

## Seminar invitation:

# Finnish needs and research highlights on hydrogen - focus on liquid LOHC "batteries" and hydrogen legislation

7 November 2018

Seminar room Leonardo, Innopoli 1 (Tekniikantie 12, Espoo)

None of the today's energy storages is feasible to serve all needs in the revolution from fossil to carbon-free renewable energy. Hydrogen is a flexible energy carrier, however, its storage, transport and use as compressed or liquid form is challenging. Liquid organic hydrogen carriers (LOHCs) resemble liquid hydrogen "batteries" as they can be reversibly hydrogenated and dehydrogenated using catalysts. This concept could serve as safe storage of renewable energy for many sectors. In this seminar, energy system needs in the transition to renewable energy are evaluated for power plants, transport, residential and chemical sectors. The LOHC concept is discussed both in technical and economical terms. Pathway to hydrogen economy is feasible only when in line with legislation, which is one of the topics of seminar. In addition, national research projects related to hydrogen are presented.

## Organiser

The LOHCNESS project (<https://www.vtt.fi/sites/lohcnness>) evaluates feasibility and performance of LOHC solutions by identifying the business possibilities and best uses around the concept. Partners are VTT Technical Research Centre of Finland Ltd., University of Helsinki, Fortum, St1 Renewable Energy Oy, Oy Woikoski Ab, Leppäkosken Sähkö Oy and Aino Energia Oy. Project belongs to Smart Energy program of Business Finland.

The EU project HyLAW (<http://www.hylaw.eu/>) aims to review laws related to hydrogen and to remove legal barriers to the deployment of fuel cells and hydrogen applications. HyLAW brings together 23 partners from Europe, is coordinated by Hydrogen Europe and has received funding from the Fuel Cells and Hydrogen 2 JU.

## Registration

The seminar is free of charge. Register online at <https://www.lyyti.in/lohcnness> by 31.10.2018.

More information: Päivi Aakko-Saksa, VTT ([paivi.aakko-saksa@vtt.fi](mailto:paivi.aakko-saksa@vtt.fi)) and Riitta Nyholm, VTT ([riitta.nyholm@vtt.fi](mailto:riitta.nyholm@vtt.fi)). Speeches in Finnish, slides in English.

*The organizer reserves the right to make changes to the program.*

## Program

- 9.00 *Registration and coffee*
- 9.30 **Opening**  
Kalle Kantola, VTT Technical Research Centre of Finland
- 9.45 **Session A: NEEDS**  
**Hydrogen storage options for energy revolution**  
Pia Salokoski, Business Finland, Smart Energy  
Mikael Hilden, Academy of Finland projects, A Climate-Neutral and Resource-Scarce Finland, Smart Energy Transition projects  
**Energy system needs**  
*Land-transport*, Aki Hämäläinen, Woikoski  
*Marine*, Kari Sillanpää, Meyer Turku  
*Residential*, Juhani Rummukainen, Aino Energia Oy  
*Energy*, Mika PA Anttonen, St1 Energy  
*Power and Chemicals*, Sebastian Johansen, Fortum Power
- 12.00 *Lunch and poster session*  
Posters of related hydrogen projects, e.g. HySTOC, MARANDA, Balance, Bioeconomy+, BCDC, EL-TRAN, Soletair
- 13.15 **Session B: STORING HYDROGEN AND LEGISLATION**  
**Hydrogen storage in liquids, LOHCNESS project**  
*Overview; Feasibility of LOHC concept; Catalysts; Demonstrations*  
Päivi Aakko-Saksa, Markus Hurskainen, Matti Putkonen, Noora Kaisalo, Sonja Auvinen, VTT  
Timo Repo, University of Helsinki  
**Hydrogen legislation, HyLAW and MARANDA projects**  
*User-friendly website for Finnish and European hydrogen legislation; Hydrogen in stationary and marine applications*  
Mikko Kotisaari and Jari Itonen, VTT
- 15:45 **Questions and end of the seminar**  
Coffee and discussions

LOHCNESS, 2017-2019

Liquid hydrogen "batteries" for storing renewable energy

