

TeachHy

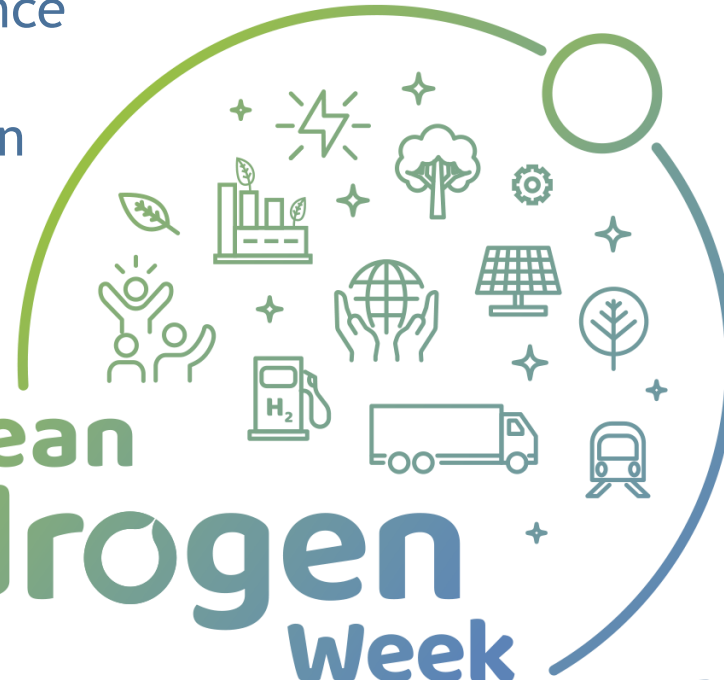
Teaching Fuel Cell and Hydrogen Science

and Engineering Across Europe within

Horizon 2020



European
Hydrogen
Week



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#PRD2021
#CleanHydrogen



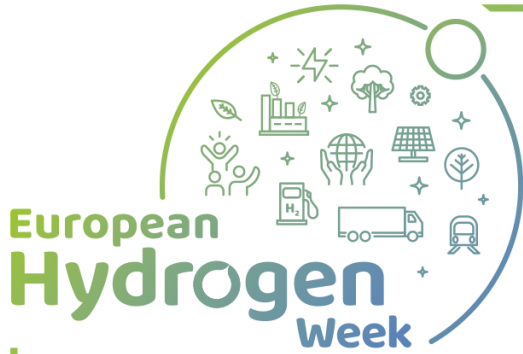


TeachHy Overview



- Call year: 2017
- Call topic: FCH-04-3-2017
- Project dates: 01.11.2017 - 31.10.2022
- % stage of implementation 01/11/2021: 85 %
- Total project budget: 1 248 528 €
- FCH JU max. contribution: 1 289 658 € / Other financial contribution: 1 000 000 €
- Partners: University of Birmingham, Technical University of Delft, Politecnico di Torino, National Technical University of Ukraine 'Kyiv Polytechnic Institute' - KPI, Denmark Technical University - DTU, University of Chemistry and Technology, Prague - UCPT, École Polytechnique Fédérale de Lausanne - EPFL, Université libre de Bruxelles - ULB, University POLITEHNICA of Bucharest, Grenoble institute of technology - INP, Ulster University, Karlsruhe Institute of Technology - KIT





TeachHy - Teaching Fuel Cell and Hydrogen Science and Engineering Across Europe



Objectives

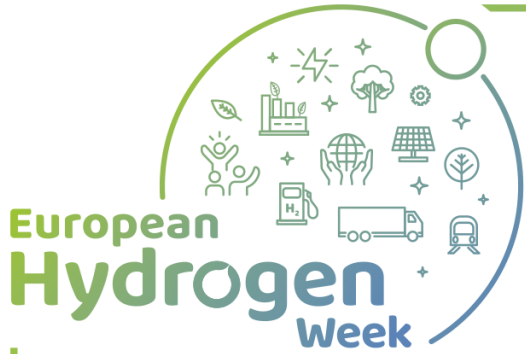
- establishing a blended learning MSc course to be delivered by a network of European universities
- establishing a focal point of advanced education in FCH technologies
- offering CPD and public educational materials and certified professional courses
- developing means of offering virtual and distance access to laboratory facilities
- implement public-facing material on the NET-Tools platform
- offering subscription/licensing of universities to the TeachHy concept

