



**NEXT**



**SMART CONSTRUCTION SYSTEM**

## *The reasons for energy saving*



*Safeguarding the environment for future generations is the objective which the Kyoto Protocol has set by imposing a gradual but constant reduction in energy consumption.*

*Buildings are large energy consumers and the greatest waste comes from their heating and cooling systems.*

*Uncontrolled use of fossil fuels puts energy supplies and the quality of our lives at risk by increasing air pollution and greenhouse gas emissions.*

**Energy saving is the answer in order to bring down the rising costs of energy and reduce CO<sub>2</sub> emissions into the atmosphere.**

**With NEXT CONSTRUCTION SYSTEM towards sustainable design  
Comfort for humans and compatibility for the environment**

*The architectural organism must be evaluated over its complete life cycle. NEXT constructions, demonstrate all the evident eco-efficient and economic advantages if evaluated over their complete life cycle.*

*The polystyrene inside the panels, in fact, must be evaluated over the whole of its life cycle and it will then be noted that it affects the environment less than other more biological insulators.*

### **EPS SUSTAINABILITY**

Expanded polystyrene (also known as EPS) is a leader as regards respect for the environment:

- it is **SAFE**: it does not release toxic or harmful substances and it is totally inert. It does not contain chlorofluorocarbons (CFCs) or hydrochlorofluorocarbons (HCFCs). Furthermore, as it contains no organic material, it inhibits the growth of microorganisms and mould. The mechanical and thermal characteristics are supplied for the whole life of the building in which it is installed. It does not suffer permanent damage if exposed to vapour or humidity.
- it is **RECYCLABLE**: no waste materials are produced during production and the production process for the panel aims to optimise its cut, reducing waste to a minimum. Any leftover EPS is recycled directly in the production plant itself.
- it is **NON-TOXIC**: it does not create allergies and it does not damage the health of those producing or installing it.
- it is **SELF-EXTINGUISHING**: the EPS used for the panels is self-extinguishing so, once the striking cause has been eliminated, the material does not produce flames, nor does it continue to burn.

**The environmental cost of producing expanded polystyrene is minimal if compared to how much energy is saved during the entire life of a building which has been correctly insulated with our panels.**

**The cleanest energy is the energy which is not consumed**



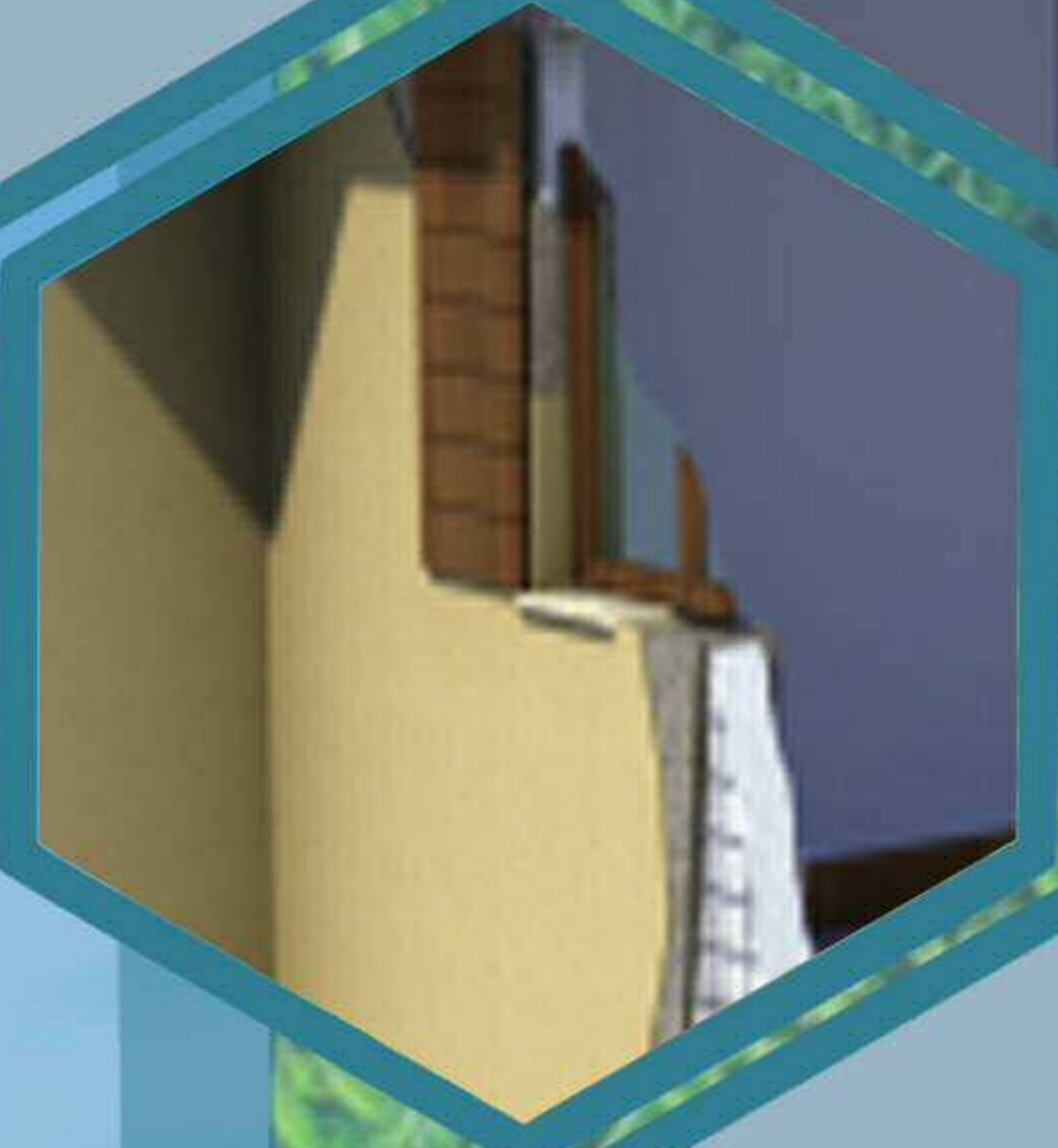
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structures which are thermally insulated from the foundations



