

2023

NEWS ARCHIVE

of the Center for Sustainable Energy

24 JANUARY 2023

Luigi Crema, director of the Sustainable Energy Center at Fondazione Bruno Kessler, is the new President of Hydrogen Europe Research, the most important European research organization in the field of hydrogen

(v.l.) Luigi Crema, HER's first Italian president, commented on the appointment that officially took place this morning:

"It is with great enthusiasm that I welcome my appointment as president of Hydrogen Europe Research. It is an honor to provide support to the European program of the Clean Hydrogen Partnership by representing our members who have placed their trust in me. This appointment comes at a very important time for the hydrogen sector, which is emerging as a real prospect for a new market between now and the next few years. I will make every effort to bring attention, at the European level, to the need to think about the future and the next technologies, but also to the need to continue to team up with and systematize the various stakeholders in the field of industry, politics and business, to accelerate the grounding of what has been done so far in a timely manner. This is also an important achievement for the national context, as well as for the visibility that FBK will have at the European and global level."

This morning's appointment concerns the most important European research organization in the field of hydrogen. Comprising more than 130 international universities and research centers, [Hydrogen Europe Research](#) manages under the [Clean Hydrogen Partnership](#) - along with [Hydrogen Europe](#) (for the industrial sector) and the European Commission - a €1.2 billion program.

More at: <https://www.fbk.eu/en/press-releases/luigi-crema-is-the-new-president-of-hydrogen-europe-research/>

27 JANUARY 2023

The Center for Sustainable Energy in Lisbon to kick-off of COMMUNITAS

The researchers Diego Viesi and Gionata Luca participated in the Kick-off meeting of [COMMUNITAS](#), which took place on the 17th and 18th of January 2023 at the NOVA IMS Information Management School, in Lisbon.

The main goal of the project is to pave the way for the empowerment and engagement of different types of consumers and prosumers, placing them at the heart of energy markets.

How? By boosting the creation and exploiting the potentialities of Energy Communities (ECs) as hubs for innovative energy services, integrated with non-energy benefits, co-created together with citizens and other stakeholders. The project will put consumers organised in ECs at the forefront of the digitalisation, decentralisation, decarbonisation, and democratisation of the energy sector.

This Innovation Action Horizon Europe project will enable citizens to become an active element of the energy markets as they will be involved in Social and Policy Labs and in a feedback loop, which will be central to development of the project.

What will be the role of the Centre SE?

FBK with [ACSM Primiero](#) will lead the research activities in the pilot site of Primiero Valley, where the realisation of an Energy Community is foreseen during the next two-year period.

Primiero Valley will be one of the eight (8) pilot sites of COMMUNITAS Project.

30 JANUARY 2023

Zaragoza hosted the General Assembly of FLEXIndustries

The [project FLEXIndustries](#) is working to reduce the global emissions and production costs of the industrial sector looking at possible energy efficiency measures and process flexibility methods for energy-intensive industries.

The project has 7 demo plants in 7 industrial facilities in 6 reference countries: Turkey, Greece, Poland, Bulgaria, Germany and Italy.

The Centre for Sustainable Energy of [FBK](#) is the supervisor of the Italian demo plant, the pharmaceutical industry of Rovereto [SUANFARMA](#). The demo also sees the active involvement of several partners such as [HiReE](#), which will provide the heat pump, and [MIDAC](#), which will provide the battery.

During the General Assembly, in Zaragoza at the end of January, the researchers Diego Viesi and Francesco Ghionda presented the results of the analysis "Flexibility assessment and project framework definition" for the Italian Demo site.

The study focus on several aspects:

- Energy and process balances
- Flexibility market and demand response programs
- Flexibility actions and load manageability
- Enabling technologies applied in the pilot plant
- Decision Support Systems for AI-enabled energy and
- process flexibility planning and optimization



20 FEBRUARY 2023

Direct use of Ammonia in Fuel Cells.

AMON Project to pave the way for a New Breakthrough Technology in Europe

The kick-off meeting of the project AMON "Development of a next generation AMmONia FC system" was held on 31 January 2023 in Trento, hosted by [Fondazione Bruno Kessler](#), and followed by a visit to the manufacturing site of Solid Oxide technology by [SolydEra](#) in Pergine. All Partners were present to launch the activities of this Horizon Europe project, which will last for 3 years and is funded from the [Clean Hydrogen Partnership](#).

The overarching objective of AMON project is to develop a novel system for the utilization and conversion of ammonia into electric power at high efficiency using a solid oxide fuel cell system. The project will deal with the design of the basic components of the system including the fuel cell, an ammonia burner, ammonia resistant heat exchangers, the engineering of the whole Balance of Plants, and validation of the compliance with ammonia use for all the specific parts and components. Optionally, depending on system needs, an ammonia cracker and anode gas recirculation will be developed.



Fundamental for the project is the interdisciplinary consortium of 13 partners coordinated by Fondazione Bruno Kessler, through the Centre for Sustainable Energy. Renowned industrial leaders such as [SolydEra \(Italy\)](#), [Alfa Laval Technologies AB \(Sweden\)](#), [Alfa Laval Aalborg AS \(Denmark\)](#), [Alfa Laval SPA \(Italy\)](#) and [SAPIO Produzione Idrogeno Ossigeno Srl \(Italy\)](#), [KIWA Nederland BV \(The Netherlands\)](#) and [KIWA Cermet \(Italia\)](#) will collaborate with prominent research institutes such as [Fondazione Bruno Kessler \(Italy\)](#), [Teknologian Tutkimuskeskus Vtt OY \(Finland\)](#), [Technical University of Denmark \(Denmark\)](#), [Ecole Polytechnique Fédérale De Lausanne \(Switzerland\)](#), [European Fuel Cell Forum AG \(Switzerland\)](#) and [Fachhochschule Zentralschweiz - Hochschule Luzern \(Switzerland\)](#).

The goal of the project is to demonstrate highly efficient, direct conversion of ammonia in fuel cells. **Such a breakthrough would enable further major steps towards a sustainable energy economy.** The final system will be a 8 kWe, with a heat management system and a possible ammonia cracker. It will aim at an overall electrical efficiency of 70%.

"The Amon project will realize a breakthrough for the direct conversion of ammonia in Solid Oxide Fuel Cells" states Luigi Crema, Director of the Centre for Sustainable Energy of FBK, and AMON project coordinator. "Ammonia will become an important energy carrier for Europe, and as indicated in the [Repower EU Report](#), it may constitute 40% of hydrogen imported in EU @2030. Ammonia will thus be important for the maritime and shipping sector, for autonomous power systems and remote datacentres, and for all applications where large amounts of energy need to be stored in small quantities. As Fondazione Bruno Kessler we are strongly motivated and glad to support AMON and drive the project to a successful impact"

Are you interested in understanding why ammonia is so important and the purpose of the project? Do you wish to know the impact targeted by the project and how the project will achieve its goals?

Read the entire press release: <https://www.fbk.eu/en/press-releases/direct-use-of-ammonia-in-fuel-cells/>

23 FEBRUARY 2023

Luigi Crema invited to present at the Hydrogen Seminar organised by the Municipality of Bologna

The Director of the Centre for Sustainable Energy, Luigi Crema, participated as key note speaker in the seminar promoted by the Deputy Mayor for EU/Recovery funds, ecological transition and international relations of Bologna Municipality.

The event took place on 22 February 2023 in the Sala Falcone e Borsellino in via Battindarno 123, and had a rich agenda which showed the participation of different stakeholders from public authority, research institutions and companies.

Following the welcoming of the city hall representative, an introduction to hydrogen was made by Giorgio Graditi, from [the Italian National Agency for New Technologies, Energy and Sustainable Economic Development \(ENEA\)](#).

Then, Luigi Crema concentrated on the city use of hydrogen. The Director of the Centre gave some examples on European cases and explained the reason why and how hydrogen is so important for cities. The third session was kept by Francesco L. Basile from [the University of Bologna](#) and focused on how hydrogen can be fundamental for the decarbonisation of cities.

Finally, the perspective of hydrogen in the city of Bologna was given. In order to do so, Orazio Iacono from [the HERA Group](#) and Giuseppina Gualtieri from [Trasporto Passeggeri Emilia-Romagna \(TPER\)](#) were invited to speak. The main fields of operation of the Hera Group are waste (management and treatment), water (aqueduct, sewerage, and purification) and energy (distribution and sales of electricity, gas and energy services). TPER is the society that manages public transports in the region.

3 MARCH 2023

Local stakeholders at the table of "Nevermore", the European project dedicated to climate change

In the afternoon of March 2, at the Headquarters of the Autonomous Province of Trento (PAT), the Local Council of the EU project NEVERMORE "New perspectives and tools to support an assessment of the impact and risks of climate change for a climate-neutral and resilient society" was set up.

The NEVERMORE project, coordinated by FBK Digital Society center, is funded under the Horizon Europe programme and aims to support excellence in scientific research on the climate and on climate policies. A particular feature of the project is the activation of the Local Council which will involve the public administration, research institutions, local businesses, trade associations and civil society, creating an environment for reflection and discussion on climate change with a particular focus on tourism and energy.

The Local Council is a working group of stakeholders animated by the PAT Tourism and Sport Service, which is also leader of the Trentino Case Study (one of the 4 case studies within the project), and supported by the Centre of Sustainable Energy of FBK. The Council wishes to promote a participatory and interdisciplinary approach that can integrate the different skills and knowledge present in the area on issues related to climate change.

The activities were introduced by the Council Member Roberto Failoni, and coordinated by Maria Serena Barbera and Alessio Bertò of the PAT Tourism and Sport Service. The objectives of NEVERMORE were illustrated by the project coordinator Alessia Torre (FBK).

Professors Lorenzo Giovannini and Umberto Martini of the University of Trento, respectively experts in climatology and tourism, gave framework speeches to support the further work of the Local Council discussion tables that were moderated by FBK researches and the PAT.

"Here and in 4 other European regions that are hotspots for climate change, FBK will deploy the tools to conduct participatory planning processes with local working groups." stated Alessia Torre, from the Digital Society Centre.

Sara Stemberger, researcher at the Centre for Sustainable Energy, confirmed that *"Yesterday's meeting at the Province of Trento set the launch of the Local Council in Trentino. An inaugural moment aimed to get stakeholders acquainted and to debate with a participated approach on the challenges of the climate emergency. This first meeting, in fact, kicks off a significant process of discussion on the impacts and risks of climate change on the territory, with key players from the public administrations, businesses, research centres and the civil society in Trentino. Occasions that, in the coming years, will be the driving element of the co-design and co-assessment of innovative NEVERMORE models and technologies, useful for an improved understanding of future scenarios and functional to the planning of more incisive adaptation policies for the territory."*

Check this link to know more about the event (in Italian): <https://www.ufficiostampa.provincia.tn.it/Comunicati/Stakeholder-locali-al-tavolo-del-progetto-europeo-Nevermore-dedicato-ai-cambiamenti-climatici>

Watch this video to understand more the project: <https://youtu.be/blF56G88VTg>



23 MARCH 2023

FBK and ACSM promote the energy community of Primiero Valley

A new project lands in Trentino, with one goal: supporting the creation of a new renewable energy community in the Primiero Valley.

Among the 18 partners of COMMUNITAS, there are ACSM S.p.A. and Fondazione Bruno Kessler, through the Centre for Sustainable Energy. Eight European countries are involved in the project: Portugal, Greece, Italy, Spain, the Netherlands, Denmark, Poland and Croatia.

"A renewable energy community", explains Gionata Luca, researcher at FBK, "consists in an association of citizens, enterprises, and public administration that decide to join forces with the purpose of producing, exchanging and using energy from renewable sources on a local scale. [...]"

This European project started in January 2023 with a kick-off in Lisbon, and will last till June 2026. "COMMUNITAS aims to allow the members of the energy community", comments Diego Viesi, Head of Area Sustainable Territories of the SE Centre, "to self-use the renewable energy and, at the same time, to have a consolidated position in the energy markets [...]"

Primiero Valley is one of the eith pilot site and sees the involvement of the Azienda Consorziale Servizi Municipalizzati. ACSM S.p.A. produces, distributes and sells hydroelectric and thermal energy through wood biomass district heating systems. "Primiero Valley has around 8.000 citizens divided on three municipalities which are all subtended by the same primary cabin, thus potentially reunifiable in a single energy community" explains Simone Canteri, CEO of ACSM S.p.A. [...]

"We, at the Centre SE, believe that the energy communities should be the reference point for achieving the decarbonisation, energy security and cost reduction objectives", affirms Luigi Crema, Director of the Sustainable Energy Centre, "and the project COMMUNITAS can be a fundamental step towards this direction. We will support ACSM and we are glad to contribute to the communities of Trentino, in this specific case of Primiero Valley, to activate innovation paths on the territories".

A first workshop will be organised at the beginning of May, in Primiero. The event will have the purpose to indicate to the local population the potential, objectives and stakeholders of COMMUNITAS.

Read the entire press release at this link (in Italian): <https://magazine.fbk.eu/it/news/al-via-il-progetto-europeo-communitas/>

Read the news on ACSM website: <https://www.gruppoacsm.com/bandi-ed-appalti/al-via-il-progetto-europeo-communitas-n576>

28 MARCH 2023

Luigi Crema and Edoardo G. Macchi participated in K.EY 2023

During the lat week of March, K.EY - the Energy Transition Expo took place in Rimini with its 6 thematic areas: solar, wind, hydrogen expo, efficiency, e-mobility and city.

Luigi Crema, Director of the Centre for Sustainable Energy, presented the European Context of they Hydrogen Valleys, on March 23. The presentation was included in the session entitled "*Idrogeno verde: dalle tecnologie per la sua produzione all'utilizzo nelle hydrogen valleys* [Green Hydrogen: from the the production technologies to its use in the hydrogen valleys]". The event, chaired by ENEA and H2IT - Associazione Italiana Idrogeno, and gave an overview on the legislation and regulations currently present as well as on the challenges that this energy sector might face.

