EMMEDUE

The TECHNOLOGY to build the FUTURE

M2 EMMEDUE

Advanced Building System

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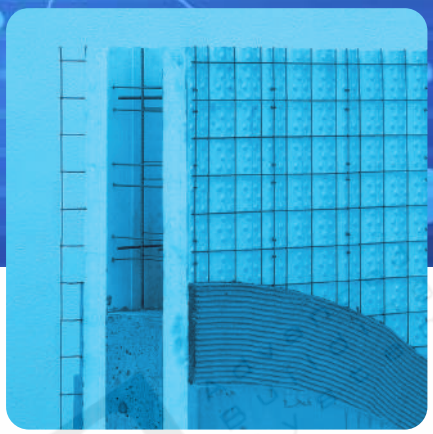
Advanced Building System



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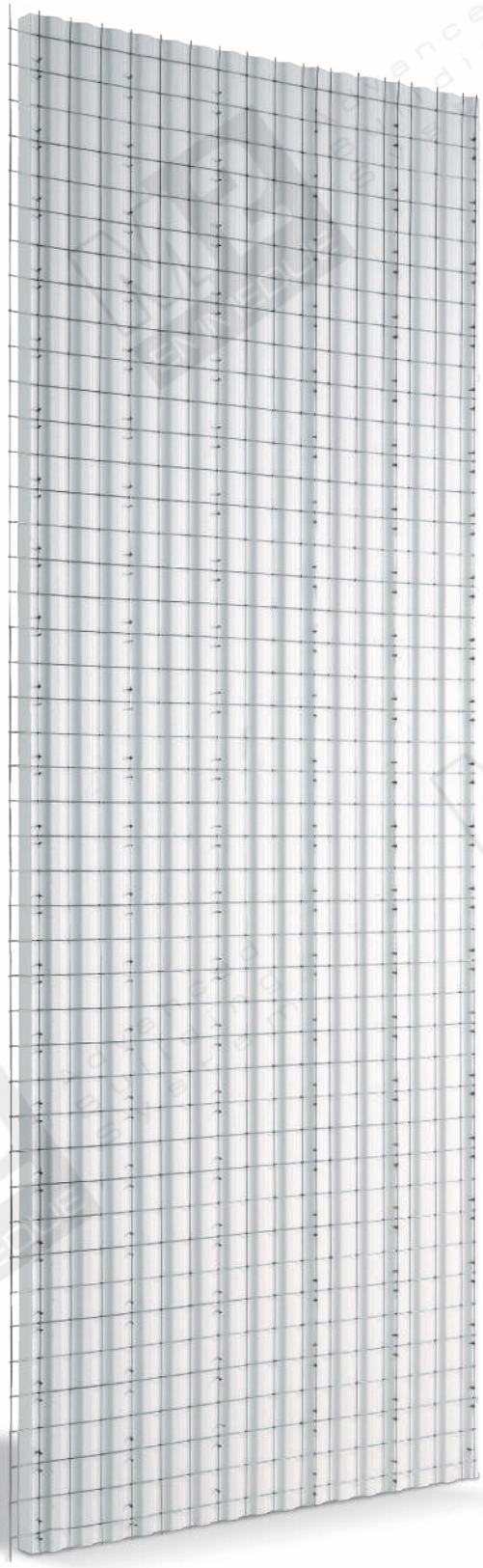
''Whatever your building project may be, EMMEDUE® has the technology and the know-how to carry it out better than anyone else."

Angelo Candiracci
Founder of EMMEDUE®



40 YEARS OF HISTORY

For over 40 years, EMMEDUE® has been leader in the production and marketing of an innovative anti-seismic building system which provides thermal and acoustic insulation.

The EMMEDUE® building system was created in 1981 and initially registered as MONOLITE® then in 1995, following a company restructure, became EMMEDUE®.

Mr Angelo Candiracci, founder of the company, drew on his previous experience in both the construction and engineering fields to develop the building system. By combining these two experiences, he created and developed what has in time become an innovative and ingenious building system.

40 YEARS OF RESEARCH AND INNOVATION

Since 1980, over 1.000.000 buildings have been constructed worldwide using the EMMEDUE® building system.

For over 40 years EMMEDUE® has been researching and developing the most advanced technology solutions to apply to the industrialized and automated production of the components of its building system.

40 years ago the EMMEDUE® building system totally revolutionised traditional building practices. Today, those 40 years serve to guarantee a product which is still innovative, safe and reliable.

"We believe in a market that deserves products which are increasingly efficient, high performance and which guarantee safety and comfort."

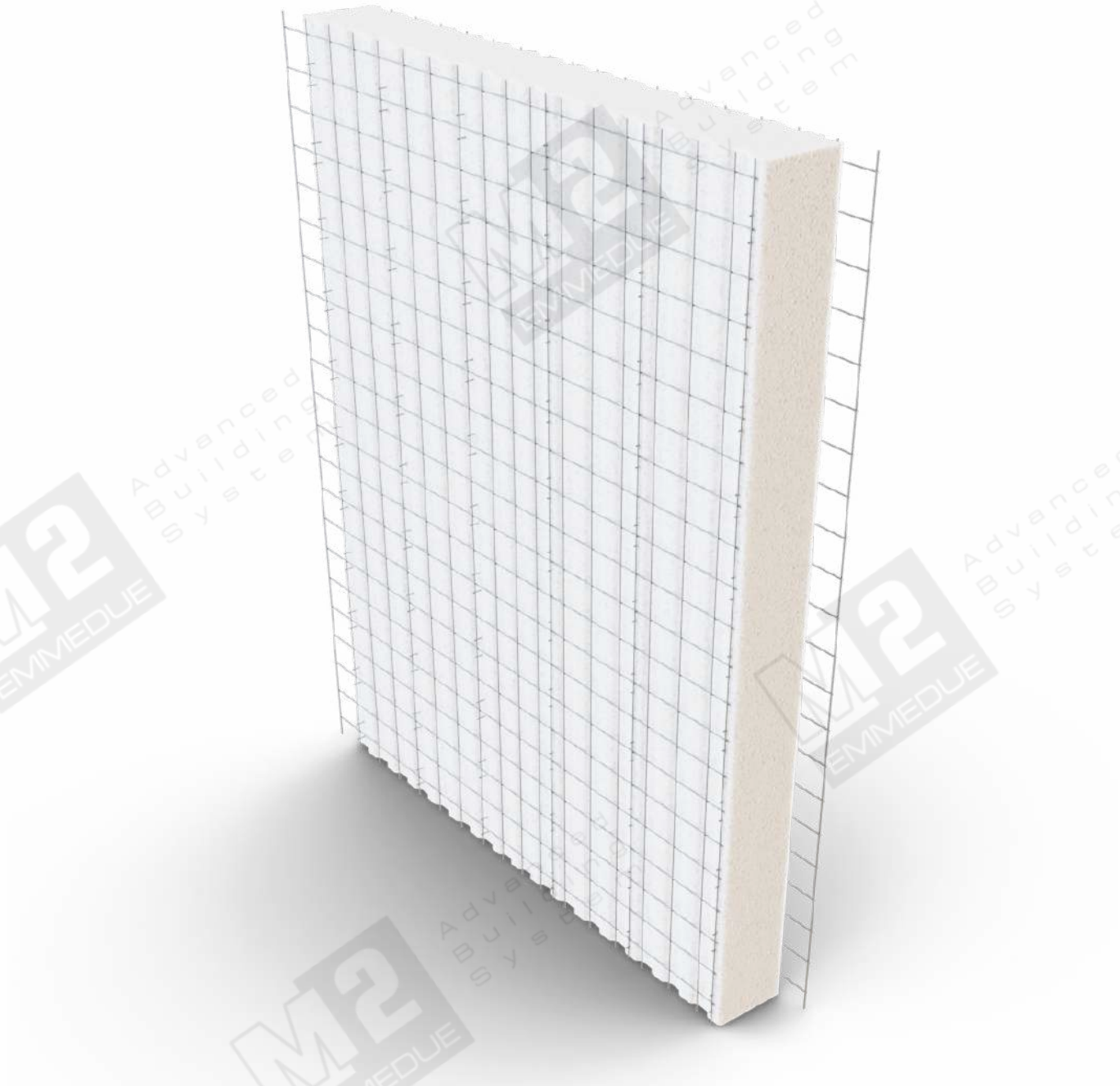
The R&D department was set up in response to our continuous focus on research for new advanced technology solutions. It is a centre of research specialising in the design of new technology solutions which are then used to enhance both the machinery and the end product.

ANTI-SEISMIC MULTI-STOREY CONSTRUCTIONS USING SINGLE PANELS

For over 40 years the EMMEDUE® building system has been used everywhere in the world, even in the most remote and inaccessible areas of the planet, successfully withstanding the destructive impact of natural phenomena.

EMMEDUE® Modular Panels: a complete range of products for all types of buildings.

THE EMMEDUE® PANEL



The core element of the EMMEDUE® building system is not a prefabricated panel but a modular one. The panel is made up of two galvanised welded steel wire meshes joined together by connectors which enclose an expanded polystyrene panel, shaped as required.

The machine-produced panel is then assembled and sprayed with shotcrete on site.

