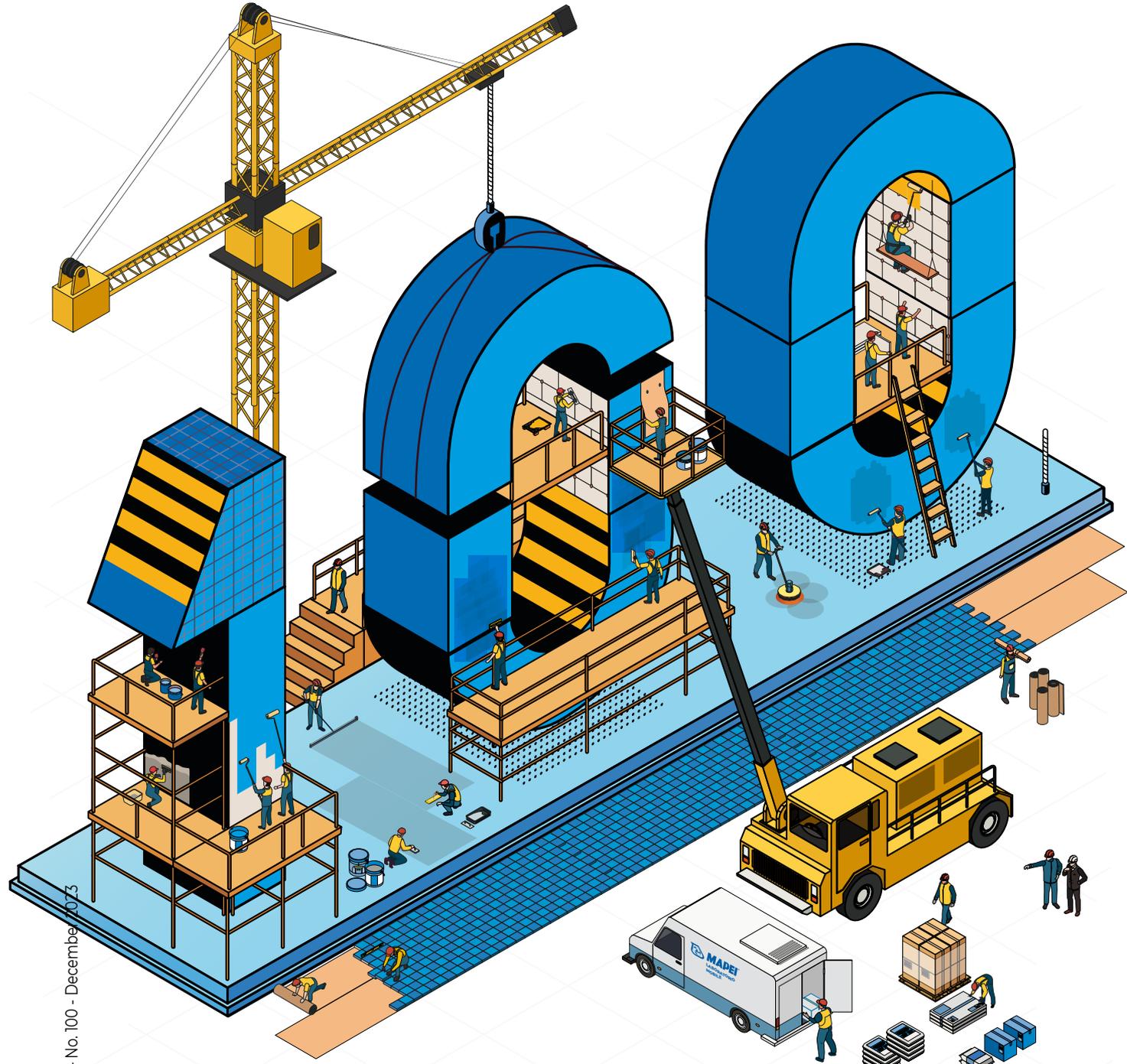


INTERNATIONAL

# Realtà MAPEI

ISSUE 100



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100

# Building a **SUSTAINABLE** future together



## NOW YOU CAN PLAY A PART

Now you can choose products with fully offset residual CO<sub>2</sub> emissions through renewable energy and reforestation projects. The attention to quality of the new **ZERO** line by **Mapei** enables buildings to be constructed and restored with durability in mind, focusing on future generations and the wellbeing of the planet and its inhabitants. **Choose sustainability for all your projects, with Mapei.**

CO<sub>2</sub> 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. A commitment to the planet, to people and to biodiversity.



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

## Mapei makes its voice heard around the world

*Realtà Mapei International* has now reached its 100<sup>th</sup> issue. A landmark we are particularly proud of, since we believe this will really encourage us to keep on providing a voice for the building industry all over the world. As Adriana Spazzoli, Mapei Group's former Marketing & Communication Director, wrote in the editorial of issue no. 0 of *Realtà Mapei International* back in 1995: "*Realtà Mapei* is a trade magazine for the building industry and not just a company newsletter. To meet demands coming from all over the world, we are publishing an international version that will reach an even wider audience of technicians, designers, architects and suppliers". This has remained the "mission" of a magazine which, over the years, has represented and tried to come up with answers for the constantly evolving building industry.

An offshoot of *Realtà Mapei* (the company magazine published in Italian), after a rather tentative start (only being published once a year to begin with), the international version has gradually grown (for many years now 5 issues have been published in conjunction with Italian language *Realtà Mapei*) and inspired the publication of local versions of the magazine in 15 countries where Mapei operates through its own subsidiaries.

*Realtà Mapei International* is now distributed in 132 countries across 5 continents and online in its digital version: a global presence and an important means of promoting the Mapei brand even in areas where the Group does not have its own subsidiary. Another sign of Mapei's desire to work closely with the building industry worldwide.

This issue's special section focuses on polyurea-based waterproofing membranes, an innovative technology that Mapei developed with and launched on the Italian market between 2009 and 2011 and then marketed globally. Polyurea (which has played a key role in the company being awarded important contracts worldwide) has become part of the waterproofing line that Mapei has been manufacturing for 43 years now. The opening of a new plant in the Mapei manufacturing facility in Laval provides the opportunity for a focus on

Canada in the "Teamwork" section of the magazine. For Mapei Group, it is another step forward in its investment plans in this country with the help of a more extensive and complete range of products that will boost the brand's presence in new market segments, particularly in the field of concrete admixtures and industrial cementitious

and resin floors.

Alongside internationalisation, innovation and sustainability are two other pillars of the company philosophy. Mapei aims to play a leading role in the challenge to obtain cements with low clinker content by researching into innovative solutions guaranteeing carbon neutrality.

Mapei is also continuing in its winning ways in sport. The Mapei-sponsored yachtsman Ambrogio Beccaria triumphed in the Atlantic at the helm of his boat "Alla Grande-Pirelli". He came first in the Transat Jacques Vabre, a prestigious regatta retracing the coffee route from Le Havre in Normandy (France) to Martinique in the Caribbean.

Enjoy your reading.

### WATERPROOFING WITH POLYUREA: AN INNOVATIVE TECHNOLOGY WITH EXCELLENT PERFORMANCES

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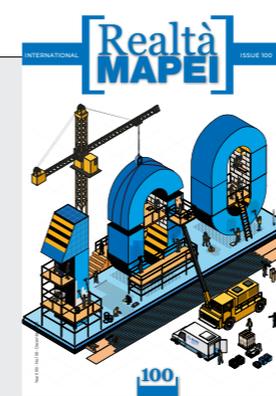
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**Cover story**  
Realtà Mapei International has now reached its 100<sup>th</sup> issue. It was launched in 1995 to reach a wide audience of technicians, designers, architects and suppliers. The magazine, over the years, has tried to come up with answers for the constantly evolving building industry. Realtà Mapei International is now distributed in 132 countries across 5 continents and online in its digital version.

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# One material, so many applications

Thanks to their excellent mechanical properties and versatility polyurea membranes are being adopted in numerous areas of use, ensuring ease and speed of application and durability. In this section of the magazine, we will present this technology and highlight their many advantages. There are also reference projects from numerous countries to show how widespread our products are and their many different applications.



**1**  
Roofs with photovoltaic plants

**2**  
Decks on railway lines

**5**  
Bleachers in stadiums and amphitheatres

**6**  
Green roofs

**8**  
Carparks

**7**  
Roofs with plant equipment or air-conditioning units

**3**  
Road decks

**4**  
Storage tanks for treating wastewater

**8**  
Carparks



Dino Vasquez

# Innovative technology in an evolving market

SINCE 2011 MAPEI HAS BEEN PRODUCING POLYUREA-BASED MEMBRANES WHICH HAVE BEEN USED IN MANY DIFFERENT COUNTRIES

With the start of the new millennium polyurea, which is well known in the United States, came onto the Italian market. Initially, manufactures of spray equipment were the ones to show most interest and, soon after, polyurea membranes started to be adopted as a waterproofing product for residential, commercial, and industrial environments. Today, along with polyurethane membranes, they are widely adopted and their use is becoming more and more consolidated not only in Italy, but also abroad.

In 2009 the Mapei Research & Development laboratories developed the first hybrid and pure polyurea formulations and carried out the first on-site tests, followed by their presentation to the Italian market in 2011 and, immediately after, to those covered by our overseas subsidiaries.

Initially, the portfolio of Mapei polyurea membranes consisted of three types of membrane: PURTOP 1000 (pure polyurea-based membrane), PURTOP 400 M and PURTOP 600 (hybrid polyurea membranes) which differ according to their areas of use but have important performance characteristics in common, such as:

- immediate waterproofing and rapid set to foot traffic;
- perfect adhesion to any type of substrate and geometric form;
- excellent tensile and tear strength;
- considerable elongation and crack-bridging capacity;

**The main characteristics of these membranes are their elasticity, immediate waterproofing and tear strength**

- colours remain stable under exposure to UV rays (by using special types of finish);
- resistant to both high and low temperatures;
- lastly, perfect for renovation work due to no additional load on load-bearing structures.

Over the course of the years these characteristics have become more and more appreciated around the world, to such an extent they were the turning point for the supply of Mapei products in important and numerous projects, and the ones I would like to recall are the majestic Gilgel Gibe III dam in Ethiopia built by Salini Impregilo, the spiral ramp for the San Giorgio Bridge in Genoa (Italy), the roof open to vehicles for the Confindustria (Confederation of Italian manufacturing and service companies) headquarters in Rome, the roof for the Masjid Negara national mosque in Kuala Lumpur and the complex designed by Renzo Piano for the luxury Braço de Prata residential district in Lisbon. They were all important challenges in which the entire Mapei team, from the Research & Development laboratories to the Technical Services team on site, carried out an exceptional job in order to create bespoke solutions with the right products and then follow their application every step of the way.

Over the years the range of polyurea membranes has been extended with the introduction of two hybrid polyurea-based products, PURTOP 500 N and PURTOP FR (resistant to fire), a new pure polyurea membrane, PURTOP 1000 N, and a manually-applied polyurea membrane, PURTOP 200.

### Certified quality

By extending the portfolio of Mapei products and, above all, thanks to the investments the company has made in this sector, Mapei Group has managed to obtain important world-wide certifications.

In fact, thanks to the extraordinary characteristics of PURTOP membranes and the certifications obtained,

it has been possible to propose these products as certified quality systems in numerous areas of application, such as:

- drinking water storage tanks (certified according to Ministerial Decree 6/4/2004 for Italy, BS 6920 standards for Malaysia and certification from the Institutes of Hygiene in Norway and Poland);
- road decks (certified CE ETA 14/0289 in compliance with European guideline ETAG 033) and rail decks (SNCF and RFI certifications);
- green roofs (certified according to CEN/TS 14416 standard);
- roofs with photovoltaic plants (D-s3-d0 according to EN13501-1 and B<sub>ROOF</sub> t1, t2, t3 and t4 according to EN 13501-5).

These certification awards are in addition to the numerous trials and evaluation tests carried out to qualify for CE EN 1504-2 marking.



The Mapei Waterproofing Line team operating in Italy.



Applying polyurea-based membranes by spray.

### The importance of teamwork

In these 13 years we have managed to achieve excellent results because we have made teamwork our strong point. In fact, the Mapei waterproofing line has a solid structure made up of several product line specialists spread all around the countries where Mapei operates who, on a daily basis and thanks to constant promotional and knowledge-sharing activities, work jointly with designers to create polyurea waterproofing solutions. They also carry out training sessions and demonstrations so that our clients can get to know and appreciate the exceptional characteristics of PURTOP membranes. This activity is particularly appreciated because the application of polyurea membranes requires very precise phases regarding substrate preparation and good knowledge and skills when operating the equipment used for their application. In order to apply PURTOP membranes, special spray equipment is required (with a regulator, hoses, pistons, pumps and spray gun), along with an air compressor and a generator. Before approaching this technology, it is necessary to have a clear understanding of the whole scenario. And no matter what, the extensive support and technical assistance supplied by Mapei, from supply to application, for 13 years has enabled this important sector of the waterproofing market to grow, and will continue enabling it to grow even more in the future. Thanks to the capillary Mapei network, its presence in 5 continents and a product portfolio featuring an extensive range of products and certifications, I am certain we will be able to take on increasingly stimulating challenges and obtain even better results than what we have achieved until now.

