

1 Flow field simulation in a stack.

2 New redox flow stack with
0.5 m² active area.

REDOX FLOW BATTERY TEST LABORATORY

DEVELOPED STACKS UP TO 0.5 m²

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The integration of fluctuating renewable energies like wind and solar are the huge challenges of the futures. Big battery systems based on redox flow technology offer many advantages. They enable longer storage times and higher capacities because power and capacity can be independently scaled up.

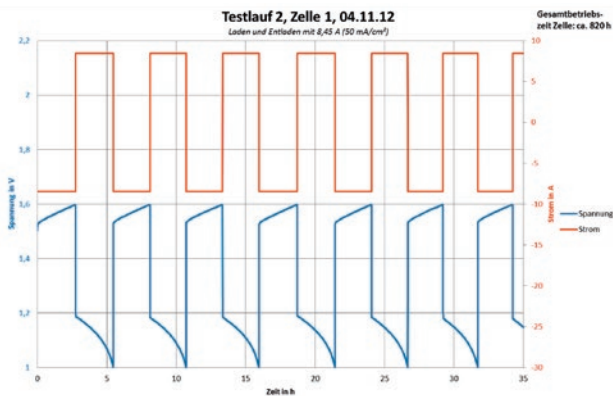
Fraunhofer UMSICHT operates one of the largest test laboratories for redox flow batteries in Europe in which we have the opportunity to built up and test big stacks as well as single cells in a freely selectable environment.

Keywords

- Development, design and construction of redox flow battery stacks
- Measuring of redox flow batteries
- Selectable environment parameters
- Reproducible test environment
- Impedance spectroscopy
- Battery model development

Industrial Sectors

- Battery manufacturers
- Power supply companies
- Wind farm operators
- System providers of PV facilities
- Telecommunication industry



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- 1 Charge-/Discharge cycling of a redox flow battery.
- 2 View of the redox lab test environment with electrolyte tanks and heat exchangers.

Technological specification

- Laboratory with three different test rigs
- Bidirectional power up to 80 kW
- Maximum current up to 100 V, maximum amperage up to 900 A
- Stacks up to a size of 1 m³ and a weight of 1 t are testable
- Adjustable temperature range of the electrolyte between 15 and 40 °C
- Impedance spectroscopy up to 50 kHz

Our service

- Development of freely scalable redox flow systems
- Performance tests of redox flow systems
- Test environment for independent function and power examination
- User specific cycle selection for different test scenarios (grid parallel, self-sufficient island systems, etc.)
- Power examination of different electrolytes at different temperature levels
- Development of battery models based on our examination results
- Flow and process optimization

Your benefit

- Independent function examination of redox flow systems
- Reproducible test environment
- Opportunity to compare different electrolytes or stacks