EMMEDUE® offers a complete range of building elements including load-bearing walls, floors, roofing, stairs, partitions and curtain walls. In this way, it is possible to construct a whole building using the same building system, as well as optimise the supply chain, and reduce time and labour.

SINGLE PANEL

The EMMEDUE® single panel is composed by a cage realized with two galvanized steel meshes that encloses an expanded polystyrene slab and it is completed on site with shotcrete. This is the ideal panel for load-bearing wall, partition walls, cladding, slabs and roofs of civil and industrial buildings.

It is used as a load-bearing wall, for buildings of up to 6 storeys; for partition walls and cladding in new or renovated homes, in large industrial and commercial buildings; as insulating disposable formwork for roofs and floors with limited spans.

This panel is approved as a load bearing wall thanks to many certification obtained worldwide as, for example, the ETA certification in Europe, the ESR evaluation report from ICC and the TER from DRJ in the US.

DOUBLE PANEL

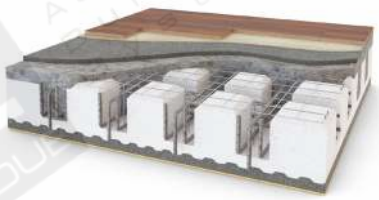
The insulating double panel is ideal for reinforced concrete walls such as load-bearing and retaining ones. The double panel is made up of two basic panels, shaped as required and joined together by double horizontal connectors which create a hollow core which is then filled with concrete of strength to meet the project needs. A layer of plaster is then applied to the panel on the outer faces. The double reinforced panel meets building code requirements for reinforced concrete EUROCODE 2 (EC2) and any other building code all over the world.

STAIR PANEL

For the fast construction of lightweight, resistant stairs.

The stairs are made of a single block of EPS, shaped to the required design specifications, enclosed within two layers of steel wire mesh which are joined together by electro welded steel wires. Once the stair panel has been adequately reinforced and finished on site with an application of concrete, traditional coverings such as tiles or marble can be easily applied.

LANDING PANEL



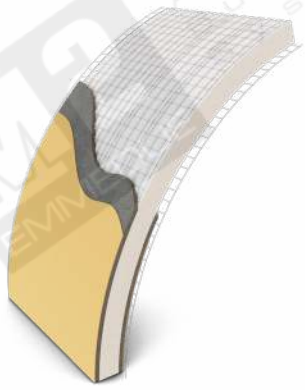
This panel is used to create landings, floors and two-way reinforcements and provides continuous insulation on the underside of the panel.

The EMMEDUE® landing panel provides the ideal solution for connecting landings to stairs made using the EMMEDUE® stair panel. The landing panel is also suitable for reinforced concrete plates or slabs requiring two-way reinforcing and thus reduces weight load compared with a full slab. It also provides continuous insulation which also acts as formwork.

FLOOR PANEL

The panel can be used for both flooring and roofing with reinforced concrete joists. It provides significant advantages in terms of reduced weight, insulation and rapid assembly. The EMMEDUE® floor panel is a shaped polystyrene sheet which can be used for flooring and roofing. It consists of channels that will function as reinforced concrete joists.

CURVED PANEL



The curved panel is a special panel, produced in the factory in a flat shape and arranged to be curved, later, on site.

Thus, the panel produced is easily transported and then, manually or semi-automatically, curved on site into the desired form, using a pneumatic tool designed by Emmedue.

The main advantage of the panel is the ability to cover large surfaces quickly and conveniently. Moreover, these panels allow architects to be more creative and test new shapes.

EASE OF HANDLING

The extreme lightness of the EMMEDUE® panels enable fast and easy transport and handling.

EMMEDUE® panels can be positioned manually and joined together by using a staple gun or construction wire.

Single panel for flooring and roofing

M2 EMMEDUE
Advanced Building System

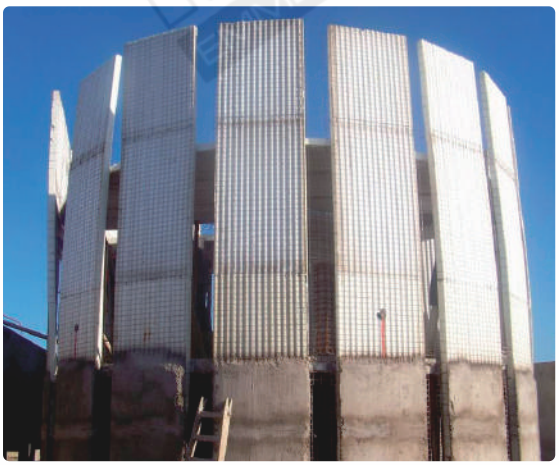
The utility chases in the polystyrene are easily made by melting the polystyrene behind the wire mesh with a hot-air gun or other heat-producing tool.

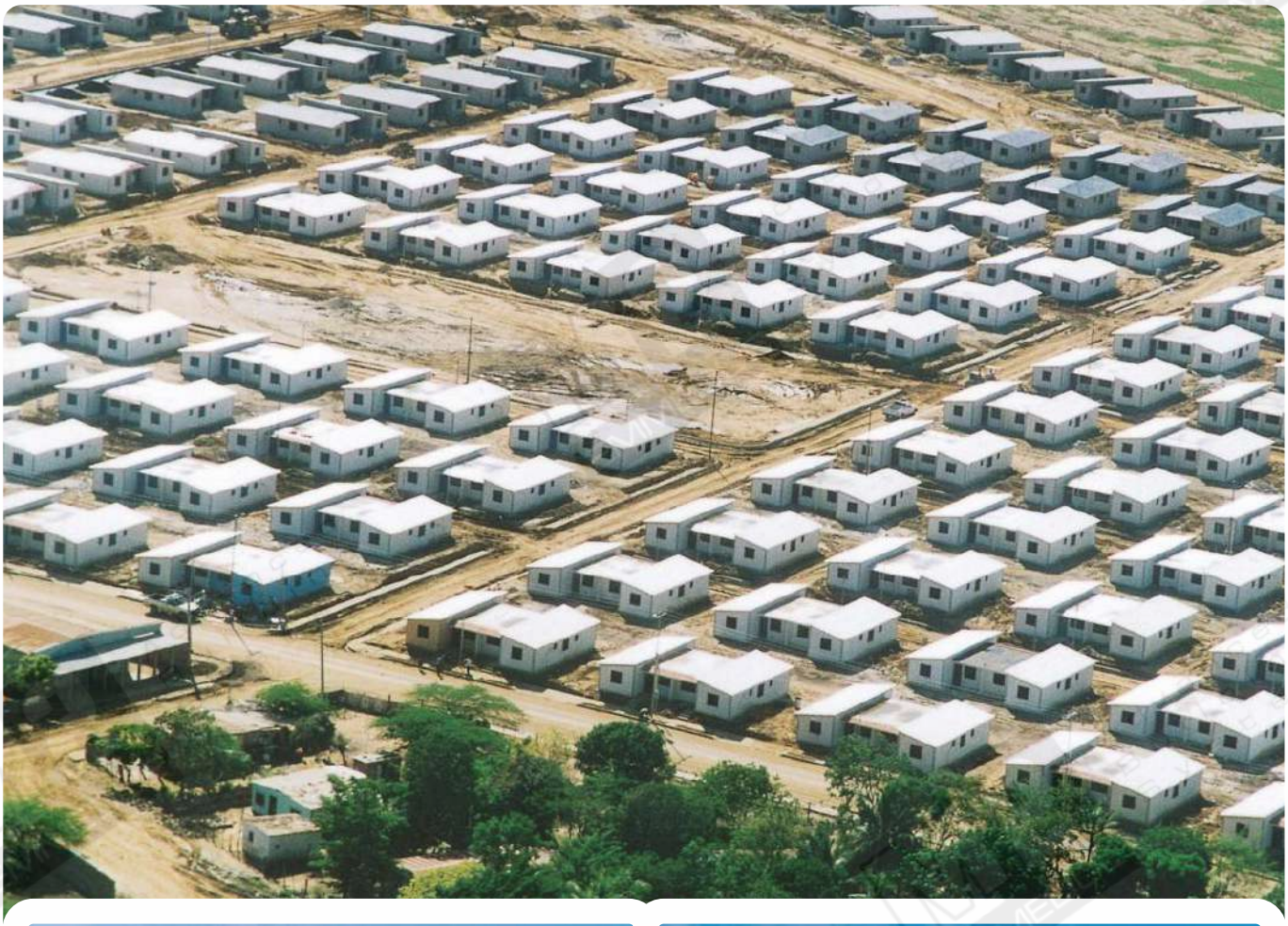
The placement of service pipes (electricity, water, gas, etc...), is carried out quickly and easily, behind the wire mesh.

