OSMOSE INSIGHTS

Project's public newsletter

MAY 2020

OSMOSE

OPTIMAL SYSTEM-MIX OF FLEXIBILITY SOLUTIONS FOR EUROPEAN ELECTRICITY

Editorial

The OSMOSE project has reached some significant milestones towards the launch of the different demonstrators.

The Covid19 crisis is impacting the project activities, fortunately the resulting delays remain limited so far.

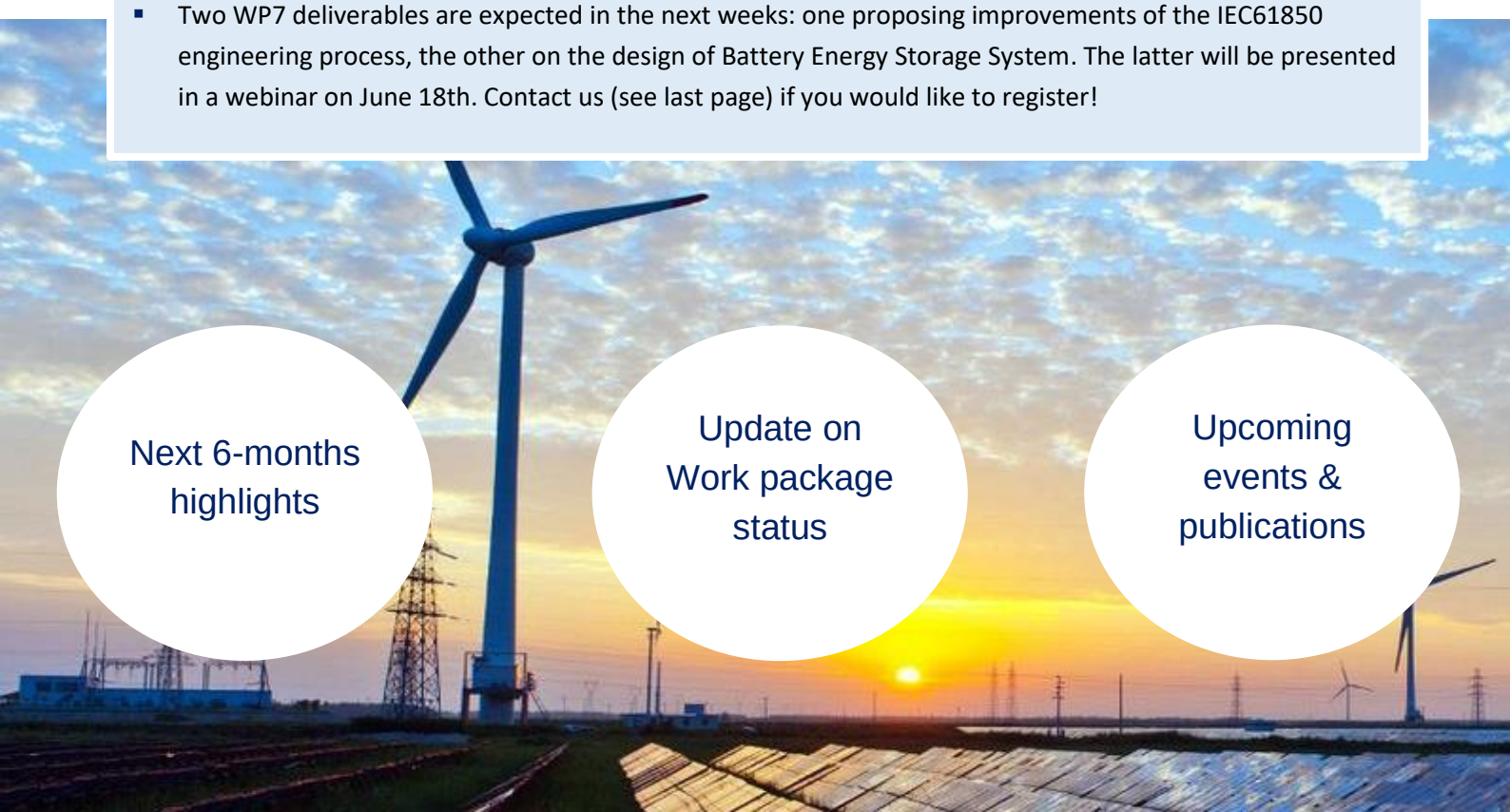
This newsletter will provide you with an overview of our latest achievements and ongoing work, as well our upcoming publications.

