

## **ADDITIVE MANUFACTURING OF PARTS FOR INDIGENOUS AERO ENGINES**

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### **Abstract**

Aero engines contain many parts with highly complex geometry. Revision of design is necessary for many such components till the design matures and is frozen. Many complex parts are often produced by investment casting which involves complicated tooling, high cost and time. Any changes in design would bring the process back to starting phase with requirements of new fixtures, tooling, etc. Direct Metal Laser Sintering (DMLS) is one of the additive manufacturing processes, and is a good alternative to manufacture parts with complex designs that machining or casting cant achieve in quick time. This paper covers the manufacture of complex engine parts with DMLS. Complicated engine parts like cooled turbine blades, cooled NGV, etc. have been manufactured within the country and HAL and successfully tested. Cooled turbine blades have been manufactured in 4 months which would have taken about 2 years if investment casting had been used.

**Keywords:** DMLS; 3D printing; Powder; Sintering; Laser; Additive manufacturing