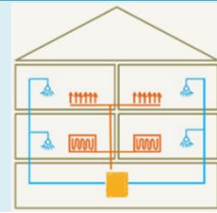


Three Heat Pumps are enough to claim the BREEAM Certificate, Spain

In San Sebastian de los Reyes in the heart of Spain, a building with 56 homes is heated and cooled by just three heat pumps.



F1.1

Key facts

Buildings

Location	<i>Madrid, Spain</i>
Construction	<i>2019</i>
Project type	<i>newly built</i>
Heat and cooling distribution	<i>underfloor</i>
Heated space	<i>6,700m²</i>
No. of apartments	<i>56</i>
Level of insulation	<i>excellent</i>

Heat pump and source

Number of	<i>3</i>
Operation mode	<i>cascade</i>
Heat source	<i>Ground</i>
Services	<i>Heating & active cooling, DHW</i>
Type of system	<i>central</i>

Space Heating, DHW and Cooling

Installed power	<i>300 kW</i>
Heating temperature	<i>-</i>
DHW temperature	<i>-</i>

Other information

Coefficient of Performance	<i>4,6 - 5</i>
Refrigerant	<i>R410A</i>
Boreholes	<i>32 x 125m</i>

Lessons learned

- Savings compared to conventional gas boiler and aérothermal installation of 36%. This represents 32,600e per year.
- SPF July 2023 = 6,7
SPF Annual = 5,3



Pictures: AEDAS Homes, Ecoforest

Why is it a unique project? What innovation does it implement in terms of technology, design, services or other aspects?

This building is a sustainable construction both in its design, execution and final phase, obtaining the highest level of energy rating. Not only does it have a geothermal system with water-water heat pumps operating in cascade, but it also has an underfloor heating-cooling system, special attention to thermal insulation and a double-flow ventilation system with heat recovery.

What is the replicability potential of this project?

The replicability of the project is wide, it is applicable to any type of residential building. This technology not only makes it possible to comply with existing building regulations and satisfy European Directives, but also enables a seal of sustainability to be obtained that provides visibility, recognition and the capacity to become a guide for buildings to be constructed in the future.

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Description of the technical concept

The residential building, designed by the prestigious architectural firm Morph Estudio and promoted by AEDAS Homes, has a heating and cooling system that consists of a collection system of 32 boreholes of 125 meters deep each and a production system composed of three Ecoforest heat pumps model HP3 25-100 kW that aim to cover 100% of the heating, cooling and DHW demands. Heat pump source collection and installation were executed by the installer Geoter

This is a unique project as geothermal energy in the renewable energy that is responsible for covering 100% of the building's thermal demand, thus obtaining one of the highest levels of sustainability of the **BREEAM** seal.

The **Seasonal Performance Factor (SPF)** of 6,7 is a milestone in the energy efficiency of a centralized residential installation of this size.