Enjoy the reading!

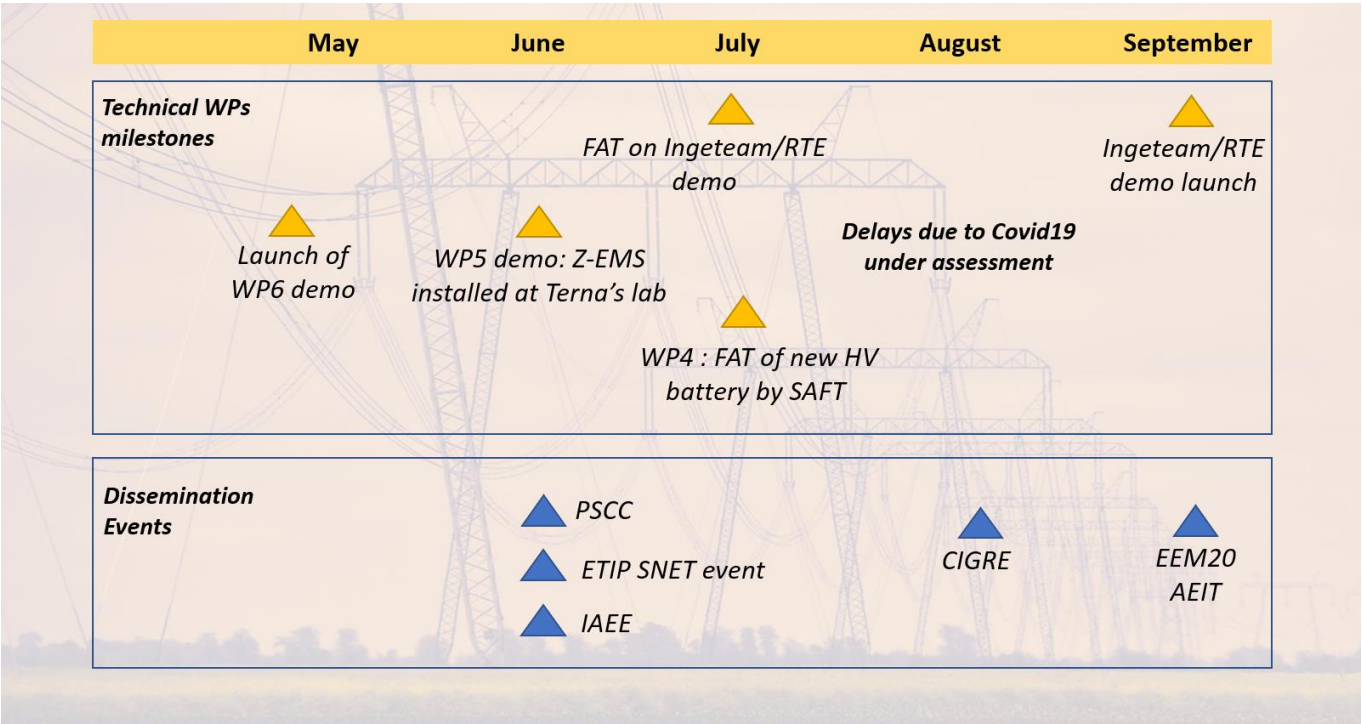
Nathalie Grisey, Coordinator

Latest news in brief:

- The simulations of scenarios and market designs of WP1 and WP2 are running as planned.
- A 2-3-month delay is to be foreseen due to Covid19 on the commissioning of demonstrations.
- The demonstration of WP4 (Storage and FACTS) is being redesigned and will be located in CENER facilities.
- Two WP7 deliverables are expected in the next weeks: one proposing improvements of the IEC61850 engineering process, the other on the design of Battery Energy Storage System. The latter will be presented in a webinar on June 18th. Contact us (see last page) if you would like to register!



