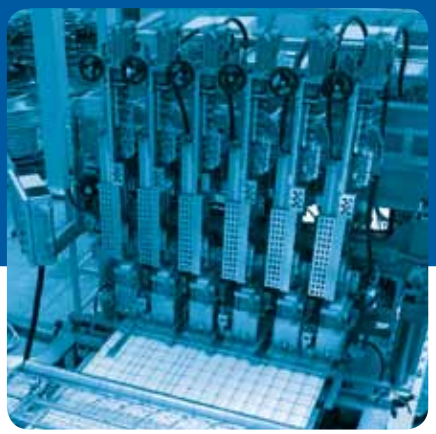
Building the future



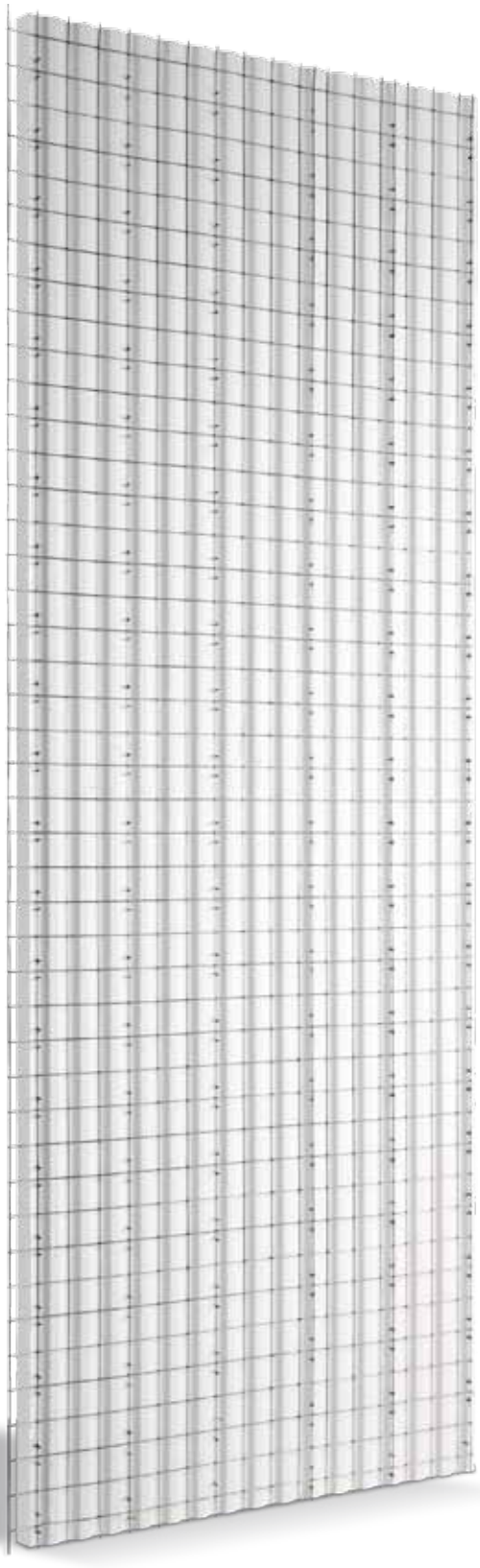
M2 EMMEDUE

Advanced
Building
System

INDEX

"No matter what you need, EMMEDUE® has the **know-how** to provide the **best technological solution** possible."

Angelo Candiracci
President EMMEDUE® SpA



30 YEARS OF HISTORY

For **over 30 years** EMMEDUE® has been the market leader in manufacturing and marketing of an **innovative seismic resistant and thermally-insulating building systems**.

The **EMMEDUE® building system** was born in 1981 under the name of **MONOLITE®** and then, after a company restructure in 1995, as **EMMEDUE®**.

This system has been developed from previous experiences, carried out in both the **construction and engineering fields** by Mr. Candiracci Angelo, the founder of the system and current President of the Company. And it was precisely the combination of these experiences that led Mr. Candiracci to design and develop what has eventually become an **innovative and ingenious building system**.

For over 30 years EMMEDUE® has **designed and developed** the technology to produce the **building system components**, marketing worldwide turnkey plants and assisting its customers during the manufacturing, engineering and installation phases.

THIRTY YEARS OF RESEARCH AND INNOVATION

From **1980** to date **over 100.000 buildings** have been built all over the world with the EMMEDUE® building system.

For over 30 years EMMEDUE® has **researched and developed** the most advanced technological solutions for the **industrialized and automated production** of the various building system components.

30 years ago, the EMMEDUE® building system **revolutionized the traditional building concept**. Today those same 30 years guarantee a product that remains **innovative, safe and reliable**.

"We believe in a market that deserves more efficient products able to ensure high performance, safety and comfort".

The constant search for innovative and technological solutions has led to the creation of the Research & Development Division, specialized in the engineering of new technological solutions applicable to both machines and their final products.

Advanced Building System

PROJECT, ARCHITECTURAL AND DESIGN FREEDOM

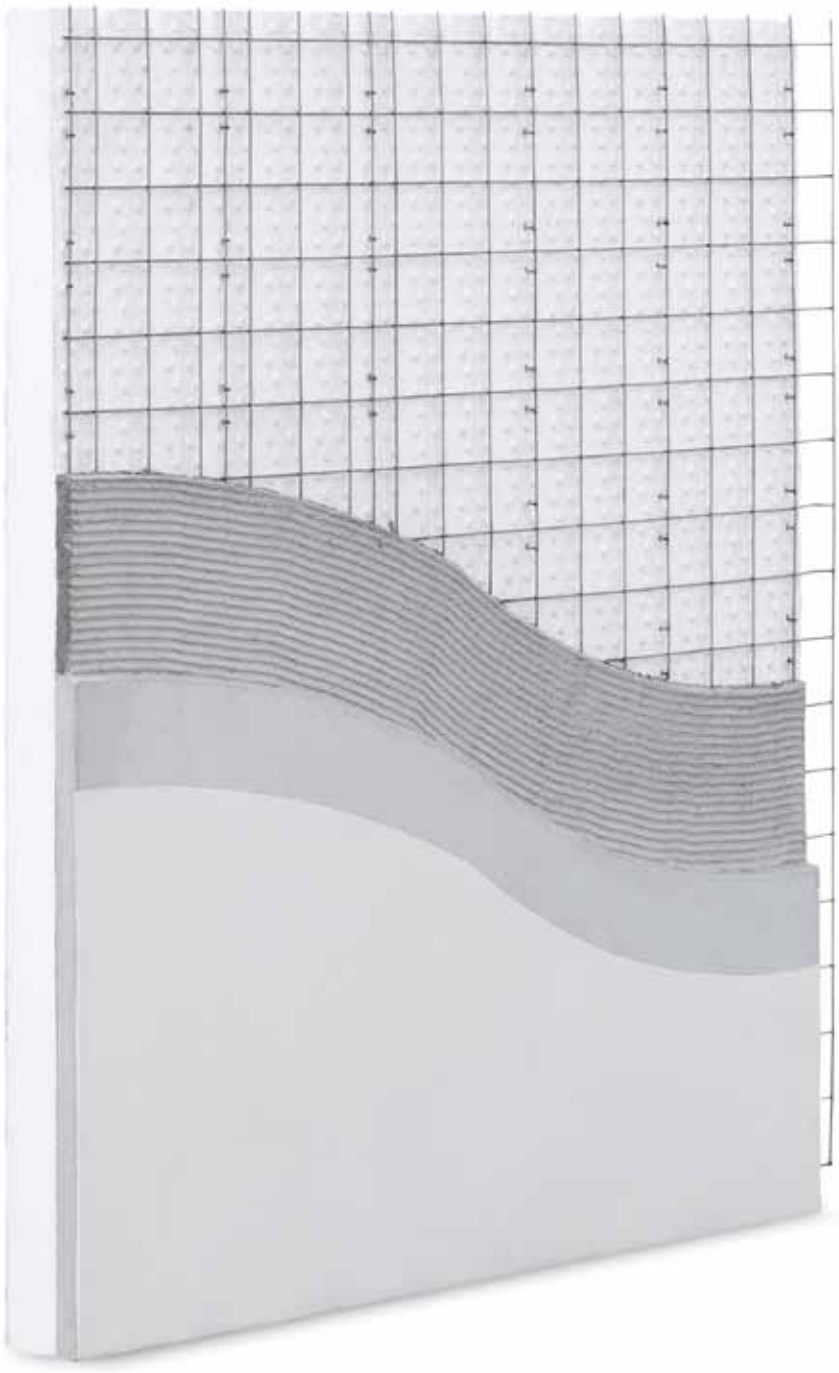
EARTHQUAKE RESISTANT MULTISTOREY BUILDINGS WITH SINGLE PANEL

For over 30 years the EMMEDUE® building system has been used **throughout the world**, even in the most remote places of the planet, successfully tackling even the **most catastrophic natural events**.