insulated ducts inside the panels

load-bearing walls, also with a double layer of insulation

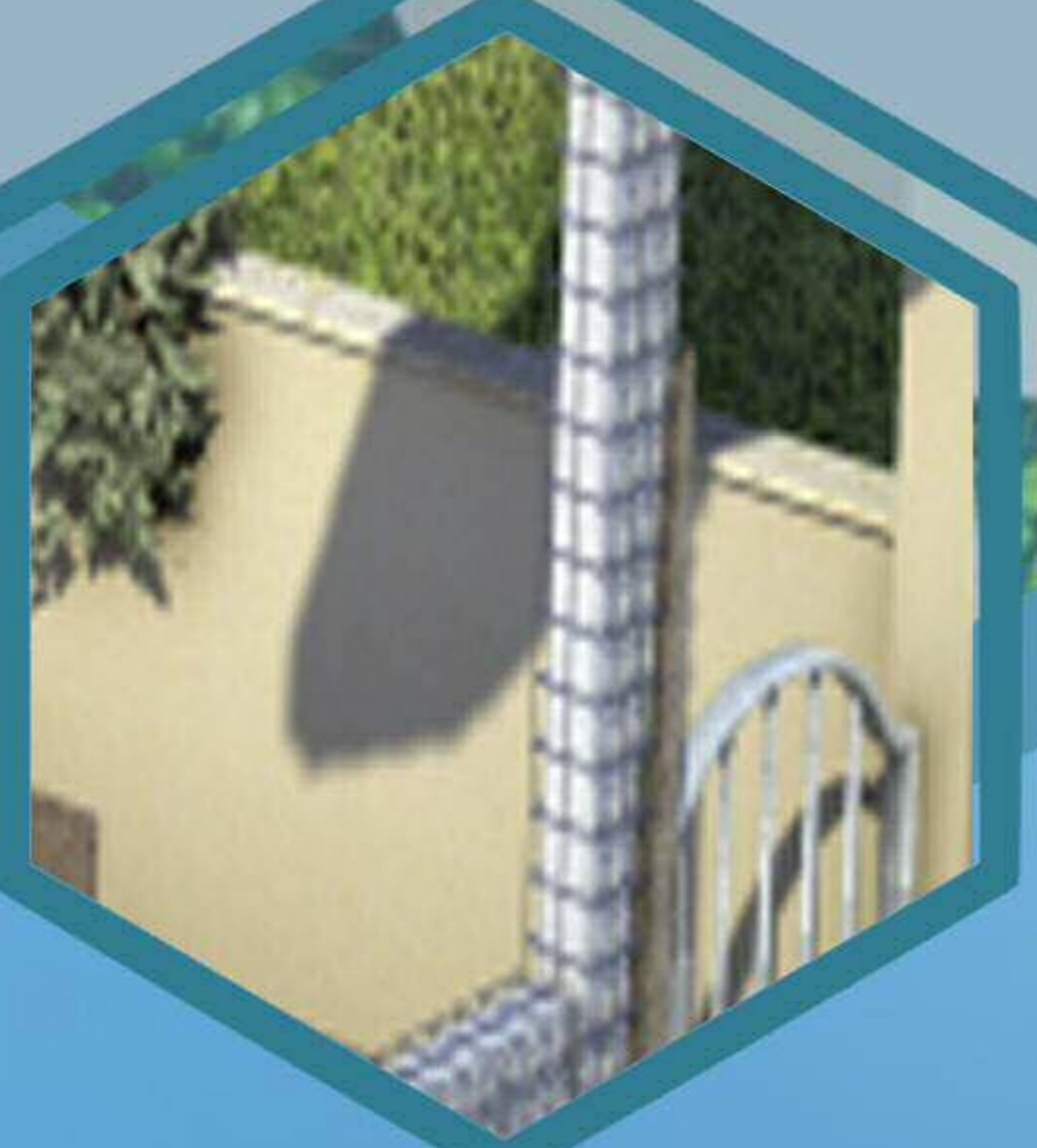


continuous walls without discontinuities in construction

total elimination of thermal bridges

A good thermal insulation allows to halve the energy usage and the polluting emissions due to heating systems and/or air conditioning.

floors and roofs with continuous insulation on the intrados



*The evolution of the building industry  
characterised by energy efficiency and construction quality*



*Our panels system is an innovative, ingenious construction system composed of walls, floors and roofs made of reinforced concrete with a polystyrene core which insulates the whole of the building shell.*

*The complete range of building elements guarantees complete creation of the building using the system: load-bearing walls, floors, roofs, staircases, partitions, curtain walls and insulation panels.*



24h



The **NEXT pj** system achieves:

- reduction of heat exchange with the outside to a minimum energy saving
- reduction in CO<sup>2</sup> emissions and environmental and atmospheric pollution
- benefits for the environment
- economic saving



*Our construction system considerably improves heating comfort inside house and limits energy consumption, thanks to the widespread presence of polystyrene and its extremely low level of thermal conductivity.*

*Panels allow to achieve high levels of thermal insulation to be achieved, even with minimum thicknesses and at truly competitive prices.*

*The building volume vs space ratio is thereby improved and labour, transportation and storage expenses are reduced, ensuring a lower environmental impact in the long term.*

