

Shopping center Sello

Smart building connected to smart grids
Jaano Juhmen, Business Developer

Sello

The smartest shopping mall in Europe

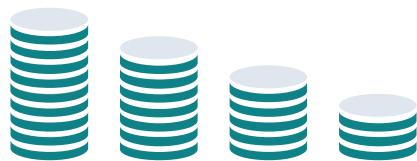
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A building as a part of the smart energy system

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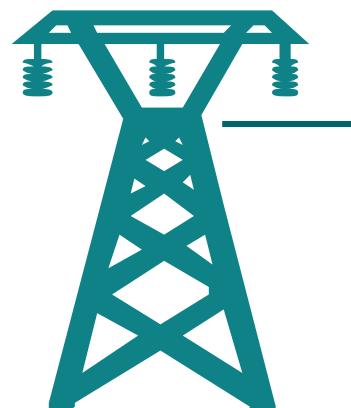
El Spot
Electricity market



Demand response
market



Siemens microgrid and
demand response Cloud



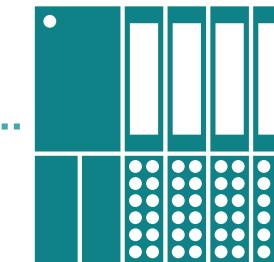
Solar Panels 750 kWp



Microgrid functionality

A Building, e.g. a shopping mall,
campus or business park

Battery storage 2 MW / 2,1 MWh



Microgrid functions

Smart
building
automation

Electric systems for the
demand response use and
microgrid functions

Building technology components in the microgrid

Load to be provided from Sello to the reserve market



Battery SieStorage (2 MW, 2,1 MWh)

LED lightning dali control (3000 pcs)

Fans (0-848 kW scale)

Ground heater electric (0-390 kW scale)

Ground heater pump (0-35 kW scale)

Generators (1330 kW)

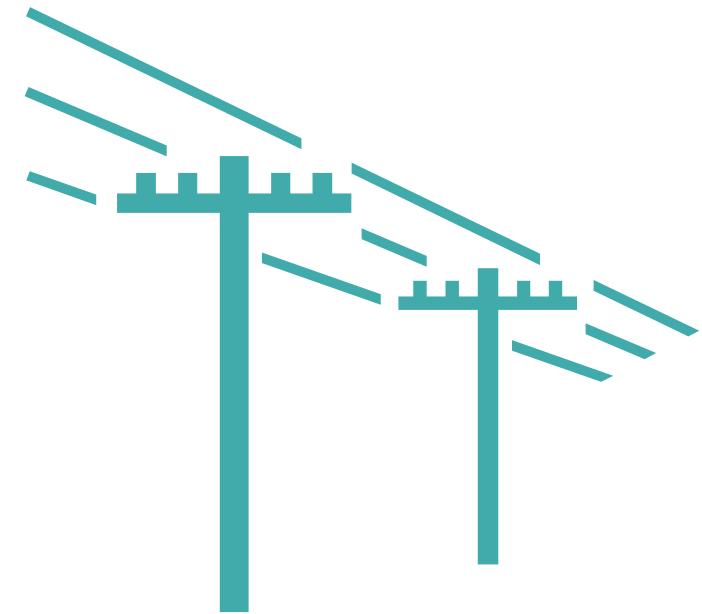
Solar power (0-750 kW scale)

