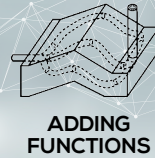


HEAT EXCHANGER

Dimensions: 116x116x60 mm
Mass: 244 g
Heat exchanging power: 2,3 kW
(simulated result)



OBJECTIVE:

Develop a heat exchanger using the full potential of PBF process

RESULTS :

- Good thermal performance for a smaller volume compared to "conventional" exchangers.
- Printed all at once

CONTEXT:

PrintSky is a joint venture between 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.

Temisth is specialized in the development of custom thermal solutions customized using additive manufacturing. The goal for PrintSky and Temisth was to demonstrate the interest of the PBF (Powder bed fusion - laser) technology to create heat exchangers with improved compactness.

MEANS USED:

Printsky has developed its own methodology for dimensioning heat exchangers to the given characteristics. In this example, the aim was to meet the needs of the space industry. The part was produced in aluminum on a FormUp 350 machine provided by AddUp.

ADVANTAGES OF METAL 3D PRINTING:

Metal additive manufacturing is relevant for thermal equipment. It allows to create channels with complex shapes, thus improving thermal performance while reducing the volume. This heat exchanger has thin walls (250 μm) and double curvature channels that are impossible to produce by conventional techniques.

The tests carried out on a test bench allowed to validate the leak tightness of the part, as well as its performance, very high considering the compactness of the exchanger.

PrintSky has obtained a partnership agreement with the ESA (European Space Agency) for the development of this aluminum part.



**Aluminum
AlSi7Mg**



The part from above

THE ADDUP ADVANTAGE

Metal powder in fine particle size, used here on the FormUp machine, allows surface conditions adapted to heat exchanges.