"The earthquakes are natural calamity, but unsafe buildings are not. Earthquakes do not kill people, bad buildings do"

EMMEDUE® modular panels: a complete range for residential, industrial and commercial buildings

THE EMMEDUE® PANELS

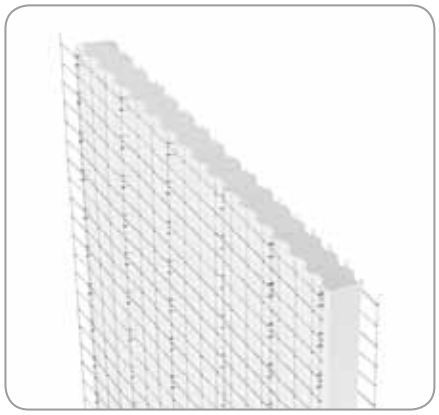


The basic element of the EMMEDUE® building system is a modular non prefabricated panel, made up of two electro-welded steel wire meshes, linked each other by connectors, sandwiching a polystyrene foam slab suitably shaped.
Produced on an industrial scale the panel is then assembled and cast-in-place using shotcrete.

EMMEDUE® offers a complete range of building elements: load bearing walls, floors, roofing, stairs, partitions and curtain walls. Therefore buildings can be entirely constructed with the same building system, optimizing different supply and timing phases as well as work force availability.

SINGLE PANEL

The EMMEDUE® single panel is made up of a spatial steel lattice enclosing an expanded polystyrene slab that is then finished on site with plaster. This panel is perfect for walls, partitions, claddings, floors and roofing of both civil and industrial applications. Used as a load-bearing structure, for buildings of up to 6 floors, with structural plaster placed on both sides; as partitions and claddings, in new buildings or in those in need for renovation; as curtain walls and partitions in large-sized industrial and commercial buildings; as insulating frameworks for roofing and moderate spam floors, prepared with or without pre-cast beams.



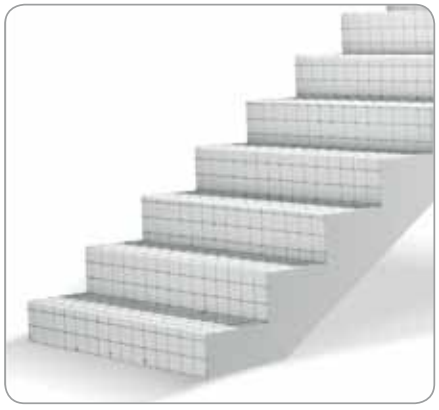
DOUBLE PANEL

An insulated double panel, excellent for reinforced concrete walls, including load-bearing and retention ones. The double panel consists of two basic panels, suitably shaped and joined to one another by double horizontal connectors, creating a cavity to be filled with concrete having appropriate characteristics and strength. The panel is then finished by external plaster. The double panel comes with reinforcement certified by an Official Laboratory in accordance with the Law 5/11/1971 no. 1086 - D.M. 14/01/2008, complying with the provisions concerning reinforced concrete structures as stated by the EUROCODE 2 (EC2).

STAIR PANEL
(EMMEDUE® Exclusive Patent)

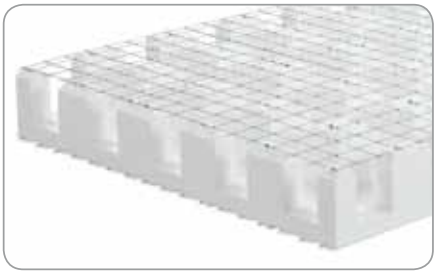
A panel for the fast construction of a lightweight and resistant stairs.

Made up of a polystyrene foam block the panel is shaped to design requirements and sandwiched between two metal meshes by welded steel wires. When reinforced and cast-in-place it is ideal to build stairs that can be externally finished with traditional plaster, tiles or any other finishing material. The stair panel is quick and easy to install and offers particular lightness and strength.



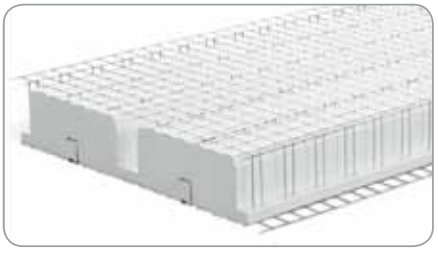
LANDING PANEL

A panel used to build landings, floors and bidirectionally reinforced plates. It provides continuous insulation to the panel intrados. The EMMEDUE® landing panel is an excellent solution to build landings next to the stairs made with the EMMEDUE® stair panels. The landing panel can also be used for any plate or slab made of concrete to be reinforced in two directions, offering the advantage of both reduced weight, when compared to a full slab, and continuous insulation when used also as a formwork.



FLOOR PANEL

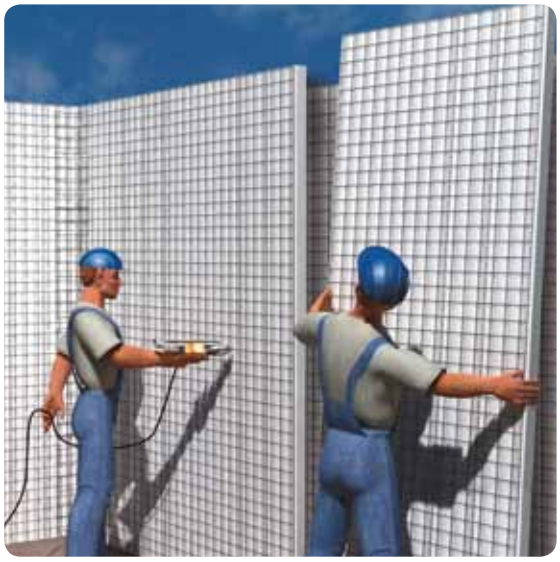
A panel used to build floors and roofing with reinforced concrete joists, providing significant advantages in terms of lightness, insulation and speed of assembly. The EMMEDUE® pre-formed polystyrene foam slab, reinforced with suitable steel joists and then adding cast-in-place concrete, can be used to construct floors or roofing when reinforced with suitable steel joists and then adding cast-in-place concrete. Shown in the picture: a reinforced panel ready for installation.



EASY HANDLING

The EMMEDUE® panel remarkable lightness allows easy and quick transport and handling.

The EMMEDUE® panels can be manually positioned and linked together by a nail gun or conventional construction wire.



Single panel for floor and roofing.

The chases are easily created by melting the polystyrene behind the metal mesh using a hot-air gun or any other similar device.

The placement of service pipes (electricity, water, gas, etc. ..), is carried out quickly and easily, behind the wire mesh.

