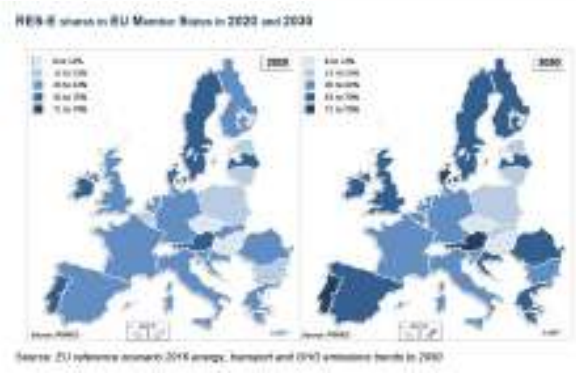
Newsletter insight 6

Cryogenic Energy Storage for Renewable Refrigeration and Power Supply!

CryoHub Energy Profile Report

The purpose of the Energy Profile report is to provide context for the further exploration of opportunities for CryoHub technology in the cold storage sector in the form of an analysis of EU member states' energy supply profiles and carbon footprints, installed renewable energy supply & capacity (with a particular focus on the variable renewable sources of wind and solar power) and renewable energy economic, regulatory and policy drivers.



Production and consumption profiles have been prepared for all the EU28 Member State countries and more in-depth energy profiles have been assembled and analysed for a sub-group of 15 member state focus countries. Broader trends with the potential to impact CryoHub have also been examined including global agreements, forthcoming EU legislation, EU renewable energy generation trends and developments in energy storage. Overall, whilst it was clear that opportunities for the potential development of CryoHub technologies are apparent in a number of the focus countries, this is tempered by the understanding that that not only do attitudes to variable RES vary, both politically and socially from country to country, but in many cases RES support mechanisms, markets and infrastructure are also undergoing transition making development pathways, in the short term at least, less certain. This has implications for the ongoing development of market strategies, policies and business models. The full report is available on the CryoHub web site www.cryohub.eu/downloads

WHAT IS CRYOHUB?

CryoHub is an EU-funded innovation action entitled *"Developing Cryogenic Energy Storage at Refrigerated Warehouses as an Interactive Hub to Integrate Renewable Energy in Industrial Food Refrigeration and to Enhance Power Grid Sustainability"*. The aim of the project is to develop and investigate the potential of large scale cryogenic energy storage at refrigerated warehouses and food factories. The innovative CryoHub technology is based on storing renewable energy as a cryogenic liquid - which in the case of this project is liquid air. This cryogen is then boiled at very low temperatures to generate electricity for on-site use or feed into the power grid during peak demand periods. The cooling effect of boiling the cryogen is used to refrigerate industrial facilities.

NEW CRYOHUB ADVISORY BOARD MEMBER

A new advisory board members has recently joined CryoHub. Prof. Dr. Tatiana Morosuk of **Technical University Berlin** aisre the latest addition expert offering their valued expertise to the CryoHub advisory board.

This project has received funding from the European Union's Horizon 2020 Research and Innovation Programme under Grant Agreement No 691761.

Coordinator: Prof. Judith Evans (j.a.evans@lsbu.ac.uk)

Paper on cryogenic heat exchangers now available

A paper on cryogenic heat exchangers for process cooling and renewable energy storage is now available on the CryoHub web site.

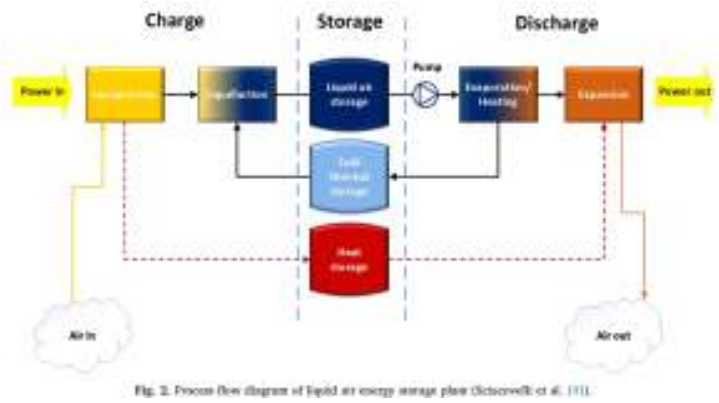


Fig. 2. Process flow diagram of liquid air energy storage plant (Sciacovelli et al. [11]).

Heat exchangers are among the most important components determining the energy efficiency of cryogenic systems. They also constitute the necessary interface between a LAES system and the industrial process utilizing the available cooling effect. The review aims to familiarise energy professionals and stakeholders with the latest achievements, innovations, and trends in the field of cryogenic heat exchangers, with particular emphasis on their applications to LAES systems employing renewable energy resources.

Important innovations in coil-wound and plate-fin heat exchanger design and simulation methods are reviewed among others, while special attention is given to regenerators as a prospective component of cryogenic energy storage systems. This review also reveals that the geographical spread of research and development activities has recently expanded from well-established centers of excellence to rather active emerging establishments around the globe.

Download the whole review at www.cryohub.eu/documents

Events

❄**25th IIR International Congress of Refrigeration, 24 to 30 August 2019 Montreal, Canada**
The theme of this, the largest gathering of the refrigeration scientific community, will be "Refrigeration for Human Health and Future Prosperity" the event will feature 1,000 technical papers with thematic streams covering Cryogenics. More at www.icr2019.org.

❄**Cryogenic Energy Storage for Renewable Refrigeration and Power Supply workshop, 30th August 2019, Montreal, Canada**
This workshop will be an opportunity to find out more about the potential for CryoHub technology and hear the latest news from the project. A free workshop for participants registered for the International Congress taking place on 30th August at 10.40am-12pm. More at www.icr2019.org

❄**EU PVSEC, 9 to 13 September 2019, Marseille, France**
The EU PVSEC is the largest international Conference for Photovoltaic research, technologies and applications, and at the same time a top international PV Industry exhibition. With almost 1,000 high-level presentations from all over the world, the programme and its parallel events offer a world-class overview and in-depth insights to the latest research in the PV solar energy sector.

Sign up to the website for regular news and updates about the project.

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