

ATOM

ATOM H2 ENERGYTECH S.L.

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Startup

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CHALLENGE | Renewable energy intermittency

Renewable energy faces **two key challenges**: **intermittency** leads to over 50% of solar energy in Spain being **wasted due to poor storage**, and current solutions only meet 20% of global energy needs, **leaving 80% still dependent on fossil fuels**.

SOLUTION | Energy storage

ATOM **stores surplus renewable energy** in the form of **hydrogen**, a clean and abundant solution, ideal for **hard-to-electrify sectors** and especially for remote locations.

Its **modular** hydrogen **generation and storage system**, combined with lithium batteries and on-site integration, is designed to replace diesel generators.

Thanks to its **solid-state storage** technology using metal hydrides, ATOM provides a **safe, durable, and scalable** solution capable of adapting to diverse energy needs and maximizing the use of renewable energy, contributing to a future without emissions.



1. Low pressure | **Safe**
2. **Modular** | **Compact** | **Scalable**
3. Abundant materials
4. **High capacity**, compact volume
5. **3D-printed** metallic tank



Topics of interest in calls 2025

Topic	Project idea and partners sought
Development of cost-effective and high-capacity compression solutions for hydrogen <i>(HORIZON-JU-CLEANH2-2025-02-02)</i>	<p>Idea: ATOM H2 proposes an innovative hydrogen compression solution based on metal hydrides, overcoming the limitations of traditional mechanical compressors. Our approach enables compression with no moving parts, offering lower maintenance, reduced cost, and an extended lifespan, while utilizing residual heat to optimize hydrogen absorption and release. This technology is key for mobility, stationary storage, and decentralized distribution, providing a scalable and cost-effective alternative for hydrogen infrastructure.</p> <p>Partners: 1. Research centers and laboratories specializing in advanced materials, hydrogen storage, and experimental facilities for testing. 2. 3D printing companies for manufacturing key components. 3. Industrial partners with expertise in metal hydrides and high-pressure storage. 4. Public institutions and industry associations supporting hydrogen innovation and adoption. 5. Companies interested in implementing this solution, such as: Hydrogen fuel stations, Hydrogen compression for gas storage, Refining industry, Ammonia production, Methanol production...</p>
Topic	Experience and Contribution
Efficient electrolysis coupling with variable renewable electricity and/or heat integration <i>(HORIZON-JU-CLEANH2-2025-01-04)</i>	<p>Experience: ATOM H2 excels in compact, modular hydrogen storage solutions, including metal hydride technology and 3D-printed tanks for off-grid renewable energy integration.</p> <p>Contribution: We could offer complete containerized hybrid energy systems combining hydrogen storage and lithium batteries to reduce fossil fuel dependency. Our modular, scalable solutions aim to boost renewable energy usage in off-grid scenarios, leveraging our expertise in sustainable hydrogen storage to deliver efficient and reliable energy systems.</p>
Small-scale Hydrogen Valley <i>(HORIZON-JU-CLEANH2-2025-06-02)</i> Demonstration of stationary fuel cells in renewable energy communities <i>(HORIZON-JU-CLEANH2-2025-04-01)</i>	<p>Experience: ATOM H2 excels in compact, modular, low-pressure, and safe hydrogen storage solutions, including metal hydride technology and 3D-printed tanks.</p> <p>Contribution: We could offer a modular, scalable, and compact solid-state hydrogen storage solution, which complements different hydrogen technologies, such as high-pressure gas and liquid state storage.</p>