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COSMHYC Website online

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CO	Confidential, only for members of the consortium (including the FCH2 JU Services)	



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Table of content

Table of content	3
Introduction	4
Deviations	4
Disclaimer	4
1. Objectives the COSMHYC website	5
2. Development of the COSMHYC website and general layout	6
3. Description of the COSMHYC website content	9
3.1 The COSMHYC front page “Home”	9
3.1.1 COSMHYC: Welcome.....	9
3.1.2 COSMHYC: The vision	9
3.1.3 COSMHYC: Objectives and activities.....	10
3.1.4 COSMHYC: Impacts and benefits.....	11
3.1.5 Section refeeding to the FCH JU.....	12
3.2 The COSMHYC “Learn more about” page	12
3.3 The COSMHYC “Consortium” page	13
3.4 Additional pages	15
3.4.1 News & Events.....	15
3.4.2 Downloads & Links	15
Main conclusion	16
Annexe 1	17

Introduction

The present deliverable describes the COSMHYC project website that will serve as main promotion platform for the project, featuring general information about the project as well as news and results. This website is the main outcome of task 7.1.2 “Project website, online presence and campaign”. It serves as main platform for the project communication, containing e.g. a summary of the project’s vision, objectives and activities, benefits and impacts and descriptions of the partners. It will be used as primary communication channel for the project, especially concerning the project news. It will also allow disseminating the results of the project among a large audience of interested stakeholders, including experts and industry representatives and the interested public likewise.

The COSMHYC website is publically accessible from the 30th of June 2017, the latest, via the following link: <http://www.cosmhyc.eu>. Its layout was created by a graphic design agency in consultation with Steinbeis 2i GmbH (S2i). All original content of the website was created and edited by S2i with support of the project partners which provided texts and pictures.

The present report describes the development steps of the website (Chapter 1 and 2) as well as its content which will be up-dated all along the life of the project in order to maintain relations to all interested stakeholder, from the general audience to potential end users of the results.

Deviations

Delivery of the content is in time without any deviations from actions planned until month M06 in Annex 1 – WP7 – Task 7.1.2 of Grant Agreement.

Disclaimer

This report was created within the COSMHYC project.

The views and conclusions expressed in this document are those of the involved project partners. Neither the partner(s), nor any of their employees, contractors or subcontractors, make any warranty, expressed or implied, or assume any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, product, or process enclosed, or represent that its use would not infringe on privately owned rights.

FCH JU and the European Union are not liable for any use that may be made of the information contained herewith.

1. Objectives the COSMHYC website

The COSMHYC website is the main communication and dissemination channel of the project. Its development and up-dates are part of the project's communication and dissemination roadmaps to be described in Deliverable D7.3 "First draft of the dissemination and exploitation plan"¹. Deliverable D7.3 will provide a detailed analysis of the targeted stakeholders for communication and dissemination as well as an in-depth description of their needs (in terms of information about the COSMHYC project) and related messages. Nevertheless, it is essential to provide information about the project as early as possible after the beginning of the project. Therefore the development of the web site was based on the following preliminary analysis of targeted audience, related messages and content.

The web site is at once a communication and a dissemination channel and is intended for a very diverse audience from general public to experts.

- For the **general audience**, the end user (potential buyer of fuel cell electric vehicle) and non-expert interested stakeholders (including politicians), the website is intended to provide general information about the project (objectives, impacts,...) by **focusing on benefits of hydrogen mobility and contributing to a positive image of hydrogen powered mobility in the general public**. The website therefore provides a range of additional explanations on hydrogen production, fuel cell electric vehicles, H2 infrastructure. The aim is to help the general public and end-users to understand the main trends to which the developments of COSMHYC are contributing. To support and enhance the general understanding, it was decided to use the concept picture, initially developed for the flyer (see section 3.1.3 below).
- For a more **expert audience**, the website is the entry point to attract actors involved in the development of the hydrogen mobility value chain. Therefore, **the focus is here clearly put on compression step at the refuelling station**, its importance in the hydrogen value chain, related technological challenges and expected evolutions. Within the course of the project further details on the developments conducted within COSMHYC will be presented. These descriptions will be up-dated during the project in order to gradually integrate the progress achieved. Updated information on the project partners, current research activities including demonstration activities will mainly be provided through the sections "news and events" of the website.

