# COSMHYC XL INTERVIEW

## Rami Chahrouri / EIFER

## Hydrogen mobility on the rise and the role of the FCH JU enabling research and innovation

**The European Institute for Energy Research (EIFER)…**

… is a European Economic Interest Grouping founded in 2001 by the French utility EDF and the KIT (Karlsruhe Institute of Technology, Germany). The aim is to bridge the gap between science and industry on 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.

**Rami Chahrouri** studied mechanical engineering with a focus on energy and environmental engineering at the Karlsruhe Institute for Technology in Germany. He has been working in the field of hydrogen since then and joined EIFER in 2017, where he is involved in several demonstration projects related to hydrogen mobility, as well as developing innovative technologies such as hydrogen compression.

### 1. What does your daily life as researcher at EIFER look like?

Our activities at EIFER cover many levels of hydrogen research including innovative development & design, laboratory testing, on-field demonstration, techno-economic analyses, and market studies. Being involved in several projects simultaneously, my focus can switch from day to day and depends on the priorities of the different tasks. The same applies to the COSMHYC projects: I generally alternate between desk work (writing reports and contacting partners & suppliers) and hands-on field work at the prototype test-site (installation and assembly of the prototype, troubleshooting, testing). I really enjoy the constant change and not knowing what new challenge awaits me every morning!

### 2. What has been most exciting in your work on COSMHYC XL so far?

COSMHYC XL is the follow-up of the COSMHYC project which was successfully completed earlier this year. With COSMHYC, we built the first full-scale prototype of a metal hydride compressor. We learned a lot from the experience and now, with COSMHYC XL, have the opportunity to really improve the design and different aspects of system integration. In this second prototype, we will implement new innovative solutions to problems that were identified

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in the COSMHYC long-term test phase. This will take the technology to a whole new level, enabling to cover applications that are much more ambitious and demanding. It is very exciting to progress in technology readiness, reliability and performance.

### 3. You have been in on the COSMHYC journey from the very beginning: First COSMHYC, then COSMHYC XL and recently COSMHYC DEMO started – with you as the coordinator. Can you tell us about this journey and the new project?

This is an incredible journey! In COSMHYC and COSMHYC XL the focus is still on research and development, allowing for significant improvements on all aspects of the compressor prototypes. The long term tests enable us to validate the different configurations and performance levels in relevant environments and under conditions simulating a whole range of refuelling profiles. In COSMHYC DEMO we are taking a further step towards real life as we will operate a compressor prototype in a real hydrogen refuelling station to be installed near the city of Tours, France. As coordinator, I am responsible for supporting all partners smoothly bring the needed components together and considering all aspects from building the prototypes, to planning and installing the new HRS, to conducting comprehensive tests. There is so much to take into account when it comes to real life application! At the end, we expect to achieve TRL 8 for the compressor prototype and we will have installed a new HRS in a region which embraces hydrogen technologies as a driver of local and regional economic development.

### 4. What is your vision of the current hydrogen research and policies and how does the FCH JU support these developments?

The concept of hydrogen as an energy carrier is nothing new and has been researched for more than a century. However, due to a lack of urgency and awareness, hydrogen has so far taken a back seat in the energy game compared to more readily available and economically attractive alternatives. The devastating impact of fossil fuels can no longer be ignored, and viable and sustainable solutions to the energy crisis are urgently needed. With a new wave of support in the last few years (public, political, and financial), we finally have the momentum required to bring green hydrogen to the forefront of the global energy transition.

We are currently witnessing the beginning of large-scale deployment of hydrogen infrastructures worldwide and in the EU. This is a critical period with many challenges to achieve the level of maturity and reliability found in “classical” technologies. However, the demonstration projects are very promising, and I am convinced that we are on the right path and that green hydrogen will soon have a significant role to play in many fields and industries in the EU. The support of the FCHJU in both the research and demonstration aspects are invaluable at this decisive point in time.

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