

The Storage4Grid and GreenCom Projects

Use Cases and Test Sites

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Storage4Grid at a glance

Aim: avoid or reduce network reinforcement:

- by enabling the coordination of local, gridconnected and mixed Energy Storage Systems (ESS)
- by providing a new ICT framework for planning and optimizing ESS-based services

Scope: distribution grid level (ESS at substation level), end-user level (ESS at user premises) coordinated in conjunction with Electrical Vehicles (EVs) charging, innovative energy metering systems and energy routing systems.





Background: the Duck Curve (1/2)

STORAGE



Net load - March 31

Background: the Duck Curve (2/2)

STORAGE **A**

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- The curve shows the **increasing timing imbalance** between peak demand and renewable energy production
- In many energy markets the peak demand occurs after sunset, when solar power is no longer available
- In locations where a substantial amount of solar electric capacity has been installed, the amount of power that must be generated from sources other than solar or wind displays a rapid increase around sunset and peaks in the mid-evening hours
- The duck's growing **belly** highlights the near-term potential for "over-generation": at some point, system operators have to start **curtailing solar to balance the grid**
- Without any form of energy storage, after times of high solar generation, generating companies must rapidly increase power output around the time of sunset to compensate for the loss of solar generation
- The best option is to store surplus local energy production as close as possible to the production site and to use it locally in order to avoid grid losses.



S4G Test Site 1: Resilient and efficient local ecosystem

Location: Bucharest (Romania)

Scope:

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Low-TRL technologies, analyzed in controlled conditions



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3 Primary Use Cases (PUCs) specified

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S4G Test Site 1: Resilient and efficient local ecosystem







S4G Test Site 2: Cooperative EV charging

Location: Bolzano (Italy)

Scope:

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Coordination of ESS with the EV charging infrastructure



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3 Primary Use Cases (PUCs) specified

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S4G Test Site 2: Cooperative EV charging

Bolzano:

HLUC-2-PUC-1: Residential prosumer with storage HLUC-2-PUC-2: Cooperative charging in the parking lot of a commercial test site HLUC-2-PUC-3:

HLUC-2-PUC-3: Simulating EV charging and storage behaviour, considering both public and residential charging stations





S4G Test Site 3: Storage Coordination

Location: Fur (Denmark) (leveraging GreenCom Pilot)

Scope:

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Coordination among ESS at user level and substation level



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4 Primary Use Cases (PUCs) specified

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S4G Test Site 3: Storage Coordination





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The GreenCom Project

myGrid; Energy Efficient and Interoperable Smart Energy Systems for Local Communities

Test-sites and Use cases

GreenCom

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Consortium Overview

7 partners / 3.459 M€ budget / 42 months (1 Nov. 2012 - 30 Apr. 2016)



GreenCom

Home monitoring and control

- Save energy and shift load to get cheaper energy prices
- Install a GreenCom home automation service with
 - o access to detailed, itemised energy consumption data
 - o automatic home control features
 - o integration with tariffs
 - $_{\circ}$ bundling of services



GreenCom

HaaS – Load management

- Heat pumps installed and aggregated for load management offered to the DSO
 - o Full, direct control by Aggregator
 - Contractually guaranteed comfort level for consumer and economic reward



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Find out more at: www.storage4grid.eu www.Greencom-project.eu



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