
EGI GRID
EUROPE'S GREEN AND INTELLIGENT GRID

EGI Grid project
Introduction

Ensuring security of supply and resolving capacity constraints are two of the most relevant challenges the European energy system is facing today.
We strongly believe that creating a secure and future-proof energy supply with less dependency on is a common goal that requires cooperation and collaboration across EU borders.

To achieve this goal, major investments in grid infrastructure, smartification but also new energy solutions are needed. We have thus created an international consortium of DSOs and TSOs to take on these challenges together, the ***EGI GRID project****.*

To make this happen we want to join forces with the EU Commission by applying for PCI status in the Smart Grid category.
The proposal includes important infrastructure investment projects in Poland, Sweden and Czech Republic focusing on high voltage power lines and transformer stations.
We furthermore aim to investigate on how to improve permission procedures on a European level, as well as bringing to life a joint flexibility platform that allows mutual learning between different markets and technical situations in Europe.

Projects of Common Interest Policy Goals & Benefits

To meet the conditions of PCI the project should be focused on some specific requirements of the TEN-E regulation.

The project contributes significantly to sustainability through the integration of renewable energy into the grid and contributes to at least two of the following specific criteria:

- **security of supply**, including through efficiency and interoperability of electricity transmission and distribution in day-to-day network operation, avoidance of congestion and integration and involvement of network users;
- **market integration**, including through efficient system operation and use of interconnectors;
- **network security, flexibility and quality of supply**, including through higher uptake of innovation in balancing, flexibility markets, cybersecurity, monitoring, system control and error correction;
- **smart sector integration**, either in the energy system through linking various energy carriers and sectors, or in a wider way, favouring synergies and coordination between the energy, transport and telecommunication sectors;

Conditions to match for smart grids:

- Equipments and installations at high-voltage and medium-voltage level.
- Operators should cover at least 50 000 users that generate or consume electricity or do both in a consumption area of at least 300 Gigawatt hours/year.
- At least 20 % of this electricity originates from renewable resources that are variable in nature.
- It involves cooperation between TSOs, TSOs and DSOs, or DSOs from at least two Member States. The project may involve only DSOs.

Partnership composition

Leader:

Stoen Operator Sp. z o.o. – *DSO /Poland*

Partners:

Enea Operator Sp. z o.o. – *DSO /Poland*

Polskie Sieci Elektroenergetyczne S.A. – *TSO / Poland*

TAURON Dystrybucja S.A. – *DSO/Poland*

E.ON Energidistribution AB - *DSO/ Sweden*

ČEZ Distribuce , a. s. – *DSO/Czech Republic*

ČEPS - *TSO/Czech Republic* - *supporting partner*

The importance and priority of the Project is emphasized through the engagement of the entities participating in the Project.
On the Polish side, the role of the leading organization is held by one of the country's distribution system operators Stoen Operator Sp. z.o.o., with the support of other Polish DSOs, Enea Operator Sp. z o.o., TAURON Dystrybucja S.A. and Czech DSO ČEZ Distribuce and Swedish DSO E.ON Energidistribution AB.
One of the important partners for the interconnection of all partners' activities and strengthening their positive impact on the Polish electricity network is the Polish transmission system Polskie Sieci Elektroenergetyczne S.A.

Partnership among project participants will result in more intense cooperation between Poland, the Czech Republic and Sweden, primarily in the fields of data exchange and accelerated know-how sharing processes, which will also facilitate future emergency management for grid planning and scheduling.

