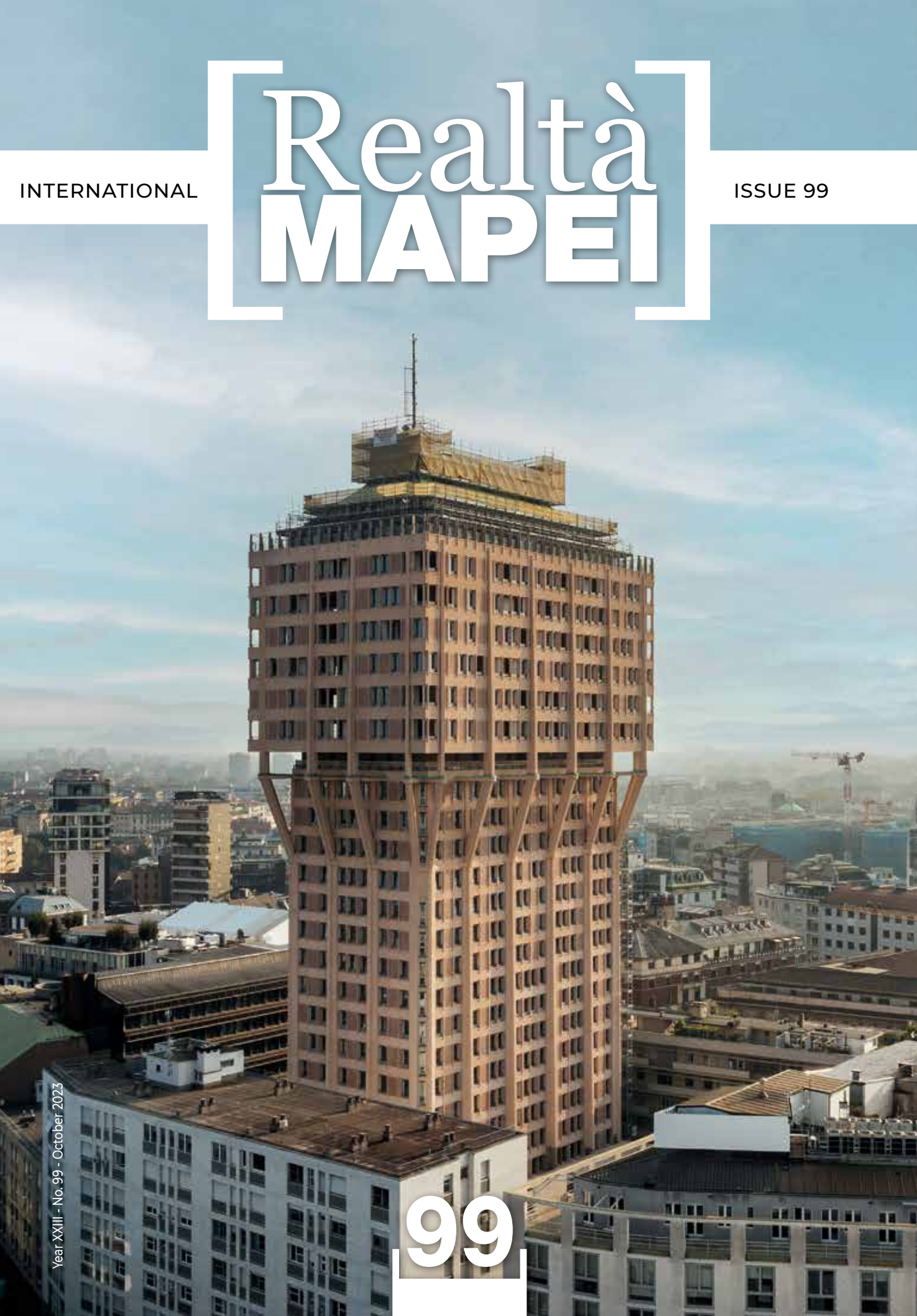
INTERNATIONAL

Realtà MAPEI

ISSUE 99



Year XXIII - No. 99 - October 2023

99

by **Guido Palmieri**
Realtà Mapei International's
Editor-in-Chief

The race up into the sky and the new faces of our cities

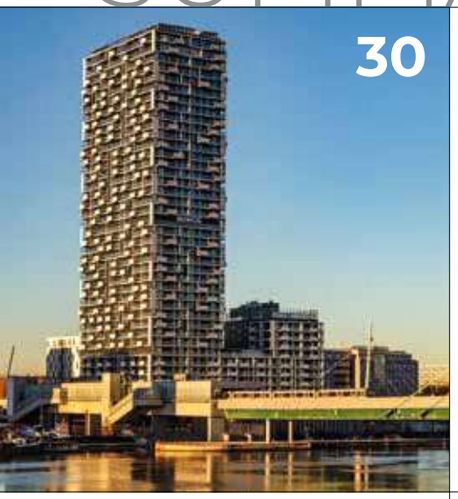
On a visit to Milan in the 1930s, Alberto Savinio, a writer and the brother of the Italian painter Giorgio de Chirico, wrote: "I live on the tenth floor, my skyscraper is part of a herd of 14, 16 and 19 storey skyscrapers. Who will stop man in his bold ascent into the sky?". How distant those times now seem for a city (Milan) which, as along ago as the 1960s, was already Italy's pioneering location (Velasca Tower, Pirelli Skyscraper) for this race up into the sky that first began at the end of the 19th century in Chicago in the United States through the reconstruction of districts destroyed by the great fire of 1871. This race is showing no signs of slowing down even now with buildings like the Burj Khalifa in Dubai that towers up to the head-spinning height of 828 m.

A SPECIAL ISSUE ON TALL BUILDINGS: THE CHALLENGES FACING FUTURISTIC SKYSCRAPERS AND THE CONVERSION OF OLD BUILDINGS

The face of cities is constantly changing and vertical constructions, often designed by archistars, are imposing themselves on the cityscape of both the biggest centres in the United States and Europe and more recently developed cities (from China to Malaysia and the Arab Emirates). The construction of new and futuristic skyscrapers, as well as the renovation and conversion of existing towers, is a challenge for architectural design, the building industry, technologies and materials. The largest section of this issue of *Realtà Mapei International* is dedicated to tall buildings, with a review of prestigious projects and building operations Mapei has contributed to through its innovative, sustainable products, along with studies and interviews with architects and other professionals.
In the "Teamwork" section we visit the United Kingdom to talk about the ongoing growth of Mapei UK, which, thanks to the recent opening of a new plant for the manufacture of concrete admixtures, aims to seize new development opportunities in the realm of building products.
The industry of ceramic tiles was on show at Cersaie again last September (having now reached its 40th edition): Mapei played a leading role with important innovations in the name of sustainability being presented at the Bologna exhibition.
And when it comes to sustainability, Mapei's 7th Sustainability Report covers the entire world for the very first time, including the 57 countries in which the Group operates.
A combination of art and sport has gone into the restyling of Mapei Stadium in Reggio Emilia (Central Italy): a stadium that is increasingly functional, open to the surrounding community and now even more beautiful than ever, thanks to an artwork welcoming Sassuolo fans created by the artist Olimpia Zagnoli.

Enjoy your reading.

SUMMARY



Cover story
This issue of *Realtà Mapei International* is dedicated to tall buildings, with a review of prestigious building and renovation projects Mapei has contributed to through its products. The photo shows the Torre Velasca skyscraper in Milan.

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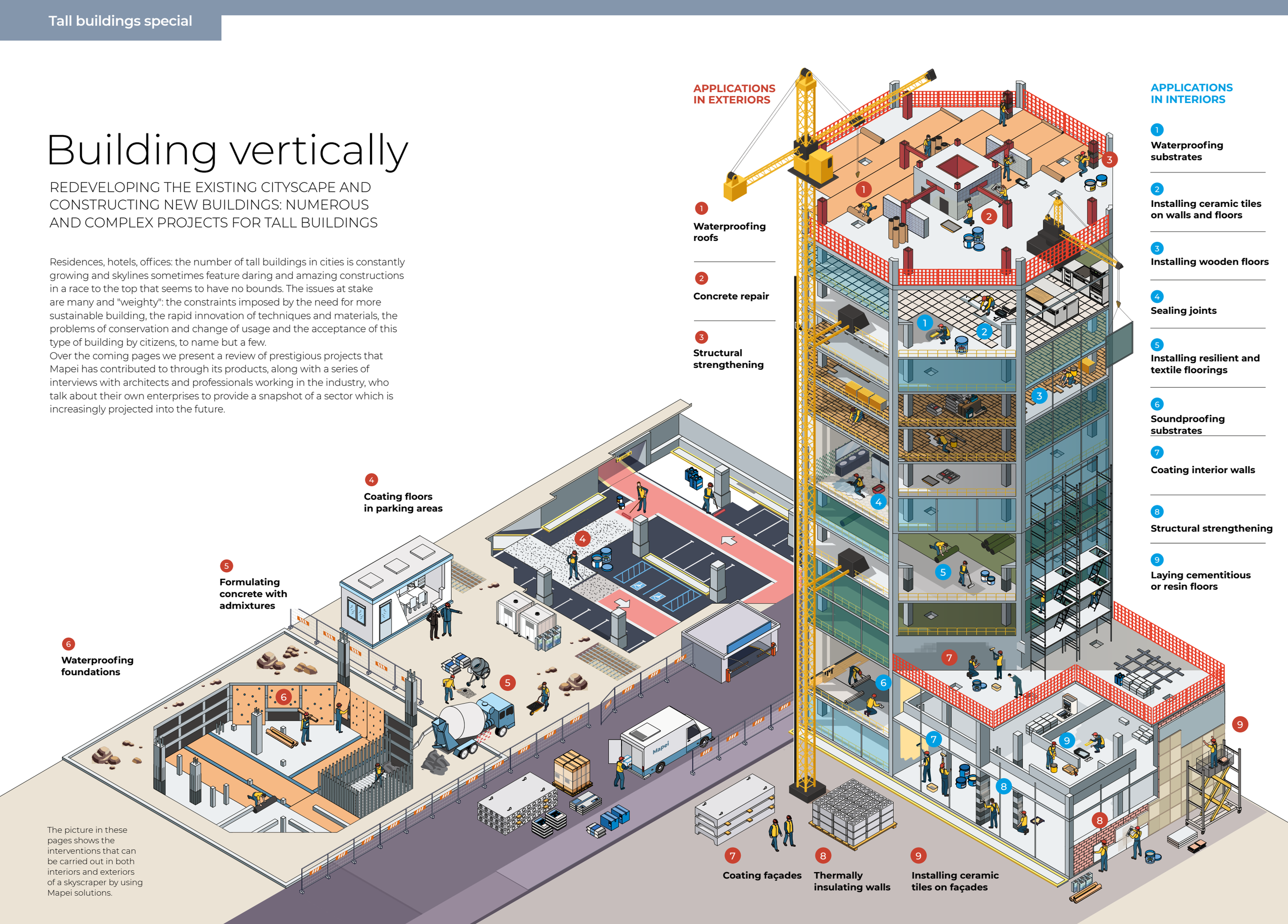
Building vertically

REDEVELOPING THE EXISTING CITYSCAPE AND CONSTRUCTING NEW BUILDINGS: NUMEROUS AND COMPLEX PROJECTS FOR TALL BUILDINGS

Residences, hotels, offices: the number of tall buildings in cities is constantly growing and skylines sometimes feature daring and amazing constructions in a race to the top that seems to have no bounds. The issues at stake are many and "weighty": the constraints imposed by the need for more sustainable building, the rapid innovation of techniques and materials, the problems of conservation and change of usage and the acceptance of this type of building by citizens, to name but a few.
Over the coming pages we present a review of prestigious projects that Mapei has contributed to through its products, along with a series of interviews with architects and professionals working in the industry, who talk about their own enterprises to provide a snapshot of a sector which is increasingly projected into the future.



The picture in these pages shows the interventions that can be carried out in both interiors and exteriors of a skyscraper by using Mapei solutions.

Dizzying heights started in the States

THE STORY OF SKYSCRAPERS STARTED IN CHICAGO WITH THE REBUILDING OF AREAS OF THE CITY DESTROYED BY THE GREAT FIRE OF 1871

In recent decades the new frontier has moved to the Far East: China, Malaysia and the UAE, which boasts the tallest building in the world in Dubai

The 828 m Burj Khalifa towers above the centre of Dubai (United Arab Emirates).

The story of skyscrapers started with the Chicago School, a group of American architects commissioned to rebuild areas of the city destroyed by the fire that spread through the centre of Chicago in 1871. The designers proposed innovative construction technology to the main contractors that proved to be fundamental for the future of buildings: to use a steel structure, more resistant to fire compared with the previous ones made from wood, with the capacity to take buildings to heights that had never been attempted before.
Designed by William Le Baron Jenney, the first skyscraper built with these characteristics appeared in 1885: the Home Insurance Building, a steel and brick structure "only" 42 m high. It was followed in 1895 by the Reliance Building designed by Daniel Burnham which, apart from having 15 storeys and a height of 62 m, used the typical "beam and pillar" structure that enables large windows to be installed on façades. Ever since then American cities have been growing in height. The reason? Building land in the larger cities of the United States has always been very expensive and it was only by building upwards that it would be possible to meet the demand from buyers.
The construction of skyscrapers then moved from Chicago to New York where, in 1902, it was again Daniel Burnham who designed the Flatiron Building (86.9 m), a striking construction because of its triangular shape.
An international competition was launched for the construction of the new headquarters of the *Chicago Tribune*: the winning design, by Raymond Hood and John Mead Howells, reached a dizzying height of 140 m.
In order to withstand these constantly increasing heights, the structures were gradually integrated with steel frames strengthened with reinforced concrete; the buzzwords were lightness, solidness and flexibility.
In the United States, and especially the Manhattan area of New York, skyscrapers completely changed the landscape of cities thanks to new construction technologies that enabled tall buildings to be constructed in less than two years. Designers tended to favour a Gothic or Art Deco look, such as in the case of the Empire State Building (381 m). The real change came in the 1950's when a wave of European Rationalism got a foothold in the USA, which led to the construction of the Seagram Building designed by Ludwig Mies Van Der Rohe, and of many other buildings with a parallelepiped form covered with glass and steel, which stood out for their elegance and sobriety and reached even more dizzying heights, such as the 541 m One World Trade Center in New York, constructed in place of the Twin Towers (417 m).

Designed by William Le Baron Jenney, the Home Insurance Building was built in Chicago in 1885. With its 42 m, it is among the first skyscrapers in the world.

The new frontier moves to the Far East
Between the end of the 20th century and the new millennium, the race to go higher moved to the Far East with the construction of the Petronas Towers (452 m) in Kuala Lumpur, designed by César Pelli. But the lion's share goes to China which decided upwards was the right direction for its most important cities – Beijing, Shenzhen and Shanghai, with the Shanghai Tower being the second tallest skyscraper at 574.61 m – to symbolise the country's economic power. Shanghai now has more than 50 buildings that exceed a height of 200 m, while there are more than 1000 that exceed 150 m. The tallest skyscraper in the world is in Dubai in the United Arab Emirates. It was here that the Burj Khalifa Tower was inaugurated in 2010, designed by Skidmore, Owings & Merrill with a height of 828 m. They will all be overtaken, however, by the Jeddah Tower in Saudi Arabia. The building, designed by Adrian Smith, is still under construction and will be the first building ever to reach a height of one kilometre.

Europe and Italy
Europe does not favour building skyscrapers in its old historic cities and tends to redevelop separate urban districts in rundown areas and build them from scratch. For many years, apart from some of the major cities such as London, Paris, Frankfurt and Moscow, there were relatively few skyscrapers in Europe, whereas today there are a lot more. In the top ten of tall buildings, Russia holds the first three places with the Federation Tower in Moscow topping the list (373.7 m), while in fourth place there is The Shard in London designed by Renzo Piano (309.7 m).
In Italy the record is held by Milan which has always loved tall buildings, starting with the Pirelli Skyscraper (1958) designed by di Gio Ponti which, at 127 m, was the tallest building in Europe until 1966. The tallest building in Italy is the Allianz Tower (209.2 m), designed by Arata Isozaki (see *Realtà Mapei International* no.46).
The third tallest is the Piedmont Regional Council skyscraper (209 m) designed by Massimiliano Fuksas, while in fourth and fifth places are the Generali Tower (192 m) and the Libeskind Tower (175 m), both in Milan (see *Realtà Mapei International* no. 58).
Well worth mentioning is that, amongst the architects that have designed some of the most important skyscrapers in the world in recent years according to the Council on Tall Buildings and Urban Habitat, there are the Italian architects Renzo Piano and Stefano Boeri, whose Vertical Forest was proclaimed "the most beautiful and innovative skyscraper in the world" by the Council.

THE TALLEST SKYSCRAPERS IN THE WORLD

Burj Khalifa, Dubai (United Arab Emirates)	**Shanghai Tower,** Shanghai (China)	**Abraj Al-Bait Towers,** La Mecca (Saudi Arabia)	**Ping An Finance Centre,** Shenzhen (China)	**Lotte World Tower,** Seoul (South Korea)	**One World Trade Center,** New York (United States)	**Guangzhou CTF Finance Centre,** Canton (China)	**Tianjin CTF Finance Centre,** Tianjin (China)	**CITIC Tower** Peking (China)	**Taipei 101,** Taipei (Taiwan)
828 meters	**632 meters**	**601 meters**	**599 meters**	**554.5 meters**	**541.33 meters**	**530 meters**	**530 meters**	**527.7 meters**	**508 meters**

Dario Trabucco

Challenges to overcome between conversions and innovative technologies

DARIO TRABUCCO (IUAV UNIVERSITY OF VENICE) TALKS ABOUT CUTTING-EDGE TRENDS AND PROBLEMS TIED TO CHANGES IN FUNCTION

Let's talk about tall buildings, a topic that is garnering growing interest at design level, but also amongst the public. Why do we choose to construct this type of building when carrying out urban regeneration projects?
There are two main reasons: one of these is to create a so-called landmark, a symbol for that specific development or the entire city. The other is a more local reason: the possibility of developing a restricted area of land where all the functions necessary for that area are concentrated, giving back to the city green spaces or places where people can come together. For example, in the Park Associati project in Via Pola in Milan a low building will be replaced by a tower. This skyscraper will represent a symbol of the area's redevelopment and will make it possible to free up areas of land for a public park.
From a public opinion perspective there has been an enormous change in the last few years: in the redevelopment of the Porta Romana hub in Milan it was the citizen committees themselves which had been consulted during the initial design phase of the project that asked for taller buildings to be constructed, because this would have allowed areas at street level to be freed up for public use, parks and green spaces. And this is a significant change. In a certain sense, skyscrapers have modified the perception of public opinion when it comes to vertical developments, which are no longer seen as monstrosities: their positive aspects can also be appreciated.

> **One of the current issues regards increasingly complex cladding, different to the transparent glass surfaces used until 2000**

What cutting-edge construction and cladding technologies are currently in use?
Over the last several decades more complex cladding has been developed, different to the transparent glass surfaces that characterised most skyscrapers up until 2000. Different types of cladding are being used with less transparent surfaces, or sometimes covered with vegetation, but always with a different relationship with respect to a classic curtain wall. Walls are becoming increasingly larger: this is the first trend.
Another trend now is wooden buildings: the cladding is no longer made up of glass surfaces but of large panels, sometimes in wood but in all cases a rigid material, that can also act as a windbreak in structures with a wooden frame or with a mixed frame in steel or concrete and wood. The shell, therefore, is heavier and often opaquer.
And lastly, following the fires that broke out in several skyscrapers in Milan, London and Dubai, more attention is also being paid to the issue of fire and the resistance of façades in the event of fire breaking out inside a building and the way it propagates along the façade. Different materials are adopted and non-combustible elements are used that can prevent or make it as difficult as possible that there is a repetition of these fires.

Let's talk about the design of interiors and the liveability of spaces. What topics are being worked on to improve the wellbeing of those who inhabit these environments?
In office buildings the main topic has become absolute flexibility: fully flexible spaces are being designed in which there is no longer the traditional workspace with each employee assigned their own desk. There are now offices that look more like airport lounges with large surfaces dedicated to informal meetings, conference calls or other activities. This is due to the need to bring people back into the office following the pandemic: many international companies are still at 40/45%

The Sears Tower (527.3 m) in Chicago used to be the tallest skyscraper in the world between 1973 and 1998.

compared with pre-pandemic occupation. We need different buildings to those of the past and this has an effect, for example, on the need for lifts: if previously we needed a building for 10,000 people and now there are only 5,000, vertical transport use is considerably lower. This change is significant, and the same can be said for air-conditioning systems, whose loads can vary considerably according to how many people occupy the building.

And for residential buildings, what topics are you working on for their interiors?
Up until 30-40 years ago tall residential buildings were almost non-existent, whereas now they are taking up a significant portion of the market. From a design perspective we are looking to create open spaces and this, too, is a result of the restrictions due to Covid-19. Almost all skyscrapers now overlook the outside and have terraces, with more extensive open spaces.

So, the conversion and renovation of tall buildings has become a more common topic. What are the challenges with this kind of work?
The challenges are mainly due to the height between each floor, in that modern office spaces need much higher floors compared with offices of the seventies and eighties, and from this the need to convert these buildings for other functions, such as hotels or apartments. In my opinion the biggest problems will be with really big buildings. For example, the Sears Tower in Chicago, which used to be the tallest skyscraper in the world, once it is no longer competitive on the market it will be a problem: you can't convert it into either apartments or hotels because of the sheer size of the floors. We will have to tackle the problem of demolishing these buildings, with a site that would last years, and having to support high levels of noise and dust in the city. Again, on the subject of reconverting offices to apartments or hotels, from a cladding perspective there could be problems with their excessive transparency, which would be difficult to adapt to the needs of apartments or hotels, such as privacy. In such cases blinds or different curtain walls can be employed.
In the case of Torre Galfa in Milan there was a conservation problem: the desire to maintain a building's form and appearance. In other countries, on the other hand, there seems to be no problem in completely changing a cladding system and even "betraying" what used to be the identity of the building. Last year we carried out some work on the Chicago Tribune Tower, a landmark of Chicago, which was converted into a building for residential use with a well though-out intervention.

How sustainable can the construction of a skyscraper be and how can it contribute to the sustainability of the city in which it is located?
This question encompasses a number of different issues. There is the issue of how to reuse the existing structure because we always need to ask ourselves whether it should be demolished or whether it could be reintegrated into a different building structure, saving part of it. Then there is the larger issue of wood which is, however, maybe more of a fashion statement than a real answer, because wood is probably more suitable for building small family homes than large buildings.
Often this race to go higher has led to buildings having an architectural feature on the top: an enormous waste of materials. The new sustainable design tools being introduced in most European countries will impose limits on CO_2/m^2 and will limit excessive heights, leading to opting for simpler solutions and recycled materials. So, the primary topics are how to reuse existing structures and the need to construct as little as possible and as simply as possible.

DARIO TRABUCCO

Born in Venice in 1980, he graduated in architecture in 2004. He became a PhD in Building Technology in March 2009 after doing research periods at the Illinois Institute of Technology in Chicago and in Belleville, Paris. From October 2012 he is a tenured researcher in Building Technology at the IUAV University of Architecture in Venice. From March 2013 to February 2014, he was a visiting researcher at the Council on Tall Buildings and the Urban Habitat/Illinois Institute of Technology in Chicago. He became Associate Professor at the IUAV University of Venice in July 2018.

A host of prestigious projects

A ROUND-UP OF ICONIC SKYSCRAPERS BY THE BIG NAMES OF ARCHITECTURE, WITH THE CONTRIBUTION OF MAPEI SOLUTIONS AND TECHNICAL SERVICES

PETRONAS TWIN TOWERS,
KUALA LUMPUR (MALAYSIA)
A SYMBOL OF MALAYSIA'S ECONOMIC DEVELOPMENT, THESE TWIN TOWERS (452 M) WERE DESIGNED BY CÉSAR PELLI. BETWEEN 1997 AND 1998 MAPEI SUPPLIED PRODUCTS TO WATERPROOF SUBSTRATES AND INSTALL CERAMICS, MOSAICS AND STONE.

