

Extend to improve: a 90 m² retrofit that lifts the whole house

Completed in September 2012, this project shows that extending an existing home can also be the moment to raise the energy performance of the whole building, not just the new floor area.

Extending a house is usually framed as a space problem. The retrofit PAPIK Group completed in September 2012 treated it as a wider opportunity: adding 90 m² of living space while also improving the thermal behaviour of the entire existing building. The outcome shows how a high-efficiency construction system can be integrated into a building that already stands and extend its benefits beyond the new section.

A 1935 home revisited through sustainability

The original property is a private house built in 1935. The extension was designed from the standpoint of sustainability, incorporating PAPIK Group's own high-efficiency construction system. The premise that governed the whole intervention is simple to state and demanding to deliver: in gaining living area, the efficiency of the entire house had to improve, not only that of the added spaces.

The envelope: roof, ventilated façade and breathability

The roof accounts for a large share of energy losses in any building, which is why it was resolved with a vapour barrier and insulation that prevents temperature leaks in this especially sensitive part of the structure. It was waterproofed to rule out infiltration, a basic requirement for the durability of the whole.

On the outside, a ventilated façade was installed, improving thermal insulation by avoiding the direct transfer of temperature between exterior and interior. The level of insulation achieved places the thermal transmittance at U 0.16 W/m²K. For reference, the Spanish Technical Building Code (CTE) sets a maximum U of 0.53 W/m²K, so the value obtained sits well below the required limit.

The construction system is breathable, a property that allows the common damp problems of the area to be eliminated. In this way the intervention not only adds floor area but also removes damp that predated the extension. This logic is the same one that governs our [energy retrofit](#) projects.

Timber structure prefabricated in the workshop

The structure was prefabricated in the workshop using timber from forests managed for renewal. This way of working brings a double added value: the manufacturing process for the materials is far more sustainable than that of traditional systems, and on-site assembly is considerably faster. It is the same principle that underpins our industrialised timber construction and that we set out in detail in the wood revolution.

Interiors and exteriors are customisable, as is the finish level throughout the home. The system, based on timber and high-quality materials, ensures high durability because no element is left in direct contact with the exterior. It should also be stressed that these buildings meet the same conditions for a mortgage as any other home.

A proprietary system that adapts to each project

Having its own construction system allows PAPIK Group to offer the most suitable solution for each commission and to incorporate new technological advances as better materials and qualities appear. This project took part in the 2012 Endesa awards for sustainable construction, in the retrofit category.

Extending well is not only about adding square metres: it is about using the works to raise the energy performance of the whole home, so that the house ends up worth more than the sum of its parts.