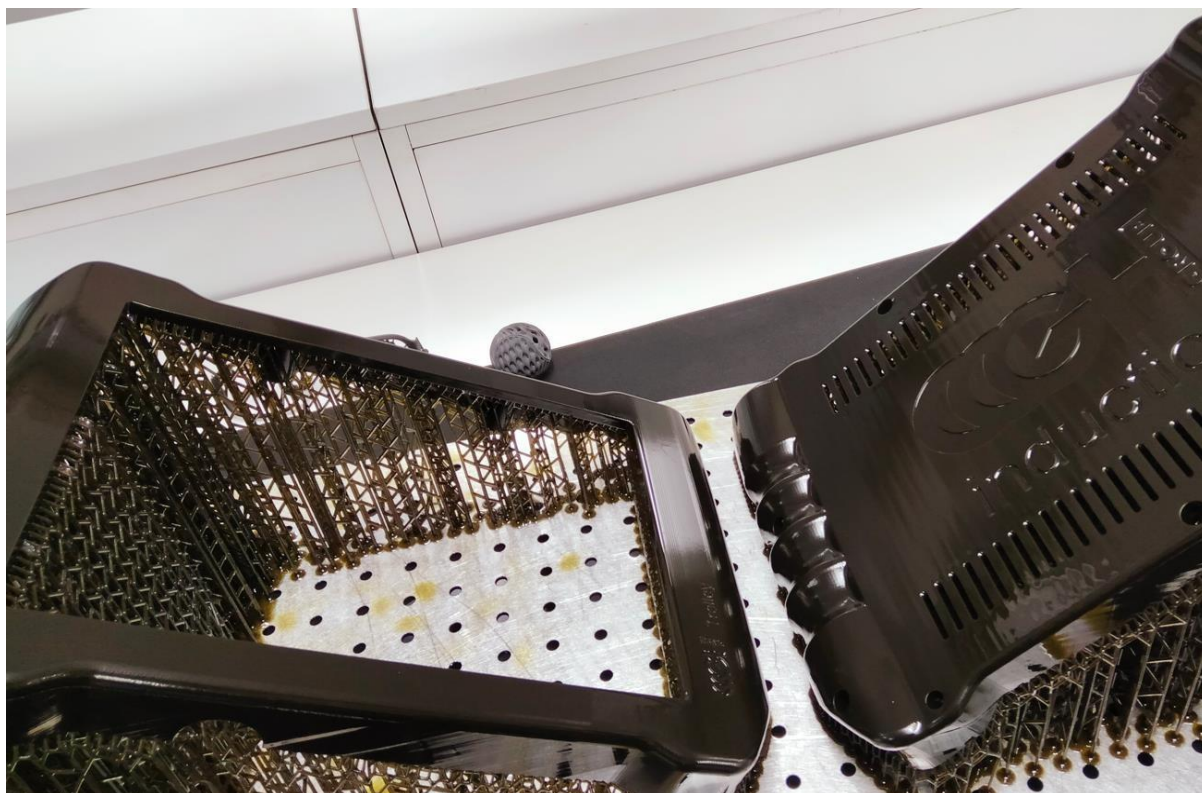


REMOTE WORKSHOP FOR PROGRAMMING

Remote additive manufacturing workshop



Version_20240626

Student Name:

Delivery Date:

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1. CORE AREA

1.

- GENERAL/KNOWLEDGE:

Mechanical Manufacturing: Additive manufacturing.

- PARTICULAR/ ACTIVITIES:

- Manufacturing parts with LCD technology
- Handling of the software used to predetermine the 3D manufacturing parameters.
- Using the main commands of the capeador/LCD printing configuration software

2. LEVEL OF THE STUDENTS

European Qualifications Framework	(EQF 4-5)
National Qualifications Framework	(NQF 4-5)

3. . PREVIOUS KNOWLEDGE

1. Minimum knowledge of 3D design of mechanical parts and/or rendering is required to be able to create the STL files that will be used in additive manufacturing systems
2. How a 3D printer works with LCD technology
3. Using the main commands of the capeador/LCD printing configuration software

4. DESCRIPTION OF THE WORKSHOP

The operation of the remote workshop will be based on the manufacture of 3D parts using LCD technology.

This remote workshop will have a hybrid character. On the one hand, we have the hours of remote work assigned to the student, and on the other a series of hours assigned to the



laboratory technician who will assist the students in the creation of the parts through the preparation of the equipment, as well as the post-processing of the parts and the equipment. The shipment of the piece to the design destination will be carried out as agreed by both centers (remote and local center).