Some project highlights for the next months



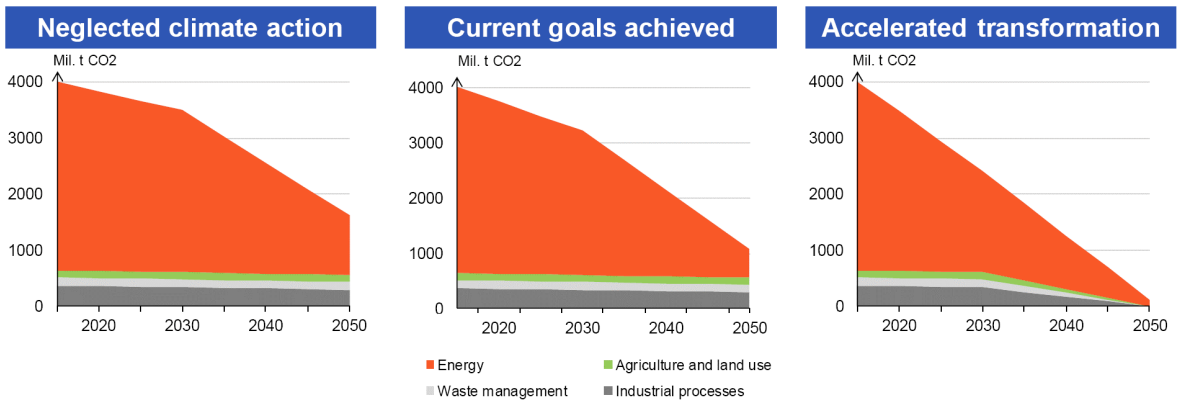
Publications submitted to the above-listed conferences are detailed on the last page.

Update on Work Packages

WP1 – Optimal mix of flexibilities

An introduction to this WP is available following this link.

RTE and EKC simulated the scenario "Current goals achieved" produced by TUB with a unit-commitment model (ANTARES). Results serve as inputs to ongoing simulations with more detailed models (Task 1.4) performed by REN, ENSIEL and NESTER. In the meantime, TUB developed a first version of the new and extended framework to set up large-scale linear energy system models with a focus on multi-period capacity expansion (anyMOD). The developed scenarios will then be updated according to the simulations' results obtained by the different tasks.



The three scenarios defined by TUB (Emissions in Mil. T. CO_2)

WP2 – Market design & regulation

An introduction to this WP is available following this link.

The ongoing tasks 2.3 and 2.4 consist in measuring the performance of several market designs using quantitative simulations. UDE and RTE have started their respective studies to that end and are preparing the process flow for the simulations. ENSIEL is currently working on the application of their TSO-DSO's interface model, to first prepare input for RTE's studies. UPD is studying how current market designs in Europe help capture the value of ancillary services provided by flexibility sources. Once brought all together, these studies and analyses will provide a clearer vision on how each considered market design impacts the flexibility mix.

WP3 – Demo Grid forming by multi-services hybrid storage

An introduction to this WP is available following this link.

The demonstration at EPFL's premises is now up and running (720kVA BESS with Li-Titan battery). The positioning of PMUs on the campus network will be rearranged to measure the dynamic performance of grid forming controls. The demonstration should be completed by December 2020.
Regarding the RINGOLAB demonstrator (1000kVA BESS with supercapacitors and Li-ion battery at 600-20kV Transformer Station), all required equipment has been purchased. The grid forming control is currently implemented in INGETEAM power converters, and the Factory Acceptance Test should be completed in July. The installation work is however suspended so far due to the Covid19 crisis, and the resulting delays are currently being assessed.
For both demos, WP3 partners are working on the methodology and KPI to quantify the impact of grid forming which occurs in the first hundreds of milliseconds, which requires some dedicated processing of PMU measures.

WP4 – Demo Multi-services by the coordinated control of storage and FACTS devices

An introduction to this WP is available following this link.