State of the Art

- no comparable online or blended learning offerings

MAWP Reference

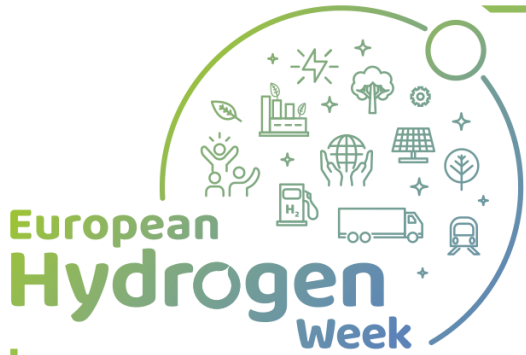
- none – education only mentioned in one paragraph, mainly aimed at safety and RCS



The Challenge TeachHy meets



- many universities cover single topics in FCH in courses such as Physics and Chemistry (thermodynamics, electrochemistry), Chemical & Mechanical engineering etc.
 - within the EU only one (!) university offered an FCH MSc degree
 - many universities are willing to contribute to FCH MSc programmes but can only cover about ~30% of the necessary lecturing material and capacity
 - a number of 50 to 200 university MSc courses are needed to cover the HR demands by 2030 (~50,000 trained engineers/scientists)
- how can the missing ~70% of teaching be supplied?
- how can quality of teaching be assured in a high number of newly developed programmes?



Implementation on LMS



Achievement to-date

0%



100%

25%

50%

75%

Accomplished

- modules recorded, implemented, and accredited on CANVAS LMS at UoB
- MSc programme started at UoB on 26/09/2021
- hybrid course delivery at Groningen University, Grenoble INP, EPFL, Kyiv Polytecnic

Ongoing

- testing on different LMS platforms (CANVAS, Blackboard, etc.)
- translation of material (Romanian, German, French)
- accreditation at Prague University for Chemical Technology (UCTP)

Outstanding

- accreditation at multiple universities



The screenshot shows a web browser with two tabs. The active tab is titled 'C2 - 2 Basic Introduction to Electrochemistry' and displays a Canvas LMS page. The page has a dark sidebar on the left with navigation options like Home, Announcements, Assignments, Discussions, People, Pages, Files, Syllabus, Outcomes, Quizzes, Modules, Conferences, Collaborations, Attendance, Chat, SCORM, Panopto, and Settings. The main content area features a blue header 'Learning outcomes' with a bulleted list:

- A recap of the previous module on Electrochemistry & Thermodynamics
- Applied to fuel cells and electrolysis

Below the text is a video player showing a presentation slide. The slide content includes:

Centre for Fuel Cell and Hydrogen Research
School of Chemical Engineering
University of Birmingham, UK

UNIVERSITY OF BIRMINGHAM

the European MSc course in FCH Technologies

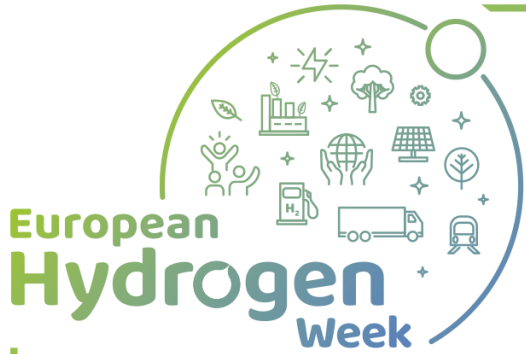
2021-09-15 12:01:55

Powered by Panopto

At the bottom of the page, there is a table with three rows:

Resources	Presentation slide set: Thermodynamics, Electrochemistry and Principles
References	Further reading: Frano Barbir. PEM Fuel Cells: Theory and Practice. 2nd edition, Elsevier, 2013. Disclaimer: We do not endorse any of the content linked here, but point it out as additional information for student self-studies.
Quiz	Quizzes for 1.1.1.





