Increasing penetration of renewable power, alternative fuels and grid flexibility by cross-vector electrochemical processes
Project scope

BALANCE project build on the unique capability of Solid Oxide Cell to be able to operate in fuel cell and electrolysis mode. This reversible technology (rSOC) allows for a single device to offer service of:
1. fuel production from excess renewable electricity,
2. power production during unfavourable weather,
3. grid balancing services.
In short, rSOC provides the much needed large-scale long-term electrical energy storage solution.

rSOC contributes to integrate intermittent renewable sources to the energy system and decarbonise transportation fuels

Project activities

**European Research Agenda**
- Mapping national research programmes on rSOC
- Database of results and research infrastructure
- European research agenda for rSOC

**Cell and stack activities**
- Air and fuel electrode
- Interconnect and coating
- Stack design
- Cell and stack manufacturing

**rSOC systems**
- Demonstration of rSOC system
- Grid balancing services
- Flexible methanation process

**Techno-economic analysis**
- Market analysis for fuels and power
- Business cases and life cycle analysis

Picture and performance data of the cells that will be used in BALANCE project. During the project, an improved cell generation will be developed. Figure and picture courtesy of Ming Chen, DTU.