Altogether, the COSMHYC public website's goals are:

- To raise awareness for the topic of automotive fuel cells and hydrogen mobility.

¹ Deliverable D7.3, initially due M7, has been postponed to M9 (September 30th 2017) with the approval of the project officer to be able to integrate in this document the outputs of the first dissemination and exploitation workshop to be hold during the Project meeting which will take place September 6th and 7th 2017.

- To create attention for the COSMHYC objectives, activities and benefits and how they respond to the objectives of the Fuel Cell and Hydrogen Joint Undertaking (FCH JU) and the climate goals of the European Union.
- To provide a regularly updated information channel for the COSMHYC project in order to generate interest in the COSMHYC concept both from the general audience and the actors contributing to deploy hydrogen technologies in Europe.
- To strengthen the partners' reputation in their research community or market at regional, national and international level.

2. Development of the COSMHYC website and general layout

As described in Deliverable 7.1 ("Corporate Identity", submitted M3, March 31st 2017) a graphic designer agency had been selected for the development of the COSMHYC Corporate Identity. The website implementation was part of the package of activities subcontracted to this graphic design agency, ensuring the adherence of the website layout design to the established Corporate Identity, and hence a consistent image of the project.

S2i collected inputs from the partners and drafted the texts of the website. S2i organised iterative feedback loops between the successive versions proposed by the agency and the project's partners in order to ensure that the final version correspond to the views of the consortium.

Figure 1 shows the general layout for the website integrating fonts and colours established for Corporate Identity. The corporate header of the website, identical in each of the website's subpages, incorporates the COSMHYC project logo and the project slogan/claim "Innovative compression solutions for efficient hydrogen mobility". The key visual of the website's front page (the "Home" page) is drawn from the layout of the leaflet's first page, described in D7.1 section 1.4 "Final version of the layout of the brochure's first page". This is to ensure a coherent image of the project and to allow a high recognition of the COSMHYC brand. In the key visual of the front page there is further integrated a transparent box, which contains information on the latest events and news concerning the project.

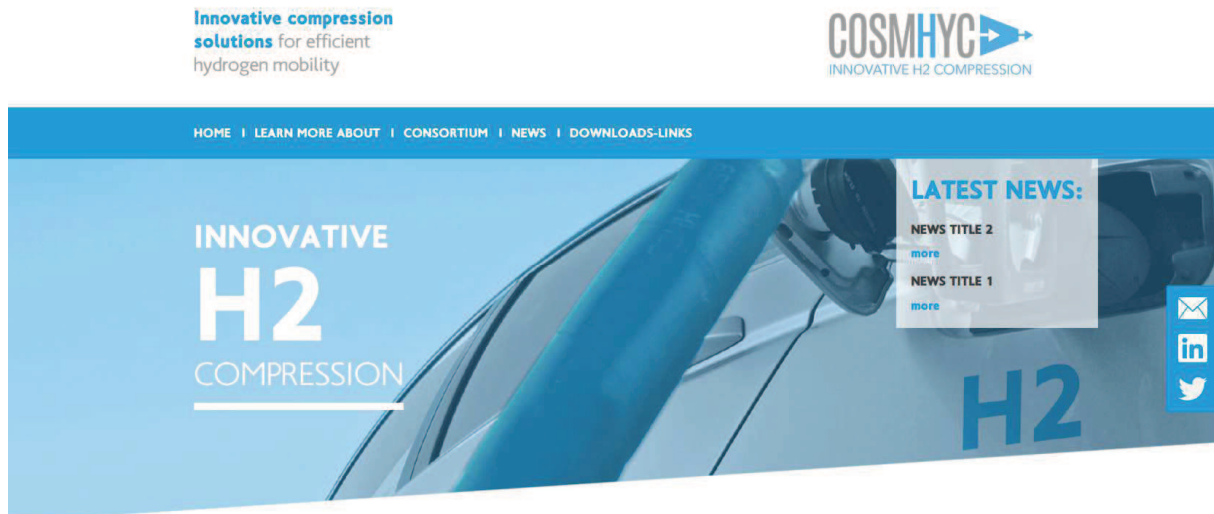


Figure 1: The website's front page - This cut-out shows the website's header, navigation bar and the layout of the website's first page "Home"