On the same day, Edoardo Gino Macchi - Head of the Battery Technologies Area of the Centre for Sustainable Energy - participated in the roundtable on the Downstream segment of the Batteries Supply Chain.

The roundtable was part of the session "La filiera nazionale delle batterie: a che punto siamo? [The national supply chain of batteries: where are we?]", The event, chaired by ENEA and MANZ Italia, aimed at presenting the state-of-art of the two Important Project of Common European Interest (IPCEI projects) on batteries, which gathers numerous companies and research centres and cover the whole supply chain.

The discussion involved different stakeholders and was divided in two session: the first on the Upstream segment (raw materials and production) and on recycling, the second on the Downstream segment (Manufacturing and Application).

The K.EY Fair provides a comprehensive showcase for technologies, integrated solutions and services that can guide the energy transition towards a carbon-neutral economy, giving the opportunity to stakeholders, players and leaders in the renewable energy sector to meet and communicate with each other.

31 MARCH 2023

Luigi Crema in Prague at the Hydroge Days!

Another conference for the Centre for Sustainable Energy of FBK, to conclude a March rich of events!

Luigi Crema, Director of the Centre SE and President of Hydrogen Europe Research, gave the presentation entitles "Priorities for hydrogen R&I in Europe: The perspective of Hydrogen Europe Research" during the session Overview of hydrogen policies, strategies and research activities at the Hydrogen Days 2023.



In the afternoon, Luigi chaired the session Overview of hydrogen research strategies and hydrogen activities which saw the participation of representatives from the University of Birmingham (UK), New Energy and Industrial Technology Development Organization NEDO (Japan), Business Sweden (Sweden) and CNRS (France).

The 13th International Conference on Hydrogen Technologies took place in Prague between 29 and 31 March 2023, and is organised by HYTEP - Czech Hydrogen Technology Platform.

24 APRIL 2023

The AMETHYST Project to Develop Local Hydrogen Ecosystems in the Alpine Region Kicks Off

Climate change and massive use of fossil fuels are having visible and tangible effects on the sensitive Alpine region and the beauty of its landscapes. It is sufficient to think of the rise of temperatures of the last two years and the lack of water. AMETHyST overall objective is to support the deployment of local Alpine green hydrogen ecosystems where several green H2 applications are combined on a geographical area with high potential for H2.



This project will pave the way to the implementation of Alpine Hydrogen Valleys and an Alpine post-carbon lifestyle, through the raising of capacities and understanding of public authorities and implementation of pilot projects, with the support of sectoral agencies and innovation clusters.

The Center for Sustainable Energy of the Fondazione Bruno Kessler coordinates the first of three work packages, which aims at raising awareness in the territories involved on the potential of green and low carbon hydrogen in the Alpine area, with a specific attention to the tourist sector. In particular, the researcher Eleonora Cordioli will lead numerous activities including the mapping of initiatives, technologies and economic models involving the production or use of hydrogen in the Alpine areas, and the creation of a platform for the collection and sharing of knowledge acquired as a tool for identifying best practices and development models. Several roundtables and a conference in Trentino will also be organized. These events will involve project partners, but, above all, local stakeholders, and will not only focus on sharing the results of the activities and explore the issues, but also pave the way for local initiatives, opportunities and Hydrogen Valleys and take a step forward towards the decarbonization of the Alpine areas, especially in the tourism sector.

On March 7th and 8th, Luigi Crema, Director of the Center for Sustainable Energy of FBK, and the researchers Eleonora Cordioli, Sara Stemberger and Jacopo de Maigret took part in the kick-off event for AMETHyST in Moûtiers in the French Alps.

"The launch of the AMETHYST project in Moûtiers was successful!" commented Eleonora Cordioli, researcher at the Centre for Sustainable Energy and WP Leader of AMETHyST "The kick-off meeting was a great opportunity for officially starting the activities and exchanging views with partners. We are confident that the project will help drive the transition towards sustainable Alpine territories, reinforcing the hydrogen value chain and supporting public authorities in developing local energy plans and regional strategies for the deployment of green hydrogen solutions. A step forward to the creation of Alpine H2 ecosystems."

Luigi Crema, Director of the Centre for Sustainable Energy, reported that *"It was a pleasure to support the event in Moûtiers. It has brought together a lot of stakeholders of the hydrogen value chain and several passionate stakeholders to boost hydrogen in several Alpine projects. The workshop/event has highlighted several important and relevant points to accelerate the hydrogen uptake, based on Alpine specific values. First of all, the need to work on innovative business cases, and in parallel to this, the need of incentives to support the realization of an attracting market framework for hydrogen."*

Read the entire press release in English, here: <https://magazine.fbk.eu/en/news/amethyst-project-to-develop-local-hydrogen-ecosystems-in-the-alpine-region-kicks-off/>

Read the entire press release in Italian, here: <https://magazine.fbk.eu/it/news/al-via-il-progetto-amethyst-per-lo-sviluppo-di-ecosistemi-locali-di-idrogeno-nel-territorio-alpino/>

24 APRIL 2023

HyCARE PROJECT: an innovative approach for renewable energy storage, now reality

The exhibition event of this European Project took place in Paris, on April 21st, 2023, with the presentation of the project activities and the demonstration of the prototype.

Last April 21st, 2023, Matteo Testi - Head of Hydrogen Technologies Area, together with Ilaria Alberti - Knowledge Manager of the Centre SE, and the researchers Davide Ragaglia and Giacomo Gottardi, participated in the final event of [HyCARE Project](#) took place in Paris with an exhibition entitled "The HyCARE system. Opportunities and challenges of the energy storage sector".

The show hosted by ENGIE Lab Crigen in cooperation with CNRS aimed to show the main results of activities carried out during the HyCARE Project, supported by the [Clean Hydrogen Partnership](#), and coordinated by the University of Turin.

The day started with the presentation of the project activities, outlining the process for testing and tailoring the hydrogen carrier as well as those related to the production and processing. Heat management was also a fundamental topic, together with the description of the design and building of the tank, the system integration, its commissioning, and validation. Finally, the techno-economic analysis was explained together with a short overview of exploitation and dissemination activities implemented.

Following the Partners' presentations, HyCARE hosted other three EU projects COSMHYC, SHERLOHCK and HyPSTER on hydrogen storage topic that presented their activities and shared their own experience.

Finally a Stakeholder Roundtable was moderated by HyCARE Coordinator, Marcello Baricco, with Patricia De Rango – Member of Task 40 of Hydrogen Technology Collaboration Programme (Hydrogen TCP) within the International Energy Agency, Olivier Joubert – Director of the French Federation of Hydrogen Energy FRH2, Abdelilah Slaoui – Director of the CNRS Task Force on Energy and co-director of the PEPRH2, Pierre Roy, Director of European Strategic Collaborative Program, Enterprise relationships Directorate at CNRS. The discussion focused on the big challenges of hydrogen storage in the future.

The event wrapped up with the visit to the demonstrator guided by Jose M. Bellosta von Colbe – expert on metal hydrides from Hereon, who explained the functioning and components in the container, followed by the visit to the laboratories of ENGIE Lab CRIGEN guided by Reda Bellahcene and Olivier Lefranc, from ENGIE.

“It has been a great challenge” – says prof. Marcello Baricco, of the University of Turin and project coordinator – “but we are now happy to demonstrate the use of hydrogen as an energy carrier. The theoretical studies on metal hydrides, performed in last years in European laboratories, find now a real application at a large scale. The combination of Metal Hydrides with Phase Change Materials for the thermal management of a hydrogen storage system was claimed since a while, but now it is a reality. We really thank the Clean Hydrogen Partnership for the financial support to the project. All partners have worked together with professionalism and enthusiasm, allowing to reach the final goal of the HyCARE project.”

Read the entire press release in English, here: <https://www.fbk.eu/en/press-releases/progetto-hycare-un-approccio-innovativo-per-lo-stoccaggio-di-energia-rinnovabile-ora-diventato-realta/>

Read the entire press release in Italian, here: <https://www.fbk.eu/it/press-releases/progetto-hycare-un-approccio-innovativo-per-lo-stoccaggio-di-energia-rinnovabile-ora-diventato-realta/>

Check out the website: <https://hycare-project.eu/category/news/>



4 MAY 2023

Luigi Crema and Edoardo G. Macchi at the World Hydrogen & Renewables Italy Conference

In these days, the World Hydrogen & Renewables Conference is taking place in Milan. The event is organised by World Hydrogen Leaders and, with its 80 speakers and more than 200 participants, it is considered an unmissable opportunity for renewable energy and hydrogen professionals to come together and understand the key industry trends, technology, and strategies to effectively integrate and advance the clean energy and hydrogen sectors in Italy and Europe as a whole, while enjoying exclusive networking activities.

Yesterday, on 3rd May 2023, the Director of the Centre for Sustainable Energy of FBK Luigi Crema and the Head of Battery Technologies Area Edoardo G. Macchi participated as speakers in two panels. Edoardo Macchi focused on how innovation in battery storage can secure flexibility in the grid, giving an overview of long-duration ESS and promising non-electrochemical energy storage technologies, including the strategies to increase the relevant skills. The panel "The Role of Battery Storage as a Crucial Piece of the Puzzle" saw also the participation of Esmeralda Colombo (CMCC), Marco Bertazzi (Encavis) and Filippo Meucci (Statkraft).

In the afternoon, Luigi Crema with Massimo Valsania (EthosEnergy) and Viviana Cigolotti (ENEA) participated in the panel "The Potential for Hydrogen in Italy" moderated by Tim Podesta (World Hydrogen Leader). The discussion developed around three main topics related to the investment landscape for hydrogen in Italy and the development of hydrogen value chain development, the enabler for Italy's geographical and climatic conditions for achieving its ecological and energy transition goals, and the international co-operation needed to accelerate the uptake of hydrogen in the EU, and Italy's role in this transition.

Check out the website: <https://www.worldhydrogenrenewablesitaly.com/>



9 MAY 2023

Matteo Testi at the Wired Next Festival

On Saturday 6 May, the Head of Hydrogen Technology Area Matteo Testi participated in the talk "*L'intelligenza energetica*" at the Wired Next Festival.

The panel saw the participation of Matteo Testi (FBK), Fabio Fava (Professor at the University of Bologna) and Francesca Failoni (Chief Financial Officer and co-founder of Alps Blockchain). The speakers discussed about how to reduce waste, differentiate production, enable new consumption, as well as about the role of digital technologies in energy management.

Wired Next Festival celebrated its 10 years and started its journey in Rovereto, on Saturday 6 and Sunday 7 May.

The leitmotif of this edition was *Italy, the place of innovation*. A celebration of our country as a territory that knows how to combine creativity, art and technology, a window on the future and on the challenges to be faced, on the skills to be developed, but also on the legacy of a past that can be a guide in this transformation process.

Through music, debates, interviews, creative workshops and experiences the event aims at raise the awareness on how to safeguard the precious uniqueness of the country and how to enhance it in the face of increasingly complex international scenarios, with an eye to social issues and the integration of all people. Because Italy is a place of innovation for everyone.



Source: <https://eventi.wired.it/wnf23-rovereto>

22 MAY 2023

Luigi Crema speaks about hydrogen at the Galileo Festival dell'Innovazione

Last Saturday, 20 May 2023, Luigi Crema participated in the panel "*Idrogeno, un ponte verso un futuro sostenibile [Hydrogen, a bridge to a sustainable future]*" of the Galileo Festival dell'Innovazione.

The President of Hydrogen Europe Research and Director of the Sustainable Energy Centre underlined the importance of hydrogen in the decarbonisation process to realise a resilient and strong energy system, that will be able to support the deep electrification of the final uses.

The event was an important moment of discussion and exchange of opinion between the speakers: Vito Di Noto - Professor of Electrochemistry for Energy at the University of Padua, Emanuela Lucchini - President of Ici Caldaie, Roberto Gasparetto - Managing Director of AcegasApsAmga.

This year, the Festival celebrated its 11th edition and took place in Padua, from Friday 19th to Sunday 21st May 2023, with more than 60 events. The event is promoted by the Municipality of Padua and ItalyPost, and is focused on 4 topic areas: space economy, robotics and AI, energy, life sciences and biotech. For more information on the event check [this link](#).

24 MAY 2023

Luigi Crema invited to present at the Hydrogen Ecosystem North Adriatic Conference 2023

On Tuesday 23 May 2023, the third edition of the Hydrogen Ecosystem North Adriatic Conference took place in Nova Gorica (Slovenia).

The rich agenda included the participation of industrial parties, associations, public authorities and Universities.

Luigi Crema - as President of Hydrogen Europe Research and Vice President at the Italian Association for Hydrogen and Fuel Cells, spoke about the importance of the transnational cooperation and cross-regional dimension of the NAHV.

The purpose of the event is to bring together the parties creating an unprecedented phenomenon of cross-regional cooperation in the transition towards a clean energy future based on clean hydrogen. The goal of the 3rd conference is to accelerate activities related to the development of North Adriatic Hydrogen Valley (NAHV) project, the first Transnational Hydrogen Valley project in the EU in 2023 and to boost other already ongoing projects developed by industry towards

a regional hydrogen ecosystem to accelerate regional and European energy transition, to scale innovations. Industrial partners, universities, and society leaders from participating countries are working together to explore further development opportunities and accelerate already envisaged projects.



29 MAY 2023

The Partners of the JIVE projects met in Toulouse!

On the 24th and 25th of May, Edoardo Gino Macchi - Head of Battery Technology Area, and the researcher Adriano Li Matsumura travelled to Toulouse (France) to participate in the General Assembly of the projects JIVE and JIVE 2.

The projects involve the implementation of Fuel Cell Electric Battery Buses (FCEBs) in 16 different cities around Europe. Fondazione Bruno Kessler, through the Centre for Sustainable Energy, is partner to the projects and is responsible to get data on the perception and satisfaction of different stakeholders, such as bus passengers, bus drivers, and policy makers.

