



1st Newsletter “Fridays for Research”

On March 1st, 2024, the 1st “Friday for Research” joint online meeting was successfully conducted within the EULiST consortium partners. More than **80 participants** from the EULiST academic institutions attended the event in order to meet and generate ideas, promote scientific excellence and innovation capacity building.

The debut theme of the 1st “Friday for Research ” joint meeting focused on Energy Storage and Renewables, with a specific emphasis on Hydrogen Production and Utilization in Energy Systems. This focal area encompassed discussions on:

- New solutions for the Hydrogen economy
- Hydrogen storage materials
- Fuel cells materials
- Electrolyser materials
- Electricity market and hydrogen storage
- Hydrogen underground storage
- Social impact of Hydrogen economy
- Hydrogen carriers
- LCA
- Any other relevant topics

The above objectives can be reflected in the 1st Friday for Research, presented below

Time	Speaker / Topic
12:00 to 12:30 (CET)	1 st Keynote Prof. Sotirios Karellas (NTUA): The “Philosophy of Fridays for Research in EULiST” 2 nd Keynote Marc Delage (IMT): Setting a Marie Curie proposal
12:30 to 14:15 (CET)	Presentations by the member universities (5 min presentation + 10 min discussion) <i>Focus on research ideas and know-how the participating university can bring to the TOPIC: New solutions for the hydrogen economy</i>
14:15-14:30 (CET)	Coffee Break
14:30 to 15:00 (CET)	Summary of the outcomes of the sessions and future steps (30 min) (Rapporteur + Chair)

The session opened with a presentation by Prof. Dr-Ing. Sotirios Karellas from NTUA, introducing the EULiST framework and its objectives. EULiST strives to establish a cohesive platform for collaborative research and innovation initiatives, facilitating knowledge exchange and best practice sharing through joint participation in relevant EU R&D calls to secure public funding. The consortium has identified potential calls, including HORIZON TMA MSCA Doctoral Networks, HORIZON TMA MSCA Doctoral Networks - Industrial Doctorates, and HORIZON TMA MSCA Doctoral Networks - Joint Doctorates, focusing on the research area of the Hydrogen Economy. Subsequently, Mr. Marc Delage from IMT provided a brief presentation outlining the requirements and regulations of these calls.

Every academic institution showcased their research activities and accomplishments related to Hydrogen Production and Utilization in Energy Systems via dedicated presentations, ultimately aiming to establish common ground for synergistic collaboration. The consortium partners demonstrated robust expertise and impactful research and innovation initiatives spanning the entire H₂ value chain. This ranged from production and materials engineering to end-use applications and sophisticated high-level energy system modelling. Leveraging their strong expertise in the emerging field of hydrogen economy, the consortium partners pledged to pursue additional collaborations and joint funding applications.

Webex Meeting Interface (Screenshot 1):

Participants: Viktor, Valerio De Santis, Marc Delage (active), Host, me.

Viewing Marc Delage's screen (Zoom: 54%)

MSCA DOCTORAL NETWORKS

2

- Objectives**
 - Respond to well-identified needs in various R&I areas (bottom-up) => define a relevant multidisciplinary topic around the H2 value chain to promote impact and competitiveness for Europe
 - Expose the researchers to the academic and non-academic sectors => define the right consortium (with or without every EULIST partners)
 - Offer training in research-related, as well as competences relevant for innovation and long-term employability => define an innovative education offer
 - Focus on research and transferable skills, (inter-sectoral secondments), career development plan, supervision, internationalisation/attractiveness => focus not only on scientific education
- Consulting firm:**
 - <https://euronovia.eu/en/>
 - IMT will pay for the consulting company even if IMT is not PC and/or in the consortium

Meeting Controls: Unmute, Stop video, Share, Record, Apps.

Participants (78) list (partial):

- ΣΩΤΗΡΙΟΣ ΚΑΡΕΛ...
- Marc Delage
- Andrea Lazzarini
- Anežka Michálková
- Antoinette Humea...
- Antonis Peppas
- Barbora Cutrikova...
- Blanka
- carlo pierleoni
- Chiara Marchionni

Webex Meeting Interface (Screenshot 2):

Participants: Santiago Gómez..., Antonis Peppas, Reinhard Sefelin T..., Gisela Orcajo (active).

Viewing Gisela Orcajo's screen (Zoom: 52%)



ITPS – Research Institute for Sustainable Technologies

Material-based storage and renewable production of hydrogen

"RESEARCH FRIDAYS" EVENT

Gisela Orcajo

EULIST - European Universities Initiative Alliance project March 1st 2024

Cisco Webex Meeting

Webex Meeting Info: 02:05:38

Participants (69): carlo pierleoni, Chiara Marchionni, Chrysa Politi (NTUA), Daniel Koutný, Debbie Strumsky, Domenico Bianchi, EULIST LUH, Friedrich Dinkelack..., FUL_TOB_STUBA, Gisela Orcajo, Ilaor Hudak

Sorption Enhanced Processes

SORPTION ENHANCED – STEAM METHANE REFORMING (SE-SMR)
(T = 650 °C ; P = 1 atm)

Steam Methane Reforming (SMR)	$\text{CH}_4 + \text{H}_2\text{O} \rightarrow \text{CO} + 3\text{H}_2$	$\Delta H_{298\text{K}}^\circ = +206.2 \text{ kJ/mol}$
Water Gas Shift (WGS)	$\text{CO} + \text{H}_2\text{O} \leftrightarrow \text{CO}_2 + \text{H}_2$	$\Delta H_{298\text{K}}^\circ = -41.2 \text{ kJ/mol}$
Carbonation (CBN)	$\text{CaO}_{(s)} + \text{CO}_2 \rightarrow \text{CaCO}_{3(s)}$	$\Delta H_{298\text{K}}^\circ = -178.2 \text{ kJ/mol}$

REGENERATION
(T = 800 - 900 °C ; P = 1 atm)

$\text{CaCO}_{3(s)} \rightarrow \text{CaO}_{(s)} + \text{CO}_2$ $\Delta H_{298\text{K}}^\circ = +178.2 \text{ kJ/mol}$

CALCIUM LOOPING

Regenerated solid ↔ Solid saturated by CO₂

Webex Meeting Info: 03:12:14

Participants (44): Masoud Moshtaghi..., Matúš Pospíšil, Miia Pirttilä, Ondřej Pavlík, Patricia, Pauline Rousseau I..., Pavel Charvát, Pavol, Raphael Pruckner..., Reinhard Sefelin T..., Santiago Gómez-R..., Stefano Di Gennaro

H2 Value Chain Overview

H₂ Production → **H₂ Storage** → **H₂ Distribution** → **H₂ End-Use Applications**

1. Materials Research University of Bratislava Juan Carlos University 1. Production Pathways NTUA (Water Electrolysis) Juan Carlos University (Biological) UNI LAQUILA (Blue Hydrogen Production) IMT	1. Materials Research Juan Carlos University LUT University BRNO University Leibniz UNI Hannover IMT	1. Materials Research Juan Carlos University	1. Combustion Gas Turbines IJCE NTUA Leibniz UNI Hannover BRNO University 2. Fuel Cells UNI LAQUILA, IMT 3. Transportation (Road, Marine, Aviation) NTUA Leibniz UNI Hannover
------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

1. High System Level Modelling
NTUA, LUT University, ITM, Leibniz UNI

