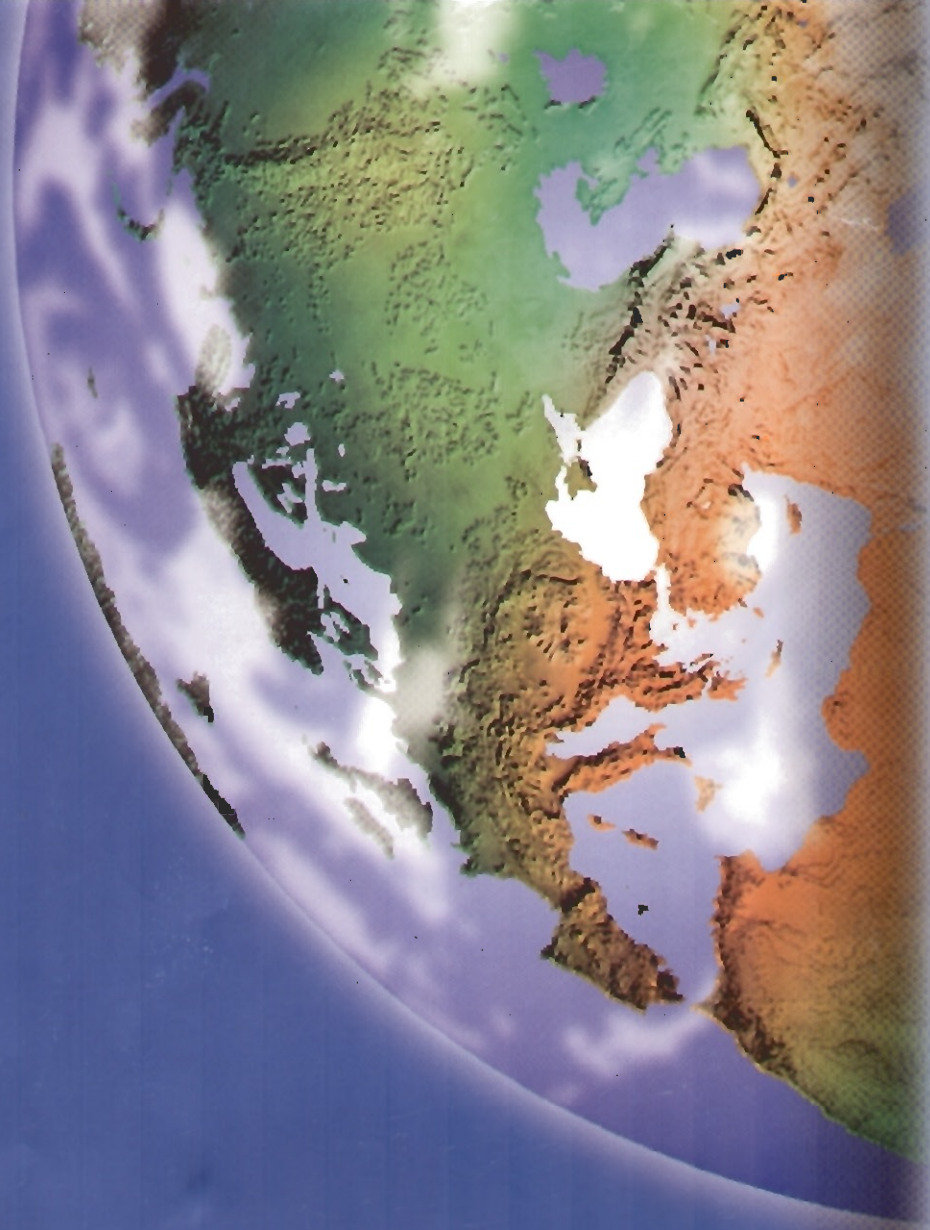




Advanced  
Building  
System



EMMEDUE® all over the world



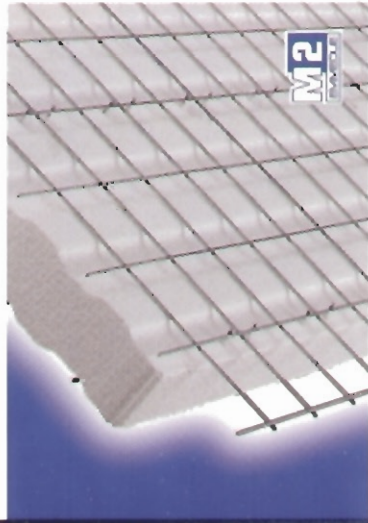
**EMMEDUE® is a flexible and extremely versatile system enabling the construction of earthquake-resistant buildings up to 20 storeys as well as architectural structures from the easiest to the most complex.**

EMMEDUE® is an innovative earthquake-resistant and insulating construction system based on a series of modular panels, industrially manufactured, that meet the structural requirements efficaciously, guaranteeing, at the same time, high thermal and acoustic insulation as well as high resistance to fire and earthquakes.