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

APPLICATIONS

APPLICATIONS

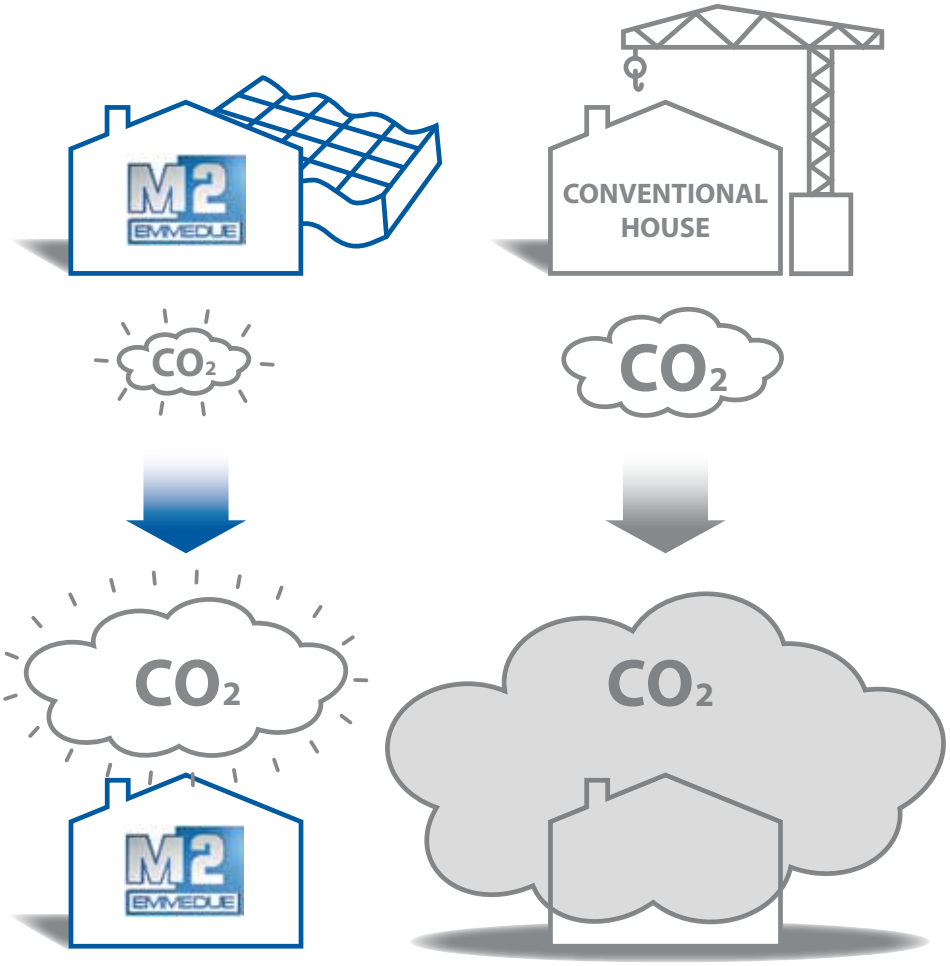
APPLICATIONS

APPLICATIONS

EMMEDUE®: Green Culture to build the future

Buildings consume large amounts of energy and the greatest wastes arise from heating and cooling them.

Energy saving is the answer to reduce rising energy costs and CO_2 emissions.



CO_2 emission reduction

Up to 40%*
in the realisation of the building.

Up to 65%*
during its use.

The cleanest energy is the one not consumed

-80% energy

A good thermal insulation can **halve the energy consumption and the pollution** caused by heating and/or cooling buildings.

The use of EMMEDUE® panels allows the construction of less energy-greedy buildings, ensuring higher energy efficiency and thereby energy **savings up to 80%** throughout its life cycle.

** The given data are taken from "PEP - Promotion of European Passive Houses - Energy Saving Potential" report.*

Human comfort and environmental compatibility

The EMMEDUE® building system **considerably improves heating comfort inside buildings**, drastically reducing energy consumption and promoting strategies aimed at sustainable development.
The **excellent insulating capabilities of EPS** provide, throughout the life of the building, lower power consumption and lower CO_2 emissions thus limiting climate change and global warming.

EMMEDUE® has carried out a comparative analysis of the CO_2 footprint produced by its own building system, consisting of single panels, and a traditional system: a building realized by the **EMMEDUE® building system gives a CO_2 footprint that is 60% less than the one given by a conventional building** made of reinforced concrete and cladded by masonry.

EPS SUSTAINABILITY

Polystyrene, the main component of our product, has been classified and certified by the most authoritative and competent organisations, as a completely eco-friendly material with the lowest **environmental impact**.
Expanded sintered polystyrene (or EPS) is in fact a green leader:

it is **SAFE**: it does not release toxic or harmful substances and is completely inert. It contains no chlorofluorocarbons (CFCs) and hydro chlorofluorocarbons (HCFCs). Besides, being free of organic material, it inhibits the growth of microorganisms and mould. The mechanical and thermal properties are guaranteed throughout the life of the building. It does not suffer damage if exposed to steam or humidity.

it is **RECYCLABLE**: during production no waste materials are produced and the EMMEDUE® panel production aims to optimize the cuts while minimizing waste. Any EPS scrap is directly recycled during production, in the plant itself.

it is **NON-TOXIC**: it does not create allergies and is not harmful to the health of those who produce or install it.

it is **SELF-EXTINGUISHING**: EPS used for EMMEDUE® panels is self-extinguishing, i.e. once the ignition source (the flame) has been removed it will not produce a flame or continue to burn.

Benefits of the builder

EMMEDUE® is a building system that combines in a single element all the functions needed to create a complete architectural system ensuring maximum efficiency with all types of construction.

Cost effectiveness

The EMMEDUE® panels give better performance compared to conventional products, and with far lower costs.
In fact a simple structure made with this building system costs about 30%* less than a conventional structure, but offers the same performance.
Also an additional economic advantage is obtained as building time is significantly reduced.

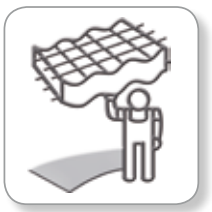
** Data refer to a structure built with panel PSMØ2.5*

Speed of installation

Several experiments carried out in all kinds of conditions, in different parts of the world, and using all types of labour, have shown a remarkable reduction in construction time for those buildings made using the EMMEDUE® system, compared to those made with conventional methods. This industrialized product, in fact, optimizes assembly processes, while minimizing labour force operations.
As an indication it is possible to get time savings of up to 40%*.

** Data refer to a structure built with panel PSMØ2.5*

Lightness, manoeuvrability and transportability



The EMMEDUE® panels, due to their lightness and rigidity, are handy, easy to carry and assemble even under the most difficult operating conditions.
An EMMEDUE® panel, prior to plastering, may weigh between 3.5kg/sqm and 5kg/sqm, so a single person can easily handle a wall of over 3sqm*, that is a panel as tall as the average landing of a house.

** Data refer to a structure built with panel PSMØ2.5*

Versatility

The EMMEDUE® building system allows complete design flexibility, as it is composed by a full range of building elements: load-bearing walls, curtain walls, floors and stairs.
It can be easily used to realize any type of construction and any type of geometric shape, whether flat or curved, can be obtained just as easily by simply cutting the panels on site.

Integration with other building systems

EMMEDUE® is a very versatile building system, compatible with all other existing systems; in fact EMMEDUE® products can be used to complete reinforced concrete or steel structures. In addition, they can be easily anchored to construction elements of all different kinds, such as steel, wood or reinforced concrete.

Wide choice of finishes

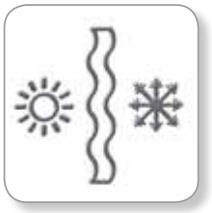
Structures made with EMMEDUE® panels can be completed with all types of finishing or with traditional painting finishes on smooth plaster. In fact, the final surface of the wall is a thin sheet of reinforced plaster that can support any type of cladding, including stone slabs or ventilated facades.

