



# SMARES

## Smart Energy-Storing Modular Technology with Advanced Energy Management System for Renewable Energy

” SMARES will increase the energy management capability of renewable power plants and smart grids.

Power electronics and control systems are regarded to be a fundamental part for achieving an improved penetration of renewable resources in the electrical grid. Highly efficient conversion will lead to lower costs and reduce the capital expenditure per generated MW to the level low enough to allow renewable sources competing with traditional sources. Besides that, the integration of energy storage technologies, have modified traditional concept of central and unidirectional distribution network. Taking into account the growth of renewable energy sources installation in Europe, a business opportunity is found in the renewable energy integration market, which is addressed to:

- More manageable power plants
- Reduce/eliminate intermittent operation issues, improving safety and quality of electricity supply
- Facilitate power balancing and smooth peak-shaving in electrical networks
- Real-time control of active/reactive power, ensuring the stability of the frequency and voltage
- Improve transient stability problems

The objective of the innovative SMARES project is to solve cited challenges, enhance integration of renewable power plants as well as distribution grids improvements by means of the development of the most promising power electronic equipment for network stability, able to control active and reactive power, taking it even one step further with the inclusion of energy storage systems (HESS).

# SMARES

### Project Duration

01.04.2016 - 31.09.2018

### Project Budget

Total Budget: € 1,400,000.-

Funding: € 976,000.-

### Project Coordinator

GPTEch (Spain)

### Project Partners

- EDP-NEW (Portugal)
- INESCTEC (Portugal)

### Project Website

[idi.greenpower.es/index.php/en/smares-en](http://idi.greenpower.es/index.php/en/smares-en)

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From Local Trials towards a European Knowledge Community

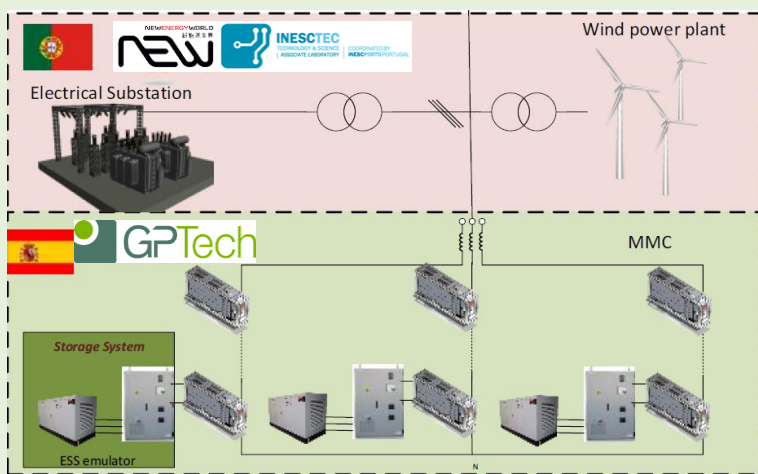
<http://www.eranet-smartgridsplus.eu>

### Main Objectives

- To design and manufacture a turnkey modular multilevel converter (MMC) with power output up to 6MVA and 20kV, including energy storage modules, to facilitate the integration of renewable energies in the High Voltage (HV) network
- To test and validate the developed solution in a real environment for a range of cases of use.
- To certify the prototype equipment according to applicable standards.

### Main Results

- Modular and ready-to-install power conditioning and fast-acting energy storage system adaptable to any grid, situation or requirement.
- Integration of Hot-Swapping features to increase the availability and reliability of the system (Improvement of the MTBF by 25%).
- Reduction of CAPEX by 50% compared to similar power rate systems and 35% regarding space needed due to a new High Power density module
- Efficiency improvement due to High Voltage technology.



This project is part of the 1st Joint Call for transnational RDD projects of the ERA-Net Smart Grids Plus initiative. More than EUR 31 million of funding have been made available to 21 projects from 19 regions/countries.

**ERA-Net Smart Grids Plus**

