

SMART Capital Region: Fact Sheet

Project Goal

Developing a concept for the future use of regenerative surplus energy from Brandenburg in the capital region based on the local and temporal distribution of renewable feed-ins and residual load. To verify the developed models a smart grid is set up on the central campus of the University of Technology (BTU) Cottbus-Senftenberg in which certain components can be recorded by measurement techniques while others can be fully controlled.

Duration: 07/2013 until 12/2016

Operating Figures of Smart Grid Application at Central Campus of BTU Cottbus-Senftenberg

Components of micro grid for electricity, heat and cold that can be fully controlled:

- Switchboard for grid connection of micro grid to smart campus: 300 kVA
- Switchboard of micro grid- 'island' serving as an artificial shortage for the charging station park: 110 kVA
- Photovoltaic installation: 110 kVA_{peak}
- Combined Heat and Power Plant (CHP), reactive power driven mode: 80 kW_{th}, 40 kVA
- Power-to-Heat (P2H) module: 57 kVA & heat storage: 250 kWh_{th}
- Cooling unit: 15 kW_{cold} and buffer storage
- Stationary lead-acid battery storage: 2.000 kWh_{nominal}/ 500 kWh_{usable}, 60 kVA
- Charging station park capable of communication and energy management system: 15 charging stations, with an installed load of 22 kVA each
- E-cars capable of communication and of controlled charging with a loading capacity of 10 kVA each (charging mode of operation 3, three-phased) & 17 kWh usable energy capacity as 'mobile battery storages', Vehicle-to-Grid (V2G) technology has been successfully demonstrated

Components that can be measured but only partially controlled:

- 25 smart meter to track the power performance of laboratory and teaching buildings, 35 additional smart meter are part of the micro grid and the charging station park
- Power-to-Gas installation (P2G): 145 kVA_{e las} controllable loads

A greater grid control technology allows to control the micro grid. It also records the measured data of the loads that are only partially controllable at the moment and which belong to the smart grid on campus.

Context & Funding

- Chore project of the 'Berlin-Brandenburg International Showcase for Electromobility' as part of the national 'Electric Mobility Showcase'
- Funding through the Ministry for Economy Affairs and Energy of Brandenburg (MWE) with 1,8 Mio. €

Partners: BTU Cottbus-Senftenberg · 50Hertz Transmission GmbH · Stromnetz Berlin GmbH · Mitteldeutsche Netzgesellschaft Strom mbH · E.Dis AG · German E-Cars Research & Development GmbH · Vattenfall Europe Generation AG · Vattenfall Europe Wärme AG · Siemens AG

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