

Innogrid 2020

How DSO can help developing RES and innovation needs?

-

IElectrix H2020 project

-

Pierre-Jacques Le Quellec, Project Coordinator
Sven Tischer, Project Technical Director



General IElectrix project overview



The first Horizon 2020 Smart Grid project funded by the European Union involving an actual demonstration in India

This project has received funding from the European Union's Horizon 2020 research and innovation program under grant agreement n°824392

Consortium

42 months project duration
2019 - 2022

with a total budget of
10.7 M€



A fostering collaboration among

15 European partners
1 Indian partner

Project Coordinator

ENEDIS
L'ELECTRICITE EN RESEAU

Technical Director

e-on | Hálózati

General IElectrix project overview

16 partners
from
9 countries



Moew.e demo



Germany

STROM Güssing demo



Austria

HELGA demos



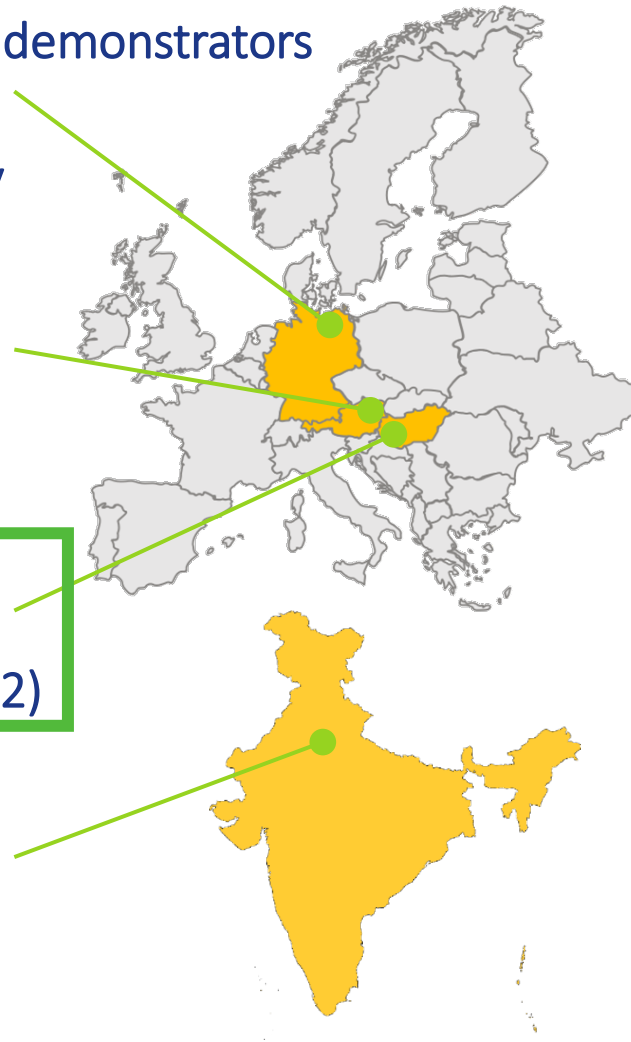
Hungary (x2)

SHAKTI demo



India

5 real-scale
demonstrators



Objectives and ambitions

Common goals



Increased RES integration in the network



Improved reliability and resilience of the electricity supply



Prepare the advent of Local Energy Communities and their integration in the networks



Improved prosumer implication

Contribution to the decarbonisation of energy systems at local levels

Different regulations and ecosystems



Reduction of peak load and voltage change due to renewable generation



Postponement of costly network reinforcements and integration of massive renewable generation



Integration of an existing energy community in the network



Anticipation of large amount of PV panels connected to LV network in the coming years

Implemented solutions



Storage units

Energy Management Systems



Digital substations

Demand-side management schemes implemented by the DSO



Microgrid and islanding solutions

LV grid digitalisation

Focus on the Hungarian demonstrations

-

HELGA

Hungarian **E**nergy storage: **L**ocal communities for **G**lobal **A**dvantage

The Hungarian demonstrations



- New boundary Conditions for DSOs in Hungary from the national regulator (voltage variance: MV grid < 2% & LV grid < 3%)
 - Increase in Renewable Energy Sources - insufficient network capacity (the voltage change rule) for this amount of decentralized generation plants
 - Local generation > Local consumption - Issues with peak load and the voltage change due renewable generation.
-
- Development & installation of grid digitalization technologies
 - Implementation of Direct Load Control system to control a subset of household loads to manage grid issues
 - Mobile energy storage systems
 - Respect of the new Hungarian renewable regulation scheme

HELGA

(Hungarian Energy Storage: Local
Communities for Global Advantage)





