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Storage4Grid VISION

The Storage4Grid vision is to provide utilities and end-users with **new tools for optimal grid planning, use and evaluation of storage technologies**. S4G pre-designs new storage control models and interfaces built upon existing standards and suitable to support scalable and cost-efficient coordination of heterogeneous ESS.

Plenary meeting in Lisbon: Storage4Grid Business models and data model

On March 7th and 8th 2018 the Storage4Grid consortium gathered in Lisbon (Portugal) to discuss the common data model to be used in the project. The business models were refined after some previous users' interviews. The partners had the opportunity to visit the UNIINOVA laboratory, where the energy router is being assembled and tested. The energy router is a power electronics device that manages the energy transfer from/to different sources, loads, electricity storage system and supporting DC-link connection between houses.

Plenary Meeting in Bolzano: Period 1 Storage4Grid achievements

From May 28th to 30th 2018, the partners gathered in Bolzano (Italy) to discuss the Storage4Grid period 1 achievements and draft the phase 2 test site plans In Bolzano, the technical partners had to possibility to do some deployment activities and test their developments on-site. The Cooperative EV Charging scenario will be demonstrated in a residential and commercial case.

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This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 731155

UPB, the Romanian pilot site of Storage4Grid

The Bucharest test site is using the infrastructure of a laboratory at Politehnica University of Bucharest, used both for teaching students enrolled in the Faculty of Electrical Engineering and research objectives by MicroDERLab team.

In order to demonstrate the advantages of using the LV DC technologies, the laboratory setting has been developed over the time in this direction. The set-up is modular in order to allow validation of proposed solutions and includes a DC bus (220V) where AC appliances are directly connected to the DC ring (Figure 1 and Figure 2); two PV modules of 1 kW peak power each (Figure 3), lead-acid batteries, various DC/DC converters and other control equipment. The energy exchange with the university' distribution grid is continuously monitored using an Unbundled Smart Meter (USM). The control equipment is based on a smart meter extension (SMX), an Energy Router, and communication devices (e.g. local Wi-Fi router) which is intended to be further developed to allow black-start support for isolated grids. To ensure that the local DC grid will be able to supply its critical (local) loads also during small duration (minutes) AC grid unavailability, it needs to be compatible with a microgrid paradigm.

Figure 1. DC bus with local loads.

Figure 2. DC plugs.

Figure 3. PV panels.

In this context, UPB is responsible for demonstrating the feasibility of the Advanced Cooperative Storage Systems in the Storage4Grid project, i.e. enabling energy communities. For this, a 400V DC link with a Smart Grid laboratory placed at approximately 300 meters away, is installed in the Faculty of Power Engineering.

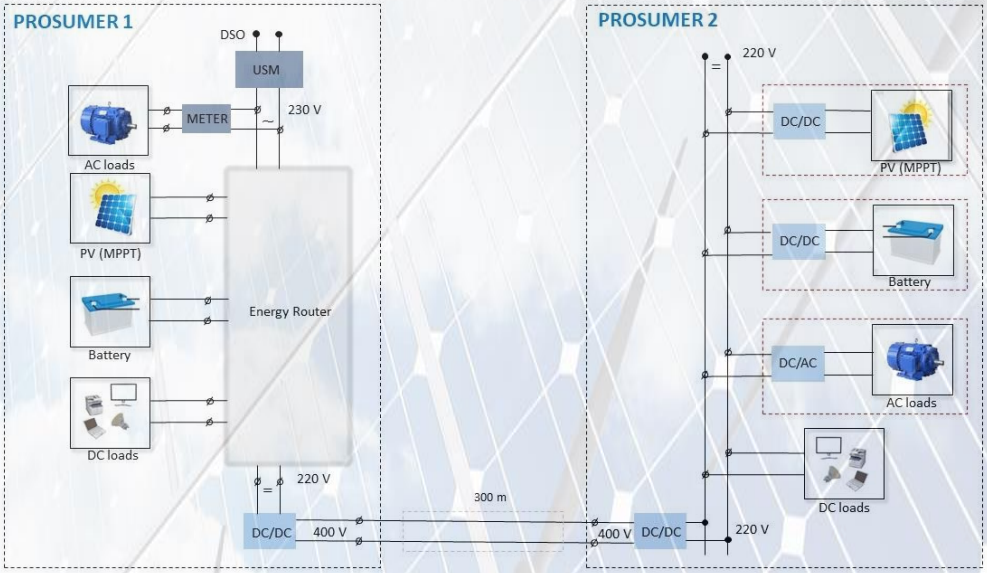

Figure 4. DC link between laboratories.

Making intelligent use of the Energy Router, the PV energy production can be controlled and the distribution (including consumption) optimized. The energy community issued in this way will behave as a resilient cluster against different types of grid outages. Storage4Grid project develops the local intelligence of the Energy Management Systems (EMS) in the SMX platform, to control energy production, storage and consumption for local needs, as well as to provide energy services to neighbour prosumers.

Dissemination activities

Storage4Grid presentation at SAET & Partners 2018 Meeting Report

Poster presentation at the Aachen DC Grid Summit

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