



AD ASTRA

HARNESSING DEGRADATION MECHANISMS TO PRESCRIBE ACCELERATED STRESS TESTS

Project ID:	825027
Call topic:	FCH-04-3-2018 - Accelerated Stress Testing (AST) protocols for Solid Oxide Fuel Cells (SOFC)
PRD 2020 Panel:	6 - Support for Market Uptake
Project total costs:	€3 008 426
FCH JU max. contribution:	€3 008 426
Project start - end:	01/01/2019 - 31/12/2021
Coordinator:	AGENZIA NAZIONALE PER LE NUOVE TECNOLOGIE, L'ENERGIA E LO SVILUPPO ECONOMICO SOSTENIBILE, IT
Website:	www.ad-astrea.eu



BENEFICIARIES: SUNFIRE GMBH, SOLIDPOWER SPA, EIFER EUROPAISCHES INSTITUT FÜR ENERGIEFORSCHUNG EDF KIT EWIV, INSTITUTE OF ELECTROCHEMISTRY AND ENERGY SYSTEMS, UNIVERSITÀ DEGLI STUDI DI SALERNO, ÉCOLE POLYTECHNIQUE FÉDÉRALE DE LAUSANNE, UNIVERSITÀ DEGLI STUDI DI GENOVA, DANMARKS TEKNISKE UNIVERSITET, COMMISSARIAT À L'ÉNERGIE ATOMIQUE ET AUX ÉNERGIES ALTERNATIVES

PROJECT AND OBJECTIVES

The objective of AD ASTRA is the development of accelerated stress test (AST) protocols that allow quantitative identification and prediction of critical degradation mechanisms, correlating them with overall performance variables in selected SOC stack components (fuel electrode, oxygen electrode and interconnect). Numerous field-tested samples of SOC stacks provided by the industrial partners have been analysed for benchmarking, and testing and modelling methods based on ex-situ component ageing and aggravated stack testing have been proposed and initiated.

NON-QUANTITATIVE OBJECTIVES

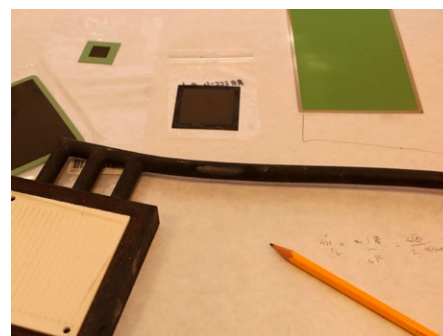
- Inclusion of degradation functions in mechanistic models, validated with experimental data
- Inventory of models has completed first approaches to degradation (stochastic and mechanistic/geometric) and field samples have been taken and analysed for benchmarking the first cycle of experimental procedures which have been agreed and are ongoing
- Remaining useful lifetime estimation in operando
- Interaction with INSIGHT to implement algorithms in AD ASTRA
- Preparation of an International Standard on Accelerated Testing
- Initiated an Ad Hoc Group in IEC-TC105.

PROGRESS AND MAIN ACHIEVEMENTS

- 26 field-tested SOC stack samples in both electrolysis and fuel-cell mode delivered for post-test analysis according to agreed protocols
- Online database set up for the collection of all data (sample identity details, test conditions, measurement results) in an indexed archive
- First experimental matrix defined and agreed covering all components, both in ex-situ and in-situ tests.

FUTURE STEPS AND PLANS

- Finalisation of first round of experiments, evaluation and definition of second cycle
- Evaluation of approach to superposition of aged components in pristine stack to isolate degradation effects from stack performance
- Submission of review article on degradation mechanisms in SOC
- Refinement of models describing different degradation mechanisms for inclusion in dynamic performance models
- Validation of procedures, description of transfer functions and submission of NWIP to IEC for standardisation.



