Newsletter #3 – February 2021

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Editorial

Beyond demonstration

Welcome to IElectrix 3rd newsletter!

We are at an exciting and challenging part of our project. After an initial phase of specifications and careful planning, demonstrators are procuring and deploying the necessary technologies in the field. As you can read in this newsletter, the German demo (Moew.e) is ready to start its activities while the Hungarian demo (HELGA) one has taken a huge step forward by installing the battery system in the demo site.

Undoubtedly, these activities are key to achieve the project objectives, overcome technological barriers, and prove the value of our project. Nonetheless, at IElectrix, we believe it is also important to look forward beyond the demonstration activities in order to generate a long-lasting impact.

The WP4 that I lead aims to do so by performing a scalability and replicability analysis, i.e. assessing whether and how the same solutions tested in the demos could be effective when deployed at a larger scale and/or in other areas across Europe.

This intends to be a multi-disciplinary analysis covering technical aspects, regulation, interoperability and stakeholder acceptance.

Rafael Cossent
WP4 leader (Comillas)

We also count on our Replication Board, formed by a selected group of international experts external to the consortium, who provide us with feedback and support to ensure and accelerate the impact of our results.
Lastly, our WP will deliver a set of regulatory recommendations to amend current regulation in order to facilitate the diffusion of the IElectrix solutions and support the full implementation of the Clean Energy Package.
Please carry on reading our newsletter, where you will get to know the latest news from the IElectrix demonstrators as well as a glimpse of the numerous dissemination activities we have carried out. Under the current context, these are on-line events. Hopefully, on future occasions we will be able to let you know more about our work face to face.
In the meantime, me personally, and the whole IElectrix team, would like to wish you and your loved ones good health.
Enjoy the reading!
Rafael

Kick-off of the Moew.e demonstration

24 September 2020
Friedland, Germany

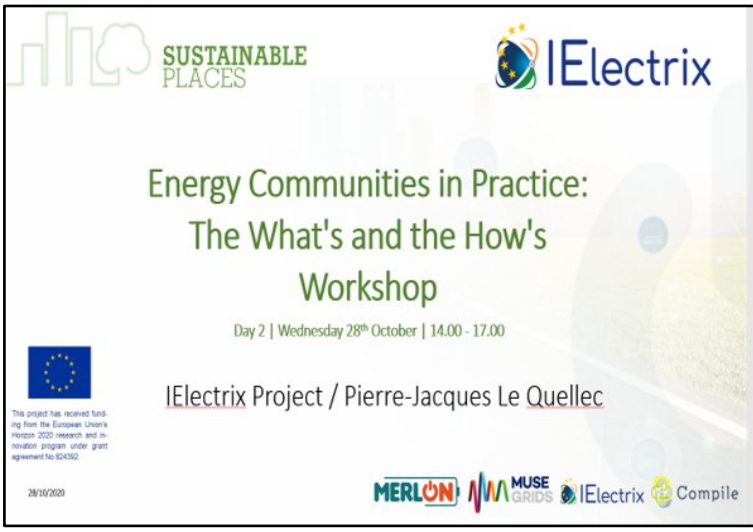
The starting signal has been given: The battery storage with (MV/LV) transformer substation was delivered, connected and ceremonially put into operation on 24/09/2020, to great media response.

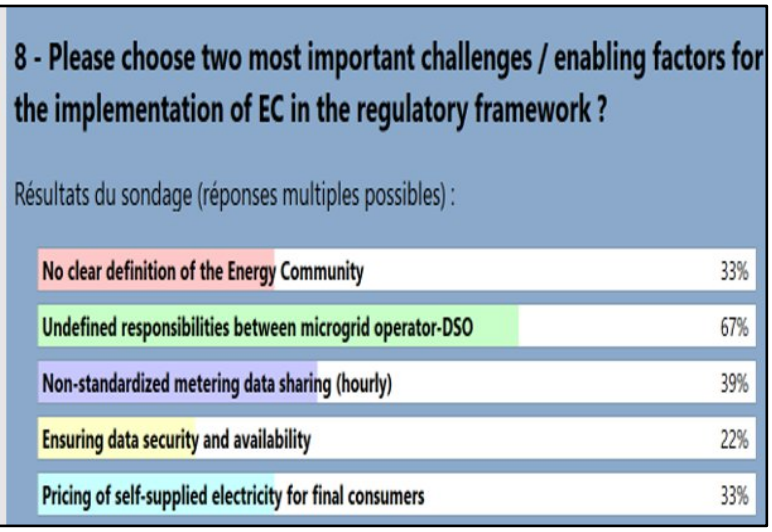
Participants of the event were, besides the board members of E.DIS AG and WEMAG, also representatives of E.ON Innovation and representatives of the state government of Mecklenburg-Western Pomerania. In the last few months, all the work and the entire organization concentrated on the "Go live", the battery storage.

