



Large scale energy storage



CryoHub

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

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Distribution List

- On the project Portal
- On the CryoHub Intranet (<http://cryohub.psutec.com/>)

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1. Executive Summary

A paper titled FINANCIAL VIABILITY OF LIQUID AIR ENERGY STORAGE APPLIED TO COLD STORAGE WAREHOUSES was written and submitted to the 5th IIR Conference on Sustainability and the Cold Chain, Beijing, China, 2018.

2. Abstract of paper

Cold storage warehouses (CSWs) are large energy consumers and account for a significant portion of the global energy demand. CSWs are ideally suited for solar renewable energy, as they generally have large flat roofs and their peak demand can coincide with the sun shining. A challenge with fluctuating renewables is their variability, which means generation may not coincide with demand. Liquid air energy storage (LAES) is a technology that stores electrical energy as a cryogenic liquid. This paper presents two strategies for using LAES at CSWs, firstly to shift the import of energy from peak to off-peak tariffs and secondly to store on site renewable energy when there is a surplus and use when not. The financial viability of these strategies is then investigated taking into account the capital cost of the LAES and the money that can be saved due to the differences in tariffs at different times.

3. Dissemination

The paper has been accepted and will be presented as a poster at the conference. The paper will be published in the proceedings of the conference (DOI: 10.18462/iir.iccc.2018.0066)