



FACTSHEET

Demonstration building

Housing complex - Via Palermo

Note: the content of this document will be subject to changes until the end of the Sinfonia project (May 2020)

Version 10/10/2017



SINFONIA stands for "Smart INitiative of cities Fully cOmitted to iNvest In Advanced large-scaled energy". This project has received funding from the European Union's Seventh Programme for research, technological development and demonstration under grant agreement No 609019

PROFILE

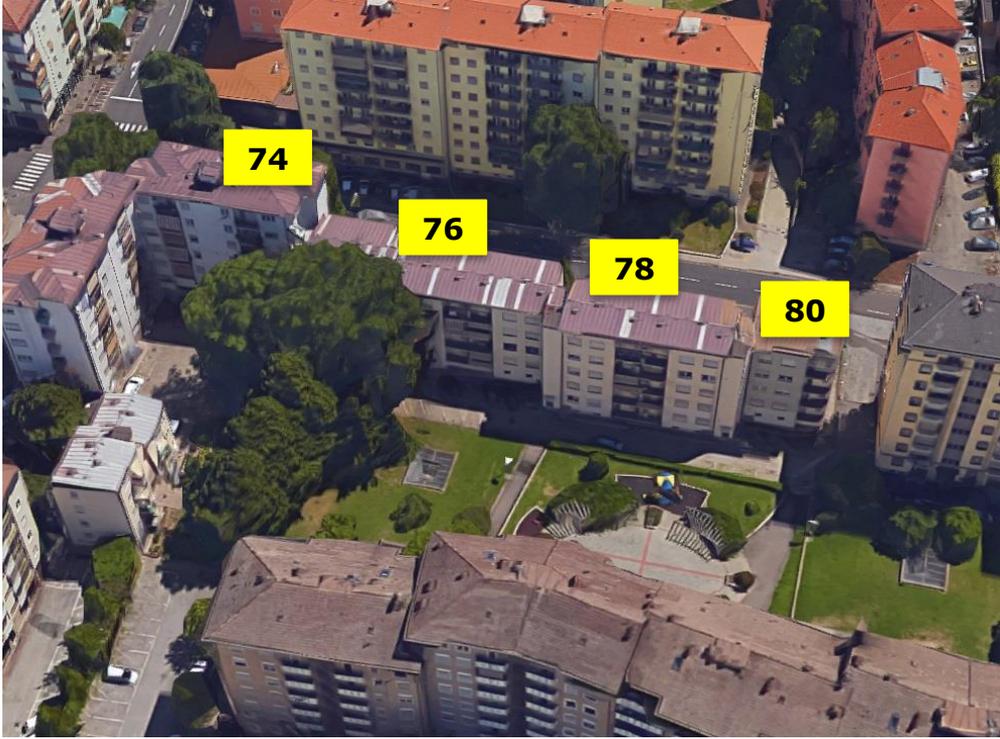
Name and address	Europa Novacella Quarter - VIA PALERMO 74-76-78-80
Map	 <p>Images ©2017 Google, Cartographic Data ©2017 Google</p>



Description	The building is located in Via Palermo, on the opposite yard side adjacent to Via Brescia building, included in Sinfonia Project too. The buildings, built in 1960, are made up of several adjacent and articulated volumes and gathers thirty-eight medium-large sized dwellings.	
Ownership	IPES-WOBI Social Building Institute of the Autonomous Province of Bolzano	
Gross volume	circa 13038 m ³	
Gross Surface	3995.5 m ²	
Number of dwellings	38	
Energy performance		
	Energy consumption excluded RES contribution	
	BEFORE	204,41 kWh/m ² year (heating, domestic hot water and lighting)
	AFTER	60,24 kWh/ m ² year (heating, domestic hot water, ventilation and lighting)
	Energy consumption include RES contribution (Total Building Energy Use)	
	AFTER	46.41 kWh/m ² year