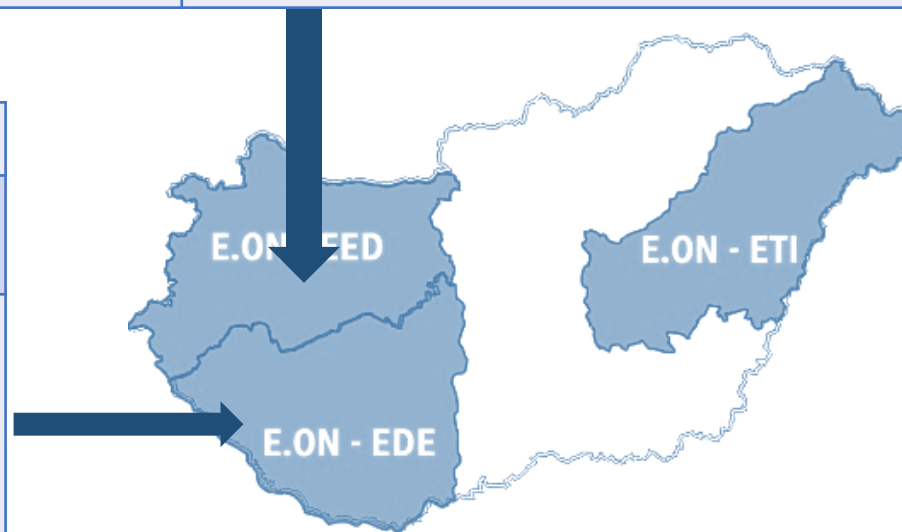
Because of the increasing PV connections and network load, the MV lines should be reinforced in order to accept the new PV requests.



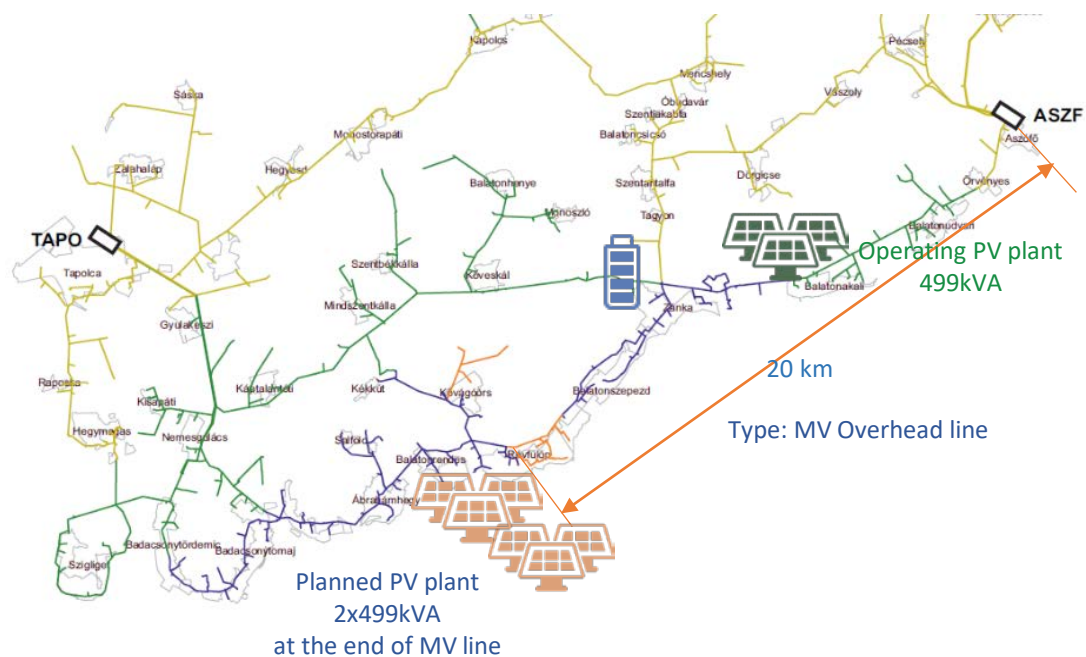
Using innovative solutions (*Battery Energy Storage System (BESS)* and *advanced Direct Load Control*) network problems can be solved and defer bigger investments (cost of a conventional solution), thus bringing cost saving to both the DSO and customers.

Site A	Dombóvár-Hőgyész MV line (ETI)
Technical details of BESS	250 kW, 500 kWh, 10 years
Problem to solve	1 PV at the end of the line is already connected and 2 PV farms are going to be connected at the end of the line, the 4 th PV connection could be accepted only with lower power than the most common PV farm size.