During the Assembly, all partners presented the activities state-of-art, and exchange the challenges faced in implementing FCEBs as a new form of public transportation. Following the meeting, the participants had the opportunity to make a site visit to FCEBs.

30 MAY 2023

Giulia Di Gregorio at the Industrial Days to present her research!

On the 4th of May 2023, Giulia di Gregorio gave the presentation entitled "Sputtering Techniques for Catalyst Fabrication in Water Electrolysis" at the Industrial Days in Rovereto.

Giulia is a PhD student of the Doctorate Program in Industrial Innovation at the University of Trento. At the [Industrial Innovation Day 2023](#), Giulia spoke about the research that she is doing at the Centre for Sustainable Energy of Fondazione Bruno Kessler, in collaboration with the company [ENPHOS](#).

The studies are focusing on the development of novel high-performant and cost-effective PGM-free electrocatalysts for Anion Exchange Membrane Water Electrolysis using sputtering techniques.

The Industrial Innovation Day took place at the Polo Meccatronica in Rovereto, on May 4. The initiative is organised by [The Doctorate Program in Industrial Innovation](#) - co-founded by the University of Trento and the Fondazione Bruno Kessler. It is an interdisciplinary program that offers a wide range of courses by the Fondazione Bruno Kessler and the Departments of Information Engineering and Computer Science (DISI), Industrial Engineering (DII), Economics and Management (DEM), Civil, Environmental and Mechanical Engineering (DICAM) and Physics (DIF) of the University of Trento.

Companies are the key players of the Program that propose specific research problems (e.g. research topics) to solve and participate in the design of individual educational paths

31 MAY 2023

Wired Italia speaks of Luigi Crema, invited at the Wired Digital Day in Lecce

On Tuesday 30 May, the Director of Center for Sustainable Energy of the Fondazione Bruno Kessler Luigi Crema gave a speech on hydrogen during the event Wired Digital Day, in Lecce.

The presentation entitled "La scommessa sull'idrogeno per far correre l'economia [The bet on hydrogen to get the economy going]" underlined how the energy transition is an obligation that cannot be waived, but renewables alone cannot be enough to guarantee continuity of supply. Luigi explained how hydrogen is one of the most concrete possibilities for a green turning point in the entire energy chain: the infrastructure for transmission is there and the raw material is not lacking.

As reported in the article of Wired Italia, at the beginning of the year 2023, the Apulia Region started the Hydrogen Valley tender to encourage companies to submit projects to build renewable hydrogen production plants in abandoned industrial areas.

"Hydrogen could become a pillar of the future energy system, accompanying deep electrification, thus creating the need to develop a complete market" remarked Luigi Crema. "For Europe, hydrogen has become an important theme, the industry has collaborated with research for several years and in fact the European industry is an industry that plays it on a global level".

Source: <https://www.wired.it/article/wired-digital-day-2023-racconto-puglia/>

Wired Digital Day took place on May 30 at the Apollo Theater in Lecce, and it consists of an entire day of talks, presentations and debates to discover the future. Sustainability, energy transition, manufacturing 4.0, healthcare and aerospace are changing the rules of the world; those who lead the change will tell how to build a society that respects the environment, is creative and capable of looking beyond traditional borders.

The new materials that science makes available to industry, the hydrogen that will power factories in the next decade and the micro-satellites that will assist us from low Earth orbit are an opportunity for the economic development of territories. Technological innovations that find their home in Puglia, thanks to companies, scientific and biomedical centers that work to found the Italy of 2050.

Source: <https://eventi.wired.it/digitalday2023/home>

1 JUNE 2023

Matteo Testi as speaker at the First Italian Workshop on Ammonia Energy

The *First Italian Workshop on Ammonia Energy* has been held from 14.30 on 31 May 2023 in Florence, at the Auditorium of Santa Apollonia.

Ammonia Energy is emerging as a key topic towards the decarbonisation of power, heat and transportation sectors.

The event organised by the Istituto di Scienze e Tecnologie per l'Energia e la Mobilità Sostenibili del Consiglio Nazionale delle Ricerche (CNR-STEMS), the Italian Section of the Combustion Institute - ASICI, and the Universities of Pisa, Perugia and Florence, gathered experts from Academia, SMEs and Industrial companies discussed on the "ammonia economy" open issues.

The Head of Hydrogen Technologies Area at the Centre of Sustainable Energy of FBK was invited as speaker at the event. Matteo Testi outlined the activities of the Centre in this field and focused on the project AMON, which aim at developing a novel system for the utilization and conversion of ammonia into electric power at high efficiency using a solid oxide fuel cell. The AMON Project is coordinated by FBK through the Centre SE.



5 JUNE 2023

The Centre SE involved in the project THOTH2

The THOTH2 consortium has been established with the aim of providing energy measurement value chain and instruments' ability to accurately measure the physical parameters of hydrogen and natural gas mixtures (H2NG) with increasing hydrogen (H2) percentages, up to 100%.

THOTH2 is funded by the European Union with almost 2 million euro over two and a half years.

THOTH2 vision will lead to an acceleration towards the H2 economy, contributing to REPowerEU and NextGeneration EU objectives. The project impact potential includes the establishment of a R&D Hub center, which can include THOTH2 partners and Advisory Board members, to translate into value the results achieved by the project, aiming to the development/update of international standards, foster innovation in the field of H2NG blending measuring devices, and supporting H2 value chain development leveraging on the EU gas infrastructure.

To maximize hydrogen blending potential in natural gas (NG) networks, a systemic and multi-disciplinary approach to make NG infrastructure resilient to the challenges of tomorrow is needed, together with industrial and research players' competences.

Two different centres of FBK will be involved in the project: the Centre for Sustainable Energy (SE), which promotes R&I on new energy solutions, for the production, distribution and storage of energy in order to minimize environmental impact and contribute to the deep decarbonization of our society, targeting technology transfer in collaboration with industrial and territorial partners, and the Centre for Sensor and Device (SD), the centre of reference for the development of novel concepts in sensors and devices for Big Science and for industrial and technical applications.

For more information on the project, read the press release:

<https://www.fbk.eu/en/press-releases/launch-of-the-eu-funded-project-thoth2/>

Check the project website: <https://thoth2.eu/>



9 JUNE 2023

The Center for Sustainable Energy participated in the 2nd Plenary Session of Batteries Europe

The second general assembly of the European Technology and Innovation Platform "Batteries Europe" has been held in Brussels on Wednesday, 7th June 2023, with the title "European Battery Ecosystem: how innovation improves competitiveness and resilience in Europe".

Over 100 stakeholders attended the event, including approximately 80 in-person participants and some more online attendees. Among them, there were three representatives of the Area "Battery Technologies" of the Center for Sustainable Energy of FBK: the Head of Area Edoardo G. Macchi and the researchers Mattia Duranti and William Gomes de Morais.

The Center SE also participated in the first in-person meeting of the joint working groups Batteries Europe/BEPA, on the 8th of June 2023.

What are the Working Groups? They correspond to six distinct R&I areas that are key to achieving a competitive, sustainable European battery industrial manufacturing capability and enabling zero-emission mobility and renewable energy storage integration. Together, these groups shall cover all segments of the battery value-chain. These six areas are:

- WG1 - New and emerging battery technologies
- WG2 - Raw materials and recycling
- WG3 - Advanced materials
- WG4 - Cell design and manufacturing
- WG5 - Application and integration: Mobile
- WG6 - Application and integration: Stationary

Edoardo G. Macchi participated in the discussions of WG1 and WG6, Mattia Duranti in the debates of WG5 and WG6, William Gomes de Morais in the WG3 and WG4.

The Batteries Europe is a H2020 project coordinated by BEST (Batteries Europe Secretariat) project, led by InnoEnergy with the participation of VDI-VDE-IT, EASE, EERA, CLERENS, SINTEF (Industry and Energy), INSTM, CIC energiGUNE, ENEA and Zabala.

The project aims to accelerate and support the establishment of a globally competitive European battery industry and to strengthen the synergies and complementarities among EU initiatives. This will be done through different levels of engagement at European, national and international level. Check the project website: <https://batterieseurope.eu/>

Check the agenda to know more about the event, [at this link](#).



14 JUNE 2023

Luigi Crema invited as speaker in the seminar "Sostenibilità: le opportunità dell'idrogeno e gli investimenti green"

On Tuesday 13 June, Luigi Crema gave the presentation "L'idrogeno e le opportunità per le imprese [Hydrogen and opportunities for industries]" at the event Sostenibilità: le opportunità dell'idrogeno e gli investimenti green [Sostenibilità: le opportunità dell'idrogeno e gli investimenti green].

The seminar was hosted by SolydEra, in Pergine Valsugana, and organised by Confindustria Trento, the association representative of the identity, interests and service of almost 600 industries located on the territory of Trentino.

The aim of the event was to clarify the doubts of companies regarding a hot topic, which is the subject of numerous investments.

Read more about the event (in Italian): <https://www.confindustria.tn.it/it/eventi/le-nostre-iniziativa/seminari-e-webinar/sostenibilita-le-opportunita-dellidrogeno-e-gli-investimenti-green/>

22 JUNE 2023

Luigi Crema as keynote speaker at the event "Il Tavolo di Lavoro della Community Idrogeno" of The European House - Ambrosetti

Today, 22 June 2023, [The European House - Ambrosetti](#) organised the event "The Working Group of the Hydrogen Community" at the [Be Factory - Progetto Manifattura](#) in Rovereto.

The event was organised in collaboration with [Trentino Sviluppo](#), [H2IT](#) and [Fondazione Bruno Kessler](#); and was sponsored by numerous well-known companies.

The Working Group consisted of different panel discussions focusing on different topics. Starting from the Hydrogen Valleys, then the attention was given to the synergies between the industrial and the research systems, and to the development opportunities where infrastructures were underlined. Then, the panelists dealt with the transport sector as starting point for the H2 supply chain and to foster the industrial competitiveness. The event ended with a visit to [SolydEra](#).

Luigi Crema has been the keynote speaker during the panel entitled "Synergies between the industrial and research systems" which saw the participation of Massimo Bertoldi - SolydEra, Antonio Miotello - University of Trento, Alessandro Paneghel - Smart Industry, and Simone Mausoli - Bureau Veritas.

Oggi, 22 giugno 2023, [The European House - Ambrosetti](#) ha organizzato l'evento "Il Tavolo di Lavoro della Community Idrogeno" presso la [Be Factory - Progetto Manifattura](#) a Rovereto.

Il tavolo di lavoro è stato organizzato in collaborazione con [Trentino Sviluppo](#), [H2IT](#) e [Fondazione Bruno Kessler](#); con la partnership di numerose e conosciute aziende.

L'evento è stato strutturato in diverse discussioni con focus diversi. A partire dalle Hydrogen Valleys, l'attenzione si è poi focalizzata sulle sinergie tra il sistema industriale e quello della ricerca, per poi passare alle opportunità di sviluppo e alla necessità di migliorare le infrastrutture. Tra i temi, anche quello del settore trasporti. La giornata si è conclusa con la visita a [SolydEra](#).

Luigi Crema ha partecipato come keynote speaker nella discussione "Sinergie tra sistema industriale e sistema ricerca" che ha visto la partecipazione di rappresentanti di entrambi i settori: Massimo Bertoldi - SolydEra, Antonio Miotello - Università di Trento, Alessandro Paneghel - Smart Industry, e Simone Mausoli - Bureau Veritas.

26 JUNE 2023

Matteo Testi, Ilaria Alberti and Luca Prattico' participated in the meeting of AMON project

The first meeting of the project AMON "Development of a next generation AMmONia FC system" took place on the 19th and 20th of June 2023 and was hosted by [Technical University of Denmark](#) in Copenhagen (Denmark).

The meeting, led by the Project Coordinator Matteo Testi, has been an opportunity for Partners to discuss on the activities implemented during the first six months of the project, and to exchange views on the steps to be taken in order to reach all the expected results.

The researcher Luca Prattico' presented the status of technical activities the Center is involved in, while Ilaria Alberti illustrated the work done within the project management and the communication tasks.

Following the meeting, the members of the Consortium had the possibility to visit the laboratories of DTU.

The project is Coordinated by [Fondazione Bruno Kessler](#) - through the Center for Sustainable Energy. It will last for 3 years and is funded from the [Clean Hydrogen Partnership](#).



28 JUNE 2023

Luigi Crema as speaker at the CEOs Electrolyser Summit and at the European Hydrogen Forum

This week started with two big events in Brussels: the CEO Electrolyser Summit and [the Forum of the European Clean Hydrogen Alliance](#) respectively on July 26 and 27, 2023.

The 6th edition of [the Forum](#) took place at La Maison du Bois in Brussels, and for the first time the Forum will be a high-level Forum with the participation of CEO and equivalent administrators. Both events are organised by the [European Clean Hydrogen Alliance](#), which was set up in July 2020 to support the large-scale deployment of clean hydrogen technologies by 2030. It counts over 1700 members from industry, public authorities, civil society, investors and the research community. The alliance aims to promote investments and stimulate renewable and low-carbon hydrogen production, transmission, distribution and use across various sectors (industry, mobility, residential applications).

On the first day, Director Luigi Crema - as President of [Hydrogen Europe Research](#) - moderated the session "CRMs and advanced materials for a coherent EU's ELY expansion" with Mr Mark E. Newman - President and CEO of Chemours, Mr Damien Lenoble - CEO of LIST, and Mr Vincent Wille - CEO of Agfain.

Yesterday, Crema participated in the second Panel of the Forum entitled "Skills for the European Hydrogen Economy". The panel saw the participation of Maive Rute - Deputy Director-General DG GROW, Dr Olaf Jedicke from the Karlsruhe Institute for Technology - GreenSkills4H2, and Amy Adams - Vice President Government Partnerships and Funding, Cummins.

