5th EERA Symposium on

"Business opportunities of Power-to-X Systems and how academy could support this"

Lappeenranta, LUT University, 15th–17th September 2025

Participants

European Commission
Ismo Ulvila, Representation in Finland

Business Finland
Tero Ijäs

LUT University
Antti Kosonen, Jero Ahola, Pertti Kauranen, Vesa Ruuskanen, Markku Niemelä, Santeri Pöyhönen, Pietari Puranen, Lauri Järvinen, Altti Meriläinen, Alejandro Ibáñez-Rioja, Petteri Laaksonen, Christian Breyer, Emma Laasonen, Jukka Ruusunen, Taija Hämäläinen, Kalevi Korjala, Eeva Lähdesmäki, Teemu Tuomisalo, Amir Mohseni, Jenna Ruokonen, Sampo Vilve, Toni Viinanen, Tuomas Koiranen, Anafi Aini, Galdi Hysa, Muhammad Asim Sarwar, Esa Tuviala

VTT
Jere Elfving, Niko Heikkinen, Ville Saarinen

Karlsruhe Institute of Technology (KIT)
Roland Dittmeyer, Peter Holtappels, Katja Haas-Santo, Gaël Corre, Jinju Zhang, Alexander Navarrete, Johannes Fladerer, Nils Gensior, Daphne Alexandra Ruppelt

Forschungszentrum Jülich (FZJ)
Holger Janssen

CIEMAT
Esperanza Ruiz Martinez

University of the Basque Country (EHU)
Haritz Etxeberria

Wärtsilä
Håkan Agnevall

ABB
Simo Säynevirta, Matti Kauhanen, Mika Talonpoika

Stargate Hydrogen
Rainer Küngas

NEL Hydrogen
Egil Rasten

Neovolt
Samuli Räisänen, Joonas Koponen

P2X Solutions
Tuomo Rinne

OX2
Anders Wiklund

Soletair Power
Petri Laakso

Fortum
Wenzhong Zhang, Senni Karhu

Elstor
Niilo Hendolin, Kari Suninen

STR Tecoil / TotalEnergies
Niko Honkasalo, Lauri Liuska, Jussi Vakkuri,

Syncron Tech
Jussi Eskelinen, Ari Rasimus

Ren-Gas
Miko Olkkonen, Mikko Lehtinen

Norsk e-Fuel AS
Niko Salonen

Metsä Group
Minna Mentzer, Eemeli Hytönen

3Flash Finland
Miko Huomo

City of Imatra
Matias Hilden

City of Lahti
Juha Kapanen

City of Lappeenranta
Ilkka Räsänen

Business Joensuu
Rami Alfasfos

Instructions for presentations

Oral presentations
15 min for presentation (keynotes 20–25 min) + 5 min for questions

Poster presentations
A0 or A1 size posters

How to reach Lappeenranta Campus:

The conference venue is LUT Lappeenranta Campus (Instructions for visitors).
Address: Yliopistonkatu 34, 53850 Lappeenranta, Finland

Lappeenranta

City of Lappeenranta combines urban culture with beautiful, soothing nature.
Lake Saimaa, the largest lake in Finland, is a big part of the city's identity.

Lappeenranta's southern location and proximity to the Helsinki metropolitan area surprise many, as the train journey to Helsinki (220 km) takes only two hours.

Like LUT, the city of Lappeenranta has invested in a more sustainable tomorrow. In 2021, the European Commission awarded the city the Green Leaf Prize. This shows how Lappeenranta's climate actions are recognized as exemplary and progressive investments in green development.

More information:
Visit Lappeenranta (link)

Lappeenranta - Much more than a landscape video (link)

How to get here from Helsinki

By plane and train (or shared taxi):

Train: The easiest way to reach Lappeenranta from **Helsinki Vantaa Airport (HEL)** is by train.
A local commuter train leaves the airport every 10 minutes and connects to Tikkurila station, where you can change to the direct train to Lappeenranta. The train ride is about 2 hours long.

