LIEBHERR-AEROSPACE HAS FIRST 3D PRINTED AIRCRAFT COMPONENT FLOWN ON AIRBUS A380

News / Manufacturer

Airbus has successfully flown a 3D printed spoiler actuator valve block made by Liebherr-Aerospace. Liebherr says the part, flown on an Airbus A380 passenger airliner test flight, is the first 3D printed primary flight control hydraulic component flown on an Airbus aircraft.

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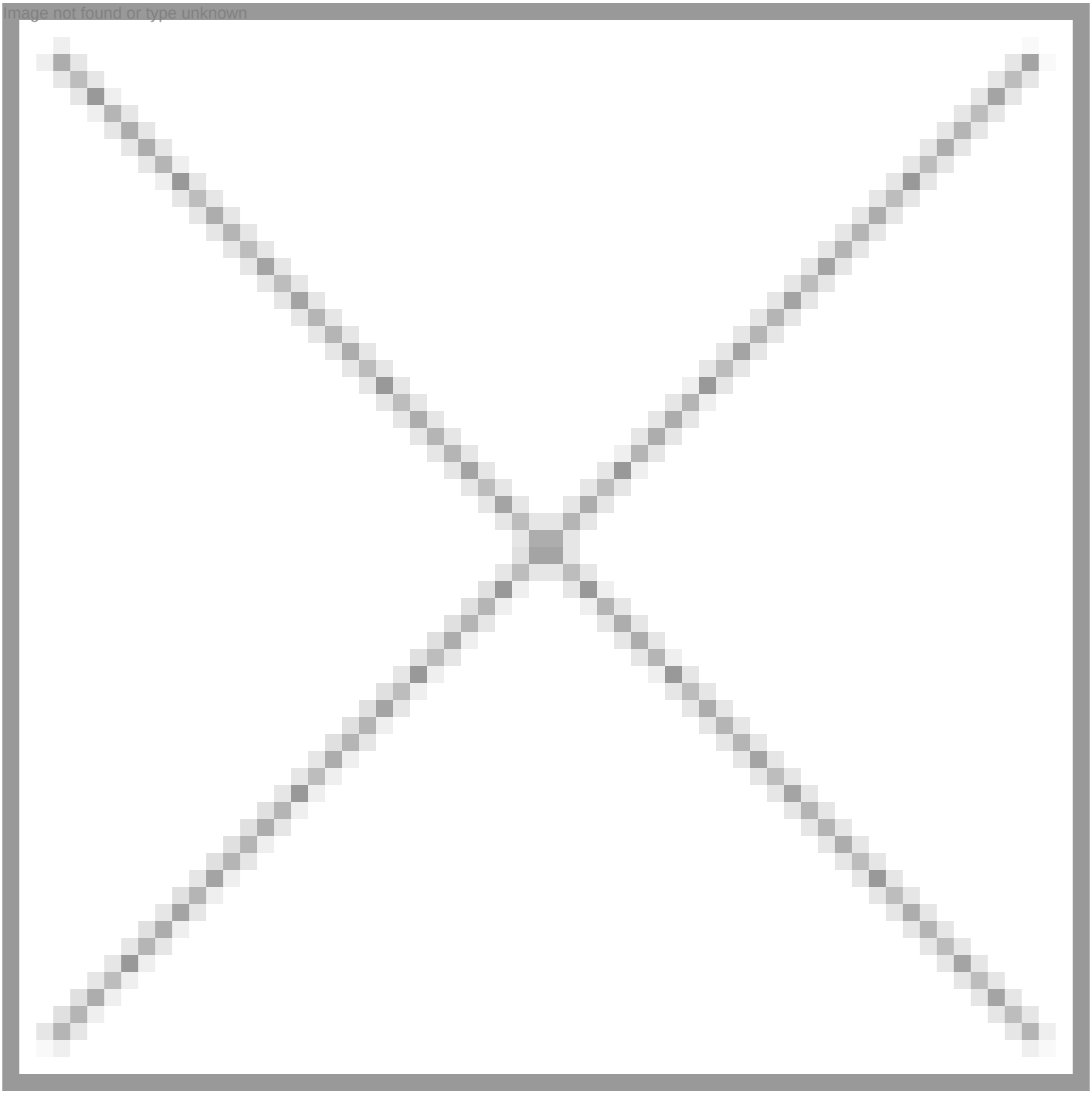

Liebherr's 3D printed spoiler actuator valve block

It offers the same level of performance as a conventional valve block, but is 35% lighter and made from fewer parts. That might as well be the tagline for additive manufacturing—making the same things but with less mass and fewer joins—but it is also a significant step for Liebherr-Aerospace, the aerospace arm of Switzerland's Liebherr Group, as well as Airbus, the aerospace company whose A380 airliner has benefitted from the new 3D printed part.

The valve block, 3D printed from titanium powder, is part of Liebherr-Aerospace’s spoiler actuator, and provides primary flight control functions on the A380, which successfully completed its first flight test with the 3D printed part on March 30. Liebherr says the selective laser melting (SLM) manufacturing process used to make the valve block is less complex than other methods, and also helps to keep titanium waste to a minimum.

The 3D printed aircraft part was developed by Liebherr in collaboration with both Airbus and Germany’s Chemnitz University of Technology, and was partly funded by the German Federal Ministry of Economic Affairs and Energy. Thanks to the work of all three parties, Liebherr believes that the lightweight 3D printed valve block and future 3D printed parts could contribute to reduced fuel consumption and reduced CO2 and NOx emissions.

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The 3D printed spoiler actuator valve block was flown on an Airbus A380

“We still have quite a way to go until we can introduce 3D printing technology on a broad scale in the aerospace industry,” said Liebherr’s Heiko Lütjens. “All parts of the process chain—from the powder material, over the laser parameters, the post processing, up to the final product—need to be optimized in order to improve stability, maturity, and economic efficiency. Nevertheless, the potential and vision of 3D printing will change the way future aircraft generations will be

developed.”

Liebherr is currently working on other 3D printed aircraft components, including a highly integrated 3D printed rudder actuator. This part combines the valve block, cylinder housing, and reservoir into a single compact housing, massively reducing assembly time and potential for breakage.

Although 2017 has been a comparatively quiet year for Airbus and its additive manufacturing ventures, the aerospace giant did announce earlier this month that it had installed 3D printed parts (an air nozzle and drilling templates) on its **A330neo jetliner and BelugaXL airlifter** aircraft.

Last year, Airbus lifted the lid on plans to establish a **3D printing Aerospace Factory** in Germany. The facility will purportedly be set up in collaboration with high-profile partners such as EOS and the Technical University of Munich.

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