ALLIANZ TOWER, Milan (Italy)
DESIGNED BY ARATA ISOZAKI WITH A HEIGHT OF 209 M, THE TOWER IS LOCATED IN THE CITY LIFE DISTRICT OF MILAN. BETWEEN 2012 AND 2015 MAPEI SUPPLIED ADMIXTURES FOR THE SPECIAL CONCRETE USED TO MAKE THE LOAD-BEARING PILLARS AND FLOOR SLABS OF THE TOWER.

BURJ KHALIFA,
Dubai (United Arab Emirates)
ONE OF THE MOST IMPORTANT TOURIST DESTINATIONS IN DUBAI, THE BURJ KHALIFA WITH ITS 829.8 M HOLDS THE TITLE OF TALLEST BUILDING IN THE WORLD. INSIDE THERE IS A TOTAL OF 344,000 M^2 OF FLOORING FOR MIXED, COMMERCIAL AND RESIDENTIAL USE. FOR THE ARMANI HOTEL INSIDE THE TOWER, MAPEI SUPPLIED PRODUCTS TO INSTALL CERAMIC TILES, NATURAL STONE AND WOOD.

EMPIRE STATE BUILDING, New York (USA)
BUILT BETWEEN 1930 AND 1931 AND ONE OF THE SYMBOLS OF NEW YORK, THE EMPIRE STATE BUILDING WAS THE TALLEST BUILDING IN THE WORLD UNTIL 1970 WHEN THE NORTH TOWER OF THE WORLD TRADE CENTER WAS COMPLETED. THE VIEWING TERRACE WAS RENOVATED IN 2019, WITH MAPEI SUPPLYING PRODUCTS TO WATERPROOF SUBSTRATES AND INSTALL CERAMIC TILES ON FLOORS.

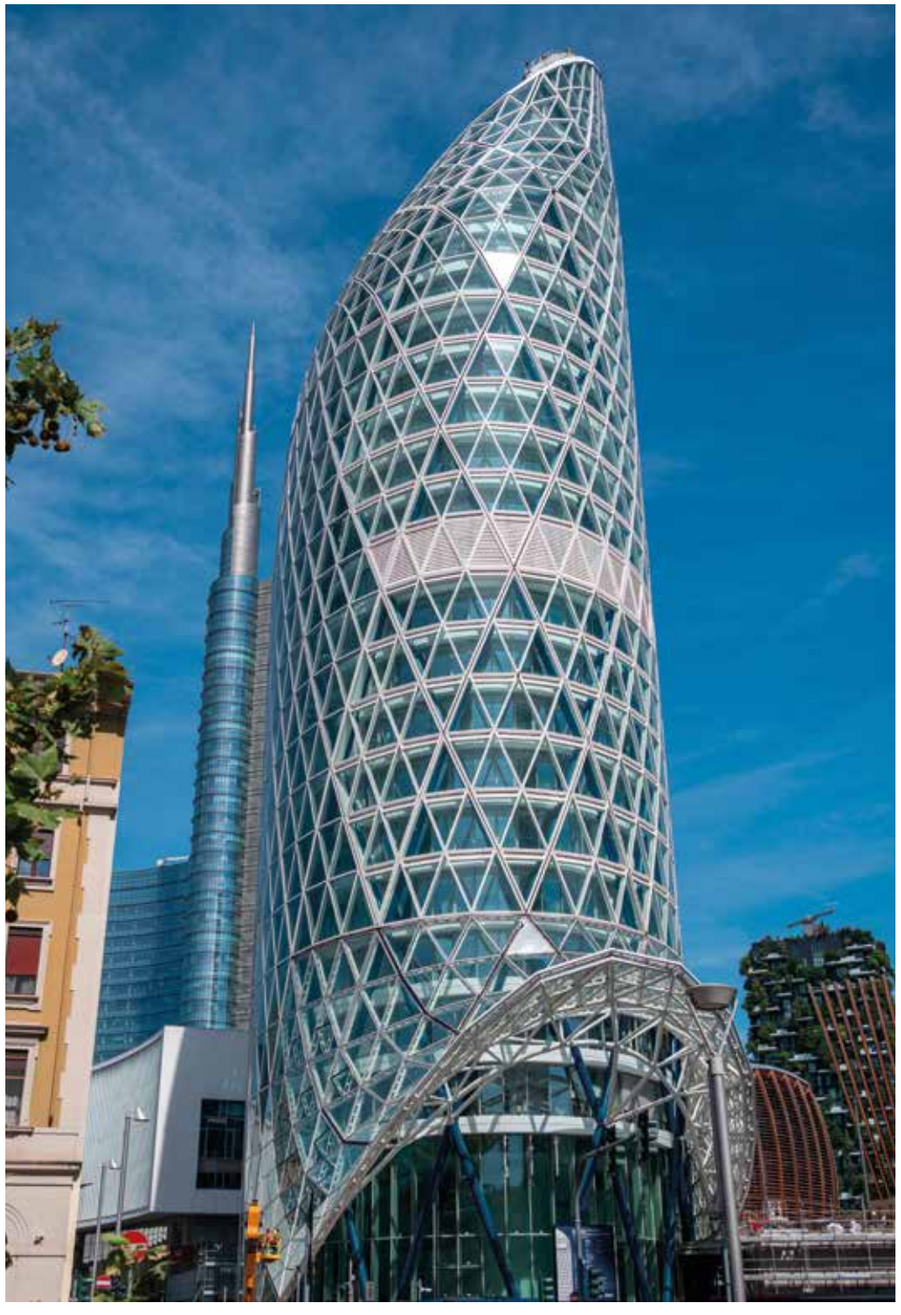
MARINA BAY SANDS, Singapore
SOLUTIONS TO REPAIR CONCRETE, WATERPROOF SUBSTRATES AND INSTALL STONE FLOORINGS: BETWEEN 2008 AND 2010 MAPEI PARTICIPATED IN THE CONSTRUCTION OF THIS MAGNIFICENT STRUCTURE, WHICH INCLUDES HOTELS, SHOPPING AREAS, MUSEUMS AND THEATRES. THE COMPLEX IS TOPPED OFF WITH A SUSPENDED PLATFORM IN THE FORM OF A SHIP.

VERTICAL FOREST, Milan (Italy)
THIS COMPLEX, DESIGNED BY BOERI STUDIO, IS MADE UP OF TWO TOWERS WITH A HEIGHT OF 110 M AND 76 M. IN 2015 IT WAS NAMED "THE MOST BEAUTIFUL AND INNOVATIVE SKYSCRAPER IN THE WORLD" BY THE COUNCIL ON TALL BUILDINGS AND URBAN HABITAT. MAPEI SUPPLIED PRODUCTS FOR THE INSTALLATION OF CERAMIC TILES IN INTERNAL AREAS OF THE COMPLEX.

Milan (Italy)

Torre Unipol

AN ENORMOUS TOWER WITH A CONCRETE AND METAL CORE: THIS IS THE LOOK CHOSEN FOR THE NEW SKYSCRAPER TO BE INAUGURATED SHORTLY IN MILAN



Completion of Torre Unipol, designed by Mario Cucinella Architects, concludes one of the most important and imposing urban redevelopment projects undertaken this century in Milan and focusing on the Porta Nuova district. Construction of the new skyscraper started in 2018 and required meticulous preparation from a design and technical perspective. In fact, a cutting-edge site was created characterised by a vertical structure which occupied only a minimum amount of space at its base. The structure rises up on a small plot of land at the corner of Via Melchiorre Gioia and Via Fratelli Castiglioni. In 2014 Unipol chose this plot for its new group headquarters and, once fully operational, it will accommodate more than 600 people. After invitations were sent out to compete in the international competition for its design, the project was awarded to the MCA architectural and design firm.

A cutting-edge skyscraper

Construction of the tower started in 2018 with the insertion of the foundation piles, while the first stone was laid in the spring of 2019. The most interesting feature of the tower is its sensorial double shellt. The façade, in fact, was created out of curvilinear steel pillars intersecting with each other. The materials used for its construction are mainly glass, steel and concrete.

Right from the very start the building was designed to maximise energy efficiency, thanks to a double shell along the external wall with the function of mitigating heat in summer and insulating against cold weather in winter. The geometry of the external structural shell, consisting of triangular glass modules set in a blue and white metal framework, also contributes to guaranteeing the tower's energy efficiency. To increase energy efficiency of the building even further and reduce consumption of resources to a minimum a geothermal heat pump was installed, as well as photovoltaic panels, a mechanical ventilation system to recycle hot air and a rainwater recovery system. These characteristics will enable a request to be submitted for LEED Platinum certification.

Design, height and so much sustainability

The building, which will be inaugurated by the end of the year, is 23 storeys high and has 3 floors below ground level, with an overall height of 125 m and a total surface area of 33,000 m^2. Once the best position on the plot of land had been identified, MCA architectural studio defined the form of the tower: a cylindrical, elliptical shaped form was chosen, a solution which enables the dispersive surface to be reduced if compared with a building of similar volume but with a rectangular form.

The enormous, 75 m high atrium is accessible on two levels, one from Via Melchiorre Gioia and the other via a platform in Piazza Gae Aulenti. This space has been defined by the designer as a "climate moderation space", that is, it is able to use the way it is exposed as an energy opportunity: the atrium, in fact, faces south and acts as a climatic buffer, minimising heat dispersion from the shell and storing heat energy from the sun.

On the upper floors there are the management offices, meeting spaces and a restaurant which will be connected to the bar area via a panoramic stairway. The offices will benefit from passive cooling from the double shell, but not from ventilation coming from the large atrium as they are closed off from the atrium as a fire prevention measure. On the top floor there will be a large greenhouse with an area designed to host public meetings and cultural events: another space without forced conditioning which will benefit from passive cooling, especially in average months, thanks to efficient control of the ventilation outlets in the lower part facing south and in the upper part facing north.

Mapei also played its part

Mapei took part in the construction of the new buildings that have transformed the face of the Porta Nuova district (see *Realtà Mapei International* no. 49) and contributed

Mapei was involved from the earliest stages of the construction of the skyscraper supplying concrete admixtures (DYNAMON line).

to the construction of Torre Unipol by proposing the most suitable systems for various types of work. Here is a summary of the works carried out.
Supply of admixtures for concrete. Mapei supplied the concrete admixtures DYNAMON XTEND W300 N and DYNAMON XTEND W300 R to the cement and concrete producer Holcim for the construction of the foundation slab and vertical structures. Upon request of the construction site supervisor, Mapei also contributed to control the heat development of the concrete used for the foundation slab, which has not to exceed a certain temperature according to current regulations.
Concrete repair. Various portions of concrete needed to be repaired. The first stage of the work was to protect the steel reinforcement rods with MAPEFER 1K, followed by reintegrating the sections from where damaged concrete had been removed with PLANITOP SMOOTH & REPAIR R4 and MAPEGROUT THIXOTROPIC mortars.
Structural strengthening. Work was carried out to improve static and seismic capacity by applying C-FRP composite systems. MAPEWRAP SYSTEM, consisting of MAPEWRAP PRIMER 1, MAPEWRAP 12 epoxy grout, MAPEWRAP 31 epoxy adhesive and MAPEWRAP C UNI-AX HM 300 carbon fibre fabrics , was applied to confine some of the concrete pillars and to improve the shear and flexural resistance of some of the beams.
Underground carpark. MAPEFLOOR PARKING SYSTEM RLT was chosen for the floors in the underground carpark, a seamless, multi-layered system used for coating surfaces in areas used by pedestrians and light vehicle traffic.
Resin flooring. MAPEFLOOR SYSTEM 31 was chosen to coat the floors of the stairs and bathrooms, a multi-layered epoxy system applied in layers from 0.8 to 1.2 mm thick, followed by a coat of MAPEFLOOR FINISH 58W that improves the mechanical properties of the surfaces, especially as for their abrasion resistance.
Waterproofing for the bathrooms. The substrates in the bathrooms were waterproofed with two layers of MAPELASTIC two-component cementitious mortar, with MAPENET 150 alkali-resistant fibre glass mesh embedded between them and MAPEBAND EASY alkali-resistant tape used for waterproofing the corners between adjacent walls and between walls and floors.
Installation of stone and marble. After installing MAPETEX SYSTEM anti-fracture system on the substrates, the adhesive KERAFLEX MAXI S1 ZERO was used to install 2 cm thick Serena stone slabs, while the joints were grouted with KERACOLOR FF. Marble slabs were installed using ULTRABOND ECO PU 2K adhesive which was chosen due to its capacity to ensure excellent durability and resistance to ageing and perfect adhesion to all types of substrates.
Sealing. MAPEFLEX MS 45 and MAPEFLEX PU 45 FT sealants were chosen for sealing operations in different areas.

Find out more
ULTRABOND ECO PU 2K

PROJECT INFORMATION
Torre Unipol, Milan (Italy)
Period of construction: 2017-2023
Period of the intervention: 2017-2023
Intervention by Mapei: supplying admixtures for the concrete mix, as well as products for concrete repair, structural strengthening, materials for installing stone materials, waterproofing substrates, sealing joints, laying cementitious and resin floors

Design: Studio Mario Cucinella Architects (MCA)
Owner: Unipol Sai
Main contractors: CMB (Cooperativa Muratori e Braccianti di Carpi), Officine della ghiaia
Stone installation company: STC Marmi
Mapei coordinators: Luca Pretini, Andrea Siboni, Davide Dido, Alberto Arosio, Alessandro Negrini, Mapei SpA (Italy) and Andrea Serafin (Agenzia AN.PER)

MAPEI PRODUCTS
Concrete admixtures: Dynamon XTEND W300 N, Dynamon XTEND W300 R
Concrete repair: Mapefer 1K, Mapegrout Thixotropic, Planitop Smooth & Repair R4
Structural strengthening: MapeWrap Primer 1, MapeWrap 11, MapeWrap 12, MapeWrap 31, MapeWrap C UNI-AX HM system
Laying resin floors in parking areas: Mapefloor Parking System RLT, Mapefloor System 31, Mapefloor Finish 58W
Waterproofing substrates: Mapenet 150, Mapeband Easy, Mapelastic
Installing stone materials: Keraflex Maxi S1 Zero, Keracolor FF, Mapetex System, Ultrabond Eco PU 2K
Sealing joints: Mapeflex MS 45, Mapeflex PU 45 FT

For further information on products please visit mapei.com

An organism in constant dialogue with the outside

MARIO CUCINELLA, DESIGNER OF THE SKYSCRAPER: THE TOWER WAS CONCEIVED AS A CLIMATE MACHINE INTERACTING WITH THE ENVIRONMENT

You defined Torre Unipol as "sensorial architecture". What do you mean by that?
For some time now we have been adopting an approach to design whereby buildings are conceived as organisms with the capacity to interact with the surrounding environment: thanks to an apparatus that acts as a "sensor", represented by those elements of the organism in direct contact with the outside such as the shell and the foundation slab, the building draws on resources to guarantee the highest standards in living comfort from an environmental, spatial and social perspective, reducing its negative impacts on the environment and in complicity with the context, with which it relates like an active exporter of added value.
In Torre Unipol the shell is the element that makes the building an organism in constant dialogue with the outside, a network of well-ordered networks that interact through light and air. The double shell, just like the atrium, acts as a dynamic bioclimatic buffer.
In winter the cavity acts as an additional layer of insulation that reduces heat loss significantly. During the summer, on the other hand, the ventilation provided via the cavity limits overheating in the areas behind. For quite a large part of the year, the mitigating effect of the double shell provides natural ventilation for the adjacent internal spaces, which reach a high level of comfort without having to rely on any active system.

> **The skyscraper was designed in the shape of an ellipse to improve its energy efficiency and reduce its dispersive surface**

Can you tell us why the building is considered to be a small climate machine?
I wouldn't say small exactly. Apart from the "shell" there are many other elements. We could consider it a bioclimatic machine, starting from the form of the building itself designed in the shape of an ellipse to improve its energy efficiency, significantly reducing the dispersive surface (if we compare it with a building of similar volume with a rectangular form) and interacting with the surrounding microclimatic context. An in-depth analysis of the site was carried out to establish the best position, which enabled us to find just the right balance between the form of the lot and the orientation of the building. The result is a volume that intercepts the area with the most sunlight in winter, thereby offering the possibility to actively interact with the surrounding climatic context. The large, vertical internal atrium on the south-west side of the building acts as a bioclimatic buffer: in winter it behaves very much like a greenhouse, reducing heat dispersion from the shell and storing free heat energy from the sun, whereas in summer it helps protect the offices behind the shell from direct sunlight and, by opening towards the outside thanks to the skylight at the top, allows the entire space to be ventilated naturally. Inside the building, the layout has been conceived so that most of the offices are located on the east-north-east sides to maximise the benefits from having so much light available, and also so that they can overlook the adjacent park. The glass shell allows for optimum penetration of natural light into the internal spaces. External mobile blinds positioned in the gap in the double shell and facing the large central atrium control light radiation and prevent users of the building being dazzled by the sun. The greenhouse also obviously has a bioclimatic function: in winter, thanks to a system of mobile photovoltaic blinds, it remains closed and stores

> **What counts in the vertical development of a city is a vision of its totality in the medium to long term that keeps projects that are either out of scale or out of context under control**

energy from the sun. In summer, the blinds block out direct sunlight so that the internal areas are shaded, at the same time maximising the production of electrical energy from renewable sources, while the openings at the top and bottom enable the spaces to benefit from the effect of passive ventilation.

How does Torre Unipol dialogue with the Porta Nuova district, which is already densely populated with "important" buildings?
The Torre Unipol project is located in a district of Milan which, over the years, has been radically transformed and during a period in which the development of Porta Nuova Garibaldi and Varesine areas was at an advanced stage, with new architecture – taller than other buildings typically found in the area until that moment – practically completed and new public spaces handed over to the city. The project had to be developed, therefore, within a lot that had been completely urbanised, so with particularly stringent constraints that meant specific design choices had to be made.

What influence did the current norms related to the height of the skyscrapers have on the overall design? Are rules like these a constraint or an opportunity?
Rules are necessary, also to guarantee homogeneous urban development. However, for obvious reasons, that doesn't mean to say each single one is "appreciated" by everyone and, at the time, is necessarily seen as a stimulus rather than an actual constraint. In this precise case the project, starting with the competition, underwent a series of modifications and various progressive geometrical enhancements, some of which were quite radical. Initially the proposal was for a building with a flat top, cut horizontally, with a green roof. This would lead to the design of a tower with a height of 80 m. The client, however, was looking for something with more iconic architecture, while obviously respecting the context: so the evolution in the design contemplated the possibility of raising the tower on the side facing the park, following a trajectory of 60 degrees, up to a height of 124 m, resulting in a pointed rather than a horizontal architectural form. Thanks to there being more space by being taller, it was possible to close the building off by creating a greenhouse. In so doing the current Italian norm (called "60 degrees norm") led to a final "push" in the design phase, resulting in the creation of a more complex, richer and more iconic geometrical form.

During the design stage, to what extent can suppliers of new materials and technologies facilitate and improve design concepts?
A lot. To be able to count on materials and technologies that make a building more efficient and less impactful can help give direction not only to an idea, but to the actual design of a building: its orientation, its form, its higher or lower transparency and its aesthetics.

Tall buildings have radically changed the Milan skyline. What is your opinion on the subject?
It's not as if there weren't already tall buildings in the city. To mention just a few of them, we have Torre Velasca, the Pirelli skyscraper, Torre Snia, Torre Breda and Torre Galfa. They are all part of the city's architectural heritage. What we have seen over the last 10 years is a higher geographic concentration of vertical developments that have helped give a new identity to part of the city, perhaps more recognisable at international level. I don't believe one should have an absolute opinion on individual buildings, be they tall or low. In an urban development, what counts is a vision of their totality in the medium to long term and the presence of instruments that keep projects that are either out of scale or out of context under control. But, above all, a vision that is not purely "geographic", but also "social".

MARIO CUCINELLA

Graduated from the University of Genova in 1986, Mario Cucinella went on to found MCA – Mario Cucinella Architects in 1992. He has received important recognitions for his work on environmental and social issues, such as an International Fellowship of the Royal Institute of British Architects (2016) and an Honorary Fellowship of the American Institute of Architects (2017). He has also lectured at the universities of Ferrara, Naples, Munich (Germany) and Nottingham (UK).

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Milan (Italy)

Torre Velasca

RENOVATION WORK ON THIS HISTORIC BUILDING IS ALMOST COMPLETED. A SPECIFIC BINDER WAS DEVELOPED TO RESTORE EXTERIOR SURFACES AND BRING THEM BACK TO THEIR ORIGINAL COLOURS

"The Tower proposes to culturally summarise that ineffable yet perceptible characteristic atmosphere of the city of Milan without following the language of any of its buildings", is how Ernesto Nathan Rogers described the thought process that led to the BBPR design studio's conception of Torre Velasca, one of the city's most iconic buildings.
Built between 1955 and 1957, the tower is the result of a dialogue with the surrounding space. Its vertical momentum is in contrast, firstly, with the small square at its base, but also with the rest of the city centre, that the designers believed would be able to welcome a new tall building, which at first sight may seem out of place with the urban fabric: "The continuous vertical growth of current building stock from the start of the century" - explained Lodovico Barbiano Di Belgioioso from BBPR – "Had flattened the profile of the city landscape and almost submerged traditional landmarks such as towers, cupolas and bell towers, the gables of buildings. To us, creating new, architecturally relevant elevations, including in city centres, seems to be a sustainable proposition, I would even say desirable".
So, a modern building that transforms the skyline of the old city centre, evoking, however, some of the features of the surrounding historic buildings, first and foremost the Milan Cathedral with a take on its flying buttresses, but also the architecture of the medieval Lombardy era. Its "mushroom" structure is, in fact, a clear homage to Torre di Bona di Savoia at Castello Sforzesco in the centre of Milan. Torre Velasca was the subject of heated discussions in the world of architecture, but also amongst the inhabitants of Milan, who soon nicknamed the building the "skyscraper with braces".

