

i-STENTORE

Acronym and title	i-STENTORE innovative Storage Technologies on ENergy TOWards Renewables and Energy efficiency
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Project number	EC/HE/101096787
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Start and conclusion date	01/01/2023 to 31/12/2025
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VG CoLAB total budget € 329 540.00

Main goal	Demonstration of innovative storage technologies which go beyond the state-of-the-art of existing storage solutions in respect of sustainability, technical performance, lifetime, non-dependency on location geographical particularities and cost. Increased availability, robustness, and safety, of sustainable and efficient choices for energy storage to reduce energy losses and improve the environmental footprint of the energy system.
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Partners	INESC TEC, EEM (Empresa de Eletricidade da Madeira), + 24 EU partners
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Summary	<p>i-STENTORE will examine the integration of diverse storage solutions and their combinations. Innovative storage systems will be showcased and their co-operation with the integrated assets will be co-optimized, placing the reliability, the power quality, the cost efficient operation and the maximization of the assets' lifetime as end-goals. i-STENTORE will introduce an umbrella framework aiming to showcase stand-alone and hybrid storage solutions highlighting the multi-purpose use of storage, not only as an energy buffer, but also as an active grid component capable of providing services and contributing to grid resilience, stability and efficient operation. The proposed framework will examine the applicability of versatile storage solutions in various applications covering the mobility, agricultural, industry, household, heating and other sectors, and in different timeframes, creating what-if scenarios for the selection of the optimal storage solutions to serve each individual application in the most effective way, promoting purpose-specific Hybrid Energy Storage Systems (HESS). To achieve this and to ensure a seamless integration in a technology-agnostic and interoperable manner, i-STENTORE will design a Reference Architecture towards an open and flexible storage-enabling European energy system leveraging storage-induced flexibility and facilitating the increased integration of renewable energy sources (RES). i-STENTORE will embrace the introduction of novel business models, towards building positive and attractive business cases for storage, identifying new revenue streams for storage operators, and promoting storage systems as a facilitator of the energy transition. This approach will develop and validate the enhanced connectivity of multiple systems at different levels of the energy value chain, incorporating both front-of-the-meter and behind-the-meter solutions, targeting the essential empowerment of new actors and the strategic shift of the role of storage.</p>
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