Benefits for the user

With the EMMEDUE® building system the best standards of comfort and functionality are achieved.

Advanced Building System

Thermal insulation



The EMMEDUE® structure brilliantly performs both insulation and load-bearing functions: the thickness and density of the panel can be customized depending on the specific thermal insulation required.
Moreover, the continuous EPS core extends over all surfaces of the building envelope, without any thermal bridge. For example, an EMMEDUE® PSM80 wall with a finished thickness of about 15cm provides the same thermal insulation as an insulated masonry wall of about 40cm, with obvious advantages in terms of more usable space.
The possible combination with sound-absorbing materials (such as plasterboard, cork, coconut fibre, rock wool, etc...), optimizes the acoustic insulation of those walls, which must comply with the strictest regulations.

Earthquake-resistance

Laboratory tests carried out on full-scale prototype houses have shown that the EMMEDUE® structures withstand, without damage, earthquakes with intensities much greater than those considered by current regulations. In fact, during laboratory tests on full-scale prototypes, natural and artificial accelerograms were simulated up to peaks of more than 1,0 g, and no damage was detected.
The results obtained during these tests scientifically confirm what has already happened and often experienced in nature. Infact the structures built with EMMEDUE® panels are extremely light, so with a reduced seismic mass, but are also rigid, thanks to two sheets of reinforced plaster that interact with each other creating a box-like behaviour of the entire structure.

Energy efficiency

With the EMMEDUE® building system high energy efficient buildings can be built, complying with the highest energy classes thanks to an insulated shell provided by a continuous polystyrene core, without any thermal bridge or insulated ducts within the panels.
Therefore EMMEDUE® provides a significant improvement in thermal comfort inside buildings, dramatically reducing energy consumption and promoting strategies aimed at sustainable development, as shown by an analysis conducted on a prototype showing that the CO_2 footprint is reduced by about 60% when compared to a conventional building.

Load resistance

Numerous laboratory tests carried out in several countries have shown the high load resistance of the EMMEDUE® panels. For example, compression tests with a centred load carried out on a finished single panel, 270cm high, have shown a maximum load up to 1530 kN/m ≈ 156 ton/m.
The monolithic joints of the EMMEDUE® building system are suitable to give constructions high structural strength.

Fire resistance

The polystyrene foam used for our panels is the self-extinguishing type and is perfectly enclosed between the reinforced concrete layers that coat the panel preventing combustion.
The fire resistance of the panels has been verified in tests carried out in several laboratories. For example, a wall made with a PSM80 panel ensures a REI 150 fire resistance, so it can be included in the REI 120 class. This means that for 150 minutes, the panel has proven to be: R = stable, E = resistant to passage of fire and smoke, I = insulating.

Cyclone resistance

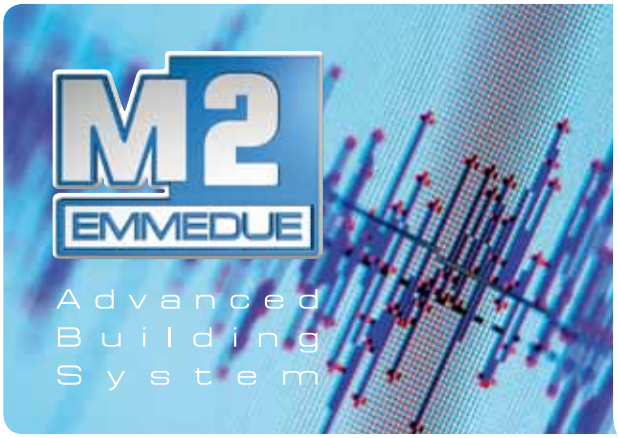
Buildings made with the EMMEDUE® system in high risk cyclone areas have shown, over the years, the ability to withstand the passage of the most devastating cyclones. Laboratory tests carried out on resistance to cyclone impact have confirmed that the strength given by EMMEDUE® buildings is suitable to cope with the effects of the most powerful cyclones and damage caused by flying objects (tests required by U.S. regulations concerning protections against cyclones with speeds of up to 106,2 km/h).

Blast resistance

EMMEDUE® has subjected several types of panels, set in different types of high-strength concrete, to a series of blast resistance tests. The tests were carried out using a powerful explosive, in a test chamber optimized to produce a uniform shock wave on the face of the panels. EMMEDUE® panels stood up admirably to all tests, surviving explosions of over 29,5 tons/sq.m.

TESTS

EMMEDUE® research and development activities aim to continuously improve the products, ensuring the highest reliability standards.
For this reason, EMMEDUE® submits its products to continuous laboratory tests (static, dynamic, ballistic, fire resistance, wind tests, etc ...) carried out at the most renowned international laboratories, thus obtaining relevant certifications and approvals.



TEST CATEGORY	COUNTRY	ORGANIZATION	TEST TYPE
STATIC TESTS	ITALIA	RITAM - Università di Perugia	Bending test on floor panels Compression Tests on load bearing panels Diagonal Compression Test on load bearing panels
		Università di Padova	Compression, bending and shear test Sliding test Materials properties test
		Istituto Giordano	Eccentric load test
	ILE DE LA RÉUNION	I.U.T. Veritas	Bending test
	MÉXICO	IMCYC	Static tests
	PANAMÁ	Universidad tecnológica de Panamá Centro experimental de ingeniería	Static tests Materials properties test Dynamic tests
	USA	TEXAS - Intertek Evaluation Centre	Compression test on wall panel Bending test on wall panel Bending test on floor panel Compression-bending test on wall panel Shear test on wall panel Shear test on floor panel Materials properties test
SEISMIC TESTS	ITALIA	ENEA	Two stories house tested on shaking table C model tested on shaking table H model tested on shaking table
		RITAM - Università di Perugia	Dynamic tests
	PERÚ	Pontificia Universidad Católica del Perú	Seismic tests on shaking table
ACOUSTIC TESTS	BRASIL	Instituto de Pesquisas Tecnológicas (IPT)	Soundproofing test
	CHILE	Universidad de Chile Facultad de ciencias físicas y matemáticas	Soundproofing test on the single panel
	ITALIA	Istituto Giordano	Soundproofing test on the single panel, double panel and HP
		SINTHESI	Soundproofing test
FIRE RESISTANCE TESTS	AUSTRALIA	CSIRO	Fire resistance test on single end double panel
	CHILE	Universidad de Chile Facultad de ciencias fisicas y matematicas	Fire resistance test
	ITALIA	Istituto Giordano	Fire resistance test
		Laboratorio CSI	Fire resistance test
	ESPAÑA	Centro Tecnológico De La Madera	Floor fire resistance test Wall fire resistance test
	USA	TEXAS - Intertek Evaluation Centre	Floor fire resistance test Wall fire resistance test
OTHER TESTS	ITALIA	Istituto Giordano	Soft matter resistance
			Ballistic tests
	CHILE	Universidad de Chile Facultad de ciencias físicas y matemáticas	Rainfall resistance test
	USA	University of Kentucky, Lexington	Blast resistance test
		Texas Tech University, Lubbock	Wind projectile resistance test

EMMEDUE®
SYSTEM APPROVALS

EMMEDUE® over the years has obtained numerous types of approvals and certifications testifying the reliability of its products and meeting the most stringent regulations on building matter applied in many Countries.