Larger footprint for the upper module

The building has a height of 106 m and 28 floors, two of which are below ground level. The structure is made up of reinforced concrete pillars and beams. The reinforced concrete structural elements made on site (columns, parapet beams, tie-rods and link points) are covered with a double layer of render containing granulates of pink Verona marble applied at different thicknesses and with a floated textured finish. The external closure elements incorporating the windows, on the other hand, are made up of a series of precast elements which, positioned together in an irregular pattern, generate a characteristic decorative layout for the façade of the tower. The small pillars are precast monolithic elements with a variable section made from granules of red Verona marble in

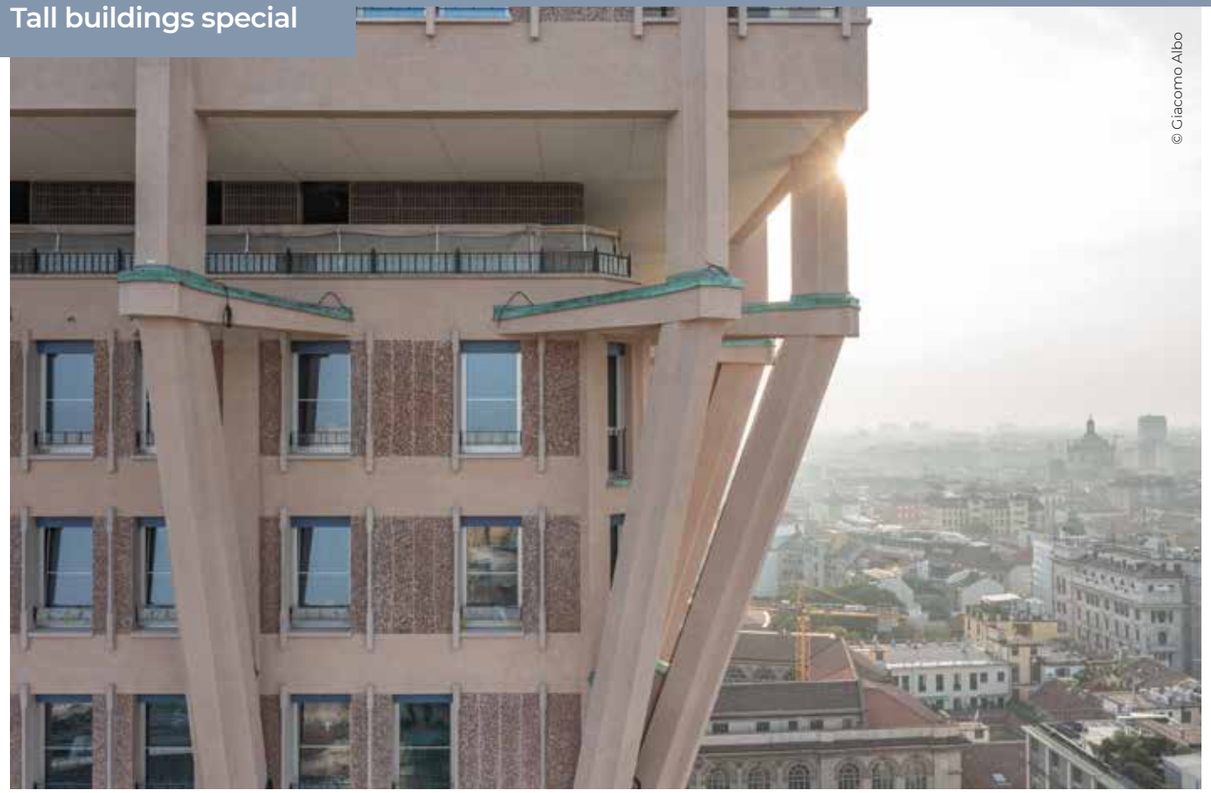
Paolo Asti

RESTORATION IN THE NAME OF MODERNITY

NEW COMMUNAL SPACES AND AN URBAN CONNECTION BETWEEN THE TOWER AND THE CITY: PAOLO ASTI TALKS TO US ABOUT HIS ROLE AS WORKS DESIGNER

When it was built, Torre Velasca was one of the few tall buildings in the city. Today, the Milan skyline is very different: how do old and new skyscrapers manage to dialogue between themselves?
Even though it was initially met with contrasting opinions from critics and the general public, Torre Velasca is a lasting and integral part of the Milan skyline. The design is characterised by an image of togetherness, from the overall organisation of a design idea and the identification of sought after functions in relation to the requirements of the client, to the definition of the complex as a whole and to the types and architectural qualities of the internal office spaces and homes. This presence of mixed-use spaces is one of the much sought after characteristics we also come across in Milan's new skyscrapers. Torre Velasca turns architectural and structural dogma on its head and, rather than becoming more slender, it opens out into the Milan skyline like a mushroom once it passes above the roofs of the city. The aim of so much effort that went into the design by BBPR was to fulfil the relationship between form and function, along with the intent to respect the quality of the urban surroundings, expressing a much sought after modernity following in the wake of history.

What were the guidelines for your restoration project?
Since 1958, the year it was built, Torre Velasca had never undergone refurbishment, restoration or redevelopment work. In 2020, with the arrival of Hines an investor in the HEVF Milan 1 fund managed by Prelios SGR S.p.A, a restoration proj-ect was launched, not to turn the BBPR design into a museum piece, but to bring it up to date, a skyscraper that still lives and dialogues with Milan, by also creating spaces that could be used by the local community.
The original linguistic elements of Torre Velasca enabled what was already a flexible design from the 1950's to be projected into the future and transform its life over time. The last 70 years of atmospheric agents had badly ruined the façade of the building causing it to loose its original colour, a shimmering pink that varied as the light changed at the various times of day. In order to return the façade to its original, authentic colour, the team carried out an in-depth scientific and materic analysis of the render, on-site surveys and studies of historical documents and records, as well as repair work on some of the original elements that had managed to keep their original colour. The render was then carefully studied, together with Mapei, in order to create a bespoke binder called LEGANTE INTONACO VELASCA, that would be able to resist the weather conditions found at such heights but without impacting its final colour. The mix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white cementitious mortar.
The most characteristic structural feature of the building is clearly visible between the 15th and 18th floors: a load-bearing structure designed to support the overhanging upper module containing the remaining eight floors. Twenty oblique beams emerge from the external prospects in correspondence with the 18th floor and are then grafted to the perpendicular upper pillars and the large link points. The upper module, in fact, has a larger footprint: according to the designers the private dwellings located between the 19th and the 25th floor needed to have more depth to the main body than the offices below and, at the same time, create a sort of formal detachment to clearly define the two areas of the building.

Redevelopment work
In 2020 Hines, Development Manager and an investor in the HEVF Milan 1 fund managed by Prelios SGR S.p.A, signed an agreement with the Local Heritage Authority and Milan City Council to redevelop Torre Velasca, which also included transforming the piazza into a pedestrian zone. Work is scheduled to be completed in 2024.


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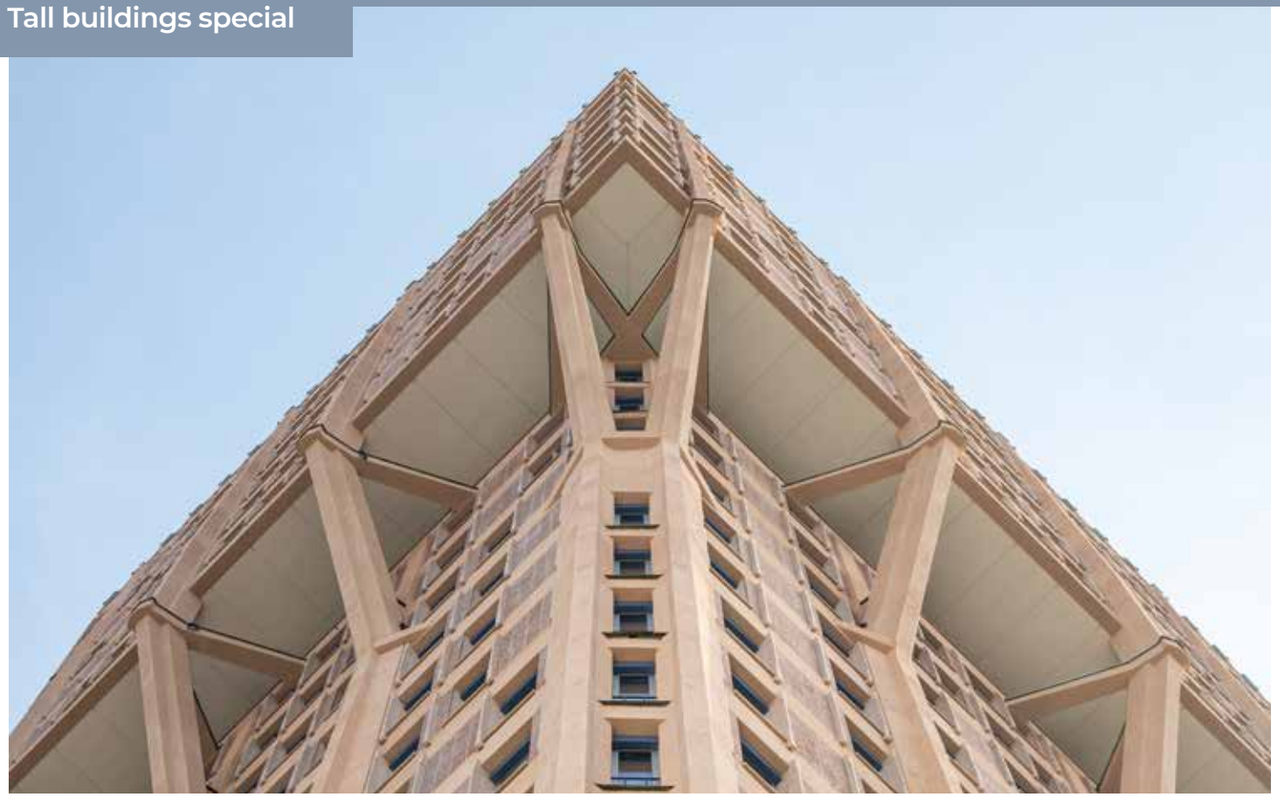
Designed by Studio Asti Architetti in partnership with CEAS (for masonry renovation works), redevelopment work included the complete restoration and consolidation of its original exteriors to maintain the iconic façade and bring it back to its original colour. The internal spaces, on the other hand, have been given a new layout and are divided into different functional areas to include shops, restaurants, a spa centre, offices, and apartments.
To restore the original colour of the building's façades, which had been exposed for more than 60 years to pollutants and all types of atmospheric conditions, the design, which was agreed upon with the Superintendency for Architectural and Landscape Heritage for the city of Milan, was created using 30% LEGANTE INTONACO VELASCA by Mapei and aggregates (Verona red, coral pink, ebony, and Botticino white aggregates with a grain size of 0 to 6 mm) making up the remaining 70%.
The restoration work was not only aesthetic but also structural, which meant employing specific treatments to strengthen the structure, constructing electro-welded mesh to safeguard the tower against the risk of failure. The project was also developed in line with the highest standards of environmental sustainability and energy efficiency with the aim of obtaining international LEED Gold certification.

What criteria did you adopt to redesign the layout of the interiors?
The atrium will be restored to its original design, absolutely stunning, and had stood up well. The interiors, offices and apartments, on the other hand, were less appealing.
In general the language of the 1950's was restored, thanks to the enormous effort put into using the same techniques as back then to reproduce the original covering materials: ceramics, hand-made terracotta, wood and even linoleum, a typical expression of offices of that period. The architectural language of the interiors was intentionally left free of decorative features. And this is in stark contrast with our idea of the 1950's, of brassware and polished wood, of sumptuous interiors, because the tower – even if does date back to the 1950's – does not correspond with that style of interior architecture.

The piazza around the tower is also being redeveloped: what new life do you imagine for this building?
At the foot of the tower we are trying to give, or re-give, the city a space that has never been considered an integral part of either the city or the tower. The space in front of Torre Velasca has always been a kind of crossroads and was neither a piazza, nor a carpark nor a street. Considerable effort was made during the design phase to identify the role of the piazza and, at the same time, as a "secular courtyard" for the tower itself.
We came up with the idea of creating an urban connection between the city and the tower: Piazza Velasca will become a kind of filter between public and private, but also an urban feature that emphasises the monument overlooking this space. We would like it to become a "stoppage" point with respect to the fast pace of the city, a place where one can pause, take in the view of the tower, make the most of its services and gardens. We deliberately chose to include very little street furniture for a precise reason: we preferred using gardens and lighting to furnish the piazza which will create zones that will be lived as rest points. There is also seating, extremely simple benches that are part of the design of the paving. Our intention was to introduce only minimal street furniture that would connect with the concept of paving that rises up to become a seat.

Paolo Asti. Studio Asti Architetti

PHOTO 1. After removing the old render and hydro-scarifying the substrate, the exposed steel reinforcement was treated with MAPEFER 1K cementitious anti-corrosion mortar.
PHOTO 2. A scratch-coat made of PLANITOP HDM MAXI cementitious mortar was applied after repairing the concrete.
PHOTOS 3 and 4. Mapei developed a bespoke type of render for this site called LEGANTE INTONACO VELASCA.



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sign studio reached out to Mapei who developed a special binder specifically for this site. The product is a decorative, white, cementitious render with specific polymers so that it can be mixed with the aggregates, which were recreated to match the type and grain size of the original render of that era, until a formula as close as possible to the authentic colour of the render used for the façades of the tower was obtained. Mapei also supplied products for structural strengthening work on the tie-rods in the upper floors of the building. So, a complex site that we would like to present on the following pages.

Preparation of surfaces and concrete repair

The first phase of the work was the removal of the old render and preparation of the surfaces, removing the part of the reinforcement rods that had become carbonated by hydro-scarifying to leave a rough, compact surface free of dust. The reinforcement rods left exposed after removing the cementitious conglomerate were thoroughly cleaned to remove all the rust, again by hydro-scarifying, and then treated with MAPEFER 1K one-component, anti-corrosion, protective cementitious mortar, a product applied by brush in layers at least 2 mm thick. The sections from which the carbonated concrete had been removed were reintegrated by applying MAPEGROUT 430 fibre-reinforced, compensated-shrinkage, thixotropic mortar which can be applied in layers from 5 mm to 35 mm thick.
MAPEGROUT 430 was chosen not only for its mechanical characteristics that made it suitable for the concrete substrate, but also due to its workability and ease of pumping with a worm-crew rendering machine or with a continuous-feed rendering machine. Electro-welded 0.8 mm diameter AISI 304 non-magnetic stainless-steel mesh (mesh size: 24mm x 24mm) was embedded in the mortar by fastening it to the substrate with fasteners made from pieces of AISI 304 stainless steel bar shaped to suit.

LEGANTE INTONACO VELASCA to restore the colour

After restoring and reconstructing the concrete, an intermediate scratch-coat needed to be applied over the entire surface with a notched trowel so that the next layer, in this case the new LEGANTE INTONACO VELASCA render, would mesh mechanically and form a strong bond. This scratch-coat was created by applying PLANITOP HDM MAXI, a two-component, ready-mixed, fibre-reinforced, pozzolan-reaction cementitious mortar.
Mapei was also involved in restoring the façades to their original colour. This part of the work required an in-depth scientific analysis in the R&D laboratories of the original render and, through a series of laboratory tests, the most appropriate aggregates and colours were identified in order to develop a bespoke binder specifically designed for Torre Velasca, from which it takes its name. The new, white cementitious LEGANTE INTONACO VELASCA was formulated in order for it to be mixed with aggregates in a granulometric curve from the Bellamoli and Ferrari quarries, which were used to reconstruct the original type and granulometric curve, until a “mix design” as similar as possible to the original render used on the façades was obtained, as one can read in a dedicated article in the next few pages. LEGANTE INTONACO VELASCA was modified with specific polymers to create a highly adhesive, water-repellent and crack-free product to guarantee the maximum level of durability possible for the surface exposed to aggressive atmospheric agents and the urban environment.

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PHOTOS 5 and 6. MAPEWRAP C UNI-AX SYSTEM was used to carry out strengthening work to increase the tensile strength of various structural elements.

Strengthening work was also carried on the tie-rods to improve their tensile strength

FRP strengthening package for the tie-rods

Because the chain/tie-rod package has an important structural function for the overall static capacity of the upper floors of the building, it was deemed necessary to add further structural strengthening to increase the tensile strength of these structural elements.
Because of the particular geometry of the external elements, an FRP strengthening package with carbon fibre fabric, MAPEWRAP C UNI-AX SYSTEM, and special connectors (also made of carbon fibre) from the MAPEWRAP C FIOCCO line, was designed. The system guarantees:

- very little intrusion from an aesthetic and architectural perspective so no interference with the architectural constraints of the tower;
- an increase in the structural capacity of the elements while maintaining the same mass and stiffness of the existing structure;
- high durability of the building/structure through the use of a certified and tried and tested, scientifically valid system.

Thanks to their low thickness, carbon fibre fabrics from the MAPEWRAP line were applied to both the inside and outside of the floor and followed exactly the same layout as the chains embedded in the floor slab and the external tie-rods.

Water-repellent treatment for the rendered surfaces

The cycle was completed by treating all the façades with PLANISEAL WR 100, a protective hydrophobising product which, thanks to its particular composition, penetrates deep down into render and protects it from degradation phenomenon without affecting the aesthetics or colour of the surface. Thanks to a considerable reduction in the absorbtion of surfaces treated with PLANISEAL WR 100, degradation due to freeze-thaw cycles is prevented and, as a result, they are much more durable.

Find out more
MAPEWRAP C UNI-AX SYSTEM

PROJECT INFORMATION
Torre Velasca, Milan (Italy)
Original designers: Studio BBPR (Gianluigi Banfi, Lodovico Barbiano Di Belgioioso, Enrico Peressutti and Ernesto Nathan Rogers) and Arturo Danusso
Period of construction: 1955-1957
Period of Mapei’s intervention: 2021-2022
Owners: Hines and Prelios sgr
Redevelopment work designers: Studio Asti Architetti and CEAS srl
Main contractors: Ars Aedificandi SpA and Gasparoli Srl
Works Management: Fontana Architetti and ESA engineering
Mapei distributor: Bild Distribuzione srl
Mapei coordinators: Massimo Seregni, Luca Pretini, Luca Albertario, Paolo Banfo, and Ivan Ceriani (Mapei SpA)

MAPEI PRODUCTS
Concrete repair:
Mapegrout 430
Protection for steel reinforcement: Mapefer 1K
Surface preparation:
Planitop HDM Maxi
Structural strengthening:
Mapewrap C UNI-AX System
System, MapeWrap C Fiocco
Protection of surfaces:
Planiseal WR 100
Restoring the render:
Legante Intonaco Velasca*

*The product was specifically developed for the restoration of the Velasca Tower
mapei.com

Bruno Finzi

Taking care of the past using new materials

BRUNO FINZI (CEAS): AMBITIOUS RESULTS ACHIEVED WITH RESTORATION WORK ON THE RENDER AND APPLICATION OF A STRENGTHENING PACKAGE

Durability is a very important issue for designers. How did you approach the work on Torre Velasca with regards to this concept?
Torre Velasca was built at the end of the 1950's. Because of the amount of attack from atmospheric agents and the level of degradation that had damaged the render after 65 years of service, a very thorough "care" programme for the main structures was absolutely essential, along with a complete refurbishment of the render which, because of its particular colour, had played such an important part in the building's aesthetic impact over the years. The aim of the complete refurbishment of the render and the strengthening work on the structures was to provide this iconic building with an expected service life of at least a further 65 years, which is why the concept of durability applied to structural materials and finishing products in contact with the atmosphere was extremely important in order for us to achieve such an ambitious result.

The development of a render that would return the façades to their original colours was a very delicate operation. What challenges had to be overcome with this particular intervention?
The main problem was how to combine the results of in-depth research into the materials originally used for the building's construction with the reality of binders of the latest generation that would be able to achieve the impermeability and durability required, and with identifying the right aggregates to reproduce the original colours. The constant exchange of information between the Local Heritage Authority, which had the final say on the materic and aesthetic result, also led to the number of samples taken on the building being increased. More than ten types of mix were tested, each one with a different percentage of aggregates and binder, and numerous tests were carried out in the laboratory before arriving at a final result that met all the requirements mentioned previously.

How did you address the very particular "mushroom" conformation of the Tower, especially with regards to its structural consolidation?
The original structural configuration, designed by Prof. Danusso, included a series of steel reinforcing "tie-rods" inside the eighteenth floor, where the change in section in the upper part of the Tower with respect to its main trunk has to be "chained and wrapped". In correspondence of these tie-rods, made from bundles of smooth reinforcing rods, strips of carbon fibre were installed on the intrados and extrados of the floor beams and slab on the eighteenth floor in order to guarantee, once again, the service life of this fundamental structural part of the building. The first sixty five years of service had taken their toll on the building, with thermal cycles and vertical and horizontal loads generating some cracks that it was absolutely essential to intervene on and to take preventive measures for the future by applying carbon fibre strengthening, which "doubled" and integrated the original chaining. This type of strengthening was the only solution possible without altering the original dimensions of the structures and adding post-tensioned cables externally, which would have compromised the original aesthetics of the Tower.

How important was the support and technologies provided by Mapei?
The support we received was fundamental during both the analysis phase on the existing materials and then again during the development of a new, bespoke binder, named LEGANTE INTONACO VELASCA, which gave us the durability required and level of elasticity we were looking for to limit the formation of cracks in the render. The Mapei R&D laboratory again played a leading part, along with the Laboratory at the Polytechnic of Milan, in defining the refurbishment and renovation cycle of both the concrete elements poured on site (pillars and beams for the façade) and the precast elements for the facade. The entire test campaign and trials of the cycle, and then its application, was carried out by Mapei under the supervision of CEAS Façade Works Operational Division. Hines, Development Manager and an investor in the HEVF Milan 1 fund managed by Prelios SGR S.p.A., backed the redevelopment project in collaboration with Asti Architetti, CEAS and ESA engineering, with Ars Aedificandi acting as General Contractor, while remaining in constant dialogue with the Superintendency for Archaeology, Fine Arts and Landscape Heritage from Milan City Council.