29 JUNE 2023

The Centre for Sustainable Energy participated in the NEWELY Final public workshop

Last June 20, 2023, the final event of [NEWELY Project](#) took place in Bad Zwischenahn (Germany) in the form of a poster exhibition. The event aimed to show the main results of activities carried out during the NEWELY Project.

NEWELY is a European project funded by the [Clean Hydrogen Partnership](#) and coordinated by [DLR - the German Aerospace Center \(Germany\)](#).

The project developed and tested components for the next generation of anion exchange membrane water electrolyzers (AEMWE). These can reach twice the performance of the state of the art of AEMWE operating with very low concentration KOH feed. Additionally, a 5-cell stack with elevated hydrogen output pressure was designed and constructed.

Francesca Panaccione and Giacomo Gottardi, respectively researcher and technologist at the Center for Sustainable Energy, participated in the event with a poster related to experimental activities carried out in FBK within the project.

In the framework of the NEWELY project, FBK collaborated with other project partners ([ProPuls](#), [WHS](#) and [CEA](#)) in two Work Packages: WP4 and WP5.

In particular, the researchers of the Center were involved in

- the development of a testbench in the FBK laboratory, used for the AEM single cell testing activity and for the AEM stack under development (WP4);
- all the experimental activity on the AEM cell, which implied the definition of a common test protocol to be used by all involved partners, the pre-treatments required for each component and the final assembly of the single cell, with the final goal of the electrochemical characterization of the cell.

Almost 100 stakeholders from academia and industry sectors participated in the event. The poster session stimulated the interest of the participants and encouraged the dialogue on electrolyzers and membrane among different stakeholders and experts in the field.

Read and download the entire press release at this link: <https://newely.eu/2023/06/28/newely-project-the-opening-event-of-emea-workshop-2023/>

Read the news about the last project meeting of NEWELY Project, at this link: <https://newely.eu/2023/06/22/the-last-meeting-for-newely-consortium/>

3 JULY 2023

Elena Crespi presents PROMETEO strategy control at ICCEP2023

Elena Crespi, researcher at the Center for Sustainable Energy at Fondazione Bruno Kessler, presented the poster "Control of a Solid Oxide Electrolysis system for hydrogen generation from solar power and thermal energy storage". The poster graphically represents the results of the experimental campaign performed at FBK facility on a 5 kWe stack, and proposes an effective system control strategy for the 25 kWe pilot system built within the [PROMETEO project](#).

The [8th International Conference on CLEAN ELECTRICAL POWER Renewable Energy Resources Impact \(ICCEP2023\)](#) took place last week, from the 27th to the 29th of June 2023, in Terrasini, Sicily (Italy). The aim of the Conference is to promote a permanent scientific forum, where people involved with clean electrical power generation may compare their experiences and present innovations to improve the current state of the art. The conference is attended by representatives from Industry, Research, and Academia sectors.

The poster stimulated the interest of the participants and encouraged the dialogue among the participants. Read about it at this link: <https://prometeo-project.eu/news/fbk-presents-a-poster-at-iccep2023/>

6 JULY 2023

FBK hosted the 1st General Assembly of SINNOGENES Project

In occasion of the first project meeting, the SINNOGENES Consortium met again in Trento on the 5th and 5th of July 2023, hosted by Fondazione Bruno Kessler.

"Storage INNOvations for Green ENERgy Systems" in short SINNOGENES aims to develop the Storage INNOvations energy toolkit.

What is it? A complete framework of methodologies, tools and technologies that will enable the grid integration of innovative storage solutions beyond the state-of-the art, while demonstrating sustainability, technical performance, lifetime, non-dependency on location geographical particularities and cost.

The project innovations will be then demonstrated in six pilots in Portugal, Spain, Germany, Greece and Switzerland.

Fondazione Bruno Kessler, through the Center for Sustainable Energy will be responsible of the Use case definition (T2.2) and will be involved in activities related to the environmental and impact assessment e flexibility markets compliance.

During the meeting, the members of the Consortium were organised in groups guided by the colleagues Edoardo G. Macchi, Mattia Duranti and Saman Korjani to discuss the project use cases in an engaging workshop.

Read more about the project here: <https://sinnogenes.eu/>



11 JULY 2023

AMETHyST: Funivie Madonna di Campiglio hosted AMETHyST roundtable on hydrogen technologies

On July 7, the Center for Sustainable Energy and [Funivie Madonna di Campiglio](#) organized a roundtable to discuss with the local stakeholders how to decarbonize the tourism sector in the Alps through hydrogen applications, and to identify the potential for hydrogen development in that area.

This initiative was organized in the framework of the [AMETHyST project](#), an Interreg Alpine Space project whose aim is to support the deployment of local Alpine green hydrogen ecosystems to pave the way for a post-carbon lifestyle in the Alps.

Following the presentation of the ski area of Funivie Madonna di Campiglio by general manager Bruno Felicetti, Eleonora Cordioli - researcher at the Centre for Sustainable Energy and WP Leader of AMETHyST - presented the project, Luigi Crema - Director of the Center - gave an overview of the hydrogen strategic role on a European level and researcher Jacopo de Maigret presented currently available hydrogen technologies. The discussion was then opened and highly participated.

The key takeaways from the roundtable discussion were the following:

- The ski area of Madonna di Campiglio holds a key role in potential new hydrogen projects as they have already participated in other R&I projects concerning the application of new technologies to lower their emissions and are engaged in many sustainable activities.
- Local stakeholders confirm a strong interest in new technologies, hydrogen technologies included, that could help decarbonize the tourism sector in the Alps. In particular, hydrogen is seen as a key element to store renewable energy as they see a mismatch between renewable energy production in the summer and a strong energy request during the winter season.
- AMETHyST could provide local stakeholders with a preliminary feasibility study to understand the viability of these hydrogen applications.

A second roundtable will soon take place in Trento, hosted by FBK, and will involve both companies and other local stakeholders.

If you want to know more about the project, please check the press release in English published last April 24, here: <https://magazine.fbk.eu/en/news/amethyst-project-to-develop-local-hydrogen-ecosystems-in-the-alpine-region-kicks-off/> and in Italian: <https://magazine.fbk.eu/it/news/al-via-il-progetto-amethyst-per-lo-sviluppo-di-ecosistemi-locali-di-idrogeno-nel-territorio-alpino/>
Project website: <https://www.alpine-space.eu/project/amethyst/>

12 JULY 2023

Director Luigi Crema is member of TransHyDE Advisory Board

By 2045, Germany wants to achieve greenhouse gas neutrality. To achieve these goals, there is need to significantly increase energy efficiency. Germany also needs to decarbonise its energy and raw material supply, which is still largely based on fossil fuels, by switching to renewable or renewable-based energy sources, such as hydrogen.

The Federal Government has therefore developed a National Hydrogen Strategy to drive forward the use of climate-friendly hydrogen technologies, including an action plan intended to lay the basis for private investment in the production, transportation and use of hydrogen. The measures laid out in the action plan are divided into eight areas, among these there is "Research, education and innovation".

Within this area, three Hydrogen Flagship Projects have been identified and one of these is TransHyDE. Hydrogen transport infrastructure is fundamental to make the hydrogen economy work. There are many ideas but it is unclear which solution is suitable for which application and how these are best combined. TransHyDE aims to developing, evaluating and demonstrating several technologies for hydrogen transport.

The project has an Advisory Board which saw the participation of Luigi Crema, Director of the Center SE and President of Hydrogen Europe Research.

Source: <https://www.bmwk.de/Navigation/EN/hydrogen/national-hydrogen-strategy.html>

Project website: <https://www.wasserstoff-leitprojekte.de/projects/transhyde>

17 JULY 2023

AMETHyST: Providers and potential adopters discussed about H2 solutions in the Alpine tourism sector, during the second roundtable on hydrogen technologies hosted in FBK

AMETHyST project is an Interreg Alpine Space project whose aim is to support the deployment of local Alpine green hydrogen ecosystems to pave the way for a post-carbon lifestyle in the Alps. The Center for Sustainable Energy of the Bruno Kessler Foundation coordinates the first of three work packages, which aims at raising awareness in the territories involved on the potential of green and low carbon hydrogen in the Alpine area, with a specific attention to the tourist sector.

In the framework of these activities, all partners that are in charge of a case study had to organise two roundtables.

The case study of FBK will be the ski area of Funivie Madonna di Campiglio, for which FBK researchers will perform a feasibility assessment on decarbonization scenarios and H2 applications adoption.

The first roundtable took place on July 7, was organised by Funivie Madonna di Campiglio and had a focus on territorial synergies for hydrogen deployment.

On July 13th, the Center for Sustainable Energy organized a second roundtable in Trento but this time the attention was pointed on the application of H2 solutions in the Alps (with a focus on the case study), and therefore it saw the participation of three companies that are already providing H2 solutions to the Alpine tourism sector

Following the presentation of the AMETHyST project and the case study, by Eleonora Cordioli - researcher at the Centre for Sustainable Energy and WP Leader of AMETHyST - and of the potential H2 applications that could be applied to the ski area, by researcher Jacopo de Maigret, the three companies illustrated some ready-to-market applications:

- PRINOTH, with their H2 snow groomers that could be equipped with hydrogen fuel cell or with a hydrogen internal combustion engine;
- SOLYDERA, with their energy solutions based on the proprietary Solid Oxide Fuel Cell (SOFC) and stack technology for distributed cogeneration of heat and power;
- GKN HYDROGEN, with their ready to use solutions based on metal hydrides hydrogen storage: power to power solutions (providing electricity, and heat when needed) or hydrogen storage for long term storage.

All technologies provide advantages, but there are still some challenges to overcome, in particular when referring to their implementation in the Alpine areas. These challenges and opportunities were discussed between companies, potential adopters (other cable car companies in Trentino) and local stakeholders during the roundtable, identifying the bottlenecks like safety, bureaucracy, and costs, how to potentially overcome these problems and the substantial advantages that these technologies can provide.

The next step for AMETHyST project will be the mid-term conference that will take place in Trento in 2024.

Read more on the project website: <https://www.alpine-space.eu/project/amethyst/>

16 AUGUST 2023

Schools and Research: the commitment of the Center SE towards education

Fondazione Bruno Kessler believes in and promotes the development of the scientific and research culture in students. The Unit "Research and Innovation for Schools" focuses on the organization and implementation of a wide-range of activities that allows young people to live the "research world", experience a subject beyond those studied in schools, learn new skills and develop critical thinking, motivating their vocational choices for their future studies and careers.

In this context, the Center for Sustainable Energy is very active!

With the support of the Unit R&I for Schools, the Center hosts trainees, gives lectures in schools and guided tours of the labs.

In 2023, the Center SE and its researchers were involved in several activities, among others:

- participated in a series of lectures on hydrogen, batteries, solar energy, biomass and geothermal topics. The 40-hour seminar was given to the students of the Alta Formazione Professionale "Energy and Environment" - course offered by the ENAIIP Villazzano (TN).
- gave a lecture during the webinar "Energia: conserviamo, generiamo e trasformiamo" for students of secondary schools.
- organised a guided tour in the FBK Laboratories for the students Liceo A. Rosmini - 5th class (Rovereto).
- hosted three traineeships: one student from the ITT "Marconi" (Rovereto), two students from the Alta Formazione Professionale "Energy and Environment" - course offered by the ENAIIP Villazzano (Trento).

For more information on the activities with schools, check [this page](#) (in Italian) or contact us!

28 AUGUST 2023

Director Luigi Crema at the European Forum Alpbach

Since 1949, the [European Forum Alpbach](#) has taken place annually in the Tyrolean village Alpbach. The event brings together young people from Europe and from all over the world with the most innovative minds from politics, business, civil society, culture, and science to drive ideas for a strong and democratic Europe.

European Forum Alpbach 2023 lasts one week and gathers several initiatives, among them the Euregio Days and the Euregio Summit on energy transition. Luigi Crema, Director of the Center for Sustainable Energy of FBK, has been invited to participate as Jury member of the Euregio Final Innovation Award. Among the nine finalists, the Prize was assigned to Windcity, from Rovereto (Trentino). The company has developed, patented and produced a variable geometry passive turbine. It is a new concept of energy conversion that should allow energy to be efficiently extracted from the turbulent core of the wind and to transform municipal wind waste in a cycle.



The Director was asked to participate as **panelist** in the discussion following the Keynote event "Keynote "Transizione energetica e la sicurezza dell'approvvigionamento [*Energy transition and security of supply*]\"", on Sunday the 20th of August 2023.

Furthermore, Luigi Crema was invited as **Expert** supporting the individuation of future project that can be of interest for the Euregio macro-region, on Monday 21st of August.

Last but not least, the Director of the Center SE participated as speaker in the panel "The potential of scientific and technological and education in the field of energy" with Trentino Sviluppo and the University of Trento, during the EuregioLab entitled *Powering the Future: Bridging Perspectives on Renewable Energy in Europe and the Alpine Region*, event hosted by the [the European Region Tyrol-South Tyrol-Trentino](#)

Have a look at this video:https://fb.watch/mxGJai_mU5/

For more information on the Innovation Award, check this [link](#).

Read about the European Forum Alpbach, on its [website](#).

Source: <https://www.facebook.com/euregio.info> **Credits:** EFA/ Huber

Jury members: Hofer Marcus (Standortagentur Tirol), Crema Luigi (Fondazione Bruno Kessler), Blaser Tina (WISTO), Hinteregger Erwin (IDM Südtirol), Kröss Flora (Alperia), Arlanch Silvia (Dolomiti Energia), Supper Susanne (Green Energy Lab).

Finalists: Andreas Bangheri, Ilario Zanetti, Kurt Raffl, Markus Lechthaler, Alfons Huber, Giuseppe Soraperra, Hannes Ladstätter, Nicola Baraldi, Tommaso Morbiato

31 AUGUST 2023

The Laboratories of FBK's Sustainable Energy Center at the new Hydrogen Hub in Rovereto

The new Hydrogen Hub will be hosted in Rovereto at the Arcese area. This is provided for in the memorandum of understanding signed by Trentino Sviluppo with the industrial group.

