CIN

isolareflex®

HIGH PERFORMANCE THERMO-ACOUSTIC INSULATION SYSTEM

Introduction

Isolareflex is an innovative thermo-acoustic insulation dry system with anti-seismic characteristics, that improves energy efficiency of existing buildings.

Distinguished by the European Technical Approval (ETA), the system obtained high performance, having an estimated durability of at least 25 years.
For its innovation, this system is patented in Europe (Pat. n°3505704).

- The system consists of an external wall made up of lightweight fibre-reinforced concrete panels anchored on a double zinc-magnesium coated steel support frame and with the interpositioning of a single or double layer of thermo-reflective aluminium insulation blankets in a single or double air gap.
- Taking advantage of the excellent insulating capacity of air and the excellent reflective power of aluminium, the system guarantees high performance with a reduced thickness (9,6 cm, 11,6 cm, 13,6 cm, depending on the number of layers of thermo-reflective aluminium insulation blankets and the number of air gaps).
- The “barrier” effect generated ensures excellent summer/winter thermal performance and makes an important contribution to acoustic insulation, leading to an overall improvement in the building’s comfort.

Tested and certified system

In order to assess its performance, the system was tested at the laboratory of the Italian - Istituto per le Tecnologie della Costruzione (ITC) of Consiglio Nazionale delle Ricerche (CNR), obtaining:

01 **E.T.A. Certification**
(European Technical Assessment)

02 **CE Marking**

03 **M.E.C. Certification**
(Minimum Environmental Criteria)

Installation advantages

The system provides excellent thermal performance during the summer season, reflecting the heat outside, and during the winter season, keeping heat inside, as well as offering an important contribution to acoustic insulation and ensuring a general improvement in living comfort.

Among the system's numerous advantages are its speed of installation, compactness, high resistance to impacts and weather damage, and adaptability to the most difficult substrates.

Faster

The system uses prefabricated elements that are ready to be assembled, saving time. The installation of the system involves the mechanical joining of these elements, making installation quick and easy. The application of the system also does not require any preliminary work to prepare the substrate, eliminating any wait for drying and reducing the time and cost of the work.

Compactness

The Isolareflex system combines several functions in a single solution, reducing the overall thickness of the intervention and providing excellent thermal and acoustic insulation in just a few centimetres, contributing to considerable energy savings and improved living comfort. To obtain the same thermal performance as the Isolareflex System with 8 cm, the required thickness with EPS would be 12 cm.

High impact resistance

The lightweight fibre-reinforced concrete panels coupled with the metal substructure create a cladding that is extremely resistant to impact, vibration and weathering. The high strength of the system contributes to its durability: the Isolareflex system comes with an estimated durability of at least 25 years.

Verticality defects to be corrected

The system is easily adapted to any type of building, either by following the original form or by modifying it for modern, design-oriented construction. It also allows façade imperfections to be concealed, verticality defects to be corrected, and enables the incorporation of ducting within the air gaps, avoiding more invasive interventions.

Suitable for difficult substrates

With its mechanical anchoring method, the Isolareflex system can be applied on-difficultsubstrates (such as buildings with ceramic and/or clinker cladding) that often provide poor adhesion to commercially available adhesives, thus greatly reducing the preliminary preparation time of the substrate.

More colour choices

The system's high degree of elasticity and the low thermal expansion coefficient of the lightweight fibre-reinforced concrete panels ensure the system is not sensitive to particular heat stresses that cause variations in colour, allowing the use of a wide chromatic range of colours on the façade, including dark/intense colours.

Performance advantages

High resistance to fissures and cracks

The system's high degree of elasticity enables smalls movements that absorb mechanical, thermal and seismic stresses without damaging the lightweight fibre-reinforced concrete panel cladding.

Thermal insulation in summer and winter

The Isolareflex system resists the passage of heat, not only by the traditional reduction of thermal conductivity, but also, and above all, by thermal radiation thanks to the reduced emissivity of the thermo-reflective aluminum insulation (ε=0.02).

The combination of the air layers with the thermo-reflective aluminum insulation, allows to reflect up to 98% of the heat, ensuring high living comfort.

From a thermal point of view, the low emissivity of the insulation results in a fourfold increase in air gap resistance, from 0,182 m^2k/W to 0,665 m^2K/W. The air layer (2 cm) - aluminium blanket (4 cm) - air layer (2 cm) layering offers a thermal resistance of 3,00 m^2K/W in only 8 cm thickness. While in the case of a double layer, the air layer (2 cm) - 2 x aluminium blanket (4+4 cm) - air layer (2 cm) layering offers 4,52 m^2K/W in only 12 cm thickness.