Bruno Finzi. Ceas, Structural Works and Façade Works Operational Division

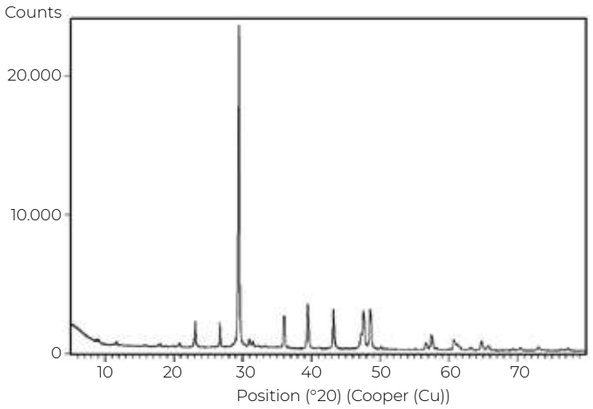
Marta Bovassi

Legante Intonaco Velasca

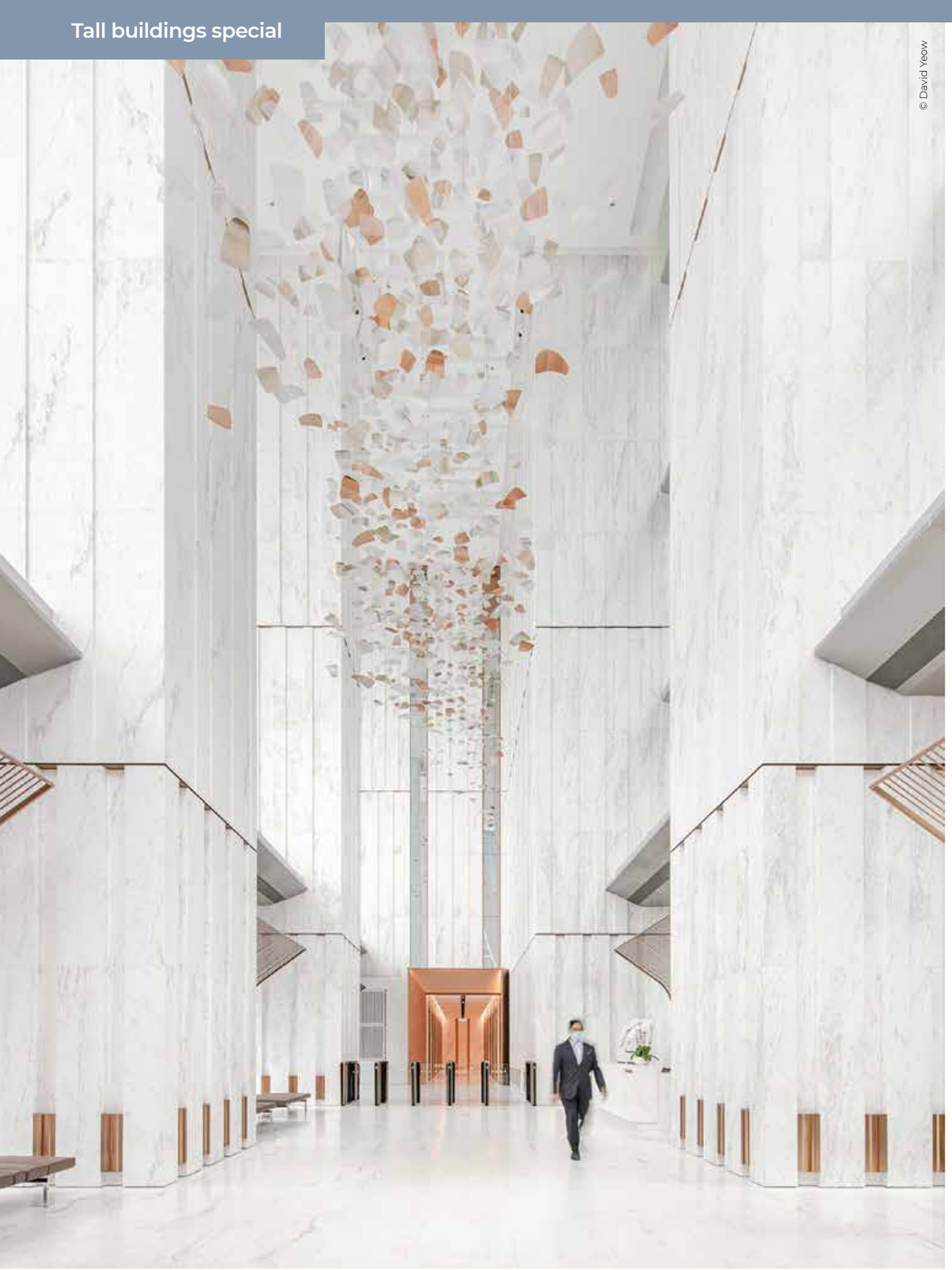
MAPEI R&D LABORATORIES DEVELOPED A BINDER ENSURING A PERFECT MATCH WITH THE ORIGINAL COLOUR OF THE RENDER

Studying and formulating a new product is always a challenge for the Mapei Research and Development laboratories, especially when creating a product to be used in restoration work on a historic symbol of a city, such as Torre Velasca in Milan.
LEGANTE INTONACO VELASCA is the result of an in-depth study aimed at meeting the need to guarantee compatibility with the original structure, the durability of the restoration work considering the conditions the render will be exposed to, and a perfect match with the colour and texture of the original render using materials of a new generation.
To develop this product a thorough, detailed investigation was initially carried out under the direction of Anna Bravo, Group Leader at Mapei R&D Central Analytical Department, to analyse the composition and colour of the original render. A sample of render was taken on site and, using morphological analysis, thermogravimetric analysis (TGA) and X-ray diffraction (XRD), it was possible to asses the aggregate distribution in the base matrix, along with its colour, grain dimensional distribution and form, mineralogical nature.
On the basis of these analyses, a study was carried out to develop a mix made from light coloured binders and a selection of aggregates to create a colour as similar as possible to the original material.
Various samples of this mix were proposed and evaluated together with the Works Director and Local Heritage Authority in order to achieve the best result from a conservative restoration perspective.
The approved mix, made from white, cement-based LEGANTE INTONACO VELASCA with graded aggregates sourced from Bellamoli and Ferrari quarries, was specifically studied to comply with the performance properties and durability required for the material. Apart from evaluating its main mechanical characteristics, particular attention was also paid to its adhesion properties, modulus of elasticity and igrometric shrinkage resistance to ensure the restoration work would remain durable over time.
For Mapei, the durability of materials is a fundamental aspect when developing products. This particular aspect was studied in collaboration with Prof. Matteo Gastaldi from the mCD (Cementitious materials and Durability) laboratory of the "Giulio Natta" Faculty of Chemistry, Materials and Chemical Engineering at the Polytechnic of Milan.
LEGANTE INTONACO VELASCA underwent accelerated ageing tests by thermal and hygrometric cycles to simulate the effect of temperature variations, rain and infrared radiation. The adhesive properties of the material were evaluated on various aged samples in comparison with the non-aged product, giving excellent results. A durability study was also carried out on the complete restoration system proposed by Mapei: we are only too aware that, when carrying out restoration work on heritage buildings, it is important to supply complete product systems, from the reconstruction stage to final protection.

Marta Bovassi. Building Lab, R&D, Mapei SpA (Italy)



ABOVE. Sample of original Torre Velasca render (left) and its longitudinal section and X-Ray diffraction (right).



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Kuala Lumpur (Malaysia)

YTL BB Tower

HIGHLY SUSTAINABLE ADHESIVES FOR THE NEW HEAD OFFICE OF A GIANT OF THE MALAYSIAN ECONOMY

In the centre of one of the most luxurious business and tourist districts in Kuala Lumpur a new skyscraper rises to a height of 179 m: the YTL BB Tower, with glass façades and light, elegant lines. The building, which occupies a reduced portion of land, features pointed portions resembling crystals. It was designed by the KPF architecture studio of New York and comes with technologies and measures to collect and recycle rainwater, reduce energy consumption, and make it highly energy efficient. So, it came as no surprise when the project obtained GBI Gold rating certification from the Green Building Index, a classification system adopted in Malaysia to evaluate the sustainability of buildings.

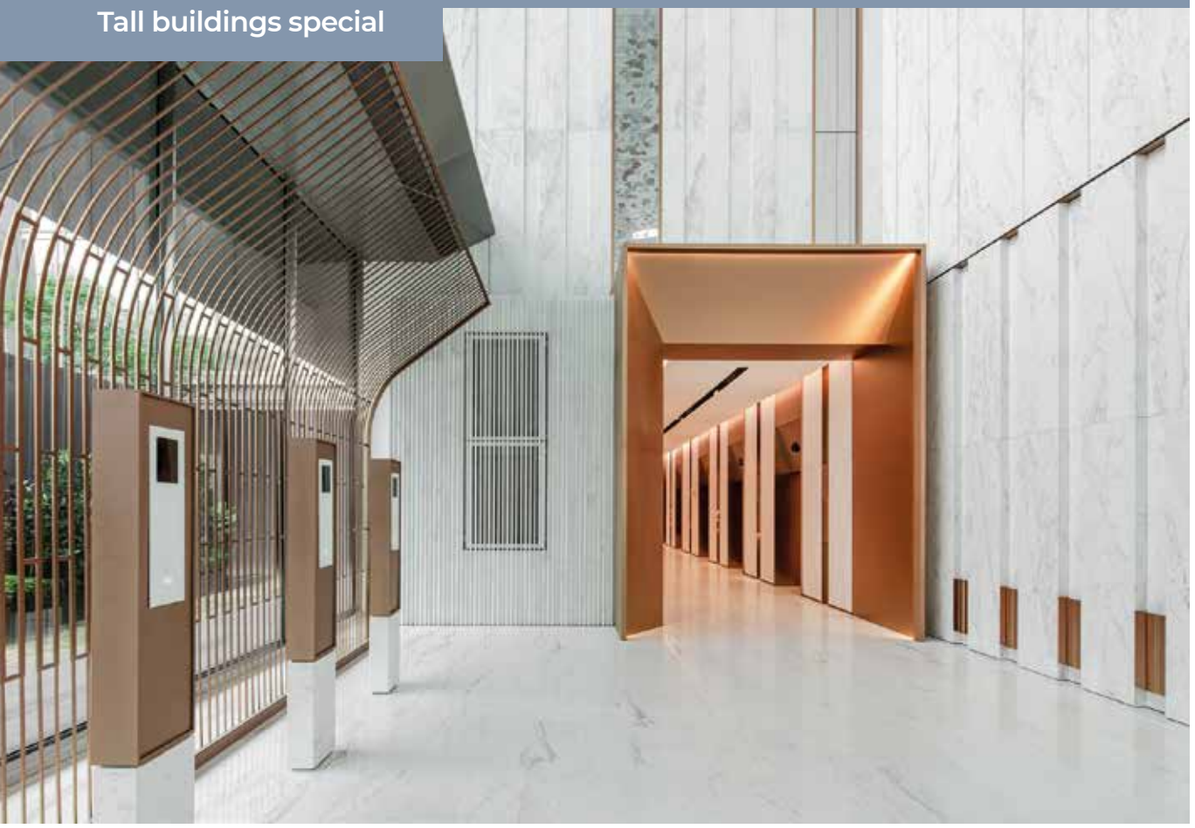
A colossus for a giant

The 42 floors of the tower are the new head office of YTL, a Malaysian colossus with 1,000 employees and 12 million clients operating in the infrastructures, construction, hospitality, cement production, real estate and e-commerce sectors in various Asian countries (Singapore, Japan and China), the UK and Australia.
The employees of the company, who previously worked in 12 different buildings in Kuala Lumpur, are now able to work from one location in a series of “office-boutiques” at the intersection of some of the busiest roads in the Jalan Bukit Bintang district which, thanks to the tower, has now been enhanced with this new “icon” of the city.
The lower floors of the skyscraper include a large entrance hall and a conference suite embellished with a large garden, while the offices are located on the upper floors.
For both environments construction materials were chosen that would guarantee excellent mechanical characteristics, durability and a pleasant aesthetic effect. These included complete Mapei systems which were selected for the installation of large format floor and wall ceramic tiles, both internally and externally.
Going into detail, because of its workability and perfect adhesion to substrates, it was decided to use KERABOND PLUS improved adhesion cementitious adhesive with extended open time to bond 300 mm x 600

Problems & Solutions

The biggest challenge for this project was the installation of large-size ceramic floor and wall tiles on both internal and external substrates. The team managed to overcome this challenge thanks to KERABOND PLUS improved cementitious adhesive with extended open time, which was used to bond ceramic tiles measuring 300 mm x 600 mm and 600 mm x 600 mm. For the lift walls in the lobby, the need to guarantee sound, durable installation of 1200 mm x 600 mm tiles was met by using the KERABOND T+ ISOLASTIC 50* adhesive system.

ABOVE. With its elegant slender forms the BB TYL Tower rises up in the Jalan Bukit Bintang business district of Kuala Lumpur.



© David Yeow

ABOVE. Large-format ceramic tiles were installed on the interior floors with Mapei adhesives such as KERAFLEX MAXI S1, KERABOND T+ISOLASTIC 50* and KERABOND PLUS.

mm and 600 mm x 600 mm floor tiles, such as those in the large lobby on the ground floor.
With the KERABOND T+ISOLASTIC 50 system, on the other hand, which consists of non-slip cementitious adhesive and elasticising latex additive produced and distributed locally by Mapei Malaysia, 1200 mm x 600 mm tiles were bonded to the walls of the lifts and the lobby. When mixed with adhesive, the latex helps improve its adhesion to substrates and its deformability and waterproofing properties.

A champion of sustainability
KERAFLEX MAXI S1 deformable, non-slip cementitious adhesive with extended open time, meanwhile, was chosen to bond 600 mm x 600 mm ceramic tiles on the rest of the internal walls. This product comes with Low Dust technology and, thanks to its high thixotropy, is particularly suitable for bonding large format ceramic and stone tiles: it may be applied on vertical surfaces without slumping or allowing tiles to slip, including heavy and large format tiles.
What is more, KERAFLEX MAXI S1 is a "champion" of sustainability: it features very low emission of VOC (Volatile Organic Compounds), is certified EMICODE EC1^{Plus} by the German association GEV and helps obtain important credits for obtaining the LEED certification. So, using this product also played a part in reducing the environmental impact of the entire project.

Find out more
KERAFLEX MAXI S1

PROJECT INFORMATION
YTL BB Tower, Kuala Lumpur (Malaysia)
Period of construction: 2018-2019
Period of the Mapei intervention: 2018-2019
Owner: YTL
Design: Kohn Pederson Fiox Associate PC, Syarikat Pembenaan Yeoh Tiong Lay Design Group, Veritas Architects Sdn Bhd
Main contractor: YTL Construction Sdn Bhd
Ceramic installation company: L&W Tiling, Lem Win Foo
Mapei coordinator: Kenny Teo, Mapei Malaysia

MAPEI PRODUCTS
Installing ceramic tiles:
Kerabond Plus, Kerabond T+ Isolastic 50*, Keraflex Maxi S1

*The product is manufactured and distributed in Malaysia by Mapei Malaysia

For further information on products visit mapei.com and mapei.com.my

Vienna (Austria)

Marina Tower

MAPEI SYSTEMS WERE USED TO WATERPROOF WET AREAS AND BOND CERAMIC TILES IN THE TALLEST RESIDENTIAL COMPLEX IN AUSTRIA

This is the tallest residential complex in Austria and since January 2022 it has changed the Vienna skyline.
Marina Tower consists of two inter-connected towers of different heights with 511 apartments, a nursery school, a fitness area and dedicated areas with shops and restaurants. The smaller tower has 10 floors while the taller one has 41 floors with magnificent views of the Danube and a large part of the Austrian capital.
24,000 m² of ceramic coverings were installed on the floors and walls in the taller of the two towers using 30 Mapei products from specific systems for this type of application and, in certain cases, products that were specifically developed to meet the requirements of this megaproject.
A contribution for which Mapei Austria GmbH, the Austrian subsidiary of the Group, can be rightly proud of. "We are proud to have provided support for the execution of this project with our professionalism and know-how, as well as by supplying a large variety of chemical building products", declared Stefan Schallerbauer, Product Manager of Mapei Austria GmbH products for installing ceramic tile and stone.

Substrates as a starting point

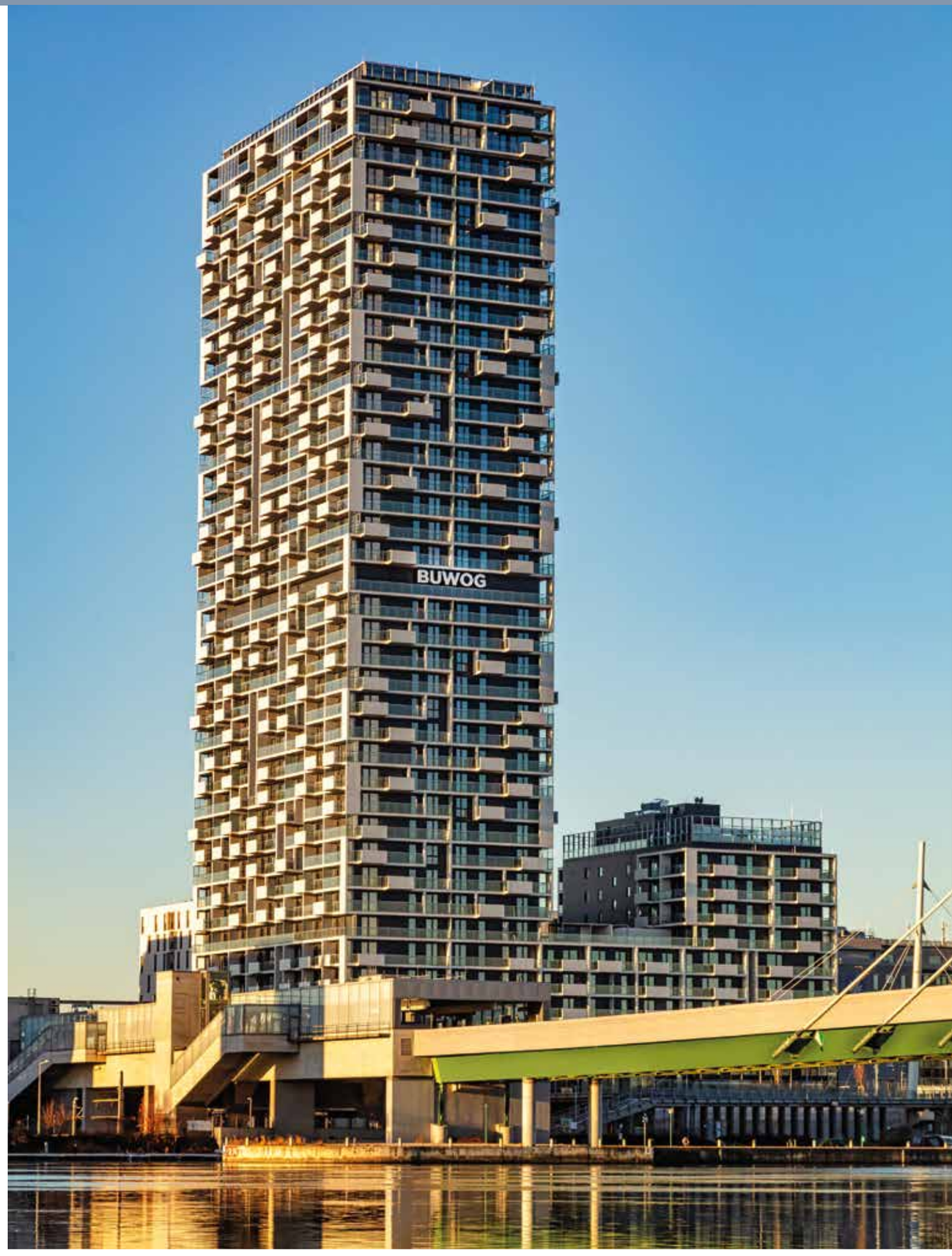
Before bonding the enamelled ceramic and porcelain tiles on the floors of the apartments, stairs, corridors, around the pools and in the fitness centre, the substrates were treated with PRIMER G synthetic resin-based primer in water dispersion with very low emission of volatile organic compounds (VOC), which is used to provide uniform absorption in cementitious or gypsum surfaces, or with ECO PRIM GRIP bonding promoter, specific for non-absorbent internal and external substrates. Going into detail, this product is a low odour, solvent-free primer with a very low content of VOC.
After treating the surfaces, the ceramic tiles were installed using three different types of cementitious adhesive: KERAFLEX MAXI S1, particularly suitable for installing large format tiles, KERAQUICK MAXI S1, which enable surfaces to be opened to intense traffic after only 24 hours, and ADESILEX P9, an "historic" Mapei adhesive that has been used for more than 60 years to install all types of ceramic tiles, mosaics and stone, thanks also to its excellent quality/cost relationship.

Innovation in waterproofing

Mapei solutions also played an important role in waterproofing work carried out in the 511 apartments. In 391 of the apartments on the lower 28 floors of the tower, MAPEGUM WPS liquid membrane was used on 6,900 m² of substrates in potentially damp areas. This product was chosen because of its quick-drying properties, which means ceramic tiles can be installed after only 12 hours, as well as for its excellent elongation and very low emission of VOC (certified EMICODE EC1^{Plus} by GEV). The corners between adjacent walls and between the walls and floors were sealed with MAPEBAND PE 120 PVC tape for liquid membrane waterproofing systems.
For the substrates in 120 of the 511 apartments between the 29th and the 41st floors, on the other hand, Mapei Austria GmbH proposed a bespoke solution developed together with experts from the sector, such as those from the association of Austrian tile and screed manufacturers. The substrates in the bathrooms in these areas have pump-applied anhydrite screeds and their surfaces were classified as W4 regarding their exposure to damp according to the Austrian Standard ÖNORM B3407. This circumstance required a special waterproofing, called "Verbundabdichtung plus" (waterproofing plus) ac-

Problems & Solutions

One of the main challenges of this project was finding a proper waterproofing solution for the wet areas in the apartments of the upper floors. The substrates had anhydrite screeds and their surfaces were classified as W4 regarding their exposure to damp according to the Austrian standard ÖNORM B3407. Mapei GmbH proposed a bespoke solution developed together with experts from the sector, such as those from the association of Austrian tile and screed manufacturers. This enclosed the use of MAPELASTIC TURBO elastic mortar, MAPEGUARD WP 200 anti-fracture membrane and MAPEBAND EASY rubber tape.



RIGHT. Marina Tower is the tallest residential complex in Austria. Since January 2022 it has changed the Vienna skyline.

cording to a guidline, created by the Austrian tile and screed association in collaboration with Mapei Austria based on this construction project
After preparing the substrates, 680 m² of surfaces were waterproofed with a complete Mapei system consisting of MAPELASTIC TURBO rapid-drying, elastic cementitious mortar, which may be applied on substrates that are not perfectly dry, MAPEGUARD WP 200 alkali-resistant anti-fracture membrane and MAPEBAND EASY rubber tape to seal the control joints and corners between the walls and floors. In the showers and swimming pools, on the other hand, the substrates were waterproofed with MAPELASTIC TURBO and MAPEBAND EASY, for a total surface area of 380 m².

Gold-rating sustainability
In April 2020, while the project was still at the executive stage, Marina Tower was awarded "Gold" certification by ÖGNI, the Austrian association for sustainable real-estate management which, when evaluating the complex, took into account the energy resources and hydric management practices, but also the quality of the construction materials for their low impact on the environment and their guaranteed durability.
Sustainable, high performance products, such as those supplied by Mapei, undoubtedly played an important part in being awarded this certification. As Andreas Wolf, General Manager of Mapei Austria GmbH, declared, "We pay a lot of attention to the sustainability of the production process of our materials and to the development of formulations that are safe for both those who apply them and for the end user. It is part of our commitment to meet the needs of construction companies".

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© Stephan Huger

ABOVE. Ceramic tiles were installed in several areas of the tower using three cementitious adhesives to meet different needs: KERAFLEX MAXI S1, KERAQUICK MAXI S1, and ADESILEX P9.

Find out more
KERAQUICK MAXI S1

PROJECT INFORMATION
Marina Tower, Vienna (Austria)
Period of construction: 2019-2022
Period of the Mapei intervention: 2021-202
Owners: Buwog, IES Immobilien
Design: Zechner & Zechner ZT GmbH
Main contractor: Marina Tower Holding
Installation company: Olida Ceramic GmbH
Mapei coordination: Fares Magshood and Stefan Schallerbauer, Mapei Austria GmbH

MAPEI PRODUCTS
Preparing substrates: Primer G, Eco Prim T
Waterproofing substrates: Mapelastic Turbo, Mapeguard WP 200, Mapegum WPS, Mapeband Easy, Mapeband PE 120
Installing ceramic tiles: Adesilex P9, Keraflex Maxi S1, Keraquick Maxi S1

For further information on products please visit mapei.com and mapei.at

Sustainability, safety and social value


Christoph Zechner

CHRISTOPH ZECHNER SPOKE WITH US ABOUT THE CHALLENGES FACED BY THE ZECHNER & ZECHNER ZT GMBH DESIGN STUDIO

What challenges did you come across during the design stage of such a tall building as the Marina Tower, the tallest residential building in Austria?
The initial idea was to build a skyscraper to be used as offices. Its design, therefore, contemplated really deep volumes. So the first challenge was to create new layouts which would be more suitable for apartments. Tall buildings are obviously more challenging from a construction perspective. Safety requirements, and particularly with regards to fire-prevention measures, are more stringent for skyscrapers compared with lower buildings and there has to be far more attention to these aspects. But basically, all the evaluations were based on the need to guarantee the building had a high level of sustainability. For example, quite a large portion of the energy required for the building is obtained from renewable energy sources and highly efficient home automation systems have been installed.

What is the most widely held attitude between Austrian designers when it comes to tall buildings? Is Marina Towers a one-off or not?
Over the last few years several skyscrapers have been built in Vienna. They are an essential tool in overcoming the problem of "compressed" urban spaces and to limit the use of land to the detriment of green spaces. Therefore, because of its sheer height and "bulky" presence within the urban fabric, the responsibility of someone who designs a tall building is far higher than for someone who designs a building of average height. This means the selection of projects must be based on qualitative criteria and entrusted to competent bodies and organisations.

What urban context is this project located in? And what influence did this have on its design?
Marina Tower is near the banks of the Danube, separated from the river by a very busy road and a railway line. A bridge has been built over the road and railway, the Marina Deck, so that pedestrians and cyclists can reach the area around the towers. Communal use of this space then continues into the atrium with glass façades that occupies some of the lower floors. For the upper floors, on the other hand, we preferred large spaces to afford a spectacular view of the city.

How important was the concept of sustainability and how did you manage to obtain certification issued by ÖGNI, the Austrian Society for Sustainable Real-Estate?
All aspects related to sustainability were crucial for the entire architectural design. And they didn't only concern energy performance and choice of materials. The position of the building near an underground railway station, the creation of a "Mobility Point" where bikes, scooters and cars can be rented and the presence of numerous parking spaces for bikes all enable residents of the complex to move around sustainably. Communal services, such as a nursery, are available in the lower part of the building and help increase its value, as contemplated in the requirements for ÖGNI certification.