This first mobile storage system of IElectrix is located in Friedland in Western Pomerania. Friedland is proud to participate in the EU research project that will allow to develop locally European solutions. It is indeed a very special location, it takes on a pioneering role for Europe, as the European part of RES is already a reality.

In this area there is approximately twice as much renewable energy generated as it is consumed. E.ON's Chief Operating Officer - Networks Thomas König says: "After the planning phase, we are now starting implementation and bringing IElectrix's first mobile energy storage solution to the grid. This is our response to the rapid transformation of the energy system towards ever more decentralised generation. With our mobile storage, we can optimize network expansion, reduce the shutdown of renewable energy plants and feed in more locally generated green energy quickly and cost-effectively."

Mobile storage is a solution helping make the grid fit for the energy transition and the feed-in of numerous decentralized generation plants. Still, several years can pass to plan and implement grid expansion. Mobile storage ensures that as much green electricity as possible is fed into the grid already today and helps to bridge the gap until necessary grid expansion is complete, especially in rural regions with a high proportion of renewable energy.





Sustainable Places 2020

28 October 2020

Online event

Every year, the Sustainable Places Symposium examines new innovative ways of designing and managing the environment in which we live in, in order to reach the sustainability targets and climate change objectives.

In particular, *Local Energy Communities* have been gaining more and more attention in the recent years, even though significant challenges still remain. For example, how can energy communities be established and operated in a sustainable manner across EU Member States?

A host of inter-dependent organizational, technical, social, regulatory and business aspects need to be carefully balanced to achieve sustainable operation from an environmental & financial perspective.

SUSTAINABLE PLACES 2020
October 27-30, 2020
Digital Event

To deliver initial results on the previous questions, the workshop *"Energy Communities in Practice: The What's and the How's"* took place during the Sustainable Places Event.
On this occasion, Pierre-Jacques LE QUELLEC had the opportunity to share IElectrix perspectives and results, alongside other H2020 sister projects on energy islands.

Participating projects:

MERLON MUSE GRIDS IElectrix Compile

IElectrix demonstrators

Strom Güssing

Demo in Austria led by Energie Güssing

2021 promises great breakthroughs for the Austrian demonstration, which foresees the arrival of the BESS and transformer station on its site and the beginning of the civil works by the end of the first quarter.
Meanwhile, after studies conducted by EEE and Geco to understand customers and local stakeholders' perspectives on RES, LEC and DR, two engagement strategies were selected and are being carried out in Güssing, in the form of information campaigns and customer questionnaires.
Moreover, as part of the Energy Data Management plan, smart meters are being rolled-out on site.

HELGA

Demo in Hungary led by E.on EED

Great news for the Hungarian demonstration: with the installation of a 500 kVA BESS and a local EMS on the Zánka site, the project has achieved a significant landmark.
After a successful testing phase, a virtual kick-off was held on the 20th January to officially inaugurate the Helga demo.
As for the Dúzs site, the manufacturing and installation works have been making steady progresses as well.
You will find here a video published by E.ON, on the installation works at Zánka site.
More information to follow in the Focus!

Moew.e

Demo in Germany led by E.DIS

With the commissioning of the battery storage system in September 2020, an important milestone has been reached. On this basis, we are able to test the battery storage system and investigate the concrete benefits for the distribution grid. For this purpose, different measurements and simulation models will be installed on the battery storage system and in the surrounding distribution grid, measurements will be carried out and scientifically analysed with the support of our project partners. The aim is to prove that battery storage systems support the energy transition and future challenges in the distribution network.

SHAKTI

Demo in India led by Enedis

While the manufacturing of the SNA and smart devices for the Shakti demo is going on as planned and is nearly over, we are preparing a testing phase in France for some of the equipment before shipping it to India. The testing phase will be conducted at Concept Grid Lab, a dedicated facility to carry out physical integration tests on a real electrical network. This phase is crucial to ensure a good operation of the equipment on site, and will contribute to a reliable and efficient installation and commissioning phase in India.
On another note, a paper on the Demand Response program for the Shakti Demo was submitted successfully to ISUW 2021.

Focus: HELGA – storage system installation

Introducing the energy storage system in Zánka

The battery energy storage system (BESS) in Zánka is the first energy storage facility connected to the medium-voltage line in Hungary which is installed and owned by a distribution system operator. Hungarian regulations allow DSOs to establish and operate an energy storage system as a part of the distribution network in accordance with the principle of the least cost approach in order to ensure safe and reliable operation of the distribution network. The nominal output power of the energy storage system established and operated by the distributor system operator should not exceed 0,5 MW.

