

Methodologies for Qualification of Additively Manufactured Aerospace Hardware

Douglas Wells*, Brian West* and Richard Russell**

*NASA Marshall Space Flight Center

**NASA Kennedy Space Center

Description:

Additive Manufacturing (AM) is a disruptive technology that has the potential to revolutionize hardware production and traditional supply chains. For NASA, companies producing human rated liquid rocket engines have been an early adopter of AM. In response the NASA Marshall Space Flight Center has produced MSFC-STD-3716 “Standard For Additively Manufactured Spaceflight Hardware by Laser Powder Bed Fusion ion Metals” and MSFC-SPEC-3717 “Specification For Control and Qualification of Laser Powder Bed Fusion Metallurgical Processes”. These two documents convey the policy and procedures necessary for Marshall to certify components produced using powder bed fusion. The framework established by these documents has been widely accepted by NASA and is being reworked to become NASA Agency level standards which will be written to cover a wider range of AM materials and technologies for all NASA programs. This course will provide guidance and practical methodologies on how to establish a qualified process and deliver certifiable hardware per the requirements in MSFC-STD-3716 and MSFC-SPEC-3717. Where available, examples will be used to demonstrate how a participant could respond to the given requirements.