QUANTITATIVE TARGETS AND STATUS

TARGET SOURCE	PARAMETER	TARGET	ACHIEVED TO DATE BY THE PROJECT	TARGET ACHIEVED?
Project's own objectives	Acceleration of lifetime	10 %	N/A	✗
	Published articles	2 for each WP 2, 3 and 4	2 for WP 3 and 1 for WP 5	
AWP [2018]	submission of NWIP to IEC for standardisation	1	Ad Hoc Group started in TC105	

Project ID: 826246

Call topic:

FCH-04-4-2018 - Strengthening public acceptance and awareness of FCH technologies by educating pupils at schools

PRD 2020 Panel: 6 - Support for Market Uptake

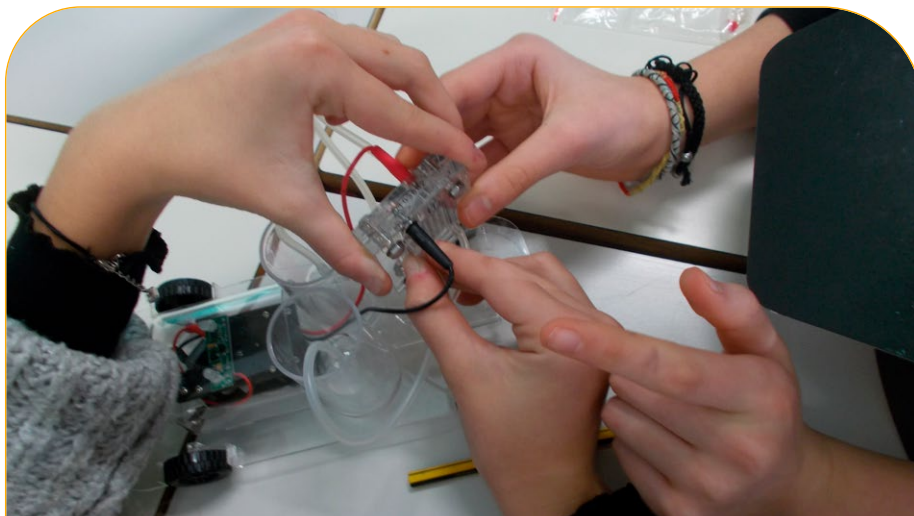
Project total costs: €502 499

FCH JU max. contribution: €502 499

Project start - end: 01/01/2019 - 31/12/2020

Coordinator: UNIVERSITA DEGLI STUDI DI MODENA E REGGIO EMILIA, IT

Website: fchgo.eu



BENEFICIARIES: STEINBEIS ZI GMBH, INEUROPA SRL, ZÜRCHER HOCHSCHULE FÜR ANGEWANDTE WISSENSCHAFTEN, UNIWEISYTET MIKOLAJA KOPERNIKA W TORUNIU, LIBERA UNIVERSITA DI BOLZANO, DANMARKS TEKNISKE UNIVERSITET

PROJECT AND OBJECTIVES

FCHgo aims to explain the functioning and application of FCH technologies and make young generations aware by providing an educational toolkit with a narrative approach, using a website as the connecting point for all users. A set of lessons for classroom teaching in 6 countries will be available, involving pupils from 8 to 18 years. FCHgo will also launch the first edition of an annual award for the best idea/solution for employing FCH. The first version of the FCHgo toolkit is already available, its testing in classrooms is under way, and the award has been launched.

NON-QUANTITATIVE OBJECTIVES

- The first version of the Educational Programme Delivery Model (EPDM) has been finalised. It comprises an educational toolkit which includes a set of guidelines, lessons, toys, games and videos to support educational activities in European schools. The EPDM is currently available in five languages
- The FCHgo award has been launched, providing the opportunity for all European students to propose their best idea for future FCH applications. The award is now running.

PROGRESS AND MAIN ACHIEVEMENTS

- First version of the FCHgo EPDM available
- Testing of the EPDM ongoing in all partner countries
- FCHgo award launched in February 2020.

FUTURE STEPS AND PLANS

- Completion of classroom activities
- Validation of the EPDM educational toolkit
- First edition of the FCHgo award, with more editions scheduled in future
- Launch of 'FCHgo at Home', a simplified version of the toolkit to be used from home in distance learning.