**Dino Vasquez.** Corporate Product Manager, Waterproofing Line, Mapei Group



Antonio Ausilio

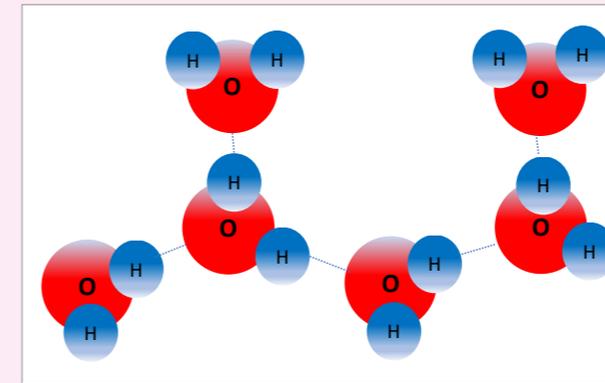
# The strong points of a truly unique product

SHORT CURING TIME, HIGH FLEXIBILITY AND EXCELLENT MECHANICAL PERFORMANCES ARE SOME OF THE ADVANTAGES OF POLYUREA MEMBRANES

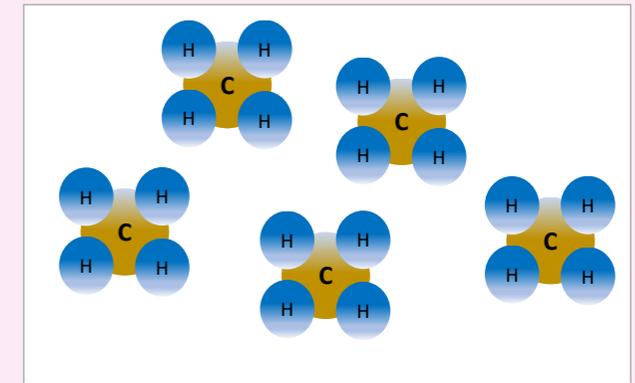
Even though the reaction between isocyanates and amines (that is, the reaction that leads to the formation of a polyurea) has been well known for many years, it was only in the 1980's that people started to think about its possible uses in developing products aimed at the building industry. The reluctance to take into consideration this technology derives from its extremely short reaction time (generally just a few seconds) which still characterises it to this day and which, being quite a strong impediment to its use in the formulation of products applied manually, for a very long time directed research towards the study of other polymers, first and foremost polyurethanes. However, at the start of the 1990's, the considerable benefits associated with the use of a polyurea led to the development of special, sophisticated pumps. These

pumps were so efficient in handling the extremely short curing time of the product that it was no longer considered an almost insurmountable barrier and it became one of the benefits most associated with polyurea. In fact, the very high curing speed of a polyurea membrane guarantees it may be applied quickly which, in practical terms, means that waterproofed surfaces may be put into service after just a few hours. However, what makes a polyurea-based membrane such a truly unique product on the market is its particular mechanical characteristics. In fact, when you need to increase the flexibility of a product, you have to inevitably lower its cross-linking density by using molecules with a high molecular weight and low functionality. In most polymers, these formula's adjustments also lead to a general lowering of other

**The benefits associated with the use of polyurea led to the development of sophisticated pumps which are very efficient in handling the extremely short curing time of the product**



Water: the molecules are linked together by hydrogen bonds (dotted line)



Methane: no bond is formed between the molecules.

properties of a product, such as tensile strength and tear strength, but not with a polyurea-based product. Even with membranes that have an elongation rate of more than 300% (which is the minimum elongation rate of every spray-applied polyurea from the PURTOP line), both tensile strength and tear strength remain far higher than with other membranes with same degree of elasticity, but made using different technology. The reason why this occurs with a polyurea, and not with other polymers, depends on the different molecular interactions that originate following the reaction between isocyanates and amines, especially those leading to the formation of a particular electrostatic bond called a hydrogen bond.

The number of hydrogen bonds that originate between the various polyurea chains is considerably higher than those obtainable with flexible polymers of a different nature, but to explain in an easier way how this difference can affect the final characteristics of the products, we can use an example which is very easy to understand, such as the comparison between water and methane. The molecules of these two substances are very similar in size and both have a very low molecular weight and, because of this latter characteristic, in theory, at ambient temperature both methane and water should be at a gaseous state. In reality this only occurs with methane, while to take water to its gaseous state it's necessary to overcome 100°C. This considerable difference in behaviour between the two substances depends precisely on the hydrogen bonds that water is able to form, creating a network that links the various molecules together and stops them from evaporating, while with methane this does not take place.

If we transfer this concept to polyureas and use polyurethanes as a comparison (which are the polymers chemically most similar to polyurea),

with all other factors being equal, the higher number of hydrogen bonds that form between urea groups compared to those that form between urethane groups (which basically means a more extensive network in the polyurea chains) is the only explanation to justify the considerably higher mechanical characteristics of a polyurea membrane compared with those of a polyurethane membrane. What is more, remaining in parallel between these two technologies, it is important to underline another advantage of the polyureas compared with the polyurethanes which depends, once again, on the extreme reactivity between isocyanates and amines. A urethane group forms by the reaction between an isocyanate and an alcohol. Alcohol molecules, however, are chemically similar to water molecules and so, in the presence of moisture, not only do isocyanates react with alcohol, they also tend to react with water. In many applications in which polyurethanes are involved (excluding the single component products where the reaction with water is fundamental) this reaction can be a problem, in that it generates carbon dioxide, a gas that can lead to the formation of surface blisters during the curing phase. This does not happen with polyurea, because the difference in reactivity between amines and water with respect to isocyanates is such that, in the presence of moisture, isocyanates react exclusively with amines.

### Using a polyurea membrane on small surfaces

Even though the very high curing rate of polyurea is an advantage when you need to waterproof very large surfaces, it becomes an obstacle in those cases in which the surfaces to be waterproofed are much smaller, because using such a sophisticated pump would not be cost effective, as well as very unwieldy. However, looking more deeply into the chemistry of



1. Peel-strength test of polyurea.



2. Measuring the mechanical characteristics of polyurea.



3. Pull-off test to evaluate adhesion to a cementitious substrate.



4. Application of polyurea by spray.

the substances used in this technology, we were able to understand that, by carefully selecting amines that were less reactive, it would be possible to formulate a type of polyurea suitable for manual application. And this was exactly the concept behind the development of PURTOP 200. What is more, not only does this product have far better performance properties than any other liquid membrane currently available on the market, but its formula contains no solvent, thereby also making it a product with very low emissions.

### Polyurethane-polyurea hybrids

The mechanical characteristics of a polyurea membranes make this product suitable for applications in quite severe conditions. Amongst other properties, it performs excellently as crack-bridging coating in carparks where vehicles transit and guarantees excellent resistance when

in continuous contact with a host of aggressive chemical substances.

If, however, it is mainly used as a waterproofing membrane, the performance characteristics of a polyurea could even seem to be excessive. With this in mind, in order to offer clients a product at a more accessible price, over the years we have developed polyurethane-polyurea hybrids whose characteristics are defined according to applications where only some of the advantages offered by polyurea are really necessary. However, as we mentioned previously, the reaction between isocyanates and alcohol is quite slow. So, in order to have the same reaction speed as that between isocyanates and amines, it is necessary to add a catalyst in the formula of a hybrid polyurethane-polyurea. This catalyst, however, is unable to distinguish between alcohol and water, which means that with polyurethane-polyurea hybrids, adding a catalyst could lead to the formation of surface blisters. So, formulating a polyurethane-polyurea hybrid is more complicated than formulating a pure polyurea one.

In spite of this, thanks to intense research work and by carefully selecting which substances to use, we have been able to make this problem become rather unimportant and the resulting product, PURTOP 500N, is now widely used in countries with a particularly damp climate for a large part of the year, such as Singapore and Hong Kong.

We then need to highlight that the possibility of generating these various types of hybrids has acted as a stimulus for us to study new solutions for even

more complex problems. One clear example of this is PURTOP FR, a polyurethane-polyurea hybrid which, thanks to specific chemical modifications which have considerably improved its reaction to fire, has been classified as D-s3-d0 according to European standard EN 13501-1 and B<sub>ROOF</sub> t1, t2, t3 and t4 according to European standard EN 13501-5. Thanks to this characteristic, the membrane is taking a larger slice of the market, in line with the increasing adoption of photovoltaic panels, whose use has led to more restrictive regulations in terms of reaction to fire.

### Protecting the membranes with aliphatic top coats

Such frequent use of polyurea or polyurethane-polyurea hybrids as waterproofing membranes for roofs requires that these materials, first and foremost, do not degrade due to their exposure to UV rays and the effect of thermal oxidation. It is true to say, however, that the polymer network itself guarantees exceptional mechanical characteristics and is able to make such degradation (which shows as progressive yellowing of the membrane and a tendency of the material to "chalk") very slow without being particularly penalising from a performance perspective.

Having said that, if aesthetics are an important requirement, the membrane needs to be protected using an aliphatic top coat. These products are, by their very nature, highly resistant to UV rays (unlike PURTOP products, which, instead, are aromatic-based) so, even when applied in thin layers (150-200

µm), they help the surface of the membrane remain unchanged for very long periods. Mapei proposes various aliphatic top coats for its polyurea products, which differ according to the type of application. If, for example, a membrane just needs simple protection and it does not have to withstand any stresses, the best compromise from a cost/benefit perspective is MAPECOAT PU 20N.

Alternatively, if the surface to be waterproofed has to withstand vehicles in transit, such as in a carpark, a top coat with higher mechanical properties should be specified, such as MAPECOAT PU 30N.

And lastly, if products that release very low amounts of solvent are required, it is possible to use MAPEFLOOR FINISH 59W, a water-based top coat which, thanks to its flexibility, is also able to withstand any movements of the membrane.

Developments regarding the use of polyurea in the building industry sector are constantly evolving. From our side, we could continue the discussion by mentioning the studies we have ongoing to develop aliphatic polyureas and polyureas with a high content of renewable substances. These, however, are products that are still at an experimental stage and further work needs to be carried out on their formulations, but although they are a clear evidence of our incessant desire to innovate, which has always been the driver behind Research & Development activities in the Mapei laboratories.

**Antonio Ausilio.** R&D Polyurethanes Group Leader, Mapei SpA (Italy)

**Looking more deeply into the chemistry of the substances, we were able to formulate a type of polyurea suitable for manual application**

# When a membrane makes all the difference

A ROUND-UP OF PRESTIGIOUS BUILDING SITES WHERE PRODUCTS FROM THE PURTOP RANGE WERE USED



## MASJID NEGARA NATIONAL MOSQUE Kuala Lumpur (Malaysia)

Built to celebrate the country's independence from Great Britain and inaugurated in 1965, the mosque is of a contemporary style and has been classified as a Class 1 Heritage Building by the city's authorities. The substrates of the cupolas and pyramids were waterproofed in 2015 using PURTOP 1000 polyurea membrane.



## SPIRAL RAMP OF SAN GIORGIO BRIDGE Genoa (Italy)

The spiral viaduct provides access for traffic coming from the western side of the bridge, which was designed by Renzo Piano, onto the A7 motorway towards Lower Piedmont and Lombardy. The deck of the access ramp was waterproofed by applying PURTOP 400 M SYSTEM DECK, a complete waterproofing system which is CE marked in compliance with ETAG 033 guidelines and included the use of PURTOP 400 M two-component, hybrid polyurea membrane.



## ON-SHORE FISH FARM Fredrikstad (Norway)

Norway's first ever on-shore fish farm has been built in Fredrikstad and Mapei systems were chosen to waterproof the tanks and to treat the concrete water pipes connected to the water treatment plant. The substrates were treated with MAPEPRIMER M\* epoxy primer before applying PURTOP 1000 membrane, which is suitable for contact with drinking water, has high waterproofing capacity and creates a very smooth surface which can help protect the fishes.

\*This product is manufactured and distributed on the Norwegian market by Mapei AS (Norway)



## FERENC PUSKÁS STADIUM Budapest (Hungary)

Completed in 2019, this stadium is dedicated to the footballer, Ferenc Puskás. For the plant service rooms, a waterproofing solution was needed, one that could guarantee excellent tensile strength, tear strength and elongation capacity, as well as long-term resistance to leaking between the various levels of the structure. Which is why the PURTOP SYSTEM was used, which included the application of a coat of PRIMER SN epoxy primer on the substrate, a broadcasting of quartz sand over the primer and then application of PURTOP 400 M hybrid polyurea membrane.

## BRAÇO DE PRATA Lisbon (Portugal)

Braço de Prata is a large, luxury residential complex to the north of Lisbon designed by Renzo Piano. Apart from waterproofing the roofs, the system also had to be resistant to fire and have an attractive finish. And with PURTOP FR polyurea membrane it was possible to satisfy both requirements.



## PALAZZO BN Lecce (Italy)

After a complete renovation of the building, this former branch of the Banco di Napoli bank is now an exclusive hotel. On the terraces on the top floor there is a large hanging garden with lawns and various trees. The roof was waterproofed by spray-applying PURTOP 1000 two-component, pure polyurea-based membrane.





## Kuala Lumpur (Malaysia) Syariah Courts of Justice

COMPLEX RENOVATION WORK ON THE ROOFS TO OVERCOME PROBLEMS WITH WATER INFILTRATIONS, CRACKING AND SPALLING CONCRETE

The Sharia Tribunal of the Federal Territories (MSWP) is a body of the Malaysian Federal Government responsible for dealing with judicial affairs and legal cases in compliance with mandates of the Islamic religion in the federal territories of Kuala Lumpur, Putrajaya and Labuan.

It refers to one of the two judicial systems in Malaysia: one civil and one religious. The latter, which only has jurisdiction over Muslim citizens, deals in particular with family and religious legal issues such as divorce, marriage, inheritance and child custody.

Islamic courts play an important role in the life of Malaysian citizens because Malaysia is a predominantly Muslim country. So, it is no coincidence that they are often found

in majestic buildings with architectural lines similar to those of mosques or other religious sites of the east. And the Syariah Courts of Justice in Kuala Lumpur is just one such example, featuring a complex of buildings around an internal courtyard characterised by light pink façades and white roofs with golden cupolas, surrounded by lush vegetation and, a little further away, the prominent skyscrapers of Kuala Lumpur.

### Leak-proof roofs

Some of the courtrooms and conference rooms in the Syariah Courts of Justice had numerous water infiltrations coming from the roofs, whose reinforced concrete



**TOP OF THE PAGE.** The Syariah Courts of Justice in Kuala Lumpur are inside a majestic complex featuring roofs adorned with golden cupolas.

**ABOVE.** Using spray-applied PURTOP 1000 membrane has overcome waterproofing and water infiltration problems caused by failure of the waterproofing system applied previously.

### RELIABLE PRODUCTS AND CONSTANT TECHNICAL SUPPORT FOR A COMPLEX PROJECT



Chew Tzu Hong

THE WATERPROOFING CONTRACTOR EXPLAINS THE CONTRIBUTION OFFERED BY MAPEI TO THE RENOVATION PROJECT

#### For which type of applications do you most frequently use polyurea-based membranes?

We choose this type of material when the project owner is looking for durable, high-performance, waterproofing protection for the concrete roof decks. This is especially true for refurbishment works where fast-track completion and long-term extension of service-life is expected.

#### In your opinion, what are the advantages of the polyurea membranes proposed by Mapei?

Mapei polyurea-based products offer several advantages and, among them, we especially appreciate their fast and easy application and ability to create a continuous waterproofing layer. Besides, we choose them due to their high performance and Mapei's ability to provide a strong successful track record for their use in different projects and countries.

#### What are the strengths of the collaboration with Mapei?

We especially appreciate Mapei's commitment in providing technical support. We know we can rely on expert, committed, and competent technicians that are always available and ready to support us.

