

SMART Capital Region 2.0: Fact sheet

Project goal

Within Smart Grid at the BTU Central Campus up until 2019 the effects of growing amount of regenerative generation, storages and flexible loads for electricity, heat, gas and electro mobility on residual load and load profile “administration and other office use” will be investigated.

Furthermore, with the help of a visualization platform the chronological and spatial distribution of renewable generation and residual load on supra-regional level will be demonstrated.

Runtime

- 01.03.2017 – 30.11.2019

Key figures of Smart Grid applications on BTU Cottbus-Senftenberg Central Campus

Fully loaded components of Micro Grid for electricity, heat, cold and electro mobility:

- Switchgear of Micro Grid grid connection at the Campus: 300 kVA
- Switchgear of Micro Grid isolated grid as artificial shortage for charging stations park: 110 kVA
- Photovoltaic installation: 110 kVA_{peak}
- AC power capable cogeneration unit: 40 kVA, 80 kW_{th}
- Power-to-Heat-Module (P2H): 57 kVA & heat storage with 230 kWh ($\Delta T = 20\text{ K}$)
- Power-to-Cool- Facility (P2C): 15 kW_{cold} and buffer storage
- Stationary lead acid battery storage: 60 kVA, 2.000 kWh_{total}/500 kWh_{useful}
- Communicable charging stations park with energy management system: 15 AC charging stations with total 330 kVA power input
- Electric cars, that can be operated as controllable loads in Smart Grid

Components, that can be measured, but are only conditionally controlled:

- 25 Smart Meter for measuring performance of teaching and laboratory buildings, further 35 Smart Meter in Micro Grid
- Power-to-Gas-Facility (P2G): 145 kVA_{el} as controllable load

Primary grid control technology allows control of Micro Grid as well as measurement data acquisition of currently conditionally controllable loads in Smart Grid of the BTU Cottbus-Senftenberg.

Visitor locations

- Visitor Center Smart Energy Grids (BIENE), Smart Grid applications, interactive sign round tour, web-application, power system simulator

Context & funding agencies

SMART Capital Region 2.0 is a research project in a joint project WindNODE (“Showcase for smart energies from the north-eastern Germany”). WindNODE is one of the five chosen German model regions of the funding program SINTEG (“Showcase smart energies – digital agenda for energy transition”) sponsored by the German Federal Ministry for Economic Affairs and Energy.

Partners

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