Spraying the panel with plaster coating

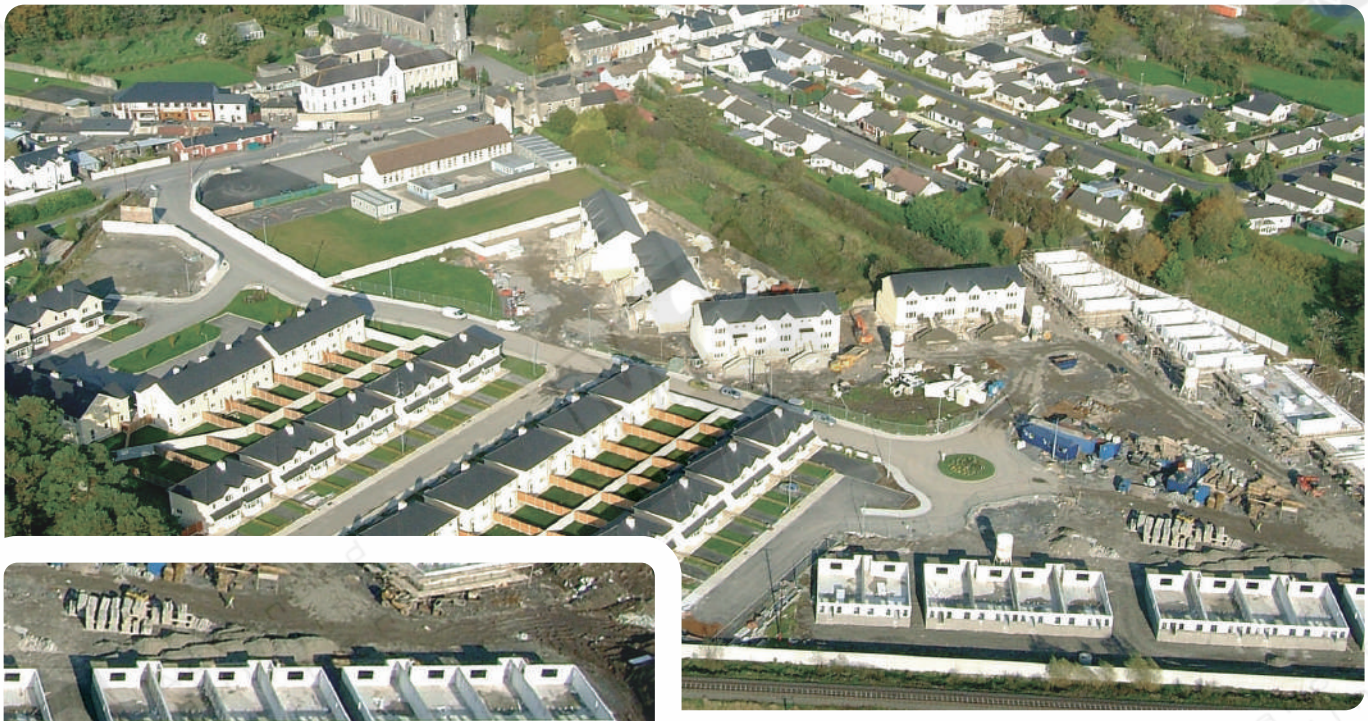
APPLICATIONS

APPLICATIONS





APPLICATIONS

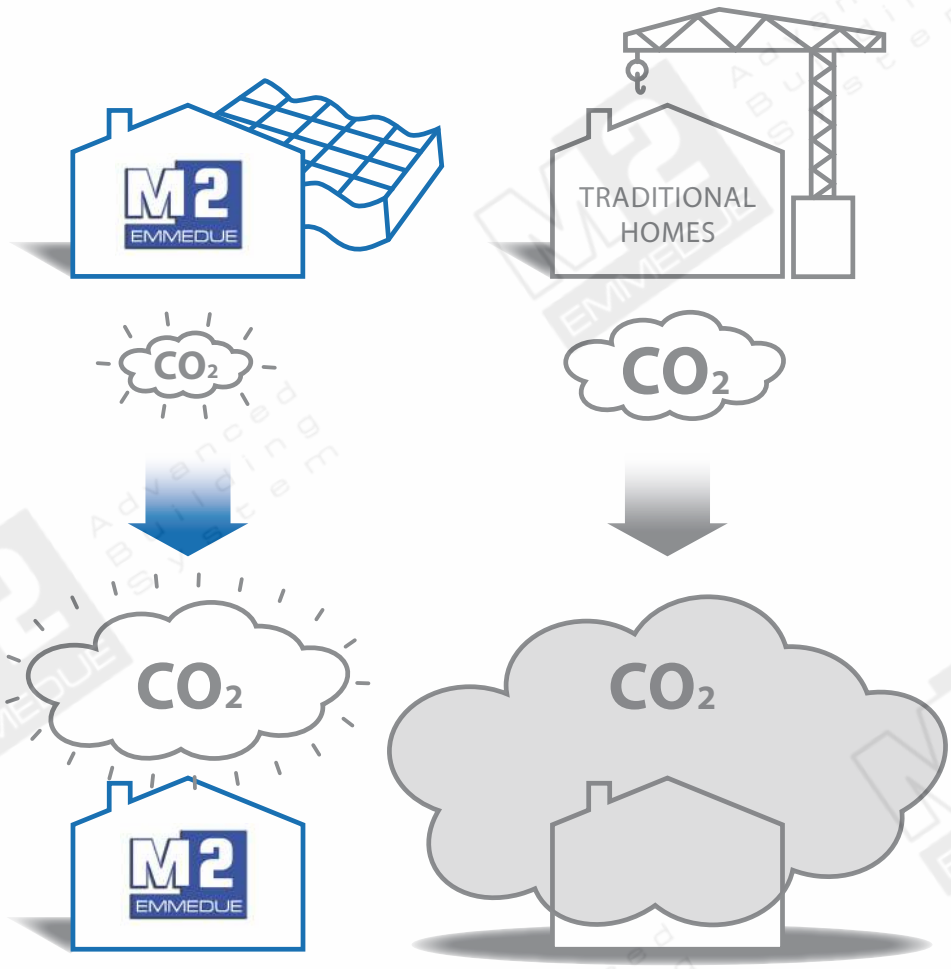


APPLICATIONS

EMMEDUE®

Green Culture for a future to build

Buildings consume enormous quantities of energy; their heating and cooling systems are responsible for the greatest waste. Energy efficiency is the answer to reducing rising energy costs and CO_2 emissions.



CO_2 emissions reduction

Up to 40%* less in the construction of the building.

Up to 65%* less during its use.

The cleanest energy is the one not consumed

-80% energy

Good thermal insulation can halve energy consumption and the pollution caused by the heating and cooling systems in buildings. The use of EMMEDUE® panels results in the construction of less energy-guzzling buildings, ensuring higher levels of energy efficiency and energy savings of up to 80% throughout the life span of the structure.

**data taken from a report by "PEP – Promotion of European Passive Houses – Energy Saving Potential"*

Human comfort and environmental compatibility

The EMMEDUE® building system considerably improves indoor thermal comfort drastically reducing energy consumption and promoting strategies aimed at sustainable development. The EPS has excellent insulating capacities which, throughout the life span of a building, results in reduced energy consumption and lower carbon emissions thus curbing climate change and global warming.
In a comparative carbon footprint analysis, commissioned by EMMEDUE® to measure the footprint produced by its own single panel building system and a traditional one, the findings showed that the EMMEDUE® building system produced approximately 60% less Co_2 emissions compared with a traditional building made of reinforced concrete and masonry facing.

EPS SUSTAINABILITY

Polystyrene, the main component of our product, has been approved and certified by regulatory authorities and agencies, and is recognized as being totally eco-friendly with the lowest environmental impact.
Sintered expanded polystyrene (or EPS) is an environmentally friendly market leader:

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, and it does not suffer damage if exposed to steam or humidity.

RECYCLABLE: during production, no waste materials are produced and the panel production aims to optimise the cuts while minimising waste. Any EPS scraps are directly recycled during production, in the plant itself.

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

SELF-EXTINGUISHING: the EPS used for EMMEDUE® panels is self-extinguishing, i.e. once the ignition source (the flame) has been removed the flame self extinguishes.

BENEFITS OF THE BUILDER

The EMMEDUE® building system combines in a single element all the key essentials needed to construct a complete building that is adaptable to all types of building project with maximum efficiency.

Cost Effectiveness:

Compared to traditional products, EMMEDUE® panels achieve far better results at considerably reduced cost. In fact, it can be estimated that the grey structure made with the EMMEDUE® building system costs almost 30%* less than a traditional structure with similar performance. The shorter build timescales represent additional savings.

**refers to builds using PSM08-Ø2,5 panels*

Rapid Installation:

The EMMEDUE® system has been used in countless building experiences, in diverse conditions, and with all types of labour in many countries worldwide. These building experiences show a marked reduction in construction time compared to traditional building methods. EMMEDUE® panels are industrialized, and for this reason, assembly processes are optimised, labour is significantly reduced and construction time decreased by roughly 40%*.

**refers to builds using PSM08-Ø2,5 panels*

Lightness, ease of transport and handling:

Thanks to their lightness and resistance, the EMMEDUE® panels are easy to handle, simple to transport and assemble even in most adverse operational conditions. Before shotcrete application, an EMMEDUE® panel weighs from 3.5kg/sqm to 5kg/sqm, thus a single operator can easily handle more than 3sqm* of wall, that is a panel high as an house storey.