What criteria were behind the choice of preferred construction materials?
We place a high value on durability, long service life cycles and how easy it is to apply and maintain the materials used. We tend to favour materials that can be recycled at the end of their service life with a view to encouraging a circular economy.

To waterproof a number of damp environments in many of the apartments a bespoke solution was developed thanks to the collaboration between suppliers of construction materials and experts from associations operating in the sector. How important was this synergy between the various stakeholders involved in the project?
We overcame the challenge of waterproofing the substrates in damp areas thanks to perfect coordination between Mapei and the other companies involved with an integration to the project that also worked out cheaper compared with solutions normally adopted to waterproof substrates. Another determining factor was the quality of the technical support which Mapei Austria GmbH provided during the design phase.

Christoph Zechner. Zechner & Zechner ZT GmbH (Austria)

Vancouver (British Columbia, Canada)

Mirabel Towers

MAPEI SUPPLIED CERTIFIED SYSTEMS FOR "BEAUTIFUL" TOWERS

The name “Mirabel” stems from the Latin word *mirabilis*, meaning “wondrous” or “of wondrous beauty.” When developer Marcon Construction in 2017 chose that name for its twin-tower condominium project that is located within the West End section of Vancouver, the bar was set high. The corner of Vancouver’s Davie and Broughton streets had been the site of two aging apartment buildings. By 2021, the site’s transformation into a complex with two neighboring 18- and 19-story buildings – comprising 153 luxury units and 68 social-housing units – was complete.

The project entailed the use of Mapei products within an area covering 8,268 m² altogether. “Many different Mapei products were used on this project,” Dave Randall, Mapei Inc. Business Development Manager for Western Canada, said. “This twin-tower design is very modern and greatly improved the neighborhood.”

Concrete restoration systems on the job

Once the main structure was erected, Marcon’s crews used products from the Concrete Restoration Systems line, that are manufactured and distributed on the Canadian market by Mapei Inc., to prepare concrete slabs and help form exterior balconies. These products included TOPCEM PREMIX screed mortar, MAPECEM QUICKPATCH concrete patch, PLANITOP X repair mortar and PLANIGROUT 755 construction grout.

The concrete slabs were verified to an International Concrete Repair Institute (ICRI) concrete surface profile (CSP) of #2. Areas needing leveling were then coated with PRIMER L acrylic latex primer to enhance the adhesion of NOVOPLAN 2 PLUS high-strength, cement-based self-leveling underlayment.

In order to ensure adequate sound reduction to maintain a peaceful living environment, the next step was to install Mapei’s “3-in-1” answer for crack isolation, waterproofing and sound reduction: MAPEGUARD 2.

MAPEGUARD 2 not only helps to prevent existing or future floor cracks, but also reduces the transmission of impact sound and airborne sound through floors when installed under ceramic tile, stone or wooden floor coverings. MAPEI SM PRIMER was used to ensure a quick installation of MAPEGUARD 2 membranes onto the leveled substrates.

Waterproofing wet areas

MAPELASTIC AQUADEFENSE ready-to-use, ultra-quick drying, flexible liquid waterproofing membrane was applied over substrates in the bathroom to create a thin, continuous barrier to protect adjacent rooms and floors below from water damage.

Installation systems for the stone and ceramic floors

Interior designer Alda Pereira specified natural marble for wall and floor tiles in the condominium units, which were installed using KERAFLEX SG polymer-modified mortar.

The ceramic floors in the lobbies were bonded with ULTRAFLEX RS rapid-setting thin-set mortar. All grouting operations were completed using polymer-modified ULTRACOLOR PLUS FA grout. Finally, MAPESIL T silicone sealant was used for the expansion joints.

Certified solutions for a wondrous beauty

As an added benefit, all products used in this project were third party tested and third-party certified for low VOC emissions. As a result, the products achieved Indoor Advantage Gold certification from SCS Global Services to meet California Department of Public Health (CDPH) Standard Method v1.2-2017. The testing of these products is the most stringent type of testing that is available in North America.

NOVOPLAN 2 PLUS is also Red List Free, having been verified per the most current Red List on the Website for the Living Building Challenge (LBC), an international sustainable building certification program created in 2006 by the non-profit International Living Future Institute.

The new towers are truly an upgrade over the low-rise apartments that they replaced. Their “wondrous beauty” is a sight to behold – almost as much as the striking views of the Rocky Mountains that they provide to their new residents.

All the products mentioned in the article, except for MAPELASTIC AQUADEFENSE, are manufactured and distributed on the Canadian market by Mapei Inc.

Find out more
MAPELASTIC AQUADEFENSE

ABOVE. Mirabel Towers residential complex in Vancouver encloses two neighboring 18- and 19-story buildings comprising 153 luxury units and 68 social-housing units.
RIGHT. All tile joints in the apartments were grouted with ULTRACOLOR PLUS FA*, while expansion joints were sealed with MAPESIL T* sealant.

PROJECT INFORMATION
Mirabel towers, Vancouver (British Columbia, Canada)
Period of construction: 2020-2021
Year of the Mapei intervention: 2021
Project owner: Marcon Construction
Design: Richard Henriquez and Alda Pereira (interiors)
Main contractor: Marcon Construction
Tile installation company: Robertson Floors Ltd.
Mapei distributors: Prosol Inc. and Central Concrete Accessories
Mapei coordinators: Dave Randall and Anthony Petrunia, Mapei Inc (Canada)
Photos: Take Off Photography and Luke Potter Photography

MAPEI PRODUCTS
Concrete repair: Mapecem Quickpatch*, Planigrout 755*, Topcem Premix*, Planitop X*
Preparing substrates: MAPEI SM Primer*, Novoplan 2 Plus*, Primer L*
Waterproofing and soundproofing substrates: Mapeguard 2*, Mapelastic AquaDefense
Installing ceramic tiles: Keraflex SG*, Ultraflex RS*
Grouting tile joints: Ultracolor Plus FA*
Sealing expansion joints: Mapesil T*

*These products are manufactured and distributed on the Canadian market by Mapei Inc. (Canada)

For further information on products please visit mapei.com and mapei.ca

When buildings look upwards

HOTELS, OFFICES AND RESIDENTIAL COMPLEXES: A SELECTION OF PROJECTS FROM ALL OVER THE WORLD

One Za'abeel skyscraper
Dubai (United Arab Emirates)

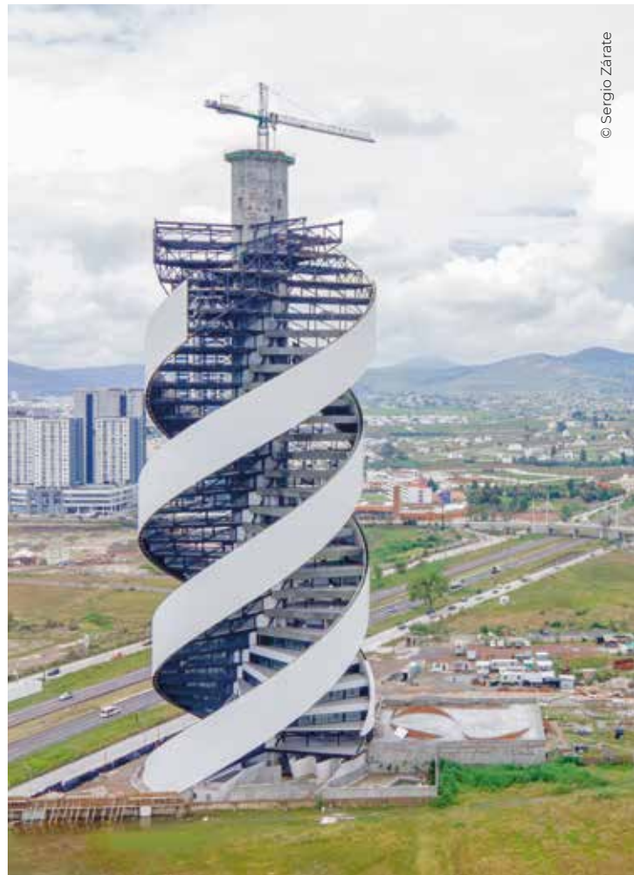
This skyscraper seems to embody Dubai's dynamic and innovative spirit. It is a mixed-use skyscraper with apartments, shops and entertainment areas. Particular attention was paid to the use of quality construction materials that would contribute to the durability of the complex. One of these materials was ADESILEX P7, an adhesive distributed on the Emirates market by Mapei Construction Chemicals, which was used to install 98,000 m² of porcelain tiles, including in areas exposed to high levels of traffic. KERABOND T, on the other hand, was used to bond 39,000 m² of small format porcelain tiles and ULTRACOLOR PLUS was used to grout joints on more than 137,000 m² ceramic coverings. To address the needs of high-tension areas, MAPEGUARD UM 35 anti-fracture and uncoupling membrane has been employed, covering an area of 5,220 m² to prevents cracks and ensure durability to the installed ceramic surfaces.

Hilton Tashkent City Hotel
Tashkent (Uzbekistan)

The centre of the capital of Uzbekistan features traditional architecture living harmoniously alongside modern buildings. This area, ideal for both tourism and business trips, is the location for the Hilton Hotel, a 22-storey tower with interiors illuminated by natural light thanks to its large glass façades. Inside the hotel, the Serenity Spa offers a swimming pool and Jacuzzi, along with other areas dedicated to wellbeing. And it was here that ceramic and porcelain tiles were installed using ADESILEX P10 cementitious adhesive, KERACOLOR FF and ULTRACOLOR PLUS cementitious grouts and KERAPOXY DESIGN epoxy grout for joints.

Helea tower
Puebla (Mexico)

Designed by Bulnes Arquitectos, this 33-storey tower with 94 apartments has received several architecture awards and is one of the city's most iconic residential projects. Each floor of the building has three sections arranged in the form of a spiral which rotate by 15 degrees in an anti-clockwise direction at each floor level until reaching a height of 150 m. Mapei products were used to prepare (PRIMER L) and level off the substrates (ULTRAPLAN ECO 20, a product distributed on the Mexican market by Mapei de Mexico), as well as to install ceramic tiles. Going into detail, ULTRAFLEX LFT cementitious adhesive was chosen to bond the ceramic tiles while KERACOLOR FF cementitious mortar was used to grout the joints.


© Sergio Zárate

Lex tower
Buenos Aires (Argentina)

This skyscraper, which stands out for its graceful lines and glass façades, is located on the site of the historic Politeama Theatre which, with its new look, has become part of the complex. It consists mainly of office space, accessible from two different entrances. Technologies were employed for its construction that would guarantee a high level of sustainability by optimising rainwater, creating green roofs, using materials supplied by local manufacturers and by creating parking spaces for smart vehicles. So it comes as no surprise that the building has been awarded LEED BD+C certification: Core and Shell from the Green Building Council. Mapei Argentina also played a part in achieving this result by supplying eco-sustainable products, such as KERAFLEX to install porcelain floor and wall tiles and MAPELASTIC to waterproof substrates.

© Andrea Martiradonna

R11 residential towers
Cascina Merlata, Milan (Italy)

An important residential development is currently under construction in the Cascina Merlata district of Milan. The northern end of Villaggio Highrise is the location for lot R11 where residential towers designed by C+S Architects have been constructed. The two buildings, one with fourteen floors and one with twelve floors, are separated by a piazza to create a kind of urban gateway for the nearby park. For the façades of the towers M+, a subsidiary of Mapei, supplied 15x15x4 mm thick glass mosaic tiles in the colours white and dark grey, which were chosen to meet design requirements regarding light refraction. Mapei supplied ULTRACOLOR PLUS grout for joints and MAPESIL AC silicone sealant for expansion joints.

Cersaie: 40 years showcasing Made in Italy

MAPEI, A CONSTANT PRESENCE SINCE THE FIRST EDITION OF THE TRADE FAIR, PRESENTED IMPORTANT NEW SUSTAINABLE SOLUTIONS

The 40th edition of Cersaie, the International Exhibition of Ceramic Tile and Bathroom Furnishings held at Bologna Fiere from 25th to 29th September, closed with extremely satisfying results. This year there were 99,319 visitors, an increase of 8.8% on last year, with overseas visitors representing 48% of the total.
"The Italian ceramic industry continues to be highly appreciated on international markets thanks to its intrinsic characteristics such as salubrity, hygiene, durability and sustainability", declared Giovanni Savorani, President of Confindustria Ceramica, the Confederation of Italian manufacturers of ceramic tiles and refractory materials.
The "Route 40" exhibition itinerary, specially prepared to mark the 40th anniversary, told the story of the main product innovations that have played a part in making Italian ceramic tiles and bathroom furnishings jewels in the crown of the Made in Italy brand all over the world.

Since the first edition
Mapei has been taking part at Cersaie since the very first edition, a way of highlighting its bond with the entire chain at Italian and international level. And the company was present again this year with two stands to exhibit its products and those of its subsidiary, Profilpas, acquired one year ago, proposing complete and versatile solutions for showers and external applications on balconies and terraces.
Sustainability, durability and quality were the key words that united, like a common thread, technical solutions designed for different environments, but joined by the common denominator of respecting and safeguarding the environment and people.

Zero Line: new products with fully offset CO_2 emissions
This year Mapei introduced the Zero Line, a complete line of products with CO_2 emissions fully offset throughout their entire life cycle[1], which includes 14 products for the ceramic tile installation and building sectors. To mark this special edition of Cersaie, the line was enhanced with new products and now also includes white cementitious adhesives for ceramic tiles, waterproofers and products for the care and maintenance of ceramic and stone surfaces.
The aim is to offer project owners, designers and professional installers the opportunity to choose to construct responsibly, using high performance products with fully offset CO_2 emissions and designed to last[1]. The line includes adhesives such as KERAFLEX EASY S1 ZERO, KERAFLEX EXTRA S1 ZERO, KERAFLEX MAXI S1 ZERO and ULTRALITE S1 FLEX ZERO and ULTRACOLOR PLUS grout for joints.

[1] CO_2 emissions measured throughout the life cycle of products from the Zero line in 2023 using LCA (life Cycle Assessment) methodology, verified and certified by EPD (Environmental Product Declarations), have been offset through the acquisition of certified carbon credits in support of renewable energy and forestry protection projects.
A commitment to the planet, to people and to biodiversity.

IN THESE PAGES.
At Cersaie 2023 Mapei showcased innovative products for the installation of ceramic tiles. Many of these solutions are products with CO_2 emissions fully offset throughout their entire life cycle[1].

SUSTAINABLE BUILDING: A SHARED CHOICE
On 26th September, Mapei brought together leading stakeholders from the ceramic chain to discuss the need for joint action to reduce the impact of the building industry on the environment and climate change. The roundtable "Sustainable building: a shared choice" brought together Marco Squinzi, Mapei CEO (pictured left), Emilio Mussini (pictured right), CEO of Panariagroup (a leading Italian ceramic tile manufacturer) and Vice President of Confindustria Ceramica, Fabrizio Capaccioli, President of GBC (Green Building Council) Italia, and Salvatore Correale, CEO of Cidimm, a company specializing in diagnostic investigations on buildings.

Elastic sealants

Sustainability and attention to the world of architects for the sealants line: showcased at the trade fair was MAPESIL AC ECO, a solvent-free, mould-resistant, pure acetic silicone sealant which is produced without having to use fossil-based raw materials and then packaged in recycled plastic cartridges. Two new matt neutral silicone sealants were also presented: MAPESIL TILE MATT – eleven colour shades for ceramic tiles – and MAPESIL STONE MATT – nine colour shades for natural stone.

Fabio Guerrini
Corporate Product Manager, Elastic Sealing and Bonding Line, Mapei Group

"With MAPESIL TILE MATT and MAPESIL STONE MATT our aim was to intercept an ongoing trend in the design world, and especially amongst architects, and to try and make sealant products more "materic".
So we gave the product a less shiny finish by introducing matt shades, some also with speckles, that don't have a solid colour, but rather a texture that simulates the colours of materials such as stone, granite or Travertine".

UltraCare Line

Since 2021 Mapei has been proposing the UltraCare Line, specifically created for cleaning, maintaining and protecting surfaces. In fact, after the design and installation phases, it is very important surfaces undergo regular maintenance to safeguard their performance and aesthetic appeal and to extend their service life.
At Cersaie 2023 the line was enhanced with two cleaners (ULTRACARE RUST REMOVER and ULTRACARE STAIN REMOVER to remove, respectively, rust and stains of organic nature) and two protective treatments (ULTRACARE RAIN PROTECTOR S and ULTRACARE RAIN PROTECTOR W for protection from rainwater).
UltraCare is also a valid contribution to sustainable building: keeping surfaces clean and protected and guaranteeing their functionality over time has a direct correlation with their durability and sustainability: the longer flooring lasts, the less impact it has on the environment because there is no need to rebuild it. Seven products from the range are also part of the Zero Line: their CO_2 emissions, calculated throughout their entire life cycle, are fully offset through the acquisition of certified environmental credits in favour of renewable energy and reforestation projects[1].

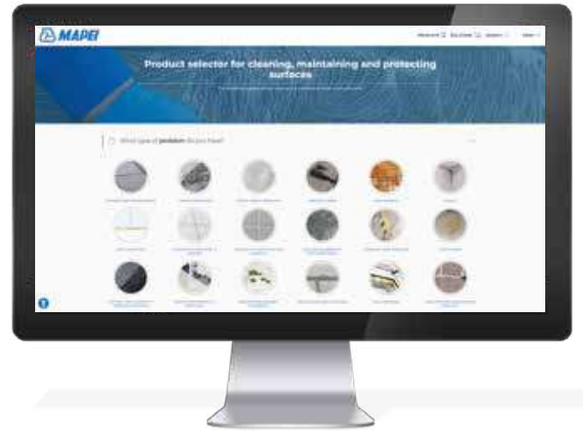
Enrico Geronimi
Corporate Product Manager, Grouts and Ultracare Line, Mapei Group

Amongst the new products this year we have ULTRACARE RAIN PROTECTOR, the ideal solution for those who have problems with terraces. Can you describe it to us?
This kind of products are highly requested by the market and can be applied while waiting for a more permanent solution. If I have a problem with infiltrations on a balcony or terrace that has deteriorated due to the effect of rainwater infiltrations and I need to protect it temporarily while waiting for a more permanent solution – such as using MAPELASTIC or MAPEGUARD UM 35 waterproofing membranes – the new ULTRACARE RAIN PROTECTOR, in either the S (solvent-based) or the W (water-based) version, provides this type of protection. What is more it is transparent, does not form a film, makes surfaces water-repellent, and does not alter the natural breathability of porous materials.

Very often surfaces have organic stains that are difficult to remove. What solution do you propose in such cases?
This year we introduced ULTRACARE STAIN REMOVER, a thick consistency cleaner for removing organic stains from absorbent surfaces, such as oil stains from cementitious floors, or grease, wine and coffee stains from stone flooring. Very often these kinds of stain form on absorbent surfaces, which makes them difficult to remove. This product has a very strong cleaning action, as well as an absorption action.

There is also another new product for problems with rust. Which one?
It often happens that we find rust stains from a metal element on external paving, such as from a simple clothesline or a metal floor lamp. We already had an acid-based cleaner in the range, ULTRACARE ACID CLEANER, which is highly effective at removing rust but isn't compatible with surfaces sensitive to acids, such as limestone and stone in general. This year we introduced ULTRACARE RUST REMOVER, a product with a slightly alkaline pH so compatible with surfaces sensitive to acids.

WORK TOOLS



Which UltraCare product is best for you?

Find it out using the product selector for cleaning, protecting and maintaining surfaces

The UltraCare Line is made up of 25 products for various uses, four of which were presented at the most recent edition of Cersaie trade fair. But how do you choose the best solution for your specific protection and maintenance needs?
On the mapei.it website there is now a handy tool (available in English) which enables you to find the most suitable product for your needs.
All you need to do is answer these simple questions:

- What type of problem do you have?
- What type of material do you need to work on?
- Where do you need to operate?
- What type of surface do you need to work on?

Answering these questions is very simple: just select the image that corresponds to each answer. You will get a list of products, each with a brief description of its use and advantages. You can also print off the results.

Go to the product selector for cleaning, maintaining and protecting surfaces

The ZERO line now also encloses MAPELASTIC ZERO and MONOLASTIC ZERO waterproofing membranes with fully offset CO_2 emissions[1]

Dino Vasquez
Corporate Product Manager, Waterproofing Products Line, Mapei Group

AQUAFLEX S 1K is another great new product and, again, is the result of innovation promoted by Mapei. It is a solvent-free liquid membrane made from silane terminated polymers used to waterproof exposed flat roofs or balconies and terraces on which the covering material is then installed. This type of membrane has excellent properties such as being quick-drying and easy to apply and prepare. It is also highly resistant to UV rays, ponding water and fire. AQUAFLEX S 1K is a multi-purpose product that enables us to offer the market a solution with certified durability for numerous areas of application.

Cementitious and liquid waterproofing membranes

Sustainability also with waterproofing: two historic Mapei products joined the Zero Line. In fact, CO_2 emissions measured throughout the life cycle of MAPELASTIC ZERO and MONOLASTIC ZERO have been fully offset through the acquisition of certified credits in support of renewable energy and reforestation projects[1]. Two elastic cementitious mortars to guarantee complete and total waterproofing, protection and durability for new and existing balconies and terraces.
And that's not all: the silane-based liquid membrane AQUAFLEX S 1K was also presented at Cersaie. Supplied ready to use, this membrane is a practical, easy and quick solution for both new and existing structures and can be left with either an exposed finish or covered with tile. AQUAFLEX S 1K can also be applied on damp substrates and on substrates of various nature such as bituminous membranes, concrete and cementitious screeds, metal and many more.

Complementary products for installing tiles

To simplify the work of installers Mapei presented three handy new accessories for levelling off and spacing ceramic tiles.
MAPELEVEL PROWDG is the new, more durable, reinforced wedge encouraging sustainability and respect for the environment.
MAPELEVEL EASY T is a reusable levelling system, very useful to make adjustments when installing tiles, or to be used as a standalone levelling system. For localised work it can be used to eliminate residual lippage without having to lift tiles.
MAPEI TILE SPACER 7-in-1, on the other hand, is a new type of spacer that enables joints in ceramic and stone coverings to be set 0.5 - 1 – 1.5 – 2 – 3 – 4 – 5 mm wide thanks to one single spacer with 7 different thicknesses.

ABOVE. Two new solutions presented at Cersaie 2023: MAPELEVEL EASY T (top of the page) is a reusable levelling system; MAPEI TILE SPACER 7-in-1 is a special spacer with seven sides.

Andrea Annoni
Product Manager, Complementary Products and Tools, Mapei Group

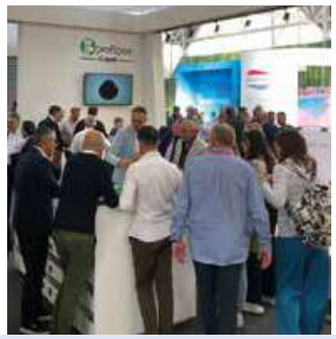
In the levelling system sector Mapei carries out extensive research and every year proposes new solutions. Could you show to us what's new for this year?
Mapei always tries to be in line with the needs of tile installers to help them during the installation phase of ceramic tiles and stone. As far as MAPELEVEL PROWDG SYSTEM is concerned, we have reinforced the structure of the wedge to make it even more durable so that it may be used again and again.

