Portugal energy storage research and development

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The NGS (New Generation Storage) project is an innovation pact composed of 47 companies and entities aimed at developing a new energy storage concept in the field of BESS (Battery Energy Storage Systems), essential solutions for balancing energy demand and supply and promoting electrical grid stability.

The New Generation Storage (NGS) Innovation Pact is fully aligned with the European Union’s energy transition strategy by 2040 and the challenge for complete electrification of mobility by 2035.

Based on a model structured into 8 Work Packages covering the entire value chain of component production, packs, and battery recycling, the goal is to add value to each stage of the process, culminating in a common objective: the creation of a new technological ecosystem in the battery sector that will highlight the national industry in the global market.

With the collaboration of 47 entities, the aim is to structurally transform the national productive fabric, creating the necessary conditions – both technologically and in terms of human resources – for an industrial ecosystem capable of mass-producing innovative technologies, and a complete value chain that allows for world-class end-of-life management.

NGS consists of complementary technological Work Packages (WPs), with the capacity to autonomously generate Products, Processes, or Services (PPS) for the international market, incorporating innovative technologies that can increase the project’s value over time.

WP1 “Refinement and Advanced Valorization” aims to establish a large refinery and related actions for sustainable refining and valorization processes, intending to implement an innovative and enhanced industrial line for lithium processing through sustainable technology based on membrane electrolysis.

WP2 “Cells, Modules, and Components” aims to establish and operate manufacturing lines for cells/modules and the development of new safer, and more sustainable electrodes, binders, electrolytes, and separators, closely related to WP1 and WP5.

WP3 “Battery Assembly” foresees the installation of three productive assembly lines for stationary battery modules for the automotive industry; it also foresees the integration of wiring, connectors, and enclosures, as well as energy management and control electronics, modeling, and product development.

WP4 “Integration and Application” includes five pilot lines related to: battery connection to the grid for electrical grid management; the use of batteries for different purposes – residential, commercial, and industrial; battery integration into fast-charging stations; battery integration into vehicles.

These pilot lines will define technology and knowledge applied to using batteries in a wide range of situations.

WP5 “Recycling and Second Life” includes action lines related to the recycling of battery materials and components, battery disassembly, and second-life batteries. Additionally, the recycling of battery elements will feed into WP1, creating a fully closed circular project.

WP6 “Training and Advanced Courses” is transversal to the entire NGS Innovation Pact and aims to empower human resources in the companies involved in NGS, as well as provide highly specialized training for future master’s and doctoral students, promoting technical and university qualifications in companies.

WP7 “Technological Platform and Entrepreneurship” is also transversal to the entire Innovation Pact and includes action lines to develop and implement a Technological Platform, which will support the national industry in positioning itself as a major international player in the battery sector. The main goal of this Platform is to support market innovation (from the laboratory to the factory) for the full development and adoption in the market of technological solutions, supporting them at all necessary development stages along the value chain.