Information about **trains and train tickets:** https://www.vr.fi/en

Shared taxi: If your flight arrives later than the last train leaving Helsinki (usually around 9 PM), you can order a shared taxi service from Taksi Saimaa to pick you up from the HEL airport and bring you to your accommodation in Lappeenranta. It is also available if your flight is in early morning and you won't reach it with the first train leaving Lappeenranta. See more info on the schedule and how to prebook it **here.**

A website with **timetables and routes** for multimodal transportation in Finland:
https://opas.matka.fi/?locale=en

Local buses at Lappeenranta

The conference venue at LUT campus is located 6 km from the city center.

Bus route 5 operates from train station (Matkakeskus) via city center (Keskusta) to LUT Campus (Yliopisto). Travel time about 30 minutes. Bus route 1 operates from city center (Keskusta) to LUT Campus.

Information about the **local bus timetable:** https://lappeenranta.digitransit.fi/?locale=en

Accommodation in Lappeenranta

We recommend to book your room at Green Key -certified
ORIGINAL SOKOS HOTEL LAPPEE (link)
BRAHENKATU 1, 53100 LAPPEENRANTA

LIMITED AMOUNT OF ROOMS WITH SPECIAL PRICE
for EERA Symposium participants for 14-18 September 2025:

159 € / single room / night
179 € / twin room/ night

The room price includes a rich buffet breakfast, use of the gym and the residents' sauna and swimming pool section during opening hours.

You can make reservations from the allotment with these prices until **24 August 2025** or until the rooms are available.

Rooms can be booked at the prices mentioned above by using the reservation code **BEERA**
Hotel reservation channels:
Online reservation: https://www.sokoshotels.fi/en
Email: lappee.lappeenranta@sokoshotels.fi
By phone: +358 10 7621000

Other recommended hotels in Lappeenranta city center:

HOTEL LÄHDE (link)

HOTEL RAKUUNA (link)

SCANDIC HOTEL PATRIA (link)

Program

Monday, 15th September

08.45 – 09:00	Meeting at LUT Main Entrance Hall
09:00 – 11:00	***PtX Lab visits @ LUT***
	Chemical process laboratory
	Hydrogen laboratory
	High voltage alkaline water electrolysis laboratory
11:00 – 12:00	***EU emission trading and global view*** *(moderated by Dr. Petteri Laaksonen)* ***@ Auditorium 1318***
	Global view for PtX (Christian Breyer, LUT)
	Markets and policy for carbon pricing to reduce emissions and improve competitiveness (Ismo Ulvila, EU Commission)
12:00 – 12:50	*Lunch Break @ LUT Buffet*
12:50 – 13:00	Walking
13:00 – 15:00	***Company visits***
	Soletair Power – Building Integrated Carbon Capture (BICC)
	Elstor – Power-to-heat thermal energy storage
	Transportation to Yllikkälä
	Neoen – Yllikkälä battery energy storage, 56.4 MW / 112.9 MWh
15.00 – 15:30	Transportation to Mattila
15:30 – 18.30	***Special Program*** *– Disc golf tournament @ Mattila*
	Refreshments available, three best throwers will be awarded
18.30 – 19:00	Transportation to Rakuunanmäki
19:00 – 22:00	***Dinner @ Tuju Taproom***
	Award ceremony of the disc golf tournament

