EASY-RES CONSORTIUM



PROJECT COORDINATOR

Aristotle University of Thessaloniki (Greece)

R&D PARTNERS

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INDUSTRIAL PARTNERS

TSO: Independent Power Transmission Operator SA (Greece) | DSO: Elektro Gorenjska, podjetje za distribucijo elektrine energije, d. (Slovenia) DSO: Stadtwerk Haßfurt GmbH (Germany) | DSO: Stadtwerke Landau a.d. Isar (Germany) | Manufacturer: FENECON GmbH (Germany) | Dissemination & Exploitation: Zentrum Digitalisierung.Bayern (Germany)

FIND MORE INFORMATION **ABOUT THE PROJECT**

Find more Information about the project at www.easyres-project.eu

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If you are interested, please get in touch with us. info@easyres-project.eu

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THE EASY-RES PARTNERS



EASY-RES

Services by Renewable **Energy Sources**

OUR VISION

100% RENEWABLE 100% SECURE



WHAT IS THE EASY-RES PROJECT?

EASY-RES is a Horizon 2020 research project devoted to improving EU energy security by allowing very high penetration (up to 100%) of Renewable Energy Sources (RES) in the grid with simultaneous decommission of large Synchronous Generators (SG) driven by conventional fuels. The high RES penetration will be achieved by making their variable generation more predictable and grid friendly.

EASY-RES will develop novel control algorithms for all converter-interfaced Distributed RES (DRES) in order to enable them to operate similarly to conventional SGs and provide new Ancillary Services (AS) to the distribution and transmission grid, such as virtual inertia, damping of transients, reactive power exchange for voltage regulation purposes, fault-ride-through and fault-clearing capabilities, and adaptable response to primary frequency control.

The EASY-RES approach is based on the segmentation of the distribution network into small Individual Control Areas (ICAs), where the DRES and properly sized energy storage systems (ESS) will be optimally coordinated via suitably designed ICT infrastructure to provide the aforementioned AS in a bottom-up approach: prosumers and independent RES producers will provide AS to DSOs and the aggregation of these AS will be provided by the DSOs to TSOs.

WHAT ARE THE GOALS?

- Increase the robustness of the power system towards abrupt frequency changes by introducing virtual inertia and damping in DRES, thereby adopting characteristics similar to SGs.
- Contribute to the stability of the grid by providing frequency-dependent active power.
- Increase the DRES penetration levels at both Low-Voltage and Medium-Voltage level, while avoiding investments for grid reinforcement.
- Make the RES more grid-friendly by: (i) reducing the short-term electric power fluctuations at both DRES and HV/MV substation level; (ii) introducing active harmonics filtering into each DRES converter.
- Preserve the long-term grid security even under very large DRES penetration, by reducing reserve requirements after fault recovery.
- Develop viable business models for all the stakeholders.

HOW CAN IT BE MADE REAL?

- Develop algorithms for the techno-economically optimized provision of AS, both at ICA level and towards the upstream grid through virtualized ICT infrastructure.
- Enable the TSO to simulate the ICA as a simplified active grid through the development of a Dynamic Distribution Grid Model (DDGM).
- Develop new metrics for the quantification of the various AS, so that they are properly measured and remunerated.

DRES FUNCTIONALITIES IN EASY-RES

- Evaluate the economic costs and benefits of all the developed AS.
- Develop converter prototypes and validate the new algorithms through lab tests and simulations.
- Propose the required ICT infrastructure to implement, record and register AS.
- Contribute improvements to the open source energy management system OpenEMS (www.openems.io).





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