The new hydrogen hub will be built in Rovereto in a portion of the compound now used by Arcese. The logistics and trucking industrial group will retain its Office Building on Via Fornaci, while Palazzina Officina, the workshop building, will be occupied again by Trentino Sviluppo and will become a technology hub for hydrogen. In fact, the new laboratories of [Fondazione Bruno Kessler's](#) Sustainable Energy Center, a flagship in renewable energy research on the national and European scene, will be hosted there. This completes the strategic plan for new science and technology hubs in Trentino, which sees the Province and [Trentino Sviluppo](#) committed to building in the coming years, alongside Polo Meccatronica and the Progetto Manifattura green hub, the new Life Sciences Hub – also in Rovereto in the area now available after Ariston left – and the Hydrogen Pole.

The Palazzina Officina workshop building will become the heart of the new Hydrogen Hub, where a laboratory will be set up to study battery, flow and next-generation energy storage technologies and hydrogen fuel cell accumulators. The hub will also house the new headquarters of Fondazione Bruno Kessler's Sustainable Energy Center, which is committed to researching innovative solutions for green hydrogen production and initiatives related to energy networks, microgrids, distribution and transmission networks. In this regard, the location in Via Fornaci proves to be strategic, as it fosters local and system policies for the expansion of the hydrogen and battery supply chain, including infrastructure projects, such as the introduction of hydrogen along the Brenner freeway axis.

The Sustainable Energy Center also has a strong international reputation. Evidence of this is the recent award to Fondazione Bruno Kessler of the “[IPCEI Batterie 2 – Eubatin](#)” project, in which 12 European countries and some 40 companies are participating, approved in May 2022 by the Ministry of Economic Development. In parallel, the foundation is engaged in the preparation and start-up phase of the “[IPCEI Idrogeno 1](#)” project, together with [ENEA](#) and other six Italian companies.

In compliance with the planned timeframe, it was decided to temporarily set up spaces to be dedicated to laboratories inside the new “Be Factory” area of Progetto Manifattura, that is expected to be available by early summer 2024, where the machinery financed by these research projects can be installed and put into operation, pending the completion of the work on the new Hydrogen Hub.

Source: Trentino Sviluppo press release (m.d.c.)

Read the entire press release here, in English: <https://magazine.fbk.eu/en/news/fbks-sustainable-energy-center-laboratories-at-the-new-hydrogen-hub-in-rovereto/>

Read the entire press release here, in Italian: <https://magazine.fbk.eu/it/news/i-laboratori-del-centro-sustainable-energy-della-fbk-nel-nuovo-polo-dellidrogeno-a-rovereto/>

7 SEPTEMBER 2023

The PhD student Hossein Namdar presented his work at FEMS EUROMAT

Hossein Namdar is a student of Trento University who is doing his PhD at the Center for Sustainable Energy of Fondazione Bruno Kessler.

In particular, Hossein works with the Low-Carbon Research area on on manufacturing and modifying membranes for use in proton exchange membrane water electrolysis.

Hossein presented his work at [the 17th European Congress and Exhibition on Advanced Materials and Processes - FEMS EUROMAT 2023](#), which took place in Frankfurt am Main (Germany) between 03 - 07 September 2023.

The event is the premier international congress for the latest advancements in materials science and technology and gathers leading experts, researchers and innovators offering a unique opportunity for researchers, scientists, engineers, and students to exchange ideas, share their research, and learn about the latest advances in materials science and engineering.

Hossein Namdar presented the study entitled "Investigation the effect of Argon plasma pretreatment on the performance of Aquivion membranes coated with TiO₂ films by ALD technique in proton exchange membrane water electrolysis", within the session on Membranes and Membrane-Electrode Assemblies for PEMFCs and PEMELs.

Proton exchange membrane water electrolysis (PEMWE) is a promising approach for high-purity hydrogen production. In this study, Aquivion membranes modified by Argon (Ar) plasma and coated with a thin layer of TiO₂ by ALD technique were investigated. Ar plasma pre-treatment was applied to Aquivion membranes for varying durations ranging from 300 to 1800 seconds, and TiO₂ nanofilms were grown onto the treated membranes using TiCl₄ and H₂O as precursors in the ALD technique. The performance of the resulting hybrid membranes in terms of proton conductivity, surface wettability, water uptake, ion exchange capacity (IEC), and hydration number was evaluated. The results showed that increasing the duration of Ar plasma significantly increased the proton conductivity of the Aquivion membranes, from 0.0066 (S/cm) for the neat membrane to 0.0295 (S/cm) for the Aquivion 1800s membrane. The maximum IEC value was observed for the Aquivion 1080s membrane as 1.21 (meq/g), compared to 1.10 (meq/g) for the neat membrane. Furthermore, the presence of TiO₂ on the surface and inside the membranes directly affected their hydration numbers. Similarly, the water uptake of the membranes increased with increasing plasma process time, while the contact angle remained the same due to the uniform TiO₂ film on the surface of each membrane. In conclusion, the modified Aquivion membranes with TiO₂ thin films exhibited improved proton conductivity and IEC, making them promising candidates for use in PEMWE for high-purity hydrogen production.



12 SEPTEMBER 2023

Luigi Crema invited to hold a plenary lecture at the 109° SIF National Congress

The Italian Physical Society (SIF - Società Italiana di Fisica) founded in 1897 is a non-profit association with the aim to promote, favour and protect the progress of Physics in Italy and worldwide. SIF represents the Italian scientific community, in the research, the educational and professional fields, either private or public, relative to all areas of Physics and its applications (Medicine, Biology, Informatics, Economics and Finance, Meteorology and Climate, Environment, Archeometry, Cultural Heritage and others).

SIF organises the Annual National Congress which gathers about 600 Italian physicists for a whole week, represents the meeting point of our scientific community. In spite of the various cultural and scientific facets of contemporary physics, the world of Italian researchers and physicists finds here its common background.

The Congress is composed of Plenary Sessions and 7 Parallel Sessions:

Section 1: Nuclear and Subnuclear Physics

Section 2: Solid State Physics

Section 3: Astrophysics

Section 4: Geophysics and Physics of the Environment

Section 5: Biophysics and Medical Physics

Section 6: Applied Physics, Accelerators and Physics applied to Cultural Heritage (Archaeometry)

Section 7: Physics Education and History of Physics

Every year the Congress takes place in a different location, and in 2023 the event took place from 11 to 15 September hosted by the University of Salerno.

On September 11, **Luigi Crema** opened Section 6 of the SIF National Congress with the work "Materials, methods and priorities for the development of the hydrogen value chain".

Abstract:

Hydrogen is seen as one of the most promising energy carriers to enable the deep decarbonization of our society, contributing to the development of a resilient energy system. Research will be a key driver to develop novel solutions and technologies provided with high performances, lower costs, without critical raw materials: from production, to handling and storage, to end uses. Advanced materials for electrolysis, novel technologies with innovative functionalities, breakthrough solutions will require dedicated support to enable a hydrogen sector in line with the European policies underway. Several key solutions will leverage the conversion efficiency of electrolysis up and beyond 80%, reducing the need for scarce or costly materials such as iridium or other transition metals. Novel solutions can directly produce hydrogen splitting water from direct solar radiation. New proton conductive ceramic cells can add functionalities to hydrogen production such as compression, purification, separation of hydrogen or co-electrolysis processes. Mature technologies can be then improved through novel collaboration schemes between research and industry, enabling a levelized cost of hydrogen compatible with the market needs. This will change the perspective of having a novel, clean, diffuse gas sector in form of 100% hydrogen.

Congress proceedings (page 2) can be found [at this link](#).
Have a look at the recording of the opening ceremony [at this link](#).

More information on the SIF National Congress:
<https://2023.congresso.sif.it/info>



15 SEPTEMBER 2023

Silvia Ricciuti in Copenhagen to participate in SESAAU2023

The Smart Energy Systems International Conference - SESAAU2023 took place in Copenhagen on 12-13 September 2023.

Silvia Ricciuti, researcher at the Center SE within the Sustainable Territories Area, presented the work entitled "Modelling the optimal transition of an urban neighborhood towards an energy community and a Positive Energy District" within the Session 3 Integrated energy systems and smart grids.



The work explores PED and energy community scenarios on an urban district of 6 buildings - Santa Chiara District - in Trento (Italy). This area is also one of the 3 case studies of the Horizon Europe InCUBE Project. Firstly, the 6 buildings were modelled with the Urban Modeling Interface (UMI) tool to evaluate the environmental performance with respect to operational and embodied energy use. Then, the EnergyPLAN software coupled with a multi-objective evolutionary algorithm (MOEA) was used to investigate energy decarbonisation scenarios based on different RESs, energy system integration and energy sharing.

Read more about it on the book of abstracts (p.235), [at this link](#).

Authors: Silvia Ricciuti, Gregorio Borelli, Alessandro Sartori, Md Shahriar Mahbub, Matteo Brunelli, Francesco Pilati, Andrea Gasparella, Giovanni Pernigotto, Federico Battini, Diego Viesi. The aim of SESAAU2023 is to establish a venue for presenting and discussing scientific findings and industrial experiences related to the subject of Smart Energy Systems based on renewable energy, 4th Generation District Heating Technologies and Systems (4GDH), electrification of heating and transportation sectors, electro fuels and energy efficiency.

The conference has grown to become a main venue for presentations and fruitful debates on subjects that are pertinent to the development and implementation of smart energy systems to fulfill national and international objectives.

More information on: <https://smartenergysystems.eu/>

18 SEPTEMBER 2023

The Sustainable Energy Center at the EFC23

The 10th edition of the "European Fuel Cells and Hydrogen Piero Lunghi Conference (EFC23)" took place in Capri from 13th to 15th September 2023.

Several collaborators participated in the conference presenting the activities of the Center SE and the work done on different projects.

The Director **Luigi Crema** was invited as President of Hydrogen Europe Research as keynote speaker on 13 September 2023. Luigi talked about the status and objectives of the research sector in implementing the hydrogen transition in Europe.

On September 14, **Matteo Testi** - Head of Hydrogen Technologies Area - chaired two different sections. The first session focused on "PEM electrolyzers" while the second on "Hydrogen and energy storage".



The researchers Francesca Panaccione, Farhad Farajimoghadam and Luca Prattico' presented three works respectively on the projects PROMETEO, HyUSPRe and AMON.

Francesca Panaccione presented the work entitled "Testing and characterization of a 5 kW SOE stack: full load, partial load and hot-standby mode analysis" within the session High temperature electrolysis.

The work presented by **Farhad Farajimoghadam** was entitled "A Numerical Investigation of Underground Hydrogen Storage" within the session Hydrogen and energy storage.

Luca Prattico' presented the work entitled "From direct use of ammonia in solid oxide fuel cells to the next generation of ammonia fuel cell systems" within the session Alternative Fuels. More information on the above three presentations can be found in the book of proceedings.

EFC23 is well-known conference in the fields of hydrogen energy and fuel cell technologies is held biannually in Italy, and aims to discuss the scientific progress and the most modern applications of hydrogen and fuel cell-based technologies, to prove that the need for change is a resource to cultivate. Such a view is reflected in the cross-cutting topics and wide range of applications considered one of the pillars of future European energy and transport systems, making a valued contribution to the transformation to a low carbon economy by 2050. More information on the conference: <https://www.europeanfuelcells.com/>

19 SEPTEMBER 2023

Luigi Crema invited as speaker at the EERA JP ES workshop

The **European Energy Research Alliance** (EERA) has a Joint Programme on Energy Storage (JP ES) which was officially launched in 2011 and is coordinated by Karlsruhe Institute of Technology in Germany. This JP strongly fosters the efficient development of new energy storage technologies. At present, 40 research organizations and universities from 15 different European countries are participating in the JP on Energy Storage. Each JP ES participant has a wide experience in specific fields pertaining to energy storage, important research infrastructures and relevant ongoing research activities, funded by national or European resources is achieved.

On September 14, EERA JP ES organised a workshop in conjunction with the EFC23 on: "Exploring similarities, synergies and perspectives of open electrochemical reactors for long duration energy storage".

The first session "Setting the Scene" saw the involvement of the Helmholtz Association (Germany), the Joint Research Centre of the European Commission (Belgium) and of Hydrogen Europe Research and Fondazione Bruno Kessler with Luigi Crema's presentation. Luigi's speech was entitled "Clean Hydrogen Partnership: support for hydrogen storage, priorities and strategic research agenda and possible hybridization H2 and batteries".

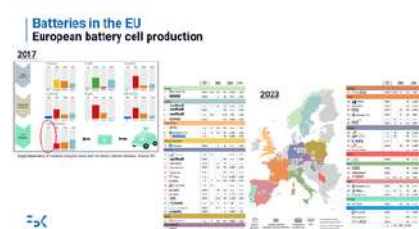
Check the entire agenda of the workshop at this link.

22 SEPTEMBER 2023

Edoardo Macchi spoke about IPCEI Project at NanoInnovation2023

Last week, Rome hosted the event NanoInnovation2023, Conference and Exhibition.

Among the numerous topics of the event, a symposium was dedicated to the Important Projects of Common European Interest (IPCEIs), within the session *IPCEI: the key role of Italy in the microelectronics, digital, health and energy large- scale EU industrial research projects*.



These projects are EU large-scale industrial research initiatives, aiming to overcome important market or systemic failures in strategic value chains, to promote sustainability and competitiveness of the national and EU economy.

Fondazione Bruno Kessler has a strong participation in several IPCEIs related to microelectronics, batteries, hydrogen and cloud. Edoardo G. Macchi gave a presentation on the IPCEIs on batteries entitled "Toward sustainable made in EU batteries: state of play of two IPCEI projects and Italy's position in the battery value chain".

