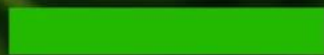




LAND OF THE CURIOUS





UNIVERSITY OF
EASTERN FINLAND



Tampere University
Tampere University of Applied Sciences




 OCTOBER 1ST, 2024

HYGCEL FINAL SEMINAR & VISITING PRESENTATIONS

LUT University, Lahti campus

Mari Tuomaala

 October 1st, 2024

THE IDEA BEHIND THIS SEMINAR

- HYGCEL research has been running since January 1st, 2022, and it will end on October 31st, 24.
- During the spring -24, the research received many requests to organize one-to-one meetings between researchers to disseminate results.
- That initiated an idea to organize a bigger event with visiting H₂ -research presentations and with opportunities for H₂ -researchers to meet face-to-face.
 - Official HYGCEL final seminar was the “HYGCEL– Hydrogen Cluster joint event” in Oodi, on May 22.
- **Could this event be the first of its kind in providing possibilities to disseminate results withing researchers working on the same topic and in meeting new people?**



October 1st, 2024

AGENDA



MORNING SESSION (9:30 – 12.00)

- » location: LUT-University Mukkula, Auditorium 2

- » HYGCEL research introduction & LUT H2 research activity
- » An overview of Finnish hydrogen -related research projects
 - » several presentations
- » Overview of Finnish power-to-X economy research 2017-2023
- » Hydrogen SRA created by the Hydrogen Research Forum
- » Introduction of novel ideas: CO2 electrolysis in solid carbon production .

AFTERNOON SESSION (13:15-15.30)

- » location: LUT-University Niemi

- » **Afternoon parallel session 1, room B103**
 - Hydrogen production routes and potentials
 - Transportation needs and feasibilities - electricity, H2, CO2 and end products

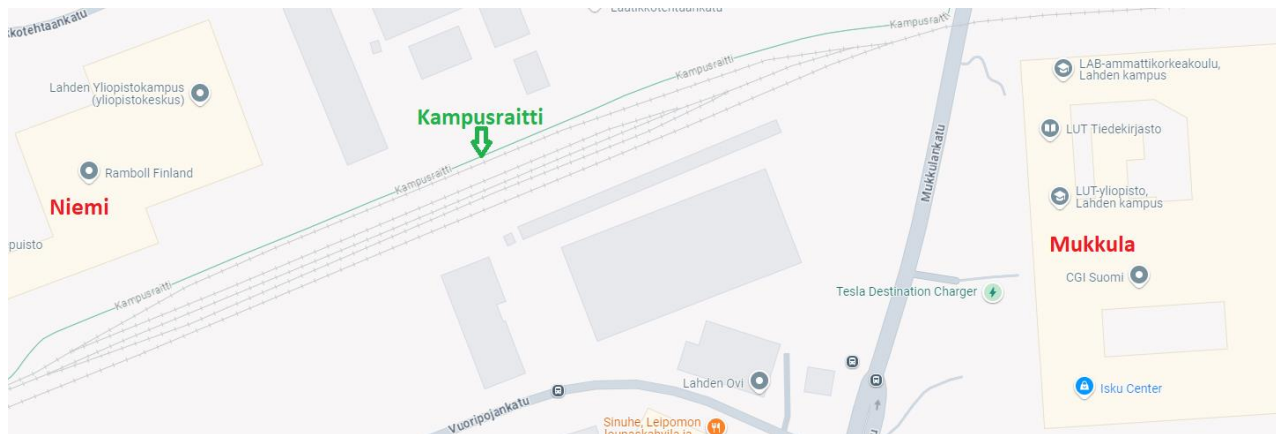
- » **Afternoon parallel session 2, room B209+B210**
 - Hydrogen infrastructures
 - Cyber security and infrastructural resiliency.

Lunch (own cost) 12:00 - 12:50

Guided walk to afternoon premises 12:50 -13:05 (starts from the outdoor).

