

OSMOSE

OPTIMAL SYSTEM-MIX OF FLEXIBILITY
SOLUTIONS FOR EUROPEAN ELECTRICITY

*Newsletter #7
- December 2021 -*

Editorial:

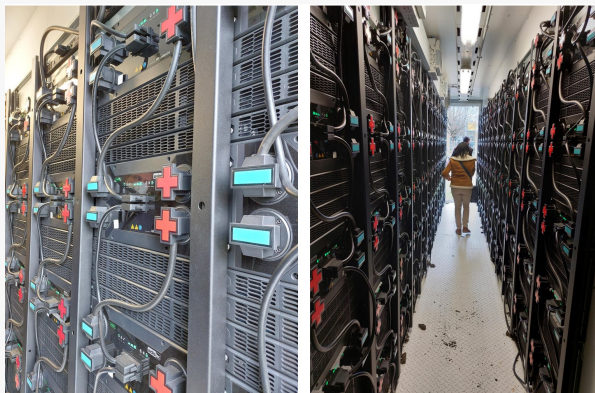
The OSMOSE project is entering its final phase, with targeted completion in April 2022. The last semester was marked by tremendous activity, both on technical and dissemination sides. Therefore, this newsletter will only give a few highlights on the latest project achievements, and upcoming events.

Enjoy the reading!

Updates on demonstrators

WP3 - Demo Grid Forming

[WP3](#) experimentally validated a grid-forming control of battery energy storage systems to provide multiple services, using a grid-scale 720 kVA/560 kWh BESS connected to a 20 kV distribution feeder of the EPFL campus, hosting stochastic prosumption and PV generation forecasts. The evaluation based on the proposed metrics showed the superior performance of grid-forming control, compared to the grid-following one (see [publication](#)).



WP3 demonstrator in Lausanne,
Consortium visit during General Assembly, November 2021

WP4 - Demo hybrid storage device for multi-services




[WP4](#) demonstrator in Spain successfully completed the manufacturing and installation of a modular hybrid flexibility device combining ion-lithium battery, supercapacitors and statcom ([factory acceptance test validated](#)). The device provides multiple grid stability and security services (synthetic inertia, power oscillation damping, frequency regulation, voltage control, congestion management). A Master Control was also successfully developed, that coordinates the different equipment within the hybrid device: it determines the setpoints of

each equipment to provide specific required flexibility services, while optimizing the devices aging and the available power and energy. The demonstrator performances are currently under evaluation.



WP5 - Demo Demand Response / DTR / wind farms controls

[WP5](#) experiments multiple services for the Italian grid based on RES, DSR and DTR coordinated through a zonal Energy Management system deployed at Terna. On DSR side targeting congestion management (CM), aFRR and automatic voltage control, six industrial test sites are currently being tested: so far 112 MWh of energy have been used for congestion management.

Provider	Industrial plant	Tested resources	Hours of testing at mid november 21
	Industrial park (CM & AVC)	2 Generators	129 h
	Steel factory (CM)	<ul style="list-style-type: none"> • 2 Blast Machines • Decoring plant • Compressor 	
	Oil refinery (CM)	Heating system	
	Powertrain industry (CM & aFRR)	2 Chillers	73 h
	Foundry (CM)	Furnace	112 h
	Military Site (AVC)	Rephase system	

WP6 - Near real-time cross-border market

[WP6](#) demonstrates the close-to-real-time optimization of RES on both sides of the Italian-Slovenian border. The WP6 team successfully designed, developed and installed the software suite in the TSOs IT environment and at the RES flexibility providers' sites (network modelling, market operation and flexibility bidding platforms). The ongoing tests allow to perform a 'business proof of concept', from the consolidation of bidding offers and their selection according to real-time network constraints, up to the real activation of generation units.

Latest Deliverables Released

[Optimal Sizing and Siting of Storage Facilities](#)

This deliverable introduces the Dispersed Energy Storage tool (DESPlan), and its simulations performed on the Portuguese transmission network on long-term scenarios. DESPlan identified potential congestions and determined the optimal sizing and siting of BESS to solve them.

[Cross Border Reserve Exchange](#)

In the framework of long term flexibility scenarios simulated in WP1, this deliverable analyzes the security of supply criteria from the perspective of operational reserve assessment, through the use case of Continental South West region.

Final Conference Announcement

Save the date! The OSMOSE Consortium invites you to the project's final conference to be held in Paris and online on **March 24th 2022**. More info on the conference agenda and registration will be provided later on.

Highlights on Latest Events

Over the past 6 months, OSMOSE organized and participated in numerous conferences, webinars and events. Here is a selection of videos:

- [Panel session](#) at ISGT 2021 Conference: BESS to support the power system
- Three Joint webinars with the EU-SYSFLEX sister project: [High RES scenarios](#), [IT challenges](#), [Distributed flexibility resources](#)
- Webinar on [electricity market design](#), hosted by ISGAN Academy
- Webinar on [IEC 61850 standard](#), hosted by ISGAN Academy

Check our [publications](#) on the project website.

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