1985

Italia
Ministero dei Lavori Pubblici

1991

Australia
Building Control Accreditation Authority

1994

Puerto Rico
Dirección de planeamiento y desarrollo urbano San Juan

1996

Россия - Russia
Federal National Authority ”Russian Institute for scientific researches concerning fire protection”
(FGU VNIIPO MCHS DI RUSSIA)

1997

Jamaica
Bureau of Standards-Civil Engineering Department

South Africa
Sannon Technologies South Africa

2003

Argentina
Ministerio de Obras y Servicios públicos-Instituto Nacional de Prevención Sísmica

M2 EMMEDUE
Advanced Building System

2006

Ireland
Irish Agrément Board

República Dominicana
Ministerio de Obras Públicas y Comunicaciones

2007

Algérie
Centre National d'Etudes et de Recherches Intégrées du Bâtiment-CNERIB

2008

España
Instituto de Ciencias de la Construcción Eduardo Torroja

Rumenia-România
Institutul Național de Cercetare-dezvoltare în Construcții URBAN INCERC

2010

Nicaragua
Ministerio de Transporte e Infraestructura

Panamá
Ministerio de Obras Públicas

Perú
Ministerio de Vivienda, Construcción y Saneamiento

USA
ICC-ES International code Council-Evaluation service

WORLD LEADING COMPANY

More than thirty years of experience and **a worldwide presence** make EMMEDUE® **the world leader in the industrialized building sector**.

Alongside the full range of products and machinery aimed at the production of the building systems, EMMEDUE® offers a **package of solutions** to back its customers up not only during the start-up and the management activities, but also with support and accessories ones.

Infact, the EMMEDUE® offer includes:

- **PRODUCTION PROCESS: SUPERIOR TECHNOLOGY**
- **INTEGRATED MANUFACTURING SOLUTIONS**
  - **Robotized solutions**
  - **Continuous line**
- **MOBILE PLANT**
- **MODULAR BUILDING SOLUTIONS**
- **PANELCAD SOFTWARE**
- **KNOW-HOW AND TRAINING**
  - Training of on-site staff
  - Training of factory staff
  - Continuous activities aimed at obtaining certifications and type approvals for raw materials and finished products
  - Product strength and reliability tests
  - Registration of the company's trademarks and patents issued to protect the inventions throughout the world
- **TURNKEY OFFER AND ADDITIONAL SERVICES**
  - Technical assistance during design, financing and installation phases
  - Pre and post sales technical assistance to its Customers for both machinery and panel use
  - On-line Customer Support
- **RESEARCH & DEVELOPMENT**
  - Continuous Research & Development to find innovative technological solutions.

M2 EMMEDUE
Advanced Building System

PRODUCTION PROCESS, A SUPERIOR TECHNOLOGY

POLYSTYRENE

The EPS (Sintered Expanded Polystyrene) is a material produced from styrene, a monomer derived from petroleum, but also found in foods such as wheat, strawberries, meat and coffee. Polystyrene is obtained through the **polymerization of styrene**. Before being expanded the polystyrene is in a glassy granule form (beads), with size ranging from 0.3 to 2.8 mm.

PRE-EXPANSION

Pre-expansion, that is the physical-chemical process that leads to the formation of the polystyrene beads, takes place by heating the polystyrene - the raw material - without using CFCs. The beads thus obtained are then treated with water vapour at temperatures above 90°C so the pentane they contain expands causing an increase in their initial volume of up to 20-25 times, forming an internal closed cell structure that holds the air and gives the product its excellent thermal insulation properties.

SINTERING (MOULDING)

During the “sintering” (moulding) process the expanded polystyrene beads are welded and compressed. The expanded and dried beads are injected into a mould and are again subjected to vapour that causes a further swelling. This process completely closes the interstices between the beads that, welded together, create a homogeneous block of foam. After cooling, these blocks are left to cure before final cutting into slabs.

MATURING PERIOD

After pre-expansion the beads are subjected to a period of aging and then are conveyed to silos to be air dried, here excess moisture is removed.
This provides the stability required for the next stage of the process.

OUTPUT CAPACITY

EMMEDUE® **modular manufacturing solutions** can be **tailored** for different levels of output capacity.

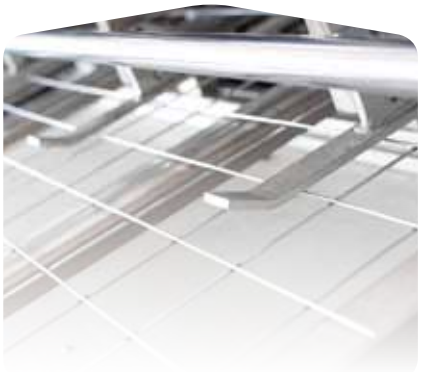
Thanks to the modular design of the line, capacity can be quickly increased after the initial start-up.

CUTTING AND SHAPING

The blocks are cut and shaped by a CNC hot-wire cutter. The high-precision cutting is programmed by the operator according to the specific job requirements.

STITCHING OF THE SANDWICH PANEL

The double connector **automatic welding and assembly plant** lies at the **heart of the production line** because it is the machine that makes the sandwich, consisting of two or four welded wire meshes and one or two polystyrene slabs according to the type of panel required and to be produced.



MESH WELDING AND CUTTING

The **EMMEDUE® automatic welding plant** produces galvanized steel flat meshes, consisting of 20 longitudinal wires at variable pitch.
Automatically produced to size, the meshes are taken by an automatic device and stacked on a steel pallet, which allows them to be moved to the panel machine.

WIRE UNWINDING AND STRAIGHTENING

The EMMEDUE® automatic welding plant is equipped with **a system which feeds the longitudinal wires through an automatic conveying system** that directly takes them from 20 loading reels and then proceed with the straightening process.