A new location has been proposed for installation of Hybrid Flexibility Device demonstrator in WP4. This new demonstrator, pending of EC validation, will be installed at CENER 20 kV grid-connected facilities, and will include a STATCOM, 4 MVAR supercapacitors and 2MW/0.5MWh 1500V DC Battery system. Grid events will then be emulated by using a microgrid installed in the location.
The equipment required for the demonstrator have been manufactured and acquired. The HV battery system have been developed by SAFT and Factory Acceptance Test will be performed in next months, then followed by the integration of STATCOM and the super-capacitors into container by GPTECH. REE and ULPGC have determined the optimal configuration of dynamic parameters for the Hybrid Flexibility Device and simulated their impact on the Canary Island grid. The full commissioning was planned for December 2020, but it will be postponed to the begin of next year due to Covid-19 pandemic.

WP5 – Demo Multi-services by coordinated grid devices, large demand response and RES

An introduction to this WP is available following this link.

The installation of all Dynamic Thermal Rating devices on-field is now completed. As for the associated self-organizing sensor network, the server supply for the Master node (that will calibrate, monitor and communicate the line's thermal parameters) was initiated in the selected substation, but works are now suspended due to the Covid19. The Zonal Energy Management System will be installed within TERNA's « Lab Energy Tech » premises by late June. Regarding the Demand-Side Response resources, seven industrial sites have confirmed their availability, and the required physical upgrades are ongoing at end users' premises. A video presenting the demo will soon be available.

WP6 – Demo near real-time cross-border market

An introduction to this WP is available following this link.

The development of software bricks by Engineering, EKC and RTE for the FlexEnergy market platform is now completed. Software installation into ELES' business environment will start in the next weeks, followed by test runs and software adaptation. Two portfolio optimization tools will be running at generators sites (HSE and HDE). The first steps of the demonstration are planned before summer.

The two deliverables related to the software demonstration development (D6.2 and D.6.3), as well D6.4 specifying the case studies and Key Performance Indicators for demonstrations have been drafted and should be released before summer, if possible part of them will be made public.

WP7 - Scaling up and replication

An introduction to this WP is available following this link.

Deliverables 7.1 and D.7.5 will be released soon.
Deliverable 7.1, drafted by IT4Power and currently under final review, proposes refinements for the engineering process of the IEC61850 communication standard for electrical substation automation systems.
Public Deliverable 7.5, under drafting by CEA, will present the methodology for optimization of BESS design and sizing. CEA is also working on integrating the first data sets into the ESS database in order to test its new framework. The used data comes from a previous project's installation on CEA's premises, including a storage system connected with photovoltaic panels.

Real-time testing platform at Nester Lab used to demonstrate the IEC61850 specification & implementation

WP8 - Dissemination and exploitation

RTE, RSE, UDE, UPD participated to the General Assembly of the Bridge initiative (cooperation of H2020 smartgrid projects). ELES presented the WP6 demo last February at the 2nd workshop on Flexibility Markets organised by the EC and ENTSO-E. Some joint working sessions were organised with the EC-funded projects CROSSBOW (REE) and EU-SYSFLEX (RTE).
With regard to the future exploitation of project results, the first version of the Exploitation Plan, gathering inputs from all consortium partners, has been released internally.

Please note that most presentations of the last General Assembly of the consortium, held in December 2019, are available on the project website at: https://www.osmose-h2020.eu/presentations/ .

Highlight on publications

- Two papers drafted by EPFL on WP3 were accepted at the PSCC conference, which will most probably be held under web format.
- Papers from RTE (WP1) and ELES (WP6) were accepted to the IAEE Conference.
- ENSIEL's abstract (WP2) was accepted for the EEM20 Conference.
- One paper from RTE was accepted to CIGRE (RTE, WP3).
- A presentation was submitted to the Energy Storage Global Conference 2020 (REE and CENER, WP4); a paper was submitted to ISGT (ELES; WP6), and another one to 2020 AEIT International Annual Conference (ENSIEL, TERNA).
- ENSIEL will soon submit an article to the open access journal Applied Sciences, Special Issue "Control, Optimization and Planning of Power Distribution Systems".

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Keep in touch with us:

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@Osmose_H2020
OSMOSE H2020 Project

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