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**Additive manufacturing technologies for Aero-Engine Systems****S. Anand Kumar***Indian Institute Of Technology–Jammu, India*

The additive manufacturing (AM) process is evolving as a highly disruptive technology for aerospace industries. AM can be cost-effective and of great benefit in terms of decreased lead time and complex, intricate designs, to name a few. Further, AM is also recently exploited in the manufacturing, repair and remanufacturing of high-value parts. AM has attracted the industries in recent past years in the field of manufacturing sector due to its intrinsic characteristics. In general AM is categorized in seven categories – material jetting, VAT photopolymerization, sheet lamination, binder jetting, material extrusion, Powder bed fusion (PBF) and directed energy deposition (DED). Among all these PBF and DED are mainly used in aerospace and biomedical applications. In AM, the CAD model (shape of the final component) is given to the AM machine in the form of STL file and subsequently in consonance with CAD model the layer-by-layer fabrication get started to fabricate the solid object. This chapter furnishes an exhaustive study of AM in aircraft applications, including challenges and future directions.

**Biography**

Anand Kumar S, PhD is an Assistant Professor in the Department of Mechanical Engineering, Indian Institute of Technology Jammu. His research group currently focuses on additive manufacturing of end-use parts targeted for engineering applications, including aerospace, automotive, bio-medical, etc. In addition, he is also actively involved in investigating the influence of surface modification of biomaterials such as Ti-alloys and Magnesium alloys for improving the tribological and bio-activity characteristics. He received his PhD from the Indian Institute of Technology Madras (IIT-Madras), India during 2013.