Thanks to its rapidity of erection and reliability, EMMEDUE® is superior to any previous construction system, be it traditional and prefabricated, of which it combines the most significant positive features.



EMMEDUE is available in five basic versions:



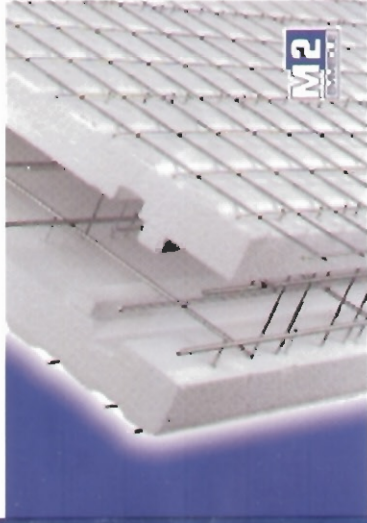
**SINGLE PANEL:**

- as a load-bearing structure, up to 4 storey buildings, with structural plastering on the two surfaces;
- for partition walls and curtain walls, in buildings either new or to be restored;
- for curtain walls and partition walls in large industrial and commercial buildings;
- as a disposable insulating formwork for roofs and floors of small-sized spans, with or without pre-cast ribs.



**SINGLE PANEL "HP":**

In order to meet even the most particular requirements, it is possible to realize a special panel made up of a double steel wire electrowelded mesh on each side. Although maintaining the basic features of the system, this panel combines a considerable structurality with a resistance to horizontal stresses, both static and dynamic, which is comparable to impacts having a force higher than 2300 kg/sq.m.



**DOUBLE PANEL:**

It consists of two basic panels, suitably shaped and joined one another by double horizontal connectors, inside of which is an air space to be filled with concrete having suitable characteristics and strength. The thickness of the concrete casting inside the double panel as well as the characteristics of the concrete itself vary according to structural requirements. The double panel, equipped with a reinforcement certified by an Official Laboratory in conformity with the Italian Law 5/11/1971 no. 1086, M.D. 9/11/1996, complies with the provisions concerning the reinforced concrete structures, in accordance with EUROCODE 2 [EC2].



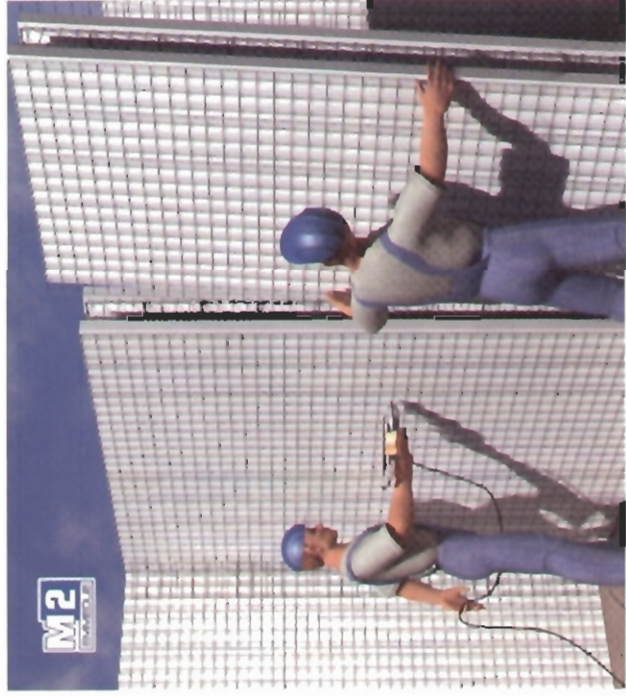
**FLOOR PANEL:**

Used in the construction of large-sized span floors by placing integrative steel in the spaces moulded for this purpose (bar joists) and casting concrete.

