

ABSTRACT

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APPLYING ADDITIVE MANUFACTURING TO A NEW LIQUID OXYGEN TURBOPUMP DESIGN

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ABSTRACT

A liquid oxygen turbopump has been designed at Marshall Space Flight Center as part of the in-house, Advanced Manufacturing Demonstrator Engine (AMDE) project. Additive manufacturing, specifically direct metal laser sintering (DMLS) of Inconel 718, is used for 77% of the parts by mass. These parts include the impeller, turbine components, and housings. This paper discusses the impacts of the DMLS fabrication technique on the design of the turbopump and lessons learned during DMLS hardware fabrication and material testing.