#### Which were the main challenges involved in the works at the Kuala Lumpur Syariah Court?

First of all, we found out that the existing substrate was in poor condition and required extensive repair works and proper substrate preparation. We managed to overcome this problem by using specific Mapei solutions such as MAPEFLOOR EP 19 MT epoxy mortar.

Besides, the use of reliable, high-performance, easy-to-apply products such as those supplied by Mapei helped us to meet the tight deadlines for the completion of the works.

Director, Paints Depot Sdn Bhd (Malaysia)



**LEFT.** A detailed view of the roofs of the Syariah Courts of Justice upon completion of the waterproofing works.

The first step was to remove all the areas of screed that were no longer sound and then install metalwork for water drainage elements along the perimeter of the involved areas. The surfaces were then hydro-blasted and ground with diamond discs to remove any residual crumbling or detached materials and to make sure there would be a good bond for the materials applied after. The waterproofing membrane used for the previous repair work was also removed and the cracks in the substrates were repaired with epoxy resin.

It then came to the moment to apply the polyurea-based waterproofing system proposed by Mapei Malaysia. The first step was to treat the surfaces with PRIMER SN two-component epoxy primer mixed with QUARTZ 0.5 sand. In some of the sections MAPEFLOOR EP 19 MT, an epoxy mortar which is distributed in the Malaysian market by Mapei Malaysia, was also applied to make sure the surfaces were sufficiently level.

The final stage was the PURTOP 1000 two-component, solvent-free, pure polyurea-based waterproofing membrane, which was applied by spray with a high-pressure bi-mixer pump. Thanks to its high chemical resistance, flexibility and tear strength, this product is particularly suitable for waterproofing both new builds and existing structures such as roofs, including roof gardens and inverted roofs. In this particular case, it will ensure the roofs of the Syariah Court of Justice will have sound, perfectly waterproofed surfaces with no water infiltration for many years and, no less importantly, roofs with a high aesthetic impact in harmony with the majesty of the entire complex that measure up to the functions carried out below them.

substrates had been treated in the past with waterproofing products that had then gradually deteriorated over the years, leading to the problems of infiltrations, cracks and ponding water on the surfaces, spalling of portions of concrete and the formation of mould in corners between horizontal and vertical surfaces.

In 2019 the owner decided to overcome these problems with a new waterproofing solution and specified that it had to be a polyurea based system. Mapei Malaysia, the Malaysian subsidiary of the Group, proposed a specific, complete system that would guarantee high performance and durability, as well as being supported by numerous prestigious reference projects where the system had been successfully used in the past.



Find out more  
PURTOP 1000

**PROJECT INFORMATION**

**Syariah Courts of Justice,** Kuala Lumpur (Malaysia)  
**Period of construction:** early 2000s  
**Period of the Mapei intervention:** 2019-2020  
**Design:** Jabatan Kerja Raya (JKR)  
**Owner:** Jabatan Kehakiman Negara

(Federal Court of Malaysia)  
**Main contractor:** FBA Construction Sdn Bhd  
**Waterproofing contractor:** Paints Depot Sdn Bhd  
**Mapei coordinators:** Lim Kean Meng and Tengku Mohd Khairi Tengku Khalid, Mapei Malaysia

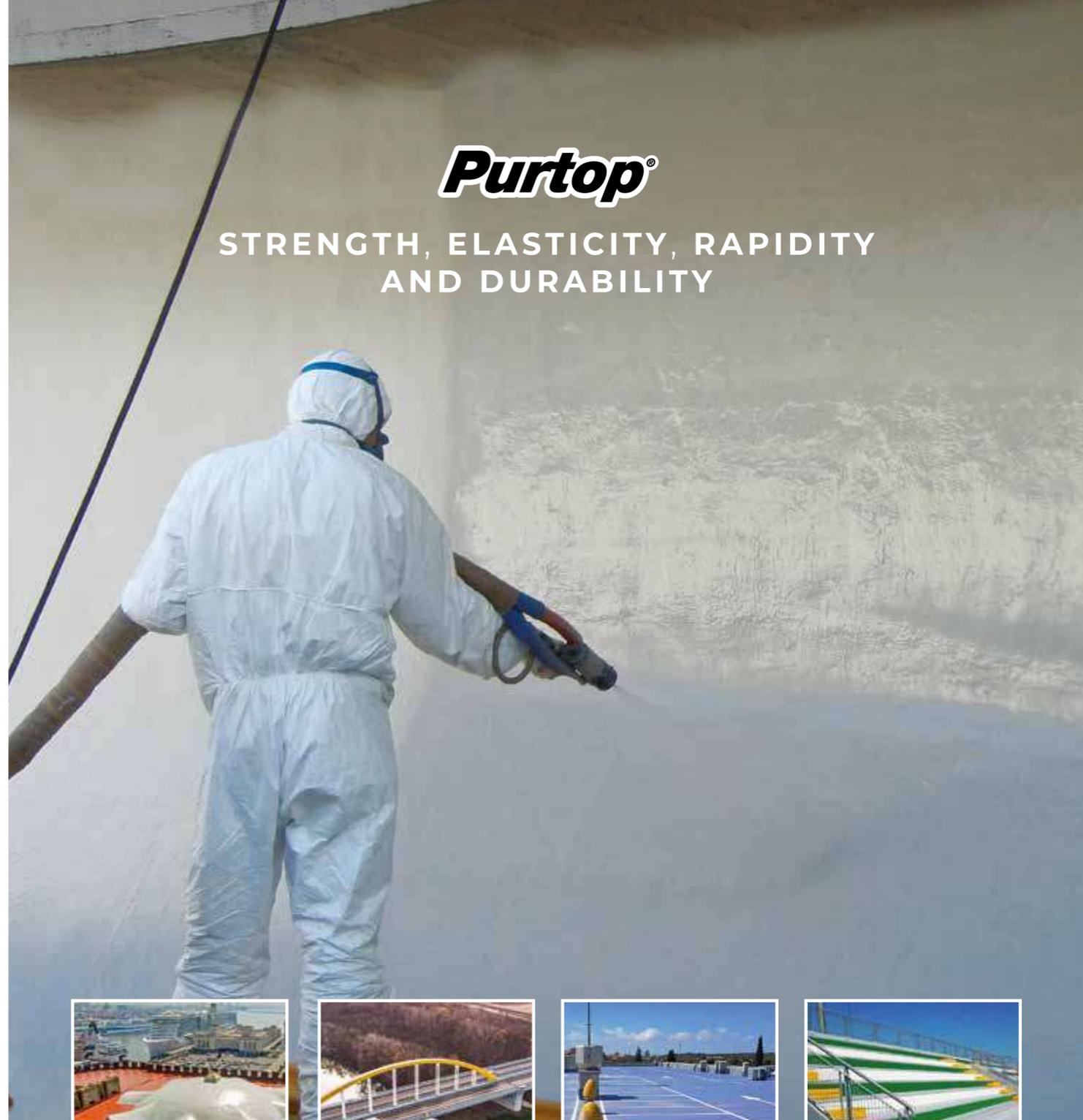
**MAPEI PRODUCTS**

Preparing substrates: Primer SN, Quartz 0.5, Mapefloor EP19 MT\*  
Waterproofing works: Purtop 1000

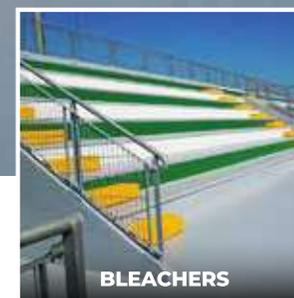
\*This product is manufactured and distributed in the Malaysian market by Mapei

Malaysia

For further information on Mapei products visit [mapei.com.my](http://mapei.com.my) and [mapei.com](http://mapei.com)



**Purtop®**  
**STRENGTH, ELASTICITY, RAPIDITY AND DURABILITY**



**Purtop** is a range of solvent-free polyurea waterproofing membranes which, once applied by spray, make surfaces immediately waterproof and ready for use. Thanks to their high mechanical characteristics and exceptional elasticity, they may be applied in various surroundings and on various substrates to create a strong, elastic waterproof layer that remains resistant over time.

**EVERYTHING'S OK WITH MAPEI**

Learn more on [mapei.com](http://mapei.com)





## Helsinki (Finland) Crown Bridges

A COMPLETE WATERPROOFING SYSTEM FOR ONE OF THE MOST IMPOSING INFRASTRUCTURE PROJECTS IN THE FINNISH CAPITAL

In August 2016 the Helsinki city authorities decided to construct a tram link between Helsinki and the island of Laajasalo, which lies to the east of the Finnish capital. The link will be 10 km long and will include three bridges, called Merihaansilta, Finkensilta and Kruunuvoorisilta, that will be accessible to trams, bicycles and pedestrians only. The longest of the three bridges will be 1.2 km, beating the previous record for Finland's longest bridge. The project also includes rebuilding the Näkinsilta and Hakaniemensilta bridges, thereby leading to the completion of five infrastructure projects in the city. Apart from reducing congestion on the eastern zones of the city's metro

network, the project will also provide fast and reliable transport to and from the Laajasalo area, which has a growing population and is forecast to double with the construction of a new residential district called Kruunuvoorenranta. The project is a clear sign of the will of the city's authorities to promote sustainable transport, including through the integration of different systems and networks, encouraged by the creation of footpaths and cycle lanes and expanding the tram network. All these initiatives are being carried out also to overcome the increase in population in the Finnish capital which, from 658,000 in 2020, is expected to reach 870,000 by 2060.

### A hybrid membrane for the decks

Construction work on the Crown Bridges project got under way in October, 2016 and is scheduled to be completed in 2026. From the autumn of 2022 until the autumn of 2023, a complete system proposed by Mapei OY, the Finnish subsidiary of the Group, was chosen to waterproof half of the decks of the Näkinsilta, Hakaniemensilta and Merihaansilta bridges: PURTOP SYSTEM DECK, which was applied over a total surface area of 13,600 m<sup>2</sup>.

The first step for this system was to treat the substrates, once they had been cleaned and sanded, with MAPEPRIMER M two-component epoxy primer, distributed on the Finn-



**ABOVE.** Hakaniemensilta Bridge is just a part of the prestigious Crown Bridges project which includes the construction of 3 bridges in the area to the east of Helsinki and the reconstruction of two existing bridges. Above, application by spray of PURTOP 400 M on several sections of the deck of the Hakaniemensilta Bridge.



### JANNE RUOHOLA AND ANTTI SUNI, SILTA ETTAN OY, TALK ABOUT THE ADVANTAGES OF USING MAPEI WATERPROOFING SYSTEMS

Silta Ettan OY is a Finnish company specialised in the application of waterproofing systems favouring the use of polyurea-based membranes. The company invests heavily into the quality and durability of its operational activities and uses EN 1504-10:2017 as a reference standard. The company regularly uses Mapei solutions to guarantee effective, high performance and long-lasting results. Since 2021 it completed waterproofing work on 45,000 m<sup>2</sup> of decks using Mapei solutions.

#### For what type of application do you most frequently use polyurea-based products?

We use polyurea-based products first and foremost for waterproofing bridge decks with asphalt or concrete substrates.

#### In your opinion, what advantages do polyurea membranes by Mapei offer?

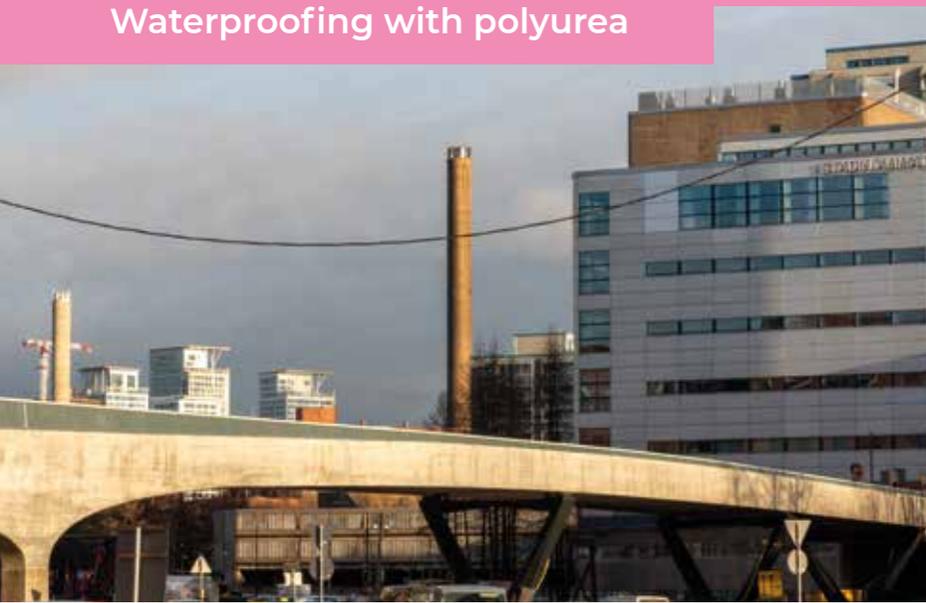
We appreciate the high and constant quality of products that lead to fewer problems arising on site. In addition, the elasticity of Mapei materials is higher than that of products from its competitors, and we also really appreciate the primers on offer which are able to completely seal pores.

#### What are the strong points of your collaboration with Mapei?

Firstly, I would say reliability. We always receive Mapei products when we need them, so we don't have to deal with problems of availability. Also, Mapei is really flexible when it comes to processing and managing orders and this flexibility proved to be invaluable, even during the periods affected by the Coronavirus pandemic.

#### What projects have you recently completed with the contribution of Mapei products?

Amongst the most recent I would like to mention the Veturitie Bridge in the Pasila district of Helsinki, several bridges for the Crown Bridges project in Helsinki, and the first integrated tram and bus terminal in the Ruskeasu district of Helsinki.



**ABOVE.** PURTOP SYSTEM DECK waterproofing system was also applied on the decks of the Näkinsilta bridge.

ish market by Mapei OY. This product is particularly suitable for both damp and dry concrete substrates to improve adhesion of layers to be applied afterwards and, in this particular case, the product was applied in two coats and broadcast with quartz sand.

The next layer consisted of PURTOP 400 M solvent-free, hybrid polyurea membrane, which was applied by spray at a thickness of 2.5 mm using a bi-mixer pump. Thanks to its high tear resistance, tensile strength and elasticity this product is particularly suitable for creating waterproofing membranes on bridge decks. In addition, PURTOP 400 M guarantees immediate waterproofing and rapid set to foot traffic, requires no extra strengthening and does not overload the load-bearing structure: characteristics which, along with its low emission of VOC and low impact on the environment, makes it particularly suitable for use on infrastructures in cities, such as the Crown Bridges in Helsinki.