**refers to builds using PSM08-Ø2,5 panels*

Versatility:

The EMMEDUE® building system gives full design flexibility as it offers a complete range of building elements such as load-bearing walls, curtain walls, floors and stairs.

The panels are easy to use in the construction of any type of structure and can be shaped to any geometric requirement – flat or curved- by simple cutting on-site.

Compatibility with all other building systems:

EMMEDUE® is an extremely versatile building system which is completely compatible with all other existing construction systems; in fact EMMEDUE® products are even suitable for completing reinforced concrete or steel structures. In addition EMMEDUE® products can be easily anchored to other construction elements such as steel, wood, and pre-stressed concrete.

Wide choice of finishes:

Buildings constructed using EMMEDUE® panels can be completed in a variety of finishes or can be painted traditionally on smoothed plaster. The surface of the walls has the appearance of a thin sheet of reinforced plaster that can easily accommodate all types of wall coverings including stone tiles and rainscreen cladding.

BENEFITS TO USERS

The EMMEDUE® building system is functional and achieves high levels of environmental comfort.

Thermal insulation:
EMMEDUE® constructions perform brilliantly in both insulation and load-bearing functions: the thickness and density of the panel can be customised to deliver specific thermal insulation requirements. Furthermore, the EPS core extends throughout the surface which makes up the building envelope eliminating thermal bridging. For example, an EMMEDUE® PSM80 wall with a finished thickness of about 15cm provides the same thermal insulation as an insulated solid masonry wall of about 40cm, with obvious advantages in terms of additional space. Coupling with sound-absorbing materials (such as plasterboard, cork, coconut fibre, rock wool, etc.,), further optimizes the acoustic insulation of those walls, in compliance with the most stringent regulations.

Earthquake resistance:
Lab tests carried out on full-size prototype houses determined that EMMEDUE® structures withstand, completely undamaged, earthquake loads superior to seismic safety requirements. The prototype houses were also tested using both artificial and natural accelerograms with peak values over 1,0g, and came through unscathed.
The results obtained in the lab tests represent the scientific confirmation of what has repeatedly been observed in real-world earthquakes.
Buildings made using EMMEDUE® panels are particularly lightweight, so have a low seismic mass, but are at the same time rigid due to two sheets of reinforced plaster that interact to create an enveloping 'shell' of the whole structure.

Energy efficiency:
The EMMEDUE® building system constructs buildings which achieve high levels of energy efficiency which conform to energy efficiency regulations thanks to the insulating envelope provided by its polystyrene core which eliminates thermal bridges and ducts within the panels.
The EMMEDUE® system provides significant improvements in indoor thermal comfort by greatly reducing energy consumption and promoting strategies aimed at sustainable development as established by analysis on a prototype which show a reduction of approximately 60% in carbon emissions when compared to traditional buildings.

Load resistance:
Numerous lab tests, performed in different parts of the world, have highlighted the high load resistance of the EMMEDUE® panels which after compression testing with centred load performed on a single finished panel, 270cm high, have shown they withstand a maximum load of up to 1530 kn/m ≈ 156 ton/m.
The monolithic joints of the EMMEDUE® building system provide a high level of structural strength to buildings.

Fire resistance:
The quality of the foam polystyrene used for our panels is self-extinguishing and is perfectly encased by layers of reinforced concrete which coat the sides of the panel and inhibit combustion. Fire resistance has also been verified in tests performed in various laboratories. For instance, a wall erected using a PSM80 provides REI 120 fire resistance, which means that for 150 minutes, the panel proved to be R = stable, E = resistant to fire and smoke, I = insulated.

Cyclone resistance:
Throughout the years, buildings constructed using the EMMEDUE® system in cyclone prone areas have demonstrated their capacity to withstand the passage of the most destructive cyclones. Laboratory tests, conducted on EMMEDUE® buildings, to determine the resistance of cyclone impact and damage caused by wind- borne debris confirm the strength of the building system (tests in compliance with U.S regulations for cyclone speeds of up to 106,2 km per hour).

Blast resistance:
A series of tests carried out on a variety of EMMEDUE® building panels finished in different types of high strength concrete were conducted using a powerful explosive in a test chamber optimized to produce uniform shock waves on the face of the panels. The EMMEDUE® panel performance was excellent withstanding explosions of 29.5 tons/ m².

TESTING AND EVALUATION

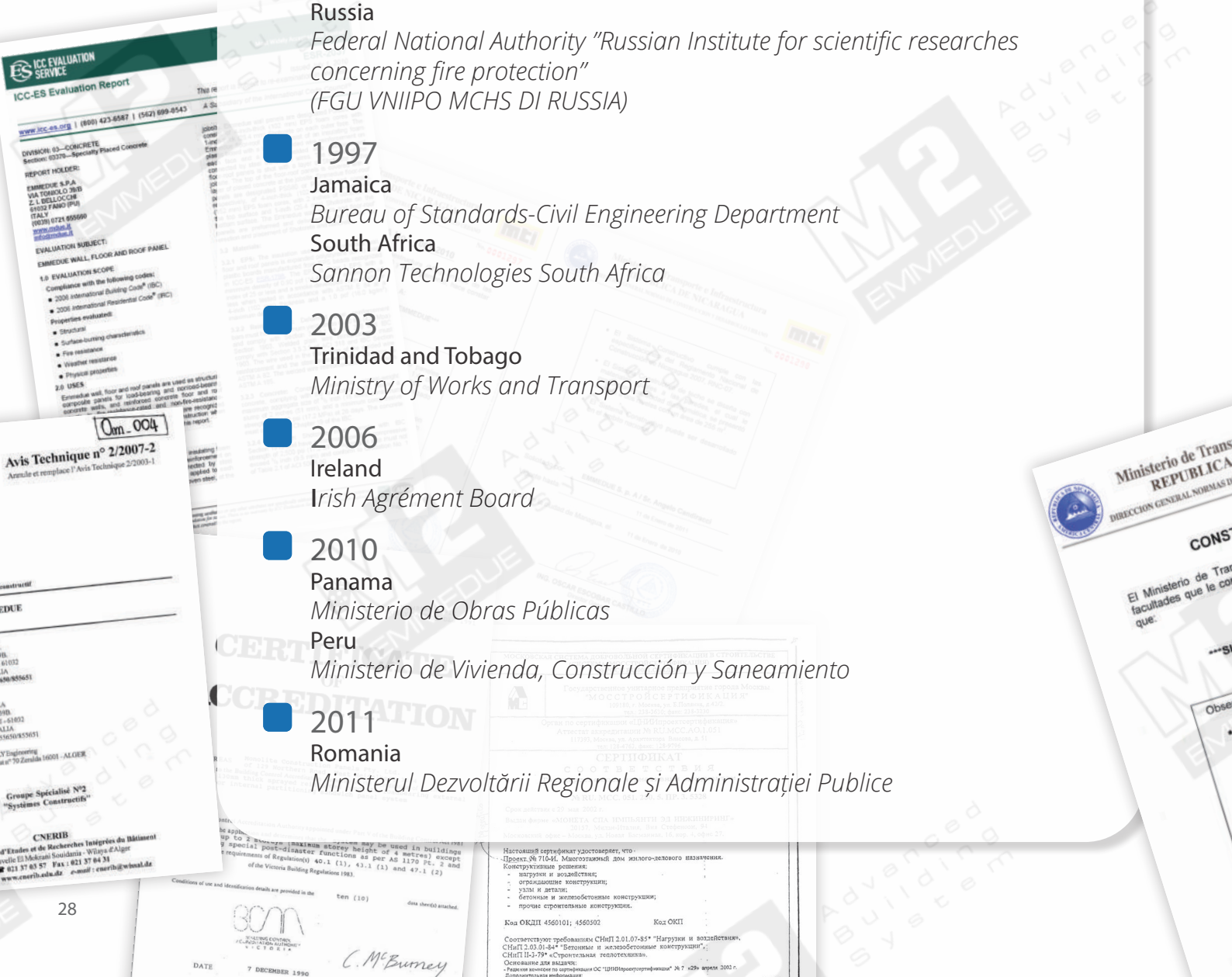
Through ongoing research and development, EMMEDUE® strives to constantly improve its products and thus ensure the highest standards of reliability. For this reason, EMMEDUE® products undergo the most stringent testing processes (static, dynamic, ballistic, fire, wind etc.) which are carried out at internationally renowned laboratories to obtain the relevant certifications and approvals.

TEST CATEGORY	COUNTRY	ORGANIZATION	TEST TYPE
STATIC TESTS	ITALY	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
	REUNION ISLAND	I.U.T. Veritas	Bending test
	MEXICO	IMCYC	Static tests
	PANAMA	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	ITALY	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
	PERU	Pontificia Universidad Católica del Perú	Seismic tests on shaking table
ACOUSTIC TESTS	BRAZIL	Instituto de Pesquisas Tecnológicas (IPT)	Soundproofing test
	CHILE	Universidad de Chile Facultad de ciencias físicas y matemáticas	Soundproofing test on the single panel
	ITALY	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 físicas y matematicas	Fire resistance test
	ITALY	Istituto Giordano	Fire resistance test
		Laboratorio CSI	Fire resistance test
	SPAIN	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	ITALY	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

CERTIFIED QUALITY OF THE EMMEDUE® SYSTEM

Through the years, the reliability of EMMEDUE® products has been confirmed many times over by the certifications and approvals received which are in compliance with the stringent building regulations of many countries.

