NewSETS

New energy storages promoting sustainable energy transition in societies

> *Based on feasibility studies, demonstration, and replicability analyses, we will provide market and regulatory suggestions to enhance energy storage integration"*

NewSETS gathers a complete entity around new energy storages. The project encompasses all the three layers in the three-layer research model: technology, market, and adoption. At core of the technology layer are a pumped hydro storage and a seasonal heat storage. The pumped hydro storage will be demonstrated in project, while in the case of the heat storage, we will perform feasibility studies.

The effects of the storages to the energy system are comprehensively studied. System analysis is combined with a research on multi-objective business models of the storages, and with replicability and scalability analyses in other locations. The technology specific storage analyses are combined to other storage technologies as well.

With skilful communication and dissemination, the project aims to establish a positive attitude among the stakeholders making the execution of the project easier and making the efforts against climate change visible to the public.

Project Duration

01.06.2021 - 31.12.2023

Project Budget

Total Budget: € 4,100,000.-

Project Coordinator

Flexens Oy Ab (Finland)

Project Partners

- LUT University (Finland)
- Polar Night Energy Oy (Finland)
- Pumped Hydro Storage Sweden AB (Sweden)

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ERA-Net Smart Energy Systems

Smart Energy Systems ERA-Net

Main Objectives

The project consists of demonstrations, feasibility studies, market and system analyses, communication and dissemination. The aim of the demonstration is to prove that an old mine can be transformed into a pumped energy storage that can participate on ancillary services as well as the arbitrage market. The feasibility studies are mainly focused on a seasonal heat storage to prove the concept of combined seasonal and monthly heat storage in an electricity network populated with wind turbines.

The objectives of the market and system analysis are related to business models of the storages, replicability and scalability, value chains in different storage use cases, as well as impacts to different stakeholders. We will also investigate development needs in market design and regulatory framework related to energy storage business models. The focus in the analyses is on the previously mentioned storages, but also in other energy storage technologies to discover differences.

The consortium also aims to communicate and disseminate the project in way that the stakeholders would adopt a positive and supportive attitude towards this project and other projects related to sustainability.

Expected Key Results

Technology

- Pumped hydro storage demonstration
- Sand-based seasonal heat storage feasibility

Market

- Storage business models discovered in various use-cases
- Market and regulatory suggestions to develop enhanced energy storage penetration

Adoption

- Storage replicability analysed in various locations
- Positive stakeholder attitude and feedback

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Combined Heat & Power Without Burning

LUT University

PUMPED HYDRO STORAGE