October 1st, 2024

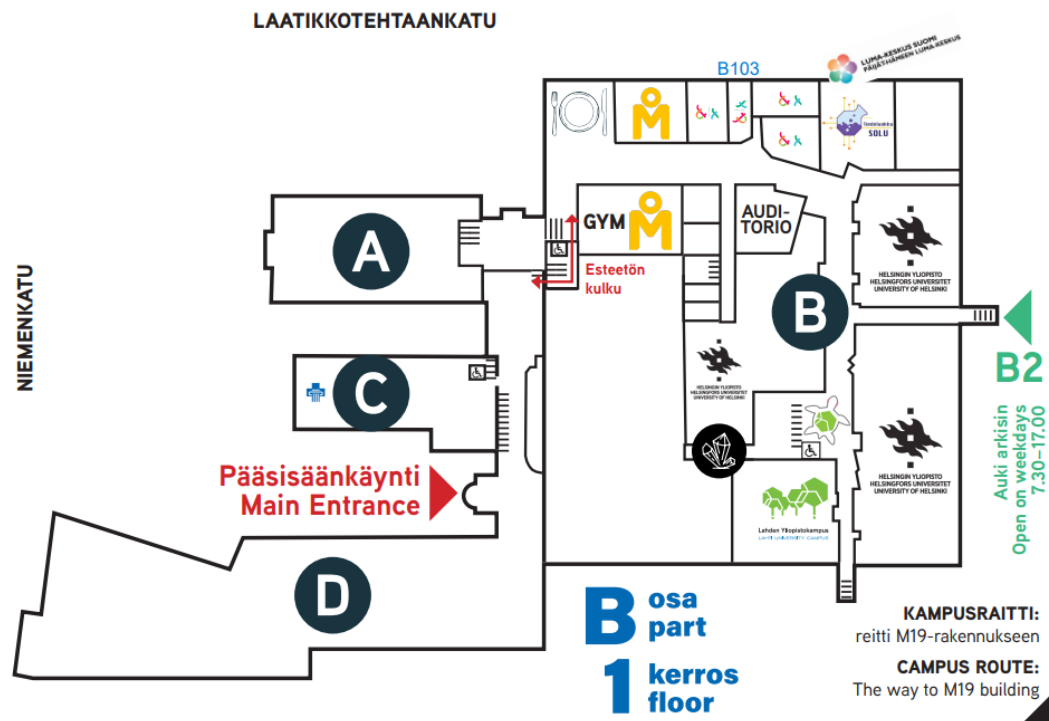
TWO CAMPUS AREAS – SOME INSTRUCTIONS



- Morning session in Mukkula
- Afternoon sessions in Niemi
- Transfer from Mukkula to Niemi during the lunch break via Kampusraitti
 - Walking takes about 15 mins
 - Guided walk starts from the front door at 12:50
- Access Niemi building using the door closest to Mukkula, so not necessarily the front door
- Cars can stay on either of the campuses.

October 1st, 2024

TWO CAMPUS AREAS – NIEMI BUILDING



- Afternoon seminar is in the section “B” of Mukkula campus
- Closest entrance when coming from the Mukkula building is door B2, being on the opposite side of the building as the main door.
- Afternoon parallel session 1 is at the 1st floor, right from the entrance B2 (closest entrance to Mukkula)
- Afternoon parallel session 2 is at the 2nd floor, and stairs to the 2nd floor locate left from the entrance B2 (closest entrance to Mukkula)



 OCTOBER 1ST, 2024

MORNING SESSION

HYGCEL final seminar & visiting presentations

Mukkula campus, Auditorium 2

October 1st, 2024

AGENDA – MORNING SESSION



FIRST PART (MORNING COFFEE 9:00-9:30)

- »» 9:30 – 9:35 Welcome – Mari Tuomaala, LUT
- »» 9:35 – 10:45 Finnish Hydrogen projects
 - »» 9:35–9:45 HYGCEL project overview – Mari Tuomaala, LUT
 - »» 9:45–10:00 LUT's H2 research activity – Petteri Laaksonen, LUT
 - »» 10:00–10:15 JustH2Transit – Marko Huttula, OU
 - »» 10:15–10:30 REPower – Johanna Routa, Luke
 - »» 10:30–10:40 Hyper – Cyril Bajamundi, VTT
 - »» 10:40–10:50 HUG-Economic prospects of H2 storing, Peter Ylén, VTT
- »» 10:50 – 11:00 Time for discussion.
- »» 11:00 – 11:15 Break – coffee available

SECOND PART

- »» 11:15 – 11:25
 - Overview of Finnish power-to-X economy research 2017-2023
Teemu Tuomisalo, LUT
- »» 11:25 – 11.35
 - Hydrogen SRA for Finland by Hydrogen Research Forum
Finland, Eeva Lähdesmäki, LUT
- »» 11:35 – 11:45
 - Introducing novel ideas: CO2 electrolysis in solid carbon
production – HYGCEL, WP5, Emma Laasonen, LUT
- »» 11:45 – 12:00 comments from the audience & discussion.