The Head of Battery Technologies Area at the Center for Sustainable Energy gave an overview of the two large-scale projects that wish to promote a European battery value chain: IPCEI on Batteries (2019) and IPCEI EuBatIn (2021). Macchi also explained the overarching objectives and the differences between the two projects, and he also described the current situation of the European battery cell production.

Edoardo Macchi concluded the presentation summarising the status and perspectives of the batteries chain: the IPCEI boosted the establishment of a solid EU Battery ecosystem and industry through the creation of synergies between companies working along the battery value chain. However, the competitiveness of the EU battery ecosystem is currently at risk. Simplifying permitting procedures and increasing the specialised workforce through education and trainings can help but the EU needs to act urgently to restore its sustainable competitiveness and investment attractiveness.

More information on the event, [at this link](#).

More information on IPCEI: <https://www.ipcei-batteries.eu/>

Updated 16/10/2023: Have a look at the article published by AIRI <https://www.airi.it/event/ipcei-il-ruolo-dellitalia-nei-grandi-progetti-europei-di-ricerca-nella-microelettronica-digitale-energia-e-salute/>

25 SEPTEMBER 2023

Energy communities supported by LIFE project ECOEMPOWER

ECOEMPOWER project officially started with the kick off meeting that was organized in Trento on September 19th and 20th, gathering the 10 partners of the consortium from Italy, France, Germany, Czech Republic and Greece.



The project is financed by EU programme LIFE, and it aims at creating, in the 5 participating regions, a One Stop Shop (OSS) as a physical and virtual hub where citizens and stakeholders can access integrated services and digital tools for setting up energy communities. The OSS raises awareness about the benefits of collective energy initiatives, assists in project feasibility analysis, business model development and capacity building, and it fosters networking between energy communities, public authorities, and technology providers.

On the second day of the Kick off meeting, the consortium visited two of the three pilot sites selected by the Provincia Autonoma di Trento and part of the project: Valle dei Laghi and Villa Banale di Stenico (the third pilot site is Levico Terme).

Energy communities in Valle dei Laghi and **Villa Banale di Stenico** – yet to be legally created – will benefit from the services of the One Stop Shop to be created by the Provincia Autonoma di Trento and, thanks to their feedback, high level services will be created, that will be beneficial to all energy communities in Trentino. The same process will happen in the other 4 regions of the project, where every region will involve 3 pilot sites/energy communities that will test the services offered by the One Stop Shops.

This experience will then be valorized as a methodology and policy recommendations will be created to support regional One Stop Shops and energy communities in all Europe.

Fundamental for the project is the interdisciplinary consortium of 10 partners coordinated by Fondazione Bruno Kessler, through the Centre for Sustainable Energy. In addition to FBK there are other 2 research centers such as Università degli Studi di Trento (Italy) and Auvergne-Rhône-Alpes Energie Environnement (France); five public bodies/association such as Provincia Autonoma di Trento (Italy), Association Centrales Villageoises (France), Energie- & Umweltzentrum Allgäu (Germany), Pražské společenství obnovitelné energie (Czech Republic) and PERIFEREIA STEREAS ELLADAS/Region of Central Greece (Greece) and renowned industrial partners as BAUM consult (Germany) and UBITECH Energy (Belgium).

Read the entire press release, in English: <https://magazine.fbk.eu/en/news/ecoempower/>

Nuovo slancio alle comunità energetiche grazie al supporto del progetto LIFE ECOEMPOWER

Il Progetto ECOEMPOWER ha avuto ufficialmente inizio con il kick off meeting che si è tenuto a Trento nelle giornate del 19-20 settembre, riunendo i 10 partner del consorzio provenienti da Italia, Francia, Germania, Repubblica Ceca e Grecia.

Il progetto è finanziato dal programma europeo LIFE, e mira a istituire, nelle cinque regioni partecipanti, degli One Stop Shop per la creazione e il sostegno alle comunità energetiche, sia costituite che in divenire. Questi OSS svilupperanno servizi non solo di assistenza tecnica, ma anche di supporto economico, finanziario, legale, nonché di comunicazione, coinvolgimento sociale e formazione.

Nella seconda giornata il consorzio di ECOEMPOWER ha visitato due dei tre pilot sites, individuati dalla Provincia Autonoma di Trento e parte integrante del progetto: Valle dei Laghi e Villa Banale di Stenico (il terzo sito è la comunità energetica di Levico Terme). Le comunità energetiche di Valle dei Laghi e Villa Banale- non formalmente costituite - beneficeranno dei servizi dello One Stop Shop che verrà creato dalla Provincia Autonoma di Trento, e grazie ai loro feedback sarà possibile creare un servizio di eccellenza di cui potranno usufruire tutte le comunità energetiche del Trentino. Lo stesso accadrà con le altre quattro regioni coinvolte nel progetto, dove ogni regione coinvolgerà 3 pilot sites/comunità energetiche che testeranno i servizi sviluppati dagli One Stop Shop creati grazie al progetto. Il consorzio, quindi, creerà sia delle linee guide che potranno essere seguite da tutti i futuri One Stop Shop europei, ma anche delle policy recommendations per le istituzioni locali ed europee.

Fondamentale per il progetto è il consorzio interdisciplinare di 10 partners coordinati dalla Fondazione Bruno Kessler, attraverso il centro Sustainable Energy. Oltre a FBK, partecipano altri due centri di ricerca, come l'Università degli Studi di Trento (Italia) e Auvergne Rhone Alpes Energie Environment (Francia); 5 istituzioni pubbliche/associazioni territoriali come la Provincia Autonoma di Trento (Italia), Association Centrales Villageoises (Francia), Energie- & Umweltzentrum Allgäu (Germania), Pražské společenství obnovitelné energie (Czech Republic) and PERIFEREIA STEREAS ELLADAS/Region of Central Greece (Grecia) e importanti partner industriali come BAUM consult (Germania) e UBITECH (Belgio).

in Italian: <https://magazine.fbk.eu/it/news/ecoempower/>

27 SEPTEMBER 2023

Luigi Crema invited to speak at the Solar2Chem Conference



SOLAR2CHEM is an interdisciplinary European Training Network under Marie Skłodowska Curie Actions focused on photo(electro)chemical research, with the goal of filling the existing gap in the European industrial landscape in the area of solar chemicals production and usage in technical, economic and policy aspects.

From the 18th to 22nd of September 2023, the network organised the Solar2Chem conference in Terragona (Spain). The event entitled "From Sunlight to Fuels: uniting science and environmental responsibility" targeted an audience of 150 people among professionals from academia, industry and policymakers, with topics ranging from experimental and theoretical (photo)catalysis, solar fuels production, materials and devices for energy conversion and policy frameworks.

The Director of the Center SE, Luigi Crema, was invited to the conference in two different roles: as plenary speaker and as a panelist.

In his 45-minute presentation on "Hydrogen Europe Research and the priorities for the direct solar hydrogen production", Crema gave an overview on the challenges and key opportunities that surround the recent innovations of the hydrogen market.

Then, during the Solar Chemicals and Fuels Cluster Roundtable, the Director explained his perspective on public private partnership supporting research and innovation activities in hydrogen technologies in Europe.

For more information, check the [programme](#) on the [conference website](#).
Read about Solar2Chem [at this link](#).

29 SEPTEMBER 2023

Luigi Crema invited at the AIPE Congress

The [Associazione Italiana Pressure Equipment \(AIPE\)](#) is a non profit organization representing the Italian manufacturers operating in the Pressure Equipment sector and its related industries. The aim of AIPE is to promote the technological, scientific and economic development of its member companies by sharing resources and information in order to face in a fast and effective way the main issues for the Pressure Equipment manufacturers category, not only at local level but following an international point of view.

On the 29th of September 2023, AIPE organised the Congress entitled "Idrogeno. Technologies e prospettive di un nuovo mercato" to explore the innovations and opportunities in the hydrogen sector. Luigi Crema was among the invited speakers. The Director of the Center made the presentation "La prospettiva di sviluppo del mercato idrogeno in Europa: opportunità, sfide e barriere" where he presented the opportunities, challenges and obstacles for the hydrogen market development in Europe both from a wide and strategic point of view, as President of Hydrogen Europe Research, but also from a national and technological perspective as Director of the Center SE.



Read more about the event here: <https://www.aipe.it/en/idrogeno-tecnologie-e-prospettive-di-un-nuovo-mercato-29-settembre-2023/>

2 OCTOBER 2023

The Center SE presented their activities at the Research Night

Last Friday, 29 September 2023, the well-know annual event "The Night of Research" took place at MUSE - Museo delle Scienze, from 5 to 11PM.



Promoted by the European Commission, this initiative has become an unmissable appointment where citizens of all ages can see science with their own eyes and meet the researchers of [Trento University](#), [Fondazione Edmund Mach](#) and [Fondazione Bruno Kessler](#).

The researchers of the Center for Sustainable Energy participated in the event as well showing the activities they are carrying out in the field of energy from different angles: innovations in the sectors of hydrogen and batteries technologies, as well as project in the field of energy efficiency and community involvement.

Read more about the event here (in Italian): <https://www.fbk.eu/it/press-releases/la-scienza-illumina-trento/>

3 OCTOBER 2023

North Adriatic Hydrogen Valley launches in Portorož

The long-awaited start of the North Adriatic Hydrogen Valley (NAHV) is here at last. The first transnational initiative of this kind under the Horizon Europe programme, supported by the Clean Hydrogen Partnership, is being launched in Portorož-Portorose, Slovenia. [...]



Beginning on 1st September 2023, the NAHV will run for 72 months. It includes 17 pilots to be developed in different locations in all three partner countries. The partnership, which has been awarded a grant of €25 million by Clean Hydrogen Partnership, and is led by HSE, Slovenia's largest electricity producer and trader and the largest producer of electricity from renewable sources, includes 37 organisations: companies, universities, institutes and other public entities from the three participating countries. The project design covers the entire value chain of renewable hydrogen use, from production, through storage and distribution, to its end use in various sectors, notably industry and land and maritime transport, creating leverage to accelerate the transition to renewables on three target pillars: hard-to-abate industries, and the energy and transport sectors. These are the main reasons why the NAHV has received the Seal of Excellence, which is awarded under Horizon Europe to projects that have been highly rated. [...]

The key aim of the initiative is to create a market for green hydrogen on both the demand and supply sides, making it a competitive energy source for the future. Key industry players from all three countries will develop pilot projects to produce up to 5,000 tonnes of renewable hydrogen per year from renewable energy sources, destined for energy storage, distribution and use. It is expected that some 20% of the produced renewable hydrogen will be exchanged between the participating countries, thus creating a primary regional market for hydrogen. [...]

Fondazione Bruno Kessler as partner in the project, will be in charge of several activities such as the safety plan, the modelling of the digital twin of H2 valley and definition for a certification scheme for the green H2 guarantees of origin.

FBK will assist the project and project partners in identifying hazards and associated risks, in prevention and/or mitigation of them through a proper safety plan, in implementing the safety plan, and reporting safety related events.

A high-level model of the H2 valley digital twin will be developed by FBK with other scientific partners, including all connections, handling, and transport of H2 between production and consumption site, as well as the input/output to connect the single plant's models, developed by an industrial partner and the universities involved in the task.

Furthermore, FBK will coordinate the development and establishment of the renewable hydrogen certification scheme in the context of H2 valley (NAHV), managing the contact with issuing body and the industrial partners, that will allow making autonomous any production and consumer plant. Finally, FBK will be responsible of the activities related to exploitation and replication of the results.

"FBK is enthusiastic about taking part in this H2 Valley that gathers together Italy, Croatia and Slovenia" outlines **Matteo Testi**, Head of Hydrogen Technologies Area at the Center SE and reference of the NAHV Project for FBK, and continues "FBK will be actively involved and in charge of different aspects of the project: the development of the H2 Valley digital Twin, the conceptualisation and implementation of the safety plan, the definition of a guarantee scheme related to the origin of the produced and distributed hydrogen, and finally, the exploitation of the project results and the replication of NAHV in other territories".

Luigi Crema, Director of the Center for Sustainable Energy at Fondazione Bruno Kessler stated that "Hydrogen Valleys are the pathway indicated by the European Commission to develop local hydrogen ecosystems. The Hydrogen valleys are complementary to the development of the enabling infrastructures on a continental scale. They create a first market and expand the supply chain development. As FBK, we are deeply involved and highly motivated to support hydrogen valley projects through the participation in numerous European and national initiatives, where the NAHV is example of excellence."

Read the entire press release, in English: <https://magazine.fbk.eu/en/news/north-adriatic-hydrogen-valley-launches-in-portoroz/>

4 OCTOBER 2023

Edoardo Macchi participates in IPCEI EuBatIn Networking Days

FBK is an Associated Partner of the project **IPCEI European Battery Innovation (EuBatIn)**.

IPCEI is the abbreviation of „Important Project of Common European Interest“. It's a transnational project with an important contribution to the growth, employment and competitiveness of the European Union industry and economy funded by state aid.

A two-part IPCEI has been implemented to promote battery production: the IPCEI on Batteries and the EuBatIn. Both IPCEIs have in common that their participants represent the complete value chain, from material through the cells to the battery system and the final step of recycling. At the same time, there is a high degree of networking between the companies themselves and the two IPCEIs.

Last week, from 27 to 29 September, the German coordination team for IPCEI EuBatIn and the Austrian IPCEI EuBatIn organised in Vienna the *EuBatIn Vienna Networking Days*.

The three-day event targeted different stakeholders and to each of them a day was dedicated. Edoardo Macchi, Head of Battery Technologies area at the FBK Center SE, participated in the third day where the Matchmaking event took place.

Matchmaking is a networking event that offer a convenient and efficient method to connect with potential partners for collaboration.