Project introduction

Thematic area	Smart Grids
Main goals	The EGI Grid project responds to the current challenges of decentralization, digitalization and decarbonization of energy markets. The project therefore focuses on: ○ innovation and modernization of the current grid infrastructure to facilitate the connection of more RES, energy prosumers and new market participants to the grid ○ creation of an IT platform/system for acquiring and processing data from various devices, including renewable energy sources and electricity storage, using a distributed system of electrical and non-electrical measurements, including weather data ○ increase the connectivity of new renewable energy sources, quality of electricity supply, security of supply, connectivity to the grid for all users, and reduce negative environmental impacts ○ better and more cost-effective service delivery to strategic industrial areas and end users ○ strengthen cooperation between consortium partners, especially in connection with direct or indirect grid connection
Impacts of the project	Project will have a **positive impact** on the efficiency of network management and data sharing among all parties involved. Better use of data will improve control of current energy flows on the network. Due to better management of energy flows, there will be a reduction in overall transmission energy losses. ○ more resistant grid infrastructure to external threats and atmospheric phenomena ○ better grid management and its operation ○ increasement of RES in the grid ○ creation of central DataHub All combined, these items will have a positive impact on the environment in terms of CO2 reduction and elimination of greenhouse emissions production.
Benefits	○ building an IT platform will allow to create new products to identified scalable and replicable patterns addressing grid modelling and operation in different environment ○ connecting more RES, energy prosumers and new market participants to the grid ○ improving network physical & cyber security ○ increasing grid reliability: grid resistance to meteo conditions and external attacks ○ improving the quality of the transmission and distribution service ○ fast track to obtain administrative approvals and decisions ○ integrating the behaviors and actions of all stakeholders related to the energy network (consumers, prosumers, aggregators) ○ the need to develop regulatory and statutory provisions

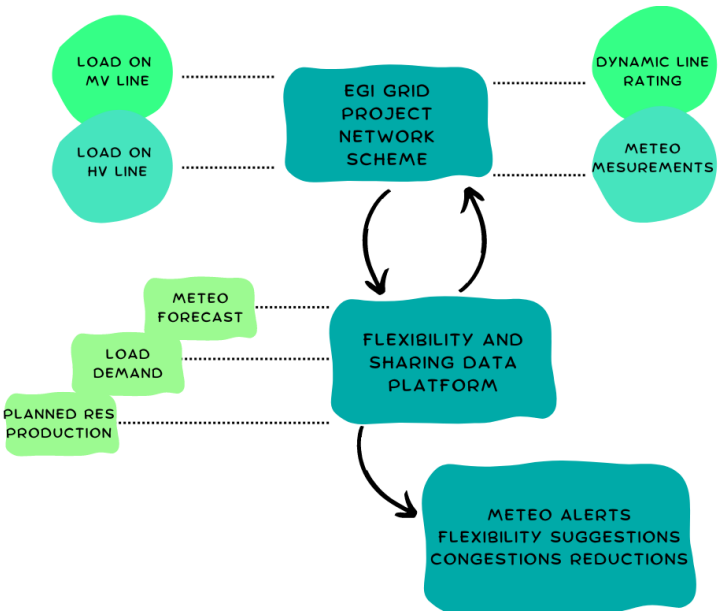
Description of the SMART Grid technology implemented as part of the EGI Grid project

Smart Power Grids (ISEs), commonly referred to as Smart Power Grids or Smart Grids, according to the definition of the European Technology Platform are networks that must be flexible, i.e. best meet customer expectations and adapt to changes in these expectations.

This flexibility and sharing data platform will be connected with similar tools operating in Sweden and Czech Republic to calculate potential energy exchange between those countries. In addition, the measurement devices for the weather parameters (temperature, wind, sunlight) will also be located on the roofs of MV/LV stations in various parts of the Poland. The algorithm will predict changes in weather conditions and create warnings in the case of storms, heavy snow, etc. Measurements from a dispersed measurement network will be the basis for the subsystem for monitoring and controlling the power infrastructure and forecasting production from energy storage, wind farms, and PV panels in the measured area. Measurement locations (BESS, weather sensors, PV) will be depicted on the map (e.g. Google/GIS), and the amount of estimated production will be shown in colors and variable over time (e.g. every 10 minutes).

SMART Grid functionalities

- dynamic measurement of loads in lines
- load monitoring
- dynamic assessment of the state of the line
- optimization of power distribution (area-wise)
- Energy (power flow) management in a flexible way
- automatic identification of errors



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