1 - Description before refurbishment

<p>Detailed characteristics of building</p>	<p>The architectural complex is articulated into 5 blocks comprising a basement and 4-6 floors above ground. The accommodations, which have an average size of 85 square meters, are laid out on staggered floors and are served by 4 stairwells equipped with lift. Along via Palermo, the complex overlooks a private pedestrian area, partly used as a garden, while the backyard area is used as a parking lot and has two accessible carriages, one from via Palermo and one from Via Milano. The interior of the block is characterized by the presence of a large park with tall trees and play areas.</p>
<p>Plot map</p>	 <p>Images ©2017 Google, Cartographic Data ©2017 Google</p>
<p>Building envelope</p>	<p>The building has a reinforced concrete frame structure with brick tampons with a total thickness of about 36 cm. The pitched roof is made of a brick cladding, covered with metal sheet. The blinds have been partially replaced in relatively recent times and have different characteristics and materials. The shadings are made of plastic rolling shutters with internal bins.</p>
<p>Technical system</p>	<p>Most of the dwellings are equipped with gas boiler and heating system with radiators, some are heated with stove, other with electric heater. In some apartments, the electrical systems are not compliant with the current regulations.</p>



**Thermal image
before
refurbishment**



Images © Eurac



Energy performance certificate

Gültig bis / valido fino al: 02.02.2025

**Klimahauss Energieausweis
Certificato Energetico CasaClima**



Bezeichnung Denominazione	IPES Istituto per l'edilizia sociale della Provincia Autonoma di Bolzano WOBI Institut für den Sozialen Wohnbau des Landes Südtirol		
Standort Gebäude Ubicazione edificio	Palermo Strasse 74 Via Palermo 74	Katastralgemeinde Comune catastale	Gries Gries
Gemeinde Comune	39100 Bozen 39100 Bolzano	Bauparzelle Particella edificiale	2782/1
Projektant Progettista		Gebäudeteil Parte dell'edificio	
Bemerkungen Osservazioni			



Agentur für Energie Südtirol – KlimaHaus
Agenzia per l'Energia Alto Adige – CasaClima

Der Direktor / Direttore
Ulrich Santa



Datum / data: 02.02.2015

GS-2015-03623

KlimaHaus Klasse Classe CasaClima	Effizienz Gebäudehülle Efficienza involucro	Gesamteffizienz Efficienza complessiva	Nachhaltigkeit Sostenibilità
GOLD		 Arrivo Prot. 0006454 del 04/02/2015 STB -1 - G F4	70 kg CO ₂ /m ² a
A			
B			
C			
D			
E			
F			
G	165 kWh/m ² a		

Klimazone Zona climatica	E	Heizgradtage [HGT] GradiGiorno di riscaldamento [GG]	2738 DD
Beheiztes Bruttovolumen [V] Volume lordo riscaldato [VL]	4335 m ³	Nettogeschossfläche [NGF] Superficie netta riscaldata [SNR]	900 m ²
Fläche der wärmeabgebenden Gebäudehülle [A] Superficie lorda disperdente dell'involucro [SI]	1890 m ²	Verhältnis Gebäudehülle / Volumen [AV] Fattore di forma [SF]	0,44
Mittlerer U-Wert der Gebäudehülle [U] trasmissione media dell'involucro [U _t]	1,31 W/m ² K	Gebäudetyp Destinazione d'uso	E 1 Mehrfamiliengebäude Edif. Plurifamiliare

AUTONOME PROVINZ BOZEN - SÜDTIROL PROVINCIA AUTONOMA DI BOLZANO - ALTO ADIGE
PROVINCIA AUTONOMA DE BULSAN - SÜDTIROL

Other relevant technical aspects

None



SINFONIA stands for "Smart INitiative of cities Fully cOmitted to iNvest In Advanced large-scaled energy". This project has received funding from the European Union's Seventh Programme for research, technological development and demonstration under grant agreement No 609019

2 – Refurbishment Concept

Concept

(From the Project Report)

The architectural project focuses on prefabrication, with the twofold objective of reducing the building time and thus the tenant's uneasiness.

The prefabricated "window" and "loggia" elements become the primary components to combine architectural and energy regeneration of the building. The "window" elements consist of a prefabricated wooden structure to be superimposed from the outside to the existing window compartment, adjusting the railing height to the current regulations (1.00 ml). Once the new items are mounted, the old fixtures will be removed, the ventilating machine installed and the interior finished.