The energy storage system established in Zánka is a battery storage facility with a nominal power of 500 kW and a nominal storage capacity of 1233 kWh. Aside from a few minor differences, the official authorization procedure of the installation of the BESS is similar to the standard procedures.

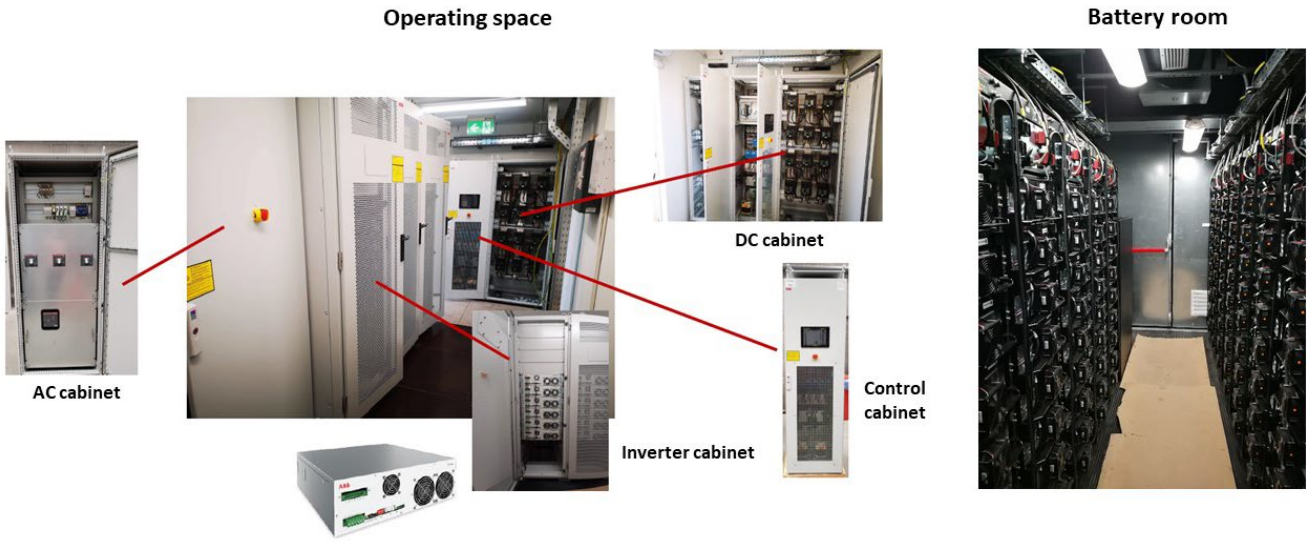
The battery energy storage system is installed in a 40-foot container, which, in terms of its internal structure, is divided into two sections: an operating space and a battery room. These two compartments are separated by a fireproof wall and the electrical connections have been designed accordingly. The operating space (control room) has two AC cabinets, three inverter cabinets, two DC cabinets, a control cabinet, an IT cabinet, and fire- and property protection systems and indoor units of the air conditioners.

One of the AC cabinets provide the energy for the auxiliary equipments, such as the lighting, fire- and property protection systems, air conditioners and the IT cabinet. In the other AC cabinet connected those low-voltage cables, which are used for charging and discharging the BESS. The three inverter cabinets contain a total of 18 inverter moduls with a capacity of 30 kW each, which means a total power of 540 kW. This power of the storage system is limited to 500 kW by software to comply with the regulatory requirements.

The control cabinet contains the PLC responsible for the internal energy management of storage system and its uninterruptible power supplies. The local operating device is located in the control cabinet. It is a touch screen interface through which BESS can be controlled locally or its current operation can be checked, and the logged events (warnings, alarms) can also be seen from here. The IT cabinet contains the PLC of the installation auxiliary unit, the PLC and router of the energy management system (EMS) which is responsible for control of the entire battery energy storage system.

The battery room contains the battery modules, the ventilation equipment that ensures appropriate room temperature, and the fire protection equipments. The battery modules are organized into racks, with 9 modules and one rack battery management system (BMS) in each rack. 6 racks form a subsystem which is monitored by the System-BMS. The energy storage system contains a total of 18 racks, thus the internal system includes three subsystems from a management and supervision point of view. The batteries are Li-ion devices with NMC technology. Their available storage capacity is 1208 kWh, as the batteries can be charged and discharged between 1-99%.

The system is designed to ensure n-1 operation, which means in case of a battery rack or an inverter unit failure event, the faulty unit will be automatically disconnected and the battery energy storage system can continue its operation with reduced storage capacity or performance, thereby increasing the availability of the system. An additional advantage of the BESS that it can respond quickly (in few seconds) to the control signals, thus it can dynamically support the distribution network.



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