For some of the bridges in the pro-

ject, such as the Näkinsilta, Hakaniemensilta and Merihaansilta bridges, asphalt coating was installed in areas used as tram and bus stops. To improve adhesion of the layer of asphalt to the surfaces waterproofed with PURTOP 400 M, these surfaces were treated with PURTOP PRIMER NERO, a one-component, low-viscosity anchoring primer used to promote adhesion, for surfaces waterproofed with PURTOP 400 M hybrid polyurea membrane or PURTOP 1000 pure polyurea membranes, before applying the keying coat for asphalt road surfaces. This waterproofing system met with the requirements of the owner, ensuring excellent performance. And so, it will be used again for other surfaces of the new sections of the bridges, currently under construction, which are part of the grandiose Crown Bridges project.



Find out more  
**PURTOP 400 M**

## THE FIGURES

**11 Km**

**DISTANCE REDUCED**  
BETWEEN  
KRUUNUVUORENRANTA AND  
HELSINKI CENTRAL STATION

**37,000**

**PASSENGERS**  
WILL USE THE TRAM LINK  
IN 2040

**7-9**

**MILLIONS/YEAR**  
EXPECTED INCREASE IN  
NUMBER OF PASSENGERS  
USING THE NEW TRAM LINK

**20 minutes**

**TIME REQUIRED**  
TO CYCLE FROM  
KRUUNUVUORENRANTA  
TO THE CITY CENTRE

**3,000**

**CYCLISTS PER DAY**  
WILL USE THE  
KRUUNUVUORI BRIDGE

### PROJECT INFORMATION Crown Bridges, Helsinki (Finland)

**Owner:** Helsinki City  
Council

**Period of construction:**  
2021-ongoing

**Design:** Ramboll Finland  
OY (as for Näkinsilta and  
Merihaansilta bridges),  
Sweco Finland OY and  
Sitowise OY

(as for Hakaniemensilta,  
Finkensilta and  
Kruunuvuorisilta bridges)

**Period of Mapei  
intervention:**

2022-ongoing

**Main contractor:** YIT  
Finland Ltd and Kreate OY

**Waterproofing  
contractor:** Silta Ettan OY

**Intervention by Mapei:**  
supplying a polyurea-

based waterproofing  
system for bridge decks

**Mapei coordinators:**  
Robin Stigzelius and Sami  
Vuorikoski, Mapei OY  
(Finland)

### MAPEI PRODUCTS

**Substrate preparation:**  
Mapeprimer M\*  
**Waterproofing work:**  
Purtop 400 M

**Surface treatment of  
waterproofing system:**  
Purtop Primer Black

\*This product is distributed  
on the Finnish market by  
Mapei OY (Finland)

For further information  
on products [mapei.com](http://mapei.com)  
and [mapei.fi](http://mapei.fi)



**PUR  
TOP<sup>®</sup>  
SYSTEM**

**Purtop System**, spray-applied polyurea membranes for **rapid waterproofing** and **protection** of any type of structure: from roofs, including those accessible to vehicles, to bridge and viaduct decks and hydraulic structures in general, for a **rapid, long-lasting** solution.

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WITH **MAPEI**

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Naples (Italy)

# Castel Nuovo

MAPEI SPONSORED THE REDEVELOPMENT PROJECT WITH A MEMBRANE OF THE LATEST GENERATION USED TO COUNTERACT WATER INFILTRATIONS



Royal residence, fortress, a place of culture: Castel Nuovo is one of the symbols of Naples and for almost a thousand years the theatre and a spectator of the history of the city.

Its construction started in 1279 under the reign of Charles I of Anjou (from whom it takes its commonly used name of Maschio Angioino) following which, over the centuries, it underwent various extension and renovation works. Today it maintains the same look it was given midway through the 15<sup>th</sup> century by Alfonso I of Aragon: an imposing building with a trapezoidal footprint encircled by five mighty round towers.

During the Middle Ages and the Renaissance era, it was the home of several monarchs, from the Angioine and Aragonese dynasties to the Bourbon dynasty in the 17<sup>th</sup> century, when court life transferred to the new Royal Palace. A centre of culture in the 14<sup>th</sup> century – with the presence of talented authors and painters like Francesco Petrarca, Giovanni Boccaccio and Giotto – it is now the home of various historical and cultural associations and the City Museum. Visitors are able to admire the Palatina Chapel, the only part that remains of the fourteenth-century Angioine castle, the Baroni Hall, where until 2006 Naples City Council held meetings, and the Armoury Room, along with numerous frescoes and paintings.

Mapei took part in the redevelopment work on Castel Nuovo as Official Sponsor. After replying to a request for tender issued by the City Council, a joint team was set



up between Mapei and the companies Sacés, Studio Discetti, Consorzio Campale Stabile and BTA to carry out the entire operation free of charge: from design work to works management, right up to the supply of materials and execution of the work.

Work was carried out on the roofs of the building to counteract the serious infiltrations of water into the Baroni Hall and the San Giorgio Tower, along with the adjacent areas, for a total surface area of around 2,500 m<sup>2</sup>.

## Substrate preparation

The first step was to prepare the substrates which were each approached differently according to the extent of the damage and the type of surface. These substrates were made up for three quarters of badly deteriorated bituminous membranes while the remaining portions were protected with a liquid-applied membrane.

In the areas with the bituminous membrane, which was suffering from localised damage, the membrane was cut and lifted, the water that had accumulated underneath was removed and then the membrane was fixed back in place.

The next step was to apply PRIMER PU 60 one-component, moisture curing polyurethane primer, to prepare the substrate for the waterproofing treatment applied after.

In the areas with the liquid membrane, on the other hand, the membrane was removed with a grinding machine to get rid of all traces of products and any loose material and the substrate was repaired by applying MAPEGROUT 430 fibre-reinforced thixotropic mortar (which is now available as MAPEGROUT 430 ZERO). Once the membrane had been removed and the cementitious substrates had been levelled off, a coat of PRIMER SN, a two-component, fillerized epoxy primer, was applied and then broadcast with QUARTZ 0.5 sand.

After cleaning the metal work with grinders and pneumatic drills, it was sanded down and a coat of MAPEDECK PRIMER 200 adhesion promoter for polyurethane systems was applied.

## Waterproofing the surfaces

Once the substrates had been prepared it was time for the actual waterproofing of the surfaces, which was achieved by spray-applying PURTOP 500 N two-component, solvent-free, rapid-reticulation, hybrid polyurea membrane with a bi-mixer pump at a rate of 2.2 kg/m<sup>2</sup>



and a thickness of around 2 mm. This system adheres firmly to substrates and, after reticulation, forms a strong, continuous, and flexible membrane ready for foot traffic very soon after application. Thanks to its high tensile strength and crack-bridging capacity (including at low temperatures), this product is able to adapt to substrates of any shape or form without cracking.

The final stage was to apply two coats of coloured MAPECOAT PU 20 N two-component, aliphatic polyurethane topcoat for membranes from the PURTOP range. Where required, QUARTZ 0.5 sand was applied between the first and second coat to create a non-slip, matt finish.



Find out more  
**PURTOP 500 N**



1. MAPEBAND TPE, a special type of TPE tape used to create elastic waterproofing and seal expansion joints, was applied where there were changes in slope and fillets. The tape was bonded in place with ADESILEX PG1 adhesive.
2. Once the cementitious substrates had been levelled off, PRIMER SN was applied and then broadcast with QUARTZ 0.5.
3. All the surfaces were waterproofed by spray-applying PURTOP 500 N two-component hybrid polyurea membrane.
4. MAPECOAT PU 20 N two-component polyurethane finish was applied after creating the waterproofing layer.

## PROJECT INFORMATION

**Castel Nuovo, Naples (Italy)**  
**Period of construction:** 1279-1384  
**Original design:** Pierre de Chaulé  
**Year of the renovation intervention:** 2003  
**Intervention by Mapei:**

supplying products for waterproofing roofs  
**Owner:** Naples City Council  
**Designer and works direction:** Paolo Discetti  
**Contractors:** B.T.A. S.r.l. and Consorzio Campale Stabile  
**Mapei coordinators:**

## WHAT THEY SAID

*“By using the most suitable primer, we were able to apply the waterproofing product whatever the type of substrate. Once work had been completed, to replicate its original aesthetic appearance, it was decided to use a finish resistant to UV rays, due to its constant exposure to sunlight, in colours specified by the designers, the Works Director and the Local Heritage Authority”.*

**Paolo Discetti, Designer and Works Director**

*“Thanks to the polyurea waterproofing system proposed by Mapei, we were able to guarantee perfect waterproofing in a very short space of time”.*

**Pasquale Maisto, B.T.A. srl**

*“Thanks to the company’s technologies, Mapei was able to restore Castel Nuovo in compliance with the safeguarding indications specified by the Archaeological, Fine Arts and Landscape Authority”.*

**Giuseppe Puttini, Sacés**

*“The aim of the work was to restore the waterproofing systems for the roofs in a short space of time without removing the existing layers. And this is why we decided using a polyurea system would be the most suitable solution”.*

**Maria Antonia Manna, Mapei SpA**

*“Over the course of its history Mapei has developed particular awareness for places of art. Our technologies and skilled employees are a vital contribution in making them come alive and durable, to the benefit of the entire community”.*

**Giuseppe Mastroianni, Mapei SpA**



Watch the video  
to learn more

Dino Vasquez, Giuseppe Mastroianni, Maria Antonia Manna, Chiara Galimberti, Anna Bortolussi (Mapei SpA), Giuseppe Puttini, Sacés Srl (Italy)

## MAPEI PRODUCTS

**Preparing substrates:** Primer PU 60, Mapegrou

430, Mapecoat I 600 W, Quartz 0.5, Primer SN, Triblock P, Mapedeck Primer 200  
**Waterproofing:** Purtop 500 N, Mapeband TPE, Adesilex PG1  
**Finishing the surfaces:** Mapecoat PU 20 N  
[mapei.com](http://mapei.com)

**Pescara (Italy)**

# Santo Spirito hospital heliport

THE HELIPAD WAS RECENTLY RENOVATED TO MAKE IT WATERPROOF AND RESISTANT TO LOADS

The heliport at Santo Spirito hospital in Pescara is one of the two bases in the region of Abruzzo (Central Italy) used by the emergency services. The helipad is an area on top of a multi-storey carpark from where patients can be taken directly to the A&E department. The helipad had various damaged areas and, in 2020, Pescara Local Health Authority decided the time had come to renovate it to guarantee a waterproof surface that would be able to withstand loads.

**Work on the helipad**

The total area covered by the work was around 2,000 m<sup>2</sup>, 650 of which were for the actual helipad. For the waterproofing work Mapei experts proposed using a series of specific products to create a seamless waterproof layer. It was decided to use PURTOP 1000 – a two-component, solvent-free, pure polyurea-based membrane applied by spray with a high pressure bi-mixer pump – as part of PURTOP SYSTEM DECK, a dedicated system for waterproofing roofs used by vehicles and for bridge and viaduct decks.

Preliminary work was carried out with power tools to prepare the surface which, by removing the old concrete layer, eliminated all traces of dirt, loose deposits and residues.

The next step was to waterproof the structural joints by applying a 1-2 mm thick layer of ADESILEX PG4 epoxy adhesive, followed by the application of MAPEBAND TPE tape sidelong reinforced with polyester non-woven fabric. A second layer of ADESILEX PG4 was then applied so that the new layer completely covered the edges of the tape. The entire area was then skimmed using a flat trowel and, while the products were still fresh, it was broadcast with QUARZT 0.5 sand, which was then removed once the adhesive had cured.

Runoff points to discharge surface rainwater were created by installing stainless steel drains inside holes made through the concrete layer. An even coat of ADESILEX PG4 was applied “wet on wet” and the stainless steel drains were inserted, followed by a further coat of epoxy adhesive. In order to create a sufficiently rough surface and improve adhesion of the waterproofing product,

the surface was broadcast with QUARZT 0.5 quartz sand, which was then removed once the adhesive had cured. The fillet joints between horizontal and vertical surfaces were sealed with MAPEFLEX PU 45 FT one-component, rapid, high modulus, thixotropic polyurethane sealant.

**Waterproofing operations**

Once the concrete surface had been cleaned and prepared and the substrate was dry or had less than 4% residual moisture, it was primed with PRIMER SN two-component, solvent-free, fillerized, epoxy resin-based adhesion promoter. The product ensured that all the surface porosity in the substrate was completely sealed. While the product was still fresh it was then broadcast with QUARTZ 0.5.

After cleaning all the metal features, such as the channels around the perimeter and the flashing, they were treated with PRIMER EP RUSTOP to improve the bond of the waterproofing product applied afterwards.

After properly preparing the substrates, PURTOP 1000 two-component, solvent-free, polyurea membrane was applied by spray to waterproof the surfaces. The membrane was applied seamlessly over all the horizontal surfaces and hemmed up along the sides, as well as on the inside of the drains positioned on the surfaces, with the thickness of the membrane being a minimum of 3 mm in the landing area and of at least 2 mm on all the remaining surfaces. Thanks to its excellent crack-bridging properties, including at low temperatures, its elongation capacity, resistance to mechanical loads and stresses and its ability to follow irregularities in substrates, PURTOP 1000 is able to form an elastic, seamless and highly resistant waterproofing layer.

The final step was to apply three layers of MAPECOAT TC coloured, wear-resistant, slip-resistant aliphatic polyurethane finish to protect the whole system.



Find out more  
**PRIMER SN**



After treating the substrates with PRIMER SN+QUARTZ 0.5 and, in some areas, with PRIMER EP RUSTOP, surfaces were waterproofed with PURTOP 1000 polyurea membrane. Surfaces were then finished with MAPECOAT TC coloured, wear-resistant, aliphatic polyurethane finish.