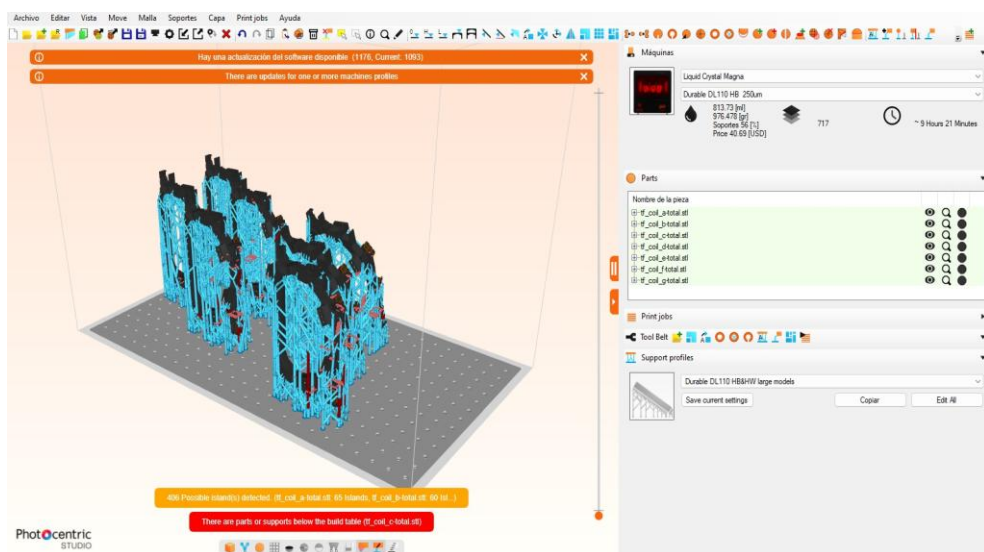
LCD Device. Stereolithography



Materials used: Plastics. Photosensitive Resins

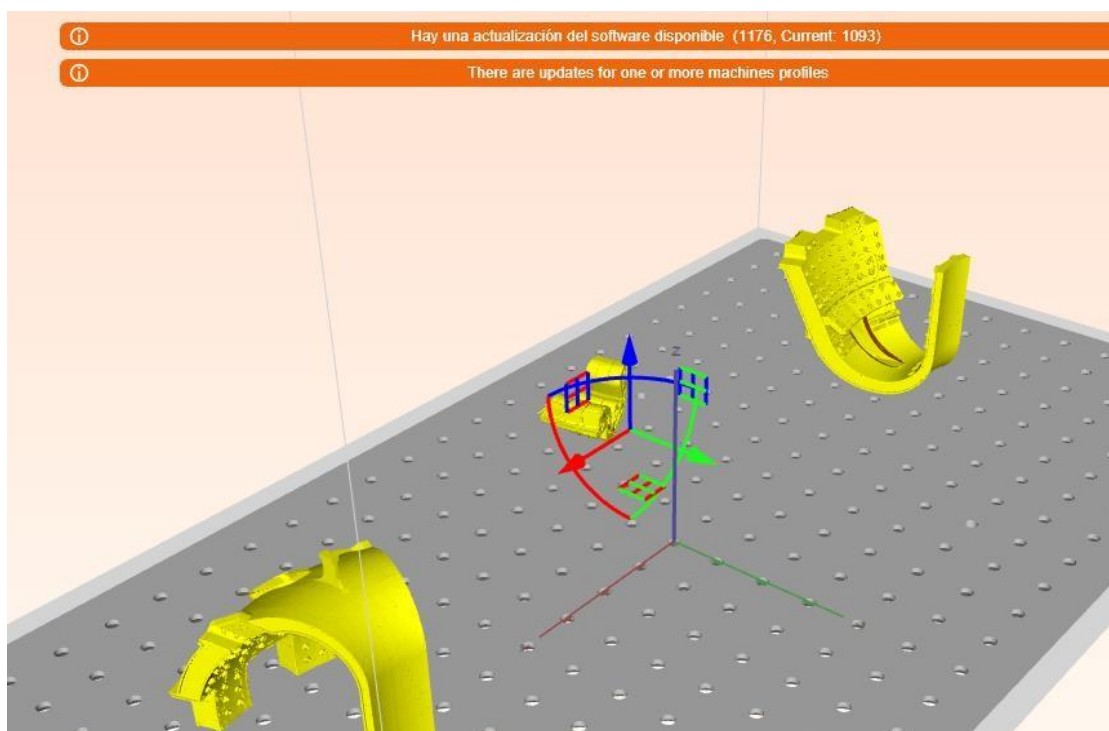
Stereolithography is one of the most popular and widespread techniques in additive manufacturing. Its primary operation is based on the use of light (in the first instance a laser) on a photosensitive resin that, deposited in a tank, hardens while the light is applied to said resin.

SLA SOFTWARE



The remote work hours are designed so that the student/teacher can choose an STL file (common file for any 3D printing process) and configure its 3D manufacturing parameters. To do this, it is necessary to take into account the following values:

- Management of the configuration program for parts to be printed (Capeador or “Slicer”)
- Assessment of the feasibility of manufacturing the 3D part.
- Arrangement of the geometry and orientation of the part to be created within the Capeador
- Creation of auxiliary structures necessary to create 3D parts.
- Optimization of the parts.
- Quantity of material used, price, hours of operation, etc.



Laboratory work hours are based on the preparation and physical assistance of the FEMPA technician.

The equipment requires cleaning and preparation of the printing material. Once the process of creating the piece is finished, the manufacturing is not finished. The laboratory technician must clean it with an organic detergent agent and then rinse it and introduce the pieces into a final piece of equipment called a “Curer”, a UVA chamber that dries and solidifies the last part of the piece.



5. PROPOSED ACTIVITIES

The operation of additive manufacturing parts is established with the following premises:

The parts generated by the students will be screened by the teacher of each center, who will send the parts to be printed to the inbox of the printing portal. Before starting the manufacture of a part, the workshop technician will review the arrangement of the parts in order to avoid serious printing errors or advice that allows the printing to be carried out without major defects.

The pieces will be printed in the order of arrival and after approval by the workshop technician. If there is any evidence of a configuration error in the piece, it will be communicated to the teacher. This feedback is what can provide the greatest educational value.



In order to optimize the printing, we will try to fill the printing trays. This means that the printing sessions will be used to print as many pieces as possible.

The printing sessions will be held every 10-15 days to avoid overlapping manufacturing times for the VetWorc project with the manufacturing of parts intended for regular use in the workshop.

Other parameters need to be set, such as:

- On what specific dates does the teacher want to launch the manufacturing?
- What delivery time does the center have for the generated parts?
- Other management parameters