Lunch (own cost) 12:00 - 12:50

Guided walk to afternoon premises 12:50 -13:05 (starts from the outdoor).



 OCTOBER 1ST, 2024

HYGCEL PROJECT OVERVIEW

HYGCEL final seminar & visiting presentations

Mari Tuomaala

HYGCEL – Hydrogen and carbon value chains in green electrification

- LUT University (LUT)
- Tampere University (TAU)
- University of Eastern Finland (UEF)

- Project time 1.1.2022 – 30.10.2024
- Financed by Business Finland

- Research budget 4,5 M€
- Co-innovation consortium budget 10,5 M€

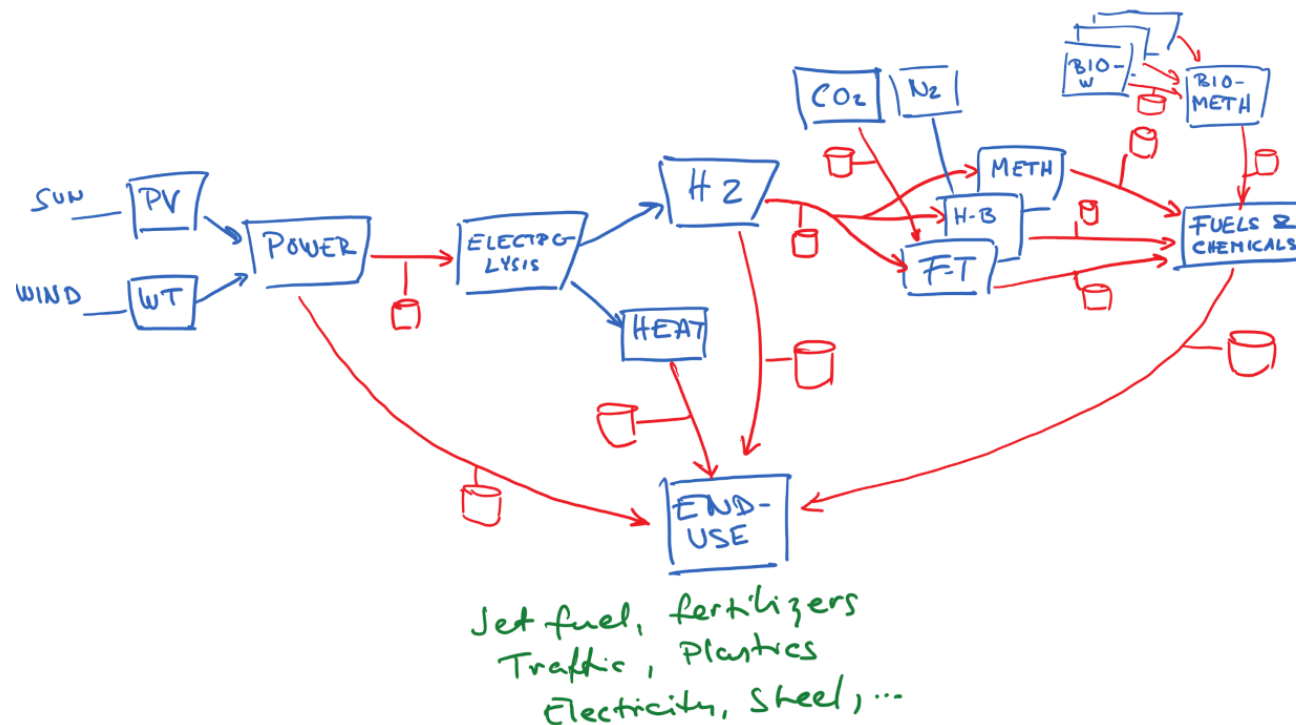
- Altogether 17 consortium partners
- Almost 80 participating researchers
- Altogether 6 WP's covering 18 tasks.



With in kind contribution:
5th Innovation, Ucont, Bakelite, FennoSteel



HYGCEL was studying what are the most optimal PtX value chains for Finland and it was developing guidance about how to build the electricity -based infrastructure in Finland.