QUANTITATIVE TARGETS AND STATUS

TARGET SOURCE	PARAMETER	UNIT	TARGET	ACHIEVED TO DATE BY THE PROJECT	TARGET ACHIEVED?
Project's own objectives	Participation in educational activities	Pupils	800	1013	✓
	Website visitors	Numbers of visitors	3 000	2841	✗
	Number of likes/followers on social networks	Numbers of likes/followers	1 000	544	
	Participation in external events	Events	10	9	



HYDRAITE

HYDROGEN DELIVERY RISK ASSESSMENT AND IMPURITY TOLERANCE EVALUATION

Project ID: 779475

Call topic:

FCH-04-1-2017 - Limiting the impact of contaminants originating from the hydrogen supply chain

PRD 2020 Panel: 6 - Support for Market Uptake

Project total costs: €3 499 867.50

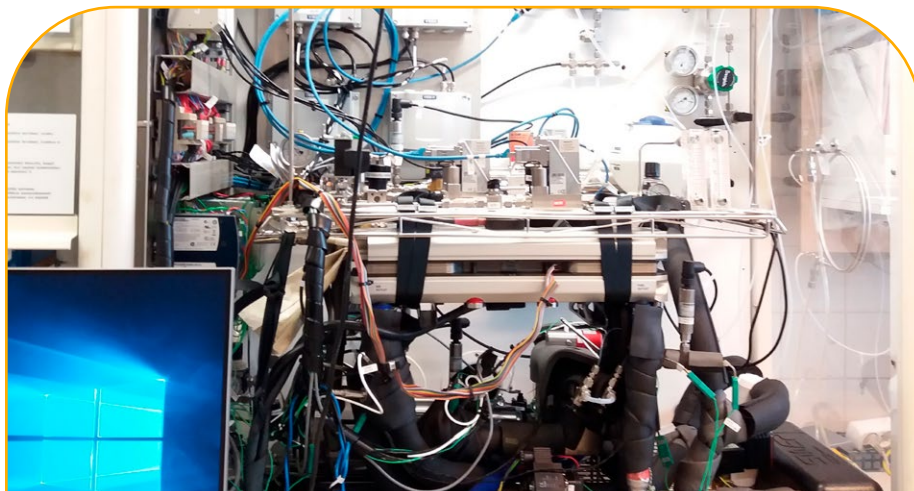
FCH JU

max. contribution: €3 499 867.50

Project start - end: 01/01/2018 - 31/12/2020

Coordinator: TEKNOLOGIAN TUTKIMUSKESKUS VTT Oy, FI

Website: hydraite.eu/



BENEFICIARIES: COMMISSARIAT A L ENERGIE ATOMIQUE ET AUX ENERGIES ALTERNATIVES, STIFTELSEN SINTEF, NPL MANAGEMENT LIMITED, ZENTRUM FÜR SONNENENERGIE- UND WASSERSTOFF-FORSCHUNG BADEN-WÜRTTEMBERG, POWERCELL SWEDEN AB, ZENTRUM FÜR BRENNSTOFFZELLEN-TECHNIK GMBH, SINTEF AS

PROJECT AND OBJECTIVES

The HYDRAITE project aims to solve the issue of hydrogen quality for transportation applications. The effect of contaminants, originating from the hydrogen supply chain, on the fuel cell systems in automotive applications are being studied. A HRS sampling campaign has been conducted. In-line monitoring of hydrogen quality at the HRS as well as a sampling strategy and methodology for new impurities, gas, particles and liquids, are evolving. Three European H₂ laboratories have been established, capable of measuring all of the contaminants according to ISO 14687 standards.

NON-QUANTITATIVE OBJECTIVES

- Recommendations for revision of ISO standard 14687
- Similar measurement set-ups of six partners ready, methodology validated, FC measurements started
- Recommendations for FC stack contaminant measurements in automotive-type operation
- Recommendations will derive from the successful measurement campaigns
- Technical data on fuel composition from HRS
- First HRS measurement campaign completed, external analysis completed, internal analysis and inter-laboratory comparison ongoing. The second SC will be achieved as soon as COVID-19 restrictions are eased
- In-line monitoring of hydrogen fuel quality
- The concept established for PEM-based sensor and HRS online quality monitoring
- Three European laboratories measuring the ISO contaminants
- Three laboratories set up with analytical methods compliant with ISO 14687.

PROGRESS AND MAIN ACHIEVEMENTS

- Set up of three European hydrogen quality laboratories, capable of full analysis according to EN 17124
- 1st HRS sampling campaign, 10 gas and particle samples collected from 8 different stations in Germany, Sweden and Norway
- Validating the methodology for studying the effect of impurities on FC stacks.

FUTURE STEPS AND PLANS

- FC measurements will be run as planned in the DoA by six project partners and the results reported.
- Recommendations will be formulated based on the experience and results from FC measurement campaigns
- 2nd HRS measurement campaign will be conducted
- Evaluation of the analytical solutions for in-line hydrogen fuel monitoring and development of a new sensor for in-line hydrogen fuel monitoring
- Three European H₂ quality laboratories will have their third and final inter-comparison.