TURN-KEY EMMEDUE® P
STARTING FROM THE

NOMINAL

D- Automatic welding and assembling plant for spatial panels

E- Cutting and bending machines for reinforcing meshes

H-Fork lift

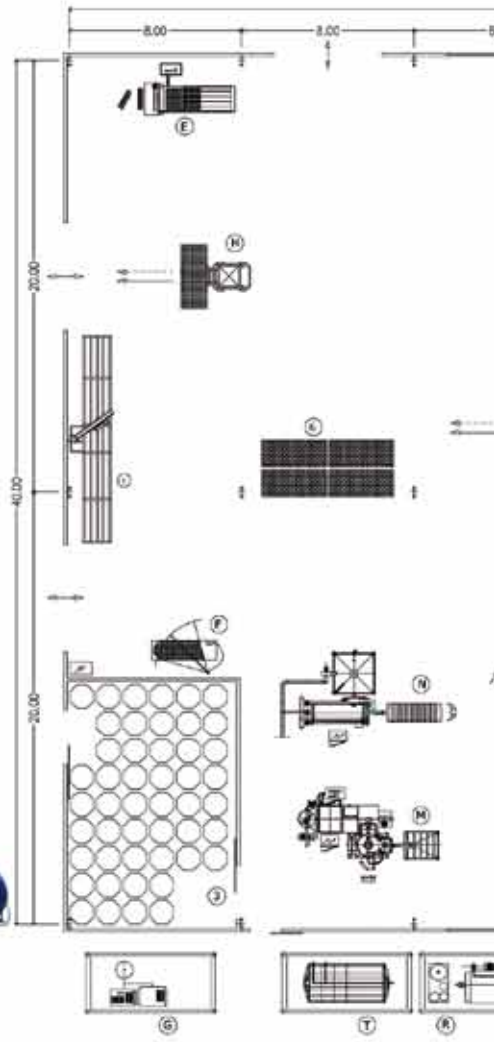
F- Bench for special panels welding

N- Automatic horizontal molder of polystyrene blocks

P - Silo for regenereted and virgin polystyrene

: - Steam generator -Water softner - Steam accumulator - -Autoclave

M-Discontinuous pre-expander of polystyrene beads



I - Special bench with radial saw to cut the Emmedue finished panels

T- Steam accumulator

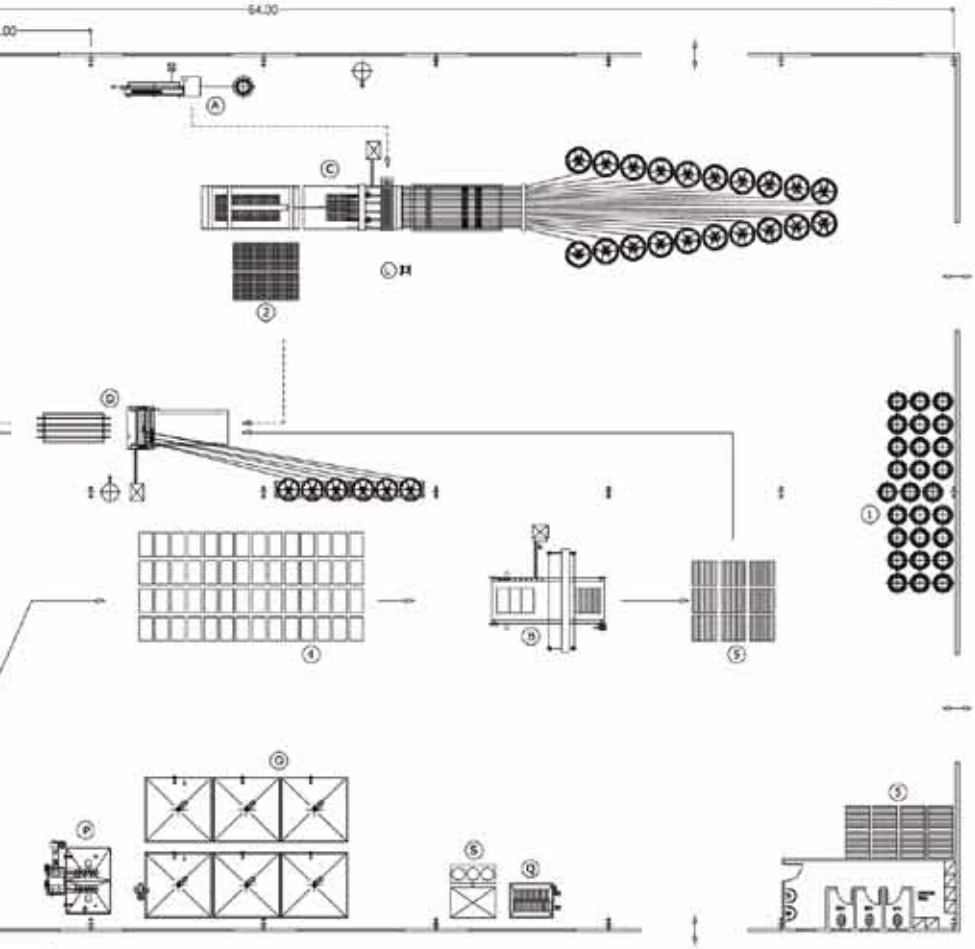
S - deduster to separate dust from recycled expanded polystyrene (

LANT FOR THE MANUFACTURE OF EMMEDUE® PANELS POLYSTYRENE BEADS AND THE STEEL WIRE IN COILS

PRODUCTION: 1.000 m²/8 HOURS SHIFT

C- Welding plant for flat mesh

A-Wire straightner



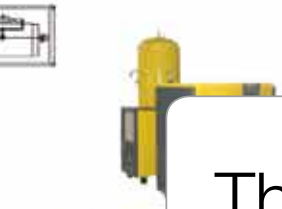
LEGEND

1 - Rolls of galvanized steel wires
2 - Electrowelded meshes
3 - Polystyrene beads
4 - Polystyrene blocks
5 - Shaped polystyrene sheets
6 - Finished panels

←---- Steel wire's course
←—— Polystyrene course
←=== Finished panel's course

⊕ - AIR-TANK (500 Lt.)

Q- Crumbler for polystyrene scraps



G- Rotar

EPS)

The EMMEDUE® technical staff studies,
together with its customers,
the best layout for the production plant.

INTEGRATED MANUFACTURING SOLUTIONS

“Our mission is to help businesspeople worldwide to set up a successful and profitable business, manufacturing and selling the EMMEDUE® Advanced Building System”.

ROBOTIZED SOLUTIONS

Our integrated manufacturing solutions are well known throughout the world and are the result of more than thirty years of experience.

By managing our factories, and supporting our network of worldwide licensees, we have countless opportunities to understand the needs of builders throughout the world, to address those needs with innovative solutions, to test those solutions in real world environments and to incorporate them into our building systems and manufacturing solutions by a process of continuous innovation.

CONTINUOUS LINE

The **EMMEDUE® continuous line** has resulted from the need to reach higher productivity levels of EMMEDUE® Single Panel. Resulting from over thirty-years of experience the company has in the production of sandwich panels and other technology, the Continuous Line combines the most sophisticated welding techniques with the most innovative information technology.
The fully automated line almost completely eliminates any human interaction, ensuring high productivity and quality levels.

The Line allows the production of the full range of EMMEDUE® Single Panels in terms of polystyrene slab thickness, regardless of the length which is decided by the operator depending on project requirements.

The whole line is managed by an industrial PC, which coordinates and handles the various machine stations.

Four control points are positioned along the line to allow the operator to check and control the process, from anywhere in the plant, without moving.

MOBILE PLANT

EMMEDUE® has designed the world's first MOBILE FACTORY for manufacturing building panels in response to our customers' requests for a temporary mobile manufacturing plant which can be erected even in remote locations, and subsequently moved.

It is a **complete, turnkey self-contained solution for shipping, setting up and operating an EMMEDUE® manufacturing facility anywhere in the world**, and then packing it up and shipping it to a different location after each project is completed. All the equipment included in the mobile factory, including the ocean-freight containers, are designed and produced by EMMEDUE®. To allow an easy and safe assembly and following disassembly as well by a small trained crew.
Like all EMMEDUE® manufacturing solutions, the MOBILE FACTORY produces the full rance of panels.

Every EMMEDUE® manufacturing standard solution can be supplied in a mobile configuration by adding the MOBILE FACTORY MODULE, which includes all the equipment to:

- transport the complete factory from one location to another
- assemble a framed and covered building to house the factory
- set up the production equipment
- set up offices and accommodations for the factory staff
- operate the factory at desired capacity
- generate the power and steam required.

Upon request EMMEDUE® can also provide the raw materials required to operate the factory.

PHASE 1

The factory arrives on site in specially designed re-usable containers.
The only preparation needed on site is a concrete base on which the factory will be placed. (image 1)
The number of containers and the base dimension vary according to the capacity of the factory. The installation process starts by unloading the special mobile crane.

PHASE 2

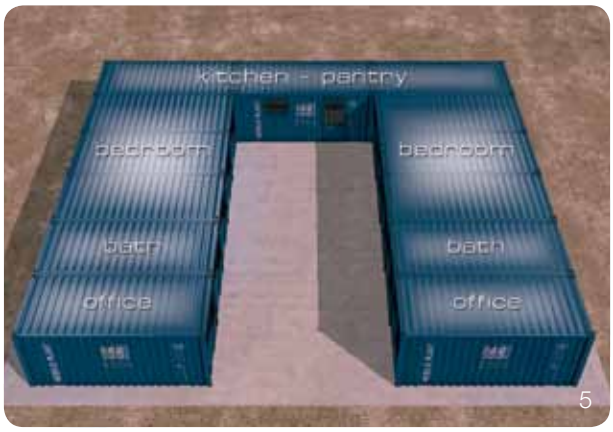
Using the mobile crane, the crew assembles the modular frame on the concrete platform in which will be installed the production equipment. The building has a steel frame structure and is covered with special purpose PVC. It is equipped with large capacity industrial doors to easily move the equipment and material in and out of the factory (image 2 and 3). Some of the containers are equipped to act as offices and to house the factory staff (image 5).

