Additive.MILLING

Add Milling to Additive Manufacturing

CONCEPT

The main purpose of additive.MILLING is to produce molding zones or inserts of high geometric complexity, minimizing the use of EDM. The solution will be to use additive processes (AM) dedicated to the processing of metallic powders consisting of components with high quality finish. However, the great limitation of the additive process of metallic powders is their inefficiency to achieve a roughness compatible with the function of the components / system. Due to the high roughness of the component during / after processing it is always necessary to use subtractive finishing processes.

Thus, the main objective of the Additive.MILLING project is to develop an integrated costing process suitable for the industry, which allows the integration of AM and SM (subtractive processing) technologies for the direct production of zones molding with high detail, precision, finishing and also with a thermal performance during the injection, in order to increase the production of parts / unit of time.

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Additive.MILLING

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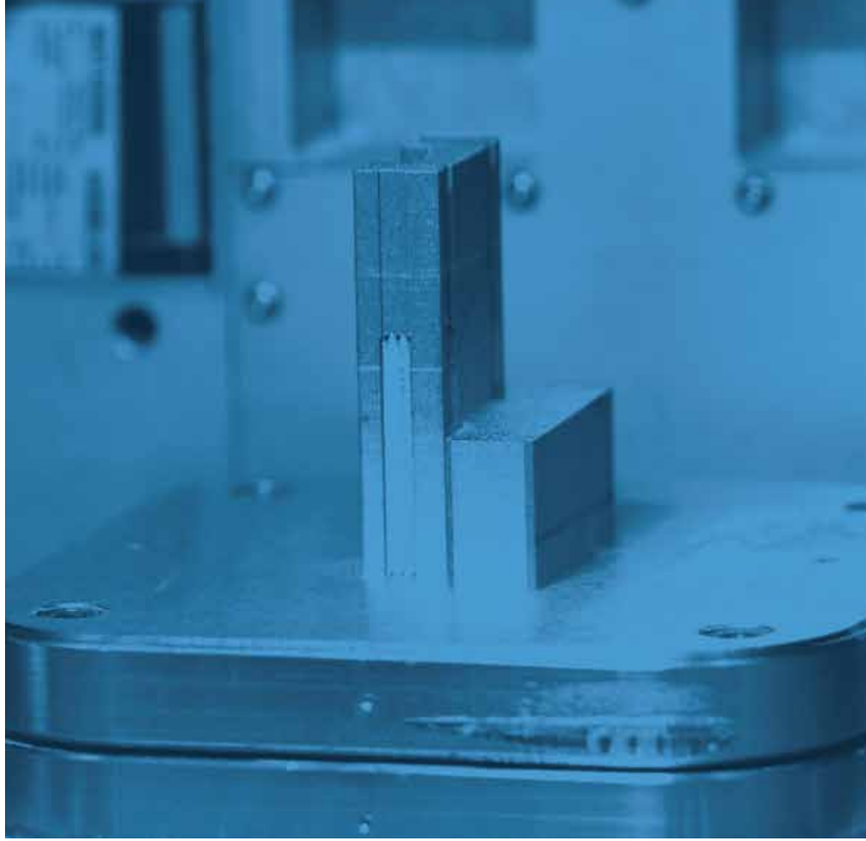

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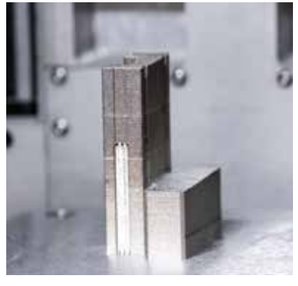
MAIN OBJECTIVES

-Design of manufacturing process, supported by addMILL.holder, where selective laser fusion (SLM) will be associated with a subtractive process (milling), eliminating the use of the EDM manufacturing process.
-Creation of a software integrator application (addMILL.soft) that allows to support the manufacturing additive (SLM) and subtraction (milling) maximizing the advantages of each one.
-Creation of a software (addMILL.cooling) that allows the design of conformal channels of refrigeration, to optimize the injection cycles and the quality of the injected parts.
-Ensuring adherence and dimensional accuracy between deposited and milled layers and the new layers of powder deposited after SLM.
-Definition of intersystem simplification and operational procedures. Evaluation of the advantages and disadvantages of the process: comparison between case studies made by conventional means and those resulting from the approach proposed in the Additive.MILLING project.
- Establishment of irrigation for implementation.

Start date: January 2016
End date: January 2018

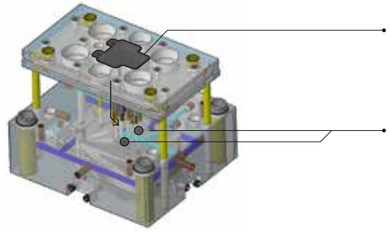
Project Coordinator: GLN MOLDS, SA;

Partners: Universidade de Coimbra (UC);
CEMUC e CMUC; IPLeiria - CDRSP;



MOLD PROJECT

MODULAR FRAME



MODULAR
EJECTION SYSTEM
a different one, for each part

COOLING FLUID CIRCUIT
IN&OUT LOCATIONS
common to the three
different inserts

CAVITY&CORE INSERTS

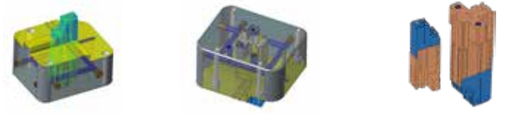
PHARMACEUTICAL
INDUSTRY

201-1 *Conformed cooling circuit in&out*

AUTOMOBILE
INDUSTRY

203-1 *Conformed cooling circuit in&out*

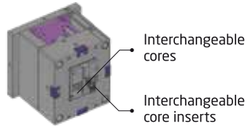
ELECTRONICS
INDUSTRY



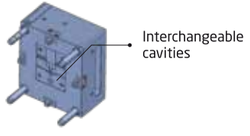
202-1 *Conformed cooling circuit in&out*

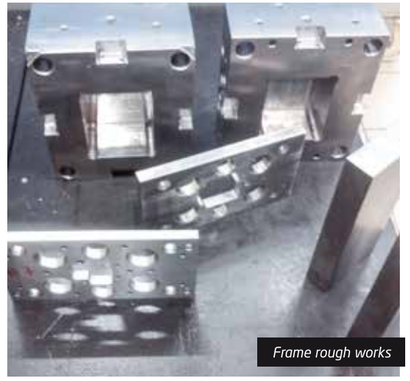
MOLD PROJECT
MODULAR FRAME

EJECTION
SIDE



INJECTION
SIDE




Frame rough works


Frame rough works


Cavitie&cores inserts final works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