Mapei has also introduced a new levelling system that overcomes a very specific problem. We are talking about MAPELEVEL EASY T.
Yes, this is a very interesting product that we introduced this year at Cersaie. It sometimes happens during tile installation that installers need an additional leveler in case the spacer of the traditional levelling system used has not been inserted or accidentally breaks.
With this product, which is inserted from above without having to remove the tile, it is possible to carry out localised work such as levelling off the corner or just one side of a tile that is not perfectly level. What is more, MAPELEVEL EASY T may be completely reused several times.

And the last product presented is a spacer, is that correct?
Yes, that's right, our latest development is MAPEI TILE SPACER 7-in-1, a special spacer with seven different thicknesses. Rather than carrying around seven different tile spacers, with just one single product installers can tackle several different situations.

Profilpas solutions

Also present at the trade fair was Profilpas, a company acquired one year ago by Mapei that produces profiles for floor and wall coverings, skirting boards, systems for bathrooms and installation solutions: an extensive portfolio of items for the building sector, which is designed to meet all technical and aesthetic needs and requirements.
Profilpas products integrate perfectly with Mapei systems, offering numerous solutions to professionals from the sector for the installation of floor-level showers, balconies, terraces and raised floors.



Giulio Curti
Technical and R&D Manager, Profilpas

Let's talk about showers. Mapei has numerous products for this particular application but with Profilpas we have taken a leap forward, that is, the creation of a complete package for bathrooms and floor-level showers.
That's right, this has proven to be a highly successful integration because, apart from waterproofing a bathroom, you also need to finish it off with linear drains so the floor of the shower can be flush with the floor of the bathroom, thereby creating a solution quite different to the classic shower booth.
We are entering into a sector in which the bathroom becomes almost fundamental within a home.

What is more, we can hide the drain by choosing from a series of different covers, and which can also match the taps and fittings if required.

For balconies and terraces, too, waterproofing is fundamental for the durability of surfaces.
With Profilpas profiles we can finish off a balcony to perfection and extend its durability.
What are you proposing to drain off water?
A terrace is complete not only once the floor and waterproofing system have been installed, but also once a draining profile from the PROTEC line has been installed around the perimeter, with drainage holes that allow any water that has infiltrated through the joints to drain off without leaving unsightly marks or stains on tile joints.

Another interesting solution is raised floors. What was new at Cersaie 2023?
Terraces are not only bonded, they can also be raised or floating. The Mapei-Profilpas team has created PP Level DUO MAXI, an innovative support which, with just four base elements and a special extension, enables floors to be raised by just a few centimetres up to more than one metre. We also have various accessory items available that enable us to install not only ceramic flooring, but also decking and WPC.

And we can also hide all the plant systems underneath.
That's right, the structure has a kind of ventilated space underneath.
If the membrane has problems, we can intervene very quickly without having to remove the entire installation package.

LEFT. Mapei was present at Marmomac 2023 with a stand displaying solutions to install stone paving and stone and ceramic wall and floor coverings, as well as a line to clean, mantain and protect stone surfaces.

MARMOMAC 2023

SUSTAINABLE SOLUTIONS BY MAPEI FOR URBAN DESIGN AND FOR THE CARE OF SURFACES AT THE MEETING POINT FOR THE NATURAL STONE INDUSTRY

51,000 visitors in four days (+10% compared with 2022) and 1,507 companies from 54 countries exhibiting their solutions over an area of 76,000 m². These are the figures for the 2023 edition of Marmomac held in Verona from 26th to 30th September, confirmation the role of this trade fair as a "magnet" for the natural stone chain. Amongst the visitors, who often refer to this event as "a meeting point for the natural stone industry", a world "Treffpunkt" or "an unmissable date", there was a record number from overseas: 65% with buyers from 128 different countries. As Maurizio Danese, Veronafiere CEO, declared, there was a "huge turnout from the American continent (+29%) thanks to the high increase in visitors from the USA, Canada and Brazil. China made quite a strong return and a lot of visitors were from Europe, particularly Germany, Spain and France".

MAPESTONE GR-ECO and its brothers

Launched one year ago to meet the needs of designers particularly sensitive to sustainability, MAPESTONE GR-ECO pre-blended grout made from natural fibres and selected aggregates was again in the spotlight and amongst the most innovative solutions for grouting joints in architectural stone paving. Thanks to its composition based on natural fibres of vegetable origin (apple fibres), it enables joints to be grouted in paving made from stone or other materials (porcelain elements or terracotta bricks) in pedestrian zones, archaeological areas, homes, hotels and carparks. The result? Paving with filtering properties: paving grouted with MAPESTONE GR-ECO receives water and then releases it in the soil and, once dried, becomes compact again. This year MAPESTONE GR-ECO was joined by MAPESTONE GR7 and MAPESTONE GR-ECO FILL, also pre-blended mortars containing natural fibres of vegetable origin. The first product can be used to achieve mechanical resistance of 7 MPa, which makes it particularly suitable for stone paving subject to light pedestrian and traffic loads. MAPESTONE GR-ECO FILL, on the other hand, is a fine-grained grout (particle size up to 0.5 mm), ideal for particularly narrow joints in architectural stone paving with filtering properties, cement block paving, low-thickness butted slabs and small bricks or terracotta bricks. MAPESTONE JOINT was also in the spotlight: a solvent-free polyurethane binder used to grout previously vibro-compacted and elastic architectural paving particularly resistant to de-icing salts, thermal stresses and acids, which can be opened to traffic very quickly.

4 new products for the UltraCare line

New entries also for the ULTRACARE line of dedicated Mapei products for the protection, maintenance and care of ceramic and stone surfaces. Two cleaners (ULTRACARE RUST REMOVER and ULTRACARE STAIN REMOVER) to remove rust and organic stains and two protective products (ULTRACARE RAIN PROTECTOR S and ULTRACARE STAIN PROTECTOR W) to counter infiltrations, one solvent-based and the other water-based. So, at Marmomac Mapei was able to present an even more complete line to installation companies, showcasing the protective and cleaning products in a specially designed display unit for retailers and thanks to exhibiting slabs with stains or exposed to running water to show the effect of the UltraCare products.

Zero Line: even more products with offset emissions

The Zero line also received a great deal of interest at Marmomac 2023, which was introduced by Mapei in March and recently extended even further. In fact, many of the systems for installing ceramic and stone flooring presented at the trade fair included waterproofers, adhesives, grouts, sealants and cleaners with CO_2 emissions offset for their entire life cycle[1].

From the USA to learn and train

A group of US professionals specialised in the design of religious buildings visited Marmomac as part of the "Designing with Stone" training programme organised by Stone Trends International (see the interview in the next page). Mapei Corporation (USA) has been Platinum Sponsor since 2010 of this event dedicated to architects who choose stone materials for their projects and can gain AIA (American Institute of Architects) credits. Mapei's involvement in the initiative enables participants to gain an in-depth understanding of the most innovative techniques and materials to create stone paving. At Veronafiere, they also took part in the presentations of "Tile and stone installation systems" by Mike Granatowski (Mapei Corp.) and "Durable and sustainable stone paving" by Grazia Signori (Mapei SpA).

[1] CO_2 emissions measured throughout the life cycle of products from the ZERO line in 2023, using Life Cycle Assessment (LCA) methodology, verified and certified with EPDs, have been offset through the acquisition of certified carbon credits in support of renewable energy and forestry protection projects.

WHAT THEY SAID...

***"Marmomac is an unrivalled meeting point:** Being present at Marmomac means being part of the stone sector; not being there means being out of the loop".*
Andrea Angheben, Director of Italporphyry.

***"We come here not only because of the fascination Italian marble** has always evoked in the Netherlands, but also to meet the "world" of natural stone".*
Mieke Dobbelsteen de Mol, Senta (The Netherlands).

***"I have participated at more than 20 editions of this trade fair**. It is an important event for German producers of natural stone. It gives us the chance to meet all the main producers and professionals from the global stone industry".* **Hans Strauss,** Mapei GmbH (Germany).

***"Italian marble is highly appreciated in India**, too. We need innovative installation systems that work better than those traditionally adopted in our country".*
Sreejith Pallikadavil, Amando (India).

***"The quality of Italian manufacturers' stands at Marmomac improves every year** and this year, too: these stands offer an overview of the excellence of Italian design and manufacturing in the natural stone industry".*
Renato Dal Corso, President of Consorzio Val di Pan.

***"I have been collaborating with Mapei since the end of the 1990's** on training courses regarding stone materials. There has always been a great deal of interest in Mapei's contribution in providing solutions to prevent post-installation problems emerging".* **Donato Larizza, President of Asmave,** Consortium of Verona marble manufacturers.

Sharing knowledge on stone that architects really need

Vincent Marazita

VINCENT MARAZITA, OWNER OF STONE TRENDS INTERNATIONAL, TALKS ABOUT TRAINING PROGRAMS FOR PROFESSIONALS OF THE STONE INDUSTRY WHICH LED THEM FROM THE USA TO VERONA

How long have you been involved in the natural stone industry from a US perspective? When did you start organizing and leading training courses for architects interested in natural stones?
I started in 1987. I was on the road to becoming an architect when the Italian government found me, knew I spoke Italian and asked me to work for them. I worked for the Italian Trade Commission for 13 years and since 1987 I've been working with many Italian suppliers, helping them set up and develop their business in the United States.
The Italian Trade Commission also hired me to bring groups of architects over to Italy to see the quarries and the stone fabrication shops. What I noticed during that time is that many architects worldwide don't have enough preparation in the use of natural stone.

How did your partnership with Mapei begin? How has this collaboration helped bring about the creation of the advanced training programmes you have organised all these years?
I have to say that Mike Granatowski, Mapei Corporation's Director of Architectural & Commercial Projects in the United States, is one of the best "professors" in the industry, a very good educator. Back in early 1990's I saw him giving seminars and I decided to work with him. He's giving transparent knowledge to architects, and I like that kind of transparent collaborative approach which characterizes Mapei. Mapei were always at all the main trade shows related to stone surfaces, a major player in the industry and from the very beginning they sponsored our training programs. They immediately recognized the importance of complete installation systems: rather than teaching just about the stone, they would teach about the bonding systems, leveling systems, and much more. Mapei are a fundamental partner due to their cutting-edge laboratories and personnel, with incredible experience and manufacturing and distribution capacity worldwide. Mapei has a lot of international knowledge that the construction industry really needs.

How did you select the people taking part in this year's "Designing with Stone" training week?
This year the training event has a theme: the use of stone in religious projects. It's a group of professionals, not just architects: contractors, installers, designers, all working on temples for the Church of Jesus Christ, or similar buildings. It is a wonderful exchange between knowledge and people who need the knowledge right now because they are all building stone buildings right now. Being stone a gift from God, a gift from nature, we want to pass on that gift as well, because it's not an easy knowledge. Stone went from being the most important structural material many years ago to more or less an ornamental material nowadays. In that transition we've lost architects. So, we take what we've learned from the past, adapt it to the new construction methods and technologies and have successful competences to share with professionals.

How do you see the natural stone industry developing? How do you think you will continue working with Mapei?
I really believe that Mapei will remain a crucial partner because they believe as much as I believe in sustainability and respect for the environment and that is going to draw us into "a new stone age". We might see a reduction of skyscrapers covered with glass and a shift going back to using stone structurally: stone is not just an ancient material, it also is a very modern material.

LEFT. Giuseppe Fallacara (in the photo) was the curator of the "Marmomac meets Academy" exhibition held in Verona as part of Marmomac 2023. These pages show some of the stone prototypes on display.

Creativity and research: a new life for "waste" materials

WE SPOKE WITH GIUSEPPE FALLACARA, CURATOR OF THE "MARMOMAC MEETS ACADEMIES" EXHIBITION AND PROFESSOR AT POLYTECHNIC OF BARI

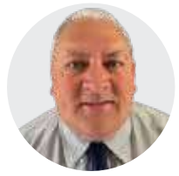
What is the background of the "Marmomac Meets Academies" project?
It is a kind of bridge between the academic world and industry, which often move forward on separate journeys. Here, on the other hand, we have the culmination of an interesting encounter between research and the world of production, resulting in the creation of various prototypes: the practical result of theoretical research you can touch, see, analyse, and even criticise.

How important is collaboration between universities and companies from the stone materials sector?
Without research the sector would be limited exclusively to cutting and selling blocks of stone: there wouldn't be that added value deriving from the transformation of a material which, in turn, is derived from creative input. Through the world of art and architecture we are able to see beyond, to imagine scenarios in which scientific know-how is needed in order for them to be achieved. Without this synergy the stone materials sector would not have the momentum that places Italian research amongst the most advanced in the world.

What is the most interesting aspect of the project, presented by the Polytechnic of Bari and Stilmarmo as part of the "Riparti" project?
We won a project launched by Apulia Regional Council called "Riparti", proposing the use of what is commonly thought of as "waste" from the extraction of quarried stone. The term "waste" isn't really exact because, when it comes to stone, there aren't any parts that are disposed of, but only parts that are used less or downgraded from an economic perspective. These have to be combined with creativity in order to be transformed into a new product. In the case of the objects on display here, thanks to the expertise of Mapei technicians and the use of specific products like the ones supplied by Mapei, we have managed to give these "secondary materials" a new life and open new scenarios. Mapei products are present in a lot of these prototypes: in the suspended vault with engineered stone tiles representing the fixed stars, in which there are fragments of glass bottles treated with Mapei products to create both the mix and their shine; the steps of the osteomorphic staircase are elements subjected to dynamic stresses that have been made out of a 2 cm slab of stone, hollowed out and then strengthened with Mapei products; other materials from the company have been used to treat various surfaces in stone; we have used Mapei adhesives to make the "stone-insulating materials" pairing compatible. With MAPESTONE GR-ECO, a special mortar made from apple fibres, we have installed flooring with a complex geometric pattern, while with other specific mortars we have bonded thin slabs, a by-product of the stone industry, in areas of historic town centres subjected to high levels of pedestrian traffic.

Is there a coordination between Italian and overseas universities for the topic of sustainability?
I have been coming to Marmomac for many years and I have built up a good relationship with colleagues from all around the world who work and carry out research in the stone sector. I have invited those with the most like-minded approach to this kind of research, involving institutions such as La Sapienza in Rome, the Polytechnics of Turin and Milan, the University of Porto (Portugal), the University of Dortmund (Germany), the Florida Atlantic University (FAU) and the University of Auckland (USA).

How is the Polytechnic of Bari approaching this topic in order to educate the professionals of the future?
The Faculty of Architecture at the Polytechnic of Bari is one of the youngest in Italy (30 years old). Right from the start its founder, Prof. Claudio D'Amato Guerrieri, wanted research to focus on the stone sector in his own territory, because, after Carrara, Apulia is the most important stone quarrying district in Italy. We have been working on topics related to stone for more than twenty years through foundation courses and research doctorates, and by taking part in international competitions and trade fairs.



Philip Breakspear

Brand power on a changing market

PHILIP BREAKSPEAR, GENERAL MANAGER AT **MAPEI UK**, TALKS ABOUT THE SUBSIDIARY'S LATEST TARGETS AND PROJECTS

Mapei has been well-established in the UK since 1989. It has recently built a new manufacturing plant for concrete admixtures. What are the growth targets following this boost in manufacturing in the UK?
Mapei UK has growth built in as part of its DNA. Over the past 27 years I cannot remember a single year when our business did not grow. We now have a fantastic new concrete admixtures plant which was opened in January in Speke, close to Liverpool in the North of England. We have a new team for the concrete admixtures line led by Alan Robinson on the sales side and Ian Ellis on the technical side. Our expectation is to develop the turnover in 2023 to more than 3.5 million Euros from about 1.15 million Euros in 2022. We confidently expect that over the next 3 to 5 years we will increase the turnover for this product line to 12 million Euros. Being acknowledged as a serious player in the concrete admixtures market has also started to open doors in the development of the watertight concrete market by specifying our BBA (British Board for Agrément) certified IDROCRETE KR 1000.

Which sectors of the building industry does the Mapei brand perform best in?
On which sector will it be focusing on in the future?
In the UK we are market leader in the products for installing ceramic and natural stone and in a strong second place in the products for installing resilient materials, LVT, textiles and wood. Both lines are directed by Kevin Field, our Commercial Director for the ceramic and resilient product lines. There is still space to increase our turnover and further develop our market share.
In the building products sectors the key areas of focus for Mapei UK are concrete admixtures, roofing materials, solutions for underground constructions, structural waterproofing, industrial flooring, concrete repair and structural strengthening as directed by Julian Pritchard, Mapei UK's Commercial Director for building products. These are the key growth areas alongside the ceramic tiles and resilient and wooden floorings sector.
Over the next 3-5 years our plan is to increase our business from 105 million Euros to more than 175 million Euros.

> **"Opening a concrete admixture plant offers fresh opportunities for growing in the building industry**

Specifically in terms of product lines, how are Mapei operations looking at the UK now?
Mapei UK product lines are generally performing well against our competitors in 2023. We have some challenges in the ceramic sector around lower cost products gaining some traction due to the economic climate, but we are responding to this trend. As a business we are confident of achieving budget.
At the moment, the best performing line in terms of revenue and growth is the concrete admixtures range, which saw a 115% increase in revenue compared to last year and a 139% rise in sales over the first quarter. This is followed by the range of products for the underground construction sector boasting a 144% increase in revenue, and the line of products for installing resilient materials with a 26% increase in revenue over the first quarter of last year. Third comes the product line for installing ceramic tiles that Mapei launched on the UK market in 1989, which recorded a 5% increase in revenue over the first quarter and is expected to rise by 10% by the close of 2023. The ceramic

Cameron Bellman

A SOLUTION TO THE DEMAND FOR INNOVATIVE MATERIALS

CAMERON BELLMAN, CORPORATE LINE DIRECTOR FOR MAPEI GROUP'S CONCRETE ADMIXTURES LINE, HAS HIS SAY

A new Mapei plant for the manufacture of concrete admixtures was completed in the UK. What are the basic strategies behind this opening?
With the admixture business suppliers needs production to be close to market providing local manufacture and, of course, support. The UK was always seen as a focus market but we needed local production to make sustainable growth a possibility.

Beside the new facility, what are the key factors that you are relying on to ensure success of Mapei concrete admixtures in the British market?
This is a fairly simple answer. Aside from consistent product performance and a reliable logistics network, our people hold the key to the continuing success of our UK and Ireland admixture business. Providing first class service and customer support at all levels is our modus operandi. It's the Mapei way!

Will the plant also manufacture products to be exported to foreign countries?
Yes! The Speke facility, including laboratory, will serve both the UK and Irish concrete markets.

The new plant is part of Mapei UK and you, as Corporate Product Line Director, are based in the UK: why is the UK so crucial for the concrete admixtures market?
The UK has long been viewed as a prominent and prestigious concrete market within Europe and further afield. With a strong demand for innovative, sustainable solutions for all industry sectors we believed that Mapei had a strong offering to the UK customers. It was these key factors that made the development of the concrete admixtures line in the UK market a natural decision.

ABOVE. The new plant for manufacturing concrete admixtures is located in Speke, near Liverpool.

Are new openings planned in other strategic markets?
We have ambitious growth expectations for the division and expect to continue expanding our production footprint globally into new markets whilst continuing to strengthen our existing ones.

Corporate Line Director, Concrete Admixtures, Mapei Group

“We are extending our operations into different sectors than those we have been operating in until now, such as underground constructions, waterproofing and industrial floorings

MAPEI UK

1989
FOUNDATION YEAR

2
MANUFACTURING PLANTS
IN HALESOWEN (WEST MIDLANDS) AND SPEKE (NORTH WEST ENGLAND)

1
SPECIFICATION CENTRE
IN LONDON

over 300
EMPLOYEES

105
MILLION EUROS
TURNOVER IN 2022

117
MILLION EUROS
FORECAST TURNOVER IN 2023

Mapei World London City, Mapei UK's Specification Centre, welcomes designers and architects to the heart of London.

line was the first product line started in the UK back in 1989: we are now market leader and expect to grow this line by a minimum of 10% by the end of 2023. Last year the Mapei UK turnover achieved the 105 million Euro sales mark, in 2023 we expect to comfortably go past 117 million Euros for the first time.

Great Britain is suffering the consequences of Brexit. What have been the effects on the building industry in general and Mapei's business operations in particular?
I did not vote for Brexit; however, we live in a democracy, and accept the result of the voting. I took the view that nothing major would change for Mapei regarding our market because the UK is a developed country with a population in excess of 60 million people and that is who we get our business from.
Cost of labour and construction products have risen faster in price than in the European Union and some of this will be a symptom of Brexit. However, this is the same for all construction product manufactures in the UK: we are all in the same boat.
Exporting to Ireland is a little more complicated now, but it is a logistics issue that just needs managing. We have also had fewer people in the workforce from European countries. You could ask where all the lorry drivers went, but I do not believe that Brexit is wholly the culprit here. Brexit created more paperwork for import, but as I have stated, it's a logistics problem that the business is required to comply with in order to continue to trade.
The bigger problems have been Covid-19, raw material shortages, transport issues, labour shortage and cost of living.

To stimulate growth, London is focusing on investment in large infrastructure projects: what opportunities are opening for Mapei?
I would not suggest that business in the UK is a bed of roses, but I strongly believe that as usual the UK will outperform the various advisers.
I can only talk for Mapei in the UK: we are a very strong business and well-known brand in the construction industry. We are now stretching the brand across a wider marketplace including the ceramic, resilient and building segments and in doing this, it is our expectation to achieve specification of more Mapei systems on an increased number of projects.
The UK government has focused on the development of some major infrastructure projects across the UK and, of course, Mapei has grown as a result of these projects. This factor will develop faster with Mapei winning projects in sectors where historically we have not been seen as strong contenders: admixtures, underground construction, roofing, waterproofing and industrial flooring. With growth in these construction areas, we not only increase our turnover, but we also improve the visibility of the Mapei brand to a wider audience.

Mapei opened the Group's first Specification Centre in London. How is this project working out in in a city that has earned a worldwide reputation as an international centre for modern design and architecture?
Our Specification Centre Mapei World London City has been an important investment for the business. Located in Clerkenwell, a key showroom district for architectural and design practices specifying products for all over the world, Mapei World London City puts us in the right place to serve this community. Regular daytime and evening events and presentations are held for specifiers and our customer base can also take advantage of the space to host their events.
Mapei World London City is always a popular exhibit during Clerkenwell Design Week, the design week that takes place every spring in London, and we have taken part in the event since 2016.
The Specification Centre provides opportunity for Mapei to showcase finished products, including a full cementitious floor completed with ULTRATOP LOFT mortar and revolving displays across all Mapei product line systems. It is also a base for our Specification Team, where there is always someone on hand to provide technical support to visitors.

Mapei has long been closely associated with sport. This year Scotland hosted the 2023 UCI Cycling World Championships: was it a great communication/ marketing opportunity for Mapei UK?
Yes indeed, being an Official Partner to the 2023 UCI Cycling World Championships in Glasgow and across Scotland was a terrific opportunity for Mapei UK, both in terms of significant brand awareness and customer hospitality. We had 11 days and 13 disciplines to entertain our valued customers in Scotland. There is a large number of keen cyclists among our customer base, many of whom enjoyed the previous event in Yorkshire in 2019 and were excited to join us again. The Mapei logo was displayed at all venues, along road routes and of course across television broadcasts.
Mapei UK also sponsors local teams to its headquarters in Halesowen, West Midlands, namely Halesowen Cycling Club who were in 2022 voted "Club of the Year" by *Cycling Weekly* and continue to develop promising young riders and also Halesowen Town Football Club who have achieved promotion to a higher division this year.

