



Casa Canale



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)

Introduzione

Casa Canale stands on the Costa dei Trabocchi (on the Abruzzo coast), overlooking the sea and immersed in a colourful and luxuriant landscape. In this building, in line with the existing construction, materials such as Trani stone, wood, plaster and steel were integrated with photovoltaic modules in two positions: on a canopy and on one of the overhangs on the top floor.

Approccio progettuale

The landscape, the surrounding nature and the existing structure were the three themes that dictated the design of Casa Canale. On first sight, the building appears modern, without obstructing the view of the spectacular landscape. The house follows the natural incline of the coast, and is set into the land, with minimal impact on the landscape. The project is located in a protected area (Italian Legislative Decree 42 /2004 - Cultural Heritage and Landscape Code, article 10 of Italian Law no. 137 of 6 July). Furthermore, in accordance with the Abruzzo Landscape Plan, the area in question is classified as Zone A2, partial conservation - coastal area.

Integrazione estetica

The project to add photovoltaic elements was planned taking into consideration all aspects related to the landscape, in order to not cause any visual alteration to the surrounding area (visual intrusion or obstruction), with the result that no views have been obstructed by the works. The PV modules added to the building have not altered the colour of the building, and the outline has remained the same, as the modules have been integrated into the existing architectural elements. The colour of the building has been widely reflected in the choice of modules installed. The canopy has an extrados steel structure covered in sheet metal that is anthracite in colour, while the external edging is white. The photovoltaic module chosen echoes these colours; a black cell on a white background.

Integrazione energetica

The integration of photovoltaic panels is part of a general project aimed at innovation, at reducing to a minimum the energy demands of the building while maximising thermal comfort. The FV system also powers a heat pump, the cooling system and the system for the draining of wastewater from the building. The system is estimated to produce approximately 13,500 kWh per year, in response to a forecast energy demand of around 10,000 kWh per year. In light of this, the client is willing to install electricity accumulators to maximise self-production. The system currently makes use of a net metering scheme with the national electricity supply company, meaning that the surplus energy produced is sold to the national grid.

Integrazione tecnologica

The photovoltaic modules (LG@NeON) have been added to two areas of the building, the canopy and the overhang, with a slight incline of 5°, contributing to the shade provided by the building.

Processo decisionale

The size of the house and the forecast that consumption may increase over time due to the possible installation of recharging points for electric vehicles, wellness equipment or a small pool, had a decisive influence on the choice of technology to be applied. The goal of creating an NZEB home dictated the use of the available surfaces for positioning high-performance photovoltaic modules that also respect the aesthetic features of the setting.

The decision-making process was also influenced by the supervisory authorities. The Superintendency approved the proposal to install photovoltaic elements on the condition that measures were observed to mitigate the impact of the system and the colour of the module, which had to be uniform with the various roof areas and non-reflective.

The modifications do not significantly alter either the lines of the building or the particularities of the landscape under protection. The canopy had been originally planned to maximise the area exposed to sunlight in order to obtain optimum performance from the photovoltaic modules.

Lessons learnt

Collaboration between the various professional figures involved is fundamental in order to achieve results that satisfy the client and are functional, attractive, provide energy efficiency, and respect the environment and the surrounding landscape.

DATI EDIFICIO

Tipologia progetto	Riqualificazione
Destinazione d'uso	Residenziale
Vincolo	Area vincolata
Tecnica di costruzione edificio	Secondo dopoguerra
Indirizzo edificio	Località Canale, Vasto (CH), Italy

Sistemi BIPV

DATI SISTEMA BIPV

Sistema architettonico	Canopy, shading device
Anno integrazione BIPV	2020
Active material	Monocrystalline silicon
Trasparenza modulo	Opaco
Tecnologia modulo	Strati di vetro, FV riconoscibile, moduli standard
Potenza sistema [kWp]	10.5
Area sistema [m²]	87.50
Dimensioni modulo [mm]	1,016 x 1,686
Orientamento moduli	South
Inclinazione moduli [°]	5
Produzione FV annuale [kWh]	13500

COSTI SISTEMA BIPV

Costo totale [€]	23000
€/m²	263
€/kWp	2191

Stakeholders

Progettista principale

Ing. Pietro De Cinque

Installatore sistema BIPV

e-More Energy
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Collaboratori

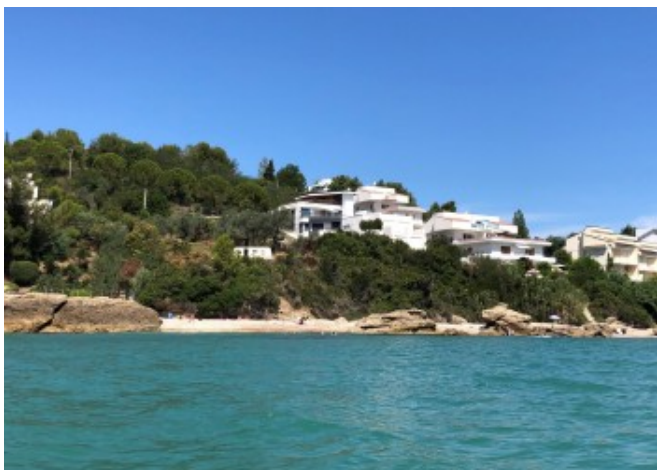
Geom. Angelo De Cinque, Geom. Remo Di Paolo, Arch. Di Matteo Mattia, Geom. Antonio Della Porta, studio FLZ, Geom. D'Aulerio Giuseppe

Consulenti

R2M Solution srl

Direttore lavori

Ing. Pietro De Cinque



View of Casa Canale from the sea © Noemi Fabiano



Close-up of the building in which the BIPV modules are not visible © Noemi Fabiano



BIPV canopy © Noemi Fabiano



System for anchoring the modules to the canopy © Noemi Fabiano



Positioning of the BIPV modules on the canopy © Noemi Fabiano



Front view of the building as seen from the sea © Noemi Fabiano

Autore caso studio:

Eurac Research