



EASA

European Aviation Safety Agency

EASA Fire/Explosion Problematics and Rulemaking Activities Overview

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With help of

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V3

IASFPF & IAMFTF, Atlantic, 24-25 Sep 2024

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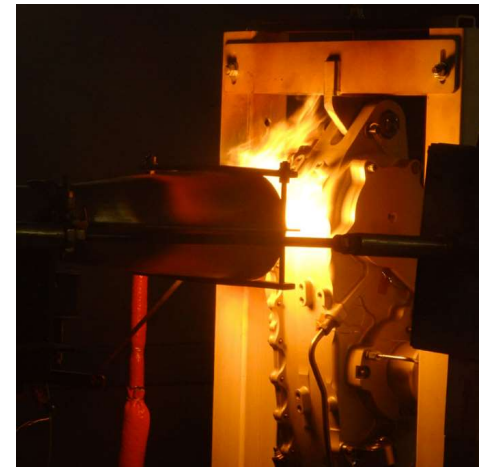


➤ SAE A22 Powerplant Fire Testing

➤ In March 2018, the FAA tasked SAE International to develop industry standards to update AC20-135 Change 1, *Powerplant Installation and Propulsion System Component Fire Protection Test Methods, Standards, and Criteria*.

➤ EASA participation

- Rémi DELETAIN (CS-25) - Focal
- Regis ROSSOTTO (CS-23 / VTOL)
- Angus BRAHAMS (CS-E)
- Laurent PINSARD (Chief Expert Structure)
- Wim DOELAND (Senior Expert Structure)





➤ SAE A22 Powerplant Fire Testing

➤ AS6826 Powerplant Fire Test Standards

- 1st ballot (28 Aug 2023 – 24 Sep 2023): commented
- 2nd ballot launched on 20 Mar 2024, till 16 Apr 2024: commented
- 3rd ballot launched on 23 Aug 2024, till 22 Sep 2024: EASA has returned few comments.

➤ ARP8580 Fire Protection of Aircraft Engine Mounts, Flight Controls, and Other Flight Structures.

- Draft dated 26 Feb 2024, till 13 Mar 2024: EASA comment sent on 07 Mar 2023 and 13 Mar 2024.



➤ ARP8704 Minimizing the Hazards of Engine Combustor Case Burn Through

➤ 1st Ballot dated 01 Nov 2023, till 28 Nov 2023: EASA comment sent on 28 Nov 2023.

➤ Some more to come for EASA involvement when ready

ARP8998



Powerplant Electrical Wiring
Interconnection Systems
(EWIS) Compliance for Fire
Protection

AIR8635



Fire Protection and
Flammability Testing able
support the maximum flight
and landing load expected



➤ SAE A22 Powerplant Fire Testing (Cont'd)

➤ Regulatory implementation of AS6826 standard ?

➤ Create (*) AMC 20-135 : Multi-product applicability

- ▶ Cross refer to AS6826 into the new AMC.
- ▶ TBC: May limit applicability to certain product (CS-25, CS-29, CS-27 Cat.A, CS-23 Level 4,...)
- ▶ As necessary, arbitration of contents in relation to :
 - ▶ existing individual product guidance and/or limitations in use.
 - ▶ existing fire testing standards and their use in relation to AS6826

(*) Subject to EASA Rulemaking validation
AMC : Acceptable Means of Compliance



➤ SAE A22 Powerplant Fire Testing (Cont'd)

- Update individual CS requirements and AMC's relating to powerplant fire testing :
 - ▶ with new AMC introduction
 - ▶ If any, removing non-relevant or superseded standards/guidance

- Release guidance (CRI , CM or AMC update (above))
 - ▶ On items not covered in AS6826 original issue
 - ▶ On items scheduled for AS6826 revision 2
 - ▶ On subjects under SAE A-22 long-term discussion

CRI: Certification Review Item

CM : Certification Memorandum



Fire Regulatory Topics

➤ CATA – CWI EASA-001 -2D Nacelle (CS 25.867)



- Internal (FAA, EASA, TCCA, ANAC) consultations – completed.
- Disposal of comments within CATA EASA-001 team and CATA Paper update - completed.
- CATA Paper 1st release towards CATA : Jul 2023
- Return with comments Aug 2023
- CATA Paper 2nd release towards CATA : Apr 2024
- Still Under CMT – planned for endorsement on 9th Oct

CATA : Certification Authorities for Transport Airplanes

CWI: CATA Worklist Item

CMT: Certification Team Management



Fire Regulatory Topics

➤ CATA – CWI EASA-001 -2D Nacelle (CS 25.867)



- Once adopted by CATA will be published on EASA website
- Regulatory adoption Plan (subject to consolidation):
 - CRI SC + IM/MoC (short term) . Generic consultation envisaged
 - CS 25J1181 evolution + AMC creation via CS-25 regular update (mid term)

CATA : Certification Authorities for Transport Airplanes
CWI: CATA Worklist Item



Fire Regulatory Topics

- CATA – CWI FAA-xxx - Definition of APU air inlet system boundary and fireproof compliance showings – 25.1103(b)(2)
 - Draft document is being circulated between CMT members
- CATA – CWI ANAC-001 - Fuel Line installation – Crashworthiness
 - Closed and published on EASA website from 05 Sep 2024
 - CRI SC+IM to supplement CS 25.993(f)/25J993(f)



➤ GENERIC GUIDANCE (CRI)

➤ Flammable Fluid (25.863) and drainage/ventilation (25.1187)