- 1985
  Italy
  Ministero dei Lavori Pubblici
- 1990
  Australia
  Building Control Accreditation Authority
- 1994
  Puerto Rico
  Dirección de planeamiento y desarrollo urbano San Juan
- 1996
  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
  Trinidad and Tobago
  Ministry of Works and Transport
- 2006
  Ireland
  Irish Agrément Board
- 2010
  Panama
  Ministerio de Obras Públicas
  Peru
  Ministerio de Vivienda, Construcción y Saneamiento
- 2011
  Romania
  Ministerul Dezvoltării Regionale și Administrației Publice



2012

Nicaragua

Ministero de Transporte e Infraestructura

Uruguay

Ministerio de Vivienda Ordenamento Territorial y Medio Ambiente

Argentina

Ministerio de Planificación Federal Inversión Pública y Servicios Obras de Desarrollo Urbano y Vivienda

2013

Ecuador

Ministerio de Desarrollo Urbano y Vivienda - NEC

2014

India

Ministry of Housing & Urban Poverty Alleviation
Building Materials & Technology Promotion Council

Algeria

Centre National d'Etudes et Recherches Intégrées di Bâtiment

Russia

Federal Health Authority

Dominican Republic

Ministerio de Obras Públicas y Comunicaciones

2016

Europe

European Organisation for Technical Assessment

2018

Russia

Министерство Строительства И Жилищно-Коммунального Хозяйства Российской Федерации (Минстрой России)

2020

Spain

Instituto de Ciencias de la Construcción Eduardo Torroja

2021

Europe

Instituto de Ciencias de la Construcción Eduardo Torroja

2022

U.S.A.

ICC- ES Evaluation Service

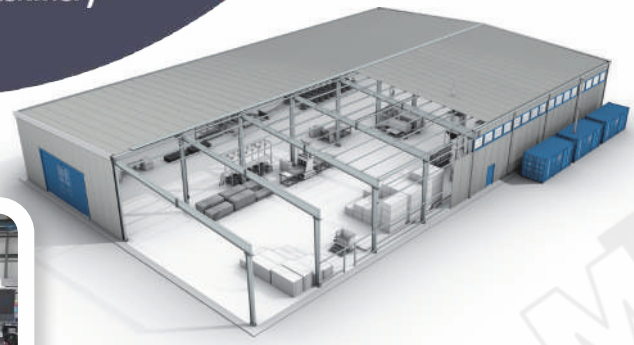
WORLD LEADER

Over 40 years experience and a worldwide presence make EMMEDUE® the market leader in the industrialised building systems sector.

Alongside a complete range of products and machinery intended for the production of our building system EMMEDUE® offers a package of solutions created to support customers.

In fact, the EMMEDUE® offer includes:

- PRODUCTION PROCESS: SUPERIOR TECHNOLOGY
- INTEGRATED MANUFACTURING SOLUTIONS
  - Robotised solutions
  - Continuous line
- MOBILE PLANT
- MODULAR BUILDING SOLUTIONS
- PANELCAD SOFTWARE
- KNOW-HOW AND TRAINING
  - Training of on-site crew
  - Training of plant workers
  - Online training with the Emmesynergy E-learning Platform
  - Ongoing process for obtaining approvals and certifications for raw materials and end products
  - Product strength and reliability testing
  - Registration of the company's trademarks and patents worldwide, and industrial patents to protect inventions.
- TURN KEY OFFER AND ADDITIONAL SERVICES
  - Technical assistance during project planning phase, cost estimating and installation.
  - Pre and post sales assistance extended to customers, machinery and panel use.
  - Online Technical Support.
- RESEARCH & DEVELOPMENT
  - Ongoing research and development for innovative technology solutions.



01 Project analysis

02 Plant design

03 Plant installation

04 Plant start-up

05 Training on machinery

06 Technical department training

07 Training on M2 PanelCad Software

08 Site training

09 Support for certifications

10 Knowledge Community Emmesynergy

PRODUCTION PROCESS, SUPERIOR TECHNOLOGY

POLYSTYRENE

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 glassy granule form (beads), with different diameter 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 to allow the pentane they contain to expand causing an increase in their initial volume by up to 20-25 times, forming an internal closed cell structure that holds 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 ageing 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.

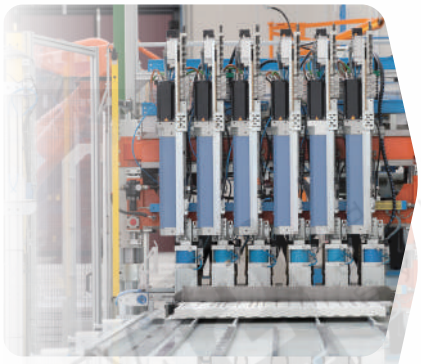
OUTPUT CAPACITY

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.

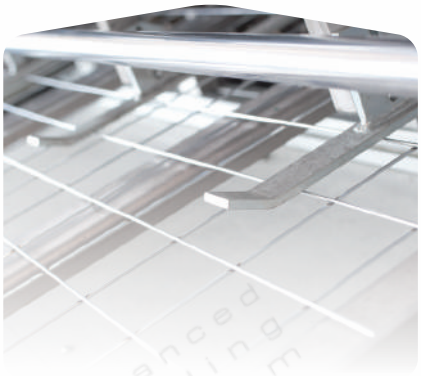
CUTTING AND SHAPING

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



STITCHING THE SANDWICH PANEL

Our automatic assembly and welding plant for spatial panels with double connectors lies at the centre of our entire production line because this machine produces the sandwich panels made up of two or four welded wire meshes and one or two sheets of polystyrene depending on the type of panel to be produced.



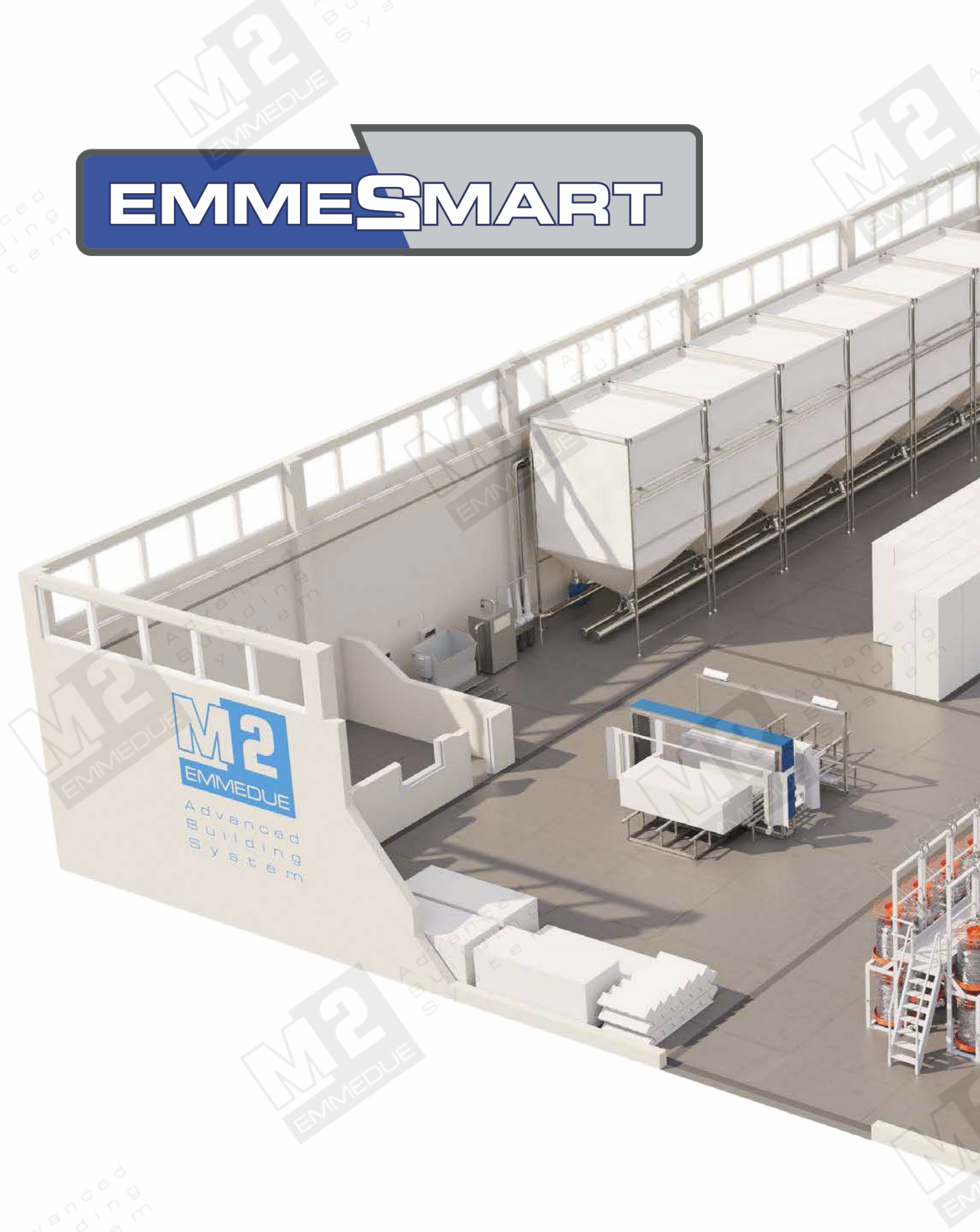
MESH WELDING AND CUTTING

The EMMEDUE® automatic welding plant produces galvanized flat steel meshes, made up cross wires at variable pitch of 20 longitudinal wires and the meshes are automatically produced to size, then lifted by an automatic device and stacked on a steel pallet ready for transfer to a panel producing machine.