WORKING WITH TOP GOLFERS

In a country where football is not the only sport fans rave over, Mapei UK is taking advantage of various sports to boost the brand's popularity and offer special experiences for its business partners.
Besides sponsoring international cycling events and local cycling and football teams, Mapei sponsors established European Tour Player Adrián Otaegui and renowned online golf coach Chris Ryan. Adrián Otaegui (in the photo below), who has won four titles including the Scottish Championship in 2020 and the Andalucía Masters in 2022, has been sponsored by Mapei UK since 2019. In addition to sporting the Mapei logo on his sleeve, he has held Golf Clinics at Mapei UK Golf Days and has joined the company for several events to interact with its clients. Chris Ryan has also been sponsored by Mapei UK since 2019. With a consistently growing online presence, he brings the Mapei brand to almost 400,000 You Tube subscribers and 150,000 followers across his social media channels. Chris Ryan also joins Adrian Otaegui at Mapei UK's Golf Events combining assisting our guests with their golf game with Q+A interviews and presenting.

Smethwick (West Midlands)

Sandwell Aquatic Centre

DURABLE AND SAFE SURFACES WITH MAPEI SYSTEMS
FOR WATERPROOFING AND INSTALLING CERAMIC TILES

After hosting one of the largest international sporting events in the UK in 2022, Sandwell Aquatic Centre opened its doors to sports lovers from all over the West Midlands region in central England. 3 swimming pools (a 50 m Olympic size pool, a 25 m diving pool and a 50 m warm-up pool), 3 rooms for various activities (yoga, Pilates, Body Pump and Body Combat), a sauna and steam bath and more than one hundred indoor cycling stations are available to anyone who wishes to train for a competitive event or simply stay in shape. The complex, designed by Roberts Limbrick Architects, needs to guarantee a high standard of hygiene, durability, resistance and safety for all the various areas, equipment and surfaces. And this is why, when choosing which materials to use, Mapei systems were singled out as being the most suitable to ensure total waterproofing for the pools and sound installation of ceramic tiles in and around the pools, changing rooms and atrium. These solutions enabled more than 35 different types of ceramic tiles, supplied by various manufacturers, to be safely installed over a total surface area of 9000 m² and 6,500 m² of screeds to be created.

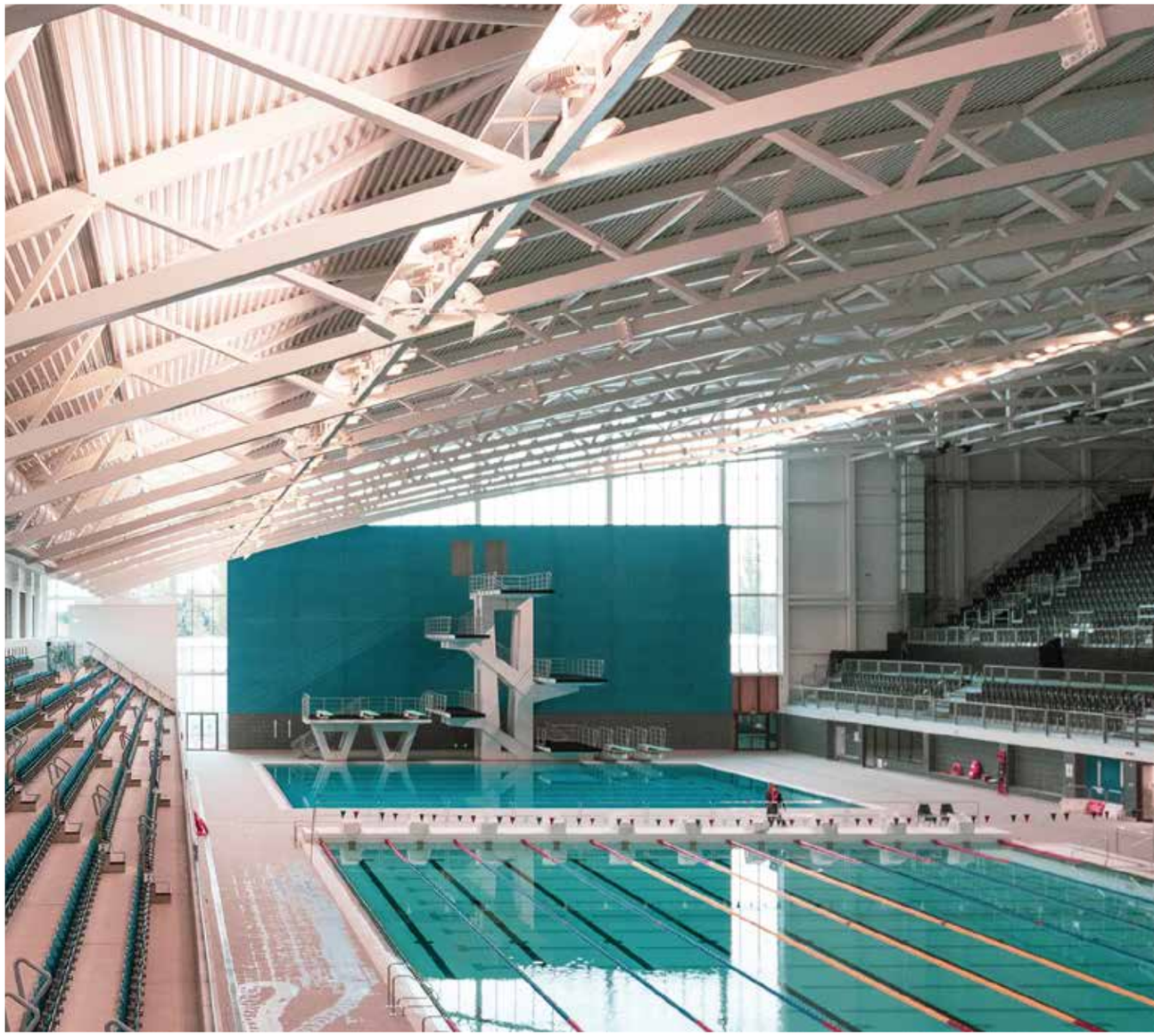
Complete systems for swimming pools

Mapei systems were used for the swimming pools, starting from the substrate preparation phase. TOPCEM special hydraulic binder was used to create normal setting, fast drying (4 days) and controlled shrinkage screeds for the three swimming pools, while NIVOPLAN levelling mortar for internal and external surfaces admixed with PLANICRETE synthetic rubber latex was used to level off the sides of the pools. PLANICRETE is used as an admixture to improve the mechanical characteristics and adhesion of cementitious screeds, renders and smoothing layers, as well as to make highly adhesive cementitious bonding slurries.

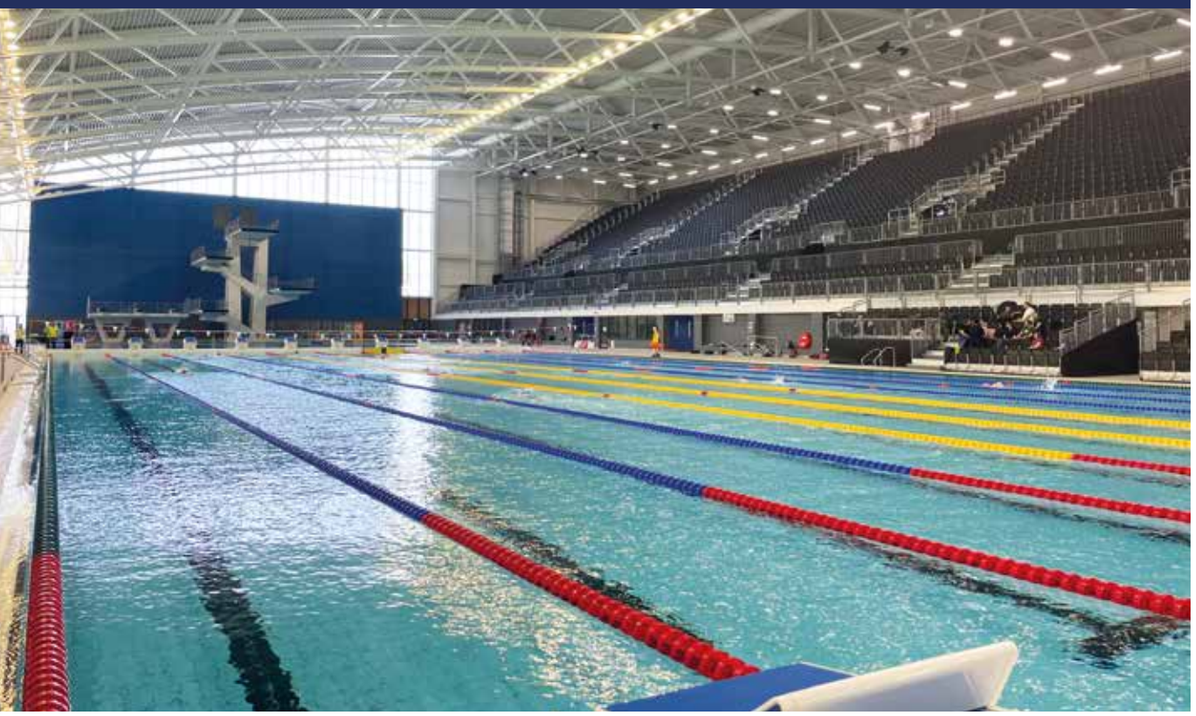
The horizontal surfaces at the bottom of the pools and around the pools were waterproofed with MAPELASTIC TURBO rapid-drying, elastic cementitious mortar reinforced with MAPENET 150 alkali-resistant mesh: a system that enabled overall operational times to be reduced. The side walls of the swimming pools, on the other hand, were waterproofed with MAPELASTIC SMART two-component, highly elastic cementitious mortar, which in this case too was reinforced with MAPENET 150. This solution provides elastic protection for surfaces, including irregular surfaces constantly immersed in water, while at the same time guaranteeing easy application and high resistance to UV rays.

Extensive use of KERAPOXY

The ceramic tiles for the bottoms of the pools and for the surfaces around the pools were bonded with KERAQUICK S1 deformable cementitious adhesive, distributed on the UK market by Mapei UK and available on the international market under the name KERAQUICK MAXI S1. The joints were grouted with KERAPOXY epoxy mortar, which was chosen because it guarantees a high level of hygiene and excellent mechanical and chemical characteristics. And it was thanks to these characteristics that the same product was also chosen to grout the joints of the tiles on the sides of the pools, which were bonded with ADESILEX P9 cementitious adhesive because of its high thixotropy: this adhesive may be applied on vertical surfaces without slumping or allowing tiles to slip out of position.



The Sandwell Aquatic Centre is a modern sports complex and venue of one of the largest international sporting events in 2022.



Ceramic tiles were bonded in the three swimming pools with the adhesives KERAQUICK S1* and ADESILEX P9, with KERAPOXY mortar used to grout the joints.

A change of waterproofer for the changing rooms

The same solutions as for the swimming pools were also chosen to prepare the walls and floors in the changing rooms: TOPCEM for the screeds and NIVOPLAN admixed with PLANICRETE to level off surfaces. A different system, however, was chosen for the waterproofing work: some of the areas were treated with MAPEGUARD WP 200, a waterproofing and anti-fracture membrane particularly suitable for damp environments and substrates sensitive to moisture; in other areas MAPELASTIC AQUADEFENSE was used, an elastic, liquid membrane suitable for waterproofing damp environments such as bathrooms, showers, laundries, saunas and changing rooms. The expansion joints and corners between the walls and floors were waterproofed with MAPEBAND rubber tape.
In these areas, too, the ceramic tiles were bonded with KERAQUICK S1 on the floors and with ADESILEX P9 on the walls. The joints, on the other hand, were grouted with ULTRACOLOR PLUS fast setting and drying cementitious mortar, ideal for joints up to 20 mm wide. Apart from having anti-efflorescence properties and being water-repellent thanks to DropEffect® technology, this product is also resistant to mould thanks to BioBlock® technology, making it the ideal product for use in damp environments. What is more, it is available in an extensive range of colours and has very low emission of volatile organic compounds (VOC). It is thanks to these characteristics that ULTRACOLOR PLUS was also chosen to grout the joints of the tiles on the floor of the atrium, which were also bonded with KERAQUICK S1.

Find out more
ULTRACOLOR PLUS

PROJECT INFORMATION
Sandwell Aquatic Centre, Smethwick (United Kingdom)
Owner: Sandwell Council
Design: Roberts Limbrick Architects
Period of construction: 2021-2022
Period of the Mapei intervention: 2021-2022
Main contractor: The Wates Group
Installation company: P. Plunkett Tiling Contractors Ltd
Mapei coordination: Mark McDonnell, Mapei UK

MAPEI PRODUCTS
Preparing substrates: Topcem, Nivoplan
Waterproofing substrates: Mapelastic Turbo, Mapelastic Smart, Mapenet 150
Installing ceramic tiles: Keraquick S1*, Adesilex P9
Grouting joints: Kerapoxy, Ultracolor Plus

* This product is manufactured and distributed on the British market by Mapei UK. It is available on the international market as KERAQUICK MAXI S1.

For further information on products, please visit mapei.com and mapei.co.uk

London (United Kingdom)

The Westin London City

CONSTRUCTION OPERATIONS HAD TO OVERCOME SEVERAL CHALLENGES INCLUDING THE PRESENCE OF AN ARCHAEOLOGICAL SITE

ABOVE. In the heart of London a new oasis of luxury: The Westin London City offers its guests 222 rooms, 10 suites and 5-star comfort.

The offer from The Westin, world leader in the hospitality sector, was recently enhanced with the addition of a new luxury destination: The Westin London City, the brand's first hotel in the UK. Designed by Dexter Moren Associates, it is a 10-storey, 5-star hotel offering clients escape and comfort in the heart of London: the hotel's 222 rooms, 10 luxury suites, restaurants and bars, swimming pool and wellness zone are located on the north bank of the River Thames, just a short distance from St. Paul's Cathedral, the Tate Modern art gallery and the Globe theatre, founded in 1599 by the theatre company associated with William Shakespeare.

A site with a host of challenges

Construction of this new complex was not an easy challenge for the main contractor, Vascroft Contractors, who had to demolish an old 10-storey building and carry out the work in an area divided into three different lots connected by highly trafficked roads, while at the same time respecting restrictions imposed by the presence of an archaeological site with remains of ancient Roman baths.
Because of the nature of the site "creative" solutions had to be found, such as the construction of a walkway along the northern part of the river and a portion of the building in the form of a bridge over the city streets, as well as the use of reliable, innovative and durable construction systems and materials.
Mapei UK, the local subsidiary of Mapei Group, provided technical support for the company that installed the resilient and textile flooring through site surveys and by carrying out checks to measure moisture content. They also supplied specific training to the floor installers on how to use the products chosen for the work and recommended an installation system suitable for the conditions and type of use in the various areas.

A traffic-proof system

The system recommended by Mapei consisted of treating the substrates with ECO PRIM T PLUS universal acrylic primer to improve adhesion of the successive layers and levelling off the surfaces with self-levelling, fibre-reinforced ULTRAPLAN RENOVATION SCREED 3240, manufactured and distributed in the UK by Mapei UK.
ULTRABOND ECO FIX adhesive and tackifier with low emission of volatile organic compounds (certified EMICODE EC1^{Plus}) was chosen to bond the loose-lay carpet and resilient coverings. Its high residual tack means that, where required, the flooring installed can be easily removed at a later date and replaced.
Rolls of textile materials were installed over the soundproofing underlay using ULTRABOND ECO TX3, an excellent wet grab adhesive with early build up of strength suitable for bonding textile flooring with any kind of backing (jute, polypropylene, Action-Bac, textile, latex, foam, felt, etc.) and needle-punch flooring on any normal, absorbent sustrates stable in the presence of humidity. In this particular case it was also chosen for its capacity to resist normal and intense loads, such as those typically found in environments such as hotels.
These solutions were adopted for textile and resilient flooring in numerous corridors, walkways, and common areas of the hotel.

Find out more
ULTRABOND ECO TX3

BELOW. In various areas of the hotel textile and resilient flooring was installed with specific Mapei systems that included the use of adhesives such as ULTRABOND ECO TX3 and ULTRABOND ECO FIX.

PROJECT INFORMATION
The Westin London City, London (United Kingdom)
Owner: Marriott International
Design: Dexter Moren Associates
Period of the Mapei intervention: 2021-2022
Intervention by Mapei: supplying products and technical support to install resilient and textile floors
Main contractor: Vascroft Contractors
Installation company: Middlesex Flooring
Mapei coordination: Daniel Stamford, Mapei UK

MAPEI PRODUCTS
Preparing substrates: Eco Prim T Plus, Ultraplan Renovation Screed 3240*
Installing resilient and textile floors: Ultrabond Eco Fix, Ultrabond Eco TX3

*This product is manufactured and distributed on the British market by Mapei UK.

For further information on products, please visit mapei.com and mapei.co.uk

Projects across the board

SOLUTIONS FOR SPORTS FACILITIES AND COMMERCIAL SPACES

Hagley Golf Club
Hagley (West Midlands)

Surrounded by the lush, green landscape of the Clent Hills, not far from Birmingham, Hagley Golf Club has an 18-hole course and a new dedicated practice area that also includes two bunkers. And it was these bunkers that were the object of recent renovation work using the MAPESOIL GF system which, thanks to its high drainage capacity, maintains the characteristics of the top layer of sand and keeps maintenance costs down. The system is made up of layers applied over the entire surface of the bunker, consisting of waterproof sheet followed by the application of a mixture of gravel in combination with DYNAMON XTEND W300 N admixture and MAPESOIL GF high performance hydraulic binder with a low carbon footprint.

Harrods Shoe Heaven, London

Shoe Heaven is located within Harrods iconic London department store. A haven dedicated entirely to shoes, it features over 50 designers and includes the latest fashion trends alongside rare collector's editions.Shoe Heaven opened in 2014 and dedicates 42,000 m² to footwear, featuring spaces embellished with stone coverings.
Various types of marble and travertine were installed on the floors, walls and columns using KERAQUICK S1* adhesive, particularly suitable for stone materials, ULTRACOLOR PLUS anti-efflorescence cementitious grout and MAPESIL LM sealant for the joints, chosen for its ability to prevent staining.

Berwick Leisure Centre
Berwick-upon-Tweed (Northumberland)

This brand-new sports complex includes three swimming pools, a spa and a multisport area. Various Mapei solutions were used in the swimming pools and changing rooms, such as TOPCEM binder to create screeds, before levelling off the surfaces with NIVOPLAN. To waterproof the various substrates MAPELASTIC SMART and MAPENET 150 were chosen for the swimming pools, while MAPELASTIC AQUADEFENSE and MAPEBAND PE 120 were used in the changing rooms. Ceramic tiles were bonded in both areas with KERAFLEX MAXI S1 for the walls and KERAQUICK S1* for the floors. The joints in the swimming pools were grouted with KERAPOXY, while ULTRACOLOR PLUS was used for the joints in the changing rooms.

* This product is manufactured and distributed on the British market by Mapei UK. It is available on the international market as KERAQUICK MAXI S1.

Manor Park School
Douglas (Isle of Man)

Since 1986, Manor Park School has been providing primary education to students from the Pulrose and Spring Valley districts, in the capital city of the Isle of Man. Refurbishment work on the roof included removal of the old roofing material and the application of a waterproofing system over an area of 1,215 m². Polyglass, a subsidiary of the Mapei Group, supplied a wide range of products in this project. Noteworthy among them is the POLYVAP SA P-AL bituminous membrane, crafted with ADESO technology, alongside FOAMSHIELD polyisocyanurate panel and ELASTOBOND S6 P membrane, adhering to the standards set forth by NAT technology. The use of this system ensured a durable roof, duly protected against the atmospheric agents.

A worldwide report

THE LAST SUSTAINABILITY REPORT SHOWS THE RESULTS OF THE MAPEI GROUP WORLDWIDE

"We have been building a present so that we can have a future": that is the statement of intent that guides Mapei in choosing which strategies to follow on an increasingly complex and competitive market. Marco and Veronica Squinzi, the Group's CEOs, are well aware that only by making this commitment today will the foundations be laid to ensure a future for both people and the planet.
It is with this in mind that Mapei published its first Sustainability Report in 2016, which initially only concerned the parent company, Mapei SpA, before being extended over the next four years to encompass the Group's Italian subsidiaries. Last year, the company's commitment to sustainability also included its European subsidiaries, while the last edition of the report embraces the entire world, including the 57 countries in which Mapei is present. The report refers to business in 2022 when the company has reached revenue of 4 billion Euros. An important result, which moves hand in hand with an increasingly concrete commitment to offer durable, high-quality products with low environmental impact. Among these solutions one finds the so-called "Zero" line, which as of 2022 provides the entire supply chain with its first carbon-neutral system for installing ceramic tiles: a line that has gradually expanded to offer solutions whose CO_2 emissions, calculated over its entire life cycle, are fully offset by the acquisition of certified environmental credits designed to encourage renewable energy and reforestation projects. Low environmental impact also in cement and concrete manufacturing, a crucial issue for today's building industry: "To help the building industry maintain high standards while reducing climate impact", so Marco Squinzi told us, "we have developed an integrated approach based on specific hardware and software to overcome the difficulties associated with the use of cement with low clinker content and aggregates of varying quality throughout the various stages of the overall process: manufacturing, transport and use".

The watchword for manufacturing plants is "energy efficiency": subsidiaries all over the world from Italy to China and the UAE have in fact installed photovoltaic systems to increase the self-generation of electricity from renewable sources, or else cogeneration or trigeneration plants that similarly help reducing greenhouse gas emissions generated at the manufacturing sites.
Mapei is also a firm believer in the importance of training: the Mapei Academy has, in fact, organised webinars and in-person courses all over the world on its own premises, at clients' premises or at specialist trade organisations, contributing to the circulation and sharing of knowledge among building professionals and showcasing the skills of its technicians.
Last but not least, Mapei is aware that being sustainable also means promoting growth and development in the areas where it operates, supporting culture, sport and social responsibility projects. Finally, focusing on its staff: there are almost 12,000 employees and they combine to make a winning team that is helping the company grow in the present...with an eye to the future.

Download the Sustainability Report

SUSTAINABILITY: FACTS AND FIGURES

All the figures are related to the Mapei Group's activities worldwide in 2022

Approx. 3,900 MILLION EUROS DISTRIBUTED TO STAKEHOLDERS

53 MILLION EUROS INVESTED IN RESEARCH & DEVELOPMENT

69,168 HOURS OF TECHNICAL TRAINING

11,438 EMPLOYEES IN 2022[1]

CO_2 EMISSIONS LINKED TO THE PRODUCTION OF SOME ADHESIVES AND MORTARS WORLDWIDE **FULLY OFFSET** BY PURCHASING CERTIFIED CREDITS TO PROMOTE **THE DEVELOPMENT OF THE HYDROELECTRIC POWER STATION IN THE DAKRLAP DISTRICT IN VIETNAM** AND THE CONSERVATION OF **BIODIVERSITY OF THE RYMBARAYA FOREST** IN INDONESIA

About 36 **MILLION EUROS** INVESTED IN SPORTS, CULTURAL AND SOCIAL INITIATIVES[2]

1 This number differs from the figure published in the 2022 Consolidated Financial Statements (11,914) because it refers to headcount instead of FTEs and temporary workers are not included. Furthermore, the reporting scope of the two reports does not coincide, as better detailed in section " 1.1 Our History: 85 Years of Success".

2 The value reported here, amounting to 35.8 million Euros, includes 23.3 million Euros allocated by Mapei Group companies to U.S. Sassuolo Calcio to conduct its activities.

Vinavil has come a long way

CENTENARY CELEBRATIONS AT THE COMPANY PLANT IN NORTHERN ITALY, BIRTHPLACE OF THE FAMOUS WHITE GLUE

Over the years Vinavil glue, a polyvinyl acetate in water emulsion, has become a familiar face in Italian homes, offices and the desks of generations of students. This “universal adhesive” was created in the company manufacturing plant in Villadossola, in the Verbano-Cusio-Ossola district (Northern Italy), which celebrated its centenary last September. An important milestone for a plant built in 1919 and operational since 1922, way before commencing production of the famous glue (1942) and the founding of the Vinavil brand (1954). The celebrations were held a year late due to the continuing effects of the Covid-19 pandemic.