More information on the event: <https://ipcei-eubatin-vienna-networking-days3.aws.b2match.io/>

More information on IPCEI Batteries: <http://ipcei-batteries.eu/>

5 OCTOBER 2023

Successful second AMETHyST project meeting and exchange programme in Innsbruck

On October 4, the second project meeting of the AMETHyST project took place in Innsbruck hosted by the Project Partner Standortagentur Tirol GmbH.

During the meeting, each partner gave an update on the development of the activities.

Eleonora Cordioli, researcher at the Center for Sustainable Energy and leader of the first work package of the project, showed the results of the two questionnaires sent to different stakeholders located in the Alpine region.

The first questionnaire aimed at assessing the knowledge on the final uses, the technologies and regulations in the field of hydrogen as well as gathering the perception of the stakeholders on the priority and barriers for the successful deployment of hydrogen in the Alpine context.

The second questionnaire, instead, had the purpose to collect information on the hydrogen projects and initiatives that are already in place in different regions of the Alps. As explained by Sara Stemberger, researcher in the Sustainable Territories area of the Center, one of the main goals of the project is the development of a map and a platform that should gather in a single virtual place all information regarding the projects and technologies in the Alpine region related to hydrogen.

Ilaria Alberti, Knowledge Manager at the Center SE, underlined the need to show the platform and the results achieved during the Mid-term Conference expected for October 2024, in Trento.

The project meeting continued on October 4, with a roundtable organised by Agenzia CasaClima which stimulated high interest and saw the participation of numerous stakeholders. The event concluded with the site visit to MPREIS in Völs, with its electrolyzer and hydrogen refueling station for logistic trucks installed within the Demo4Grid project, presented by the Green Energy Center team.

See the streaming of the roundtable, [at this link](#).



6 OCTOBER 2023

The Center SE in Milan at the presentation ceremony of the first hydrogen train

Last 3 October, the first Italian hydrogen train has been presented during the event Expo Ferroviaria 2023 in Milan.

The train has been realised by Alstom, leading global company in the field of sustainable mobility. The researchers of the Center for Sustainable Energy of FBK were present at the presentation ceremony which took place in the presence of the Italian Institutions as the Ministry of Infrastructure and Transport Matteo Salvini, the Undersecretary to the Presidency of the Council of Ministers Alessandro Morelli, and the CEOs of the three companies involved in the project: Alstom, FNM and Trenord. The Center SE provided support in the process of engineering review for the realization of the innovative train, which will start working between the end of 2024 and the beginning 2025 along the not electrified line Brescia - Iseo - Edolo, in the context of the project H2iseO that aims to realise the first hydrogen valley in Lombardy.

Read more about the event in this article (in Italian): <https://hydronews.it/i-treni-a-idrogeno-diventano-realta-anche-in-italia-alstom-ha-presentato-a-milano-il-primo-coradia-stream-destinato-alla-valcamonica/>

11 OCTOBER 2023

Mattia Duranti and William Morais at the 244th Meeting of The Electrochemical Society

After 10 years, the Electrochemical Society (ECS) returned to Europe for its first biannual meeting. This Symposium brings together scientists, engineers, and researchers from academia, industry, and government laboratories to share results advancing theory and practice at the forefront of electrochemical and solid state science and technology.

Mattia Duranti and William Gomes de Morais, researchers of the Battery Technologies Area of the Center for Sustainable Energy, participated with two poster presentations in the 244th ECS Meeting which is taking place in these days in Gothenburg, Sweden.

On Monday 9 October, Mattia Duranti presented the work entitled "Effect of Glycine on a Fe-Based Electrolyte for Redox Flow Batteries".

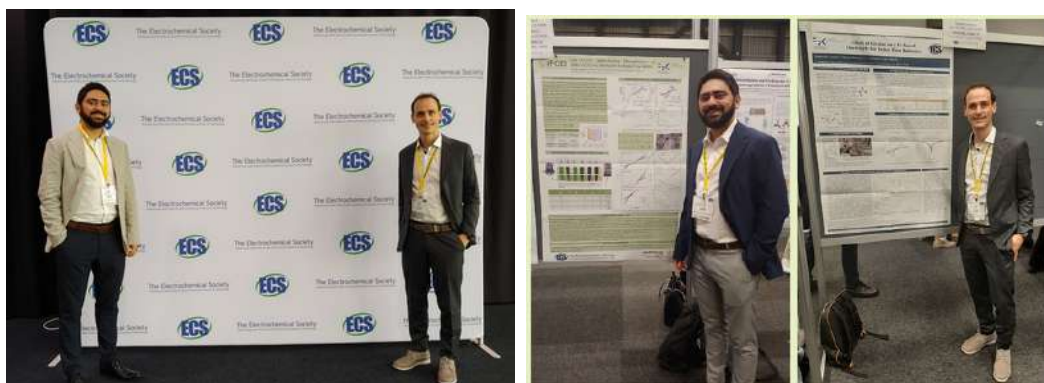
This research investigates an optimized pH-neutral catholyte for Zinc-Iron RFBs, focusing on the use of Glycine to avoid Iron-induced hydrolysis. The study is carried out on highly concentrated solutions of Iron chlorides, with the addition of Glycine as ligand at various concentrations. The aim is to preserve the performances of Fe(II)/Fe(III) kinetics and to avoid insoluble hydroxides formation by an accurate choice of the Gly-Fe ratio.

William Morais' poster focused on the "Electrochemical Characterization of Stable Cu(II)/Cu(I) Electrolytes for Redox Flow Battery".

In this study, the effect of the copper-chloride complexes used to stabilize electrolytes for CuRFB was investigated, as well as the influence of secondary cations from the supporting electrolyte, e.g., Ca²⁺, K⁺, H⁺. Different solutions with Cu:Cl ratio varying from 1:4 to 1:9 were characterized by physical-chemical and electrochemical methods.

Both works are done in the framework of the IPCEI European Battery Innovation.

More information on the event: <https://www.electrochem.org/244>



16 OCTOBER 2023

Director Crema at HESE Bologna to speak about hydrogen funding tools

Hydrogen Energy Summit & Expo is the main Italian initiative focus on the new technologies for the production, transportation and storage of hydrogen.

The event took place from 11 to 13 October 2023 in Bologna and presented a rich programme of seminars, workshops and panels.

Our Director Luigi Crema was invited as Vice President of H2IT and President of HER in the panel "*FROM ZERO TO HERO - Asset building and development opportunities for Italy in the context of international hydrogen financing*".

Luigi Crema discussed with Giorgio Graditi (ENEA) and Marcello Capra (SET Plan MASE) about the different funding tools currently available to support hydrogen initiatives.

IPCEI, Horizon Europe and the Clean Hydrogen Partnership, Innovation fund, Mission Innovation and Hydrogen Bank are just some of the funding initiatives aimed at supporting the development of the hydrogen carrier and the related supply chain; reinforced by the instruments put in place by member countries (such as those related to the PNRR) they represent an important set of tools to subsidize all stages of project development. Start from the already funded projects to highlight the assets we can count on and at the same time understand the spaces for action on the European (and international) instruments available to fill the gaps and fully develop Italy's international competitiveness potential on hydrogen.

Check the programme: <https://www.hese.it/en/Programme/Institutional-programme>
Panel information (in Italian) [at this link](#).

24 OCTOBER 2023

CETPartnership: Cooperating in Europe and beyond

The Clean Energy Transition Partnership is a initiative co-funded by the European Union that brings together public and private stakeholders in the research and innovation ecosystems, from European and non-European countries and regions. CET Partnership aims to foster transnational innovation ecosystems and overcome a fragmented research and innovation landscape.

Today start the 2-day annual conference, which will be held online and consist of panels, workshops, talks and a policy conference where participants will learn about RDI projects, and identify how the CETPartnership can contribute to the urgent topic of Sustainable Supply Chains for the Energy Sector.

Luigi Crema, Director of the Center SE and President of HER, has been invited to participate in the panel discussion "CETPartnership: Cooperating in Europe and beyond: on common challenges, approaches and cooperative RDI ways forward".

The discussion sees the participation of representatives of EU institutions, international agencies, industries and research Institutes:

- Rosalinde van der Vlies, European Commission, Directorate-General Research and Innovation, Director for Clean Planet
- Philippe Jacques, Energy Material Industrial Research Initiative (EMIRI) and Battery European Partnership Association (BEPA)
- Tae-Yoon Kim, International Energy Agency
- Dr. Paula Kivimaa, Finnish Environment Institute Syke
- Dr. Luigi Crema, Fondazione Bruno Kessler, President European Hydrogen Research
- Jochen Kreuzel, Hitachi Energy, President T&D Europe
- Michael Hübner, Coordinator of CETPartnership

Read more about the event: <https://www.cetpartnership.eu/cetpartnership-annual-conference-journey-future>

26 OCTOBER 2023

The Center SE participated in the General Assembly of FREE4LIB Project

The researchers Mohsen Shiea, Mattia Duranti and Edoardo G. Macchi participated in the General Assembly of the project FREE4LIB - Feasible REcovery of critical raw materials through a new circular Ecosystem FOR a Li-ion Battery cross-value chain in Europe.

The meeting took place on the 24th and 25th of October, in Brussels. This annual event gathers partners and will host presentations, workshops and interactive sessions that currently engage all the Consortium team.



FREE4LIB is a Horizon Europe project with a consortium of 22 partners involved in the battery value-chain. This project aims to develop technologies to create new sustainable and efficient processes for the recycling of end-of-life lithium ion batteries (EOL LIBs), providing innovative recycling solutions for efficient recovery of materials in order to improve the availability of secondary resources at European level. FREE4LIB will also develop a Battery Passport methodology to improve traceability. Finally, second-life batteries and new batteries produced from recycled materials will be made to validate the developed technologies.

Within the project, FBK - through the Sustainable Energy Center - is responsible for the Work Package 2 entitled "EOL LIBs Collection and Characterisation, Digital Tools and Battery Passports deployment" which focuses on

activities relating to the characterization of EOL cells and materials, and to the modeling of cells and recovery processes.

Furthermore, FBK deals with electrochemical tests and material analysis of lithium-ion batteries, develops electrochemical models for lithium-ion batteries and models for recycling processes for end-of-life lithium-ion batteries (EOL LIBs).

Read more about the project: <https://www.freeforlib.eu/>

27 OCTOBER 2023

The faces of Sustainable Energy

The Center of Sustainable Energy launches a new initiative! A series of videos with researchers who conduct research and development activities in collaboration with industry, academia and public institutions in the energy sector.

The EU aims to become climate neutral - an economy with net zero greenhouse gas emissions - by 2050. This goal is at the heart of the European Green Deal and in line with the EU's commitment to global climate action under the Paris Agreement. The transition to a climate-neutral society is both an urgent challenge and an opportunity to build a better future for all. All parts of society and economic sectors will play a role, from the energy sector to industry, mobility, buildings, agriculture and forestry. The EU can lead the way by investing in realistic technological solutions, empowering citizens and aligning actions in key areas such as industrial policy, finance and research, while ensuring social equity for a fair transition.

In this context, the Sustainable Energy research center (FBK SE) promotes the efficient and effective implementation of innovative energy solutions. The underlying belief is that this will help balance our ecological footprint and ensure a sustainable future for the next generations.

To move in this direction, investment in research and innovation is crucial. At the same time, since these are major social and infrastructural changes, they will only be possible if there are broad collaborations, system-wide actions and transformations of production chains.

Read the entire article in English: <https://magazine.fbk.eu/en/news/the-faces-of-sustainable-energy/>

Read the entire article in Italian: <https://magazine.fbk.eu/it/news/i-volti-dellenergia-sostenibile/>

Have a look at the video playlist, [at this link](#).

8 NOVEMBER 2023

NEVERMORE Local Council: Vulnerability and Risk

A new meeting for the Italian Local Council of NEVERMORE Project.

The objective of the event of the NEVERMORE's Local Council in Trentino has been to better understand aspects of hazards, risks and vulnerabilities of the Case Study in relation to tourism, outlining a picture of the affected and most exposed assets.

In particular the work organized with local stakeholders focused on vulnerable elements of the territory such as social groups, environmental elements or geographic areas, vulnerable sectors of the economy, structures and infrastructures exposed to 3 particular hazards: increase of average temperatures, droughts and extreme events particularly heavy rainfall.

15 stakeholders participated to the discussion tables organized at the Museum of Natural Science - MUSE in Trento.

The meeting has been organised by the Autonomous Province of Trento - Tourism and Sport Service in collaboration with the Case Study Supporters Sara Stemberger and Diego Viesi, from the Center for Sustainable Energy of FBK, with the colleagues of the FBK Center Digital Society (DIGIS).

More information on the project: <https://www.nevermore-horizon.eu/>

9 NOVEMBER 2023

Conference on #ReskillEU - new jobs for energy and transport in Europe

On November 8, 2023, Luigi Crema participated in the Conference #ReskillEU - new jobs for energy and transport in Europe.

The one-day event organised by the European Economic and Social Committee (EESC) and DG Research & Innovation (DG RTD, European Commission) aimed to discuss the need for new skills in the areas of clean energy and transport focusing on skills development through R&I activities. Horizon Europe supports skills development to make the EU's green and digital transitions successful, in line with the objectives set in the European Skills Agenda for 2025 and against the background of the European Year of Skills.

In the energy domain, the EU renewables sector today needs over 1.2 million skilled workers, according to the International Renewable Energy Agency, this will lead to an enormous demand for EU action to ensure the required skills. The numbers are expected to increase annually until 2050. Research and innovation also plays a central role in developing new skills in the energy sector.

The transport sector now employs over 15 million people in the EU. This sector is rapidly evolving, changing, and being influenced greatly by the development of automation, electrification and greening of transport. The full decarbonisation of the transport sector can only be successful if this goes hand in hand with a workforce that has the right skillset.

The conference brought together relevant stakeholders, notably civil society organisations, education networks, academia, industry, research organisations and European institutions to discuss the contribution of research and innovation activities to the skills agenda for Europe.