The navigation bar remains the same for all website sections (also see Figure 1) and features 5 main sections:

1. Home
2. Learn more about
3. Consortium
4. News
5. Downloads-Links

These 5 main sections are clearly arranged and represented in a horizontal design. Besides the sections contained in the menu bar, the page features two additional sections, "Imprint" and "Repository", in the website's footer that are also displayed on each of the website's subpages. The imprint summarizes the publishing data. Via the link "Repository" the project partners can access the project's web repository, described in Deliverable D1.1 ("Project intranet platform", submitted M3, March 31st 2017). Access to the web repository is restricted to project partners with a user account; a respective access page has been integrated in the website.

Moreover integrated in the bottom of each page are the project's funding claim, to ensure that COSMHYC is recognized as EU funded public project, and an interactive contact form. Website visitors, who would like to acquire more information or simply want to get into contact with the project consortium, can use this interactive form to send an e-mail to the consortium (see Figure 2). Also, each page of the website features a social media/contact bar (at the right side of the page, see red mark in Figure 1.2 above) that allows accessing the project's twitter stream and linkedin website as well as writing an e-mail to info@cosmhyc.eu for getting into contact with the project's consortium.

COSMHYC:
CONTACT

European Institute For Energy Research (Coordinator)
Emmy Noether Strasse 11, 76131 KARLSRUHE - Germany

Name:

First Name:

E-Mail:

Message:

Send

 This project has received funding from the Fuel Cells and Hydrogen 2 Joint Undertaking under grant agreement No 736122. This Joint Undertaking receives support from the European Union's Horizon 2020 research and innovation programme and Hydrogen Europe and NERGA-FV



[HOME](#) | [REPOSITORY](#) | [IMPRINT](#)

Figure 2: The website's footer with COSMHYC contact form, funding claim and links to the pages "Home", "Repository" and "Imprint".

Within the text sections of the website, terms and phrases highlighted in the "COSMHYC blue" colour indicate a link to other sections of the website or external websites that contain more information on the specific topic. These linkages shall enhance the user's individual experience: If interested in the topic or if needing more information on a specific aspect, users may click on the term highlighted in blue to receive more details, e.g. explanations on the functioning of fuel cells electric vehicles and their advantages.

3. Description of the COSMHYC website content

3.1 The COSMHYC front page “Home”

The texts and pictures used in the front “Home” page of the Website this section are quite similar to those used in the project’s flyer. This “Home page” is subdivided in 5 subdivisions and provides general information on the project’s scope and duration, its vision, objectives and activities as well as its impact and benefits. The last sub-section of the page is dedicated to explaining the structure and the goals of the Fuel Cell and Hydrogen Joint Undertaking by which COSMHYC is funded (in the framework of Horizon 2020). Sub-sections are accessible by scrolling down the screen.

On the top of the „Home“ page, a box featuring the most recent news has been added so that the latest evolutions linked to the project are highlighted and can be access very quickly.

3.1.1 COSMHYC: Welcome

The front page’s first section “welcome” seeks to provide the website visitor with the main data of the project (duration and funding) and its primary scope (to develop innovative compression solutions). In accordance with its headline “welcome”, this section mainly serves as a brief and easily understandable introduction to the project since this is the first section website visitors will have a look at.

3.1.2 COSMHYC: The vision

This section seeks to embed the project’s activities and targets into the larger concepts of renewable energy and clean mobility. The section amplifies how COSMHYC will contribute to the successful adoption of hydrogen in transport by addressing current high costs of the refuelling process. Altogether, the text provides the key information on the project vision, while also explaining the main problem/issue to be targeted by COSMHYC and indicating the potential exploitation of results yielded by the project.

The explanative text on the COSMHYC vision is supported and enhanced by a graph, developed especially for the website (see Figure 3). The graph illustrates in simplified form, how green hydrogen based mobility works: from the hydrogen generation in an electrolyser by the use of renewable energy, to hydrogen being converted into electricity in the fuel cell for mobility applications. This graph was mainly developed with the aim to explain hydrogen generation and use in mobility to an audience not familiar with the issue. The graph therefore also shows the various application possibilities of hydrogen in the mobility/transport sector, from the conventional passenger car to ships and airplanes.