On 9th September, 2023, the plant opened its doors for a day of celebrations in the presence of local dignitaries, members of the Mapei Board of Directors (the Mapei Group acquired the brand in 1994) and numerous local residents who took part in guided tours of the production areas, laboratories and warehouses where one can "breathe" a piece of history of the Italian chemical industry.

“This is an historic industrial site that has been part of our Group for 30 years, and one which we are particularly proud of because it was at risk of disappearing altogether”, declared Marco Squinzi, Mapei Group CEO, during the event. In fact, in 1991, Enichem, owner of the facility at the time, had decided to close it. After a lot of pressure from politicians and the trades unions the production site was put on sale and then acquired by Mapei, which gave the green light for a process of recovery and development.

Market leader

Vinavil (the name is an acronym of Vinyl Acetate at Villadossola) is today an important industrial reality in the Ossola territory, and not only. Apart from the plant in Villadossola, the company also has another manufacturing plant in Ravenna (Central Italy) and production facilities in Laval (Canada), Chicago (USA) and Suez (Egypt). The production range is not limited to the famous “white glue”; it also includes the extensive range of polymers for industry used in various fields, from textiles to paints, right up to the DIY sector. With a turnover of 270 million Euros (2022 figures) and a workforce of 370, Vinavil is an important player in the dispersion and solid polymers sector on the international scene. Following the steps of Mapei, Vinavil focuses on Research & Development.

The company has an important laboratory in Villadossola where a large part of the products and technologies are developed and have remain competitive to this day.

More than “white glue"

Vinavil produces polymers for industry.
The production lines are:

- Vinyl and acrylic binders for water paints
- Vinyl and acrylic dispersions for adhesives used in the textiles industry
- Redispersible polymer powders
- Solid polymers for the chewing-gum industry
- Polymers in beads for special applications
- Vinyl adhesives for DIY (such as the famous “white glue”)
- Tailor-made vinyl and acrylic polymers for a multitude of uses (from cementitious admixtures to suspension polymerisation agents)

THE MILESTONES OF A CENTURY-OLD MANUFACTURING PLANT

1922

A production facility is opened by SET (Società Elettrochimica del Toce) and SIPS (Società Italiana di Prodotti Sintetici) in Villadossola (Italy) to produce calcium carbide. Over the following years, the facility starts producing rayon acetate.

1936

Production of vinyl acetate starts on a semi-industrial scale. Vinyl acetate is transformed into polymers and polyvinyl alcohol for applications in the adhesives sector.

1942

The famous “white glue” is created which ten years later becomes known as Vinavil “universal adhesive”.

1946

The French company Rhône Poulenc, through the company Rhodiatoce, launches a joint-venture with Montecatini. Over the next few years, the company brings in its valuable know-how originating from large German industrial groups.

1952

Reactors to produce polyvinyl acetate in emulsion are installed and at the same time the name Vinavil is born (an abbreviation of Vinyl Acetate at Villadossola). This white latex spreads across the Italian market and becomes synonymous with white glue.

1966

Montecatini merges with Edison, to form Montecatini Edison S.p.A., which in 1974 becomes Montedison. This new colossal company carried with it the seeds of the successive industrial crisis. In 1972 Rhône Poulenc leaves the joint-venture.

Celebrating... looking to the future
The centenary celebrations started in the evening of 8th September with the concert at the Congress Palace in Stresa (Province of Verbania, Italy), offered by Vinavil to its clients, employees and working partners. The evening featured a programme of three Mozart symphonies. The following day the plant opened its doors to hundreds of people who were able to visit the site, from the production areas to the warehouses, and from the Research & Development laboratories to the cogeneration plant. So much history... looking to the future, because the company continues to grow thanks to investments keeping production activities up to date and sustainable. This was highlighted in the words from Taako Brouwer, Vinavil CEO: "At Villadossola we recently completed the commissioning of two new lines for dispersion products. Our greatest challenge now is to go on pinpointing those technological solutions that have the ability to support sustainable development, such as the cogeneration plant recently installed here at Villadossola which has enabled us to become even more energy efficient". Thus ongoing investments will lead to an increase of 20% in production capacity to reach around 250 thousand tonnes of products.

A DAY OF CELEBRATIONS.
The Vinavil plant in Villadossola opened its doors on 9th September: more than 1,400 dignitaries and local residents were able to visit the plant and laboratories.

1979

The cost of running the vinyl acetate plant is no longer sustainable and it closes down, followed shortly after by the closure of the calcium carbide plant in 1983.

1990

All Montedison's chemical operations are passed over to EniChem. The plant in Villadossola becomes part of the operations company EniChem Synthesis, along with the facility in Ravenna (Central Italy) which produces similar products.

1991

EniChem presents a Business Plan which foresees the closure of the production facility in Villadossola. After strong pressure from politicians and trade unions, it is decided to sell the company

1994

Mapei buys the vinyl acetate production activities from EniChem Synthesis and the purchase includes the Villadossola and Ravenna facilities.
The new company is renamed Vinavil S.p.A.

VINAVIL

2000

Production of redispersible powders used in cementitious products by Mapei starts at the plant and, the following year, a line of acrylic emulsions commences operations.

2007

A new line of copolymer solutions from a 30 m^3 reactor is launched. In the same year, the company is awarded EN ISO 14001 certification.

2009

A 3.5 MW thermoelectric cogeneration plant is installed in the Vinavil production site in Villadossola.

2023

Two new production lines for dispersion products start up at the plant, with the aim of increasing production capacity by 20%. A new cogeneration plant was installed to increase the energy efficiency of the plant..

First ever multi-event UCI World Championships held in Scotland

THE MAPEI BRAND TO THE FORE AS TOP RIDERS SHOW OFF THEIR SKILLS IN VARIOUS EVENTS

OPPOSITE PAGE. Filippo Ganna celebrates after winning the elite men's individual pursuit at the Sir Chris Hoy Velodrome in Glasgow.

Mapei sponsored the Cycling World Championships again this year organised by the International Cycling Union (UCI) in Glasgow and all over Scotland (UK) from 3rd-13th August. It was a special edition: 2023 is a pre-Olympics year, so the UCI decided to group together the Cycling World Championships in four main disciplines: road, track, BMX and mountain biking as a test-event ready for the Paris 2024 Olympics.
One of the competition venues was the Sir Chris Hoy Velodrome which was built in 2009-2012 with the help of Mapei products and technologies. With its 250-m indoor track and a seating capacity of 2,500, it hosted track and para-cycling track competitions. This year, Mapei is also celebrating an important milestone: 30 years of support for cycling, first as a sponsor of a first division team and then as Main Partner of the UCI Road World Championships since 2008.
A commemorative jersey was designed in partnership with Santini to celebrate this milestone, matching Mapei's iconic cubes with the rainbow colours of the UCI World Champions.
This partnership will continue with the next edition of the Championships in Zurich in 2024, with Mapei as Main Partner, confirming the company's commitment to and passion for the sport.

THE MAPEI BRAND CATCHES THE EYE IN GLASGOW
Over the eleven days of racing Mapei hosted over 300 customers from both the UK and abroad in 7 different locations, including George Square, Sir Chris Hoy Velodrome, Ralph & Finns Restaurant about 150 m from the finish line and Glasgow city centre, and the hospitality area nearby Stirling Castle. Mapei also organised two exclusive parties at the Hard Rock Café in Glasgow to celebrated its 30 years' close ties with cycling. During the races the Mapei logo was on display on banners, arches, prize-giving panels and TV backdrops. Mapei was also visible on the backdrop of press conferences and in brochures and press releases.
The races were a great hit on television all over the world. As well as RAI channels (Italian State TV), they were broadcast around Europe on Eurosport, the BBC and GCN. There were also numerous non-European broadcasters, such as ESPN, SuperSport, Fox, Sky NZ.

ABOVE. From top to bottom: the Mapei Motorhome was present for the time trials in Stirling; hospitality for the road race events was held at the Ralph & Finns Restaurant in Glasgow; entertainment for the guests in the VIP Lounge in Glasgow.

ABOVE. Belgian Lotte Kopecky won the elite women's road world championships. Lotte finished ahead of Demi Vollering (Netherlands) and Cecilie Ludwig (Denmark).

VAN DER POEL AND KOPECKY ARE THE STARS

Large sections of the road race had the Mapei brand clearly on show as the Dutchman Mathieu van der Poel produced a wonderful performance to become the 2023 men's elite road world champion. The men's race (271 km) started in Edinburgh and finished in the heart of Glasgow with a short final circuit full of tough short climbs and tricky bends. World champion Mathieu Van Der Poel finished ahead of Wout van Aert, with Tadej Pogacar coming home third. It was a race with a thrilling finish. During the last lap Mathieu Van Der Poel crashed going round a bend and broke his shoe: but he got back up and went on to win anyway.

LEFT. The podium of the elite men's road race (left) with Van Aert (2nd), Van Der Poel (1st), Pogacar (3rd), and the podium of the individual pursuit (right): Bigham (2nd), Ganna (1st) and Milan (3rd).

This year, Mapei is celebrating an important milestone: 30 years of support for cycling. A commemorative jersey was designed in partnership with Santini to celebrate this milestone.

IN THIS PAGE. The Mapei logo was prominently displayed during the races in the various disciplines, including MTB cross-country (left), BMX racing (below) and track events (right).

Italy won a gold medal on the road race thanks to Lorenzo Milesi in the men's under-23 individual time trial. The time trial took place in Stirling and Milesi finished ahead of Belgium's Alec Segaert and Australia's Hamish McKenzie over a distance of 36.2 km.

On the track, Filippo Ganna from Italy was crowned World Champion in the individual pursuit (4 km). Ganna beat Britain's Daniel Bigham in the final, while Jonathan Milan from Italy won the bronze medal. He didn't race on the road but he got an astonishing 2nd place behind Remco Evenepoel that won the gold medal on the road time trial in Stirling. When Ganna was a junior he used to go to the Mapei Sport Centre in Olgiate Olona (Province of Varese, Northern Italy) to undergo testing. "Ganna as a junior won the National Time Trial championship, Chrono des Nationes and was 4th at the European Time Trial Championship. He won also an international road race (Trofeo Emilio Paganessi)", so Andrea Morelli, Head of Cycling in Mapei Sport, likes to remember, "from his physiological results we knew he would have achieved great things as he developed. It was only a matter of time: now he is one of the most successful track riders ever and probably one of the strongest time trialist in cycling history". Lotte Kopecky (Belgium) starred in the women's race in Glasgow beating Demi Vollering in the elite women's road race (154 km) from Loch Lomond to Glasgow; bronze went to Cecilie Ludwig (Denmark).

In the elite women's individual time trial (36.2 km), Chloe Dygert (USA) put in a winning performance ahead of Grace Brown who came second and Christina Schweinberger who finished third.

WOMEN PUT ON A SHOW AT THE VELODROME

In addition to gold in the women's road time trial, all-rounder Chloe Dygert also won gold in the individual pursuit. Britain's Emma Finucane was the queen of the sprint, while Hemma Hinze (Germany) won the 500 m time trial.

Hemma was also part of the trio of gold medallists in the team sprint along with Fredrich and Grabosh, and the women's keirin final was won by New Zealand's Ellesse Andrews. The scratch race and omnium were both won by Jennifer Valente (USA) while the British duo of Nezh Evans-Elinor Barker came first in the madison.

MOUNTAIN BIKING

Pauline Ferrand Prevot (France) won the women's elite cross country mountain bike race. Britain's Tom Pidcock won the men's elite cross-country gold, Charlie Aldridge won gold in the men's under-23 race, Samara Maxwell won the women's event, and Isabella Holmgren came home first in the juniors.

Restyling Mapei Stadium in the name of art and sport

A WORK BY THE ARTIST OLIMPIA ZAGNOLI WELCOMES FANS TO THE REGGIO EMILIA STADIUM, RENOVATED FOR THE NEW SEASON

A stadium that is more welcoming to locals, more functional and also more... beautiful. Just like every other summer, this year Mapei Stadium-Città del Tricolore in Reggio Emilia (Central Italy) underwent major works in preparation for the new season.
Among the most important work carried out was the renovation of the façades - which were restored and painted - and the renovation of the west entrance, the main entrance to the stadium.
Here, a multilevel intervention has even improved the structure's appearance: the entrance tunnel has been replaced and the walkway has been re-paved, four banners featuring the Italian national colours have been put up, the risers of the access stairs have been coloured green, white and red and, most significantly, an artwork by Olimpia Zagnoli, an artist from Reggio Emilia, has been incorporated in the façade.

This is the first time a work of art has been set inside a stadium, enhancing the structure both as a sports facility and as part of the city's heritage. Zagnoli's work, "All together now", is inspired by a 1964 black-and-white video in which fans of the Liverpool team all sing The Beatles' song "She loves you" from the terraces of Anfield Stadium in England.
But the new-look façades is not the only novelty to welcome fans: this season, Mapei Stadium is illuminated with new lights and colours, thanks to the renovation of the ground's lighting system through the addition of a new set of fixtures/fittings serving entertainment and scenic lighting purposes.
There is something new outside the stadium: 150 cherry trees will give a pink hue to the flower beds in the municipal car park in front of the stadium in spring.

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TOP OF PAGE. Renovating the façades was among the interventions lately carried out at Mapei Stadium. An artwork by the artist Olimpia Zagnoli was placed at the west entrance.

A stadium up to the highest standards
In 2014, Mapei acquired the exclusive concession for the stadium: since then, investment of over 18 million Euros have modernised the structure and made it a facility up to the highest international standards, one of the most popular in the Italian Serie A league that is also used to host national team and Europa League matches. It has recently been announced that Mapei Stadium has been proposed as a suitable facility for team training within the framework of Italy's bid to be the host nation for Euro 2032.
Significant work carried out over recent years includes repair work on the deteriorated concrete bleachers, the replacement of all the seats, renovation of the interior spaces and complete resurfacing (three times) of the playing field, while no work was required on the drainage system, which was installed back in 2014 using MAPESOIL technology.
In summer 2022, the roof over the east and west stands was completely redone and the entrance system was modernised with the installation of automatic turnstiles. Work is continuing on a stadium that is increasingly open and welcoming to people in keeping with tradition but also ready to take on sporting challenges in the future.

MAPEI WORLD NEWS

EVENTS, PROJECTS AND INITIATIVES FROM THE GROUP'S SUBSIDIARIES

CANADA – A NEW PLANT IN A HISTORIC PRODUCTION FACILITY

On September 14th, Mapei Inc., the Group's Canadian subsidiary, hosted the opening ceremony of a new plant for the manufacture of powdered materials at its production site in Laval, Québec. The new plant aims to meet the growing demand for building materials, concrete admixtures and cement additives in northeast Canada. For Mapei, this is just the latest step along a path of growth and internationalisation that began in 1978 when the first manufacturing plant outside Italy was opened in Laval.
Mapei Inc. is celebrating 45 years in business this year, which we will be talking about in the next issue of *Realtà Mapei International*.

THE GAMBIA – AID FROM POLYGLASS FOR A SCHOOL IN NEED

From the Veneto region in Italy to Africa: 1,800 students and teachers at Mandinary Primary School, which first opened in the city of Mandinary (The Gambia, West Africa) in 1964, received special aid from staff at Protection4Kids, a foundation from the Province of Treviso (Italy) involved in various activities to protect minors. The foundation received support from Polyglass SpA, a subsidiary of the Mapei Group which is also based in Veneto, that manufactures waterproofing membranes. This meant, for example, that the school's sanitary facilities could be renovated thanks to the company's help.

THE NETHERLANDS – MAPEFIBRE AND CUBE SYSTEM AT THE BIBM CONGRESS

The 24th BIBM Congress was held in Amsterdam from 27th-29th September and focused on innovations for precast concrete. Mapei presented a number of products for the concrete industry at this event, such as the MAPEFIBRE range of structural polymeric fibers used to make precast concrete elements and the CUBE system that can reduce the environmental impact of concrete manufacturing.
Speakers included Carles Cots and Roberto Saccone (Mapei), who gave talks about the use of macro fibers to reinforce precast concrete elements and reduce the carbon footprint of reinforced concrete.

Think Concrete, Go Precast
bibm

THAILAND – 800 EXPERTS FOR CIRCULARITY IN THE CEMENT/CONCRETE INDUSTRY

The 16th International Congress on the Chemistry of Cement (ICCC23) took place in Bangkok from 18th-22nd September. Attended by 800 delegates, it remains the most important platform for promoting developments in chemistry for cement and their application in the cement/concrete manufacturing industry. This year's event focused on the reduction of CO_2 emissions and circularity in cement/concrete manufacturing processes. Among the speakers and authors, Clelia Sarta, Paolo Forni, Fabio Castiglioni, Matteo Magistri, and Giorgio Ferrari (in the photo above) gave presentations of research work carried out by Mapei.

QUESTIONS & ANSWERS

EXTREME WEATHER CONDITIONS: THE IMPORTANCE OF PREVENTIVE MEASURES

Stefano Mazzotti

Hail-resistant external insulation systems

We are experiencing an increase in the frequency of extremely serious natural calamities, such as flooding, hail storms, fires and whirlwinds. This just goes to confirm the importance of continuing with the decisive and mandatory actions undertaken by the European Union: to make homes more energy efficient in order to drastically reduce their energy needs and, as a result, the emission of climate-changing substances.
Worth remembering are the European Union Directives that have imposed a target to reduce, by 2030, the emission of climate-altering gases by 55% (with respect to 1990 levels), and that all homes, with a few exceptions, must have at least an E energy rating by 2030 and, by 2033, at least a D rating.
The paradoxical situation we are currently witnessing is that, while we are busy making our building stock more efficient – including through targeted grants and incentives – atmospheric events are damaging remedial work that has just been carried out or that is currently ongoing. In the case of external insulation systems, if they comply with all the relative criteria, which means using certified systems installed correctly by specialized installers, they can withstand quite strong hailstorms.

What impact resistance categories are adopted for external thermal insulation systems?
ETA certification for external thermal insulation systems (according to the European Assessment Document 040083-00-0404) contains the values obtained by testing their resistance to impact by a hard body (EN ISO 7892 test method).
To achieve the best impact resistance - category I - (see Table 1), the external insulation system must be able to withstand an impact of 10 J without being damaged (see Table 2). Traditional external insulation systems are generally category II: no deterioration following an impact of 3 J, but surface damage following an impact of 10 J.

Does Mapei offer external insulation systems that are more resistant than traditional systems?
Thanks to the research and technological developments carried out by Mapei, external insulation systems have been created that achieve the highest impact resistance category (I), including with extreme impacts:

- 10 J impact: traditional system finished off with ELASTOCOLOR TONACHINO PLUS textured coating;
- 15 J impact: reinforced skim coat of MAPETHERM FLEX RP elastic skimming paste and any of the Mapei range of textured finishes;
- 100 J impact: reinforced skim coat of three layers of MAPETHERM FLEX RP elastic skimming paste interposed with a double layer of MAPETHERM NET mesh finished off with ELASTOCOLOR TONACHINO PLUS textured coating.

Two examples of external insulation damaged by hailstones.

This latter system can even withstand the impact of hailstones as large as tennis balls or, to be more precise, class H5-H8 according to the incidence of various meteorological factors on the TORRO scale (international hail classification system).

Is it possible to improve the resistance of an existing external insulation system?
Absolutely, the performance properties mentioned above can be achieved by restoring a damaged external insulation system or by doubling the existing system. These solutions combine performance, durability and sustainability, while preventing or repairing damage caused by even the most extreme weather conditions.

Is it very expensive to install this type of external insulation system?
You may be surprised how low, from a financial perspective, the expenditure can be to install these systems that increase impact resistance by up to 30 times compared with a traditional system. To get an idea, you can ask for a quote from one of our specialised distributors or through our network of agents and technical service teams.

Stefano Mazzotti. Product Line Coordinator – ETICS (External Thermal Insulation Composite System), Mapei SpA (Italy)

Find out more
MAPETHERM X2 SYSTEM is the Mapei system applied to double an external insulation system. It enables old, obsolete systems to be used as part of a far better performing external insulation system.

Table 1. EAD (European Assessment Document) 040083-00-0404: Categories of impact resistance and examples of use

Category	Descriptions of possible uses
I	A zone readily accessible at ground level to the public and vulnerable to hard body impacts but not subjected to abnormally rough use.
II	A zone liable to impacts from thrown or kicked objects, but in public locations where the height of the ETICS will limit the size of the impact; or at lower levels where access to the buildings is primarily to those with some incentive to exercise care.
III	A zone not likely to be damaged by normal impacts caused by people or by thrown or kicked objects.

Table 2. Specification of impact resistance categories according to EAD 040083-00-0404

	Category III	Category II	Category I
10 Joule impact	...	rendering not penetrated [2]	no deterioration [1]
	and	and	and
3 Joule impact	rendering not penetrated [2]	no deterioration [1]	no deterioration [1]

[1] Superficial damages, provided there is no cracking, is considered as showing "no deterioration" for all the impacts.
[2] The test result is assessed as being "penetrated" if circular cracking penetrating as far as the thermal insulation product is observed for at least 3 of the 5 impacts.

PRODUCTS IN THE SPOTLIGHT

MAKING INSTALLATION ON UNEVEN SUBSTRATES EASIER, CLEANING CEMENTITIOUS AND EPOXY GROUTS, DECORATING AND PROTECTING FAÇADES

1

Mapelevel ProWDG System

FOR A QUICKER AND SIMPLER INSTALLATION OF TILES

This wedge levelling system helps make the installation of tiles 3 to 20 mm thick simpler and quicker. The system can be used for ceramic and stone floor and wall coverings and for a wide range of tiles thanks to two different types of spacers. Easy to apply using special pliers, the system eliminates lippage between adjacent tiles quickly and accurately to create perfectly flat ceramic and stone flooring. It is particularly recommended for installing large-format tiles or uneven coverings on deteriorated substrates. The system comes with special MAPELEVEL PROWDG wedges into the MAPELEVEL PROWDG SPACER C and MAPELEVEL PROWDG SPACER C-H spacer clips. It ensures simple and accurate adjustment.

2

UltraCare Grout Cleaner

DEEP CLEANING OF EPOXY AND CEMENTITIOUS GROUTS

Professional concentrated alkaline detergent for cleaning cementitious and epoxy grouts. It can be used on walls and floors, both in interiors and exteriors, on thin porcelain tiles, ceramic tiles, terracotta, clinker, glass mosaic, engineered and natural stone and cementine.
It ensures efficient and deep cleaning and acts quickly and efficiently both on internal and external surfaces.
ULTRACARE GROUT CLEANER brings the joints back to their original appearance.
The product is ready to use, does not need to be diluted with water and is supplied in 0.75 l spray bottles.
The product is not suitable for polished stone surfaces, waxed surfaces and methacrylate surfaces.

3

Silancolor AC Tonachino Plus

LONG-LASTING PROTECTION AGAINST MOULD AND ALGAE

Water-repellent, mould and algae-resistant, textured acrylic silicone-based plaster for the hygiene of walls in internal and external applications. It is used for coating new, old or already painted surfaces. It has high filling properties and ensures a long-lasting protection against environmental aggressions for both new and degraded surfaces, with a pleasant aesthetic finish.
It can also decorate and protect exterior thermal insulation systems like MAPETHERM SYSTEM. It has an EPD (Environmental Product Declaration) and a P.A.S.S. (Profile Aspects and Synthesis of Sustainability). The photo above shows the façade of the Villa Belvedere Hotel in Argegno (Como, Italy) where the product was applied.

BUILDING A **PRESENT** DESIGNED TO HAVE A **FUTURE**

Passion, team spirit and a constant eye on the future. Mapei contributes at a global level to the most important architectural and infrastructure works, residential projects and restoration work on historic buildings. Each and every day, in the name of innovation, we are committed to an increasingly sustainable building industry.

EVERYTHING'S **OK**
WITH **MAPEI**

Learn more on **mapei.com**

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