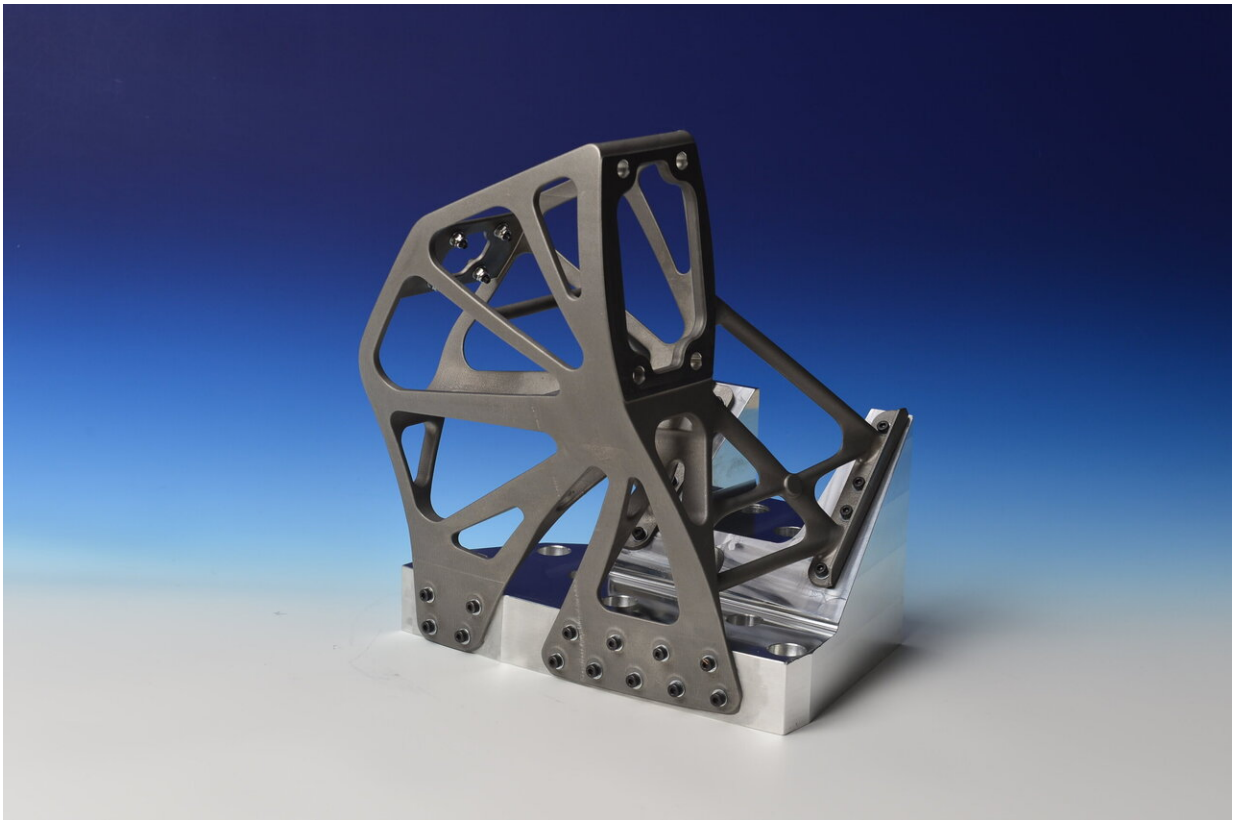
Image: Metal bracket in Ariane 5 is 3-D-printed in titanium

June 19 2019



Credit: ESA–A. Abel

This organically-styled bracket, designed for the interior of an Ariane 5 launcher, was 3-D printed in space-worthy titanium alloy for an R&D project.

One major advantage of 3-D printing—otherwise known as additive manufacturing—is that material only needs to be placed where it is required. Embracing the design freedom this opens up can lead to the creation of parts with notably organic appearances compared to their traditionally manufactured counterparts.

At the same time their performance can be just as good, if not better, with sharp reductions in mass and manufacturing time.

This bracket is a 30 percent lighter version of an operational original, serving to support the cryogenic fuel tank of Ariane 5's upper stage.

It was not so much designed as grown, with the instrument's design requirements put through "topology optimisation" software to arrive at the best possible shape.

Provided by European Space Agency