COSMHYC: THE VISION

With **hydrogen from renewable sources** fuel cell based mobility is a key component in response to climate change. **Fuel Cell Electric Vehicles** achieve a mobility service at very low emission levels.

Ease, speed and efficiency of refuelling are challenges for the successful adoption of hydrogen in transport. As FCEVs are fuelled with gaseous hydrogen at high pressure, hydrogen compression is an essential step of the refuelling process – and continued cost reductions and efficiency improvements are crucial for the technology's success.

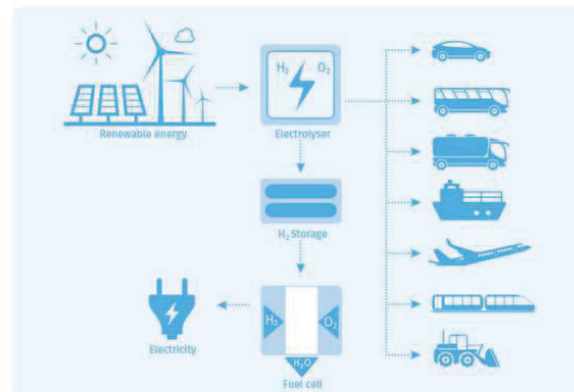


Figure 3: The website section „The vision“ descriptive text and graph

3.1.3 COSMHYC: Objectives and activities

The section outlines in detail the research undertaken and put to test within the COSMHYC project. The approach employed, including the major steps of the project, and the application field (cost-effective hydrogen refuelling) targeted are further specified. Moreover, the sub-goals of the project are elaborated (see figure 4).

The graph, illustrating the section's text, has been developed especially for the project's communication purposes. This graph shall help the website user to understand the context and significance of the compression technology developed within COSMHYC as well as the approach executed to implement it. The bottom part of the graph therefore provides an overview of the process, from the generation of hydrogen over its storage to the metering of hydrogen at the refuelling station, the aspect of the process COSMHYC focuses on. The innovative compression solution, COSMHYC seeks to realise, is further sketched out in the separate box, constituting the upper part of the graph.

COSMHYC: OBJECTIVES AND ACTIVITIES

COSMHYC develops and tests an innovative combined compression solution based on a hybrid concept for hydrogen refuelling stations.

- Adaptation of a booster, development of an alternative compressor and integration of both technologies.

- Test of the compression prototype under real conditions
- Technical economic assessments to ensure competitiveness of the developed compression solution.

The objectives are to lower costs and noise level and to increase the availability of stations. This will increase the efficiency of hydrogen conditioning and delivery.

By developing a new compression technology, COSMHYC addresses the major challenge of assuring an attractive hydrogen fuel price at the pump.

