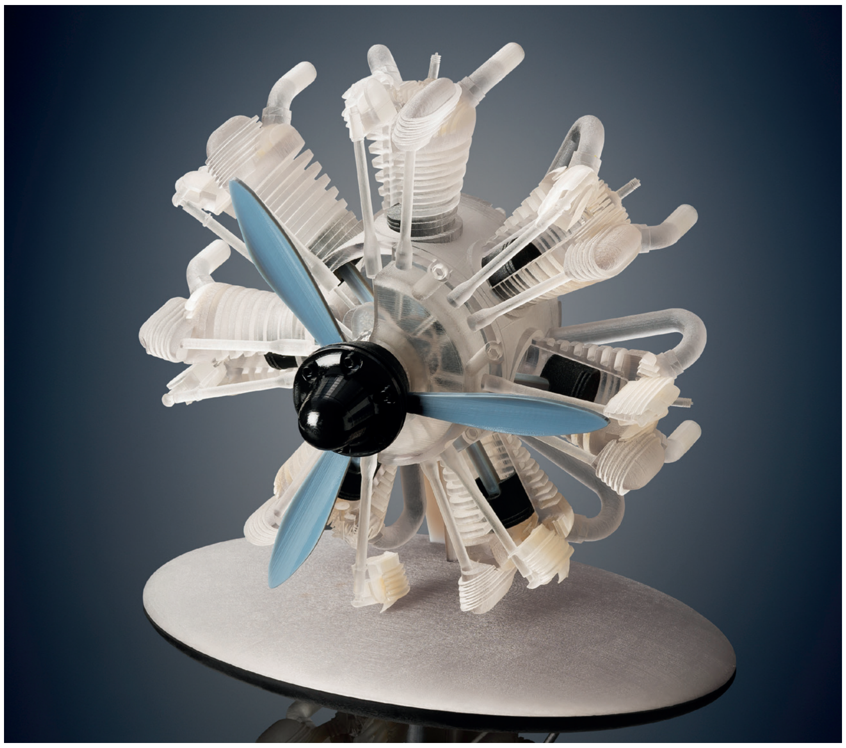
DesignTech: Shaping the Future of Aerospace with Superior 3D Printing



DESIGNTECH ensures the quality and reliability of 3D printed components for aerospace and defense applications through strategic partnerships and meticulous processes. Partnering with Stratasys, a global leader in 3D printing solutions, we address two primary areas: manufacturing tools and end-use parts. The accuracy, consistency, and reliability of Stratasys machines and materials enable rapid tool production, significantly reducing manufacturing cycle times and costs. For end-use parts, we enforce strict quality control norms, process validation, and material traceability, ensuring compliance with aerospace standards.

In the aerospace and defense sectors, 3D printing encounters unique challenges. The demand for specialized materials, stringent process validation, and control, as well as the occasional need for large-sized parts, present hurdles. Post-processing requirements and challenges in building large volume parts further complicate the process. Additionally, the lack of Design for Additive Manufacturing (DFAM) consideration can lead to suboptimal parts, hindering the integration of 3D printing into mainstream manufacturing processes.

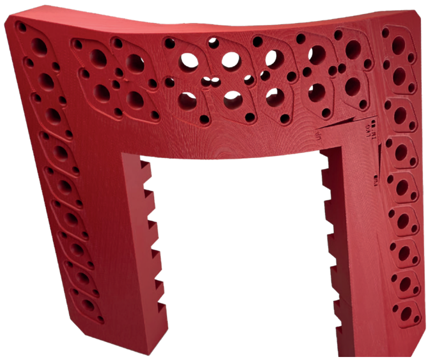
While full-scale adoption of 3D printed parts in Indian aerospace and defense is pending, our collaborations with organizations like DRDO and ISRO have facilitated various manufacturing applications, including mock parts and manufacturing tools. These collaborations have notably reduced project timelines, showcasing the potential of our 3D printing solutions.

Material selection is crucial in additive manufacturing, with factors like temperature resistance and chemical compatibility influencing decisions. Stratasys offers materials like Ultem 9085, compliant with aerospace standards, ensuring that our 3D printed parts meet stringent requirements.

By partnering with Altair Engineering and Stratasys, we leverage advanced design and simulation techniques to optimize components for aerospace and defense applications. Altair Engineering provides specialized CAE software, while Stratasys offers certified materials and industrial-grade 3D printers, ensuring the strength and performance of our printed parts.

Our 3D printing solutions have delivered significant cost and time savings for clients in the aerospace and defense sectors. For instance, we successfully printed and delivered complex parts for a DRDO unit within 24 hours, a feat that traditional manufacturing methods would have taken at least a week to accomplish. Maintaining confidentiality and security is paramount when handling sensitive projects for clients in the aerospace and defense industries. DesignTech's Engineering Services division adheres to strict confidentiality policies, ensuring that data remains secure throughout the project lifecycle.

Looking ahead, we anticipate increased adoption of 3D printing technology in aerospace and defense, driven by the establishment of more manufacturing facilities and growing interest from defense establishments. By staying at the forefront of innovation and collaborating with industry leaders, we aim to further expand the applications of 3D printing in these sectors, contributing to advancements in aerospace manufacturing. ■



ARTICLE CONTRIBUTED BY

MR. RAVIKUMAR PATIL
General Manager
Rapid Prototyping, DesignTech Systems Pvt Ltd.

Ravi Patil, with 25+ years in the industry, holds a Bachelor of Engineering in Mechanical Engineering from KLECET, Belgaum. Specializing in FDM, PolyJet, and Metal 3D Printing, he leads DesignTech Systems' Rapid Prototyping-Technical team, supporting 200+ installations nationwide.

Image courtesy : Stratasys

DesignTech
Technology for designing the future