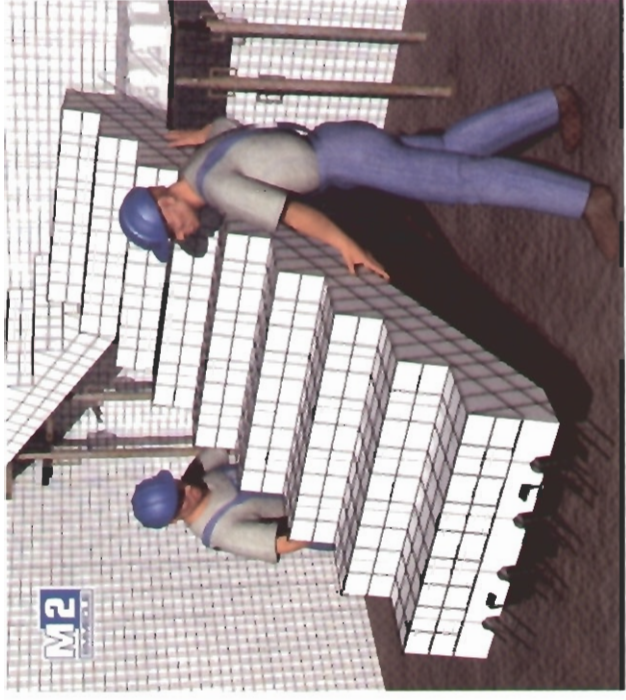


**STAIRS PANEL:**

It consists of a foam polystyrene block shaped according to designing requirements, coated with two layers of steel wire mesh assembled with electrowelded steel wires. This panel, suitably reinforced and finished with casting on site in the suitable spaces, is used to build flights of stairs up to a maximum span of 6 m. The stairs panel is characterised by its extremely easy laying along with its special structural resistance and lightness.



Thanks to their remarkably light weight, EMMEDUE® panels are easy and rapid to carry and handle. EMMEDUE® panels can be placed by hand and are connected one other with either a pneumatic gun or ordinary building wire.



An unique panel for both floor and roof



Concrete cast inside double panels braced with light prop.

### EASY HANDLING

The light weight of EMMEDUE® panels brings further advantages in their use on the construction site. EMMEDUE® panels can be easily moved by one or two workers, even when assembled and when measuring over 4 m<sup>2</sup>. In the following stage, they may be handled and placed by hand by only one worker without the aid of a lifting machine.

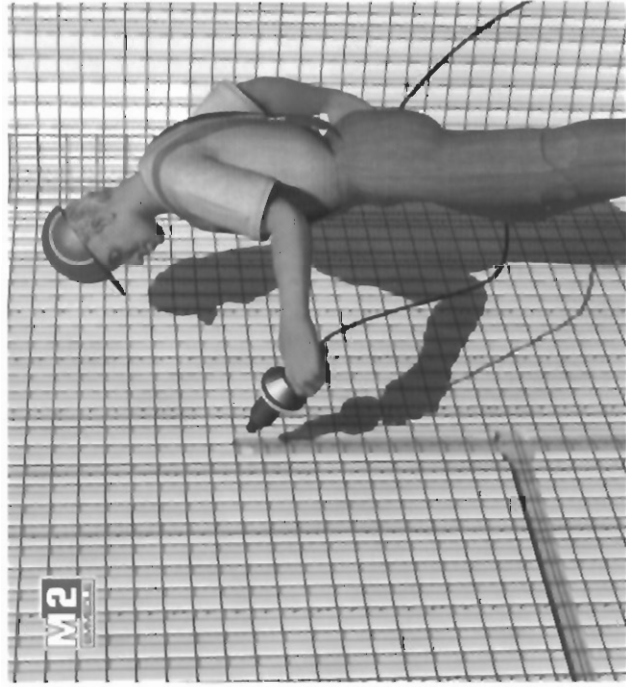
This makes their installation easier and more rapid in any situation, with no need for skilled labour.

And, of course, in case skilled workers were employed, there would be a marked increase in productivity.

