



First Project Workshop

In Pilsen and Online

Techno-economic Analysis

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Overview

- Highlights from the LC-BAT-04-2019 RFP
- LCOS metric
- Data Gathering (Technical info, Cost-related info, Project-related info)
- HIGREEW's approach
- Potential risks to achieving project targets
- Summary

Highlights from the LC-BAT-04-2019 RFP

“Since **cost is the most important driver for grid scale electricity storage**, targets for key performance indicators such as **levelised cost of energy (€/MWh)**, cost per surface power density (€/Wm⁻²) and capital cost (€/kWh of capacity) should be set.”

Expected Impact:

“Project results should contribute to reach the targets set in the SET Plan, putting the energy storage cost on the path to fall **below 0.05 €/kWh/cycle** by 2030.”

>> Cost-competitiveness goes hand in hand with having a high performing, sustainable and safe product

LCOS Metric

Definition: The cost of kWh or MWh electricity discharged from a storage device when accounting for all cost incurred and energy produced throughout the lifetime of the device.

Data Gathering

Technical info

- Energy density [Wh/L]
- Efficiency (stack, converters, aux. consumption)
- Degradation in efficiency or capacity
- Residual value of electrolyte
- Failure rate and potential replacement (OPEX)

Cost-related info (product)

CAPEX

- Cost of raw materials
- Cost of components
- Cost of upscaling
- Cost of modifications

OPEX

Project-related info

- Product lifetime
- Discharge duration
- # of cycles
- Availability
- Logistics costs
- Charging costs
- Incentives/subsidies

HIGREEW's Approach

- Vanadium redox flow batteries as a benchmark for HIGREEW's techno-economic targets
- Prototype LCOS VS upscaled product (xMW):
 - Two analysis streams one for prototype, another for an upscaled product (higher production volume).
 - Final product optimization is not part of the analysis, however some recommendations could be made based on the project findings.
- Continuous analysis:
To be done throughout the project lifetime. Whenever there is a significant update, it should be considered and evaluated.
- Sensitivity Analysis:
Study how sensitive LCOS is to the change of a certain parameter...

Potential risks to achieving project targets

- New electrolyte chemistry
- High prices of components and raw materials
- Tight project timelines and limited project budget
- Problems/risks in product upscaling

Summary

- Cost, cost, cost...
- Techno-economic analysis is the way to keep track of the project targets
- It is a collective work, done on a regular basis until project end
- Product modifications are evaluated on LCOS basis

Thank you!



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