

Waste Challenge Title

Does battery recycling compete with second-life usage?

Introduction

STABL Energy strives for sustainable energy use with its power conversion technology. Our goal is to increase the deployment of energy storage for renewable energy by setting a new standard for battery storage. With our easy-to-integrate technology, we improve battery storage systems in terms of design, safety, reliability, cost-effectiveness, and handling.

Problem Definition:

Battery recycling not only serves the purpose to improve the sustainable use of resources but is also a strategic topic of car makers to decrease the dependency on countries that provide the resources. Recycling is one option to be in control of the resources and have the necessary supply to produce batteries in the future. This objective may be conflicting with the re-use of batteries for second-life applications.

What is the waste challenge?

A possible question is if the resources needed in battery chemistries today are still as relevant for the next generation of battery technology. Cobalt, for example; its share in the battery is continuously reduced and may not be used at all in the future. Completely new battery types and chemistries like solid-state may work towards or against this trend.

The project group may also explore the expected behavior from car manufacturers: re-use of batteries reduces the demand for new batteries in electricity-grid applications. For the individual car manufacturer to benefit from this, the entire industry needs to coordinate its efforts. Solo efforts could easily undermine any coordinated action. The project group should give an overview of all identified factors and current trends in the industry and develop a recommendation for used batteries.

- Will the resources needed in battery chemistries today still be as relevant for the next generation of battery technology?
- What usage strategy can be expected from distributors of batteries like car manufacturers?
- What factors and trends will be needed to defined in order to coordinate action of the entire industry rather than individual players going it alone?

Who is behind this challenge?

Founded in 2019, STABL Energy is one of the most innovative startups for the energy transition, winning the pv-magazine Megawatt Award in 2020 and the ees Award in 2022, and being named a global Top100 Energy Startup in 2021. We are funded by renowned and experienced Tech VCs from Germany and Switzerland.

We are all united by the vision of enabling a climate-neutral energy system: with safe, sustainable, and efficient battery storage systems.

Topic domain of challenge: Cities, Energy or Consumption

Cities, since battery storage applications in cities would benefit from cheaper and available second-life batteries. **Energy** without doubt. **Consumption**, since this question would definitely affect the way we consume rare earths and resources needed for batteries.

Desired Impact of Challenge:

If used batteries such as traction batteries for electric vehicles were simply reused after their first use instead of being recycled directly in complex and costly processes, the greater availability and thus presumably lower costs would make the use of battery storage more interesting. Battery storage is an essential part of our strategy to mitigate global warming through the use of more renewable energy in the electricity grid. Since renewable energies are very volatile, a buffer is needed for temporal or spatial separation of energy production and energy use.

Currently, the necessity of recycling batteries is still underestimated, since only a few batteries have reached the end of their life. This will change massively in the next few years, as the number of returns of electric cars, electric scooters or other electric mobility devices will increase significantly. We assume that the players along the cycle from raw material to raw material are currently not connected enough to be able to enter into meaningful political discussions. Once the relevant factors are identified, the right contacts for cross-industry issues could be identified and addressed.

Skills needed/recommended

- You're a team of 2-3 people studying in the fourth semester onwards;
- You are interested in strategic issues of an innovative high-tech hardware startup;
- You are open to new things and can creatively deal with challenges;
- You have an independent, structured and systematic way of working;
- Ideally, you are a well-established team that is eager to experiment and has a great passion for providing new impulses;
- You have good English skills; German skills would be great to have.

Relevant links:

<https://stabl.com>

<https://eba250.com/>

<https://www.reuters.com/technology/german-funded-consortium-develop-battery-passport-european-batteries-2022-04-25/>