HYTUNNEL-CS

PNR FOR SAFETY OF HYDROGEN DRIVEN VEHICLES AND TRANSPORT THROUGH TUNNELS AND SIMILAR CONFINED SPACES

Project ID:	826193
Call topic:	FCH-04-1-2018 - PNR for safety of hydrogen driven vehicles and transport through tunnels and similar confined spaces
PRD 2020 Panel:	6 - Support for Market Uptake
Project total costs:	€2 500 000
FCH JU max. contribution:	€2 500 000
Project start - end:	01/03/2019 - 28/02/2022
Coordinator:	UNIVERSITY OF ULSTER, UK
Website:	hytunnel.net/



BENEFICIARIES: INTERNATIONAL FIRE ACADEMY, UNIVERSITET I SOROST-NORGE, SERVICE PUBLIC FEDERAL INTERIEUR, PRO-SCIENCE - GESELLSCHAFT FÜR WISSENSCHAFTLICHE UND TECHNISCHE DIENSTLEISTUNGEN MBH, KARLSRUHER INSTITUT FÜR TECHNOLOGIE, FUNDACION PARA EL DESARROLLO DE LAS NUEVAS TECNOLOGIAS DEL HIDROGENO EN ARAGON, HEALTH AND SAFETY EXECUTIVE, STICHTING KONINKLIJK NEDERLANDS NORMALISATIE INSTITUUT, NATIONAL CENTER FOR SCIENTIFIC RESEARCH 'DEMOKRITOS', UNIVERSITA DEGLI STUDI DI ROMA LA SAPIENZA, DANMARKS TEKNISKE UNIVERSITET, COMMISSARIAT A L'ENERGIE ATOMIQUE ET AUX ENERGIES ALTERNATIVES

PROJECT AND OBJECTIVES

This pre-normative research project is aimed at the safety of hydrogen driven vehicles in underground infrastructure. The project will synthesise analytical, numerical and experimental research to produce:

- recommendations for intervention strategies and tactics for first responders;
- recommendations for safer use of hydrogen vehicles in underground transportation systems;
- recommendations to RCS.

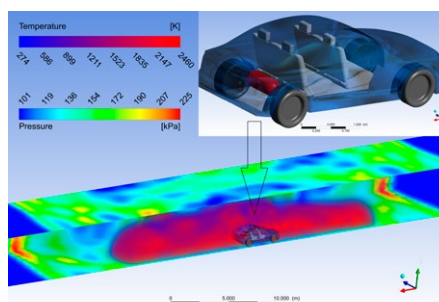
HyTunnel-CS will reduce over-conservatism in infrastructure safety design for hydrogen accidents and save costs of the underground systems. The outcomes could be directly implemented in relevant RCS.

NON-QUANTITATIVE OBJECTIVES

- FCEV entering tunnels at risk equal to/below fossil fuel vehicles
- Being addressed by considering tunnel-vehicle as a system through experimental, theoretical and numerical studies.

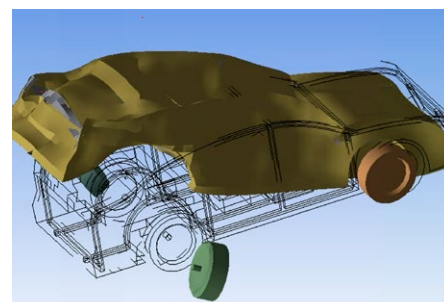
PROGRESS AND MAIN ACHIEVEMENTS

- Fulfilled safety analysis for underground transportation (D1.1, D1.2), prioritisation of accident scenarios (D1.3), identified RCS for input (D1.4)
- Fulfilled experimental programme on ignited and unignited pressure peaking (USN), mechanical ventilation effect on hydrogen release dispersion (PS)
- Completed ~50 % of analytical and numerical research programme. Project progress communicated at stakeholders' workshop (220+ registered participants).