*In traditional building systems, in order to reach the highest energy classes, it is necessary to add various thicknesses of insulating sheets to the building shell.*

*The building system is completely integrated: in a single phase, it is possible to obtain excellent thermal insulation which conforms to the strictest energy classes in addition to the load-bearing structure.*

*Building using panels means creating homes which are less energy-demanding and have a high level of energy efficiency, thereby saving up to 80% of energy for as long as the building remains standing.*

*By multiplying the annual energy saving achieved with a perfectly insulated house for the whole life cycle of the building and comparing it with the cost of production, the considerable economic saving is also evident.*

*A building can last 100 years or more and often, for many people, it represents the biggest investment they make in their lifetime.*

# DESCRIPTION OF THE BUILDING SYSTEM

## FUNDAMENTALS

The construction system is based on a series of foam polystyrene panels and galvanized steel wire meshes. The shape has been especially designed for the introduction of conventional or structural plaster (spritz beton) during on-site panel installation.

Provides a system of industrialized modular panels allowing for faster assembly than conventional systems. The System fulfils the required structural and load-bearing functions, offering high thermal and sound resistance and a wide range of shapes and finishes to provide versatility in the design compaction process.

## COMPOSITION OF THE PANELS

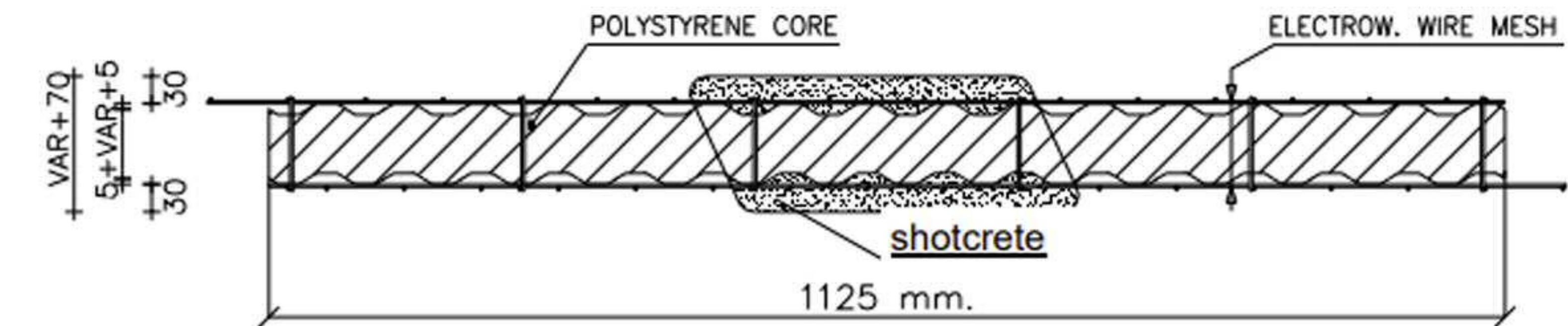
The following are the basic components:

