Metal Lattice Design, Testing, and Application Study

An America Makes Project | Department of Defense Manufacturing Innovation Institutes

Technology: GPS Satellite Bracket

America Makes

Project Participants: Ohio State University, Lockheed Martin, 3Degrees, Elementum 3D

Institutes' Role: America Makes received funding from the Office of the Secretary of Defense (OSD) to demonstrate how metal-printed geometry interacts with boundary material such as thin walls or skin material. The Institute released a competitive project call in which the topics were member derived through working groups. This project would not have been possible without the support of OSD through core funding to execute project calls.

Technology Description: This project looked at complex cellular and lattice structures that could offer revolutionary opportunities in medical devices, light-weighting, and impact protection. Lattice structures are often used in parts that must perform in exotic environments where the load cases experienced are hard to predict and little is known about how the lattices interface with bulk material such as thin walls or skin material.

Impact: The satellite bracket is currently undergoing vibration testing with low-and high-frequency vibration modes to simulate launch and orbit in the space industry. The outcomes of this project have the potential to lead to stronger parts that are lightweight and use less material to print which leads to cost savings.