

Dimensions: 120 x 105 x 105 mm
Mass: 1,6 kg

OBJECTIVE :
Demonstrate the technical and economic feasibility of metal additive manufacturing to produce spare parts

RESULTS :

- Design and mechanical characteristics identical to the original part.
- Reduced production costs, compared to traditional manufacturing (machining)
- Creation of a new and more agile supply chain
- Reduced stock of spare parts

CONTEXT:

Different plants in Orano group want their spare parts to be available at the right time and at the lower cost, to secure the installations and optimize their parts inventory management. In particular, the maintenance department of Orano Cycle Tricastin has to deal with the obsolescence of some equipment for which the supply time is very long. In the nuclear industry, the storage of spare parts for all those complex equipment represents an important investment.

THE PROJECT IN A FEW WORDS:

The project aims to verify the technical and economic feasibility of additive manufacturing to produce metal parts with complex geometries for equipment that is no longer manufactured and historically sold complete. The equipment in question is a material transfer bridge and a steam distributor block.

To meet this demand, Orano needed to rely on a solid industrial group with a large machine pool and a mastery of the value chain. This is why Orano called upon AddUp, a French manufacturer of metal additive machines. The AddUp experts thus 3D printed, using PBF technology (Powder Bed Fusion - laser), nine models of 316L stainless steel parts as well as test specimens for mechanical tests (tensile and impact) and other quality controls.

ADDITIVE MANUFACTURING BENEFITS:

- The cost of additive manufacturing compared to machining is lower: less material consumed, several parts printed on a single platform and in a single operation.
- The ability to produce parts with complex geometry from a scanned model of the part (reverse engineering) for parts without a CAD file.
- The use of fine powder results in parts with high geometric accuracy and a good surface condition, even in internal channels.

RESULTS:

The full cost of producing 16 parts and 36 mechanical test specimens by additive manufacturing is equivalent to the cost of producing 3 parts by machining.

The success of this project gives Orano the opportunity to create a new, agile, reliable and cost-effective supply chain for some spare parts.



Stainless steel 316L

THE ADDUP ADVANTAGE

The use of fine powder with the FormUp350 machine allows to manufacture parts with good surface finish (especially for internal channels), as well as the creation of complex geometries. Control of the complete production chain: design, production, machining, post-processing and inspection.