WIRE UNWINDING AND STRAIGHTENING

The EMMEDUE® automatic welding plant is equipped with a wire feeding mechanism which pulls the longitudinal wires directly from 20 loading coils and straightens them.

EMMESMART



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

MANUFACTURING SOLUTIONS

Our mission is to help business people worldwide set up a successful and profitable business in manufacturing and selling the EMMEDUE Advanced Building System.

EMMEDUE develops modular production plants with diversified production capacities based on customer needs with the possibility of implementing the production capacity of the system over time.

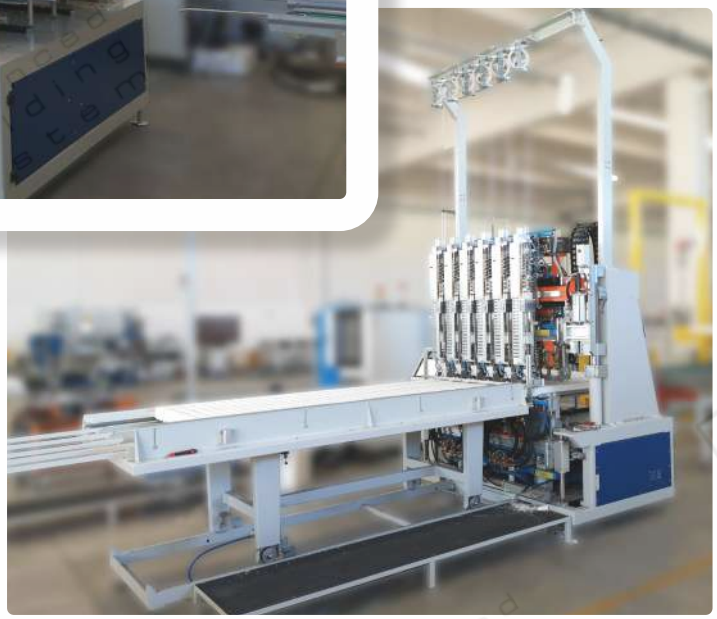
EMMEDUE uses latest generation technology that optimises system energy expenditure, using resources efficently and creating economic value through the development of a sustainable business model.

EMMESMART

A SAFE AND SUSTAINABLE BUSINESS

EMMESMART offer Plants and Solutions for starting a successful, high performance business, producing the most innovative, certified and safest building system in the world.

The smallest EMMEDUE plant with all the EMMEDUE Know How!



Panel Machine

EVO Panel Machine

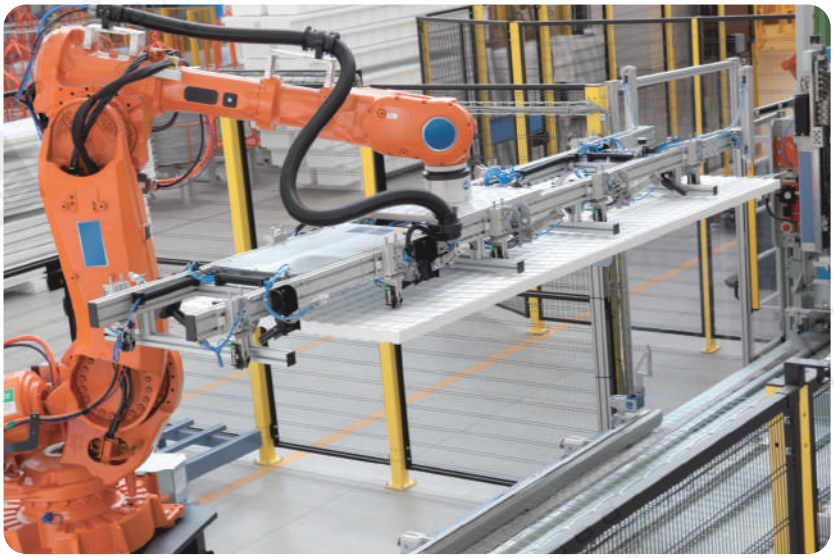
The result of over 40 years of Experience is a plant that sums the most sophisticated welding technique, great production efficiency and maximize the safety standards for the production of every type of panel in the EMMEDUE range.

Wire Mesh Machine

INTEGRATED MANUFACTURING SOLUTIONS

ROBOTIZED SOLUTIONS

Our integrated manufacturing solutions are the result of more than fourty years experience focused on the study of this unique technology. The management of our factories and the support we offer to our network of worldwide licensees, give us countless opportunities to understand fully what builders' needs are throughout the world. We strive to address these needs by providing innovative solutions tested in real-world situations and to incorporate them into our buildings systems and manufacturing solutions through a process of continuous innovation.



CONTINUOUS PRODUCTION LINE

The EMMEDUE® continuous production line results from the need to satisfy demand for higher levels of EMMEDUE® Single Panel production. The continuous production line combines the most sophisticated welding techniques with innovative information technology which results directly from experience accumulated in over 40 years in the production of sandwich panels and technology.

The fully automated line, while ensuring high productivity and quality levels, practically eliminates the need for human intervention.

The line can produce the full range of EMMEDUE® Single Panels. The size and length of the polystyrene panels are decided by the operator beforehand and depend on the project requirements.

The whole line is controlled by an industrial PC which regulates the coordination and movements of the various machines.

Four operator panels are located along the line; these panels enable an operator to track the whole machine and intervene easily from anywhere in the plant.

MOBILE PLANT

In response to customers' demand for a temporary mobile plant able to address the issues involved in setting up and then moving a manufacturing plant in remote areas, EMMEDUE® has designed the EMMEDUE® MOBILE PLANT - the first and only solution of its kind in the world.
It is a fully complete turn key solution designed to transport, set up and operate an EMMEDUE® production plant anywhere in the world which can then be dismantled and transported to another site at the end of each project. EMMEDUE® designs and produces all the equipment that makes up the mobile plant including the containers, approved for sea transport.
A small trained installation crew can easily set up

the production site and then dismantle it ready for transport to the next site.
Just like all the production solutions by EMMEDUE, the mobile plant is capable of producing the entire range of building system panels.
Each standard EMMEDUE® plant can be transformed into a "mobile" version by adding the appropriate MOBILE PLANT MODULE which includes all the equipment needed to:

- transport the plant from one site to another
- set up a covered structure to house the plant
- set up the production equipment
- set up production support offices and on site crew accommodation
- operate the plant to desired production level
- generate sufficient power and steam

PHASE 1

The factory arrives on site in specially designed re-usable containers.

The only advance preparation required on site is a cement base on which to place the plant.

The size of the cement base and the number of containers needed for transportation depend on the production capacity of the plant.

Set up of the plant begins once the mobile crane, used to move the production equipment, is unloaded from the container.

PHASE 2

The installation crew uses the mobile crane to erect the modular shed which serves to house the production equipment, on the cement base.

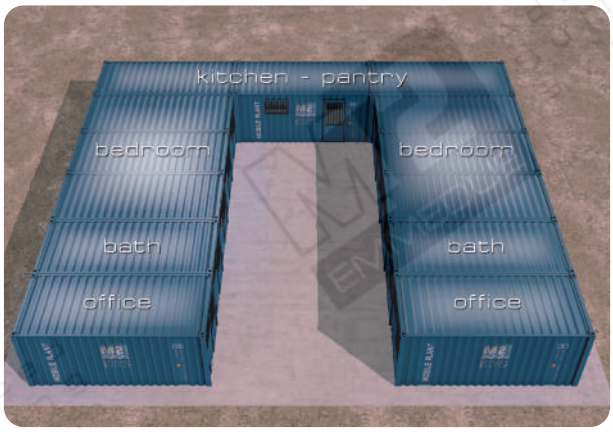
This structure has a steel frame and roofing in PVC.

Large industrial doors facilitate
access of materials and equipment.

Some of the containers serve as accommodation for workers, offices and other facilities.

"Our mobile plant represents the ideal solution for large-scale building projects in remote areas that require a plant operating at full capacity, but only for a limited period."

Valeria Candiracci
President of EMMEDUE®



PHASE 3

The mobile crane is used to transfer the production equipment from the transport containers and position them inside the shed.
The layout of the plant is planned by the EMMEDUE® technical team to fully optimise workflow, movement of raw materials and finished products.
The plant is completely self-sufficient and can operate in all climatic conditions and sites as it fitted with steam and power generators that ensure the smooth running of the production unit.