**PROJECT INFORMATION**  
**Santo Spirito hospital heliport**, Pescara (Italy)  
**Year of construction:** 2021  
**Year of the Mapei intervention:** 2021  
**Intervention by Mapei:** supplying products for waterproofing the helipad

surfaces  
**Owner:** Pescara Health Authority  
**Design and works direction:** Luigi Lauriola  
**Waterproofing contractors:** Resin System Italia and Simcor Costruzioni Generali

**Mapei coordinators:** Andrea Ficca, Mapei SpA (Italy)  
**MAPEI PRODUCTS**  
**Preparing substrates:** Primer EP Rustop, Primer SN  
**Waterproofing joints:**

Adesilex PG4, Mapeband TPE  
**Waterproofing surfaces:** Purtop 1000  
**Finishing surfaces:** Mapecoat TC  
 For further information on products visit [mapei.com](http://mapei.com)

**Belpasso (Province of Catania, Italy)**

# Etnapolis shopping centre

THIS COMPLEX DESIGNED BY MASSIMILIANO FUKSAS NEEDED A COMPLETE OVERHAUL OF THE ROOF-TOP CARPARK



Built in the Sicilian town of Belpasso (Province of Catania, Italy) in 2005, the Etnapolis shopping centre was designed by Studio Fuksas design firm. In the shopping centre there are 130 outlets and a hypermarket, 30 restaurants and bars, a cinema with 12 screens and parking for more than 5,600 cars. In terms of size – it is more than 1 km long and extends over an area of around 100,000 m<sup>2</sup> – it is the fifth largest shopping centre in Italy. Between 2018 and 2019 the company that manages the shopping centre decided the facility needed to be renovated, particularly the rooftop carpark which was showing serious signs of water infiltrations.

Before commencing work, the main contractor carried out a series of pull-off tests and took core samples to verify the strength of the existing industrial floor in order to prepare the surfaces as well as possible, following which the PURTOP pure polyurea-based system was applied.

**A complete waterproofing system**

Renovation work on the roof open to vehicles (an area of around 46,500 m<sup>2</sup>) got under way with preparation work of the surfaces.

After preparing the substrate and levelling off the surface with MAPEGROUT LM2K cementitious mortar, the

next step was to apply a coat of PRIMER SN, two-component, fillerized epoxy primer, broadcast with QUARTZ 0.5 sand.

For the areas with metalwork, it was recommended to apply a coat of PRIMER EP RUSTOP two-component epoxy primer which is especially suitable for metal surfaces. All the structural joints on the roof driven over by vehicles were treated by applying MAPEBAND TPE tape with ADESILEX PG4 adhesive and then sealed, similarly to the joints around the perimeter.

After cleaning the surface, it was sprayed with PURTOP 1000 polyurea membrane using a high pressure bi-mixer pump. Characterised by its high chemical resistance, flexibility and tear strength, this system is ideal for all types of new and existing buildings that need a high-performance waterproofing membrane.

Final protection for the system was provided by applying two coats of MAPECOAT PU 20 N, a two-component coloured aliphatic polyurethane topcoat for membranes from the PURTOP range.



PURTOP 1000 polyurea membrane was chosen to waterproof the substrates of the carpark on the roof. It was applied by spray using a high-pressure bi-mixer pump.



Find out more  
MAPECOAT PU 20 N

**PROJECT INFORMATION**  
**Etnapolis shopping centre,**  
 Belpasso (Catania, Italy)  
**Design:** Studio Fuksas  
**Year of construction:** 2005  
**Period of renovation:** 2018-2019  
**Period of the Mapei intervention:** 2018-2019  
**Intervention by Mapei:**

supplying products for waterproofing the carpark on the roof  
**Design:** Ceetrus Italy (Vito Vernavà)  
**Owner:** Morgan Stanley SGR  
**Main contractor:** T.E.M.A.R. srl  
**Mapei coordinators:**

Dino Vasquez, Roberto Pasquali, and Emiliano Ligios, Mapei SpA (Italy)

**MAPEI PRODUCTS**  
**Repairing surfaces:** Mapegrout LM2K  
**Preparing substrates:** Mapeband TPE, Mapeflex PU40, Primer SN, Primer

EP Rustop, Quartz 0.5  
**Waterproofing surfaces:** Purtop 1000  
**Finishing surfaces:** Mapecoat PU 20 N

For further information on products visit [mapei.com](http://mapei.com)

# A selection of projects

PURTOP HYBRID AND POLYUREA MEMBRANES ARE SUITABLE FOR VARIOUS AREAS OF USE AND ARE ALWAYS A GUARANTEE OF DURABILITY AND HIGH PERFORMANCE



## Hármás-Körös Bridge, M44 motorway, Kunszentmárton (Hungary)

For the deck of the Hármás-Körös Bridge crossing the M44 motorway the client was looking for a spray-applied waterproofing solution that would ensure durable, sound waterproofing over time. It was recommended to use PURTOP, a waterproofing system with high adhesion, good flexibility and excellent performance characteristics. The first step was to treat the surface with a coat of MAPEFLOOR I 914 epoxy primer, followed by application, using a high pressure spray gun, of a 2 mm thick layer of PURTOP 400 M two-component, highly flexible, hybrid polyurea membrane with high tensile strength. For the final finish it was recommended to use PURTOP PRIMER NERO, a one-component, solvent-based primer, specific for improving adhesion of asphalt paving on surfaces waterproofed with products from the PURTOP range.



## Magna Graecia University, Catanzaro (Italy)

Work was carried out on a total surface area 2,700 m<sup>2</sup> to restore the waterproofing system on the terraces and the stepped roofs of the Faculty of Jurisprudence and the University Library, which had been suffering from serious water infiltrations for some time. Once the substrates had been prepared, the surfaces were primed with TRIBLOCK P epoxy cementitious primer and, after two days, a coat of PRIMER SN

adhesion promoter was applied and broadcast with QUARTZ 0.5 quartz sand. PURTOP 1000 polyurea membrane was chosen to waterproof the roofs, which was applied by spray to form a continuous layer over all the horizontal surfaces and hems along the adjacent vertical surfaces, as well as inside the drains. To guarantee its durability, it was then finished off with MAPECOAT PU 20 N top coat..

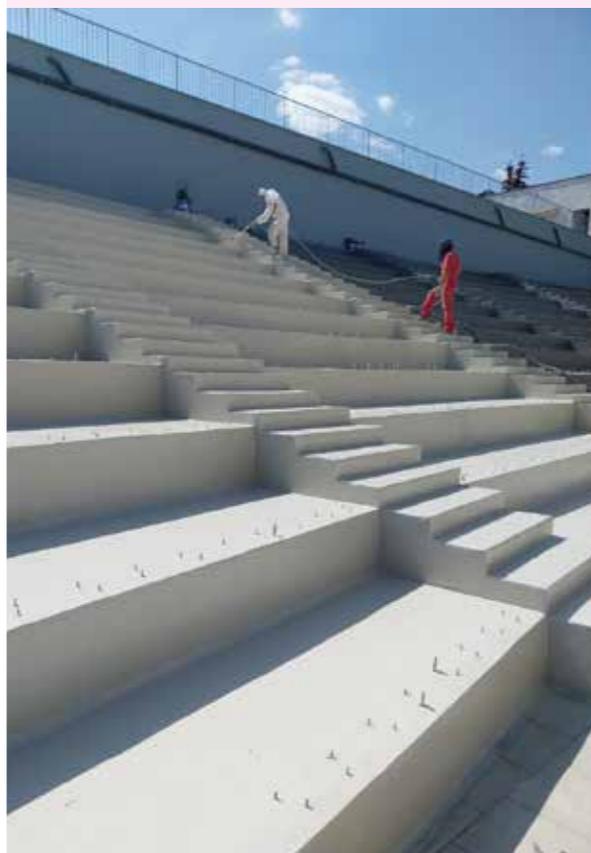


## Lysaker Brygge carpark Oslo (Norway)

PURTOP waterproofing system was employed for the floor of a multi-storey carpark in Oslo. Work commenced with the first stage being the application of MAPEPRIMER M. This product (distributed in Norway by Mapei SA) is used for creating epoxy and polyurethane coatings on floors, walls and balconies. After applying the product with a roller, while the primer was still fresh, it was broadcast with 0.4-0.8 mm sand. PURTOP 1000 pure polyurea-based membrane was applied by spray. MAPEPRIMER M mixed with sand was applied to form a fillet in the joint between the floor and the columns and the final step was to apply a seamless coating of PURTOP 1000 at the base of the columns to a height of around 15 cm above the floor.

### Shumen Summer Theatre Shumen (Bulgaria)

One of the attractions of Shumen is the Summer Theatre with seating for 900 spectators arranged in the form of an amphitheatre. Several years ago certain areas of the theatre needed to be refurbished to modernise the part used by the actors and workers and to renovate the waterproofing system. The latter part of the work was carried out on the terraces of the amphitheatre. The main contractor contacted the local Mapei Technical Services, who recommended using PURTOP waterproofing system. The first step was to treat the substrates with MONOFINISH LM one-component, fibre-reinforced cementitious mortar with low permeability to water and high resistance to aggressive agents. MAPETHERM NET glass fibre mesh was embedded within the layers of MONOFINISH LM. The surface was then primed with PRIMER SN, followed by a spray-application of PURTOP 1000 pure polyurea-based waterproofing membrane. The membrane was then finished off by applying MAPECOAT PU 20 N, a coloured protective top coat with high level of elasticity and excellent resistance to abrasion.



### Private residence Domagnano (Republic of San Marino)

For this newly built villa with minimalist lines Mapei products were specified to waterproof the surfaces of the roof and install ceramic tiles. The surfaces of the roof under the photovoltaic panels were waterproofed by applying PURTOP 1000 pure polyurea-based membrane. ELASTORAPID two-component cementitious adhesive was used to install the small-format ceramic tiles while the adhesives ULTRALITE S2 and ULTRABOND ECO PU 2K were used to install large format tiles.

### iGuzzini manufacturing plant, Recanati (Province of Macerata, Italy)

The iGuzzini works has a saw-tooth roof covering a total area of 2,200 m<sup>2</sup>. The 29 beams supporting the roof, which are waterproofed with a mineral-filled bituminous membrane, act as channels to collect and discharge rainwater. Metal casings direct the water from the roof to the channels. Once cleaned, the joints between the bituminous membrane and the metal casings connecting the roof and photovoltaic panels were sealed with MAPEFLEX

PU45 polyurethane sealant (which is now available as MAPEFLEX PU 45 FT). The surface of the membrane was then treated with PRIMER BI while the metal parts were treated with PRIMER EP RUSTOP. This was followed by spray-applying PURTOP 400 M two-component, hybrid polyurea membrane. To increase its resistance to UV rays, wear and aggressive chemicals, it was then finished off by applying MAPECOAT PU 15 two-component, aliphatic polyurethane coating with a roller.



### Bridge over River Segno, Vado Ligure (Province of Savona, Italy)

Built in 2013, this bridge over the River Segno in Northern Italy is a single-span structure with two lanes for traffic, whose asphalt road surface was showing problems with the waterproofing. The bridge deck was treated with PRIMER EP RUSTOP which was broadcast, while still fresh, with QUARTZ 0,5 sand. The next step was to apply PURTOP 1000 polyurea membrane. PURTOP PRIMER NERO was then applied on the membrane, which was also broadcast with QUARTZ 1.2. To complete the work, an asphalt mat was applied with a tack coat of modified bitumen.

# From foundations to roofs... all Mapei waterproofing solutions



Chiara Galimberti



A few photos of sites where Mapei waterproofing products were employed.

NOT ONLY POLYUREA. A LINE WITH A 43-YEAR HISTORY: FROM THE FIRST WATER REPELLENT PRODUCTS TO THOSE WITH FULLY OFFSET CO<sub>2</sub> EMISSIONS

The Mapei waterproofing line has a 43 year history. It was in 1980 when IDROSILEX was introduced as an admixture to create waterproof mortars to protect and waterproof underground areas. During the 80's and 90's, important studies and research work then led to the development of a two-component, flexible cementitious mortar for protecting and waterproofing concrete structures: the introduction in 1992 of MAPELASTIC, a product renowned on all markets for its excellent protection and waterproofing qualities which soon became the reference product for treating balconies and terraces. 2006 to 2008 proved to be a decisive turning point for the waterproofing sector in Mapei, thanks to the acquisition of Rasco Bitumentchnik GmbH in 2006 and Polyglass in 2008, and the definition and creation of the waterproofing products line, opening the solutions portfolio to numerous technologies for both underground structures and roofs. Introduced soon after were MAPETHENE self-adhesive bitumen membranes and the PLASTIMUL range of water-based bitumen emulsions for treating

underground structures and, in addition, MAPEPROOF bentonite sheets and their accessory items (hydro-swelling joints and PVC waterstops) to complete the portfolio of waterproofing systems for foundation structures. The portfolio of solutions for structures below ground level grew even further with the introduction of a new, flexible cementitious membrane. In fact, it is in these years that the formulation for MAPELASTIC FOUNDATION was developed, a product appreciated for its many pluses and its capacity to resist negative pressure of 1.5 atm, thereby making this product particularly interesting for restoring waterproofing in underground areas from the inside. Apart from MAPELASTIC FOUNDATION, in the same arc of time a one-component, flexible cementitious version was created called MONOLASTIC which, alongside MAPELASTIC, represent the most widely sold waterproofing solutions for balconies and terraces in combination with the accessory items including MAPEBAND tapes, and MAPENET 150/MAPETEX SEL N meshes and fabrics and the DRAIN line of drainage outlets.

In 2010 attention on the waterproofing line turned to liquid membranes, particularly with the development of MAPELASTIC AQUADEFENSE, the first ready to use product for waterproofing underneath ceramic coverings. This was followed in 2011 by the addition of the AQUAFLEX ROOF range of acrylic roofing membranes aimed primarily at the renovation and waterproofing restoration sectors. To complete the portfolio of waterproofing products, in 2009-2011 the PURTOP range was developed and a dedicated selection of articles is featured in this issue of the magazine to highlight its exceptional characteristics and possible applications. After laying the foundations for a complete product line that would enable us to supply waterproofing solutions from foundations right up to roofs, in 2014 the company and its waterproofing products line focused their attention on extending and completing the portfolio of products with specific characteristics. Going into detail, September 2014 saw the introduction of MAPELASTIC TURBO, the revolutionary two-component, elastic cementitious product for waterproofing balconies and terraces with not

completely dry but cured substrates. This innovative formulation became particularly appreciated by users because it met specific market requirements: the need for a product that remains fluid at any temperature, a product that cures without forming residues and, above all, one that could be used on substrates which are not completely dry but sufficiently cured. Also, from 2017 until now, there was the start of an important period of in-depth technical analysis for the waterproofing line and the development of synthetic membranes for underground structures. In fact, the work carried out to introduce MAPEPROOF FBT, MAPEPROOF AL AP and MAPEPROOF FBH fully-bonded membranes put us in a position to approach the market which, until then, had been the exclusive domain of our competitors but, thanks to our experience and knowledge of waterproofing methods for underground structures, we were able to gain a foothold. Going into detail, thanks to these synthetic membranes, along with our capillary network of training activities, we managed to capture the attention of designers in

## THE DEVELOPMENT OF THE WATERPROOFING PRODUCTS LINE



an increasingly important topic: awareness of Radon gas in new buildings and buildings under restoration. A fundamental characteristic of these synthetic membranes, in fact, is that they form an effective barrier against the penetration of Radon gas in underground structures, an area of application for which standards are under review and for which it is expected the minimum level of Radon for indoors in homes and in new buildings open to the public will be lowered in 2024-2025 to 200 Bq/m<sup>3</sup>.

