



IElectrix

Newsletter #1 – April 2020

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Editorial

Project Retrospective

It is my pleasure to write the editorial of the first newsletter of the IElectrix project.

IElectrix falls within the European Clean Energy Package ambition in significantly increasing the role of the consumers by a user-centric approach, notably through the local energy communities. This is also a way to speed up the integration of renewable energy sources in smart grids and to take part in the decarbonisation of the energy system. In this context, Distribution System Operators need to ensure an appropriate integration of the energy communities within the distribution networks.

The project officially started on 1st May 2019 and should be completed by 30th October 2022.

An operational kick-off meeting was organized in Paris in May followed by a project opening event in Essen in July 2019 with all the 15 partners of the consortium.

As per the Grant Agreement, 5 demonstrations have been defined within the IElectrix project. The demonstration sites are based on different regulatory and ecosystem contexts: one is located in Austria, one in Germany, two in Hungary and one in India.



Pierre-Jacques Le Quellec
Project Coordinator (Enedis)

The design and specification phase of the project started during the summer 2019 and was practically completed at the end of December 2019.

The IElectrix consortium partners presented the project in several major international events, such as the European Utility Week in November 2019 in Paris, E-world energy & water, in Essen in February 2020 and the India Smart Utility Week in March 2020.

5 members of the IElectrix project team participated in the BRIDGE annual General Assembly, which took place in mid-February 2020 on the European Commission premises in Brussels.

You will find out some details about the participation of IElectrix in these events in the next pages of this newsletter.

Then a brief presentation of each demo is given in the present document.

Eventually, a focus of the German demonstrator is presented at the end of this first newsletter.

In this difficult time, keep healthy and take care of yourself and your loved ones.



European Utility Week 2019

12 – 14 November 2019
Paris, France

The EUW puts forward IElectrix and its innovative solutions for the energy transition.

IElectrix was present at the European Utility Week 2019, which took place in Paris from 12 to 14 November 2019. This is a major event for the smart utility sector to showcase expert knowledge and innovative solutions to achieve a low carbon energy transition. During these intensive three days, the project team actively acted to promote objectives and solutions of IElectrix.

First of all, IElectrix had its own booth in the EU projects zone endorsed by the European Commission. People from all over the world (both professional and institutional actors) showed a wide interest in IElectrix and in the business model the project could lead to.

Pierre-Jacques Le Quellec, as project coordinator, presented IElectrix during a hub session and took part in the Bridge initiative panel discussion about “Integrating the energy sector with the buildings, transport and industry sectors”.

In parallel with the European Utility Week, the European Commission organised the 8th EU-India Smart Grids Workshop to present the new Horizon 2020 call for joint EU-India projects on integrated local energy systems. It was the opportunity to present the IElectrix project to the DG Energy of the European Commission and to the large Indian delegation participating in this workshop.

The next European Utility Week will be a common event with PowerGen Europe through the new name “Enlit” and will take place from 27 to 29 October 2020 in Milan, Italy.



Bridge General Assembly 2020

11 – 12 February 2020
Brussels, Belgium

IElectrix participated in the BRIDGE General Assembly, which took place on 11th and 12th February 2020 at the European Commission in Brussels.

The objectives of this meeting were to deepen understanding of the BRIDGE projects, learn about projects results and promote closer cooperation between the different European projects.

The four reports produced by BRIDGE Working Groups and Task Forces during the last period were presented, as well as new BRIDGE projects. Ended projects also took part to give feedbacks and highlight the lessons they learnt during their implementation.

Eight parallel sessions were also organised so that projects can collaborate and discuss about future BRIDGE topics in 2020.

Around 150 participants from a variety of backgrounds attended this General Assembly: energy system stakeholders involved in BRIDGE projects such as consumers, grid operators, regulators, local energy communities representatives, power technology providers, energy suppliers, research and innovation, etc.

TSO-DSO cooperation was discussed, as well as Consumer and Citizen Engagement, Scalability & Replicability and Interoperability of Flexibility Assets.



We bring ideas to life



E-World energy and water 2020

11 – 13 February 2020
Essen, Germany

IElectrix was present at E-world energy & water, which took place in Essen, Germany from 11th to 13th February 2020.

The topics of the trade fair are innovative solutions for the future of energy supply – ranging from energy production, transport and storage to energy trading, efficiency and green technologies.

The project was represented at the booth of IElectrix technical director: E.ON. On the 12th of February Luis Hernandez (Steering Committee leader) in collaboration with Adam Tóth and Ralf Wagenitz (leaders of the Moew.e and HELGA demonstration sites) gave a presentation about IElectrix.

They pointed out that, by using smart assets, energy storages and engaging citizens, IElectrix contributes to a faster and affordable energy transition. Moreover, they showcased the German and Hungarian demonstration sites.

Attendees showed a wide interest in the project and in the achievements that are expected to happen during the running time of the project.

The next E-world trade fair will take place in February 2021 in Essen, Germany. IElectrix plans to participate in it to show the progress achieved until then.



India Smart Utility Week 2020

**3 - 7 March 2020
New Delhi, India**

IElectrix is the first European H2020 project including a real-scale urban Microgrid demonstration in India.

