**Grant agreement number: 779730**

WP8: Project promotion and Dissemination

**Deliverable D8.1: Website construction**

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| Issue Date | Version | Changes Made/Comments | Author(s) |
|---|---|---|---|
| V1.0 | 02/01/2018 | First draft, all major information about site structure and content provided and described | V. Shentsov, D. Makarov, V. Molkov (UU) |
| V2.0 | 26/01/2018 | Second draft, updated figures, logo, template and features such as subscription and hit counter added | V. Shentsov, D. Makarov, V. Molkov (UU) |
| V2.1 | 26/01/2018 | Corrections provided by UBHAM | N. Al-Mufachi (UBHAM) |
| V2.2 | 26/01/2018 | Final version compiled | V. Shentsov |
| V3.0 | 30/11/2019 | Revision | RSW |
| V3.1 | 20/07/2021 | EU funding statement amended as per review request<br><br>resolution of Figs 2 & 3 improved | RSW |

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# Table of Contents

## About TeacHy

As the FCHT industry gradually emerges into the markets, the need for trained staff becomes more pressing. TeacHy2020, or short TeacHy, specifically addresses the supply of undergraduate and graduate education (BEng/BSc, MEng/MSc, PhD etc.) in fuel cell and hydrogen technologies (FCHT) across Europe.

TeacHy2020 will take a lead in building a repository of university grade educational material, and design and run an MSc course in FCHT, accessible to students from all parts of Europe. To achieve this, the project has assembled a core group of highly experienced institutions working with a network of associate partners (universities, vocational training bodies, industry, and networks). TeacHy offers these partners access to its educational material and the use of the MSc course modules available on the TeacHy site. Any university being able to offer 20 to 30% of the course content locally, can draw on the other 80 to 70% to be supplied by the project (and its successor entity that will support the platform post-project).

This will allow any institution to participate in this European initiative with a minimised local investment. TeacHy will be developing solutions to accreditation and quality control of courses, and support student and industry staff mobility by giving access to placements. Schemes of Continuous Professional Development (CPD) will be integrated into the project activities. We expect a considerable leverage effect which will specifically enable countries with a notable lack of expertise, not only in Eastern Europe, to quickly be able to form a national body of experts.

TeacHy will offer some educational material for the general public (e.g. MOOC's), build a business model to continue operations post-project, and as such act as a single-stop shop and representative for all matters of European university and vocational training in FCHT. The project partnership covers the prevalent languages and educational systems in Europe. The associated network has over 70 partners, including two IPHE countries, and a strong link to IPHE activities in education.

# 1 Deliverable Abstract & Aims

The TeacHy project website has been developed and maintained by TeacHy consortium member Ulster University. The website [www.teachy.eu](www.teachy.eu) constitutes an actual deliverable as per the description of work (DoW). The TeacHy homepage was publically available in month 1 of the project. The website consists of two main areas:

- The public area of the website, which contains publicly available information related to the project i.e. information about the project and partners, events, newsletters etc.
- The internal area of the website called *Members Area* protected with a user name and a password.

The deliverable describes the structure and content of the web site and the Member section functionalities.

# 2 Public area of the website

The TeacHy project website has been developed and is maintained by TeacHy consortium member Ulster University. The website www.teachy.eu is hosted externally at www.123-reg.co.uk. The TeacHy homepage has been publically available from Month 1 of the project (Nov 2017).

The website consists of two main areas:

- The public area of the website, which contains publicly available information related to the project, i.e. information about the project and partners, course content, events, educational links, newsletters etc.; it also supplies access to the project deliverables with a status 'public' (once they are accepted by the FCH JU).
- The internal area of the website called *Members Area is* protected with a user name and a password. This confidential area serves as an internal communication platform for the partners, to share project deliverables, modules, meeting agenda/minutes and other documents related to the project.
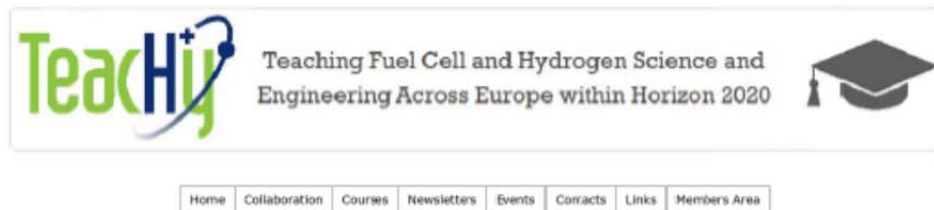
*The public area of the website is the main source of information about the TeacHy project for all interested persons and stakeholders. The main content of the website is subdivided into eight sections in the navigation bar. Seven sections can be accessed by the public. The homepage introduces interested users to the project (see*

Figure 1). It also contains announcements and any relevant new information about all events. The *Members Area* provides an access to the internal communication area of the website and available only to the project partners.

