

Dimensions: 280x133x70 mm
Mass: 364 g



COMPLEX SHAPE

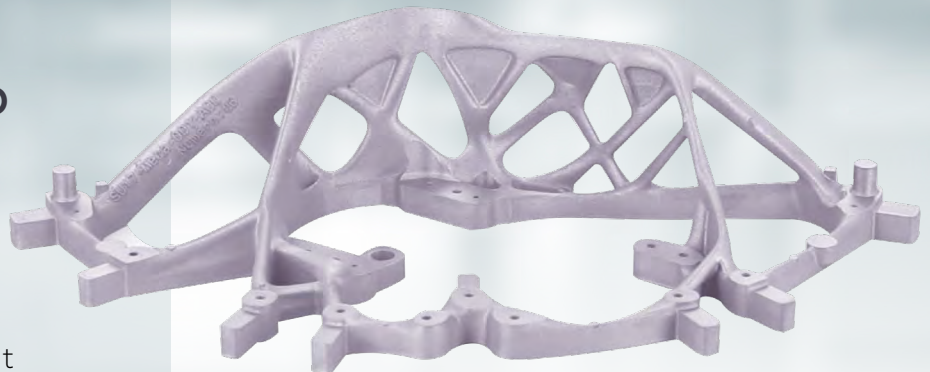


ASSEMBLY

OBJECTIVE:
Print a lightweight metal 3D support part

RESULTS:

- 40% mass savings compared to the maximum target of 600 g given
- Compliance with the dimensions of the original part, for fastening and assembly.



Titane TA6V

CONTEXT:

PrintSky is a joint venture between the AddUp group, expert in metal additive manufacturing, and SOGECLAIR, specialized in the integration of high value-added solutions in the fields of aeronautics, space, civilian and military transport. The CEA (French Alternative Energies and Atomic Energy Commission) commissioned Printsky to redesign a typically machined support part using the possibilities offered by additive manufacturing to reduce its mass. This support must also precisely ensure its functionalities to hold the equipment it has to support and resist the stresses it is subjected to.

MEANS IMPLEMENTED:

PrintSky was in charge of the design part of the project, developing its own experience and methodology to implement the characteristics of the metal part, in terms of mechanics and manufacturability. The production was then entrusted to AddUp experts who 3D printed the aerospace part using their FormUp 350 machine.

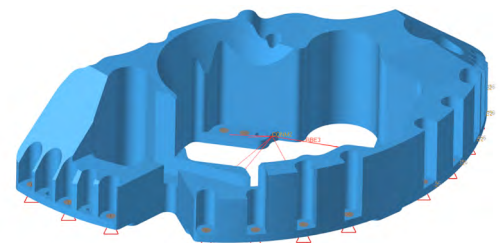
ADVANTAGES OF METAL 3D PRINTING:

After topological optimization, additive manufacturing makes it possible to develop complex shapes, improve performance and reduce the volume of a metal part. It also allows the manufacture of very robust parts. Indeed, material is added only where necessary, either to support forces or to ensure functionality such as fastening, support surface or other. A good rigidity/mass balance with a high technical and economical value for an aeronautical part.

RESULTS:

The optimized support fulfills the same functions as the original support, but with a significant mass reduction, impossible to achieve with conventional technologies.

The use of fine powder allowed to obtain a good surface finish and finally the part was manufactured without support, which allows a significant time saving in post-processing.



Original machined part



3D printed part

THE ADDUP ADVANTAGE

The mastering by AddUp of the material characteristics obtained on FormUp350 and of the additive manufacturing simulation tools has allowed to anticipate the thermo-mechanical distortions and to obtain compliant parts after only one iteration