

# GES and RINA partner to develop prototype of innovative hydrogen battery

ROVERETO , GENOA, ITALY, September 4, 2025 /EINPresswire.com/ -- Green Energy Storage (GES), an Italian innovative company in the field of green energy storage, and [RINA](#), the multinational engineering consultancy, inspection and certification group, have signed a framework agreement for the development of a groundbreaking hydrogen battery designed by GES. The first prototype will be unveiled in December 2025.



## GES Technology: hydrogen hybrid gas/liquid battery

This new generation of batteries is based on a hybrid hydrogen/liquid technology using a manganese-based liquid electrolyte. The cell integrates hydrogen production and reabsorption in a closed cycle, eliminating the need for external tanks. Key technical features of this battery include:

- Green chemistry: abundant active materials (manganese), non-toxic, recyclable, and with a low environmental footprint;
- Modularity and scalability: independent energy and power components, expandable up to the MegaWatt (MW) scale.

This technology stands out for its long lifespan and reliable performance. Its estimated lifecycle exceeds 12,000 cycles - equivalent to around 15–20 years of use – thus ensuring significant cost optimisation (LCOS) and a reduction in the volume of materials required compared to conventional flow batteries.

The system also incorporates advanced hardware and software components: in-house production of membranes and catalysts ensures direct control over quality and efficiency, while the integration of AI-enabled sensors, machine learning algorithms, and an advanced Battery Management System (BMS) guarantees maximum operational safety, predictive diagnostics, and seamless integration with hybrid systems.

The project is part of the IPCEI ("Important Projects of Common European Interest") funded by the European Union under NextGenerationEU. For this initiative, GES received €61.5 million in

funding, covering approximately 98.5% of the total costs of the project.

## The GES-RINA collaboration

This agreement marks the beginning of a strategic journey that will support GES in moving from a laboratory-scale prototype to a market-ready product, with RINA actively involved in several stages. Specifically, RINA will be responsible for technology validation - ensuring the solution meets the highest standards of reliability and performance - and for the engineering optimisation of the system to make it efficient, scalable, and compliant with applicable regulations. In addition, leveraging its extensive expertise in supporting businesses in market entry, RINA will assist GES in defining its go-to-market strategy, facilitating the commercialisation of the technology in the energy sector.

Matteo Mazzotta, Chief Executive Officer of GES, said: "This partnership is a key milestone in accelerating the development of our technology. RINA's contribution, with its international experience and strong engineering and regulatory expertise, not only strengthens the technical soundness of our project but also confirms its value in view of future industrialisation."

Michele Budetta, Chief Executive Officer of RINA Consulting, added: "We are delighted to support GES in the development of such an innovative and promising technology. Our role will be to guide GES from the laboratory to the market, helping to make this solution technologically robust, regulatory-compliant, and ready to meet the energy challenges of the future."

GES, Green Energy Storage, is an innovative Italian SME that produces green flow batteries for stationary energy storage derived from renewable sources. The international and highly specialised profiles of the research team, the managerial experience of the board, make it a company that operates on the technological frontier with distinctive know-how and a substantial patent pipeline. GES was founded in 2015 and has its headquarters in Trento and Rovereto. GES has received from the European Union access to funds for 61,5 million euro for the IPCEI Batteries 2 project, dedicated to the research and development of innovative solutions along the entire battery value chain. The company aims to play a leading role in the European battery value chain, developing an innovative battery that will be marketed in international markets. [www.greenenergystorage.eu](http://www.greenenergystorage.eu)

RINA, a leading certification and engineering company, provides a wide range of services across the Energy, Marine, Infrastructure & Mobility, Certification, Industry and Real Estate sectors. In December 2023, alongside the majority shareholder Registro Italiano Navale, Fondo Italiano d'Investimento SGR entered the shareholding structure, guiding a pool of co-investors. With revenues in 2024 of 915 million euros, 6,200 employees and 200 offices in 70 countries worldwide, RINA is a member of key international organisations and an important contributor to the development of new legislative standards. [www.rina.org](http://www.rina.org)

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