Each page of the website has four areas: a header surrounded with a grey frame and containing the TeacHy logo; a navigation bar; information related to a selected menu/sub-menu and a footer. The navigation bar has eight tabs. When a cursor is placed on each tab, a drop-down menu (and sub-menus) opens. This area is surrounded by a grey frame. The functionality of the navigation bar is detailed below.

- ***Home*** tab has four menu items:
  - ○ *About TeacHy*. This sub-menu describes the objectives and outcomes of the project. The project flyer can be downloaded here and the FCH JU and Horizon2020 web pages are linked here
  - ○ *Participants*. This sub-menu lists and provides the details of the organisations involved in the TeacHy project.
  - ○ *Deliverables*. This sub-menu lists the deliverables accessible to the public. The visitors will be able to download all final versions of public deliverables once they have been accepted by the FCH JU.
  - ○ *Milestones*. This sub-menu lists the milestones within the project.

- ***Collaboration*** tab: links to NET-tools and the virtual laboratory suite there.
- ***Courses*** tab: provides detailed information on the content of the course syllabus and the module content.

- **Newsletter** tab: As per the DoW, it will provide access to the quarterly newsletter with regular updates on project progress, results and courses to be conducted.

- **Events** tab: advertises relevant forthcoming events and lists all past events e.g. project meetings, dissemination activities etc. where information is available via a web link
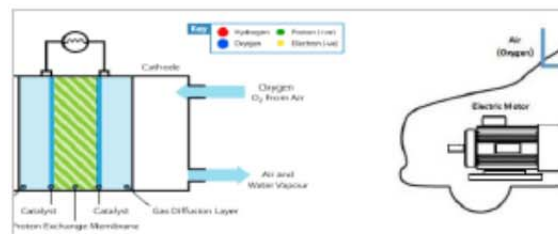- **Contacts** tab. This section enables website users to contact either the Project Coordinator or the Website Administrator via email.



*Figure 1. Screenshot of the www.teachy.eu homepage.*

- *Links* tab consists of seven menu items:
  - *Education and training.*
    - *linking to various resources related to educational activities, such as the JESS Summer School and the Education Portal offered by the University of Birmingham*
  - *Hydrogen safety.*
  - *Associations.*
  - *Projects.*
  - *Databases.*
  - *Vehicle and fuelling stations.*
  - *RCS (Regulations Codes and Standards.* This menu refers to the relevant Regulations, Codes and Standards in the field of hydrogen in three sub-menus:
    - *Regulations,*
    - *Standards*
      - *ISO, IEC, EIGA, NFPA, SAE, CGA, ASME, CSA*
    - *Codes/best practices.*
  This section provides links to other websites: Hydrogen safety related websites; HFC Associations; Hydrogen related projects; Databases; Vehicles and Fuelling Stations; Education and training; and RCS.
- *Members* tab. Only this area of the TeacHy website is protected with a username/ password.

Below the header and the navigation bar, the information related to a selected menu/sub-menu is displayed. It provides: text and pictures related to the TeacHy project, links to external websites and links to documents (deliverables, events, etc.). This area is surrounded by a grey frame. The main page contains a subscribe button prompting visitors to subscribe for the newsletter.

The footer in made of four links. The first link "**Home"** redirects users to the homepage of the website, the second link redirects users to the subscribe page, the third link redirects to the section **"Contact us"** and the fourth link redirects users to the page "**General disclaimer"**.
Below the links there is hit counter located to trace the number of hits the webpage has received. The counter will be incremented by one every time the webpage is accessed in a web browser by a user.
There are also references to the main funding body of the project, the contract number, the logo of the EC and the FCH 2 JU are included as well in the footer.

The visitors of the website have the possibility to download the final versions of the public deliverables and to get access to the demo version of the course material developed within the project.

# 3  Course Content Display

Under the 'Courses' tab on the main page visitors can see the overview of the course syllabus as shown below with the compulsory, optional and additional modules.

## List of modules

**Compulsory**

Thermodynamics (KIT), electrochemistry (KIT, BAS-IEES, INP), chemistry (KIT)

Introduction to fuel cells

Hydrogen (production, storage, handling), fuels (P2G, P2X), electrolysers

Fuel cell modelling tools (POLITO, Grenoble INP) and control

Characterisation methods

Lab experience

Hydrogen safety

**Optional**

Environmental analysis, life cycle analysis

Low temperature fuel cells (materials, stacks, thermodynamics, electrochemistry, chemistry)

High temperature fuel cells (materials, stacks, thermodynamics, electrochemistry, chemistry)

Low temperature systems

High temperature systems

Advanced characterisation

High temperature chemistry for SOFCs/SOEs

Fuel cell electric vehicles

Politics, markets, regulation, codes and standards

Energy systems and storage

Advanced modelling

**Additional**

Electrocatalysis

*Figure 2. Screenshot of the course syllabus overview page.*

Each headline contains a link that leads on to the specific module and a more detailed description of the module content as seen in Fig. 3.

