The 3rd Joint FAA – Air Force Workshop on Qualification / Certification of Metal Additively Manufactured (AM) Parts

Co-organized by Dr. M. Gorelik (FAA / Chief Scientist) and Dr. R. Dutton (AFRL / Senior Advisor)

August 29 - 31, 2017

Venue: University of Dayton River Campus
1700 S. Patterson Blvd., Dayton, OH 45409
MEYER ROOM – N1650

Workshop facilitator: Mr. Brad Cowles, Cowles Consulting, LLC
Dress code: business casual

Note to all presenters: please allow a few minutes for Q&A within the allocated time window

Day 1 – Tuesday, August 29

7:45 – 8:15 Registration
8:15 – 8:30 Introductions
8:30 – 8:45 Workshop Overview and Objectives (Michael Gorelik, FAA and Rollie Dutton, AFRL)
8:45 – 9:00 Summary of the 2016 Workshop (Brad Cowles)
9:00 – 9:30 Boeing Titanium Wire Feed Deposition Process Development & FAA Certification (Matthew Crill, Boeing)
9:30 – 10:15 Keynote Presentation – Mohammad Ehteshami, Vice President of GE Additive
10:15 – 10:45 Break / networking
10:45 – 11:15 AFRL Progress in Qualification and Certification of AM Parts (Jonathan Miller, AFRL)
11:15 – 11:45 Airbus View on How Requirements Could be Tailored to AM Applications (John van Doeselaar, Airbus)
11:45 – 12:15 Test and Material Allowable Development Considerations for Additive Manufacturing (Paul Jonas, NIAR)
12:15 – 13:15 Lunch (catered on site – reservation required) w/poster session (UDRI)
13:15 – 15:15 AM Training and Education Panel - presentations
Panel members:
   ▪ America Makes (Rob Gorham)
   ▪ Boeing (Paul Dufour)
   ▪ GE Aviation (Luana Iorio)
   ▪ Penn State University (Richard Martukanitz)
   ▪ Society of Manufacturing Engineers (Kris Ward)
   ▪ Underwriters Laboratories (Paul Bates)
15:15 – 15:30 Break
15:30 – 16:00 **AM Training and Education Panel** – *roundtable* *(Moderator: Dave Swartz / FAA)*

16:00 – 16:30 NAVAIR AM Update *(William Frazier, NAVAIR)*

**Optional Events (end of Day 1, Aug. 29)**

16:30 – 17:00 Networking

17:15 – ... No-host social - **Warped Wing Brewery** *(26 Wyandot St, Dayton, OH / [www.warpedwing.com]*)

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**Day 2 – Wednesday, August 30**

8:00 – 8:30 Arrival and Networking

8:30 – 9:00 Qualification of an AM Component for Flight *(Mark Shaw, GE Additive)*

9:00 – 9:30 AM Informatics and Component / Material Pedigree *(Amra Peles, P&W)*

9:30 – 10:00 MMPDS Progress on Developing Equivalence Criteria and Spec Minimal Values for AM *(Doug Hall, Battelle)*

10:00 – 10:30 Break / networking

10:30 – 11:00 Perspectives in Additive Layer Manufacturing at Rolls-Royce *(Amit Chatterjee, Rolls-Royce)*

11:00 – 11:30 Qualification and Certification of Additive Manufactured Critical Parts for UK Military Aviation *(Rebecca Mangham, DSTL / UK MoD)*

11:30 – 12:00 On-line Process Control to Assess the As-built Component Quality *(Andreas Fischersworring-Bunk, MTU)*

12:00 – 12:45 Lunch *(catered on site – reservation required)*

12:45 – 13:15 In-situ Monitoring for Additive Manufacturing: Implications for the Digital Manufacturing Age *(Mark Cola, Sigma Labs Inc.)*


13:45 – 14:15 A Case Study on the Incorporation of Bulk Residual Stress In Aircraft Component Design *(Dale Ball, Lockheed Martin)*

14:15 – 14:45 AMSC* Roadmap Overview *(Rob Gorham, America Makes)*

* AMSC = Additive Manufacturing Standards Collaborative (working group)

14:45 – 15:00 Break

15:00 – 15:30 Recent Progress on Standardization of Additive Manufacturing Technologies *(Mohsen Seifi, ASTM)*

15:30 – 16:00 SAE’s AMS-AM Committee on Standards Development for AM – Progress Report *(Dave Abbott, GE Additive)*

16:00 – 16:30 Proposed Collaboration Approach to Process and Materials Characterization Efforts *(Brian Hann, Honeywell Aerospace)*

16:30 – 17:00 AM Research at the Fraunhofer and RWTH Aachen University *(Robin Day, Fraunhofer ILT)*
Day 3 – Thursday, August 31

7:45 – 8:15 Arrival and Networking
8:15 – 8:45 Overview of NRC Additive Manufacturing Activities and Technology Development (Rob Amos, NRC Canada)
8:45 – 9:15 Modified title – Powder Feedstock as a Process Variable for SLM 718 Hardware (Chantal Sudbrack, NASA GRC)
9:45 – 10:15 Additive Manufacturing Qualification for Liquid Rocket Engine Applications (Nicholas Mulé, Aerojet Rocketdyne)
10:15 – 10:45 Break
10:45 – 11:15 An Overview of the Additive Manufacturing Consortium (AMC) Projects and Collaborations (Frank Medina, EWI)
11:15 – 11:45 OEM Perspectives on AM Qualification and Certification (Marilyn Gaska, Lockheed Martin)
11:45 – 12:30 Lunch (catered on site – reservation required) and networking
12:30 – 13:00 Additive Manufacturing in the Airline & MRO World – Potential, Challenges and Path Forward – One Airline’s Experience (Ramesh Ramakrishnan, Delta Tech Ops)
13:00 – 13:30 The Impact of Critical Defects on Material Performance and Qualification for Metal Laser Powder Bed Fusion (Bradley Jared, Sandia NL)
13:30 – 14:00 Opportunities for AM in the Aftermarket Supply Chain – an Independent Perspective (Brian Neff, Sintavia LLC)
14:00 – 14:30 The Use of Additive Manufacturing from a PMA’s Perspective (Jeffery Paust, HEICO Aerospace)
14:30 – 14:45 Break
14:45 – 15:15 FAA AM Roadmap Overview (Michael Gorelik, FAA)
15:15 – 15:30 Workshop summary and closeout (Brad Cowles / All)
15:30 -- Adjourn