Absence of interstitial condensation

The Isolareflex system ensures continuity of insulation by eliminating thermal bridges: the thermoreflective aluminium insulation blanket prevents vapour from migrating from the inside to the outside, preventing the formation of interstitial condensation.

Configurable for anti-seismic protection

The system is characterised by its high elasticity: the special, non-rigid, snap-on connection of the horizontal metal elements to the vertical ones determines a "decoupling" of the cladding from the façade that allows it to absorb the building's movements without suffering cracks and fissures, as demonstrated by the seismic characterisation test carried out at the ITC CNR. The mechanical anchoring helps integrate the system with the load-bearing structure, guaranteeing a suitable construction solution to avoid collapse following the tilting of the external wall. The Isolareflex system is a design solution with the rigidity and strength requirements needed to enhance the capability of non-structural construction elements of existing reinforced concrete buildings, such as masonry infills, to resist seismic events. The system counteracts the collapse of non-load-bearing walls of reinforced concrete frame buildings.

Certifications of the Isolareflex system

The Isolareflex thermal insulation system was tested at the laboratory of the Italian Istituto per le Tecnologie della Costruzione (ITC) of Consiglio Nazionale delle Ricerche (CNR), which certified its thermal and structural performance.

The system has passed all the tests to obtain the European Technical Assessment (ETA) in accordance with the EAD 090119-00-0404. ETA Certification is a valid European document issued by the EOTA, European Organisation for Technical Assessment, which guarantees that the system has been designed, assembled and tested in accordance with the EAD. The Isolareflex system has CE marking and also obtained Minimum Environmental Criteria (M.E.C.) certification.

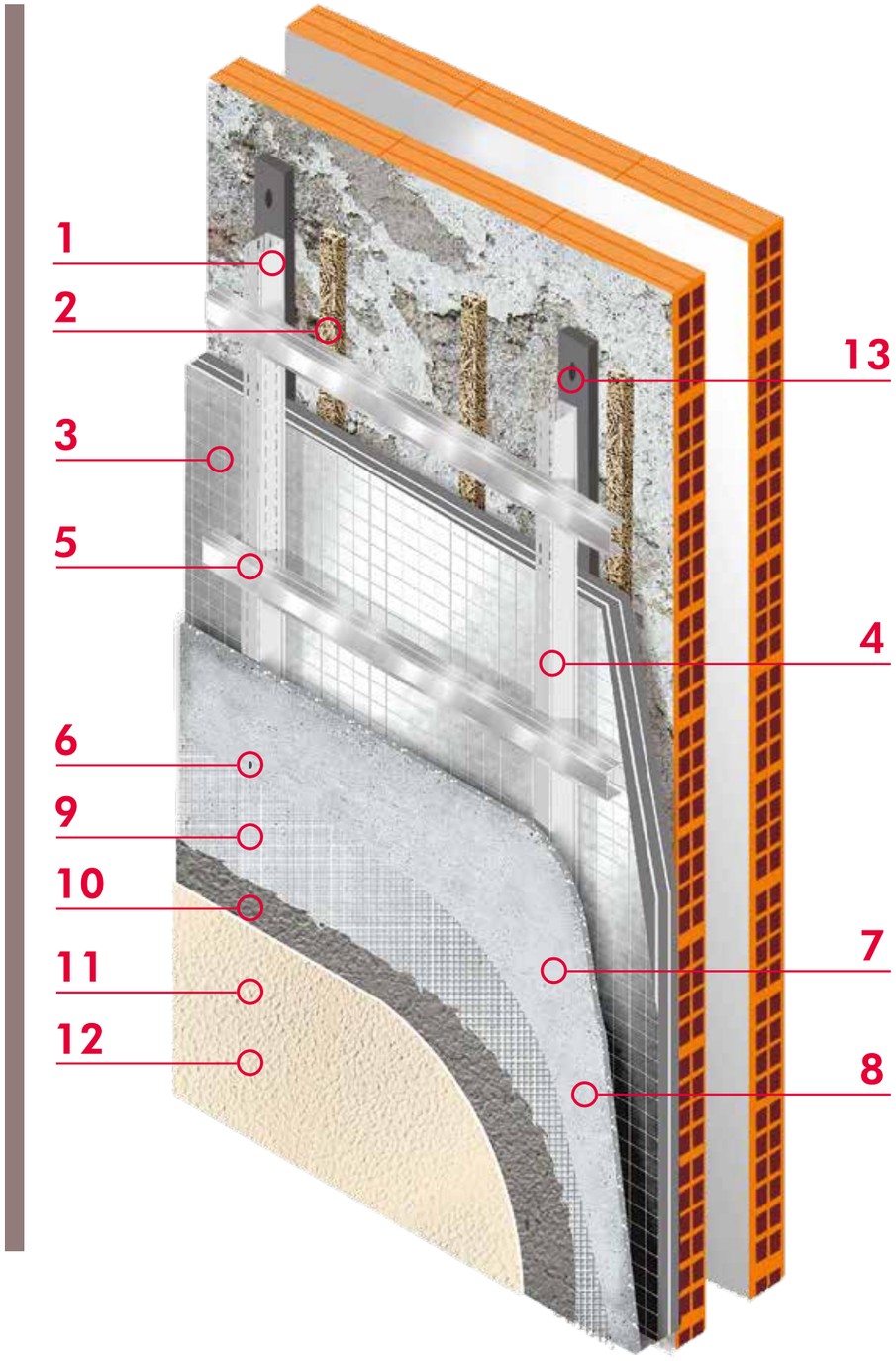
Tests on the System Isolareflex:

