HORIZON-CL5-2026-03-D3-21: Hybrid AI-Control Framework for a next-generation grid-scale energy storage and system integration

Call: Cluster 5 Call 03-2026 (WP2026-2027)	
Specific conditions	
Expected EU contribution per project	The Commission estimates that an EU contribution of around EUR 7.00 million would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.
Indicative budget	The total indicative budget for the topic is EUR 14.00 million.
Type of Action	Innovation Actions
Eligibility conditions	The conditions are described in General Annex B. The following exceptions apply: If projects use satellite-based earth observation, positioning, navigation and/or related timing data and services, beneficiaries must make use of Copernicus and/or Galileo/EGNOS (other data and services may additionally be used).
Technology Readiness Level	Activities are expected to achieve TRL 6-8 by the end of the project – see General Annex B. Activities may start at any TRL.
Legal and financial set-up of the Grant Agreements	The rules are described in General Annex G. The following exceptions apply: Eligible costs will take the form of a lump sum as defined in the Decision of 7 July 2021 authorising the use of lump sum contributions under the Horizon Europe Programme – the Framework Programme for Research and Innovation (2021-2027) – and in actions under the Research and Training Programme of the European Atomic Energy Community (2021-2025) [1].

Expected Outcome: Project results are expected to contribute to all the following expected outcomes:

[1] This decision is available on the Funding and Tenders Portal, in the reference documents section for Horizon Europe, under 'Simplified costs decisions' or through this link: https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/guidance/ls-decision_he_en.pdf

- Advanced digital twin and AI technologies (i.e. hybrid) to support proactive grid storage management and an effective integration with energy and ancillary services markets, for systems with high levels of renewable energy.
- Optimized energy storage operations resulting in reduced operational and ancillary service costs, extended asset lifespans and increased revenues from market participation while boosting renewable energy uptake for decarbonization.
- Optimized energy dispatch and storage cycling, increasing grid resilience and cost efficiency, aiding in lowering energy costs for consumers.

Scope: Projects are expected to develop and validate an integrated system that combines grid-scale energy storage with a hybrid AI control mechanism and optimisation within a digital twin framework. This system will enable proactive and adaptive management of storage and flexibility assets (e.g. large industrial plants with flexible electricity demand), ensure seamless integration with existing grid infrastructures (if applicable also with offshore systems) and electricity markets while enhancing system efficiency and resilience (also for rare/extreme events). The project will demonstrate real-time management for optimal energy dispatch, ancillary services and storage cycling, develop a scalable integration framework for seamless cross-border operability, and validate improvements in grid reliability through field demonstrations and simulations, providing a potential blueprint for EU-wide deployment. Proof of concept studies using PHIL technology applied to scaled systems are expected to be used for the proactive and adaptive management algorithms.

Selected projects are expected to contribute to the BRIDGE initiative [2] and actively participate in its activities.

[2] https://bridge-smart-grid-storage-systems-digital-projects.ec.europa.eu/