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HYBRID ADDITIVELY-MANUFACTURED SATELLITE TECHNOLOGY EXPERIMENTS (HASTE)

Abstract

The Aerospace Corporation has developed a concept and a roadmap for an Orbital Satellite Factory (OSF) that looks to build, assemble, and deploy small satellites autonomously in support of in-space servicing assembly and manufacturing (ISAM). In this process, Aerospace has identified technologies that need to be matured through a combination of design, analysis, ground and flight testing. One of the key prototyping efforts being developed that is included in this roadmap is the Hybrid Additively-Manufactured Satellite Technology Experiments (HASTE). With HASTE, we look to develop a ground-based platform to demonstrate Hybrid AM design, manufacturing, and analysis. In partnership with the University of Texas El Paso (UTEP) Keck Center, the HASTE prototype will demonstrate embedded wiring and electronics and researching radiation shielding phenomena while using AM. Also included in this demonstration are several novel satellite subsystem electronics, most notably a ultra wide-band radio, dosimeter, low-cost microcomputer, and power. The battery will have a unique AM release latch mechanism built into the main structural design that will hold the battery in place. This presentation will cover the motivation behind HASTE, the current prototype design, and on-going work to eventually lead to an on-orbit demonstration by the end of 2025.