

Decarbonization in Aviation: Technologies in Development

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Introduction: Aciturri

Aerostructures & Aeroengine components

Tier1 :

- Family-run business funded in 1977
- Delivering to major a/c OEMs: Airbus, Airbus D&S, Boeing, Embraer...
- Delivering to major engines OEMs: Safran, ITP, Rolls Royce...



Aciturri & Hydrogen Challenge

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- Defined as diversification line within the group
 - Storage function highlighted as focus
 - Running activities for H₂ storage:
 - Compressed: ground and marine applications
 - Liquid: aviation applications
 - Continued interest in new collaborations



Aciturri Key H2 – Aviation Projects

- OVERLEAF as coordinator
- H2ELIOS as coordinator
- NEWBORN as partner

OVERLEAF



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- Coordinated by Aciturri
 - Low TRL technology development on structural and insulation materials
 - Laboratory testing of LH₂ storage solution focusing on:
 - High gravimetric index
 - Relatively long dormancy times with no need of external H₂ venting
 - **Intensive material testing performed at material level**
 - **Demonstrator at PDR status**
 - **LH₂/GH₂ performance analysis showing potential of concept**



Co-funded by
the European Union



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- Coordinated by Aciturri
 - LH₂ storage solution for **CS-25** / CS-23 application
 - Double layer low-pressure composite tank
 - Full scale demonstration at functional and structural level
 - Maturation up to TRL5 (on ground)
 - Enabling flight testing of larger size tanks in further steps
 - **FDR milestone completed for the demonstrator**
 - **Manufacturing technologies & material testing progress**
 - **H2 management subsystem architecture defined**



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- Aciturri as partner and hydrogen storage WP lead
 - WP objectives aimed to a deep integration of selected fuel-cell powerplant elements into the LH₂ tank
 - Functional testing including at complete system level from hydrogen supply to propeller

Main challenges

- Testing at cryogenic conditions, specific knowledge, lack of references => Capabilities being improved at Spanish/European level
- Knowledge gap in applicability of hydrogen technologies to specific aviation environment, safety uncertainties (crashworthiness) => Airworthiness specialists involvement, reinforcement of training and cross-feeding from other sectors
- Liquid hydrogen supply flexibility at testing scale => Increasing contact efforts
- Support in coordination of activities between projects regarding access to key testing assets

t(H₂)ank you

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