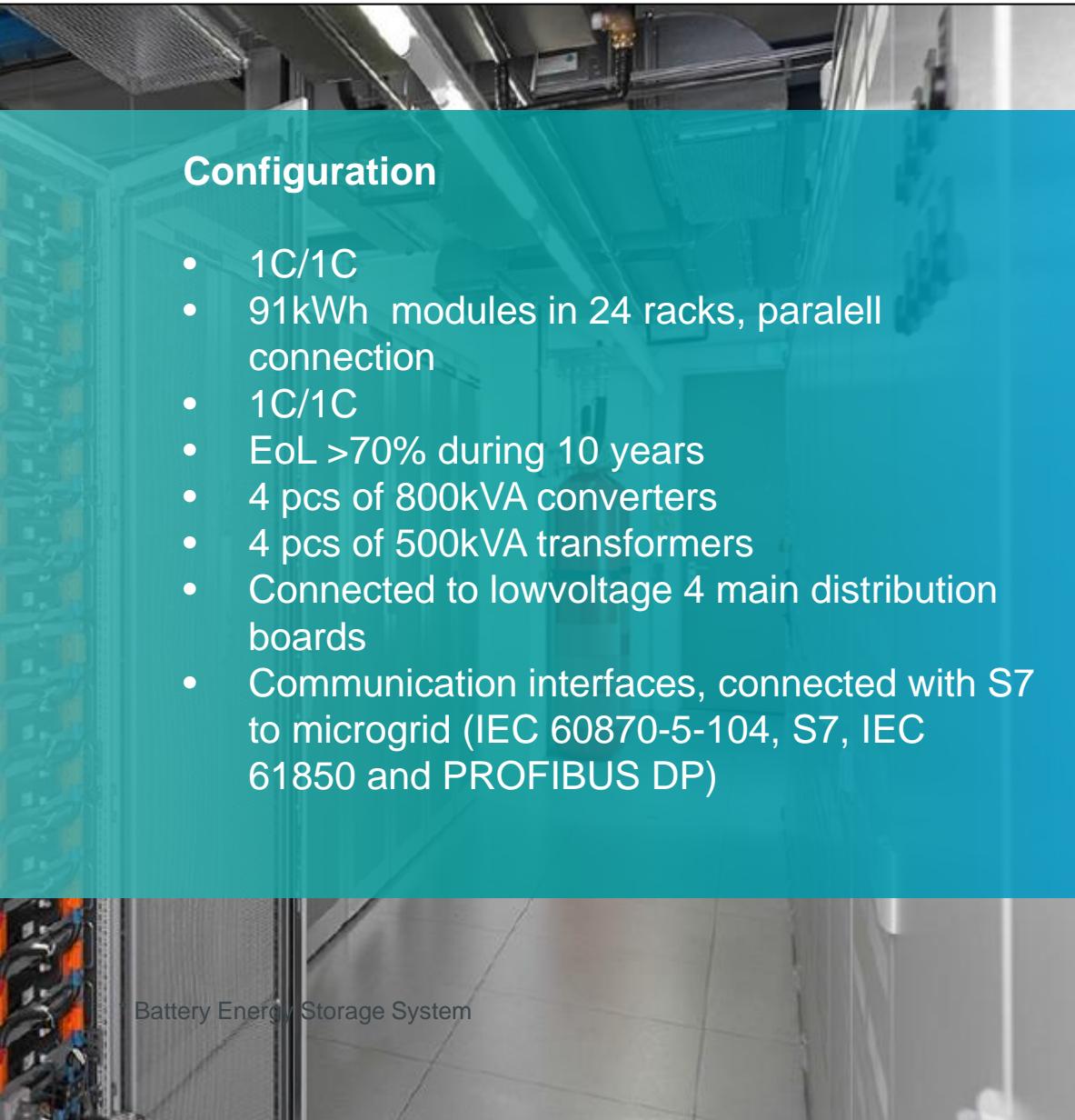
EV charging (0-300 kW scale)

Next steps,

Cooling 3 MW

Other assets 1 MW

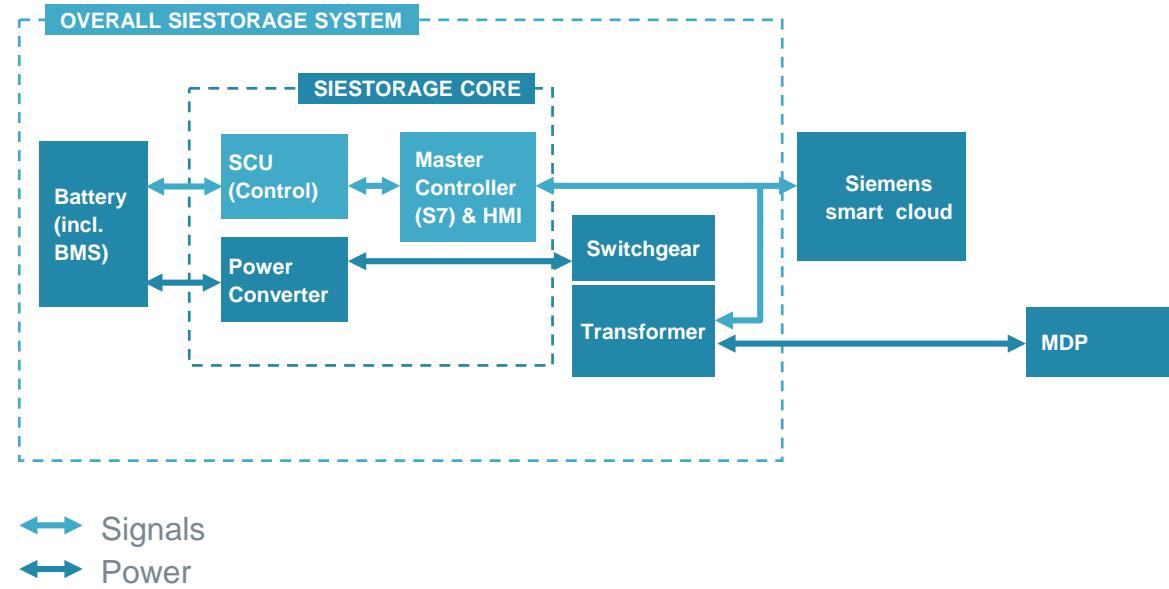




Configuration

- 1C/1C
- 91kWh modules in 24 racks, parallel connection
- 1C/1C
- EoL >70% during 10 years
- 4 pcs of 800kVA converters
- 4 pcs of 500kVA transformers
- Connected to lowvoltage 4 main distribution boards
- Communication interfaces, connected with S7 to microgrid (IEC 60870-5-104, S7, IEC 61850 and PROFIBUS DP)

