

CALL TOPIC	Pre-normative research on gaseous hydrogen transfer
START-DATE	1 June 2013
END-DATE	30 November 2014
TOTAL BUDGET	€3,100,000
FCH JU CONTRIBUTION	€1,600,000
OTHER CONTRIBUTION(S)	

PARTNERSHIP/CONSORTIUM LIST

Coordinator: Ludwig-Bölkow-Systemtechnik GmbH

Partners: Air Liquide SA, the CCS Global Group Limited, Raufoss Fuel Systems AS, Honda R&D Europe (Deutschland) GmbH, Joint Research Centre (JRC), Centre national de la recherche scientifique, Testnet Engineering GmbH.

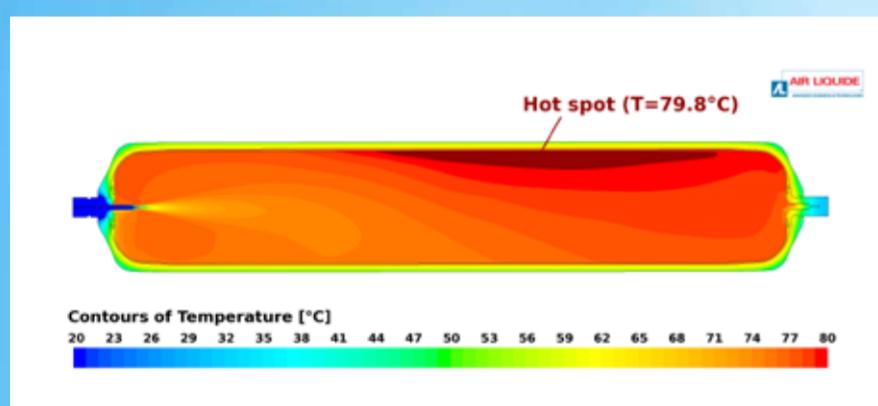
PROJECT WEBSITE/URL

www.HyTransfer.eu

PROJECT CONTACT INFORMATION

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MAIN OBJECTIVES OF THE PROJECT

HyTransfer aims to develop and experimentally validate a more practical approach for optimised fast filling of compressed hydrogen, meeting the material temperature limits of the tanks and taking into account the container and system's thermal behaviour.

This project seeks to create conditions for an uptake of the approach by international standards, for wide-scale implementation into refuelling protocols. The new approach will be thus evaluated and its benefits quantified with regard to performance, costs, and safety. Finally, recommendations for implementation into international standards will be proposed.

PROGRESS/RESULTS TO DATE

- CFD calculations for identifying the optimal spots for placing the thermocouples on the liner are concluded.
- Tanks including wrapped-in thermocouples are manufactured.
- Existing RCS and opportunities for improvements by the project are monitored.
- Detailed testing programme has been developed and is agreed and test facilities are preparing to start the test in the originally planned time slot.
- Simple modelling is in preparation.

FUTURE STEPS

- Carry out testing programme from September 2014
- CFD modelling of selected experiments in parallel for validation
- Development and validation of simple model sustaining energy-based fuelling process control criteria
- Techno-economical evaluation of results
- Prepare recommendations for RCS

CONCLUSIONS, MAJOR FINDINGS AND OUTLOOK

- Optimised and more efficient refuelling protocol
- Guidance and simple models for optimised temperature control during hydrogen transfer
- Reduction of HRS OPEX and CAPEX
- Increased reliability and lifetime of technical HRS components
- Recommendations for international RCS

CONTRIBUTION TO THE PROGRAMME OBJECTIVES

SOURCE OF OBJECTIVE/TARGET (MAIP, AIP)	ASPECT ADDRESSED	PROGRAMME OBJECTIVE/ QUANTITATIVE TARGET	PROJECT OBJECTIVES/ QUANTITATIVE TARGETS	CURRENT STATUS/ ACHIEVEMENTS TO DATE
AIP	Identification of opportunities for optimisation	Not specified	Not specified	Optimisation by focusing on heat transfer
AIP	Identification of existing RCS and opportunities for improvement	Not specified	Not specified	Work in progress
AIP	Improved approaches for carrying out the transfer with less pre-cooling	Not specified	Not specified	Work in progress
AIP	Recommendations for implementation in international standards	Not specified	Not specified	This will be the final result of HyTransfer
AIP	Evaluate the influence of tank construction on the maximum allowable filling speed	Not specified	Not specified	Tanks of three different sizes from two different manufacturers with two different liner materials were purchased and will be evaluated in three different labs concerning their thermal behaviour under a variety of filling conditions