The India Smart Utility Week 2020, held at the Delhi Lalit Hotel from the 3th to the 6th March 2020, is one of the most important Smart Utility events in India. This year IElectrix project had an active participation with several presentations, contributions to specific sessions and the presentation of a technical paper on the Indian demonstrator SHAKTI.

IElectrix is a project one of its kind as it is the first European H2020 project including a real-scale urban Microgrid demonstrator in India, more specifically in Delhi. Keeping an active presence in India Smart Utility events such as the ISUW is therefore very important since it allows a better communication of the project at a local level.

IElectrix animated a stand at the European Union Pavilion, this was the occasion to explain in more detail the objectives and the challenges of the project as well as to interact with different Indian and European visitors. Also a great opportunity to meet and discuss with the team of Tata Power DDL IElectrix's local project partner.

IElectrix was presented by the Project Coordinator, Pierre-Jacques LeQuellerc, as part of the "Presentation on EU-India joint call on Smart and Integrated Local Energy Systems" session. The project members also contributed to the brainstorming session on "smart grid replication study", the "EU Excellence in Smart Grids Technologies" session and the 9th EU-India Smart Grid Workshop.

The Project Coordinator presented the selected technical paper "SHAKTI Demonstration" which defines and explains the methodology applied for the definition of the demonstrators Use Cases and the technical innovations that will be implemented for the experimentation.

IElectrix demonstrators

Strom Güssing

Demo in Austria led by Energie Güssing

The Austrian demonstration site, located in Güssing, will be utilized to test new technologies like Battery Energy Storage Systems, human-centric demand response programs and grid digitalization technologies.

The objective is to increase the resilience of the local energy system and ensure stable and safe grid operation while tackling new arising challenges and enable the integration of additional renewable energy resources in the distribution grid.

HELGA

Demo in Hungary led by E.ON EED

HELGA means Hungarian Energy Storage Local Communities for Global Advantage.

With two demonstration areas in Hungary at Zánka and Dúzs MV lines, HELGA is using innovative solutions, such as Battery Energy Storage Systems and advanced Direct Load Control to solve network problems and defer bigger investments, thus bringing cost savings to both the DSO and customers. Meanwhile it increases the renewable hosting capacity of the network to accept the rising number of PV farms connection requests.

Moew.e

Demo in Germany led by E.DIS

The contribution of the German demonstration in the IElectrix project is to develop an innovative concept for a "mobile storage system" in distribution networks and to demonstrate it in real life.

The concept includes the local tendering of temporary flexibilities by e.g. a battery storage owned by a third party. The distribution network operator uses the temporary flexibility for network operation, the connection of further RES and network planning.

SHAKTI

Demo in India led by Enedis

The Indian demonstration pilot anticipates the large amount of photovoltaic panels (PV) which will be connected at the low voltage level in the coming years following recent governmental plans.

The Indian SHAKTI demonstration, located in Delhi, will demonstrate various Smart Grid Technologies including microgrid solutions, RTU, smart transformer and grid digitization techniques to experiment three technical use cases on the LV grid with prosumer support.

Focus: German demonstrator

Overview of control of the controllable network asset

Moew.e demonstrator includes the development, implementation and demonstration of a technical solution for the battery storage system in the 20kV / 0.4kV grid in Friedland (Mecklenburg-Western Pomerania). The development of the technical solution foresees the control of the battery energy storage system (BESS) based on current transmission congestion. For this application, the congestion provides the pulse and the signal quantity for the storage of energy from the distribution network.

In the specific application, the battery storage system is given a reference variable as set point. The technical solution provides for measurement to be carried out on a device in the network, which is often characterized by a congestion in the power transmission. This is caused by high feeds from renewable energy sources (RES).

The aim of the technical solution is that by exchanging measured values, the storage device in the network actively contributes to reducing the congestion. With this function, the battery storage system represents a grid and congestion-oriented mode of operation and promotes the local use of RES for the energy communities. Furthermore, the operation of the battery storage system has a positive effect on the increase of supply and grid quality.

The image below portrays the functionality of the congestion management between the grid operation centre and the battery storage system.

The battery system with integrated inverter is part of a substation. Together with the battery storage, the substation assumes the function of a "Control Network Asset" (CNA). The CNA consists of a medium and low voltage field, a switchgear and a transformer with three voltage levels. The different voltage levels are a special feature and enable the CNA to be connected to the medium and low voltage grid (20kV / 0.4kV) and the inverter with battery storage to be connected at the 0.48 kV voltage level.

The basic mode of operation provides that the current value of the 110 kV transformer 101/102 at the Friedland UW is converted into a setpoint value as a command variable using software developed for the project. Existing interfaces were used, or new interfaces were developed, for the transmission of the measured and setpoint values from the transformer station to the battery storage system. The transmission of measured and setpoint values between the transformer 101/102 and the battery storage system is always in real time. This ensures a permanent status evaluation in relation to the load of the transformer. In the event of an overload, the battery storage receives the signal to store excess RES. In case of power reduction due to decreasing RES feed-in, the storage can supply the locally generated energy to the local energy community again.

Ralf Wagenitz
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