"Our MOBILE FACTORY represents the ideal solution for remote, large-scale projects that use the full capacity of a factory for a limited period of time."

Valeria Candiracci
CEO, EMMEDUE® SpA


7


6



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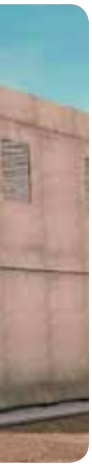


PHASE 3

The crew then moves the equipment inside the factory building using the mobile crane (image 4, 6 and 7).
The correct layout is designed by the EMMEDUE® Engineering Department optimize the production and material flow.
The factory is completely self-sufficient and generates its own power, steam and compressed air. It is designed to operate in any climate.

PHASE 4

At the completion of the building project, the factory is disassembled using the mobile crane. The manufacturing equipment is repositioned inside the re-usable ocean freight containers.
The building frame is disassembled and placed in the containers as well. After loading the crane into its container, the factory is ready to be transported to its next destination.

MODULAR SOLUTIONS FOR BUILDING

The technology underlying the EMMEDUE® manufacturing process is the result of many years of **research and development** aimed at improving operations quality and reliability, maximizing production and streamlining the whole manufacturing process, whilst also improving the structural performance of the panel.
EMMEDUE® superior technology is incorporated in several leading vanguard solutions - covered by patent - which distinguish the key equipment included in each EMMEDUE® manufacturing line.

TRANSPORTABLE MODULE
(known as MOBILE HOME)

1988


1985


1988

The EMMEDUE® system can be also used to construct **portable and modular units** retaining all the intrinsic performance characteristics of the system.

For situations where the modular transportable solutions can be the ideal response to particular weather and logistic conditions, EMMEDUE® has also designed an **automated production process** for transportable modular units.

The CURVED PANEL is a special panel having big dimensions and thickness, manufactured in the factory in a flat form and pre arranged in order to be bent after at the job site.

The panel produced in the factory is easily transported and is bent at the job site in the requested shape.

The main advantage offered by this panel is the possibility to cover big areas in a fast and convenient way. The structure grants a high thermal insulation as well as a resistance to earthquakes.

The EMMEDUE® Curved Panel is an exclusive patent of EMMEDUE® S.p.A.

PANELCAD SOFTWARE

M2 PanelCad® represents the latest evolution in the field of integrated design for the building industry.
M2 PanelCad® is an **innovative and easy to use software**, developed by EMMEDUE® in collaboration with Bentley, to offer designers high-quality solutions.
M2 PanelCad® is ideal to design both simple and complex buildings of any shape with the use of EMMEDUE® Panels.
It is **the most advanced and flexible device** to generate estimations of EMMEDUE® panels and accessories suitable for the project involved: it allows the fast creation of separate panel production lists and assembly schedules required for the on-site implementation of EMMEDUE® modular Panels.

M2 PanelCad® can be fully integrated with most of standard designs, as it uses compatible, transportable and editable formats such as DWG, DXF, DGN.

M2 EMMEDUE PANEL CAD

Bentley Sustaining Infrastructure

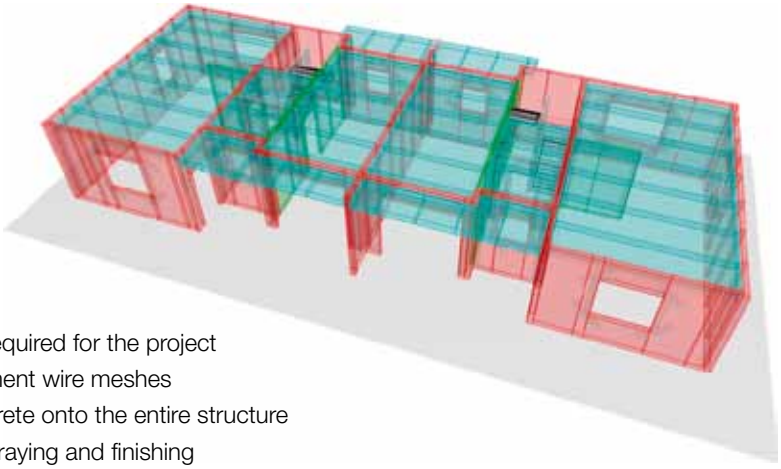
Drawing

With the M2 PanelCad® it is possible to:

- Import building projects
- Select the types of panel and wire mesh
- Design roofs and ceilings of any shape and angle
- Create openings for doors and windows
- Provide customers with a 3D execution impact simulation.

Budgeting

With the M2 PanelCad® it is possible to:

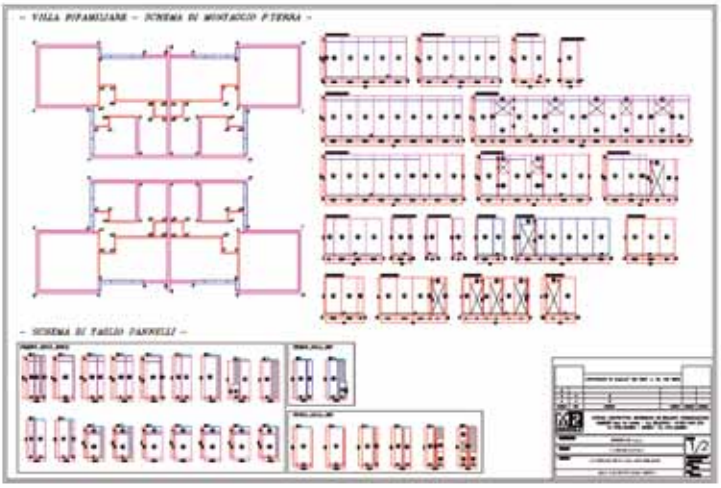


- Define standard prices for panels and wire mesh
- Estimate the amount and price of the various panels required for the project
- Estimate the amount and price of additional reinforcement wire meshes
- Estimate the amount of cement needed to spray concrete onto the entire structure
- Evaluate the work required for installation, concrete spraying and finishing
- Prepare customized quotes for customers.

Building

With the M2 PanelCad® it is possible to:

- Create a nesting plan (joint) showing the interaction and connection between panels of different shapes and sizes
- Prepare an assembly plan with the configuration details of the panels intended for each area of the building
- Print the assembly plan to be used on-site.



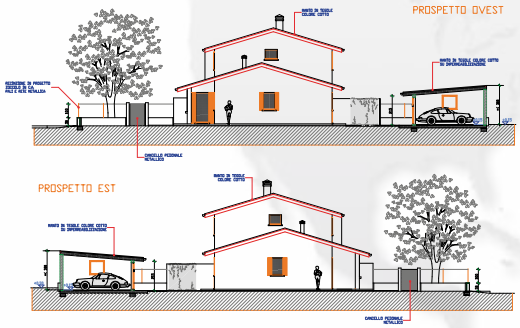
Integrated with the **M2 PanelCad®**, Bentley offers a powerful program allowing the creation of **3D modelling, prototypes of virtual buildings and hyper-realistic images and animations.**

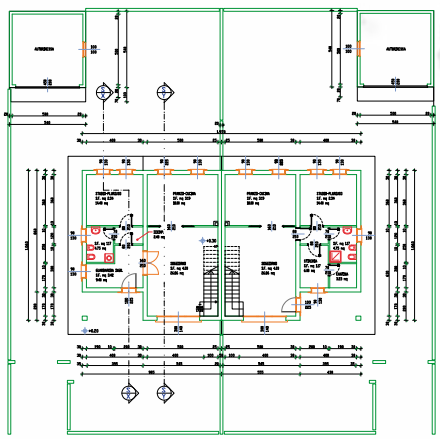
KNOW-HOW AND TRAINING

EMMEDUE®'s know-how lies in the in-depth knowledge and experience needed in order to use the **EMMEDUE® Building System and machinery in the most effective way.**
The experience gained by EMMEDUE® and its Staff over 30 years of **"World Wide" activity** is made available to the customer and its employees through staff training activities for both site personnel, through training courses involving the installation of the panels and the use of the design software and to the factory personnel, through training directed at the use and maintenance of plant machinery.