### HIGH INSULATING QUALITY

The utilization of the EMMEDUE® panels as expendable formworks permits to realize the concrete casting independent of the outside temperature, even in weather conditions that usually do not permit to operate. In fact, thanks to the high thermal insulation quality of its material, the EMMEDUE® panel protects the casting from the danger of frost at low temperatures and from the extreme evaporation at high temperatures; for this reason the casting does not require any specific additives. Furthermore, being a two-direction insulating system, the EMMEDUE® panel contributes to improve the quality of the curing process of the concrete and reduces the time required for it almost to the level of vapour curing.

At curing completion, it takes place in a much shorter time compared to traditional systems, the following can be calculated: a load bearing wall of cm. 23, realized with the EMMEDUE® system, has an insulation capacity equal to 0,40 Kcal/h m<sup>2</sup> °C in comparison with much higher thermal transmittances of the other building systems: concrete 2, brick 1,7. Once the construction is completed, in addition to the thermal advantages, the system presents also advantages from the acoustic point of view, both in its vertical and horizontal elements.

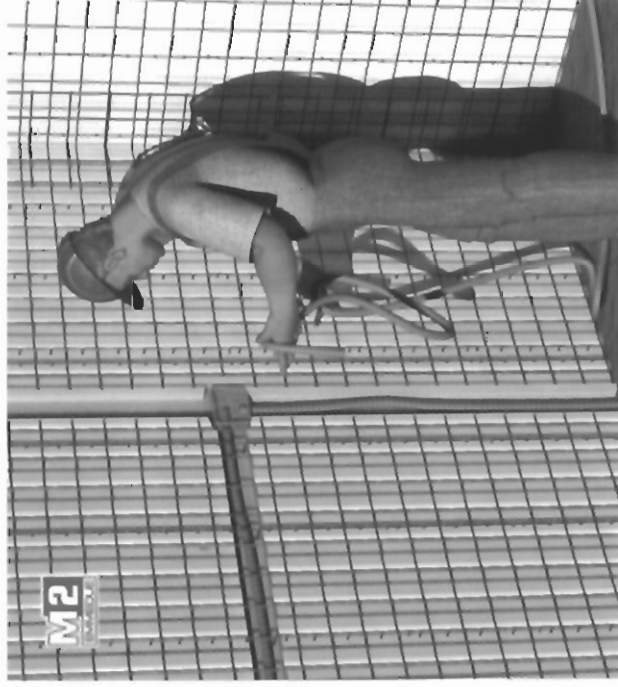


Chases are made by melting polystyrene behind the meshwork by means of a hot-air gun or any other source of heat.

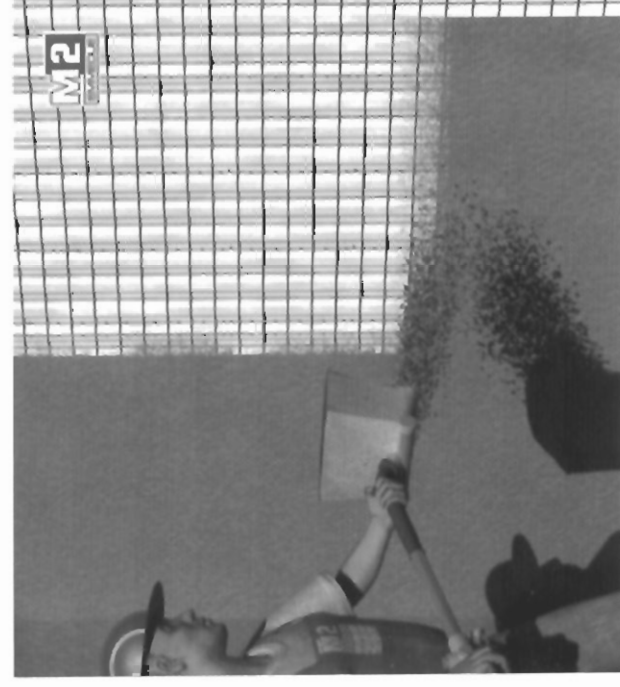


## CHASES

As to the installation of the various systems (plumbing, heating, electric, telephone, etc.), the ease with which chases are made confirms once again the many advantages offered by this method. In fact the operation is quickly carried out with no additional masonry assistance while the construction site is always clean. First, the paths of the various systems are marked on the wall; then the chases are made in the polystyrene by means of a hot-air generator or any other source of heat; in the end pipes are placed behind the steel wire mesh. In case of rigid or semirigid pipes, the metal meshwork is opened as needed by ordinary shears and then closed so to support pipes



Pipes (electricity, water, gas, etc) are easy and rapid to place behind the metal meshwork.