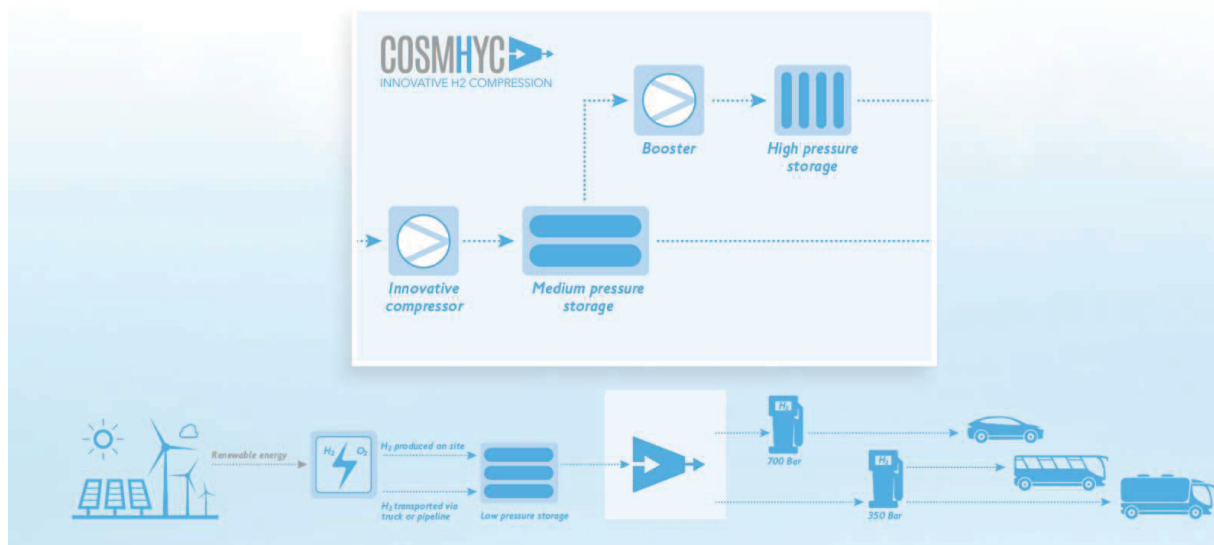


Figure 4: The COSMHYC objectives and activities section's text and graph

3.1.4 COSMHYC: Impacts and benefits

The section gives a very simplified overview of the impacts and benefits expected from the project, highlighting following two quantitative targets which are easy to remind:

- Increase if the energy efficiency of the compression process by at least 20%;
- Reduction of about 20% of the hydrogen costs at the refuelling station.

The picture illustrating this section's represents a blue car (referring to hydrogen and to the COSMHYC Corporate Identity) going through a green forest, underlying the general impacts of the project regarding reduction of air pollution and of greenhouse gas emissions.

COSMHYC: IMPACTS AND BENEFITS

COSMHYC will make an important contribution to the roll-out of FCEVs by **increasing the energy efficiency of the compression process by at least 20%**. The COSMHYC compressor will meet high flow requirements while reducing the noise level to below 60 dB at 5 m.

COSMHYC will lead to an **overall reduction of about 20% of the hydrogen costs at the refuelling station** thanks to the triple effect of

- ▶ Improved energy efficiency
- ▶ Reduction of capital costs
- ▶ Maintenance optimization

The COSMHYC compressor can also be applied in decentralized energy storage, enabling the competitive storage of electricity from renewable sources.



Figure 5: The COSMHYC: impacts and benefits section's text and picture

3.1.5 Section refeeding to the FCH JU

The section, presenting roughly the FCH JU, was added to the COSMHYC website in order to highlight the contribution of the project to the overall objectives of the FCH JU regarding the market introduction of hydrogen technologies.

3.2 The COSMHYC “Learn more about” page

The aims of this section are:

- To provide more basic explanations on the whole hydrogen value chain to the general audience. This is achieved mainly through two subsections devoted to “hydrogen production and benefits” and to “Fuel cell electric vehicles”.
- To focus on refuelling stations by highlighting the challenge and opportunities related to this infrastructure and related equipment for the deployment of hydrogen mobility. This is achieved mainly through two subsections devoted to “Infrastructure for H2 Mobility” and “Hydrogen refuelling stations”.
- To highlight more specific aspects regarding technical and economic features of the compression step at the refuelling station. This is achieved mainly through two subsections devoted to “H2 compression” and “Economic impact of hydrogen compression on hydrogen fuel costs”. These two subsections are more conceived for experts interested in the possible improvement related to compression.

Most of the illustrations used in this section were provided by the partners giving them the opportunity to highlight their specific competences (see Figure 6). For instance, Nel Hydrogen provided pictures from their products (an electrolyser and a new generation of fuelling device) and

LBST provided a picture from a refuelling station and a graph showing the costs components of hydrogen fuel. Additional pictures will be provided by the partners during the project and will be implemented into the web page.

