



Farm building in San Genesio

Introduction

The building, an old construction, was retrofitted through integrating a PV system into the building roof. It is a traditional 2-story farmhouse, with a barn upstairs and stalls downstairs, currently used as farm equipment storage. The owner Thomas Widmann was supported from the first design stages by the engineering firm Blasbichler in finding the best architectural solution to apply to the existing buildings. The Blasbichler team provided a preliminary economic assessment and was responsible for the BIPV technical design. Elektro Lahner Srl and Solarxpert Srl were involved in the plant installation, completed in 2011.

Aesthetic integration

The building is located in a little village, high above the valley entrance of the Sarentino Valley. It is embedded in the charming scenery of the Salto high plateau, far away from the main traffic lines. The BIPV system is modern technology surrounded by a natural landscape characterized by meadows, larch trees and traditional buildings. The semi-transparent PV modules create an interesting light and shadow pattern inside.

Energy integration

The BIPV system is estimated to produce 41,327 kWh per year. It feeds the total generated electricity into the grid together with second PV plant integrated on a nearby building, of the same owner. A solar thermal installation is integrated close to the second PV plant (Ing. Studio Blasbichler Srl).

Technology integration

188 Scheuten Multisol Vitro (P6-54) photovoltaic modules are integrated on the southeast facing roof of the building. The modules are frameless glass-glass products. The polycrystalline cells are inserted between a highly transparent low-iron tempered safety glass, with anti-reflective-coating (front), and a heat strengthened safety glass (rear). The cells do not cover the whole module area leaving gaps to let light through. The glazed PV modules are mounted with special aluminium Solrif profile frames and fixed to the wood substructure. Special mounting clamps brace two modules to the frames in the overlapping area, ensuring the system's weather tightness.

Decision making

When the owner decided to integrate a photovoltaic system into the farm building, he wanted to exploit the building structures' available surface in order to produce renewable energy to be fed into the grid and indirectly guarantee coverage of the building's energy consumption. He was also encouraged by the possibility of receiving economic incentives (Conto Energia) (Ing. Studio Blasbichler Srl).

Lessons learnt

The BIPV modules create a semi-transparent surface able to partially shade the upstairs barn. They allow a fair amount of sunlight to penetrate, guaranteeing natural illumination and contributing to the building heating. However, they prevent an excessive solar gain. In this case study, the potential of the BIPV multifunctional technology is highly exploited. All the functions of a traditional roofing system (e.g. mechanical resistance, thermal insulation, protection from atmospheric agents, water tightness, etc.) are connected with the shading function that controls the internal visual and thermal comfort, without compromising the electric energy generation. It is an interesting example of BIPV application on an old construction, which is located in a high-value natural environment.

PROJECT DATA

Project type	renovation
Building use	agricultural
Building address	Brunner Avigna 1, San Genesio (BZ), Italy

BIPV systems

BIPV SYSTEM DATA

Architectural system	Skylight
Integration year	2011
Active material	Polycrystalline silicon
Module transparency	semi-transparent
Module technology	glass-glass, recognizable PV, standard modules
System power [kWp]	39.6
System area [m²]	346
Module dimensions [mm]	1,488 x 988
Modules orientation	South-East
Modules tilt [°]	35
Annual FV production [kWh]	41327

BIPV SYSTEM COSTS

Total cost [€]	146202
€/m²	423
€/kWp	3701

Stakeholders

BIPV system designer

Ing. Studio Blasbichler Srl

BIPV system installer

Elektro Lahner Srl

Via Johann Georg Mahl 40, Brunico (BZ), Italy

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<https://www.elektro-lahner.com/it/home/>

BIPV components producer

Scheuten Solar Technology GmbH (closed)

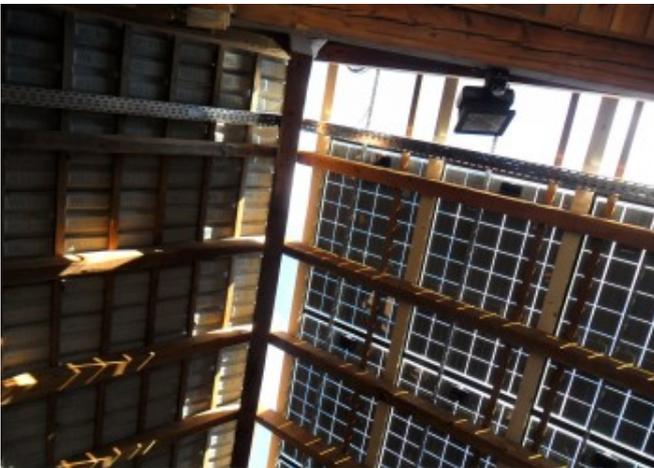
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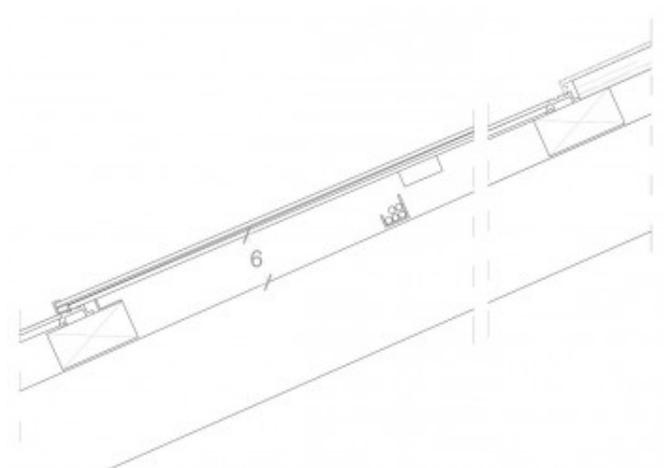
The building embedded in the mountain surrounding of the Salto high plateau © Ing. Studio Blasbichler Srl



The modern PV technology is integrated into a traditional context © Ing. Studio Blasbichler Srl



Wood structure supporting the BIPV plant © Ing. Studio Blasbichler Srl



Technical detail of the modules fixing system, re-drawn by Eurac © Ing. Studio Blasbichler Srl



Detailed view of the 'Solrif' mounting system © Ing. Studio Blasbichler Srl



BIPV shading effect © Ing. Studio Blasbichler Srl

Case study author:

Eurac Research