



Casa B



Operazione co-finanziata dall'Unione Europea, Fondo Europeo di Sviluppo Regionale, dallo Stato Italiano, dalla Confederazione elvetica e dai Cantoni nell'ambito del Programma di Cooperazione Interreg V-A Italia-Svizzera. (Codice progetto 603882)

Introduction

The building, which has a BIPV system integrated into the roof, is located in a consolidated residential area with the typical characteristics of traditional architecture and the agricultural areas to the south. From a landscape point of view, it is located in an area of “medium sensitivity”, but adjacent to an area of “extremely high sensitivity”. In the vicinity is a Romanesque-era church dating back to the 6th-7th century, San Giorgio al Cimitero, a heritage building and a protected archaeological site, as well as another Romanesque-style building. In addition, the relative green areas behind Casa B are classified on the provincial scale as “Level I and II nodes”.

Design approach

The vicinity to the historically building required a project that integrates with the surrounding landscape, protecting the views from and of the Romanesque church of San Giorgio without altering perception and without any elements of strong impact, including those of the system. This approach however did not hinder the creation of a building offering elevated energy performance (passive house), with the integration of photovoltaic technology on the roof. The project received CasaClima and Cened certification.

Aesthetic integration

The photovoltaic modules are completely integrated into the roofing system, guaranteeing: (i) the same inclination and orientation, (ii) pitch uniformity, (iii) respect for the surrounding area, reflecting the architectural, material and colour characteristics of the nearby church of San Giorgio al Cimitero.

Energy integration

The BIPV system was designed to satisfy the energy demand of both the habitation itself and the systems for the external areas (video surveillance system, irrigation system and maintenance of green areas). It has been estimated that the photovoltaic energy production is able to cover demand only during the winter, when the external systems are not in use or used much less than in the summer period. The net metering scheme with the national grid has been activated.

Technology integration

The BIPV system (Solesia, CREATON) substitutes part of the roof, protecting the building from the elements, collecting and directing rainwater to the drainage points, and providing suitable soundproofing. It is integrated among the linear rectangular tiles supplied by the same manufacturer, in order to respect the size and pitch of the roof.

Decision making

The need to create a fully integrated photovoltaic system is the result of a design choice that aims to obtain the utmost compatibility with the building's roofing elements from both a form and colour and a

functional point of view, as well as with the setting, considering the nearby elements subject to landscape, architectural and archaeological restrictions. It was necessary for the building not to have a visual impact on passers-by.

Lessons learnt

The authorisation process initially required landscape authorisation to be obtained in compliance with current regulations on a local and supralocal level. The request was granted, both for the colour of the panels and, above all, for the perfect integration with the roof. Despite the entire process requiring a considerable amount of time, the result obtained was worth the efforts made both during planning (research and contacts with the manufacturers and suppliers, attention to construction details) and construction (rapidity of installation).

PROJECT DATA

Project type	new construction
Building use	residential
Building construction technique	postwar
Building address	Via G. Quarenghi, Almenno San Salvatore (BG), Italy

BIPV systems

BIPV SYSTEM DATA

Architectural system	Opaque roof
Integration year	2018
Active material	Monocrystalline silicon
Module transparency	opaque
Module technology	glass-glass, hidden PV, customized modules
System power [kWp]	8
System area [m²]	57
Module dimensions [mm]	1,778 x 355
Modules orientation	South
Modules tilt [°]	20

BIPV SYSTEM COSTS

Stakeholders

Main building designer

Arch. Marco Minelli

BIPV components producer

CREATON Italia Srl
Via B. Maderna 7, Mestre (VE), Italy
info@creatonitalia.it +39 041 309 72 12
<http://www.etexitalia.it/>



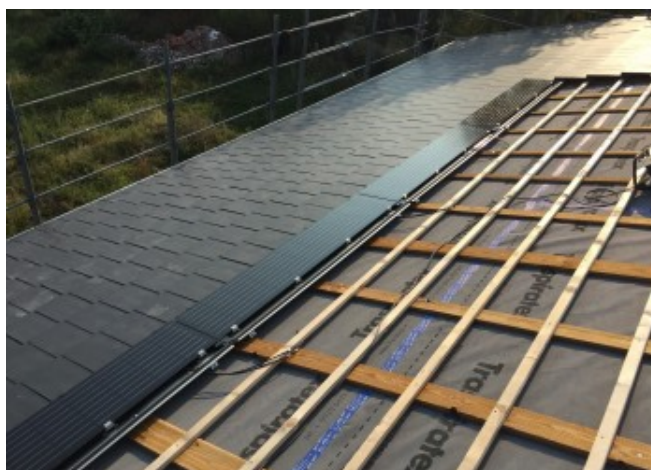
Lateral view © marco minelli architetto



The San Giorgio al Cimitero Church with Casa B in the background © marco minelli architetto



View of the area surrounding Casa B © marco minelli architetto



Fitting system for the BIPV modules © marco minelli architetto



Positioning of tiles around the BIPV portion © marco minelli architetto



Setting of Casa B © marco minelli architetto

Case study author:

Eurac Research