The "window" element is made of wood-aluminium double glazed window, aluminium sliding blinds, decentralized mechanical ventilation components under the window sills, white extruded aluminium finish and the interior finish in plasterboard. The wooden prefabricated structure will be anchored to the existing sloping curbs and will create a column of overlapping elements that will act as a guide for laying the external pipework of the electrical system needed to feed ventilation machines from the outside.

The "loggia" element consists of an insulated wooden substructure to eliminate the thermal bridges, anchored to the existing slab and to the reinforced concrete pillars of the façade. The wooden structure and sheet metal design have been designed to divide the "loggia" elements into finished panels to be assembled on site. The use of colors (white alternating with red rust) makes it possible to reduce composite stiffness of existing building and give greater identity to the renovated building.





SINFONIA stands for "Smart INitiative of cities Fully cOmitted to iNvest In Advanced large-scaled energy". This project has received funding from the European Union's Seventh Programme for research, technological development and demonstration under grant agreement No 609019



Images: © Laboratorio di Architettura

Energy Solutions

(From the Project Report)

The target is to implement a centralized hydronic system that will replace all the existing devices.

The energy needs will be lower than 25 kWh/m²yr; a solar thermal system will be installed, capable to meet at least 50% of the domestic hot water needs and a photovoltaic plant capable of producing at least 18500 kWh/yr. The buildings will be connected to the district heating network by a centralized sub-station, suited for about seventy dwellings.

All the building will be insulated with a 20 cm thick polystyrene with graphite, with the exception of small portions under some loggias where the presence of windows near the corner involves laying a thickness of 12 cm. The basement, corresponding to the cellar plan, will be insulated with a 6 cm thick layer, which will extend under the ground up to about 60 cm deep. The cellars also will be insulated on the ceiling and on the exterior walls up to one meter from the ceiling with 6 cm thick expanded polystyrene.

Existing frames will be replaced with new ones, with wood-aluminium frames ($U_f = 1.3 \text{ W/m}^2\text{K}$) and double glazed argon ($U_g = 1.1 \text{ W/m}^2\text{K}$) with adjustable aluminium slats. The balconies will be equipped with vertical roller blinds for sunbathing. All living spaces except the bathrooms will be equipped with decentralized controlled ventilation under the windowsill.