PHASE 4

On completion of the project, the production equipment is removed and reloaded onto the re-useable containers by the mobile crane, ready for transport.
The modular shed and accommodation are also placed in the container. Once loading is performed, the plant is ready for transport to another site.

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.

PORTABLE UNITS (aka MOBILE HOMES):

2012

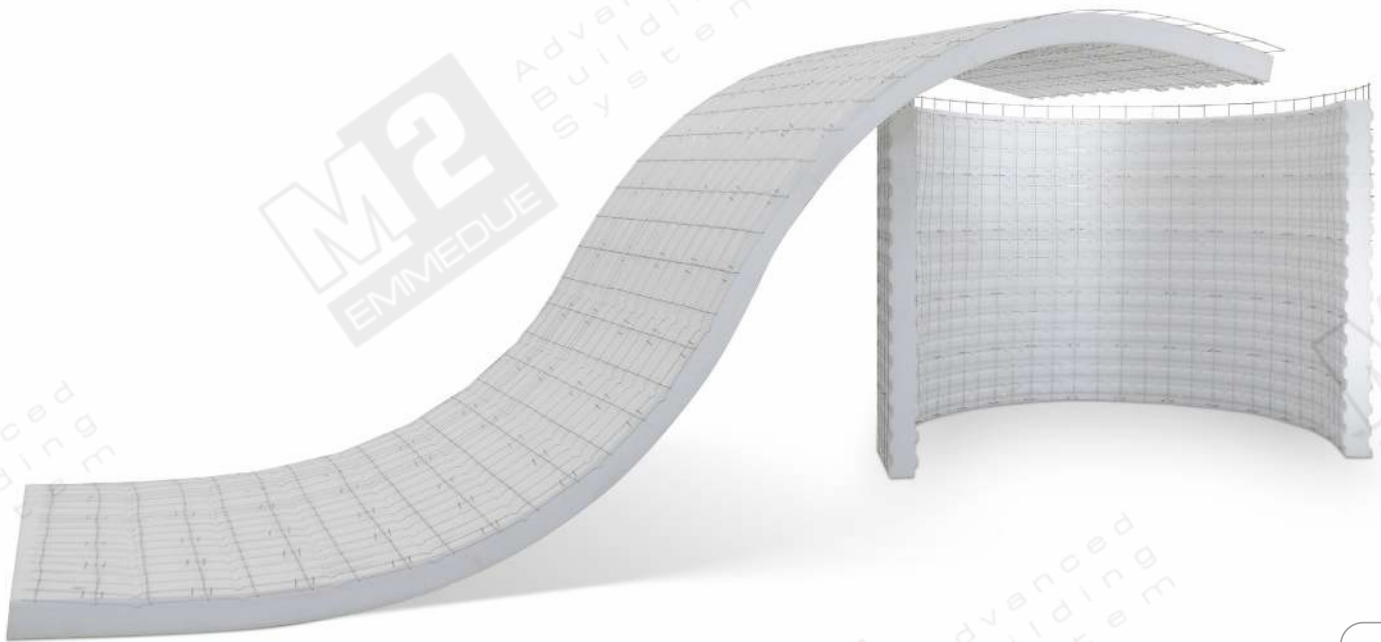
The EMMEDUE® system can also produce modular and portable units which retain all the key performance features of the system. In situations where portable units represent the ideal solution to challenges posed by climatic conditions and difficult sites, EMMEDUE® has also designed an automated production process for the production of the modular and portable units.

EMMEDUE® CURVED PANEL

The CURVED PANEL is a special panel 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.



M2 PANELCAD® SOFTWARE

PanelCad: M2 PanelCad® represents the latest evolution in the field of integrated design for the building industry. M2 PanelCad® is innovative and user-friendly software, developed by EMMEDUE® in collaboration with Bentley. It enables designers to deliver high-quality solutions.

M2 PanelCad® is ideal for designing a range of buildings of any shape, from the most simple to the most complex, using EMMEDUE® Panels. It is the most advanced and flexible tool for generating estimates for the EMMEDUE® panels and the accessories needed for the project.
It quickly creates the product specification lists and assembly schedules required for the installation of the EMMEDUE® modular panels.

M2 PanelCad® is fully integrated with the majority of standard design software as it uses compatible formats such as DWG, DXF, DGN which can be exported and edited.

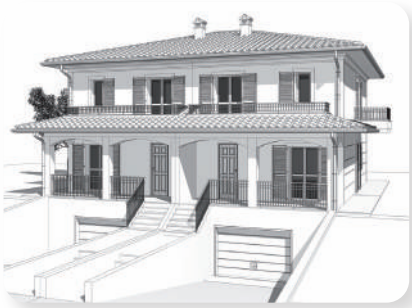
M2 PANEL CAD

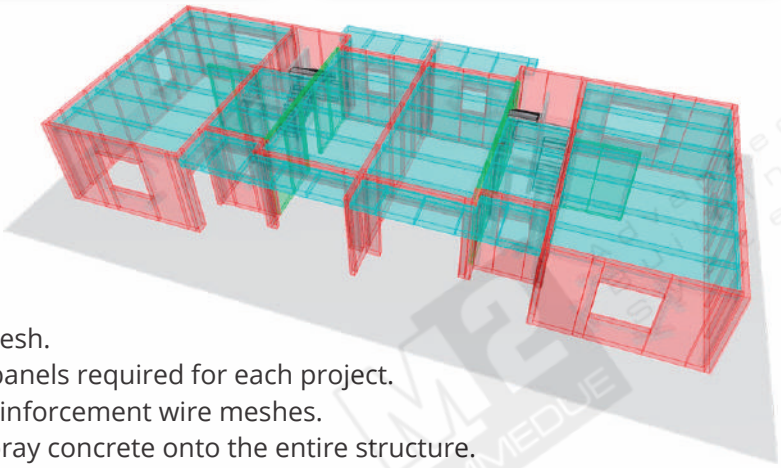
Bentley Sustaining Infrastructure

DRAWING

With the M2 PanelCad® you can:

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





ESTIMATING

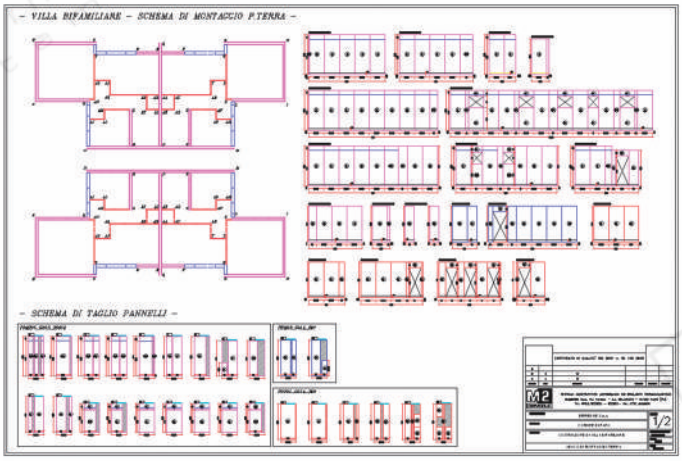
With the M2 PanelCad® you can:

- Define standard prices for panels and wire mesh.
- Estimate quantities and costs of the various panels required for each project.
- Estimate quantities and costs 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.
- Create customised quotes for customers.

BUILDING

With the M2 PanelCad® you can:

- Create a nesting plan 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 off the assembly plan for on-site use.



Integrated with the M2 PanelCad®, Bentley offers a powerful engine which assists in creating 3D models, prototypes of virtual buildings and hyper-realistic images and animations.

KNOW-HOW, TRAINING AND E-LEARNING PLATFORM

A combination of knowledge and experience provide EMMEDUE® with the know-how needed to use the EMMEDUE® Building System and EMMEDUE® machinery to achieve the best results.

The considerable experience gained by EMMEDUE® and its staff in over 40 years of business worldwide is made available to our customers and their employees through training programmes: on-site labour is trained in panel installation and the use of the EMMEDUE® design software, while factory staff is trained to use and maintain the plant machinery.

Moreover, each new partner can draw on the wealth of experience that EMMEDUE® has gleaned through developing the system, designing the production process, and optimising the sales and marketing activities necessary to successfully launch and expand a new plant.

As the owner of an EMMEDUE® plant you become part of a network of successful business people who are ready to share the wealth of experience garnered from the worldwide distribution of the system.

EMMESYNERGY

Thanks to Emmesynergy, the e-learning platform through which Emmedue shares all the expertise acquired over the years, Emmedue is now even closer to its customers.

Emmesynergy was designed to provide technical content and specialized training on both the machinery and the Emmedue Advanced Building System.

The Emmesynergy platform was created to provide continuous assistance to Emmedue customers through simple and functional tools with complete 24/7 global accessibility.

The platform offers full training courses enriched with detailed images and operational videos that allow an immediate understanding of the content.