## Hydrogen (production, storage, handling), fuels (P2G, P2X)

The Module is focused on the "The Hydrogen (production, storage, handling), fuels (P2G, P2X)" and aims to introduce hydrogen (technologies) production and fuels to students and provide them with the basic science behind the processes involved. This will be useful for both students progressing into the area of hydrogen production and its utilisation in energy generation/storage, as well as those aiming at getting involved in the FHC field itself, for instance by taking up a PhD in the Doctoral Training School for FCH.

By the end of the module students should be able to:

- present and criticise the methods, potential, benefits, and prospects of hydrogen production, storage and safety handling;
- describe the Physics, Chemistry and Engineering of hydrogen production and storage technologies and be able to apply this knowledge to moderately complex problems;
- be able to choose appropriate technology when faced with a moderately complex engineering design task;
- communicate information, concepts, problems and solutions to specialists and non-specialists;
- understanding concepts that relate to Power to Gas and Power to X concepts.

The module consists of 14 lectures:

Lecture 1: Hydrogen, introduction

Lecture 2: Fossil hydrogen production - part 1

Lecture 3: Fossil hydrogen production - part 2

Lecture 4: Hydrogen production by the electrolysis of water at normal temperature - part 1

Lecture 5: Hydrogen production by the electrolysis of water at normal temperature - part 2

Lecture 6: High temperature water electrolysis

Lecture 7: Hydrogen production using nuclear energy and thermo-chemical cycles

Lecture 8: Renewable hydrogen, non-electrolysis - part 1

Lecture 9: Renewable hydrogen, non-electrolysis and natural (geologic) hydrogen - part 2

Lecture 10: Separation and Purification of Hydrogen

Lecture 11: Hydrogen Storage

Lecture 12: On board storage

Lecture 13: Infrastructure, supply chain, transport , HRS

Lecture 14: Power to Gas

*Figure 3. Screenshot of an example module description page.*

Module descriptions are based on the course content and accreditation material documentation included in deliverables D3.2 (course content) and D6.1 (accreditation) (see there for further details and content).

In future development steps in early 2020, test excerpts of educational material will be placed here for inspection.

Information about courses offered and registration will be linked from the 'Course' tab once the courses are open for registration. These links will also offer information on which universities run TeacHy courses or use parts of the TeacHy material in their own courses.

# 4 Members area of the website

The internal area of the website called **Members Area** is dedicated as an internal communication platform for the partners. It is protected with a username and password distributed between all participants upon the launch of the website.

This confidential area serves as an internal communication platform for the partners, to share project deliverables, modules, meeting and other documents related to the project and consists of the following sections:

- *Access: Meetings & Documents: This* sub-menu allows all partners to access the documents uploaded by others and has three sections*:*
    - o *Work Packages & Deliverables:* Opens the database in the form of a table with list of all documents uploaded by the partners. It shows the title of the document, the work package number, the person who uploaded the document, the date when the document was placed and the link to download the file.
    - o *Meetings / Modules:* Opens the database of the project meeting related documents i.e. agenda, presentations, minutes etc. and modules materials developed by partners (see Fig. 4).
    - o *Documents:* This sub-menu accesses the database of other project relevant documents which need to be easily shared between partners.
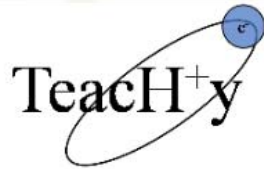
## Meetings / Modules

