PAPIK®

PROJECT Igualada, Anoia | 2021

K-Igualada

The first home in Catalonia with a timber structure that can be certified to the Passivhaus Plus standard. A 275 m² single-family house in Igualada, designed to run at an almost zero energy balance.

Catalonia's first timber Passivhaus Plus

K-Igualada is a 275 m² single-family home in Igualada, and the first home in Catalonia with a timber structure that can be certified to the Passivhaus Plus standard, one of the most demanding levels in residential energy efficiency.

Designed from day one to run at an almost zero energy balance, it pairs a high-performance thermal envelope with low-consumption active systems and its own solar generation.

Technical data

- **Location:** Igualada, Anoia
- **Delivery year:** 2021
- **Built area:** 275 m²
- **Type:** detached single-family, new build
- **Construction system:** light timber frame
- **Certification:** Passivhaus Plus
- **Climate control:** aerothermal
- **Ventilation:** Zehnder with heat recovery
- **Electricity production:** photovoltaic installation

Energy performance

- **Blower Door test (n50):** 0.60 h^{-1}
- **Heating demand:** 12.9 kWh/m²|yr
- **Cooling demand:** 10.7 kWh/m²|yr
- **Primary energy:** 68 kWh/m²|yr

— **Renewable generation:** 56.10 kWh/m²|yr

These figures place the home within the requirements of the Passivhaus Plus standard.

Architectural concept

The project rests on a single idea: architecture and energy efficiency go hand in hand. From the earliest design stages, we fine-tuned solar orientation, protection against summer overheating, the use of winter solar gains, natural light, controlled ventilation and the reduction of thermal bridges.

None of this holds the architecture back. The result is a home with a contemporary feel and an open, bright, flexible layout.

Spatial layout

The entrance opens onto a double-height space that anchors the home and ties together the hall, the study and the upstairs landing. Day and night areas are clearly separated, yet the space flows without interruption.

The ground floor brings together the kitchen, dining room, living room, a bathroom, the main bedroom, the dressing room and an en-suite bathroom. Upstairs there are three bedrooms and a south-facing terrace.

Construction system

K-Igualada is built with a light timber frame, one of the core technologies behind the Eskimohaus construction system. Timber lowers the carbon footprint and structural weight, improves insulation, speeds up the build and lets us work to finer tolerances.

The envelope brings together blown cellulose insulation, continuous exterior insulation, careful treatment of thermal bridges, airtightness barriers and vapour-open materials. Together they keep the home thermally steady all year round.

Building services

The home does without conventional high-power heating and cooling systems. Instead, its services rest on four elements.

Aerothermal

Handles heating and cooling on very little electricity.

Ventilation with heat recovery

The Zehnder mechanical ventilation system keeps the air constantly fresh, filters out particles and recovers most of the energy from the extracted air, all without draughts.

Solar generation

The roof carries a photovoltaic array sized to cover almost all of the home's annual electricity demand.

The grid as a battery

The home stays connected to the electricity grid. With no physical batteries, the grid does that job instead: it takes in surplus generation and gives energy back when the sun isn't enough.

Comfort and performance

The numbers reflect how carefully the home was built. At 0.60 air changes per hour, the Blower Door test confirms a very airtight envelope. That means lower running costs, greater comfort, no draughts or condensation and genuinely good indoor air quality, with a heating demand far below that of a conventional home.

> K-Igualada shows that a home can generate almost all the energy it uses without compromising on architecture.