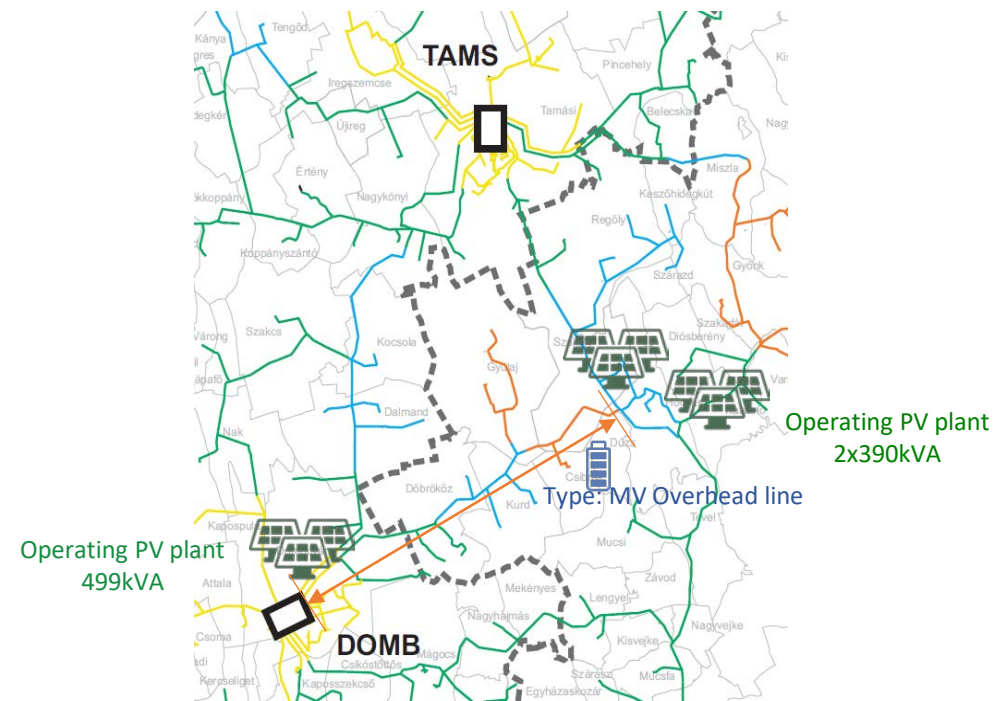
Site B	Aszófő-Zánka MV line (EED)
Technical details of BESS	500 kW, 1200 kWh, 10 years
Problem to solve	The main problem is the increasing seasonal network load (summer season), 1 PV already connected, 2 PV connection are in progress, thus additional PV connection requests cannot be accepted.



► Our concept



Aszófő-Zánka MV line



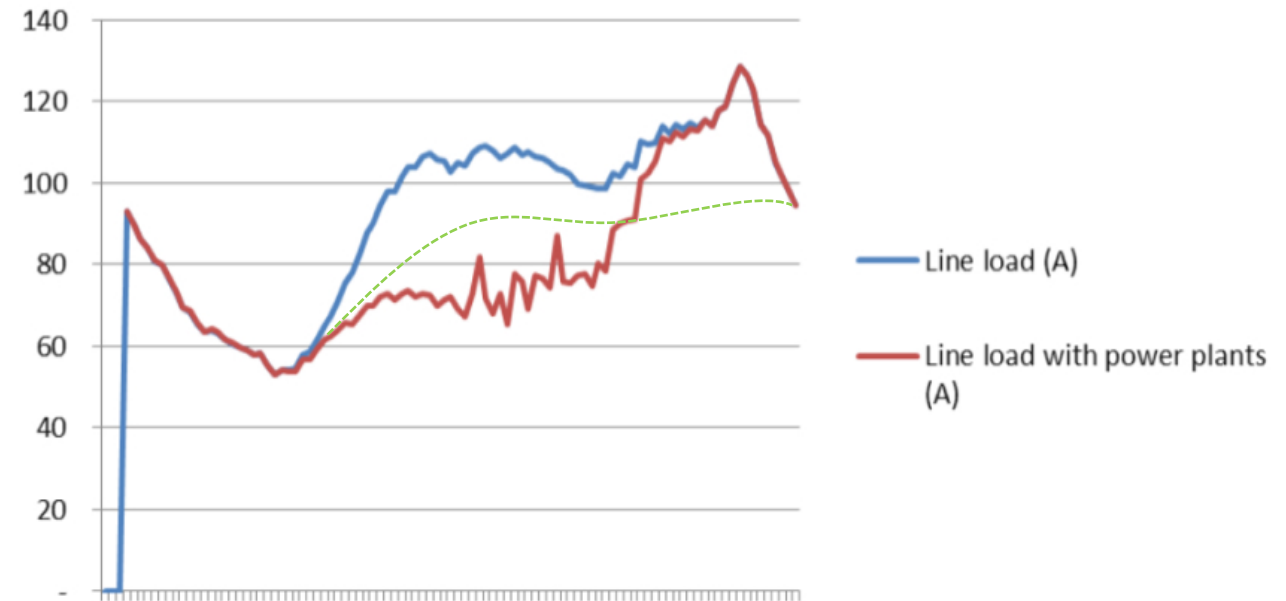
Dombóvár-Hőgyész MV line

Innovative solutions for different challenges

- **DSO owned BESS connected to MV line**
 - Zánka – 500 kW 1200 kWh
 - Hőgyész – 250 kW 500 kWh
- **Direct Load Control**
 - Ripple control system (RCS)
 - Long-wave radio control (LWRC)

Our goals

- **Solve network issues**
- **Increase network flexibility**
- **Increase renewable hosting capacity**
- **Reduce PV connection lead-time**
- **Strengthen customer engagement**



Key takeaways / Summary



❑ DSOs can support the integration of RES faster, cheaper & quicker



❑ DSOs can support the development of energy communities



❑ Develop a standard for substation plug and play battery systems

Thank you for your attention

Stay tuned with IElectrix

- Visit our website
www.ielectrix-h2020.eu
- Follow us on Twitter
ielectrix_H2020
- Mail us
ielectrix.h2020@gmail.com