Tuesday, 16th September @ Auditorium 1318

10:00 – 10:15	Opening remarks (Rector Juha-Matti Saksa, LUT)
10:15 – 10:30	Introduction of participants (who, from where, research field)
10:30 – 11:00	***Keynote 1 from industry*** *(moderated by Ind. Prof. Jukka Ruusunen)*
	The journey to a renewable future (Håkan Agnevall, Wärtsilä)
11:00 – 11:20	*Coffee Break @ LUT Galleria Hall*
11:20 – 13:00	***Water electrolyzers*** *(moderated by Prof. Antti Kosonen)*
	Leveraging R&D collaborations to develop advanced alkaline electrolysers for industrial applications (Rainer Küngas, Stargate Hydrogen)
	Advanced alkaline water electrolysis – From research to business (Santeri Pöyhönen, LUT)
	The research challenge in alkaline water electrolysis under real-life conditions (Egil Rasten, NEL Hydrogen)
	Scaling and experience in the development and testing of cells, stacks and systems (Holger Janssen, FZJ)
	Neophy: monitoring industrial water electrolysis systems for efficient and long-lasting operation (Samuli Räisänen, Neovolt)
13:00 – 14:00	*Lunch Break @ LUT Buffet*
14:00 – 15:00	***Hydrogen production*** *(moderated by Dean Olli Pyrhönen)*
	The hydrogen journey: Managing expectations and realities (2020–2025) (Tuomo Rinne, P2X Solutions)
	On-site electrolyzer for producing hydrogen for process application in RRBO refinery (Niko Honkasalo, STR Tecoil / TotalEnergies)
	Research planning at Kalla test center – Operator's perspective (Wenzhong Zhang, Fortum)
15:00 – 15:10	*10 min short break*
15:10 – 16:10	***Industrial revolution*** *(moderated by Prof. Jero Ahola)*
	Electrification of the industry (Jukka Ruusunen, LUT)
	E-fuel for the shipping industry (Green Corridors) and the work with Långnäs Mega Green Port (Anders Wiklund, OX2)
	ResilEast – Energy and defense in a new way (Petteri Laaksonen, LUT)
16:10 – 16:30	*Coffee Break @ LUT Galleria Hall*

16:30 – 18:00	***Poster session with award*** @ LUT Galleria Hall (see the list below)
18:20 – 18:40	Transportation to City Center
19:00 – 22:00	***Dinner @ M/S Camilla, Lake Saimaa Cruising (Menu)***
	Live music by Loan box – The band performs cover versions of well-known rock and pop classics with powerful energy and a distinctive style. Their shows blend the recognizable vibe of the original songs with a fresh and soulful interpretation.

Wednesday, 17th September @ Auditorium 1318

09:00 – 09:30	***Keynote 2 from industry*** *(moderated by Prof. Pertti Kauranen)*
	H2 Springboard (Simo Säynevirta, ABB)
09:30 – 10:30	***Direct Air Capture (DAC)*** *(moderated by Dr. Gaël Corre)*
	Buildings as carbon sinks (Petri Laakso, Soletair Power)
	DAC in built environment (Roland Dittmeyer, KIT)
	The role of DAC in the EU's decarbonisation effort – Summary of study for the EU parliament (Jere Elfving, VTT)
10:30 – 10:50	*Coffee Break @ LUT Galleria Hall*
10:50 – 12:10	***High TRL and demo projects 1*** *(moderated by prof. Roland Dittmeyer)*
	Possibilities and enabling effect of hydrogen innovations (Tero Ijäs, Business Finland)
	E-fuel project development (e-methane) – Current opportunities and challenges (Miko Olkkonen, Ren-Gas)
	H2Mare: Off-grid production of hydrogen and PtX products (Katja Haas-Santo, KIT)
	Energy Lab 2.0 (Gaël Corre, KIT)
12:10 – 12:20	*10 min short break*
12:20 – 13:20	***High TRL and demo projects 2*** *(moderated by Dr. Peter Holtappels)*
	Ancillary services from a P2X viewpoint (Ari Rasimus, Syncron Tech)
	A software tool-service for cost-optimal design of green hydrogen production plants – From research to business (Alejandro Ibáñez-Rioja, LUT)
	Power-to-heat thermal energy storage (Niilo Hendolin, Elstor)
13:20 – 14:10	*Lunch Break @ LUT Buffet*
14:10 – 15:30	***Low TRL technology*** *(moderated by Dr. Katja Haas-Santo)*
	Bringing CO_2 electroreduction to the next level (Peter Holtappels, KIT)
	Development of electrode materials for syngas production by H_2O and CO_2 co-electrolysis in SOEC (Esperanza Ruiz Martinez, CIEMAT)
	Designing catalysts towards a more efficient methanation in Power-to-X technologies (Haritz Etxeberria, EHU)
	CO_2 conversions with plasmas (Alexander Navarrete, KIT)