FUTURE STEPS AND PLANS

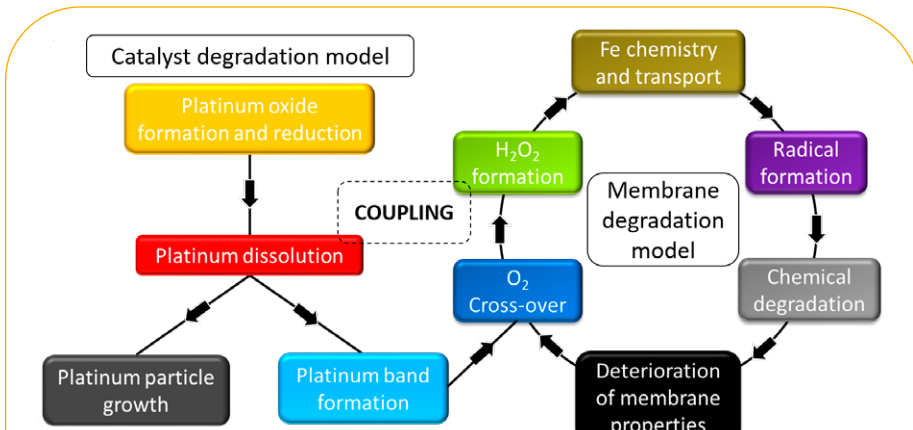
- Analytical and numerical campaign: finalisation of the remaining analytical studies, validation of CFD simulations
- Experimental campaign: fulfilling experimental programme on hydrogen releases, fires and deflagrations
- Communication campaign: dissemination of results via workshop on emergency services, dissemination conference
- Recommendations for inherently safer use of hydrogen vehicles (M34), for RCS (M35), and for response to hydrogen accidents (M36).



QUANTITATIVE TARGETS AND STATUS

TARGET SOURCE	PARAMETER	TARGET	ACHIEVED TO DATE BY THE PROJECT	TARGET ACHIEVED?
Project's own objectives	Modelling and simulation campaigns	30	15	✗
	Experimental campaigns	20	3	
	Two seminars (M6, M30), two workshops (both M15), dissemination conference (M36)	5	2	
	Recommendations for: safer use of hydrogen vehicles, RCS, response to hydrogen accidents	3	0	

Project ID:	779565
Call topic:	FCH-04-5-2017 - Definition of Accelerated Stress Testing (AST) protocols deduced from understanding of degradation mechanisms of aged stack components in Fuel Cell systems
PRD 2020 Panel:	6 - Support for Market Uptake
Project total costs:	€2748 195
FCH JU max. contribution:	€2748 195
Project start - end:	01/01/2018 - 31/12/2020
Coordinator:	COMMISSARIAT A L'ENERGIE ATOMIQUE ET AUX ENERGIES ALTERNATIVES, FR
Website:	id-fast.eu/



BENEFICIARIES: SYMBIO, FREUDENBERG PERFORMANCE MATERIALS SE & CO KG, FREUDENBERG TECHNOLOGY INNOVATION SE & CO KG, BAYERISCHE MOTOREN WERKE AKTIENGESELLSCHAFT, ZENTRUM FÜR SONNENENERGIE- UND WASSERSTOFF-FORSCHUNG BADEN-WÜRTTEMBERG, POLITECNICO DI MILANO, DEUTSCHES ZENTRUM FÜR LUFT - UND RAUMFAHRT EV, FRAUNHOFER GESELLSCHAFT ZUR FÖRDERUNG DER ANGEWANDTEN FORSCHUNG EV

PROJECT AND OBJECTIVES

ID-FAST targets the deployment of PEMFC for automotive application, thanks to specific accelerated stress tests and a methodology for durability prediction. The core focus is on understanding degradation and validation of new ASTs relating to in-/ex-situ and modelling data. Post-mortem analyses are conducted on samples aged in either real (with new drive cycles) or accelerated conditions. Models of single mechanisms, first couplings and simulations of different ageing are available, as well as experiments to study stressors. In the next period, more ageing on stacks and new multi-mechanism ASTs will be assessed.

NON-QUANTITATIVE OBJECTIVES

- Identification of real ageing mechanisms and impact of conditions
- Post-mortem analyses available from real stacks. Tests and stressors defined for stack ageing and for single cells to mimic local ageing in stack
- Development of models and coupling of mechanisms for AST simulation
- GDL degraded properties and impact of catalyst degradations simulated. Coupling of several models achieved. Bases for simulations of ASTs available

- Development and validation of specific and combined AST protocols
- Analyses done on new AST proposed for start-up and protocols developed for GDL ageing. Combined tests with different conditions and profiles applied
- Proposal of transfer functions relating accelerated to real degradation
- Comparison between real ageing conditions and accelerated conditions started for some mechanisms – further analyses needed on combined protocols
- Support to standardisation efforts on fuel cell testing related to ASTs
- First exchanges with IEC TC105 started in 2019 with a preliminary presentation of the AST approach, in collaboration with the SOFC project AD ASTRA.