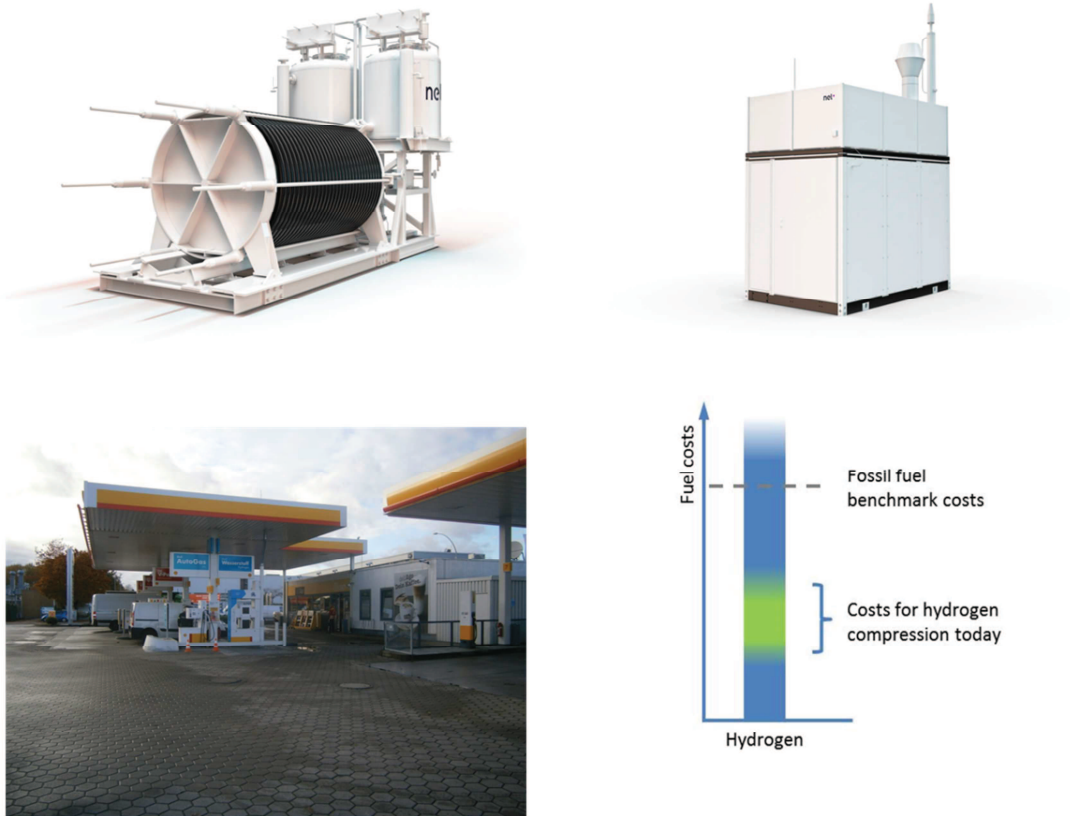


Figure 6: Selection of pictures for illustration on the section “Learn more about” in the COSMHYC website (on the top an electrolyser and a new generation of fuelling device from Nel Hydrogen and underneath a picture from a refuelling station and a graph showing the costs components of hydrogen fuel (provided by LBST)).

3.3 The COSMHYC “Consortium” page

The section “Consortium” provides an overview of the companies involved in the COSMHYC project (Figure 7). Website users may click on the icons in order to get information on the company in general, its core activities and its role and contribution to the COSMHYC project. In the respective pop-up box for each company also the contact details of the main contact person for the COSMHYC project at the company is displayed (see Figure 8 presenting the pop-up box for EIFER, the project’s coordinator, as an example).