Configuration model



The Battery Energy Storage System SIESTORAGE

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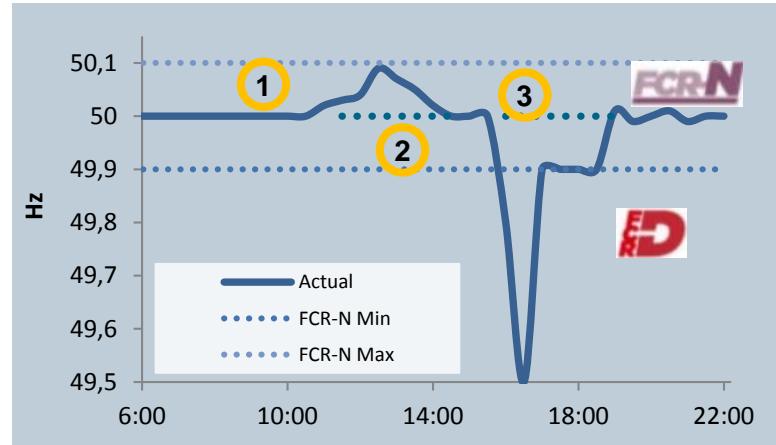
Main applications

- Frequency regulation
- Time shifting
- Load management
- Reactive power compensation
- Black Start
- Island mode

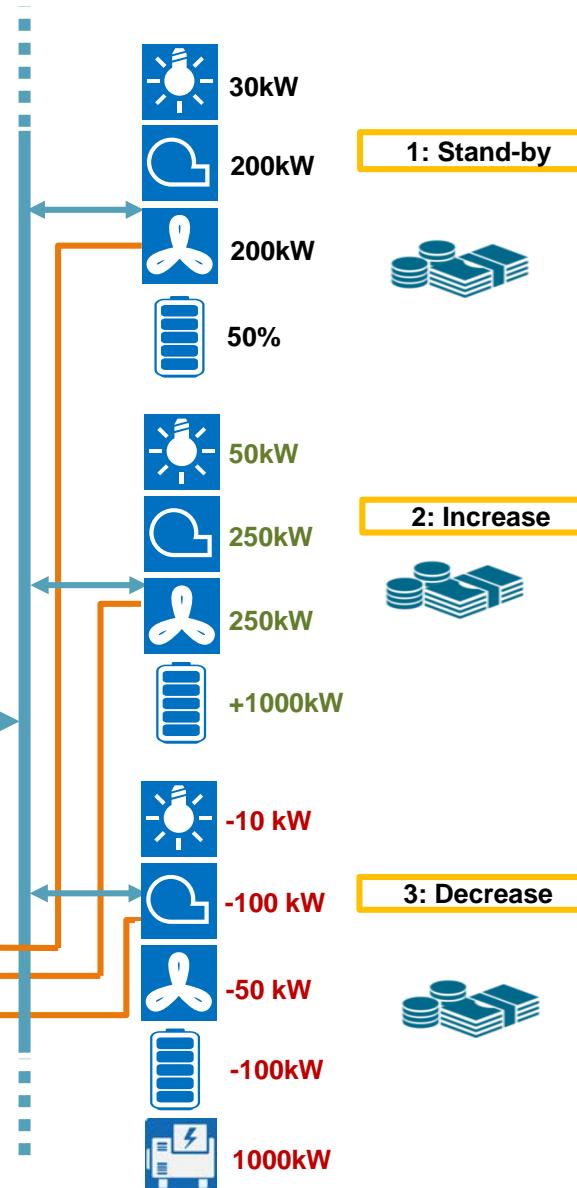
Designed for improved asset performance.

Briefly control of building loads Sello shopping center

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FINGRID



Shopping mall Sello Project key exploitable results

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Opex neutral solution

Overall yearly benefits for the customer 658.700 €

- Fingrid market places 483.000 €/a
 - PV energy production 57.500 €/a
 - Energy efficiency 78.200 €/a
 - Maintenance cost reduction 40.000 €/a
 - Maintenance cost backlog reduction 650.000€
 - Own energy production 640 MWh/a
 - Carbon emission reduction 281 tkg/co2/a
-
- Property value will increase
 - Shopping center image will increase
 - Lifecycle cost efficiency will affect the tenants positively
 - Sustainability matters, acting as a leader
 - Technology improvement and readiness for next steps

What next?



The growing amount of renewable energy is increasing the need for a sustainable balancing solution - through flexible consumption.

Back-up power

- Expensive for a society to maintain
- Not driving sustainability
- Unprofitable replacements



Funding

- Microgrid projects 22 MW
- Battery storages 10 MW
- Smart energy management



€8.4 million investment aid

- The Ministry funding enabling the implementation of the required technology for the buildings.
- The biggest investment aid granted to an energy initiative reflects the Ministry's trust of the initiative.
- €7.2 million is dedicated to building owners to implement required technologies.

Enabler for profitable technology investments.