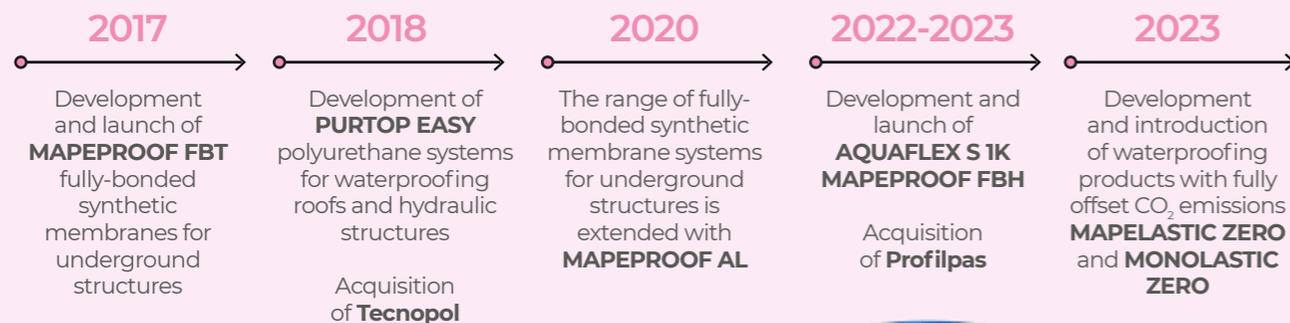
In 2018–2019 the waterproofing line was extended even further with the addition of polyurethane liquid membranes, a particular request of a market focused on research into manually-applied liquid products with excellent adhesion to a wide range of substrates and excellent mechanical properties, not to mention the possibility of creating diversified stratigraphic layouts. Following the acquisition of Tecnopol and the introduction of PURTOP EASY membranes, Mapei was able to meet these application requirements for roofs, terraces and balconies, and also for waterproofing work in storage tanks and basins for drinking water with the PURTOP EASY DW membrane. And that's not all; this type of membranes can be left with an exposed finish or covered with ceramic tiles.

In 2022-2023, a new, ready to use, non-toxic membrane was developed for roofs, balconies and terraces. AQUAFLEX SIK replaced silane technology for the sector of building specialised in liquid waterproofing membranes. Besides, thanks to the acquisition of Profilpas, a company specialised in producing and distributing profiles for floor and wall coverings, shower channels and installation accessories, the portfolio of Mapei waterproofing solutions was enhanced with a range of accessories for balconies and terraces, such as profiles for the front edge of tiled balconies and special adjustable supports to create raised floors.

With the sector trade fairs in 2023 (Cersaie, Saie and Made Expo) the first waterproofing products with fully offset CO<sub>2</sub> emissions were presented to the Italian market: MAPELASTIC ZERO and MONOLASTIC ZERO, the first two products from the waterproofing line which, together with adhesives, restoration and repair mortars, wall coatings and products for cleaning, maintaining and protecting ceramic and stone surfaces make up the Zero Line, the range of Mapei products whose CO<sub>2</sub> emissions are measured throughout their life cycle in 2023 using LCA methods, verified and certified with EPDs, and then fully offset through the acquisition of certified carbon credits in support of renewable energy and forestry protection projects. Over the course of these first 43 years of the waterproofing line, many markets have been explored, numerous sites have been successfully completed and a host of challenges have been overcome. All this has led to us acquiring even more knowledge and a deeper understanding of issues pertaining to this sector, generating the development and introduction of new waterproofing technologies and solutions. All this has enabled the line itself and the company to grow in this specific sector, leading Mapei to becoming a trusted partner for waterproofing solutions. And all this would not have been possible, and will not be possible in the future, if it wasn't for a constant commitment to research and innovation, but also to the constant dedication running through every member of our product line specialists out in the field who, day by day, propose and promote waterproofing solutions to our clients, contractors and design studios. So, borrowing the words from Mapei's former CEO, Giorgio Squinzi, I urge you to "Never stop pedalling!"

**Chiara Galimberti**, Corporate Product Line and Technical Service Specialist, Waterproofing line, Mapei Group

# Building a **SUSTAINABLE** future together



## NOW YOU CAN CHOOSE PRODUCTS WITH FULLY OFFSET CO<sub>2</sub> EMISSIONS

When waterproofing balconies, terraces, bathrooms, showers and swimming-pools, choose mortars with fully offset residual CO<sub>2</sub> emissions through renewable energy and reforestation projects. A valid choice for new constructions and increasingly sustainable redevelopment projects by focusing on the wellbeing of the environment, the planet and future generations. **Choose sustainability for all your projects, with Mapei.**



CO<sub>2</sub> 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. A commitment to the planet, to people and to biodiversity.



EVERYTHING'S OK WITH **MAPEI**

Learn more on [mapei.com](https://www.mapei.com)





Marco Roma

45 years in Canada

# Stronger presence in new market segments

MARCO ROMA, GENERAL MANAGER OF MAPEI INC (CANADA): WE HAVE EXPANDED OUR RANGE OF PRODUCTS TO BOOST THE MAPEI BRAND

**Mapei began its process of internationalisation after opening its first overseas plant in Canada in 1978. Canada also paved the way for the Group's investments in the United States. How has Mapei's presence in Canada changed over the years and what are the prospects?**

The establishment of the Laval plant in 1978 started off as an opportunity to capitalize on the momentum created through Mapei's involvement in the 1976 Olympics in

Montréal. The prompt geographical expansion of the Canadian operations was our own gold medal race as we soon after opened other facilities, expanding the operations westward to Brampton, Ontario, and later to Delta, British Columbia. We quickly understood that Canada was an attractive market full of potential for our new Tile & Stone Installation Systems and Resilient and Textile Floor Covering Installation Systems technologies. Today, all three of our product

manufacturing facilities have undergone expansion, and we now count a regional distribution centre in Calgary, Alberta, among our locations. In addition, we have expanded our product offering exponentially, supplying the Canadian construction industry with thousands of products from 11 product lines. Our focus now is expanding the trusted Mapei brand and reputation towards new areas of focus, notably concrete admixtures and cement additives,

## MAPEI'S BUSINESS OPERATIONS IN CANADA



1. HEADQUARTERS, R&D LABORATORY AND MANUFACTURING PLANT Laval, Québec



2. MANUFACTURING PLANT Maskinongé, Québec

CANADA



3. MANUFACTURING PLANT Brampton, Ontario



4. MANUFACTURING PLANT Delta, British Columbia



5. DISTRIBUTION CENTER Calgary, Alberta

industrial cementitious and resin floorings, concrete repair systems, and underground tunnelling technology.

**In September, Mapei opened a new manufacturing plant and a new warehouse at the Laval site in Québec. How does this investment fit into Mapei's expansion plans?**

Mapei in Canada has grown by leaps and bounds to become an industry leader. This growth now

distribution of powder products, such as mortars and self-levelling compounds. Producing all these products - locally and in a single location - enables us to serve our customers even more efficiently. The new facility allows us meet Northeastern Canada's growing need for construction materials, admixtures for concrete and cement grinding aids.

The new powder line in Laval will produce 30,000 tons per year per shift. The new admixtures line will produce 7,000 tons per year per shift. The expanded warehousing space can now accommodate more efficient distribution of all this production. Overall, an additional 4715 m<sup>2</sup> complement the previous 11,892 m<sup>2</sup> that already house polymers plant, R&D Center for Excellence in Concrete Construction, and Canadian head office, also located at the site.

**The new plant meets product and process sustainability standards, one of the pillars of Mapei's philosophy and also a very widespread demand in the Canadian economy on a more general level. What does this policy mean in concrete terms?** This new production plant in

Québec allows us to supply even more materials to Eastern Canada, while freeing up production and warehousing capacity at our Ontario and British Columbia plants. By enhancing our ability to shift production accordingly for more localization between our plants in Ontario, Québec, and British Columbia, we can reduce our carbon footprint with quicker deliveries and shorter distances for transport of supplies to construction sites, impacting all regions of the country. Together with all Mapei Group's new initiatives - such as the CO<sub>2</sub> fully offset line of products<sup>1</sup> - we are greatly reducing our carbon footprint.

**There have always been close ties with the Italian-Canadian community in Canada. Are these ties still as close as ever?**

The Italian Canadian community and Mapei are as tightly connected

<sup>1</sup> CO<sub>2</sub> 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.

## The plant extension ceremony in Laval



On September 14<sup>th</sup>, Mapei Group's and Mapei Inc.'s executives took part in an inauguration event to mark the official opening of a new powders production plant and warehouse expansion at Mapei Inc. flagship manufacturing facility in Laval, Québec.

**“ A new manufacturing plant in Laval allows us not only to supply Eastern Canada more effectively but also to reduce the environmental impact of our operations**

required the expansion of our flagship facility in Canada. For many years, the Laval plant produced only liquid and paste adhesives and polymers. Now, following this expansion, we have a state-of-the-art facility for the production and

**MAPEI INC.**

**1978**

**FOUNDATION YEAR**

**4**

**MANUFACTURING PLANTS**  
IN LAVAL AND MASKINONGÉ  
(QUÉBEC), BRAMPTON  
(ONTARIO) AND DELTA  
(BRITISH COLUMBIA)

**1**

**DISTRIBUTION CENTRE**  
IN CALGARY (ALBERTA)

**1**

**RESEARCH &  
DEVELOPMENT LABORATORY**  
IN LAVAL

**363**

**EMPLOYEES**

**325,000**

**TONS**  
PRODUCTION CAPACITY/YEAR  
IN CANADA

**152**

**MILLION EUROS**  
TURNOVER 2022

**159.5**

**MILLION EUROS**  
FORECAST TURNOVER IN 2023

as ever.

Mapei Inc. is an active longstanding member of the Italian Chambers of Commerce in Canada. As a matter of fact, Mapei Inc. has recently won the prestigious "Premio Venezia" award from the Italian Chamber of Commerce in Canada for the 'Made in Italy' category in 2023.

We also support local Italian magazines that spread news about the community, such as *Panorama Italia*, *Corriere Italiano*, and *Il Cittadino Canadese*. For almost a decade, Mapei Inc. has been supporting the Italian Contemporary Film Festival (ICFF) in Toronto (Ontario), which has grown to become the world's largest Italian film festival outside of Italy.

Most recently, we were grateful to have His Excellency Andrea Ferrari, Ambassador of Italy in Canada, and The Honorable Tony Loffreda, Senator at the Senate of Canada, join us to speak at our inauguration ceremony for the new plant extension in Laval last September.

**In such a vast country, what are the distribution channels for Mapei products, what are the key issues and what strategy is Mapei Inc. adopting to work more closely and quickly with the local market?**

Canada is much bigger in terms of land mass than all of Europe, but its population is concentrated in 4-5 conglomerates. If we had known that land and building prices in major centers like Montréal, Toronto and Vancouver would skyrocket, the first thing we would have done differently was to buy bigger land. In the last half decade, we have decided to diversify markets by adding product lines that were not previously in our Canadian portfolio such as Concrete Admixtures, Cement Additives, and products for industrial floorings, but which were already well developed and rigorously tested by Mapei in Europe.

**In terms of marketing, which sports and projects are the focus**

**Canada, trailblazer for internationalisation**

For the Mapei Group, Canada is a special country: it was here in Laval (Québec) in 1978 that the first foreign subsidiary was opened, and the first manufacturing plant was inaugurated up outside Italy (the photo on the right shows the opening ceremony). This country and this plant marked the beginning of an internationalization process that has led the company to establish itself as a successful multinational operating on every continent. As early as 1976 Mapei had begun to



Mapei Inc. sponsors ice hockey teams like the Gatineau Olympiques (on the left) and also cycling on a local, regional and national level.



**of Mapei's investments and interests?**

Mapei Inc. carries the proud legacy of the Mapei Group globally, in supporting local sport and culture through organizations. In 2023, Mapei Inc. became an official partner of Cycling Canada, a not-for-profit organization whose mission is to promote cycling across Canada. Cycling Canada also manages the Canadian National Cycling Team, comprised of athletes from all

disciplines that represent Canada at international competitions, World Championships and Major Games. For many years now, Mapei Inc. has been promoting arguably the country's favourite sport: ice hockey. Mapei Inc. sponsors both the Kelowna Rockets (WHL) and the Gatineau Olympiques (QMJHL). The teams compete in the Canadian Hockey League (CHL), whose mission is to develop hockey by supporting its elite players

**“ Mapei Canada has been promoting ice hockey and cycling for a number of years as part of its commitment to both sports and education**

take its first steps on the Canadian market by supplying products for installing the athletic tracks used in the Montréal Olympics. But it was thanks to the Laval plant that it first began manufacturing and marketing adhesives for the installation of ceramic tiles, stone materials as well as resilient and textile floor and wall coverings in Canada and then the U.S. and throughout North America. Laval's facilities have also made a significant contribution to R&D. It was in Mapei Inc.'s R&D Laboratory

in Laval in the late 1980s that the ULTRABOND ECO line was created, the range of adhesives for the installation of textile, vinyl, linoleum, PVC or rubber floors and walls that helped Mapei revolutionise the building industry: in fact, these materials were among the first in the industry to be solvent-free and with very low emissions. They were first launched in Canada and, later on, in the USA and in the rest of the world. To support Mapei Inc.'s constant growth in Canada, other

manufacturing units have been added to the Laval plant over the years: the plant in Maskinongé (Québec) opened in 1995 for the manufacture of re-dispersible polymers; the Brampton plant (in Ontario) was then opened in 2001, specialising in powder products for installing ceramic and stone materials and systems for repairing concrete, followed by a new plant in Delta, not far from Vancouver, in 2001 and by a distribution centre in Calgary, Alberta, in 2008.

**An investment plan has been launched in the realms of concrete admixtures, cement additives, and cementitious and resin-based industrial floors**

between the ages of 16 and 21, both academically and athletically within a safe and enriching environment to prepare them for their adult life. In terms of marketing projects, we are looking into digitalizing processes and tools, from utilizing AI technology to adding digital customer experiences at trade shows. In a post-pandemic world, we are also focusing on in-person appreciation events and experiences for clients and prospects in longstanding markets, as well as support the launch of our new product lines and systems.