15:30 – 15:50	*Coffee Break @ LUT Galleria Hall*
15:50 – 17:10	***Realization of investments*** *(moderated by Dr. Ville Saarinen)*
	Enabling P2X commercial potential: Technoeconomic insights and research priorities for power-to-X fuels, chemicals, and polymers (Niko Heikkinen, VTT)
	Imatra – "Finnish Ruhr" – Yesterday, today and tomorrow (Matias Hilden, City of Imatra)
	The future outlook of eSAF production plant in Imatra – Key factors, opportunities and challenges (Niko Salonen, Norsk e-Fuel AS)
	Helping the companies to realize the investments on P2X and Green Electrification – Case Lappeenranta (Ilkka Räsänen, City of Lappeenranta)
17:10 – 17:20	Wrap up discussion and next symposium
	Power-to-X Journal (new journal in Elsevier, Prof. Christian Breyer) articles from the next seminar
17:20 – 18:00	Transportation to Rautjärvi
18:00 – 22:00	***Special Event – Smoke Sauna with Hot Spring & Lake Swimming, Dinner @ Hugon savusaunat***
22:00 – 22:45	Transportation back to Lappeenranta city centrum

Posters as of 16.9.2025 @ LUT Galleria Hall

LUT	Teemu Tuomisalo & Eeva Lähdesmäki	PtX research in Finland: Research survey and strategic research agenda
LUT	Rami Alfasfos	Lessons learned
LUT	Rami Alfasfos	Cybersecurity
LUT	Anafi Aini	Solid carbon production via CO_2 electrolysis in molten lithium carbonate
LUT	Altti Meriläinen	Integration of water electrolysis and district heating in Nordic conditions
LUT	Altti Meriläinen	Renewable baseload electricity supply in Nordic conditions
LUT	Jino George	Development and characterization of a proton exchange membrane water electrolyzer experiment setup
LUT	Jenna Ruokonen	Transition towards Power-to-X Economy: A case study of e-methanol adoption by Finnish industries
LUT	Lauri Järvinen	Alkaline water electrolyzer behavior under dynamic operation
LUT	Galdi Hysa	Study of shunt current in an industrial alkaline water electrolyzer with different number of cells in series
LUT	Pietari Puranen	Large amplitude fluctuations in water electrolyzer current supply: Dynamic voltage response modelling and effect on active power consumption
LUT	Toni Viinanen	1000 V alkaline water electrolysis system
LUT	Muhammad Asim Sarwar	Investigating the effect of operating condition on void fraction, stray currents, and current distribution in an alkaline water electrolysis stack using CFD
LUT	Esa Tuviala	Multi-layer optimization tool to model the levelized cost of driving of battery electric trucks
KIT	Jinju Zhang	Solar-activated fuels and chemicals
KIT	Johannes Fladerer	LT-DAC electroswing approach: CO_2 absorption in l-arginine and electrochemical regeneration via electrodialysis
KIT	Daphne Alexandra Ruppelt	Capturing CO_2 from seawater: Advancing ocean-based carbon dioxide removal
KIT	Nils Gensior	CO_2-based Fischer-Trosch synthesis using efficient microstructured reactors
KIT	Alexander Navarrete	Plasma based chemical looping concept for CO_2 conversion
KIT	Alexander Navarrete	H_2O_2 synthesis using microwave plasmas
VTT	Ville Saarinen	Utilization of hydrogen as an energy storage vector by a combined reversible high temperature electrolysis and

compressor system integrated with upstream biogas and downstream e-fuel production