

Internship:

## **Energy Storage Technologies Fact Sheets for An Online Portal**

Due to increasing renewable energy to decarbonize the energy system, there are more and more discussions on the state-of-art as well as future developments of energy storage technologies. The Swiss competence Center for Energy Research, Heat and Electricity Storage (SCCER-Hae, <http://www.sccer-hae.ch/> ) has started since 2014. The assessments were performed within the project for various stationary electricity storage technologies [1–3] in the first phase of the project, while more thermal storage technologies are being assessed in the current second phase.

By combining the existing knowledge on energy storage technologies drawn from the project's past research and literature review, this internship will focus on developing a series of transparent fact sheets containing comprehensive characteristics for energy storage technologies based on their current and potential future performances, including but not limited to: applications, technical parameters, costs, life cycle environmental performance, SWOT (Strength, Weakness, Opportunities, Treats) analysis. These factsheets and information will be shared on an online portal, with user-friendly interface, transparent references, easily-extractable information as well as any other useful features that are relevant to broaden the influence of our research.

The internship will be performed within the Technology Assessment group in the Laboratory for Energy Systems Analysis at Paul Scherrer Institute in Villigen, Switzerland, and will last for 3-6 months. By the end of the internship, you are expected to develop a comprehensive understanding about energy storage technologies. Interested applicant with background in energy and/or environmental science, website application development background, and preferably with good command of German are encouraged to submit an application to Xiaojin Zhang ([xiaojin.zhang@psi.ch](mailto:xiaojin.zhang@psi.ch)), including your latest resume and current grades.

### **Reference**

- [1] Abdon A, Zhang X, Parra D, Patel MK, Bauer C, Worlitschek J. Techno-economic and environmental assessment of stationary electricity storage technologies for different time scales. *Energy* 2017;139:1173–87. doi:10.1016/j.energy.2017.07.097.
- [2] Zhang X, Bauer C, Mutel CL, Volkart K. Life Cycle Assessment of Power-to-Gas : Approaches , system variations and their environmental implications. *Appl Energy* 2017;190:326–38. doi:10.1016/j.apenergy.2016.12.098.
- [3] Parra D, Zhang X, Bauer C, Patel MK. An integrated techno-economic and life cycle environmental assessment of power-to-gas systems. *Appl Energy* 2017;193:440–54. doi:10.1016/j.apenergy.2017.02.063.