**Canada is one of the countries with the lowest unemployment rate: are there problems (and how are they being solved) in finding specialist staff with top-notch skills?**

Like many places around the world, hiring and retaining top

talent is a challenge. Nevertheless, Mapei has a unique culture as it is a multinational company that remains family owned and operated. This is what we promote and value when finding new, young talent. We pride ourselves on fostering a family-minded culture that places a premium on the individuality and well-being of each team member. Here, you're not just a number; you're an integral part of a supportive community that values and respects every unique contribution you bring to the table. Our commitment to respect extends beyond professional accomplishments, recognizing the personal dimensions that make each employee distinct. Togetherness is at the heart of the Mapei culture. We are strongest when we trust each other, pull in the same direction and have fun together.

## Mapei Inc. is awarded the "Premio Venezia"

In the elegant setting of Sofitel hotel in the heart of Montréal, Mapei Inc was awarded the "Premio Venezia" on 24<sup>th</sup> October. For 18 years now, the Italian Chamber of Commerce in Canada has awarded this prestigious prize to the very best business partnerships and synergies between Canada and Italy. Almost 200 guests attended the prize-giving ceremony for the three Italian companies (Mapei, Leonardo and iGuzzini) that have distinguished themselves for their business operations in Canada. The award acknowledged the contribution Mapei Inc. has made to the economic growth of Québec and Canada through job creation, investment and cooperation in Research & Development and, at the same time, the contribution Mapei products have made to the evolution of the Canadian building industry towards greater sustainability, durability and efficiency. The award was accepted by Marco Roma, General Manager of Mapei Inc..



On October 24<sup>th</sup>, Marco Roma (centre of photo) picked up the "Premio Venezia" on behalf of Mapei Inc., a prestigious prize that the Italian Chamber of Commerce in Canada has awarded for the last 18 years to the best joint-ventures and partnerships between Italy and Canada.

# So Ottawa is attracting foreign investments



Andrea Ferrari

ANDREA FERRARI, ITALIAN AMBASSADOR TO CANADA: INCENTIVES AND FUNDS FROM THE GOVERNMENT AND PROVINCIAL AUTHORITIES

**With a population of 39 million and high per capita income, Canada has a pro-innovation business culture offering great opportunities for business. What are the most interesting and promising sectors for investment by Italian companies?**

I believe that Canada has a lot of unexplored potential, which Italian companies, with their creativity and strive for innovation could take advantage of. Among the most interesting sectors for Italian investments and exports, I can recall:

1. Clean Energy and Renewable Resources. Canada has a strong commitment to clean energy and is a global leader in renewable resources. The country offers opportunities in wind, solar, hydro, and biomass energy projects, as well as energy storage and smart grid technologies.
2. Advanced Manufacturing. Canada's advanced manufacturing sector is strong, emphasizing high-tech industries such as automotive parts and components, machinery, aerospace equipment, and robotics. There is room for Italian companies in these areas and leverage their expertise.
3. Construction and Information Technology and Digital Media. To this last regards, Canada's tech sector is thriving, particularly in cities like Toronto, Vancouver, and Montreal. Opportunities exist in software development, artificial intelligence, cybersecurity, cloud computing, e-commerce, and digital media production.

**Italian technologies are highly esteemed in Canada. What initiatives are being undertaken by various Italian representatives in Canada to promote the innovative capabilities of Italian design and manufacturing and encourage the exchange of knowledge and information between the two countries?**

Italian representatives in Canada, including the Embassy, the Consulates, the Italian Trade & Investment Agency and Chambers of Commerce, organize business events, trade fairs and exhibitions, conferences, and seminars to showcase Italian technologies and products. These events provide a platform for Canadian businesses and individuals to learn about the latest innovations and technological advancements from Italy. In November, an online Business Matching Platform developed by Cassa Depositi e Prestiti was launched in Canada to connect Italian and Canadian companies.

**What measures are Canadian institutions (from the government to the Central Bank) taking to create an environment that is also conducive to investment by foreign companies?**

The framework of the Canadian economic system is composed of many different actors, such as the Federal Government and the various Provinces, with different tools aimed at attracting foreign companies. The Federal Government is trying, for example, to implement benefits and tax credits for companies that invest in green technologies, to compensate for the effects of the Inflation Reduction Act introduced by the US last year. Moreover, some federal funds support investments by foreign companies in Canada, focusing especially on the development of Southern Ontario (a strongly industrialized area). Most Provinces also compete in attracting foreign investments by contributing with local funds to the opening and expansion of successful foreign companies.

**Does the presence of a strong and well-established Italian-Canadian community in the country offer a useful means of promoting Italian manufacturing/design companies and industries?**

The presence of a strong and well-established Italian-Canadian community offers a useful means to promote Italian manufacturing/design companies and industries. Thanks to the cultural influence of many Canadians of Italian origin, it is possible to raise the interest and demand for our products and brands. The community's strong network and connections can provide valuable opportunities for Italian companies to establish partnerships, collaborations, and distribution channels. Italian-Canadians often maintain strong ties to their Italian roots and tend to exhibit a preference for Italian products. This preference can create a ready-made market for Italian companies, who can leverage the community's interest and pride in their heritage to showcase their products and gain a competitive edge in the Canadian market. The Italian-Canadian community frequently collaborates in organizing cultural events, festivals, and fairs that celebrate Italian traditions, cuisine, craftsmanship, and design. These events provide an excellent platform for Italian manufacturers to showcase their products, engage with potential customers, and build brand awareness among the community and the wider Canadian audience.

Andrea Ferrari. Italian Ambassador to Canada

## Niagara Falls (Ontario)

# Fallsview Casino Entertainment Centre

A HOST OF PRODUCTS TO INSTALL CERAMIC TILES AND STONE IN VARIOUS AREAS OF A LARGE ULTRAMODERN THEATRE

Visitors to the “Canadian side” of Niagara Falls, one of the “seven wonders” of this country, now have new ways of having fun: after admiring the grandiosity of the natural spectacle offered by the falls, they can relax in the new multifunctional theatre which opened its doors to the public in the summer of 2021 at Niagara Falls.

The Fallsview Casino Entertainment Center, with a capacity of 5,000 spectators, features cutting-edge technologies and perfect acoustics: and it is no coincidence that the stage is top-ranked among stages of the same

kind in Canada.

Mapei also took part in the construction of this large entertainments centre by supplying complete systems for the installation of more than 32,500 m<sup>2</sup> of ceramic tiles and stone (including Carrara marble) on the floors and walls of many areas in the centre. The materials provided by Mapei guarantee not only sound and durable installation of the various covering materials, but also a high level of sustainability. All the products used for this project have been tested by an external body



**RIGHT.** Ceramic and stone flooring were installed on most of the internal floors with ULTRAFLEX LFT\* adhesive. Granite slabs, on the other hand, were installed on the steps with GRANIRAPID SYSTEM\*.



which certified their very low emission of VOC (volatile organic compounds). The tests carried out are the most stringent used in the whole of North America and have enabled the products to obtain “Indoor Advantage Gold” certification issued by SCS Global Services.

All the products mentioned in this article are distributed on the Canadian market by Mapei Inc., apart from MAPELASTIC AQUADEFENSE, which is also available on the global market.

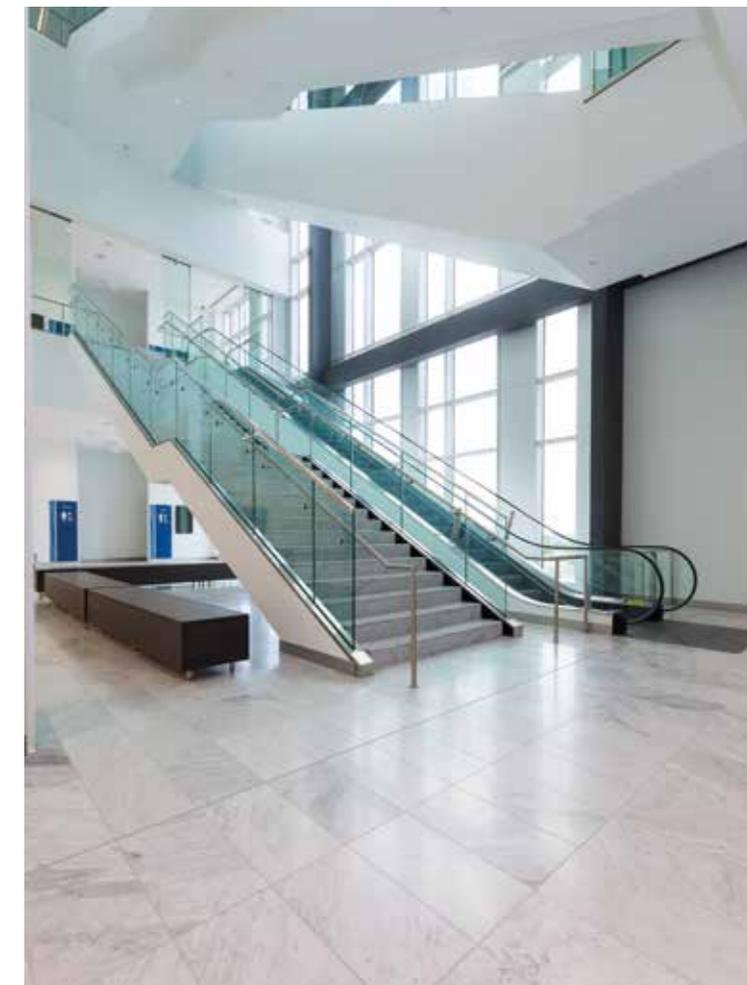
#### Challenges faced by the project

Thanks to Mapei solutions it was possible to overcome problems associated with the installation of slabs and ceramic tiles on large surfaces, including large formats, and, in several cases, in areas with curved outlines exposed to intense traffic. The company's products proved to be a decisive factor right from the very first stages of the project, such as in the preparation of the substrates for the floors made from concrete base slabs. Cementitious screeds were made from TOPCEM PREMIX mortar. To make sure the surfaces were even and level, they were then topped with PLANIPREP SC skimcoat and NOVOPLAN 2 PLUS self-levelling underlayment.

Then, to make sure the surfaces of the substrates were ready to receive the stone slabs without running the risk of damaging the final covering, a layer of MAPEGUARD UM anti-fracture membrane was applied which, apart from providing good crack control, also ensures adequate protection against any moisture present in the substrates.

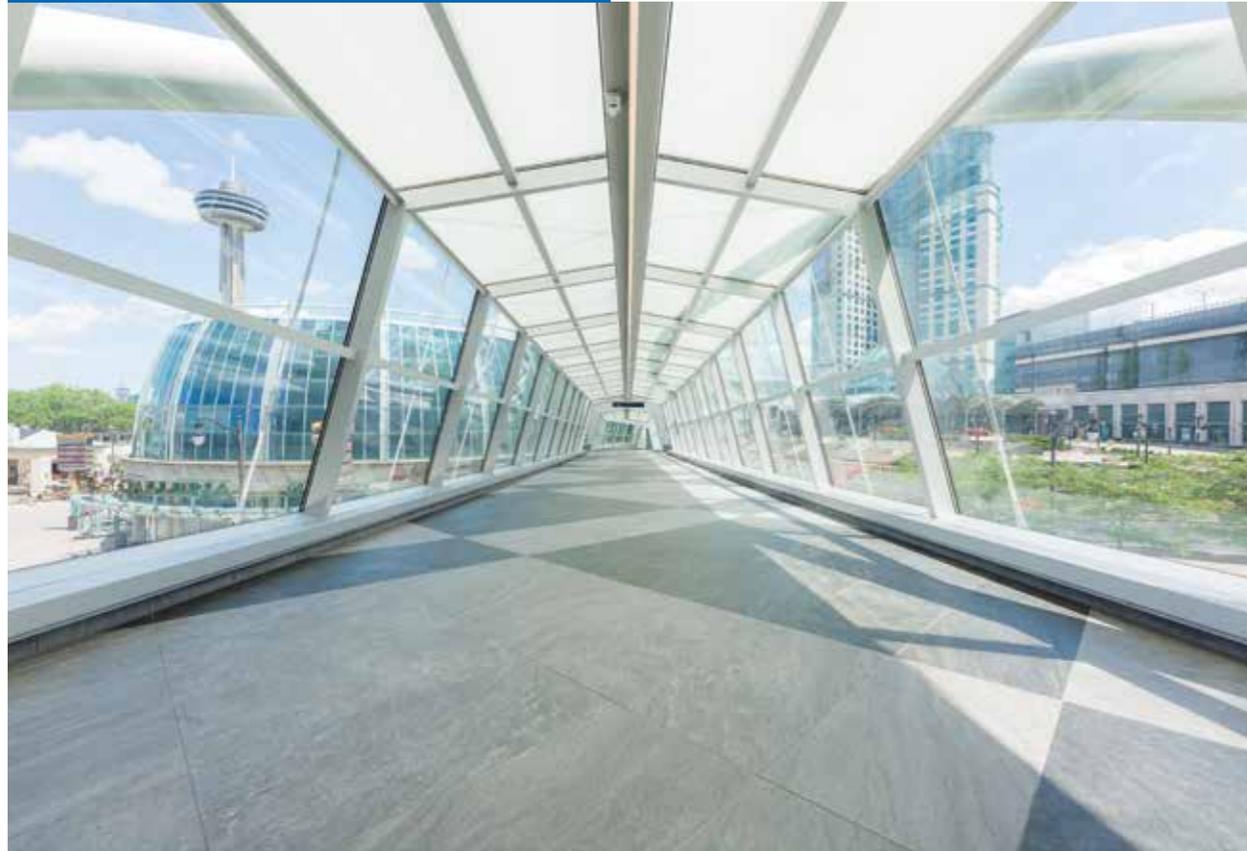
#### A real defence against water

In the bathrooms and bars, as well as in other areas where substrates are more easily exposed to damp conditions, surfaces were waterproofed by applying MAPELASTIC AQUADEFENSE, a liquid, elastic membrane supplied ready to use which is particularly suitable for waterproofing damp areas such as bathrooms, showers, laundry rooms, saunas, balconies and terraces. This product, available on the global market, dries quickly and forms an elastic membrane which is ready to receive ceramic tiles, stone and mosaics after just a few hours.