A) A foam polystyrene core which is non-toxic, non-hazardous, self-extinguishing and chemically inert with varying density and thickness depending on panel type.

B) Electrowelded steel wire meshes made of galvanized drawn steel wires placed on both sides of the polystyrene panel and connected by means of joints of the same material. The wire gauge steel net varies according to panel type and mesh direction.

## PLASTERING

After the panel assembly, structural plaster should be sprayed and/or poured on the panel - depending on panel type.



### Galvanized steel wire mesh:

Longitudinal wires: Ø gauge 12 (2.5mm) or gauge 9 (3.5mm) every 2.56 in. (65mm)  
 Transversal wires: Ø gauge 12 (2.5 mm) every 2.56 in. (65 mm)  
 Cross steel wire: Ø gauge 11 (3 mm) (approx. 6 per ft<sup>2</sup> - 68 per sq.m.)  
 Steel wire yield:  $f_{yk} > 87082$  PSI (600 N/mm<sup>2</sup>)  
 Steel wire failure:  $f_{tk} > 98692$  PSI (680 N/mm<sup>2</sup>)

Polystyrene component density: Approx. 1 lb/ft<sup>3</sup> (15 Kg/m<sup>3</sup>)

Polystyrene component thickness: between 2.36 in. (6 cm) and 5.51 (14 cm)

Finished wall thickness: between 5.12 in. (13 cm) and 8.26 in. (21 cm)

For structural use of this panel, should be used a shotcrete with a compressive strength of at least 250 daN/cm<sup>2</sup> (3621 PSI).

This panel must be used also for floor/roof slabs up to 5 m (16.5 ft.) of span.

Panel Type	Finished wall thickness (cm)	Thermal transmittance U (W/m <sup>2</sup> K) (in brackets R-values in h <sup>2</sup> ft <sup>2</sup> F/ BTU)	
		density 15 kg/m <sup>3</sup> (0,94 pound/ft <sup>3</sup> )	density 25 kg/m <sup>3</sup> (1,56 pound/ft <sup>3</sup> )
PSM60	13	0,570 (9,96)	0,518 (10,96)
PSM80	15	0,440 (12,87)	0,400 (14,20)
PSM100	17	0,360 (15,78)	0,325 (17,44)
PSM120	19	0,300 (18,69)	0,274 (20,69)
PSM140	21	0,260 (21,60)	0,237 (23,93)

Sound proofing index: 45 dB \*\*  
 Fire resistance: REI 120\*\*\*

\*\* test carried out on PSM90 at the University of Santiago of Chile  
 \*\*\* test carried out on PSM80 at C.S.I., Milan, Italy



## ADVANTAGES OF THE NEXT **pj** BUILDING SYSTEM

- Versatility & diversity of panels to accommodate differential architecture and design features
  - High heat/cold and sound resistance
- Easy to move, rapid assembly with little or no need for lifting equipment and high durability
  - Structural capacity and resistance to earthquakes and hurricanes
    - No skilled labour is required
    - Lower costs and lower construction time
  - Lower foundations costs compared with conventional systems
    - Complete construction system
  - Emmedue system well integrates with conventional systems
    - Highly fire-proof material
- Easy and quick installation of the plumbing, heating, electric, telephone systems, etc.
  - Panels of customized length and thickness
    - Solid panel connection
- Panel surface and plastering machines are especially designed for a smooth plaster spraying
  - Panels' meshes also include connection flanges
  - The polystyrene core can avoid the thermal bridges
- Panel does not change following exposure to weather conditions
  - Made of ecological components.





**NEXT7**

*7, Abagbon Odeku Street - Victoria Island - LAGOS*  
*FEDERAL REPUBLIC OF NIGERIA*  
*Phone: +234 09019706302 / 08092211112*  
*info@nextpj.com      www.nextpj.com*