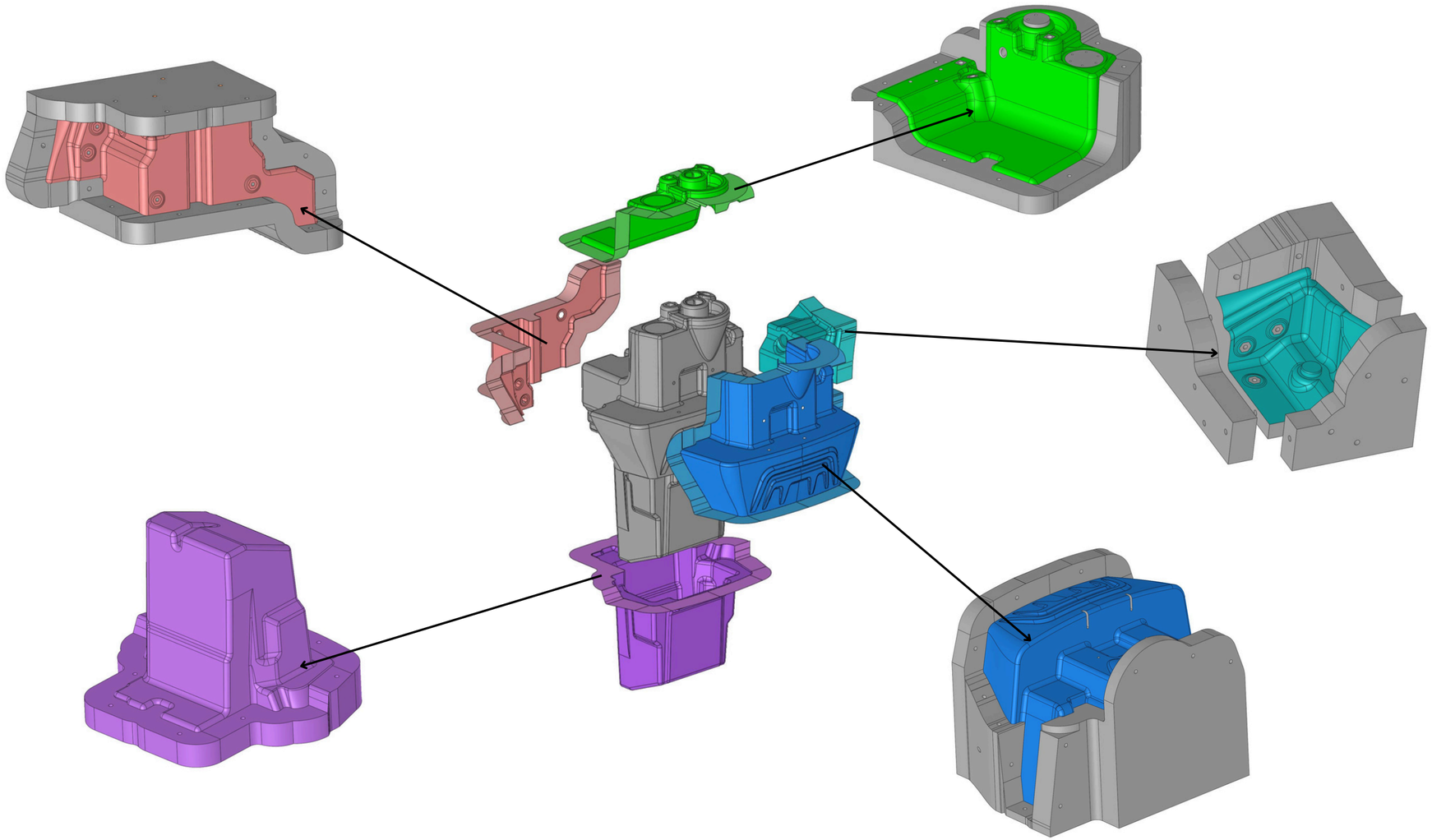
FIVE-PART MOULD

The mold was divided into 5 parts by designing each individual component in order to produce 5 resin models for carbon fiber lay-up in autoclave