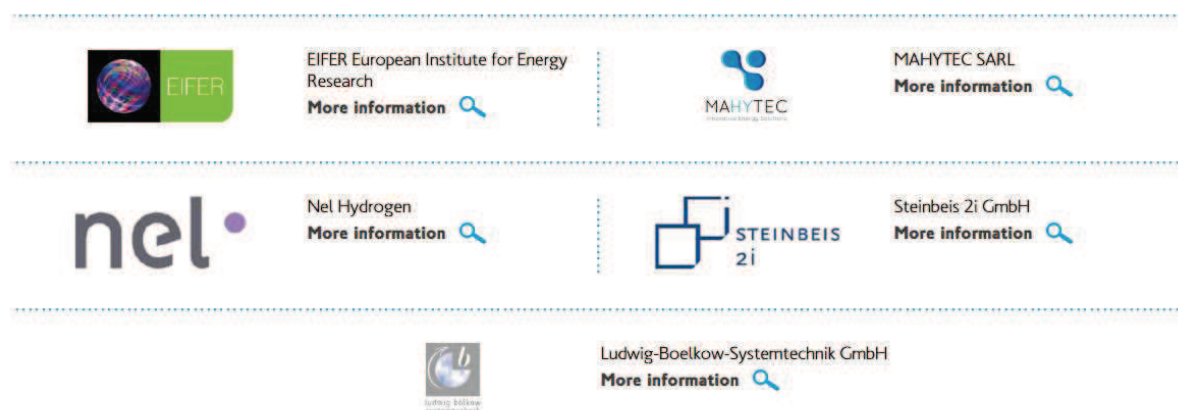


Figure 7: Consortium page



Figure 8: Pop-up box presenting EIFER, the coordinator of COSMHYC

3.4 Additional pages

3.4.1 News & Events

The main contributions in this section will be interviews and testimonies of researchers, managers or other stakeholders especially interested in the project. These texts shall serve as brief reports on the project status or dwell on a specific aspect or impact of the project. By having experts communicate the project results and speak about their experience and expectations, the intent is to raise the interest in the project and to attract stakeholders to be involved in future exploitation of the results. Important stakeholders can so serve as ambassadors of the project and boost the effect of disseminated messages. New interviews/testimonies will be drafted each six month by S2i after selection with the consortium of a relevant personality relevant. At the date of the putting the COSMHYC website on-line (M6, June 30th 2017), a first interview of Pascal Terrien, director of EIFER has been issued (see Annexe 1)

In this section, website visitors will also find information about latest news of the project (such as project partner meetings, important developments regarding results or demonstration steps,...) as well as about relevant events in the domain, in particular events at which partners participate.

Here the reader is offered the possibility to read just short information about a certain event or news or, by clicking on the link “read more” next to it, to find out more about the event. The chronological presentation of events has been favoured over a “calendar of events”, showing just the dates of events.

3.4.2 Downloads & Links

In this section website visitors may download the interviews, testimonies, project documents and other public documents. This section provides also a list of important and informative links, for instance to related projects, associations in the field of hydrogen and fuel cells, scientific magazines, articles and more.

Main conclusion

The communication principles applied while editing the website are in line with the project's vision. The project consortium wished to create an informative website with an intuitive handling embedded in a modern design. The language and content of the website is adapted to the purpose of reaching a large and diverse audience (interested public and experts). The information provided focuses, as wished by the consortium, on the overall benefits for hydrogen mobility of improving the compression step at the refuelling station.

This website is part of the communication, dissemination and exploitation strategies (which will be presented in a detailed way in deliverable D7.3 "Initial dissemination and exploitation plan"). All along the life of the project, the content will be selected and up-dated to implement those strategies. Altogether, the website provides a good basis for disseminating the project and its goals to externals and will ensure the project's recognition by the public.

Annexe 1

Interview of Pascal TERRIEN, director of EIFER, issued June 30th on the COSMHYC website.

COSMHYC INTERVIEW

INTERVIEW - Pascal TERRIEN, director of EIFER, expresses its views on the challenges taken up by the COSMHYC Project

The COSMHYC project is coordinated by EIFER, a research institute located in Karlsruhe (Germany) and the largest R&D international centre of the EDF Group. In this interview, Pascal TERRIEN, director of EIFER and expert for energy and sustainable cities, takes time to express his views about the challenges taken up by the COSMHYC project. A great opportunity to learn more about the growing links between electricity production, renewable energy deployment and hydrogen mobility.

The European Institute for Energy Research (EIFER)

EIFER is a European Economic Interest Grouping founded in 2001 by the French utility EDF and the German institute KIT (Karlsruhe Institute of Technology) for bridging the gap between science and industry on a range of energy related topics.

Together with high level scientific and industrial partners EIFER conducts research on smart and sustainable cities, energy systems, local energy concepts and low carbon solutions. EIFER participates in several national and European public funded projects on high temperature electrolysis, fuel cells, and hydrogen mobility.



Short Biography

Pascal TERRIEN is a mechanical engineer with a diversified experience of Research and Development in steel and chemical industries as well as in the energy sector.