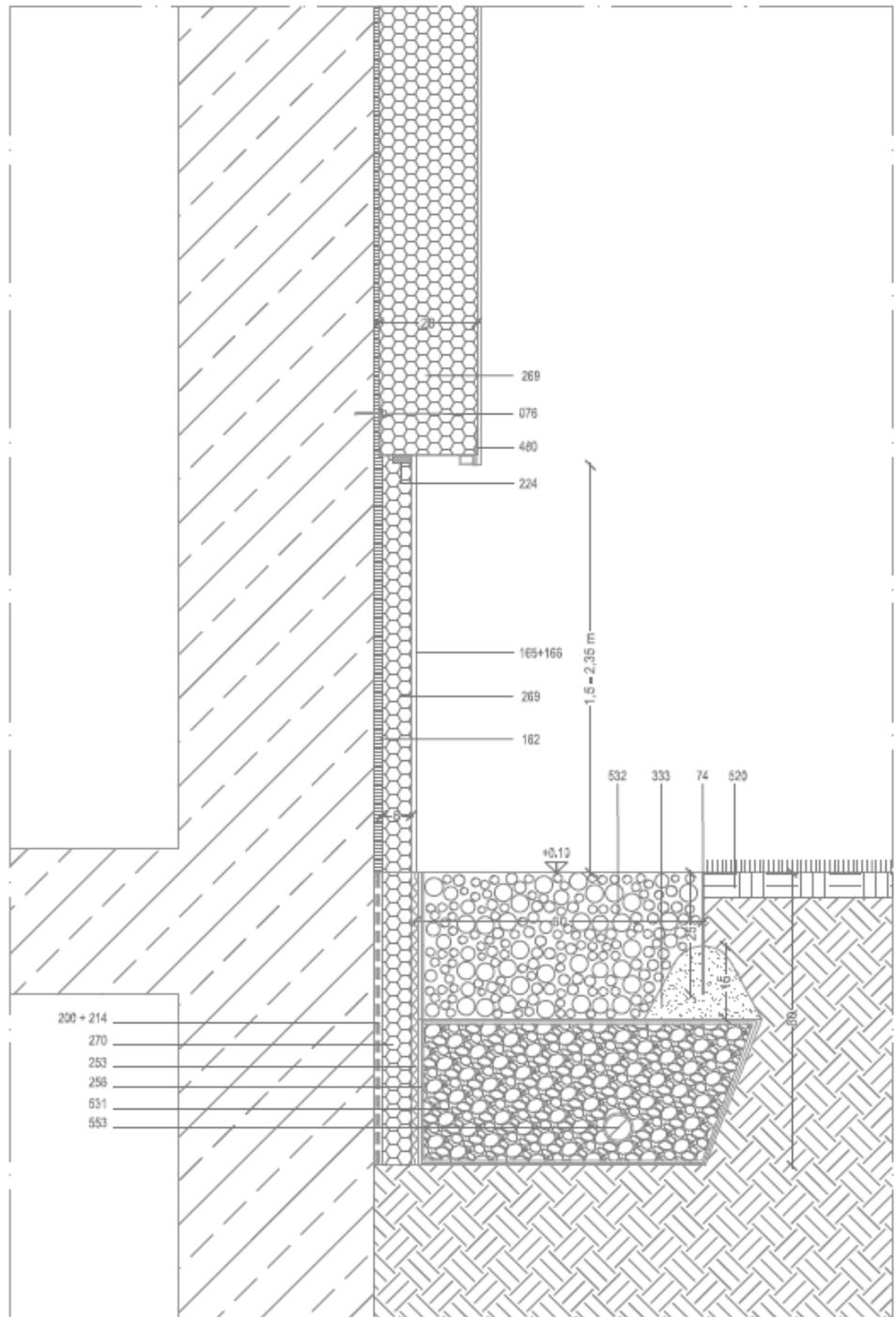


	<p>The project involves the removal of existing roofing and the construction of a flat roof with a green roof, maintaining the balance of loads unchanged before and after the intervention.</p> <p>The roof portions used for the installation of solar and photovoltaic panels will be realized with the green roof technology but the substrate (soil) will be replaced by gravel (maximum system water saturation weight not exceeding 100 kg/m²) to maintain the overall balance of loads unchanged.</p>	
Performances Targets	CasaClima A	
	Total Building Energy Use	46,41 kWh/m ² year
	Global Efficiency	14,71 kg CO ₂ /m ² year
	RES contribution	55%
Financing Model	-	

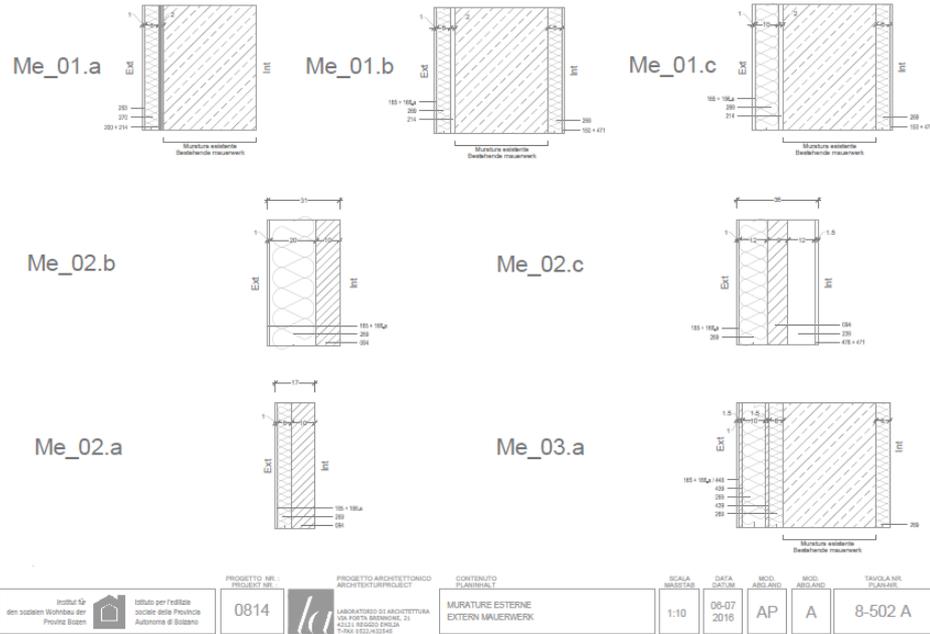
Envelope details

Ground Attach (thermal bridge)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	<table border="1"> <tr> <td> </td> <td> </td></tr></table>																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				

