

CONSTRUCTION OF USV-TRIMARAN WITH LFAM TECHNOLOGY

CONSTRUCTION OF A PROTOTYPE FOR CONTROL, TELEMETRY AND PLANT OPERATION TESTS IN A CONTROLLED ENVIRONMENT

Thanks to large format additive manufacturing by direct extrusion of plastic pellets, the initial hull will be manufactured to integrate and validate all the components that will be used in the USV-Trimaran surface water vehicle model, as well as to validate the behavior of the hydrogen fuel cell and its power plant in conditions similar to those of operation. From this base prototype, energy performance tests will be carried out, incorporating the development of the components that make up the vessel, as well as the necessary propulsion, steering and remote control maneuvering.

PROJECT MANAGER: Institute of Design, Innovation and Technology of the CEU Cardenal Herrera University.

PROYECT: 3D printing of a single hull for USV-Trimaran.

EQUIPMENT: Super Discovery 3D Printer Workstation™ manufactured by CNC Bárcenas.

TECHNOLOGY: Large Format Additive Manufacturing (LFAM) by extrusion of plastic pellets.

MATERIAL: ABS + carbon fiber.



CEU

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PROJECT DETAILS

Construction of the USV-Trimaran hull prototype with LFAM (Large Format Additive Manufacturing) FGF (Fused Granular Fabrication) technology, in the framework of the DOVELAR project: "FLEXIBLE HYBRID POWER SYSTEM WITH FUEL CELLS FOR ELECTRIC VEHICLES AND ADVANCED MANUFACTURING OF NON-TRIPULATED SURFACE ELECTRIC AQUATIC SURFACE PLATFORM". Project RTI2018-096001-B-C33.

MATERIAL INFO

ABS + carbon fiber was chosen because its great mechanical properties, strength, great dimensional stability, low coefficient of thermal expansion and contraction. Using this material, it is possible to manufacture parts with very low deformation, virtually identical to the ones designed.". In addition, these parts are lighter than those printed with other materials thanks to carbon fiber.

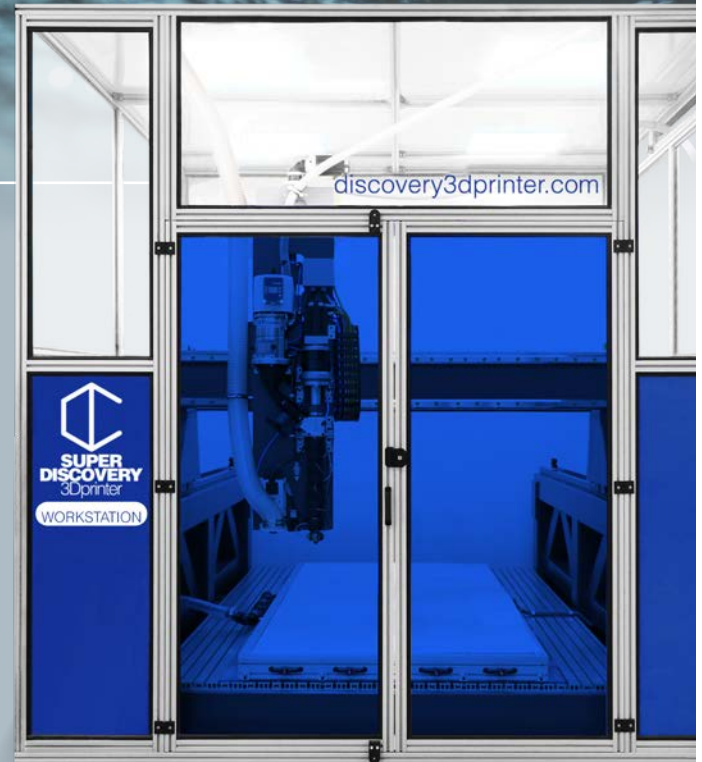
Process and results

Process:

- Printing of a full-size prototype of the USV-Trimaran's hull.

Results:

- Prototype to integrate and validate all the elements that form the USV-Trimaran in the final model.



Equipment

The Institute of Design, Innovation and Technology of the CEU Cardenal Herrera University, has selected the Super Discovery 3D Printer Workstation™, a state-of-the-art equipment for several reasons:

- Wide experience in LFAM, with real success stories in different sectors.
- Broad expertise: More than 10 years manufacturing high-level performance CNC machinery with industrial design and mechanics.
- Strong capabilities for on demand projects with full customization.
- Easy to use, universal and compatible 3D printers.
- Experienced in processing ABS + carbon fiber.



THROUGH OUR 3D PRINTING CONSULTING SERVICE, WE HELP YOU TO IDENTIFY AND DEFINE APPLICATIONS OF THIS TECHNOLOGY IN YOUR BUSINESS.



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