European Union Aviation Safety Agency

2019 EASA-FAA Workshop on Additive Manufacturing

Event

Type: Workshop

Date:

05 Nov 2019 to **07 Nov 2019**

Location

EASA Headquarters

Konrad-Adenauer-Ufer 3
50668 Köln
Germany

Directions to the Agency

Event Materials

Documents

Presentations - 2019 EASA-FAA Workshop on Additive Manufacturing

Survey results - 2019 EASA – FAA Workshop on Additive Manufacturing

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Description

Date & time

Day 1: 08:30 - 17:00
Day 2: 08:30 - 17:00
Day 3: 08:30 - 16:00

Description - Preliminary Information

Further to the recent rapid expansion in industry interest in the use of Additive Manufacturing (AM) methods in aviation products, EASA has been working, in conjunction with industry and other regulators, to find the most efficient means by which future regulation of the technology and its applications can be achieved. As part of this process, and in response to industry request, EASA and FAA have been increasingly working together, resulting in the alternate hosting of an annual aviation AM event by EASA and FAA respectively, the previous event having been hosted by FAA in Wichita in 2018. The presentations and outputs from such events, and associated publications, are readily available (see below 'Related Content').

Noting that AM is being developed by many global organisations, supported by globally dispersed work forces, it is becoming increasingly important for the dispersed workforces to have periodic face to face access to such events at various global locations. However, in order to satisfy a diverse range of interests (and levels of involvement), and also noting the limited industry and regulator resource available, it is important that the most benefit be gained from the precious face to face time available at such events. Therefore, FAA and EASA plan to alternate 1/2 day 'Generic Presentation Sessions' (typical conference format) with parallel 'Working Group Sessions' (workshop format) during the planned 3 day Event.

Current high level draft meeting agenda

05/11/2019, 13:00 - 18:00hrs: Generic Session
06/11/2019, 08:00 - 13:00hrs: Working Group Sessions (run in parallel)
14:00 - 18:00hrs: Generic Session
07/11/2019, 08:00 - 16:00hrs: Generic Session (including Working Group input)
Note: Details may change.

Working Group Themes

WG1 Title *(amended 9th August 2019)*: Machine and Material qualification (IQ, OQ)
Problem Statement: Standardization of the qualification of AM machine and material would benefit both the machine OEM and part producers (type certificate and service bureau). Installation qualification (IQ) tasks including initial calibration and builds used for site acceptance testing (SAT) will be identified. Operational qualification (OQ) tasks to show process control sufficient for statistically consistent material performance (metallurgical, mechanical, and physical properties) will be identified. Discussion will focus on aspects of IQ and OQ that can be standardized.

Comments from the June 2018 EASA Knowledge Transfer Workshop that are within scope of

the above problem statement include:

Machine OEM: “All OEMs bring their “own” individual requirements for machine producers (e.g., for FAT, SAT, Training, IQ, OQ) → standardization of offerable packages difficult; What do we need: Clarity about requirements and one aligned procedure that we can follow).”

Machine OEM: “Guidance from TCHs, AM part suppliers on how process parameters are classified as significant and how should they be defined?”

Machine OEM: “Guidance to TCHs, AM part suppliers on critical process parameters based on previous experience that could be classified as significant”

TCH: “Machine producers need a better understanding of the relationship of key process parameters and material properties for aerospace materials to ensure that ongoing development of machine technology…”

TCH: “Machine producers should execute basic parameter studies with aerospace materials to develop a better understanding of key process to property correlations…”

TCH: “Machine producers should undertake variability studies that highlight machine to machine variation…to ensure that frozen parameters established to fabricate a specific part can be used on “identical” machines from the same machine producer”

Non-TCH: “Part qualification: What is necessary for build controlling? Which QA-must be in the Builds?”

WG2 Title: Designing for AM

Problem Statement: One of the potential benefits from using AM is the possible optimisation of designs, resulting in complex geometries, e.g. as in DfAM (Design for AM).

Is understanding sufficient to ensure that such design optimisation does not reduce the existing acceptable levels of safety?

How does developing AM understanding interface with confidence levels in other design activities which define the product, e.g. global and local design tools, complex product testing strategies, use of test/analysis pyramids, in-service inspection needs and capabilities?

WG3 Title: F&DT for AM (including NDI considerations)

Problem Statement: Product safety and commercial viability relies upon meeting the commercial design and engineering requirement targets, e.g. static, dynamic, fatigue, crashworthiness, throughout its operational life. This can only be achieved through understanding the sensitivity of the product to fatigue, manufacturing defects, the environment, and accidental damage. How can this be achieved for a technology for which critical engineering properties, including damage tolerance and fatigue capabilities, are dependent upon very closely linked design and production activities, particularly when some damage modes may be difficult to detect and the populations of material / manufacturing anomalies are not fully characterized? The need to address these issues is further enhanced by the near-term introduction of the high-criticality AM parts in civil aviation.

The intention is for attendees (200-220 total) to come to the event prepared to engage in the Working Group discussions and 'brainstorming' sessions which interest them most, each Working Group being led by a co-chair and a support team.

Contact

AMWS [at] easa-event.de (AMWS[at]easa-event[dot]de)

Other documents

Final Agenda - 2019 EASA-FAA Workshop on Additive Manufacturing

Related Content

Certification Memorandum: Additive Manufacturing

2017 EASA Workshop on Additive Manufacturing

2016 EASA Workshop on Additive Manufacturing