Spraying of the coating layer on the panel by using the plaster sprayer.

## PLASTERING

Once panels are assembled, after their vertical placing, the concrete is cast in case of double panels and the systems are laid, then the plaster can be directly sprayed on both sides. Here again, the advantages of the EMMEDUE® system vis-à-vis other building methods are obvious, as plaster of any type can be used with the zinc-coated supporting mesh. In addition, the plaster applied onto the strictly connected walls, reinforced by the metal mesh, will turn out to become monolithic, which excludes any possible cracking due to mechanic and/or thermal stresses. Moreover, as chases do not need patching - which, on the contrary, is always so visible in traditional systems - the plaster will be all the more uniform and of a higher quality also in aesthetic terms.

# EMMEDUE'S GREAT ADVANTAGES

## LIGHT

The EMMEDUE® panels present a remarkable easiness of handling, transport and assembling thanks to their very reduced weight that permits their use in any condition. The lightness of the panels matches, in any case, a very remarkable stiffness, even prior of the completion with structural concrete, that guarantees integrity to the panels and correspondence between the panels and their use. Prior of the concrete application, the weight per square metre changes according to the type of panel: from 3,5 Kg/m<sup>2</sup> to 5 Kg/m<sup>2</sup>. Thanks to the lightness of the panel, any worker, even by himself, can easily handle over 3 m<sup>2</sup> of wall without difficulty.



## RAPID ASSEMBLING

Several experiences carried out in all kinds of conditions, in different countries of the world and with any kind of labour have shown that the time required to realize buildings following the EMMEDUE® system is much shorter compared to the conventional systems.



## INEXPENSIVE

The EMMEDUE® panels represent a real advantage both for the final users and the contractors, since they permit to attain better performances compared to the traditional products and with far lower costs. The idea of having an element, used at the same time both as a highly resistant wall and heat and soundproofing insulating material, has turned out to be undoubtedly successful and innovative. To this regard, economic comparisons between EMMEDUE® buildings and other traditional systems having equal performances have shown a saving exceeding 20% as for the double panel and 40% as for single panels. Furthermore, it should be taken into account the considerable saving of time due to the use of an industrial product that optimizes the assembling sequences and reduces at the minimum the work of the building site staff.



## VERSATILE

The EMMEDUE® panels can be used for realizing any kind of structure. The panels can be employed as load bearing vertical elements, partitions, curtain walls, floors and staircase flights. In all of these cases it is easy to obtain all the geometrical shapes both plane and curved, just cutting the elements on site. The characteristics of heat insulation, sound-proofing, fire resistance, handling and easiness of assembling make the EMMEDUE® panel suitable for all kinds of uses.



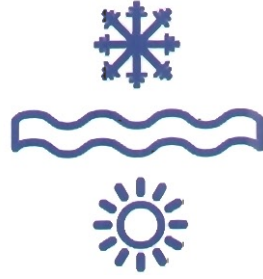
## RESISTANT

A lot of laboratory tests carried out in several countries of the world as well as in Italy have shown the high load resistance of the EMMEDUE® panels. For example, tests carried out on a finished single panel having dimensions equal to cm 112x15 and cm 270 high, have shown that the same panel can sustain loads above 1.700 KN. These values are evidence of the strength capacity of the EMMEDUE® panels that is far greater than that of comparable traditional structures.

