



ACES

Adaptive Control of Energy Storage

“ ACES develops a market-integrated control system for energy storages that enables stacked revenue streams by AI deployment

Adam Holmer (Metrum Sweden AB), Project Manager

ACES envisions smarter control of energy storage as an enabler for renewable power systems

To facilitate a 100% renewable energy transition, the ACES project aims to develop and demonstrate smart control of distributed energy storage, that allows integration of variable production and consumption.

By analysing local power quality and usage, battery health status and energy prices, ACES develops improved forecasting models to allow for stacked energy services and multi-market operation; improving economical performance of the energy storages. The ACES system incorporates an integrated billing system to external market players, as well as development and deployment of innovative battery nano sensors that can be used to optimize battery cycle life and cost.

The ACES control and billing solution will be implemented and validated at three demonstrators with PV generation and EV charging on site:

- Micro-grid lab environment
- Fraunhofer IFF (Germany)
- Multi-family real estate
- Glava Energy Center (Sweden)
- Power-to-gas hydrogen fuel station
- VänerEnergi AB (Sweden)

Project Duration

01.09.2018 - 01.03.2021

Project Budget

Total Budget: € 1 600 000.-

Funding: € 910 000.-

Project Coordinator

Metrum Sweden AB (Sweden)

Project Partners

- Glava Energy Center (Sweden)
- RISE Research Institute of Sweden AB (Sweden)
- Insplorion AB (Sweden)
- Rejlers Embriq AB (Norway)
- MINcom Smart Solutions GmbH (Germany)
- Fraunhofer Institute for Factory Operation and Automation IFF (Germany)
- Krebs engineers GmbH (Germany)
- VänerEnergi AB (Sweden)
- ABB AB (Sweden)

Project Website

www.acesproject.eu

Contact

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Main Objectives

Adaptive control

Develop and verify adaptive control algorithms that will optimize the value of the energy storage in a dynamic and ever-changing energy system. The ACES product shall allow for switching between various energy services to improve economic performance for the end-user.

Market integration & billing

Realise attractive service offerings to market actors through an integrated billing solution that distributes costs and revenues among the associated stakeholders

Battery health evaluation

Develop and test nano sensors to measure chemical reaction inside the battery cell during operation, in order to improve tools for, and understanding of, battery degradation mechanisms. The resulting degradation pattern can be used to optimize cost-efficiency of the adaptive control.

Main Results

Economic potential for service stacking

The project uses a customer-centric approach to intergrate feedback from the industry into the development process through the ACES Reference Group. A positive market acceptance from stacking the following services has been received:

- Reduction of power tariffs
- Increased PV self-consumption
- Power quality control
- DSO flexibility markets

The project's market potential analysis (RISE) verifies that economic performance for single service operation is infeasible.

Technology validation

Testing and demonstration are to be initiated during 2020. Results from the demonstrations will follow the first test results.

Joint Programming for Flourishing Innovation from Local and Regional Trials towards a Transnational Knowledge Community

www.eranet-smartenergysystems.eu



aces
PROJECT

Managing Partner:

metrum

Partners:

IREJLERS

Fraunhofer
IFF

M.I.N.c.o.m
Smart Solutions

RISE
Research Institutes
of Sweden

Insplorion

Observers:

KREBS'engineers

VänerEnergi

ABB

ERA-Net Smart Energy Systems

This project is part of the Joint Call 2017 for transnational RDD projects of the ERA-Net SES focus initiative SG+. EUR 3.9 million of funding have been granted to 4 projects from 7 regions/countries.