EMMESYNERGY

Emmesynergy provides:

- full access to training courses updated in real time;
- professional and specialized support for the most common problem solving activities;
- maximization of the efficiency by minimizing downtime thanks to online assistance on the machines.

https://www.emmesynergy.com

TURN KEY OFFER AND ADDITIONAL SERVICES

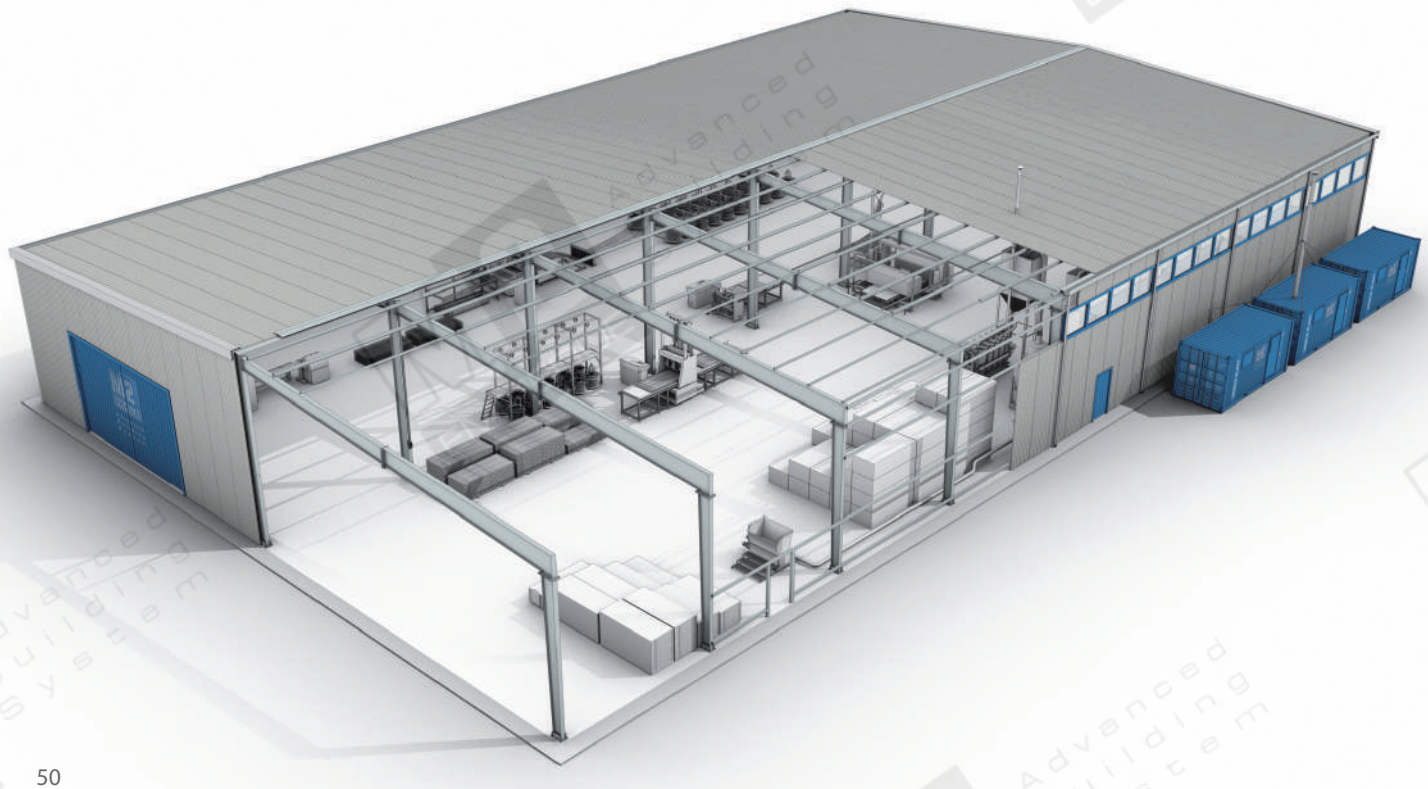
The support that EMMEDUE® offers its customers, continues well beyond delivery of the production machineries: this is one of the company's strengths.

Collaboration with our customers begins well before delivery of a plant and develops throughout the study and planning phases when the best layout is determined to ensure the optimal management of the plant.

At the customer's request, EMMEDUE® can complete its offer by supplying a custom designed pre-fabricated shed to house the plant.

Specialized teams of EMMEDUE® technicians oversee plant start up, ensure correct installation of the machinery, plant testing and training of production personnel.

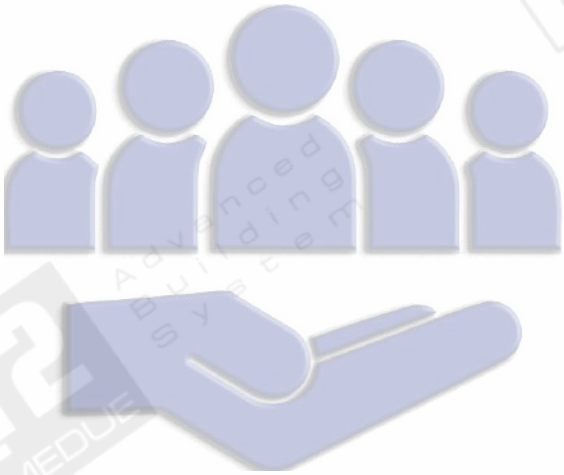
EMMEDUE® Industrial Sheds are extremely high-quality solutions and conform to the highest resistance and safety standards. The industrial shed is assembled on site by qualified EMMEDUE® personnel who can deliver a fully operational factory very quickly thanks to the integrated management of the project, from design stage, construction and right through to start-up.



Size and specifications of the EMMEDUE® industrial sheds are studied in detail, well beforehand, to pinpoint the best solution based on individual layout specifications and plot type.
EMMEDUE® also provide customers with additional services such as: assistance with the testing procedures required to obtain local permits, trade fair promotions, sales and after sales.
EMMEDUE® can also supply the customer with raw materials: drawing on experience and careful selection of local and international suppliers. EMMEDUE® can guarantee high standards of quality at competitive prices.

After plant start up, EMMEDUE® continues to help customers achieve optimal plant performance thanks to the dedicated assistance service.

On request, support is available even after project completion with EMMEDUE SERVICE® system: thanks to a highly specialised team of EMMEDUE systems experts, our network of customers have access to an exclusive package of services and solutions. These are specifically designed to facilitate the use of the panels on site and deal with any needs customers may have regarding the success of their business.



M2 SYNAPSE®

M2 Synapse® is an IoT implementation on the M2 machines ecosystem.

The goal of M2 Synapse® is to handle the production data and information in order to monitor the production flow and to balance the production loads, even over different machines of the same type.

The connection is a two-way type: production machines can export production data to a central database and they can receive production orders from outside.

In the simplest case a production list is generated from M2 PanelCAD® where, after a building project is made, a production list is generated and passed to the production plant.

M2 PanelCAD® produces a JSON file containing information for each component needed to realize that project.

The same file is then passed to every machine: mesh machine, panel machine, contour cutting machine, etc ... and each one will consider the part of its competence and will propose to the operator the production list to follow.

In this way all the parts (panels, meshes, etc...) to realize the project drawn with M2 PanelCAD®, will be produced by the various machines involved in M2 panel production.

On a higher level production lists can be centralized, merged and distributed to various production plants in order to spread the production load or to let the production to be realized on the nearest plant to the town where the building has to be made.

The bidirectional Synapse connection enhances the production control and provides tools (M2 dashboard) to check the production progress and prevent delay on material delivery to the building site.

Production progress can be compared to estimated production time while production is still running, with the possibility to take actions to prevent potentially delays, moving the production on another machine (if something is going wrong) or to spread over more machines in order to temporarily increase the production.

M2 DASHBOARD®

M2 Dashboard® is a Remote Monitoring System that allows to control the production of all the Emmedue machinery.

This Cloud system can be used on-line via a web browser and it is compatible with different devices such as Tablets or Smartphones.

Thanks to this system a complete control of production metrics is available since the system provides information in real time not only about the production speed but also about all possible unexpected downtimes of the machine.

This allows to detect the reasons for the unplanned machine shutdown and to evaluate which actions must be taken to optimize production efficiency.

Furthermore, thanks to the forecasts of daily production it is possible to take quick corrective action in order to observe the production program.

The daily, weekly, monthly and annual graphs and statistics are a valid way of assessing the current production and comparing it with previous data.

The possibility to access the control panel from anywhere enables you to monitor the production progress and the actual operation of the machine at all times.

Machine learning

Collected data over similar machines can be compared by the system so to predict a machine fault or to plan the right moment to stop production and make preventive maintenance.

This way, maintenance can be anticipated to a more appropriate moment if an overload of production is predicted, in order to avoid unexpected machine downtime.

Flexibility

The use and aggregation of the collected data can be easily tailored to match customer's needs by simply writing a new way to consider the archive contents or by modifying the data parser in order to get new information to be collected. In fact, M2Dashboard® is customizable and it can be further improved according to users requirements.

RESEARCH AND DEVELOPMENT

Research and development plays a fundamental role within the company. For many years, EMMEDUE® has been designing and patenting state-of-the-art solutions in order to stay one step ahead of innovations in technology, satisfy customer needs and respect the environment.

WORLDWIDE PRESENCE

Wherever the next EMMEDUE® plant may be, the technical and sales staff will be on hand to provide customers with assistance and support to successfully start up and develop their business.

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EMMEDUE
Advanced Building System

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