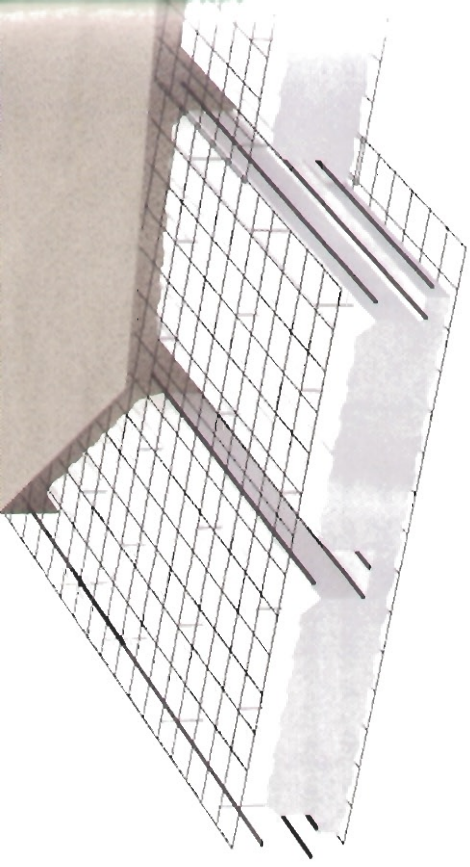


## ENERGY SAVING

The value of the K\*total heat transmittance of a wall realized by a panel made up of a polystyrene slab of 4 cm (density 15 kg/m<sup>3</sup>) applied with plaster 3 cm thick on both sides for a total thickness of 10 cm, is equal to 0.78 W/m K. If the wall is realized using a panel with polystyrene slab of 8 cm (density 15 kg/m<sup>3</sup>), the calculated value of the K heat transmittance is equal to 0.49 W/m<sup>2</sup> K.



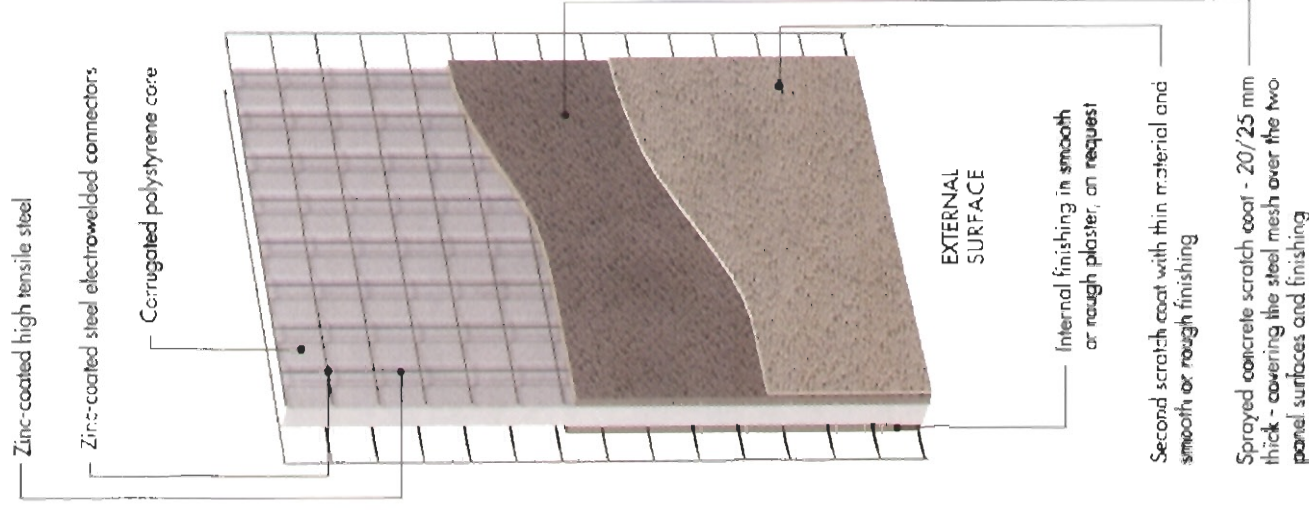
Such a heat insulation degree exceeds in a remarkable way the peculiar values of the partitions or curtain walls obtained with the traditional systems: this produces energy saving equal to 40% both while heating and while cooling.

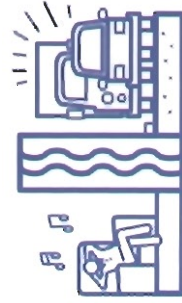


EMMEDUE  
an integrated system  
for load-bearing walls,  
partitions, floors and stairs



## SINGLE PANEL



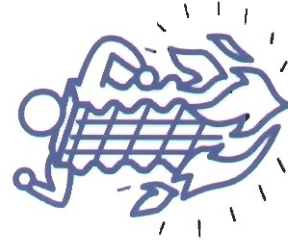


## EXCELLENT ACOUSTICS

The soundproofing of the EMMEDUE® panels is one of the advantages of the building system. Tests carried out on the panels have given the following results:

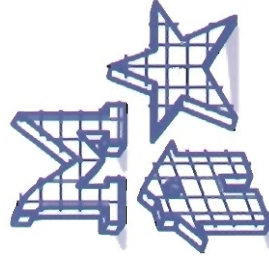
- EMMEDUE® panel with polystyrene slab 4 cm thick 38 dB
- EMMEDUE® panel with polystyrene slab 8 cm thick 45 dB

These values are evidence of how suitable the EMMEDUE® panels are even in the most severe conditions, in compliance with the technical regulations in force.



