



EANT GmbH

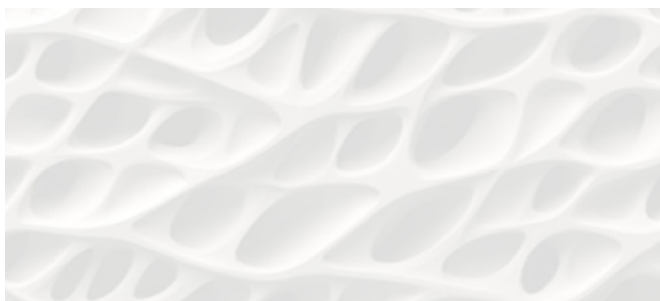
Use Case – Metal-Replacement Production Part

Customer Profile

EANT-GmbH is a leading German engineering firm specializing in advanced automation and industrial services. With a strong focus on innovation and precision, the company offers tailored solutions in various industries that enhance operational efficiency and productivity. Its expertise spans robotics to custom machinery, making it a trusted partner in industrial automation

Challenge

EANT was engaged by a partner company, EPAK, a maker of maritime satellite antennas, to improve the design of the antenna support mounts. These are usually welded structures comprising multiple stainless steel components, resulting in a heavy assembly. The goal was to amend the design to make it lighter, as well as easier and faster to produce. To achieve this, engineers used generative design, which minimizes a part's material needs while maintaining its structural requirements. However, this approach usually produces organic shapes that are difficult, if not impossible, to fabricate with machining and welding.



Solution

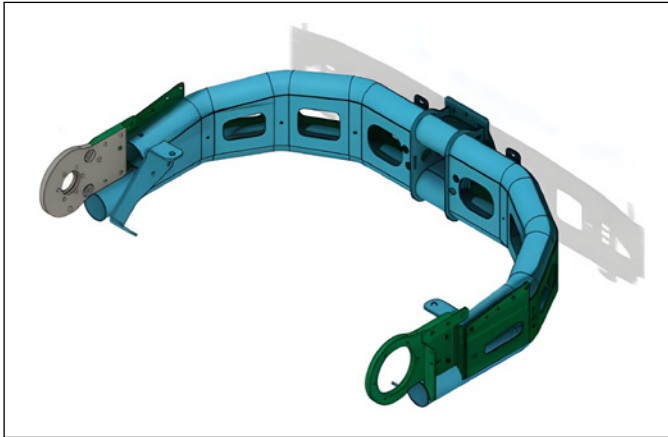
At the suggestion of Cinteg AG, a 3D printing services and solutions provider, engineers chose additive manufacturing (AM) as the optimal solution because it offered several significant benefits over other fabrication methods:

1. AM easily achieves the irregular shape produced by the generative design
2. Multiple polymer materials are available that are lighter than metal but meet structural requirements
3. AM offers a faster means of fabrication
4. AM requires much less labor to produce the mount

Engineers selected FDM® Nylon 12CF, a carbon-fiber material that results in very strong, rigid structures. A Stratasys F900® 3D printer, which has the largest build chamber among industrial 3D printers, afforded sufficient space to accommodate the part's size. A T40 printer tip was also essential to this solution because it enabled a higher volume of material deposition during the print process, accelerating the print time and reducing time-to-part.

Impact

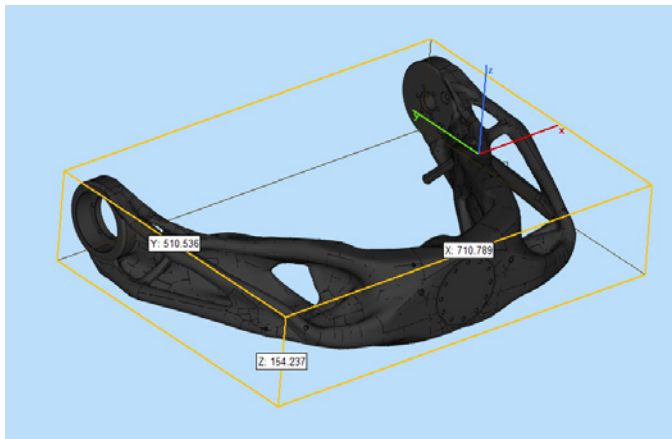
Using the F900 with the T40 tip and Nylon 12CF allowed EANT to achieve its design objectives. The 3D printed antenna support mount **decreased production cost by 20%, reduced the production time by 75%, and lowered the weight by 38%**. EANT noted that the higher-capacity T40 tip made the business case for this solution possible. Using a smaller-flow tip would have increased the print time and would not have achieved the cost-reduction objectives of the project.



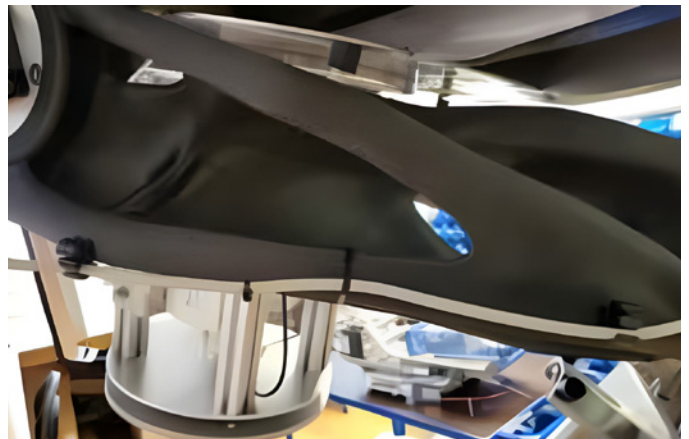
CAD image of the original welded steel antenna mount design.




The 3D printed Nylon 12CF mount (black) is shown installed on the antenna assembly.




The dimensions of the 3D printed mount (710 x 510 x 154 mm), demonstrating its considerable size.




Another view of the 3D printed mount showing the generatively designed organic shape.



Weight Reduction
38%



Time Savings
75%



Lower Cost
20%