- Seismic test report
- Thermal transmittance test report
- Fire classification and reaction report
- Small flame fire test report
- Fire test report
- Dynamic wind uplift test
- Determination of thermohygrometric behaviour
- Absorption of water by capillarity
- Resistance to adhesion between the base layer and the support
- Resistance to adhesion on aged configurations on the RIG
- Shear strength of the substrate
- Pull-out
- Tensile strength of metal profiles
- Shear strength of metal profiles
- Absorption of water by capillarity after cyclical movements
- Dimensional stability

ETA CE

CAM ≥17% Criteri Ambientali Minimi Sull'intera stratigrafia

Components of the Isolareflex System



1 **Nylon anchoring plug M8**
+ Anchoring screw
+ Washer M8x24mm
+ Hex nut
+ Flanged hex nut

2 **Mineralised wood wool spacer**

3 **Thermo-reflective aluminium insulation blanket**
+ Aluminium adhesive tape

4 **Snap-on vertical steel guide**
+ Joint for snap-on vertical steel guide

5 **Snap-in horizontal steel profile C15 | C27**
+ Joint for snap-in horizontal steel profile C15
+ Joint for snap-in horizontal steel profile C27

6 **Lightweight fiber-reinforced concrete panel**
+ Self-drilling steel screw
+ L profile
+ Self-drilling screw

7 **Fondo 2000 primer**

8 **Princol fiber mortar**

9 **Fast tela-reinforce mesh F167**

10 **Princol fiber mortar**

11 **Polyprep textured primer**

12 **Thick coating**
Eralit
Carso 1
Karst

13 **Structural reinforcement steel bar**
+ Extended nylon anchoring plug
+ Steel angle bracket
+ Self-drilling screw
+ Fender Washers

CIN

CIN – CORPORAÇÃO INDUSTRIAL DO NORTE, S. A.
Av de Dom Mendo nº 831 (antes EN13 km6) - 4474-009 Maia - Portugal
T +351 229 405 000 (Chamada para a rede fixa nacional) - customerservice@cin.com
www.cin.com

CIN VALENTINE, S.A.U.
P. I. Can Milans - Riera Seca, 1 - 08110 Montcada i Reixac - España
T +34 93 565 66 00 - customerservice.es@cin.com

PINTURAS CIN CANARIAS, S.A.U.
P. I. Güimar, Manzana 13, Parcela 2 - 38509 Güimar - Tenerife - España
T +34 922 505 330 - customerservice.es@cin.com

CIN CELLIOSE, S.A. - Division CIN Déco
Chemin de la Verrerie - BP 58 - 69492 Pierre Bénite Cedex - France
T +33 (0) 4 72 39 77 35 - customerservice.fr@cin.com

CIN COATINGS POLSKA Sp. z o.o.
ul. Parkowa 63A - 05-806 Pecice Male - Polska
T +48 22 8 68 10 68 - T +48 518 194 418 - customerservice.pl@cin.com

TINTAS CIN ANGOLA, S.A.
Rua Pedro Álvares Cabral, 21 - Cx. Postal 788 - Benguela - Angola
T +244 272 235 059 - customerservice.ao@cin.com

TINTAS CIN DE MOÇAMBIQUE, S.A.
Av. das Indústrias, 2507 - Machava - Moçambique
T +258 21 748 012 - customerservice.mz@cin.com

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