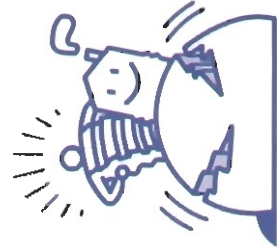
## FIRE RESISTANT

The quality of the foam polystyrene used is F type, self-extinguishing in compliance with the DIN 4102 rules. Fire resistance tests carried out on PSME80 panels have shown a result higher than REI120.



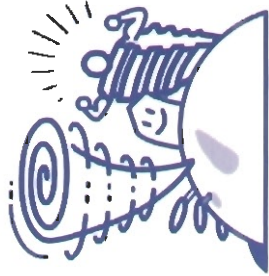
## CHOICE OF FINISHES

The walls realized by the EMMEDUE® panels can be completed with the most various finishings. It is possible to apply a thick coating right on the raw plastering or, as an alternative, ordinary painting on the smooth plastering. Any type of coating is possible, without exception.



## EARTHQUAKE RESISTANT

Laboratory tests carried out on one EMMEDUE® two-storey prototype, true scale, have shown that the structure resist and is not damaged by strains higher than those calculated for a First Category Earthquake that is the maximum provided for by the Italian seismic Standards. The results obtained with these tests represent the scientific evidence of what has been already naturally experimented. In fact, buildings realized using the EMMEDUE® system have shown their aseismic characteristics in many countries in the world, where the same have successfully overcome the most severe natural tests .



## CYCLONE RESISTANT

Buildings realized with the EMMEDUE® system in areas at high risk of cyclones have demonstrated their ability to withstand the most devastating cyclones throughout the years; thus empirically confirming the results already obtained by calculation, that is to say that the EMMEDUE® buildings are extremely resistant to the complex strains and thrusts due to the force emitted by cyclones.



EMMEDUE®  
not only an industrial system  
for housing



At the end of the Seventies the basic concept of the EMMEDUE® system was born from the brilliant idea of applying the advantages of technological innovation to the building field which was not, by tradition, very inclined to changes. The innovative and ingenious system was thus created following this idea so as to combine the modern electromechanical and electronic technology with the building world.

In fact the EMMEDUE® building system consists of a set of modular panels, industrially manufactured, that meet the structural requirements efficaciously, guaranteeing, in this way, high heat insulation and soundproofing, high resistance to fire and earthquakes along with high quality of the product.

A constant activity of Research and Development ensures a continuous technological updating and permits EMMEDUE® to meet the requirements of its own customers. In fact, together with a dynamic sales staff, two efficacious technical teams work together: the one devoted to the development and renovation of the technology applied to the plants and the other to the study and development of the projects that will be carried out with the EMMEDUE® system. Furthermore, the continuous updating allows the company to offer an efficient technical support to all of its customers in the world; this is carried out not only while designing but also while realizing works so that the manufacturing process can be optimized.

#### KNOW-HOW AND EXPERIENCE AT CUSTOMER'S DISPOSAL

EMMEDUE® is a reliable and experienced technological partner for its customers, capable of studying and providing with the best solution the most different requirements of investment and market.

As a token of the EMMEDUE® system efficacy and efficiency as well as of its remarkable reliability you can appreciate over 25 production lines situated in various countries of the world: Italy, Portugal, Spain, Russia, Turkey and Libya, Egypt, Eritrea, Saudi Arabia as well as Argentina, Chile, Brazil, Venezuela, Guatemala, Costa Rica, Mexico, Nigeria, Mozambique, Reunion Isle (France), Malaysia and Philippines.

The originality and paternity of the EMMEDUE® system has been proved by the continuous development and updating of the system. Throughout the years the system has been supported by a set of patents registered in Europe, United States of America and other countries, aiming at protecting both the product and the machinery used for manufacturing the product itself. Furthermore, the EMMEDUE® quality system is certified according to the UNI EN ISO 9001 Regulation.





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