PANELES PÉTREOS S.L.
Cno de las Ánimas, nº8
09200 Miranda de Ebro
Tel 947 335107 ; Fax 947 650503
info@panelespetreos.com
www.panelespetreos.com

DEPROT SYSTEM

DEPROT SYSTEM (definition)

DEPROT is an integrated solution using Termopiedra Panels which consist of a lagging and isolating covering for walls, special bracing and specific panel connectors, providing complete solutions for the construction and building industries.

Termopiedra Panels are double layered “semi-sandwiched” panels consisting of a 60 mm thick, high density extruded polystyrene core, on top of which there is an industrially bonded stone lagging of reduced thickness. These laggings are between 8 and 15 mm thick and are made of marble, granite, limestone, slate or porcelain tiles among other materials.

The core of the panel is grooved around the perimeter. The groove permits the special DEPROT anchorage system to slot into place as well as the specified panel connectors whose mission is to align the panels, creating a seal which permits thermic expansion and contraction. These innovative connectors allow the panels to be united without the need of joining materials of uncertain durability.

Handling and cutting of the panels is easily carried out with everyday tile cutting and drilling tools.

The innovative Deprot approach consists of an isolating system using a layered lagging system for stone and tiles. Apporting to the building facade traditional resistance, durability and beauty of stone or tiles. Moreover the thermic efficiency of the extruded polystyrene with a united system that reinforces the anchorage and the mechanical connection between stagnant panels, guaranteeing a waterproof and safety package.

The spirit that has led to the development of this system is to eliminate the diseases common in building facades: condensation and heat loss due to poor insulation, leaks and absorbing of water, cracking because of loosening of the separating joints, disengaging the application by collapse in the grip. We have also taken into consideration the current situation in the construction industry with its shortage of skilled labor.

We have researched a system that combines traditional material cladding with better insulation. This has been possible thanks to developments in the stone and tile industry which allows us to obtain large thinner tiles, advances in the chemical industry permit us to obtain a high resistance foam polystyrene and of course huge advances in the adhesive production sector that now offer us extremely strong elastic joints.

All these developments have helped develop a system that brings to the facades:

- The traditional qualities of the stone as a coating material.
- Energy efficiency, thanks to the 60mm extruded polystyrene placed on the outside. An enclosure formed by a sheet of perforated brick fabricated and the DEPROT system obtains an excellent thermal conductivity and coefficient of K = 0.36 kcal/m2h º C
- Total impermeability, due to the nature of the extruded polystyrene and the panel connecting system which guarantees tightness on the outer face of the panels.
- Safety and durability: the preproduction of the panels provides high standards of quality and homogeneous, irregardless of weather conditions and the skill and standard of work carried out by the builders on location.
- The durability and aging tests conducted by CIDEMCO (laboratory specializing in light facades) of the TERMOPIEDRA panels offer results of tensile resistance after accelerated aging of between 17,000 and 24,000 Kg/m2.
- Speed and economy, reduce time and construction costs, since on one hand simplifies and reduces the prices on the other hand their constructively and easy mounting system, like a jigsaw, helps to speed up installation. The simplicity of assembly does not require special trained labor skills.
- Perfect finishes, the system requires mounting panels which fit with together using the perimeter slot present in each panel. In this way the typical “overlaps” are not produced, regardless of the skill of the installation staff.

APPLICATIONS

DEPROT System has designed a new more efficient, more attractive, and more economical interlocking facades system.

Its characteristics are ideally suited to the reforming and rebuilding of facades, with special emphasis on providing insulation.

ELEMENTES OF THE DEPROT SYSTEM

TERMOPIEDRA Panel

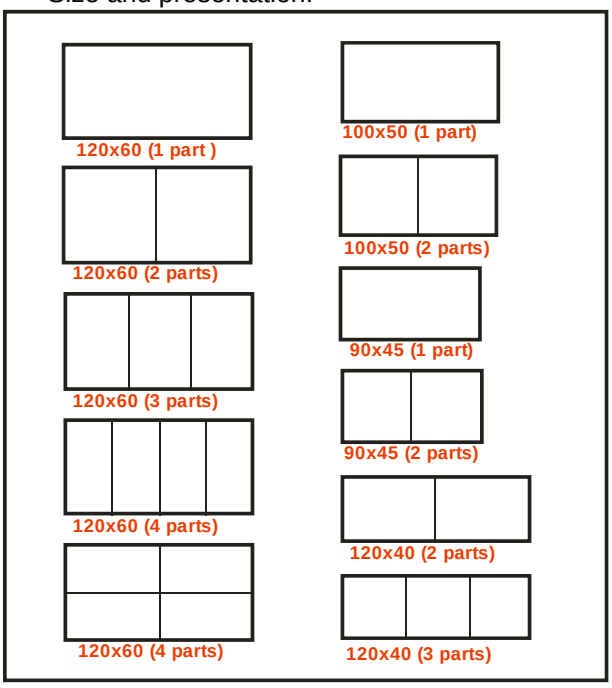
Simple and efficient is the best definition of this panel that combines the properties of the best insulating material with the best cladding of the facades.

The quality of granite, marble, limestone, slate, and sandstone or porcelain provide the TERMOPIEDRA panel with its beauty and durability.

Research in industrial processes and adhesives development, as well as the most exhaustive tests guarantee the safety of the product.

The result is a light façade covering, with an extraordinary impact resistance quality and much better durability than traditional systems offer.