PROGRESS AND MAIN ACHIEVEMENTS

- Post-mortem determination of local degradations and impact of ageing conditions, profiles or specific stressors applied in real stacks or single cells
- Advances in methods to mimic real states in stack and in diagnostics of catalyst layer-related reversible and irreversible electrochemical losses
- Assessment of new protocols defined for ageing gas

diffusion layers in operando and for simulating start-up by coupling modelling and experiments.

FUTURE STEPS AND PLANS

- Collecting more controlled real-ageing data on reference stacks. Improving diagnostics for quantification of losses due to multi-mechanism degradation
- Proposal of combined ASTs based on experiments/models; in single cells, check their impact on degradation rates and define transfer functions
- Achievement of all couplings (>two mechanisms). Integration of simplified models in the macroscopic code; long-time simulations of all mechanisms
- Starting the validation process: post-mortem comparison of data between AST and real ageing for different MEAs, cells and stacks and AST refinement
- Extend the approach to metallic bipolar plates as far as possible with specific analyses and tests to be defined/applied in a dedicated single cell.

QUANTITATIVE TARGETS AND STATUS

TARGET SOURCE	PARAMETER	UNIT	TARGET	TARGET ACHIEVED?	SOA RESULT ACHIEVED TO DATE (BY OTHERS)	YEAR FOR SOA TARGET
Project's own objectives	Accelerated degradation rate	µV/h	>100µV/h (to be confirmed)	✗	N/A	
	Acceleration factor		2 to 10	✗		
	Acceleration factor		2 to 10	✗	Single mechanisms AST available for CCM components (ex: from DoE labs)	2018 and before
	Ageing protocols	N/A	New (more representative of real ageing)	✓	e.g. FC-DLC	<2018
	Reduction of the gap in degradation understanding		Improvement	✓	Analyses of MEAs degradation mechanisms (exp. and model)	<2020
	Transfer function between real ageing and accelerated ageing		Relation defining the relative impact of real and accelerated ageing on the degradation rates	✗	N/A (limited SoA on combined AST representative of the real world)	N/A



NET-TOOLS

NOVEL EDUCATION AND TRAINING TOOLS BASED ON DIGITAL APPLICATIONS RELATED TO HYDROGEN AND FUEL CELLS

Project ID: 736648

Call topic: FCH-04-1-2016 - Novel Education and Training Tools

PRD 2020 Panel: 6 - Support for Market Uptake

Project total costs: €1 596 007.50

FCH JU max. contribution: €1 596 007.50

Project start - end: 01/03/2017 - 29/02/2020

Coordinator: KARLSRUHER INSTITUT FUER TECHNOLOGIE, DE

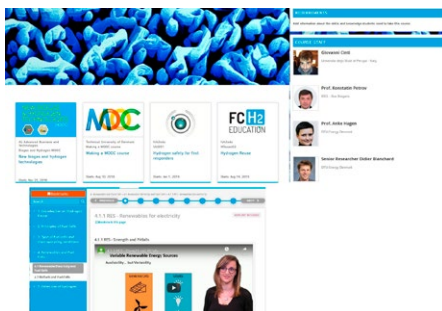
Website: www.h2fc-net.eu



BENEFICIARIES: PERSEE, ELEMENT ENERGY LIMITED, INSTITUTE OF ELECTROCHEMISTRY AND ENERGY SYSTEMS, UNIVERSITA DEGLI STUDI DI PERUGIA, UNIVERSITY OF ULSTER, NATIONAL CENTER FOR SCIENTIFIC RESEARCH 'DEMOKRITOS', DANMARKS TEKNISKE UNIVERSITET

PROJECT AND OBJECTIVES

Development of novel education and training e-tools based on digital applications related to hydrogen and fuel cell technology. Development of respective e-platform (database) to provide developed educational materials and foster free use of e-learning materials and further cooperation in this respect. Development of technical infrastructure and e-tools provided within an e-laboratory is finished. E-learning materials to be developed further in continuous process; dissemination and promotion of archived digital e-educational materials close to being finished and business concept under development.



