



Airbus Defence and Space optimising components using 3D printing for new Eurostar E3000 satellite platforms

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Aluminium additive layer manufactured (ALM) bracket saves weight and reduces manufacturing time
Greater stiffness provides better pointing accuracy for mounting antennas
Airbus Defence and Space in UK is now producing its first space qualified aluminium 3D printed components after a two year research and development programme under the National Space Technology Programme, through Innovate UK (formerly the Technology Strategy Board) and the UK Space Agency.
The 3D printed components being developed by the UK team are part of a programme that is now able to introduce components that cannot be manufactured using conventional technology. This includes a structural bracket for Eurostar E3000 telecommunications satellites manufactured from aluminium alloy. It is a single piece laser melted part weighing 35% less than the previous bracket which comprises four parts and 44 rivets. The additive layer manufactured (ALM) bracket is also 40% stiffer than the previous manufactured component, and does not result in waste generated by conventional machining.
The bracket is for mounting the telemetry and telecommand (TMTC) antennas onto the satellite, and has successfully completed flight qualification testing. It is ready to be flown on a forthcoming satellite.
Amy Glover, Senior Spacecraft Structures Engineer responsible for the project said: "Producing the first flight qualified ALM component is a major milestone and the result of two years of great teamwork funded by Innovate UK in partnership with our suppliers. Through developing and proving the design and manufacturing process, which significantly reduces the testing required, we can now look at what other opportunities there are for ALM components that will be lighter and quicker to manufacture."
Tim Just, Head of Space at Innovate UK, said: "Space is a vital and growing sector of the UK economy worth over £11bn and employing directly 34,000 people and supporting a further 72,000 jobs. Our unique role in Innovate UK means that we can bring the expertise and learning of the high-value manufacturing to bear in the space sector, creating greater growth. I had the pleasure to present the Innovation award at last years Airbus staff awards, which was won by a UK team and it is great to see these ideas turning into commercial reality. We at Innovate UK are determined to maximise the opportunities for companies big and small to build a UK space supply chain and build the new jobs of tomorrow."
The ALM bracket was manufactured for Airbus Defence and Space by 3T RPD Ltd, a leading production Additive Manufacturing company based in Newbury.
Airbus Defence and Space is continuing with its implementation plans for ALM waveguides, heat pipes, propulsion components, secondary structures and tanks.
TMTC - Telemetry and Telecommand antennas enable the satellite to communicate with the ground station. ALM structures are up to 40% stiffer than their conventionally machined and fabricated counterparts, therefore providing a spacecraft platform with higher through-life pointing accuracy.
Airbus Defence and Space
Airbus Defence and Space is a division of Airbus Group formed by combining the business activities of Cassidian, Astrium and Airbus Military. The division is Europes number one defence and space enterprise, the second largest space business worldwide and among the top ten global defence enterprises. It employs more than 38,000 employees generating revenues of approximately 13 billion per year.
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