

# H2 A/C Certification Challenges

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# A/C Certification

## The Legacy

- Today's Large Transport A/C Safety is the legacy of decades of experience, which has been progressively embedded into the current certification requirements, in particular design requirements (i.e. CS25.571 "Fatigue & Damage Tolerance", CS25.856b "Burnthrough"...)
- This legacy was focused on traditional design and architecture of kerosene A/C and CS25 is as a consequence based on a lot of assumptions linked to kerosene properties (i.e. liquid state at ambient temperatures, flammability characteristics...).
- The safe operation of the A/C and the border between operation and design requirements are also based on the past experience and on kerosene properties (i.e. maintenance, airport operations, refueling...)





# A/C Certification

## The challenges for Hydrogen

- Need to define requirements allowing to reach for H2 A/C the safety level of Kerosene A/C ...without decades of experience!
- Need to understand how hydrogen is affecting the hazards currently covered by the regulation, what are the new hazards to consider (i.e. cryo risk) and what are the consequences on design architecture and installation principles.
- Need to understand how the use of H2 may have an overall impact on the safe operation of the A/C and the border between design and operational requirements (i.e. liquid H2 refueling connector & procedure).





# H2 A/C Certification

## Impacts on the A/C integration

- Use of Hydrogen is obviously leading to the reconsideration of all the requirements related to fuel system, propulsion and propulsion integration
- A correlated effect is the impact on all safety aspects related to the risk of leak and H2 fire/explosion, cryo impingement...
- The next question will be to understand what could be the impacts beyond above aspects, on the overall A/C concept, for instance
  - How to certify an Hydrogen tank? Shall it be considered as a system, a structure, a mix of both?
  - Could the H2 phenomenology question the overall approach to cabin safety regulations?
  - Etc...



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# Thank you!