Results: <https://www.lut.fi/en/hygcel>



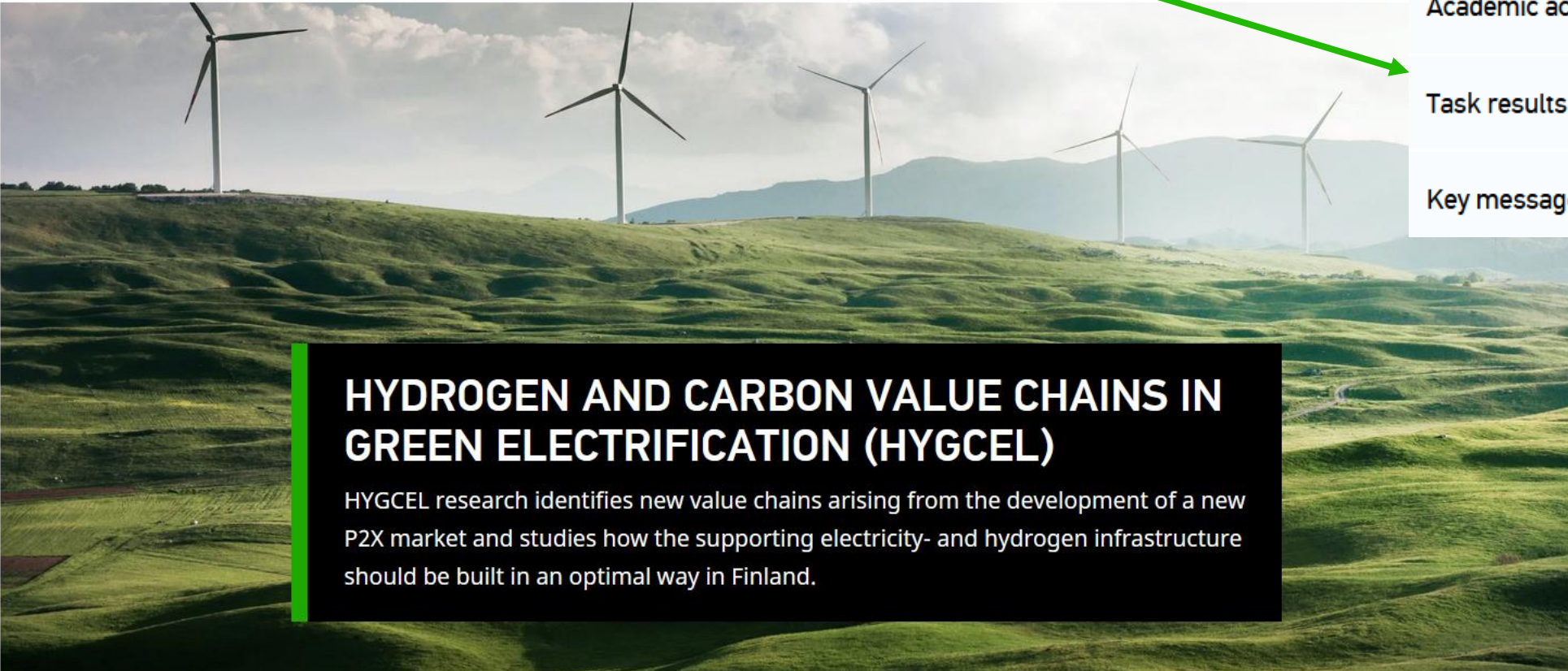
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EN

Search



Hydrogen and Carbon Value Chains in Green Electrification (HYGCEL) > Hydrogen and Carbon Value Chains in Green Electrification (HYGCEL)



- Academic achievements
- Task results
- Key messages

HYDROGEN AND CARBON VALUE CHAINS IN GREEN ELECTRIFICATION (HYGCEL)

HYGCEL research identifies new value chains arising from the development of a new P2X market and studies how the supporting electricity- and hydrogen infrastructure should be built in an optimal way in Finland.

HYGCEL work packages

Markets and regulations

Regulation, politics and investments (WP1)

Optimal infrastructure (WP2)

Techno-economy

Methane and materials (WP3)

Future P2X cogeneration plants (WP4)

Sustainability and safety

Solid carbon products (WP5)

Safety and security (WP6)

—— Topics in this seminar

Key messages available on HYGCEL web pages

Regulation

Challenges in the EU approach to hydrogen markets and regulation - 1 presentation

WP1

Techno - economy

Resource potentials and regional imbalances in infrastructure development - 3 presentations

WP2

WP3

WP4

Modelling of electricity, hydrogen, CO₂, and end-products transportation - 2 presentations

Sustainability and safety

Perspectives to sustainability, safety and profit sharing in green hydrogen value chains - 2 presentations

WP6

WP1

Politics

Hydrogen value chains: Reflection of global policies for the Finnish Hydrogen economy - 1 presentation

WP1



LUT
University