The National Hydrogen Center (CNH2) has been dedicated to promoting the development and application of hydrogen technologies since its establishment in 2007.

It is a public consortium between the Ministry of Science, Innovation and Universities and the Regional Government of Castilla-La Mancha, with each holding a 50% stake, and its headquarters are located in Puertollano (Ciudad Real).

With a multidisciplinary and highly qualified team, CNH2 carries out research, engineering, consultancy, and regulatory development projects across all links of the hydrogen value chain, from production to end use.

www.cnh2.es



HYDROGEN STARTS HERE

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Centro Nacional del Hidrógeno

HOME INTEGRATION LABORATORY



The Domestic Integration Laboratory is a real-world environment for the demonstration, testing, and validation of hydrogen technologies in the residential sector. It integrates household equipment and micro-cogeneration systems to provide electricity and heat to homes.

Area

The laboratory is structured as a modular housing unit equipped with auxiliary services, energy monitoring and control systems, and a photovoltaic installation enabling grid-connected, off-grid, and self-consumption configurations, comprising a technical room for the safe installation of hydrogen systems and a fully functional living space (kitchen, living room, and bathroom) heated through heat recovery and powered by a hydrogen fuel cell–based micro-cogeneration system supplied with renewable hydrogen.

Services

- Testing and validation of domestic micro-cogeneration systems, hydrogen cycle systems, home automation systems, IoT, and smart metering.
- Energy management strategies and grid connection for homes with distributed generation and storage.
- Rental of the H2ome Demo Lab module for use in R&D projects or technological exhibitions in any geographic location, thanks to its transportability and easy installation.

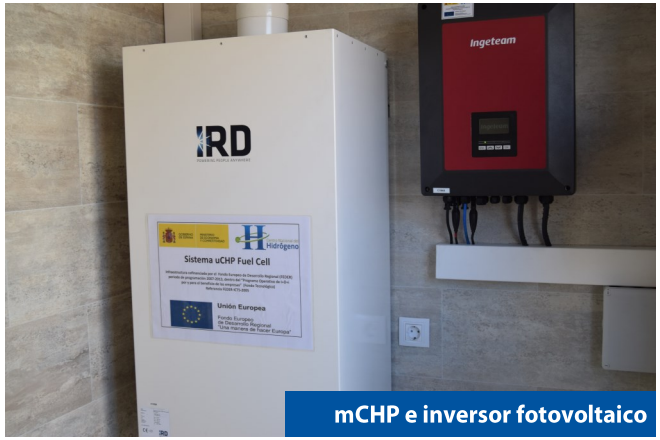
Equipament



Housing—module

- Photovoltaic installation mounted on the roof of the housing module, equipped with an inverter and auxiliary battery storage systems.
- Set of household appliances with home automation control for managing the module's energy loads.


Interior of the housing module



mCHP e inversor fotovoltaico

- PEM-based micro-cogeneration (mCHP) system providing electricity and heating to the housing module.
- Electrolyzer–compressor system with refueling points for small hydrogen vehicles.