Size and presentation:



More common dimensions

The range of colors and finishes includes about 50 types of granite, 15 of marble, 5 of slate and about 500 of porcelain.

ANCHORING:

Fixing the TERMOPIEDRA panels to the wall support is achieved using two elements:

1. Squared metal brackets, which function as a fastening agent. These are fixed to the wall through grip blocks so that each panel is supported by two of these brackets.
2. A rigid ABS profile connector whose mission it is to interlock the TERMOPIEDRA panels among themselves, and transmit the shear, tensile and compression stress to the bracket stands.

The great virtue of this fixation is the homogeneous distribution of stress to prevent accumulation of shearing strain happening at the same time.

When rigid components are jointed together (example: stone - metal) points of concentrations of effort are created, causing high stress and fatigue in materials that result in fissures and cracks.

Fixing the TERMOPIEDRA PANELS using the deprot system is carried out continuously on the elastic polystyrene elements, allowing for contractions and dilations seamlessly with no accumulation of tension, therefore without fatigue or cracks.

Another quality which stands out is its ability to compensate for collapses of up to 11 cm without the need for special parts.

CONNECTORS:

They are the key elements of the DEPROT system. In addition to its anchorage the TERMOPIEDRA panels fulfill three other main purposes:

1. They act as **EXPANSION JOINTS**.

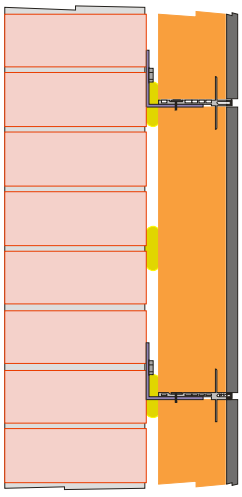
The body of the connector is ABS, rigid, while the visible head and the contact with stone is elastic. This elasticity allows the dilations and contractions of the stone cladding to be absorbed by the connector without creating tension.

2. They provide **WATERPROOF**

The high density extruded polystyrene with which the TERMOPIEDRA panels are manufactured are completely waterproof; both horizontal and vertical connectors are fitted under pressure to 22mm within the polystyrene, therefore creating an interlocking vacuum seal.

3. Forcing an **INSTALLATION REQUIRES**

Since the panels have a perimeter slotted and the connector fit into that slot, it creates a perfect flat alignment of the TERMOPIEDRA panels. Moreover this forced precision facilitates and simplifies the installation which does not depend on the level of skill of the installers.



SECTION

AIR CHAMBER

Fixing the TERMOPIEDRA panels to the wall support, creates an air chamber between the panels and the wall. The size of this space is determined by the maximum collapse of the wall support.

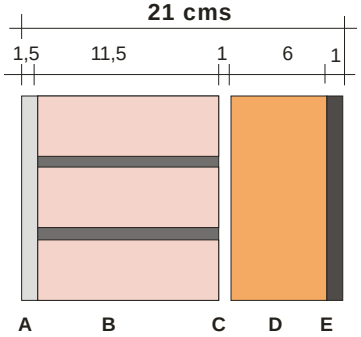
The DEPROT System air chamber is always closed, with no contact with the exterior and **totally isolated**.

The camera is compartmented applying polyurethane foam, uniting horizontal and vertical joints and panels and the axis of these. These cords have three functions:

1. Close, isolate and compartmentalize the air chamber to increase its insulating effect.

2. Strain the façade of the building by increasing the volume of foam, preventing vibration and increasing the impact resistance of the panels.

3. Reinforce the waterproof of the façade of the building by sealing the joints between the space of panels.



A … Trim plaster
B …Wall of Brick
C … Air chamber
D … XPS,
E … Stone...
} TERMOPIEDRA

$$\frac{1}{k}=\left(\frac{1}{h_i}+\frac{1}{h_e}\right)+\frac{LA}{\lambda A}+\frac{LB}{\lambda B}+\frac{LC}{\lambda C}+\frac{LD}{\lambda D}+\frac{LE}{\lambda E}$$

$$\frac{1}{k}=0{,}20+\frac{0{,}015}{0{,}26}+\frac{0{,}115}{0{,}65}+0{,}16+\frac{0{,}06}{0{,}028}+\frac{0{,}01}{3}$$

$$\frac{1}{k}=0{,}20+0{,}058+0{,}177+0{,}16+2{,}143+0{,}001=\mathbf{2{,}74}$$

$$\mathbf{k = 0{,}36}\ \frac{\text{kcal}}{\text{m}^2\ \text{h}\ ^{\circ}\text{C}}$$

Economic benefits of the *DEPROT SYSTEM*

The absence of the second ceramic foil, the incorporation of the use of insulation and the coating of only one ceramic sheet, the thinness of the coating and the slenderness of the package, coupled with the ease and speed of assembly are the reasons that make the *DEPROT System* so competitive.

- The *DEPROT system* replaces a ceramic foil, the insulating, the rough cast of the camera and of course the lining of the building facade.
- The enclosures are more slender. Building facades are thinner providing a more usable area within the same constructed volume.
- We increase the effectiveness of its enclosure and thermal resistivity.
- Installation time is reduced. Its lightness and easy mounting system allow for a high yield of installation in a shorter period.
- TERMOPANELS are built with semi industrialized elements. Industrialization increases and homogenizes quality while reducing the need for skilled labor. The influence on the quality of work is much lower than traditional systems requiring hands on contact.
- The *DEPROT system* is placed on the outside, not interfering with the construction schedule being carried out indoors.
- The system is clean with minimum waste.