Each new partner draws on the **experience** that EMMEDUE® has gained in the system development, in the production process design and in the optimization of sales and marketing activities necessary to successfully launch and manage a new plant.

Taking ownership of an EMMEDUE® plant allows the entrepreneur to become **part of a network of successful businesspeople** willing to share the experience gained in the system throughout the world.






M2
EMMEDUE
Advanced
Building
System


M2

TURN KEY OFFER

The assistance EMMEDUE® provides to its customers goes beyond the mere provision of production facilities: this is one of the strengths of the company.

In fact, the collaboration with the customer starts before the delivery of the plant: it starts during the study and design of the activities required to achieve the optimal layout needed to maximize the management of the plant.

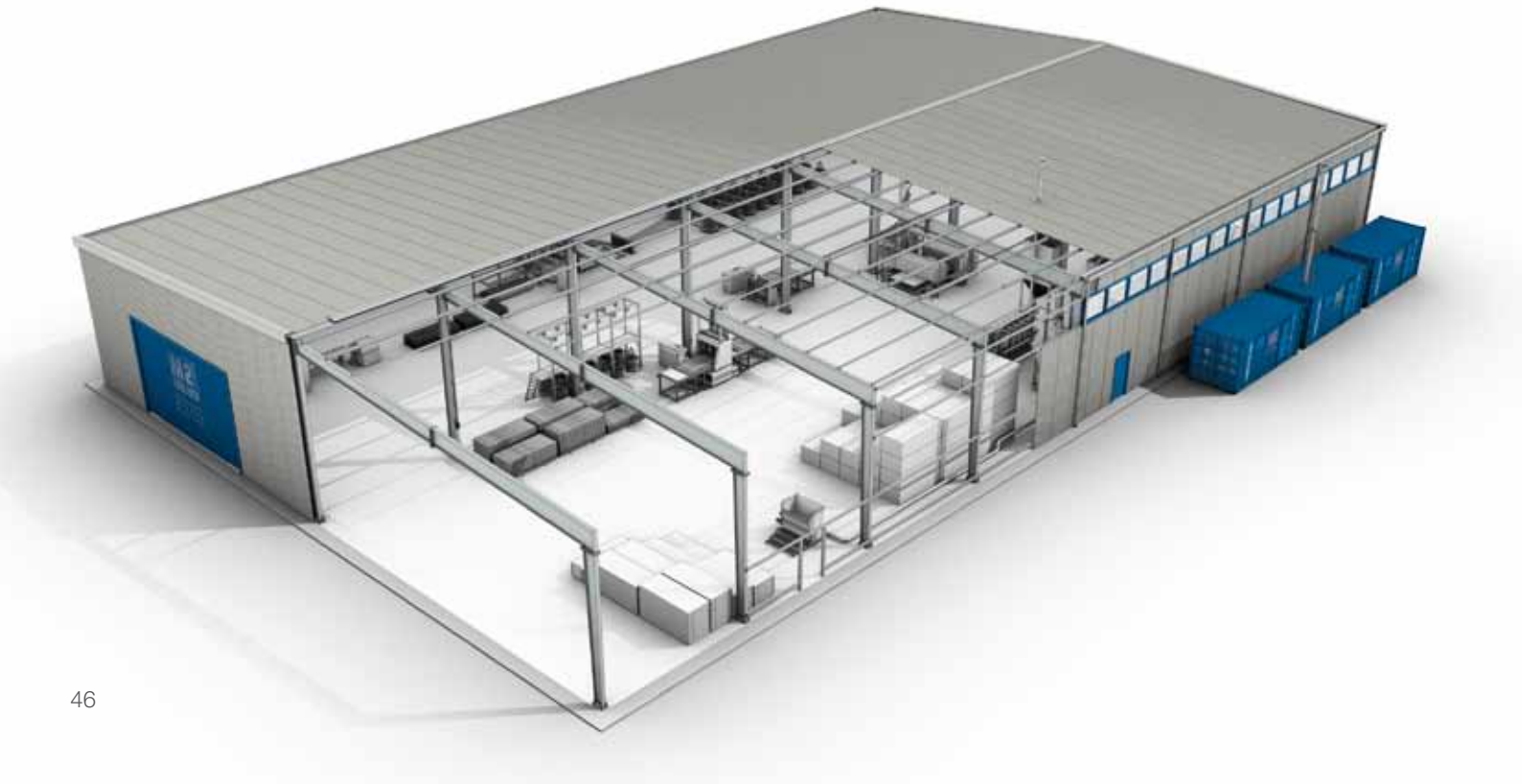
On customer's request, EMMEDUE® can complete its quotation providing **pre-fabricated structures specifically designed to house the facility.**

The commissioning of the plant is managed by EMMEDUE's® specialized teams of technicians ensuring correct installation of machinery, plant testing and training of production personnel.

The Industrial Factories EMMEDUE® offers are really **high-quality solutions,** conforming to the **highest strength and safety standards.**

The structure is assembled on site by qualified EMMEDUE® personnel who can deliver a fully operational factory very quickly thanks to the integrated management of the project, from design to construction and start-up phase.

The size and specifications of the EMMEDUE® Industrial Factories are **studied in advance** in detail to find the best solution depending on each specific layout characteristic and the type of plot provided.



ACCESSORY SERVICES

EMMEDUE® can assist the customer with the necessary support and testing operations needed to obtain any **local approvals** required and it can also promote fair trade as well as before sales and after-sales services.
EMMEDUE® can also provide its Customers with **raw materials:** thanks to its experience and careful selection of **local and international suppliers** EMMEDUE® guarantees **high quality standards at competitive prices.**

After system commissioning, EMMEDUE® continues to **assist its customers by helping them to achieve the best possible performance from the plant.**

Upon request, the support continues even after completion of the industrial project through **EMMEDUE SERVICE®:** thanks to a team of highly qualified professionals and experts at EMMEDUE®, the customers of the network can access a unique **package of services and solutions** specifically designed to facilitate the use of the on-site panels or whatever else the customers need to complete their project successfully.

RESEARCH AND DEVELOPMENT

Research and Development are crucial activities inside the company. Since many years EMMEDUE® projects and patents high innovative solutions to be always one step ahead in technological progress, customer's satisfaction and respect for environment.

WORLDWIDE PRESENCE

Italy Fano (PU)
Angola Luanda, Lubango
Argentina Buenos Aires, San Luis
Bolivia Cochabamba
Cape Verde Palmeria (Ilha do Sal)
Colombia Medellín
Costa Rica San José
Dominican Republic Santo Domingo
Ecuador Latacunga
Egypt Cairo
Eritrea Massawa, Alebu Industrial Zone
Indonesia Jakarta (2 plants)
Iran Tehran
Iraq Kurdistan
Ireland Portarlington
Libya Benghazi, Tripoli
Mexico León, Pachuca, Torreón
Mississippi (U.S.A.) Long Beach
Morocco Kenitra
Nicaragua Masaya (Managua)
Nigeria Abuja
Perù Lima
Philippines Makati City
Qatar Doha
Republic of Panama Ciudad de Panamà (2 plants)
Réunion Saint Benoit
Romania Bucarest
Russia Kurgan, Magnitogorsk
Spain Madrid, Málaga
Sudan Khartoum
Turkey Istanbul
United Arab Emirates Abu Dhabi
Venezuela Caracas, Maracaibo

The EMMEDUE® technical and commercial staff is ready to offer assistance and support to start and develop a successful business anywhere in the world.

Advanced
Building
System

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