Within the EDF Group he launched a range of innovative initiatives. With leading scientific partners in Europe, he founded the European Center and Laboratories for Energy Efficiency Research (ECLEER).

As R&D Program director for sustainable cities, he conducted international projects based on systemic approaches for long term urban planning. He is director of EIFER since 2016.

Mr. Terrien, EIFER is part of the R&D division of the EDF group. Why is France's biggest electricity producer investing in research on hydrogen?

EDF is committed in producing low carbon electricity and supports the deployment of renewable energy in the scope of the energy transition.

“By supporting research activities on hydrogen, EDF contributes to speed up innovation in this area and the energy transition.”

EDF is actively committed for climate change mitigation with low carbon solutions both on generation and demand side, stakeholders of regions and cities, public and private consumers. When hydrogen is produced with low carbon electricity, it is a solution to significantly reduce the carbon footprint of the transportation sector, which still relies at 98% on fossil fuels.

Beside mobility, hydrogen is also a low carbon solution for industrial applications. Moreover, hydrogen has the potential to create a link between different energy sectors. For example, renewable energy surpluses can be valorised by producing hydrogen with a water electrolyser for use in the transportation sector. By supporting research activities on hydrogen, EDF thus contributes to speed up innovation in this area and to draw the roadmap for hydrogen technologies for the energy transition.

Which are the main objectives of EIFER activities on hydrogen technologies?

The specificity of EIFER is to be simultaneously involved in upstream research and in the development of low carbon solutions for industry. EIFER has been working for 15 years on electrochemical devices and electrolysis technologies together with German and European partners in the frame of public-funded projects.

“Hydrogen mobility is becoming real”

Today, some electrolysis technologies are mature and we are entering a new demonstration phase before industrialization. The focus is now on capital expenditure reduction and efficiency of technologies for mobility and first applications in industry. Through its participation in different projects together with industrial partners and potential users, EIFER gets to better understand their needs. Remaining bottlenecks and possible technological improvements can also be identified. The objective is to be ready for the industrialization step which is expected in the upcoming years.

Up to now, which are the main achievements of EIFER within the fuel cells and hydrogen field?

Thanks to its test facilities, EIFER focused on long-term testing of high temperature electrolysis technologies and on the optimization of the performance and lifetime of fuel cells. Based on this research EIFER achieved, in February 2016, the demonstration of 23000 hours continuous steam electrolysis operation of a ceramic solid oxide cell for hydrogen production. This operation time is, at present, the longest reported so far, worldwide!

Another main achievement has been the opening in April this year of FaHyence, the first French hydrogen refuelling station with on-site electrolysis using low carbon electricity. EIFER contributed to the development of this station, together with French public and private partners, in the framework of the H2ME project (Hydrogen Mobility Europe) funded by the European program FCH2-JU. Such a demonstration facility is a great opportunity to get a broad audience to realise that hydrogen mobility is becoming real!

Why is the EIFER team working in COSMHYC so excited about the project?

COSMHYC will improve the compression step at refuelling stations to provide hydrogen at 350 and 700 bar for passenger cars and other vehicles. At the end, the new compression solution will significantly reduce the costs of this step and could become a real technological breakthrough, decreasing the cost of hydrogen in refuelling stations and, as a consequence, helping to develop it quicker. The EIFER team involved in COSMHYC has here the opportunity to be at the edge of technological innovation. Working with industrial partners on a product which could be industrialized very soon is particularly gratifying for researchers as well as it creates values for the partners over the short run. We are convinced that we contribute to the development of a technology which has the potential of becoming disruptive and could change the game, both for transportation and the industry.

As an expert for smart cities and urban environment how do you imagine H2 usages in the cities of the future?

The city of the future will need low carbon electricity. Polluting energy systems will be replaced by efficient and clean ones for a better quality of life. Mobility adapted to all needs, good air quality and low noise levels are major factors for the well-being of city dwellers. Technologies using hydrogen produced by low carbon electricity can offer efficient responses to all these challenges while addressing emerging and changing needs related to the delivery of goods or services. Still, the bottom line is that electric mobility will drastically change our lifestyle. The market entry of hydrogen technologies, alongside with the ongoing revolution on batteries, are major steps toward sustainable urban development.