

Reshaping Aerospace Manufacturing with High-Performance Polymer 3D Printing

Additive manufacturing (AM) is redefining how critical aerospace components are designed, produced, and maintained. Roboze, a global leader in high-performance polymer 3D printing, has developed an advanced ecosystem that bridges the gap between prototyping and true industrial production. Leveraging cutting-edge mechatronic precision and high-temperature extrusion systems, Roboze enables the manufacturing of mission-critical parts with tolerances as tight as 10 µm—meeting the stringent standards of the aerospace sector.

This presentation will explore how Roboze's metal replacement solutions, based on high-performance techno-polymers such as PEEK, Carbon PEEK, Helios™ PEEK 2005, and ULTEM™ AM9085F, are transforming aerospace production. These materials offer exceptional strength, chemical resistance, radiation tolerance, and thermal stability, enabling lightweight, durable components suitable for extreme environments such as space applications.

Through case studies—including CubeSat payload holders, autoclave tooling, and PEEK busbar supports for spacecraft—the talk will demonstrate how digital manufacturing with Roboze reduces development times, costs, and emissions while increasing design flexibility and part performance. The distributed “3D Parts” production network further supports localized, sustainable manufacturing and digital warehousing of components, key enablers for future off-Earth production scenarios.

Ultimately, Roboze's innovations exemplify how materials engineering and additive manufacturing can converge to empower human exploration and redefine the aerospace supply chain of tomorrow.