

## Sustainable cooling solutions:

# Heat pumps to ensure renewable, highly efficient heating, cooling and sanitary hot water production in a Spanish passive house building

### CATEGORY:

Thermal Comfort

### THE CONTEXT:

Buildings consume roughly 40% of the total energy in Europe and around 80% of that energy is used for heating and cooling purposes. Improving the energy efficiency of buildings is therefore one of the major axes of the European Green Deal and the 2050 decarbonisation strategy. Heating and cooling play a major role to achieve these goals and heat pumps represent one of the sustainable technologies with the highest growth rate in Europe (12,8% sales growth in 2018, according to the latest EHPA statistical report from 2019). They offer the triple advantage of high energy efficiency, renewable energy and combining heating and cooling – thus providing a major opportunity to address the challenge of achieving net zero energy buildings as well as sustainable renovation of existing systems.

### SUSTAINABLE COOLING SOLUTION:

- Panasonic air-to-water “All-In-One” heat pumps (5kW) providing cooling, heating and sanitary hot water in the first certified vertical passive house in Spain, the residence “Basa de la Mora” with 165 dwellings of 18,93 0m<sup>2</sup> in total, in Zaragoza. Total capacity: 930 kW, heating demand: 2,9kW, cooling demand: 5,0kW.
- To comply with the passive house certification, the space heating demand must be limited to 15 kWh/m<sup>2</sup> per year, and the space cooling demand to 10 kWh/m<sup>2</sup> per year. The demand for renewable energy must be limited to 60kWh/m<sup>2</sup> per year.
- Efficient heating/cooling floor system with water supply temperature of 35°C in winter and 18°C in summer. Heat and cold water storage tank with water around 50°C and 7°C to pre-condition clean air driven to the rooms.



### BENEFITS:

- High efficiency and high energy savings resulting in limited running costs for users
- Compared to conventional heating devices, the renewable energy input is increased by 300% with a 59% reduction of CO<sub>2</sub> emissions and a 49% reduction of primary energy consumption
- Heat pumps allow flexibility on the energy markets as they can store thermal energy, play a role in demand side management and in the integration of renewable energy into the electricity grid.

**TOPIC:**

- Thermal comfort and hot water
- Energy efficiency
- Synergies with heating
- Heat pumps

**GENERAL INFORMATION**

**NAME OF THE COMPANY:** Panasonic

**CONTACT PERSON:** Albert Blasco

**HYPERLINK TO LEARN MORE ABOUT THE SUSTAINABLE COOLING SOLUTION:**

[www.aircon.panasonic.eu/ES\\_es/](http://www.aircon.panasonic.eu/ES_es/)

The Panasonic logo, consisting of the word 'Panasonic' in a bold, blue, sans-serif font.