EASA H2 Activities – General Overview

June 2023

Colin Hancock
Head of Department – Policy, Innovation & Knowledge

Your safety is our mission.
Hydrogen

- EASA Regulatory Framework
- EASA Frame to support Hydrogen powered Aviation
- Hydrogen Regulation Mapping
- Standards
- Alliance for Zero Emissions Aviation
- Clean Aviation
Note: the full regulatory structure is available on Regulations | EASA (europa.eu)
EASA framework to support Hydrogen powered aviation

**Pre-Application Services with Industry**

Innovative Partnership Contracts
- Allow us to work on Innovative concepts
- De-risk certification process
- Regulatory gap analysis
- Discuss need New Special conditions/Means of compliance

Pre-Application Contracts
- For more mature concepts and applicants
- Work towards defining Cert Basis and Special Conditions
- Expected to lead to Application

**Applications Received**

- Ongoing Type Certification in CS23 domain
- Ongoing Design Verification for drones

**Research and Innovation**

- Contribution Agreements (EU funded projects) to address Authorities’ research needs
- Collaboration Agreements with Industry and Research centers (including National calls for research)
- Agreements with Clean Aviation and SESAR Joint Undertakings
Hydrogen Aircraft Mapping

- Predicted Gaseous Hydrogen Ops
- Predicted Liquid Hydrogen Ops

- Long Range
- Narrow body
- Regional
- GA - Commuter
- Drones
Hydrogen Regulation Mapping

Aerodromes
- AMC & CS
- RMT.0728 - Ground handling
- IR

FCL
- AMC
- RMT.0678 ratings

OPS
- AMC - NCO
- Fuel Manual
- RMT.0392 - Fuel Reserve
- CAT.IDE

CAW
- 2021/1296
- RMT.0731 - New Air Mobility
- RMT.0255 - Part 66
- SC CS 25
- SC CS 23
- SC CS E
- SC evolution

Certification
- AMC
- SC CS 25
- SC evolution

Long Range

Narrow body

Regional

GA - Commuter

Drones
Hydrogen Regulation Mapping

**Certification**

- Flexibility through use of Special Conditions.
- Special Conditions linked to application.
- Target equivalent level of safety.
- Special condition in relation to CS-23 anticipated for 2023.
Standards

Eurocae WG80/ SAE AE-7AFC Hydrogen Fuel Cell Systems
→ Established to develop guidelines to support qualification and certification of Hydrogen Fuel Cell Systems

SAE Steering Group on Sustainable Alternative Fuels for Aviation (SAF & H2)
→ Covering production, storage, supply and related infrastructure.
→ Outputs: Standards Gap Analyses and Standards Development roadmaps

SAE AE-5C Aviation Ground Fuelling Systems Committee
SAE AE-5CH Hydrogen Airport Task group – Hydrogen as a fuel at the airport.

ASTM H2 Fuel Group (D3-14)
→ H2 Fuel Specifications

IIWG Airport Compatibility of Alternative Aviation Fuels Task Force
→ New group with following Purpose
  → To assess possible challenges related to the integration aircraft powered by alternative or new fuel types into the legacy aviation system
  → To identify possible solutions for airport and aircraft compatibility challenges and facilitate the introduction of aircraft powered by new or alternative fuels into operations
  → To provide technical and operational expertise to ICAO on the challenges related to airport and aircraft compatibility
  → To provide a gap analysis between the existing regulatory framework and possible changes that are identified through the introduction of aircraft powered by new fuel types
Alliance for Zero Emissions Aviation (AZEA)

A European Commission initiative

→ The Alliance is a voluntary initiative of private and public partners who share the objective to prepare the entry into commercial service of hydrogen-powered and electric aircraft.

→ 6 WG in relation to Hydrogen and Electric Aviation proposed
  - WG1 Rollout scenario for electric and hydrogen-powered aircraft and related ‘figures of reference’
  - WG2 Green electricity / hydrogen supply
  - WG3 Airports (infrastructure and operations)
  - WG4 Aviation regulation, certification and standardisation (supported by EASA)
  - WG5 Integration of electric and hydrogen-powered aircraft into European network (supported by Eurocontrol)
  - WG6 Incentives

→ First meeting of working groups beginning of 2023

→ WG4 Mapping Regulations & Standardisation activity starting with gap analysis. First deliverables will be presented at Le Bourget.
  - Current aviation regulatory landscape for aircraft powered by hydrogen or electric propulsion
  - Current Standardization Landscape
CLEAN AVIATION'S JOURNEY TO CLIMATE NEUTRALITY BY 2050

TODAY, THE AVIATION INDUSTRY GENERATES

- 87.7M JOBS
- 2.8% OF GLOBAL CO₂

BY 2050:
- DEMAND FOR FLIGHTS ×3
- IF NO ACTION IS TAKEN: EMISSIONS ×2

IMPROVED ENERGY EFFICIENCY THROUGH TECHNOLOGY
- 30-50%

NET GREENHOUSE GAS EMISSION REDUCTION THROUGH TECHNOLOGY, H₂, SAF & OPERATIONAL MEASURES
- 100%

KEY IMPACTFUL TECHNOLOGIES FOR FLIGHTS OF LESS THAN 4000 KM
1. (HYBRID) ELECTRIC REGIONAL AIRCRAFT
2. ULTRA EFFICIENT SHORT/MEDIUM RANGE AIRCRAFT
3. HYDROGEN-POWERED AIRCRAFT

INVESTMENT

- €1.7B PLEDGED THROUGH HORIZON EUROPE
- €2.4B VIA EUROPE’S AERO INDUSTRY

= €4.1B TOTAL INVESTMENT

OPPORTUNITY

REPLACING OVER 40,000 AEROPLANES BETWEEN 2035-2050
= €5 TRILLION IN ECONOMIC VALUE

BRINGING TOGETHER THE WHOLE EU AERONAUTICS SECTOR

www.clean-aviation.eu
Clean Aviation – EASA contributions

- **Governance bodies**
  - Governing Board – observer
  - Technical Committee – member
  - Scientific Advisory Board – member

- **Programme level (upcoming)**
  - Contributions to impact monitoring
  - Common communication and dissemination activities
  - Advising on an integrated regulatory and certification approach

- **Clean Aviation projects**
  - Contributions to projects as third party

EASA is committed to support the Clean Aviation Programme and its projects

EASA and CAJU signed a new MoC to enable a close cooperation between both organisations
EASA Advisory role to Clean Aviation projects

→ Advise on certifiability and regulatory issues
  → The feasibility and of new concepts and technologies
  → New certification methods
  → Evolution of the regulatory material and industry standards
→ Ensure the development of complete and consistent standards through
  → Coordination amongst Agency panels for Clean Aviation projects, Innovation partnership and Pre-application contracts
  → Active involvement to standardisation bodies (e.g. ASTM, Eurocae, ICAO)
Thank you