➤ Note: FAA consulted in 2Q2023 the draft AC 25.863

➤ Residual Flame

➤ Halon Replacement (HFC125)

➤ Halon Replacement (CF3I)



➤ VTOL

➤ Special Condition and Means of Compliance

➤ SC VTOL Issue 2 – 10 Jun 2024

➤ MOC VTOL.2440 Propulsion Batteries Thermal Runaway

- MOC-3 SC-VTOL, Issue 1, 29 Jun 2022 :
- Status : Released for consultation on 29 Jun 2022
- TD : Deadline for comments 12 Aug 2022
- More than 250 comments received
- Disposal of comments completed
- CRD and final MoC released @ Issue 2 on 21 June 2023

VTOL : Vertical Take-Off and Landing (VTOL) aircraft :

- heavier-than-air aircraft in the small category, with lift/thrust units used to generate powered lift and control. The distinction from conventional aeroplanes is based on the VTOL capability of the aircraft while the distinction from conventional rotorcraft is based on the use of distributed propulsion, specifically when more than two lift/thrust units are used to provide lift during vertical take-off or landing.
- with a passenger seating configuration of 9 or less and a maximum certified take-off mass of 3 175 kg (7 000 lbs) or less



- Electrical & Hybrid propulsion (EHPS)
 - Research – TAC - IPC (CS-E, CS-25) and Project application (CS-23, CS-25)
 - Multitude of concepts
 - Maturity variations
 - Complex split of responsibilities (A/C vs Engine)
- Special Condition SC E-19 - Electric / Hybrid Propulsion System
 - Released at issue 1 on 13 Apr 2021
 - Fire Protection for electrical engine : EUROCAE WG 112 –has reactivated the activity. SAE E-40 has also decided to work on the topic
- MOC EHPS.100 Fire Protection : 1st Draft initiated



➤ H2

- Activities running in various areas at EASA (IPC, TC application, Research, Industry WG, EASA-FAA COB, ...)
- EASA H2 Core Team (EASA Certification Directorate Objectives) in place (Jan 2024)
 - H2 Road map
 - Certification framework : white paper as basis for SC
 - Harmonization
 - Knowledge and Capacity management

COB: Certification Oversight Board
IPC : Innovation Partnership Contract
SC: Special Condition



➤ H2 Fire & Explosion risk

- Initiative launched in Nov 2022 with regulator only and regulator/industry exchange : little success.
- Repeated in Jun 2023 and Nov 2023 with gradually more enthusiasm and contributions.
 - Agreed to use Systems and Material forums for the WG in a format of :
 - Regulator Only gathering
 - Regulator/Industry gathering



➤ H2 Fire & Explosion risk

➤ 2024:

- Meeting: 15 Apr (Regulator only) – 17 Apr (Regulator/Industry)
- ToR : drafted for Hydrogen Fire & Explosion Research Steering Group (HF&ERSG) activity
 - Subset of Fire and Cabin Safety Research Group, F&CSRG
 - Contributor to Hydrogen Technologies Working Group (HTWG) COB
- ToR : released
- 4 Task Groups active since 17 Apr (PWP/Cabin Safety - in-flight/ Ground Post-Crash)



➤ H2 Fire & Explosion risk

➤ 2024:

➤ For PWP in-flight/ Ground Post-Crash:

- 3+ coordination meetings @ SG level
- 14+ co-chair meetings
- 11 Group meetings
- Regulatory Gap Analysis with efforts focus onto :
 - ▶ Fire related requirements
 - ▶ CS-E/FAR33 + CS-25/FAR25 Subpart E (CS-25 Subpart J for APU)
 - ▶ Review of other subparts D, F, G, H and A, B, C (less affected vs Subpart E/CS-E(FAR33)).
- List for research items (paired with requirements)



➤ H2 Fire & Explosion risk

➤ 2024:

➤ For PWP in-flight/ Ground Post-Crash:

- Initial target Sep 2024 for draft Report :Likely to shift later in Falls
- Focus on the literature review to consolidate list of research items (till end of 2024)
- Focus on Regulatory Gap Analysis completion (Early 2025)



Fire Regulatory Topics

➤ EASA Certification Roadmap on H2 — International Workshop 2024

➤ <https://www.easa.europa.eu/en/newsroom-and-events/events/easa-certification-roadmap-h2-international-workshop-2024>

➤ By invitation

➤ 17 Dec 2024

➤ On-Site Only

➤ EASA
Cologne, Germany

➤ Contact:
propulsion@easa.europa.eu

The screenshot shows the EASA website's event page. The header includes the EASA logo, 'EASA Pro', a search bar, and navigation links: Home, The Agency, Newsroom & Events (active), Domains, Regulations, Document Library, and Can We Help You?. The main content area features the event title 'EASA Certification Roadmap on H2 — International Workshop 2024' and the tagline 'On-site event'. It lists the organizer as EASA and the event type as Workshop. Related domains include Aircraft & products, Drones & Air Mobility, Environment, General Aviation, International cooperation, Research & Innovation, Rotorcraft & VTOL, and Safety Management & Promotion. A sidebar on the right contains the EASA logo, a stylized 'H2' graphic, and the event title. The footer shows the event date '17 Dec 2024' from 09:00 to 17:00 CET (UTC +1), with buttons for 'Add to Calendar' and 'Print to PDF'.



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End slide

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Record Tracking

V1: original released for internal consultation on 20/09/2024

V2: update with SAE A22 WIP document to come later for EASA review

V3: update with Regis inputs, H2 workshop, CAT fuel lines

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