Attach to the Ground



Wall sections



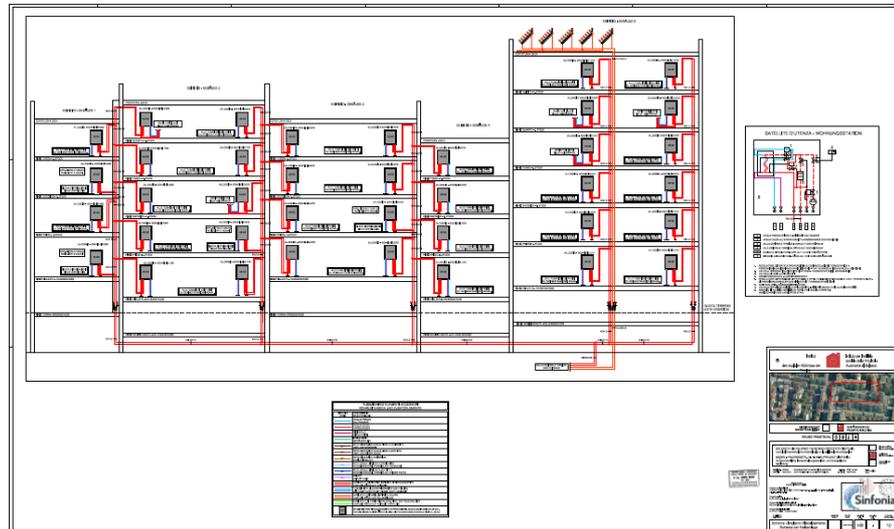
Images: © Laboratorio di Architettura

Technical system

Mechanical ventilation

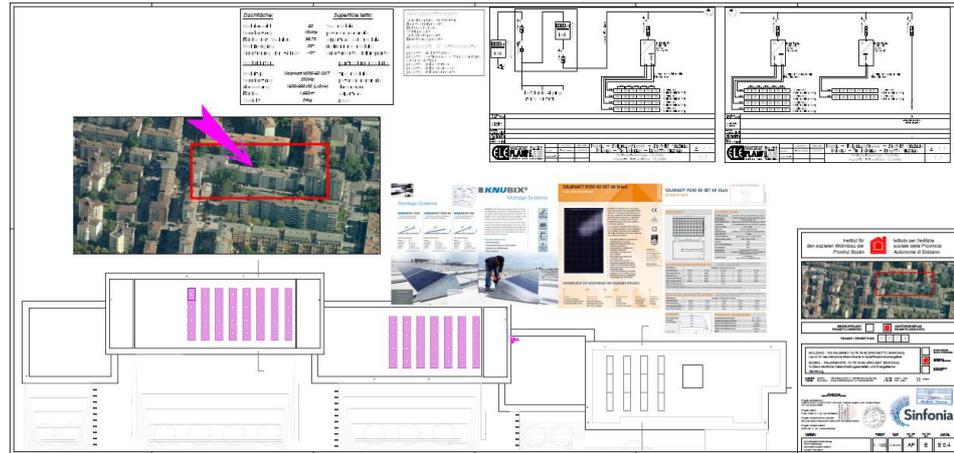
-

Hot water distribution



SINFONIA stands for "Smart INitiative of cities Fully cOmitted to iNvest In Advanced large-scaled energy". This project has received funding from the European Union's Seventh Programme for research, technological development and demonstration under grant agreement No 609019

Electric renewable integration



Images: © Studio Bolzano Biasi Ingegneri Associati



SINFONIA stands for "Smart INitiative of cities Fully cOmitted to iNvest In Advanced large-scaled energy". This project has received funding from the European Union's Seventh Programme for research, technological development and demonstration under grant agreement No 609019