NON-QUANTITATIVE OBJECTIVES

- Deliver an open-source-based e-infrastructure dedicated to FCH knowledge and science able to connect existing knowledge and easily integrate or support the production of a new one - fully achieved
- Implement a digital laboratory workspace - fully achieved
- Consolidate existing e-education and e-knowledge - achieved, but will be improved further
- Support the development of novel training delivery method mixing conventional and digital practices - fully achieved and disseminated by educational schools and webinars (use of e-tools within the e-laboratory)
- Engage with and gain traction from a wide community of companies and universities - achieved and disseminated by an educational school, with further educational school and specific webinars planned.

PROGRESS AND MAIN ACHIEVEMENTS

- Development of technical infrastructure successfully finished and in operation to provide and work with the e-tools and e-learning materials developed
- All calculation tools developed fully and tested as regards their correctness. e-tools were compiled within the respective e-laboratories and are in operation
- Specific e-learning materials developed and in use; continuous development and provision of additional e-learning materials in progress.

FUTURE STEPS AND PLANS

- Execution of the 2nd educational school to introduce into the e-laboratory and its use as well as in the developed e-learning materials
- Execution of 2-3 webinars instead of 'flying teachers' to introduce those interested into the opportunities provided by the e-learning portal and contents
- Development of the business concept and opportunities to run the e-infrastructure (e-laboratory and e-learning) beyond the project
- Finalisation of pre-developed e-learning materials (course content) as so-called MOOCs and compilation of additional ones.

QUANTITATIVE TARGETS AND STATUS

TARGET SOURCE	PARAMETER	TARGET	ACHIEVED TO DATE BY THE PROJECT	TARGET ACHIEVED?
Project's own objectives	e-tools	36	36	✓
	e-courses as MOOCs	3	3	✓
	People trained	300	nearly 200	✗

Project ID: 779613

Call topic: FCH-04-4-2017 - PNR for a safe use of liquid hydrogen

PRD 2020 Panel: 6 - Support for Market Uptake

Project total costs: €1 905 862.50

FCH JU max. contribution: €1 724 277

Project start - end: 01/01/2018 - 31/12/2020

Coordinator: KARLSRUHER INSTITUT FUER TECHNOLOGIE, DE

Website: preslhy.eu



BENEFICIARIES: INTERNATIONAL ASSOCIATION FOR HYDROGEN SAFETY, PRO-SCIENCE - GESELLSCHAFT FÜR WISSENSCHAFTLICHE UND TECHNISCHE DIENSTLEISTUNGEN MBH, HEALTH AND SAFETY EXECUTIVE, UNIVERSITY OF ULSTER, INSTITUT NATIONAL DE L'ENVIRONNEMENT ET DES RISQUES INERIS, L'AIR LIQUIDE SA, THE UNIVERSITY OF WARWICK, NATIONAL CENTER FOR SCIENTIFIC RESEARCH 'DEMOKRITOS'

PROJECT AND OBJECTIVES

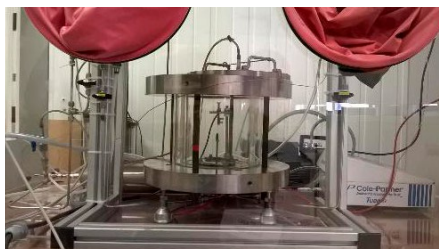
PRESLHY conducts pre-normative research for the safe use of cryogenic LH₂ in non-industrial settings. The work programme consists of a preparatory phase, where the state of the art before the project has been summarised and the experimental planning was adjusted to the outcome of a research priorities workshop. The central part of the project consists of three phenomena-oriented work packages addressing release, ignition and combustion with analytical approaches, experiments and simulations. The results will improve the general understanding and provide recommendations for SDOs.

PROGRESS AND MAIN ACHIEVEMENTS

- Workshop on LH₂ safety jointly organised with SH2IFT project on 6 March 2019 in Bergen, Norway, with strong participation from the international industry
- State-of-the-art reports published and 75 % of experimental programme finished successfully
- Establishment of the Preliminary Working Item PWI24077 for the safe use of LH₂ in non-industrial settings under the ISO TC 197.