Risks, Challenges and Lessons Learned

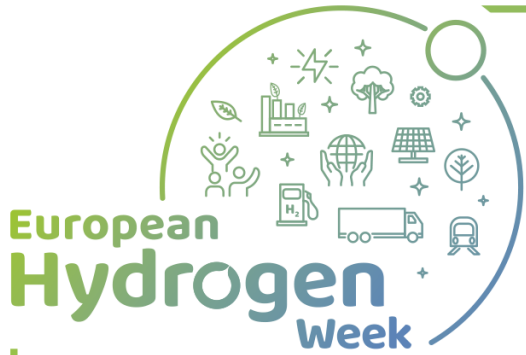


Accreditation procedures

- diversity of accreditation models at universities
- reluctance of university administrations to accept external contributions
- 'ownership' of modules

Financial issues

- divergence of university financing models and tuition charges
- reluctance of funding of educational activities - resulting in underfunding, considerable unpaid and unrecognised university input



Exploitation Plan/ Expected Impact



Exploitation

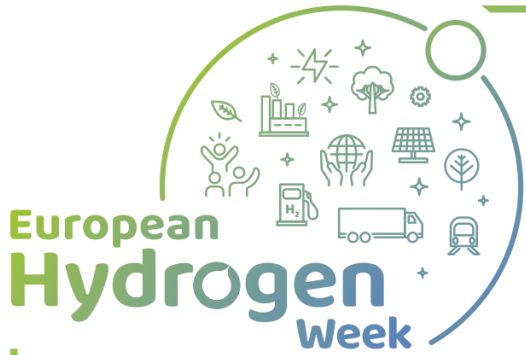
- roll-out of the MSc course implementation to the associated partner network
- establish a post-project business entity to maintain and update educational material database
- implement CPD offerings
- cooperation with various entities for teaching and CPD:
industry, regional and local governments, industry associations, colleges

Impact

- allow access to MSc- and professional level FCH educational material across EU
- opportunity for a multitude of universities to offer FCH-related courses and specialisation
- adaptation of university-course material to technician training and CPD
- broader public, stakeholders and politician education



dedicated web site
www.TeachHy.eu
with blog and regular newsletter



Synergies With Other Projects And Programmes



Interactions with projects funded under EU programmes

- TrainHy – MSc course based on syllabus developed by TrainHy
- HySafe – Hydrogen safety module from HySafe
- KnowHy – blended learning and CPD approach



Interactions with national and international-level projects and initiatives

- IPHE – Educational Activities
- EPSRC Supergen H2FC Hub – use of Educational Portal
- T.I.M.E. network – network partners



International Partnership
for Hydrogen and Fuel Cells
in the Economy



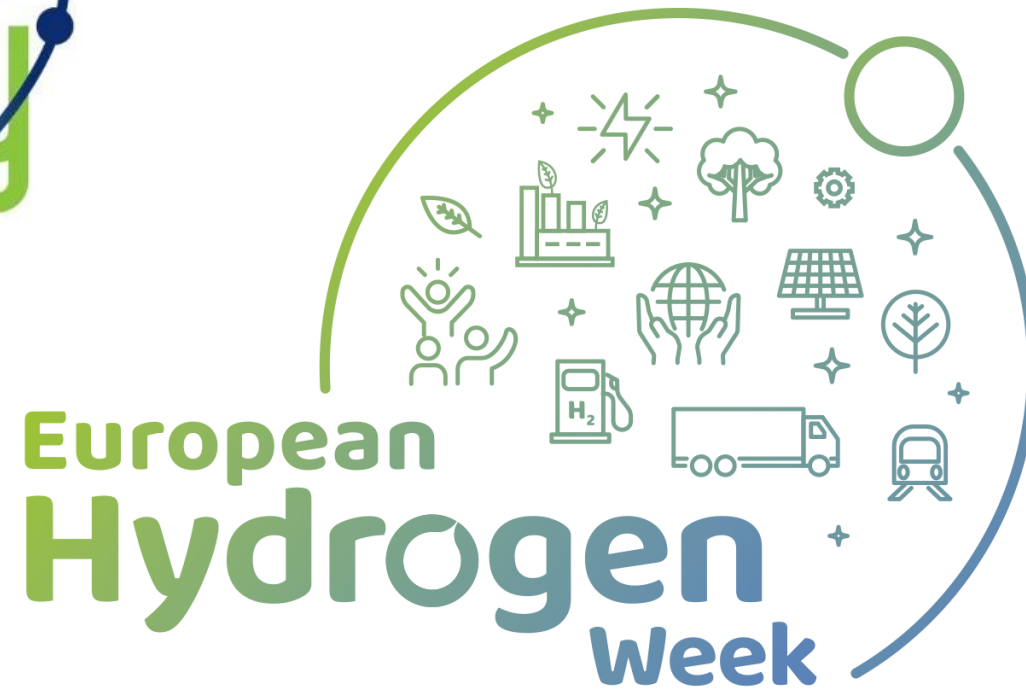
Interactions with private projects and initiatives

- JESS – Joint European Summer School – cooperation on module development and delivery



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