



# Life Zero Energy Mod

Zero Energy Habitable Mobile Modules in Europe





**ZEROENERGYMOD** develops the first habitable mobile modules, emission-free and self-sufficient thanks to renewable energies and hydrogen technology.

**LIFE ZEROENERGYMOD** is a demonstrative innovation project that aims to achieve habitable mobile modules with a near-zero energy demand that can also be satisfied with renewable resources, without generating emissions.

**The main objective of this project** is to develop a robust, transportable and easy to install habitable module, based on the **Passivhaus** standard, linked to renewable energy resources (photovoltaic and wind) and a hybrid storage system that combines the use of batteries, as daily or weekly storage, with a seasonal solution based on hydrogen technology. This avoids the consumption of diesel fuel, which is often used as an energy supply in isolated environments and its associated emissions.

**In addition, the modules require 90% less energy than existing modules, thanks to the high level of thermal insulation of Passivhaus standards, and are self-sufficient, as the modules generate and store the little energy they need to operate.**

## EVOLUTION OF THE PROJECT

### 2020

During the first year of the project, which was launched in the second half of 2020, the consortium focused on creating a baseline assessment on materials and construction techniques to develop a module that meets the required technical and mobility requirements.

### 2021

In the second year, a prototype was designed and built at the facilities of ARPA Equipos Móviles de Campaña, a partner in the project. Initially, two types of independent modules were planned: PASSIVMOD (habitable module) and ENERMOD (renewable energy generation and storage module).

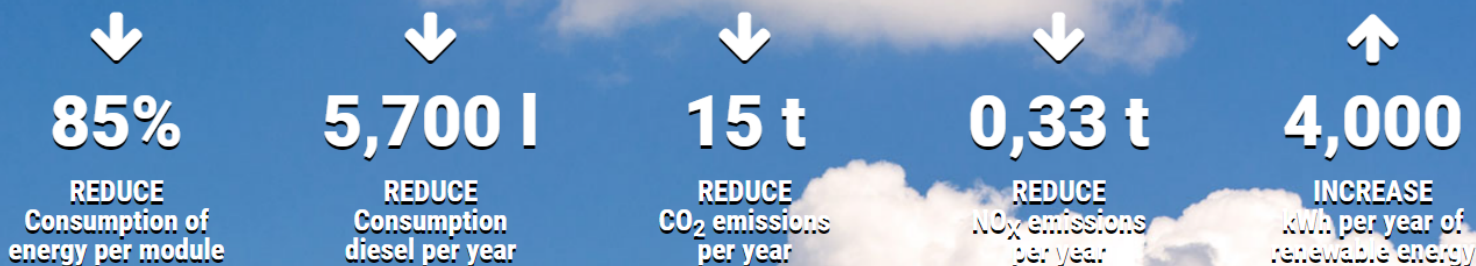
During the design process, the initial configuration has evolved into a more compact solution, in which the ENERMOD is integrated into the constructive solution of the living modules based on Passivhaus standards. This innovation increases the living area and improves the habitability and comfort of the modules, increasing the efficiency and performance of the energy module. A third demonstration site was included at the Spanish base Gabriel de Castilla in Antarctica, to validate the suitability of the prototype in one of the most extreme environments known.

### 2022

Once the prototype has been designed and built during the first two years, the second half of the project will focus on the demonstration and monitoring of the built prototype. At the beginning of the year, the prototype was disassembled at ARPA's facilities, moved and reassembled at the San Jorge Army Base, the first planned demo site with the collaboration of the Sapper Brigade (BZAP). After the San Jorge Base in Zaragoza, Spain, the second planned demo site was Adazi, the NATO base in Riga, Latvia.

Following Russia's invasion of Ukraine, the area around the second demonstration site has become demonstration site has become highly unstable and presents risks that could seriously compromise the viability of the project. In view of this, the consortium proposed to extend the demonstration in Spain and avoid moving the prototype to Latvia. In addition, these tests will be complemented by the development of a 3D model that will be validated with meteorological data from Latvia and with real data collected both in Spain and in Antarctica.

## ¿WHAT WE ARE GOING TO ACHIEVE?



## ¿HOW WE WILL MAKE THIS HAPPEN?

### Building two modules

#### ENERMOD MODULE

The **ENERMOD** module generates 2 types of renewable energy (wind and solar) and two types of energy storage (batteries and hydrogen storage) to supply the energy needs of the PASSIVMOD living module.



#### PASSIVHAUS MODULE

The **PASSIVMOD** module is a living space, designed to offer the maximum comfort to the user at a lower energy cost, as the module is built according to Passivhaus standards, which reduces energy demand.

**BOTH ACT IN SYNERGY, OFFERING AS A  
RESULT THE ZEROENERGYMOD SOLUTION**



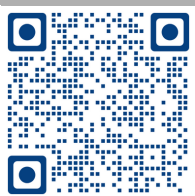
## WORKING TOGETHER

The **ZEROENERGYMOD** project is coordinated by the **Foundation for the Development of New Hydrogen Technologies in Aragon (FHa)** and it involves 3 other partners: **Defense University Center of Zaragoza (CUDZ)** and the Aragonese companies **ARPA EMC** and **B-Haus**.

It has a budget of more than million euros, **55% of which is funded by the LIFE program of the European Union.**



DISCOVER MORE ABOUT THE PROJECT



Life Zero  
Energy Mod

Zero Energy Habitable  
Mobile Modules in Europe



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