FUTURE STEPS AND PLANS

- Second LH₂ safety workshop organised jointly with Norwegian project SH2IFT in December 2020
- Turn PWI24077 into a NWIP for the December 2020 meeting of ISO TC 197
- Organise a dissemination conference in April 2021.



QUANTITATIVE TARGETS AND STATUS

PARAMETER	TARGET	ACHIEVED TO DATE BY THE PROJECT	TARGET ACHIEVED?
Review/development of standard initiated	1	1	✓
Number of publications in peer-reviewed journals	N/A	8	✗
Presentation at conferences	N/A	5	
RCS-developing organisations contacted	3	4	✓



TEACHY

TEACHING FUEL CELL AND HYDROGEN SCIENCE AND ENGINEERING ACROSS EUROPE WITHIN HORIZON 2020

Project ID: 779730

Call topic: FCH-04-3-2017 - European Higher Training Network in Fuel Cells and Hydrogen

PRD 2020 Panel: 6 - Support for Market Uptake

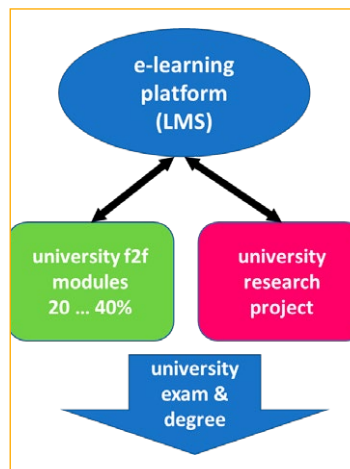
Project total costs: €1 248 528.75

FCH JU max. contribution: €1 248 528.75

Project start - end: 01/11/2017 - 31/10/2020

Coordinator: THE UNIVERSITY OF BIRMINGHAM, UK

Website: www.teachy.eu



BENEFICIARIES: DANMARKS TEKNISKE UNIVERSITET, UNIVERSITE LIBRE DE BRUXELLES, POLITECNICO DI TORINO, TECHNISCHE UNIVERSITEIT DELFT, ECOLE POLYTECHNIQUE FEDERALE DE LAUSANNE, UNIVERSITY OF ULSTER, INSTITUT POLYTECHNIQUE DE GRENoble, VYSOKA SKOLA CHEMICKO-TECHNOLOGICKA V PRAZE, UNIVERSITATEA POLITEHNICA DIN BUCURESTI, NATIONAL TECHNICAL UNIVERSITY OF UKRAINE IGOR SIKORSKY KYIV POLYTECHNIC INSTITUTE, KARLSRUHER INSTITUT FUER TECHNOLOGIE

PROJECT AND OBJECTIVES

TeachHy is establishing a blended learning master's course in fuel cell and hydrogen (FCH) technologies. This can be delivered at any university, as long as minimal requirements are met locally. TeachHy supports universities in supplying teaching content and assisting with the implementation of the course. The TeachHy material will be partly available in several European languages thereby facilitating students' access to the material, and helping to build local terminology in FCH technologies. TeachHy will be using the material developed for professional training (e.g. CPD).



NON-QUANTITATIVE OBJECTIVES

- Supplying teaching content for blended learning mainly achieved, with scope for improvement
- Building a business model for the sustainability of the project post-funding
- Draft completed and under discussion
- Forming an IASBL to support the delivery post-funding in preparation to support vocational training programmes
- This goes beyond CPD training, reaching into more continuous educational programmes for industry.

PROGRESS AND MAIN ACHIEVEMENTS

- The teaching content has been established and uploaded to the UoB LMS
- First modules have been translated
- Accreditation documentation for UoB has been completed.

FUTURE STEPS AND PLANS

- An extension will be sought to complete the accreditation at UoB
- An extension will be sought to complete the accreditation at several other universities (UCPT, ULB, TUD/RUG, etc.)
- Marketing activities will be started to gain associated members accrediting the course
- Expanding activities into vocational training (beyond CPD sort courses).



QUANTITATIVE TARGETS AND STATUS

TARGET SOURCE	PARAMETER	TARGET	TARGET ACHIEVED?
Project's own objectives	Establish online teaching content for MSc level	Content defined	✓
	Fully develop teaching content on LMS site	Content uploaded	✗
	Accreditation at university	Accreditation for academic year 2020/21	✓
	Modification of teaching content for CPD courses	First course use in 2020	✗