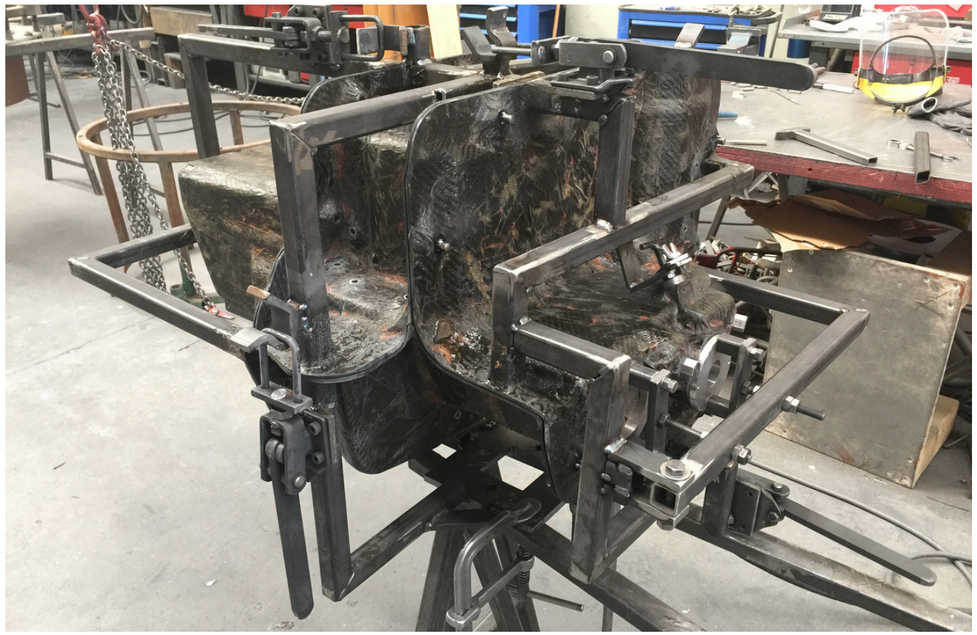


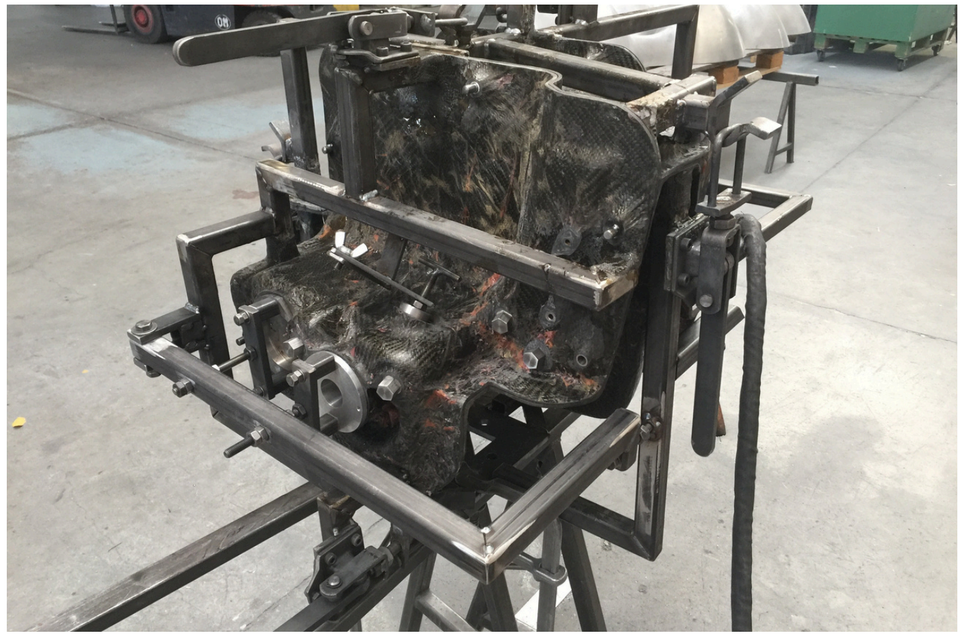
FIVE-PART MOULD



FUNCTIONAL PROTOTYPE

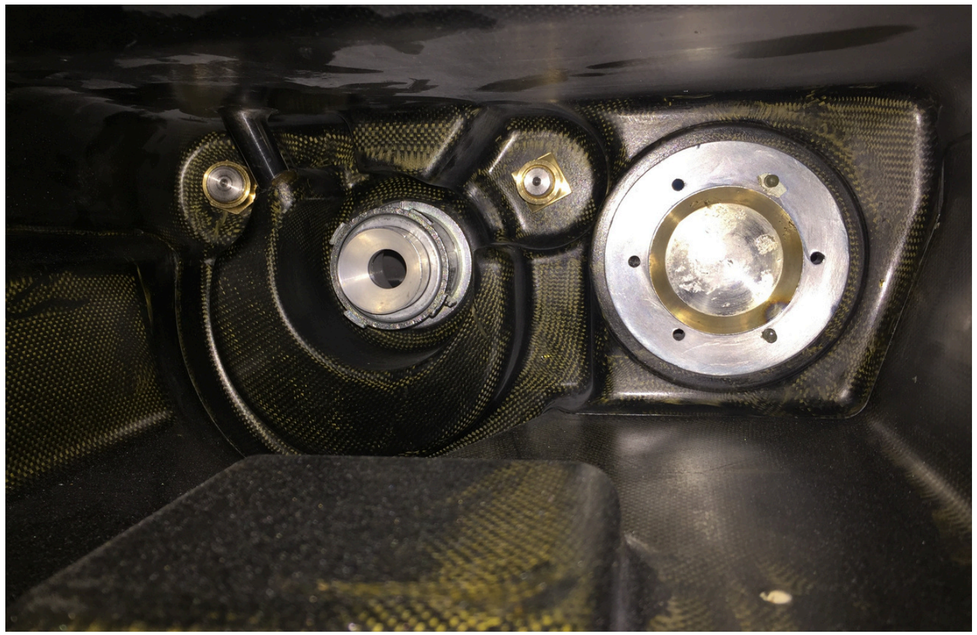
The five parts were then assembled to create the prototype mold, with embedded support framework and all the components.

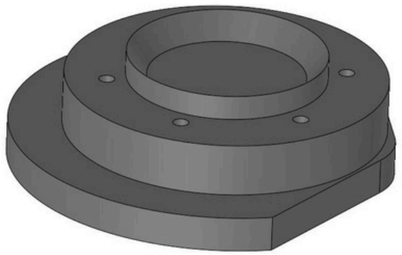


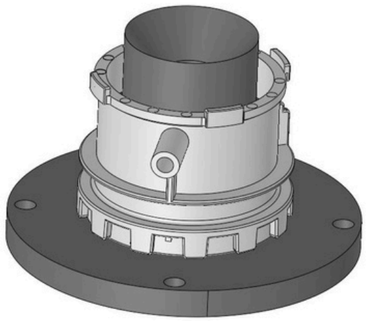


EQUIPPED WITH ALL COMPONENTS

The mold components were made of aluminum and brass, as in the final aluminum mold, and were assembled on the prototype mold to verify the functionality of all parts.







ELECTRICALLY HEATED MOLDS

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Thank you for your attention

Now it's your turn:
let's find the right solution for your projects together!

WALTER BONAZZI

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