Luigi Crema, Director of the Center SE and President of HER, was invited to participate in the panel on Sustainable Energy, and discuss with Arthur Daemers (Policy Advisor, SolarPower Europe), Abderrahim Al Mazouzi (Senior Researcher, Électricité de France/EDF) and Marco Gervasi ("Energy Transition Careers Compass" COP28 Task Force, European Youth Energy Network – EYEN).

Hava look at the recording [at this link](#), and at the the presentations [here](#).

Source of information:

<https://www.eesc.europa.eu/en/agenda/our-events/events/conference-reskillEU-new-jobs-energy-and-transport-europe/programme>



14 NOVEMBER 2023

Luigi Crema at the GMIS Connect Roadshow in Trieste

The Global Manufacturing and Industrialisation Summit (GMIS) is the world's first cross-industrial and crossfunctional platform that offers a voice and venue for leaders to transform manufacturing and utilise technology as a tool for global cooperation and collaboration to encourage greater investment in capabilities, foster innovation and drive global skills development. Co-chaired by the United Nations Industrial Development Organisation (UNIDO) and the United Arab Emirates, GMIS aim to discuss, debate and shape the future of the manufacturing sector and place manufacturing at the heart of economic regeneration and government policymaking.

Luigi Crema - as President of HER - participated in the event GMIS Connect Roadshow "Powering Sustainable Manufacturing: The Rise of Green Hydrogen" that took place today in Trieste.

The agenda saw the presence of influential delegates from the global manufacturing and technology communities, including leaders from governments, expert industry CEOs and specialist researchers and academics.

Crema participated in 1 panel discussion and moderated 1 roundtable.

The panel was entitled and focused on Government Policies and Regulations for Green Hydrogen in Manufacturing and Services. The roundtable regarded The Role of the Research in the NAHV Ecosystem.

Read more about the event and check the agenda at this link:
https://gmisummit.com/pdfs/GMIS_Trieste%202023_Conference_Programme.pdf

15 NOVEMBER 2023

Battery Innovation Days 2023: Edoardo Macchi joins the panel discussion

Today, Edoardo G. Macchi - Head of Battery Technologies Area at the Center SE, participated as panelist in the LIVE session "Implementing the Critical Materials Act for the EU battery ecosystem" of Battery Innovation Days 2023.

Batteries are crucial to the enabling of technology that will allow the EU to achieve its zero-emissions goals through a responsible and sustainable market. This 2-day event gathered research community, policymakers, industry players and end-users to boost battery research and innovation in Europe.

Result of the collaboration between the platform [Batteries Europe](#), the European research initiative [Battery 2030+](#), the Batteries European Partnership Association - [BEPA](#), and IPCEI, BID aims to increase knowledge and encourage exchange around the deployment of cutting-edge technologies in battery materials, cell design, manufacturing and recycling.

The panel saw the participation of

- Fabrice Stassin (Director Government Affairs Electromobility Projects at [Umicore](#))
- TOPIC: "A truly sustainable battery is one that functions effectively, is affordable and leaves the minimum negative footprint both on #environment & society"
- Emmanuelle Robins-Ouagne (Project leader – Europe and International, [Pôle AVENIA](#))
- TOPIC: "Let's not forget training. You need workers that take sustainability into the field and citizens who demand it at every level"
- Edoardo Macchi on "recycling vs long lifetime? It's not a zero sum question but to explore the best balance"

Read more about the event and check the agenda at this link:

https://clerens.eu/wp-content/uploads/2023/11/BID-Conference-Brochure_Web.pdf

Source: <https://www.accelevents.com/e/battery-innovation-days-2023>



20 NOVEMBER 2023

Luigi Crema participates in the opening and closing session of the EU Hydrogen Research Days

Last week, on 15-16 November, the EU Hydrogen Research Days took place online.

Initiated in 2011, this annual appointment held in autumn presents the progress of the portfolio of hydrogen relevant projects funded by the Clean Hydrogen JU and its predecessors, as well as other EU research programmes, identifying key achievements but also potential areas to be addressed or reinforced in subsequent years.

The initiative also provides an excellent visibility platform for projects and technological developments achieved in the sector and provides networking opportunities for the participants while facilitating the exchange of ideas and best practices. Furthermore, a number of awards have been introduced to highlight and celebrate annually the results of collaboration between research, industry and policy makers, and projects achievements:

- The European H2 Valley Award
- The Best Success Story Award
- The Best Outreach Award
- The Best Innovation Awards
-

The winners will be communicated during the [EU Hydrogen Week](#), which will take place in Brussels from 20 to 24 November 2023.

Luigi Crema, Director of the Center SE and President of Hydrogen Europe Research, participated in two important moment of the event: the opening and closing sessions.

Have a look at the agenda here: https://www.clean-hydrogen.europa.eu/system/files/2023-11/PRD23%20Agenda_publishable_v10.pdf

.. and at the project factsheets: https://www.clean-hydrogen.europa.eu/european-hydrogen-week/european-hydrogen-week-2023/european-hydrogen-week-2023-about-our-projects_en

The recording of the EU Hydrogen Research Days will be soon available on the [Clean Hydrogen Partnership website](#) and [Youtube channel](#).

27 NOVEMBER 2023

Sara Stemberger speaks about NEVERMORE Project at SISC

From 22 to 24 November, Fondazione Bruno Kessler - FBK was in Milan for the [SISC \(Società Italiana per le Scienze del Clima\)](#), 11th Annual Conference, presenting the hashtag #NEVERMOREProject.

The conference, titled "Mission Adaptation! Managing the risk and building resilience", at Regione Lombardia premises, was organised in collaboration with [Fondazione Lombardia per l'Ambiente](#) and [CMCC Centro Euro-Mediterraneo sui Cambiamenti Climatici](#).

The SISC conference aims to bring together leading scientists, researchers, economists, practitioners, business leaders, and policymakers, serving as an interdisciplinary platform for new advances and research results in the fields of science and management of climate change.

On Friday 24, Sara Stemberger - researcher at the Center Sustainable Energy at Fondazione Bruno Kessler - delved into the NEVERMORE project with a presentation on the Trentino Case Study and its impactful activities, within the session titled "Preliminary steps in co-design for climate change adaptation and mitigation tools in the tourism sector: a case study in the NEVERMORE project."

For more information, have a look at the programme here: https://files.sisclima.it/sisc2023_preliminary-programme.pdf



29 NOVEMBER 2023

Luigi Crema participates as a speaker in WIVA P&G annual event

WIVA P&G annual event took place on November 27, 2023 at the Tabakfabrik in Linz (Austria).

WIVA P&G is an association for funding the research and development in the fields of application, net and storage technologies for hydrogen and renewable gases.

For the further development of the European and the Austrian energy system, an increased integration and implementation of renewable hydrogen and hydrocarbons generated from it, such as methane, is required for a variety of ecological and economic reasons. As a central energy storage region, a hub in energy transport and an important location for renewable energy sources, Austria is ideally suited as an energy showcase region. Within the framework of the WIVA P&G association, an overarching overall concept is being developed that shows how existing and future projects can be networked.

The association coordinates the projects of the flagship region "Wasserstoffinitiative Vorzeigeregion Austria Power & Gas" (WIVA P&G). This allows to explore and display the whole value chain of the flagship region.

At the WIVA P&G annual event, **Luigi Crema** outlined the role of research in developing a European hydrogen value chain.

Lately, WIVA P&G has been awarded as one of the three European H2 Valley of the Year for their outstanding efforts to develop integrated systems of hydrogen production, supply, storage and use in multiple sectors. The other two awarded Hydrogen Valleys were Hydrogen Hub Noord-Holland and Green Hysland on Mallorca, Spain.

More information at <https://www.wiva.at/event/save-the-date-wiva-pg-jahresveranstaltung-2023/?lang=en>

News on the Award: https://www.clean-hydrogen.europa.eu/media/news/clean-hydrogen-partnership-awards-2023-celebrate-excellence-and-innovation-2023-11-24_en

6 DECEMBER 2023

Center SE at the GA of JIVE Projects

Last week, on the 29th and 30th of November, Adriano Li Matzumura travelled to Barcelona (Spain) to attend the General Assembly of the JIVE and JIVE 2 projects.

The projects involve the implementation of Fuel Cell Electric Battery Buses (FCEBs) and currently have 298 FCEBs in operation in 16 European cities in 6 countries.

Participants had the opportunity to travel on one of Caetano's FCEBs operating in the city and visit the Hydrogen Refuelling Station (HRS) operated by Iberdrola. The station is used to refuel FCEBs and heavy duty mobility, it has a 2.5 MW electrolyzer on site that produces the hydrogen.

The Fondazione Bruno Kessler, through the Centre for Sustainable Energy, as a partner in the project responsible for collecting data on the perception and satisfaction of the various stakeholders, presented the progress made in recent months. A preliminary analysis was presented showing data on bus users from over 3,700 responses collected in the City of London.

During the meeting, all partners gave updates on the current status of their city's deployment, the difficulties they are facing, how other cities are solving these problems and possible opportunities for further deployment of more FCEBs.

Recently, the project received the Best Outreach Award from the Clean Hydrogen Partnership. The Award recognises project consortia that communicate their work to the public using a creative, well-planned campaign.

More information here: https://www.clean-hydrogen.europa.eu/media/news/clean-hydrogen-partnership-awards-2023-celebrate-excellence-and-innovation-2023-11-24_en

21 DECEMBER 2023

USES4HEAT PROJECT LAUNCHED TO ENABLE THE DECARBONISATION OF EUROPEAN HEATING AND COOLING THROUGH INNOVATIVE SEASONAL THERMAL ENERGY STORAGE

The USES4HEAT project kicked off in December 2023 to enable decarbonised and reliable heating supply through innovative large scale seasonal thermal energy storage solutions.

The project “Underground Large Scale Seasonal Energy Storage for Decarbonised and Reliable Heat”, in short USES4HEAT, will demonstrate two innovative, cost-effective, large-scale seasonal underground thermal energy storage (TES) units to maximise the availability and resilience of heating supply, reducing significantly both energy losses and environmental impacts. The two TES units will be fully connected to large-scale district heating networks (DHN) able to accumulate various sustainable sources of heat (waste heat, solar thermal and hybrid, geothermal, power-to-heat).

Six additional key enabling innovative technologies ensuring maximal optimisation as well as sector and system integration will also be developed along the TES. AI, big-data analytics driven and cloud-based O&M algorithms will maximise the efficiency of the TES, ensuring a more reliable and efficient future heating system.

Today, residential, commercial and industrial heat needs below 150°C account for more than a third of the EU’s total energy demand and are mainly based on fossil fuels. Achieving a climate neutral economy by 2050, as set out in the European Climate Change Act and the European Green Deal, is a major challenge requiring the decarbonisation of European heating and cooling. In this sense, district heating and cooling is recognised as a key solution as it allows the integration of renewable energy sources and the use of various forms of excess and waste heat, while contributing to the stability and coupling of energy systems. To fully capitalise on this untapped high potential of DHN, the vast deployment and integration of large scale, seasonal TES solutions will be essential.

In line with the Horizon Europe’s (HE) Cluster 5 Strategic Plan, USES4HEAT is going to contribute to the “Clean and sustainable transition of the energy and transport sectors towards climate neutrality facilitated by innovative crosscutting solutions” developing and demonstrating solutions which could be exploited also for other sectors. USES4HEAT has received more than 9.7 million euros in funding from the EU’s HE Programme and will run from December 2023 to November 2027.

In the project, FBK will be in charge of several activities. First of all, FBK will be the scientific leader of the Demo Riva del Garda in Italy.

The demo will see the involvement of important local industrial stakeholders as Cartiere del Garda, Alto Garda Power and Alto Garda Servizi, and will focus on the integration of the following technologies:

1. New seasonal, large-scale, ATEs via advanced drilling technologies – provided by the partner HYDRA;
2. New groundwater heat pump at high temperature, low GWP and ATEs/DH-connected by HIREF;
3. Hybrid solar panels provided by ENDEF;
4. Intelligent energy management via AI, big-data and cloud-based tools by Energenius.

Furthermore, the FBK-SE will be leading and involved in several activities, among others:

- Baseline monitoring and demonstration planning;
- Heating and cooling decarbonisation modelling via geospatial mapping and dynamic multi-objective optimization;
- Dynamic/transient modelling;
- Layout definition and engineering;
- Experimental campaign and critical assessment.

Luigi Crema, Director of the Center for Sustainable Energy of Fondazione Bruno Kessler, outlined that “USES4HEAT is yet another contribution of the Center SE to the territorial innovation of the Province of Trento. Over the last 3 years, the Center SE, through the Sustainable Territories Area, has contributed approximately 7.5 million euros of European funding to local demo sites (e.g. in the EU projects InCUBE, FLEXIndustries, COMMUNITAS, NEVERMORE, LIFE-ECOEMPOWER). As FBK we are going to support the territorial innovation with additional projects and efforts in the coming years, including electrification, use of green carriers such as hydrogen and looking for the Net Zero in the future decades.”

Diego Viesi, Head of the Sustainable Territories Area at the Center for Sustainable Energy of Fondazione Bruno Kessler, stated that:

“USES4HEAT represents yet another concrete contribution by FBK in attracting European funding to the Autonomous Province of Trento. This funding is supporting innovative research projects for the local energy transition. USES4HEAT in particular represents a crucial challenge such as the large-scale decarbonisation of the industrial and district heating sectors, with technologies such as heat pumps, geothermal and solar which have enormous but still little exploited potential.”

Link to the FBK Magazine press release in Italian: <https://magazine.fbk.eu/it/news/lanciato-il-progetto-uses4heat-con-lobiettivo-di-consentire-la-decarbonizzazione-del-riscaldamento-e-del-raffreddamento-in-europa-grazie-a-un-innovativo-sistema-di-accumulo-stagionale-di-energia-ter/>