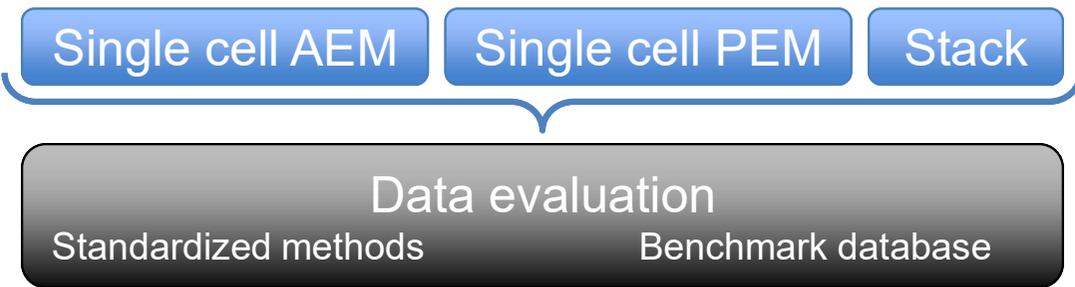


Electrolysis scale up: Benchmark values and performance evaluation

Description:

Green hydrogen production is a key enabler for the full transition of the energy system to renewable energy sources. One promising approach is hydrogen generation via water electrolysis using renewable electricity. To systematically assess technological progress, benchmark values and key performance indicators (KPIs) must be evaluated across different development stages and test environments. The objective of this master's thesis is to develop and apply evaluation tools for the data analysis of multiple electrolysis test benches in order to derive meaningful benchmark values. This includes data preprocessing and harmonization of heterogeneous data sources into comparable formats. Based on standardized measurements and analysis methods, benchmark values for different technologies and development stages are established. Furthermore, new and advanced performance indicators are defined and implemented to enable a deeper understanding of technological challenges and performance limitations. The developed evaluation framework allows a systematic comparison of new materials and technologies across all development stages.



Content / Time table:

- Use-case and requirement definition for the evaluation tool (1 month)
- Definition and implementation of a uniform database for all test benches (1.5 months)
- Analysis of measurement data and development of evaluation tools (1.5 months)
- Definition of performance indicators and benchmark analysis (1 month)
- Documentation and writing of the master's thesis (1 month)

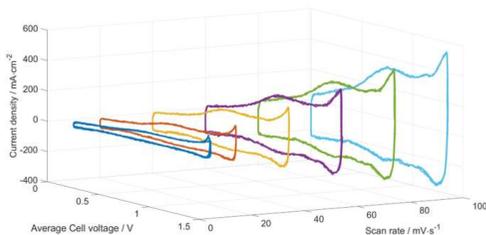
Start: as of now

Duration: approx. 6 months

Paid Master Thesis

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Schematic illustration of the data evaluation and benchmark database
Source: HyCentA / ChatGPT