| Meeting | Uploaded By | Date Uploaded | Document Title | File |
|---|---|---|---|---|
| Kick-off 21.11.2017 | Volodymyr Shentsov | 19 - 11 - 17 : 13 57 PM | Short presentaion by Ulster | Link |
| Kick-off 21.11.2017 | Jan Van herle | 21 - 11 - 17 : 08 29 AM | 2017Nov KoM TeacHy short intro EPFL | Link |
| Kick-off 21.11.2017 | Volodymyr Shentsov | 21 - 11 - 17 : 11 59 AM | Brief Overview of W8 | Link |
| Kick-off 21.11.2017 | Marie-Paule Delplancke | 21 - 11 - 17 : 13 33 PM | T.I.M.E. presentation | Link |
| Kick-off 21.11.2017 | Marie-Paule Delplancke | 21 - 11 - 17 : 13 34 PM | ULB contribution | Link |
| Kick-off 21.11.2017 | Yehor Brodnikovskyi | 24 - 11 - 17 : 12 36 PM | NTUU KPI | Link |
| Kick-off 21.11.2017 | Yashar-TUD | 08 - 12 - 17 : 10 34 AM | TUD-TeacHy kick-off meeting | Link |
| Kick-off 21.11.2017 | Florence Druart | 14 - 12 - 17 : 12 41 PM | Grenoble-INP | Link |
| Kick-off 21.11.2017 | Naser Al-Mufachi | 19 - 12 - 17 : 13 02 PM | Kick-off meeting minutes | Link |
| Kick-off 21.11.2017 | Karel Bouzek | 15 - 01 - 18 : 09 23 AM | UCT Prague 2017 - Introduction | Link |
| TELCO 18.12.2017 | Naser Al-Mufachi | 18 - 12 - 17 : 22 20 PM | TeacHy telco minutes 181217 | Link |
| Delft meeting 18.01.2017 | Volodymyr Shentsov | 17 - 01 - 18 : 20 42 PM | Delft UU (HySAFER) Progress up to date | Link |
| Delft meeting 18.01.2017 | Naser Al-Mufachi | 19 - 01 - 18 : 20 46 PM | WP1 presentation | Link |
| Delft meeting 18.01.2017 | Naser Al-Mufachi | 19 - 01 - 18 : 20 46 PM | WP2 presentation | Link |
| Delft meeting 18.01.2017 | Naser Al-Mufachi | 19 - 01 - 18 : 20 47 PM | WP3 presentation | Link |
| Delft meeting 18.01.2017 | Naser Al-Mufachi | 19 - 01 - 18 : 20 47 PM | WP3 presentation | Link |
| Delft meeting 18.01.2017 | Naser Al-Mufachi | 19 - 01 - 18 : 20 47 PM | WP4 presentation | Link |
| Delft meeting 18.01.2017 | Naser Al-Mufachi | 19 - 01 - 18 : 20 48 PM | WP5 presentation | Link |
| Delft meeting 18.01.2017 | Naser Al-Mufachi | 19 - 01 - 18 : 20 48 PM | WP6 presentation | Link |
| Delft meeting 18.01.2017 | Naser Al-Mufachi | 19 - 01 - 18 : 20 49 PM | WP7 presentation | Link |
| Delft meeting 18.01.2017 | Naser Al-Mufachi | 19 - 01 - 18 : 20 50 PM | WP8 presentation | Link |
| Delft meeting 18.01.2017 | Naser Al-Mufachi | 19 - 01 - 18 : 20 50 PM | WP9 presentation | Link |
| Delft meeting 18.01.2017 | Naser Al-Mufachi | 19 - 01 - 18 : 20 52 PM | Meeting agenda, minutes and attendance sheet | Link |

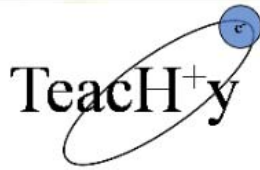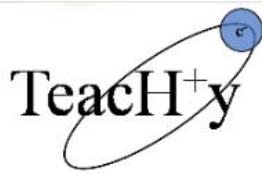Home          SUBSCRIBE          Contact Us          General disclaimer

TeacHy project is a Coordination and Support Action funded by Fuel Cells and Hydrogen 2 Joint Undertaking and supported by the European Commission under the Horizon 2020 Programme. Project reference: 779730.

*Figure 4. A screenshot of the www.teachy.eu Members Area, menu Access: Meetings & Documents, sub-menu Meetings / Modules.*

- ***Upload: Meetings & Documents:*** This sub-menu allows all partners to upload the documents to the relevant databases of the ***Access: Meetings & Documents*** and has three sub-menus:
  - ○ ***Work Packages & Deliverables:*** This tab will prompt the user to input all relevant information in order to upload the documents (see Figure 5). Two dropdown lists will prompt to select an appropriate WP and deliverable number, two fields need to be filled by whom the document was uploaded by. Button "Choose file" will navigate to the document ready for uploading and by pressing the button "Add File" the document will be added to the database.

  - ○ ***Meetings / Modules:*** Allows users to upload the meeting documents and the module documentation to the database. The dropdown list will allow users to select the meeting from an existing list If the desired meeting or module is missing from the list, then a new meeting or module can be created by clicking on the "Add a new meeting/module" button as shown in Figure 6.

  - ○ ***Documents:*** Similar procedure allows to upload other project documents to the database.

- ***Participants:*** This sub-menu lists all project partner's contact information including profile picture, name, position, company, address, phone number and e-mail.

The content of the TeacHy website is being constantly updated as the project progresses.

*Figure 5. A screenshot of the www.teachy.eu Members Area, menu Upload: Meetings & Documents, sub-menu Work Packages & Deliverables.*

*Figure 6. A screenshot of the www.teachy.eu Members Area, menu Upload: Meetings & Documents, sub-menu Meeting/Modules.*