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PRESS 10 July 2014 | 4 min read

Passive houses according to L'Econòmic: the newspaper's report on the Passivhaus model and PAPIK Group

On 21 June, L'Econòmic published a feature on the Passivhaus model and the work of PAPIK Group. This article gathers its main points.

On 21 June, L'Econòmic devoted a feature to the Passivhaus building model and to PAPIK Group's work introducing it in Catalonia. The piece placed passive houses among the most-discussed cutting-edge solutions in countries with a long culture of energy-efficient building, such as Germany, Austria and Switzerland. From Sant Cugat del Vallès, PAPIK Group works to bring home a technology in which the dwelling makes reasonable use of energy, with timber as the protagonist, though it is not the only material employed.

A model that saves 90% of energy

The Passivhaus model was conceived in the nineties by Wolfgang Feist as a proposal in which the dwelling is able to save 90% of the energy it would consume with a conventional structure. The standard is regulated by the Passivhaus Institut, based in Germany, which certifies the houses that adhere to the criterion. At the time of the feature there were already some 32,000 across Europe and the United States.

Papik Fisas, a carpenter and cabinetmaker, explained to L'Econòmic how he had reached this field after concluding that "the made-to-measure furniture business was unsustainable, now that people no longer want a piece of furniture for life". Looking for alternatives, he arrived at the idea "of a new building system, integral in character". Five years before the feature he had given a first public demonstration with a show house at the Construmat trade fair, a synthesis of the knowledge gathered in Austria, Switzerland, Germany and northern Italy.

The principles of a passive house

This building culture comes down to a few basic principles: southern orientation, thermal insulation, the absence of thermal bridges, airtightness, mechanical ventilation with heat recovery, and efficient windows and doors. As Fisas broke it down, "first of all, it is important to heat the house with the southern sun, with an architecture of large glazed openings". As for insulation, "it must be extra, on façades and roofs, with thick windows containing 90% argon", a gas that gives the glass the same capacity to retain heat as a wall during the day, so it does not escape at night. One of the refinements of the insulation is a Gore-Tex membrane that makes the house impermeable to water.

Airtightness and renewed air

Airtightness is one of the demands that characterise passive houses. "If a conventional house makes 200 air changes per hour, a passive one makes only 0.6," Fisas explained. It is not, however, about creating a stale environment inside: "So that the air does not become toxic, a dual-flow recovery unit is fitted that takes the inside air and expels it while drawing the outside air in. Thermal balance is achieved because the heat of the outgoing air passes to the incoming air." It is a technology that generates neither cold nor heat, but an exchanger that becomes more efficient the more extreme the climate is, performing the functions of heating while purifying the air. This unit can cost between 8,000 and 10,000 euros.

Prices and savings on the bill

The feature also addressed the economic question. The construction price per square metre of a house meeting these demands was 1,200 euros, a figure Fisas described as "quite competitive with what is charged for building similar conventional houses". The difference becomes clear on the electricity bill: "In a passive house of around 130 square metres, the annual energy saving translates into 500 euros less, 40 euros a month."

A proposal like this involves a certain cultural shock and requires working against some prejudices. "The main barrier is distrust, because the house has an inner base of timber, and it has to be explained that this is not a wooden house, but a house with wood," Fisas noted. "In fact, the cellulose component, from recycled paper, matters more than the timber." At the time of the interview, PAPIK Group already had 50 completed projects between new-build and renovations, since the technique is also applicable to bringing old houses up to date with damp problems.

Retrofitting to Passivhaus standards

For these cases, Fisas explained, "you would need to fit an air-flow exchanger and replace the roofs, which in this kind of house generally let the heat escape". The feature recalled that, in a temperate climate like ours, energy consumption to heat the house is double that of Germany. PAPIK Group, founded at the start of the crisis, had managed to turn it into a spur: "Some owners who had a plot to build a house on looked for alternatives to construct a building that reduces the energy bill or, if they could not build a house, to renovate the old one so that it is more efficient."

> Not a house of wood, but a house with wood: the distinction sums up a change of outlook on how we build and how we live.