#### So many adhesives for so many areas

Numerous adhesives from the Mapei line for ceramic and stone were employed inside the Fallsview Casino Entertainment Centre. Thin-set ceramic tiles were bonded on the bathroom walls with MAPEI ULTRALITE MORTAR adhesive with anti-mould BioBlock technology, which makes it particularly suitable for use in damp environments. The flooring in the bathrooms was installed with ULTRAFLEX LFT, an adhesive particularly recommended for quick and durable installation of medium and large-format tiles, and again to bond 30x61 cm porcelain tiles on the floors in the large entrance and atrium of the theatre. Slabs of Carrara marble were also installed in the corridors of the auditorium using ULTRAFLEX LFT adhe-



**ABOVE.** All the joints in the ceramic and stone surfaces in the centre were grouted with ULTRACOLOR PLUS FA\* grout.

sive and with the rapid version, ULTRAFLEX LFT RAPID, in those areas where installation had to be completed more quickly.

Slabs of granite, on the other hand, were installed on the steps of the stairway at the entrance with GRANIRAPID SYSTEM after treating the surfaces of the substrates with PLANIBOND EBA epoxy adhesive broadcast with sand.

KERAFLEX SUPER adhesive, meanwhile, was chosen to bond external porcelain flooring tiles in order to guarantee durability and resistance to intense traffic.

ULTRACOLOR PLUS FA polymer-modified grout, was used to grout joints in the ceramic and stone floor and wall coverings installed in the centre.

**Not only ceramic tiles: adhesives for textiles and vinyl**

Other Mapei products were also used in areas where no ceramic or stone had to be installed. For example, carpet tiles were installed in the auditorium using ULTRABOND ECO 811 acrylic adhesive, while in other areas, such as the backstage area, vinyl flooring was bonded with latex-based ULTRABOND ECO 711 adhesive.



Find out more  
MAPELASTIC AQUADEFENSE

**PROJECT INFORMATION**

**Fallsview Casino Entertainment Centre,** Niagara Falls (Ontario, Canada)

**Period of construction:** 2016-2021

**Period of the Mapei intervention:** 2020-2021

**Design:** ark/petroff

**Owner:** Ontario Lottery and Gaming Corporation (olg)

**Main contractor:** Bird construction

**Installation company:**

Classic Tile Contractors Limited

**Mapei distributor:** Dragona Flooring & Supplies

**Mapei coordinators:** Gino D'Alesio and Jeff McCoppen, Mapei Inc. (Canada)

**Photos:** Christina Cicione Photography and Greg van Riel Photography

**MAPEI PRODUCTS**

Preparing substrates:

Topcem Premix\*, Mapeguard UM\*, Novoplan 2 Plus\*, Planicrete AC\*, Planiprep SC\*, Planibond EBA

Waterproofing substrates:

Mapelastic AquaDefense  
Installing ceramic tiles and stone materials: Keraflex Super\*, MAPEI Ultralite Mortar\*, Ultraflex LFT\*, Granirapid System\*  
Grouting joints: Ultracolor

Plus FA  
Installing resilient and textile floors: Ultrabond ECO 711\*, Ultrabond ECO 811\*

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

For further information on products, please visit [mapei.com](http://mapei.com) and [mapei.ca](http://mapei.ca)

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Montréal (Quebec)

# A ceramic artwork at the Université de Montréal

A SPECIFIC INSTALLATION SYSTEM ADOPTED TO ENSURE DURABLE CERAMIC COVERINGS RESISTANT TO FREEZE AND THAW CYCLES



The origins of the new MIL Campus at the Université de Montréal go way back. From 1910, the area of land on which this complex dedicated to the study of sciences now rises was a marshalling yard for the Canadian Pacific Railway, serving the manufacturing companies in and around Montréal in an era in which the city was the most important economic hub of the entire country. After sitting idle for more than 20 years, the land was bought in 2006 by the Université de Montréal and transformed into an ultra-modern campus, part of a wider-reaching redevelopment programme. The new MIL Campus extends over an area of around 60,000 m<sup>2</sup> and accommodates around 200 professors and researchers and 2,000 students from the chemistry, physics, geography and biology faculties.

**A work of art with so many implications**

The new campus includes various works of art, a true “artistic patrimony” available to students, professors and visitors. The collection includes a work by Alain Paiement: “Ondes croisées”, or “Intersecting Waves”. It extends over an exterior area of 650 m<sup>2</sup>, covered, with multi-coloured ceramic tiles in patterns that bring to mind a series of waves. The University website describes it like this: “On the patio floor, that ensures sufficient air circulation for the laboratories of the Science Complex, you can see two large, intersecting waves formed by tiles in various shades

of red and blue. They represent a phenomenon, of intersecting waves, related to the work of various scientific disciplines, and, at the same time, the coming together of the Park Extension and Outremont neighbourhoods, now linked by the Campus itself”.

**An adhesive system well up to the rigours of the Canadian climate**

Mapei Inc., the Canadian subsidiary of Mapei Group, also took part in the project through the supply of a system to install the ceramic tiles, each one measuring 30 cm<sup>2</sup>. The challenge was to guarantee a strong, durable bond that would resist prolonged periods of exposure to the various weather conditions, such as rain and repeated freeze/thaw cycles.

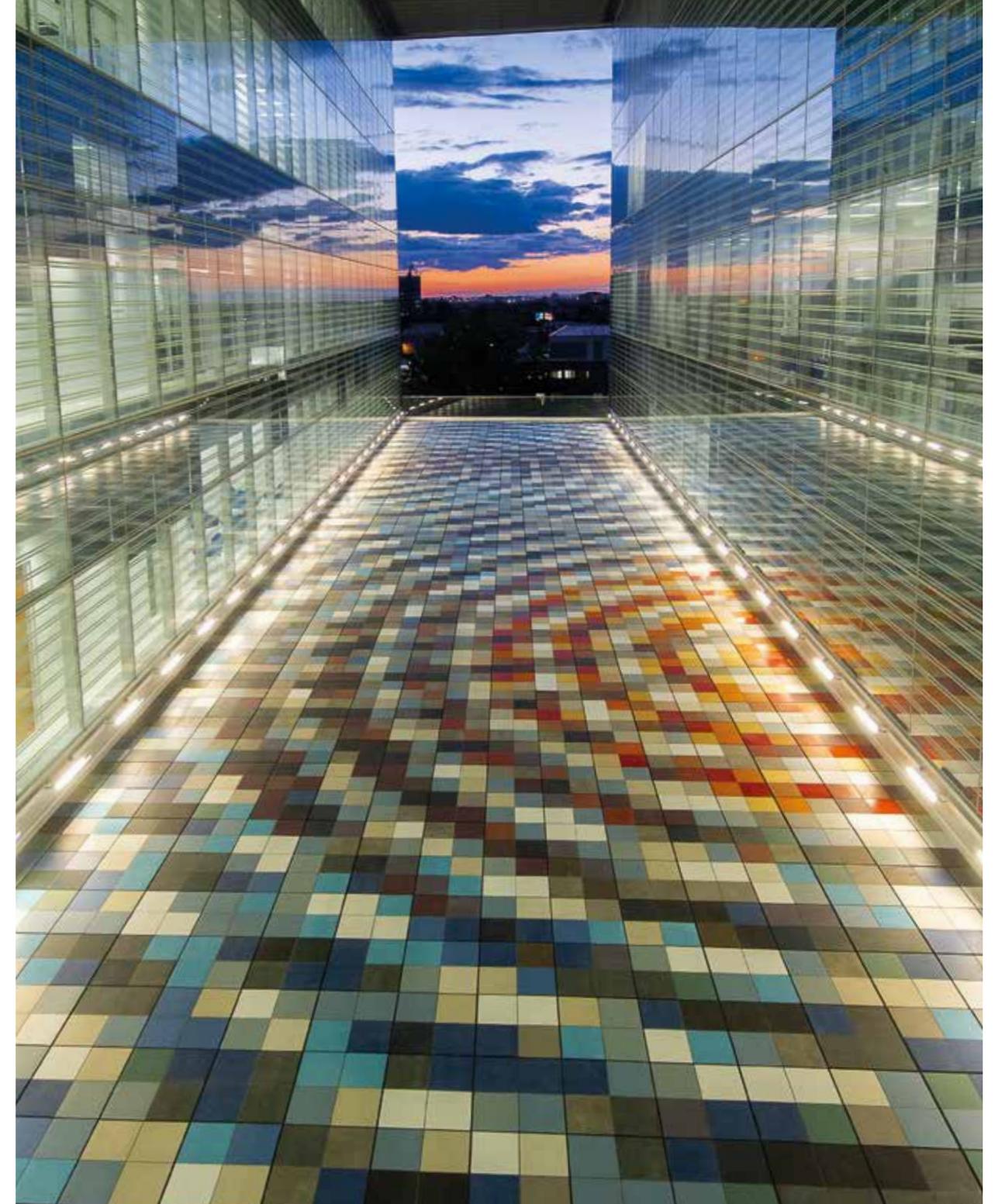
The substrate was made up of various 61x 61 cm concrete slabs, with the ceramic tiles installed on each slab in clearly-defined patterns in four different colours.

KERAFLEX SUPER adhesive, distributed in Canada by Mapei Inc., was chosen to overcome the challenges faced by the team as it guarantees very high resistance to freeze/thaw cycles and aggressive atmospheric agents. Choosing the right grout for joints was also important because it plays such an important role in maintaining the aesthetic impact and durability of finished surfaces. Which is the reason why ULTRACOLOR PLUS FA was chosen, a polymer-modified grout distributed on the Canadian market by Mapei Inc. (the counterpart on the international markets is ULTRACOLOR PLUS). This product has the capacity to contribute to prevent changes in colour in joints and the formation of efflorescence and mould, thanks also to DropEffect technology that helps reduce absorption of water and bacteria.

So Mapei technology was able to play an important role in the creation of a work of art within a university complex dedicated to research and sciences. And with a touch of creativity and colour that will undoubtedly help inspire all those students at the MIL Centre.



Find out more  
**ULTRACOLOR PLUS**



ABOVE. The artwork by Alain Paiement known as “Ondes croisées” is made of ceramic tiles installed with Mapei products.

**PROJECT INFORMATION**  
**“Ondes croisées”, MIL Campus, Université de Montréal, Montréal**  
 (Quebec, Canada)  
**Year of construction:** 2021  
**Year of the Mapei intervention:** 2021  
**Owner:** Université de Montréal

**Artist:** Alain Paiement  
**Main contractor:** EBC  
**Installation company:** Carreaux Cera Design (Richard Adam)  
**Mapei distributor:** Prosol Inc.  
**Mapei coordinators:** François Croteau, Mapei Inc. (Canada)

**Photos:** Ralph Thompson (PhotoImagerie), Mapei Inc. (Canada)  
**MAPEI PRODUCTS**  
 Installing ceramic tiles: Keraflex Super\*  
 Grouting joints: Ultracolor Plus FA\*

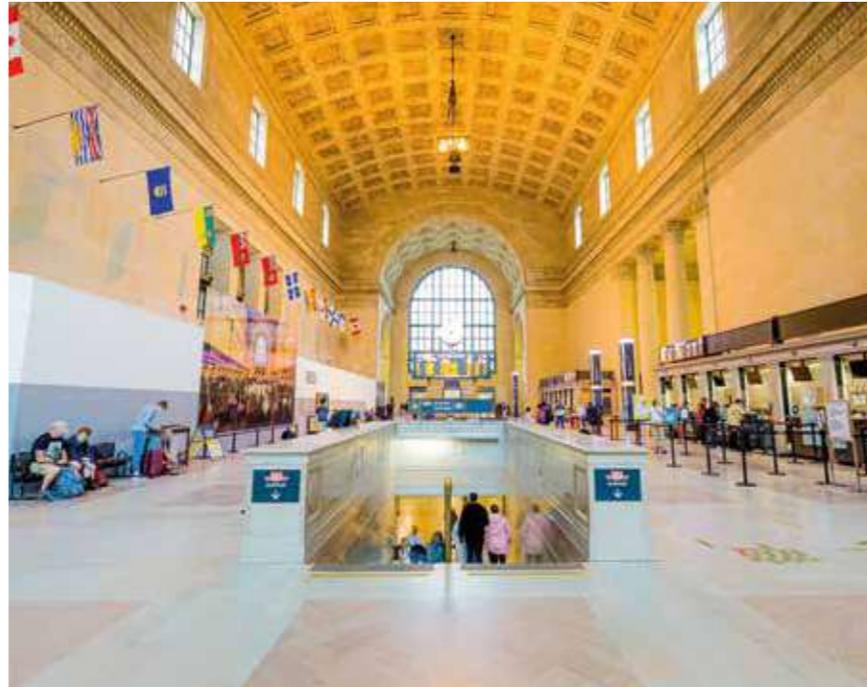
\*These products are manufactured and distributed on the Canadian market by Mapei Inc. (Canada)  
 For further information on products, visit [mapei.com](http://mapei.com) and [mapei.ca](http://mapei.ca)

# Projects across the board

INFRASTRUCTURES, HOUSING COMPLEXES, SPORTS CENTERS:  
LOTS OF APPLICATIONS FOR MAPEI PRODUCTS

## MURO residential complex Vancouver (British Columbia)

MURO is a residential complex inside a skyscraper that was recently renovated and decorated with murals by the artist Douglas Coupland. The redevelopment project included restoration of the concrete surfaces of the façades using products such as PLANITOP 13\*, PLANITOP X\* and PLANITOP XS\*. Inside the complex, various Mapei solutions were employed to treat and level off substrates before bonding ceramic tiles with several types of adhesive, depending on the particular type of ceramic tiles and the areas where they were installed: ULTRAFLEX RS\* for thin tiles, MAPEI ULTRALITE MORTAR PRO\* for the surfaces in the bathrooms and kitchens and ULTRAFLEX LFT\* for the floors in the entrances. The joints on all these surfaces were then grouted with KERAPOXY CQ.



## Bridgewater apartments and Pearle Hotel & Spa Burlington (Ontario)

Since 2021, on the northern shore of Lake Ontario, there has been a 22-storey residential complex with 144 individual residential units. And alongside the complex there is one of the 5-star hotels belonging to the Marriot chain. Construction work included the installation of 18,500 m<sup>2</sup> of internal and external ceramic flooring. The first step was to level off the

substrates with NOVOPLAN 2\*, following which they were covered with MAPEGUARD 2\* membrane to guarantee an adequate level of soundproofing. Any damp areas were waterproofed with MAPELASTIC AQUADEFENSE before installing the tiles on walls with MAPEI ULTRALITE MORTAR\*. Ceramic tiles were bonded to all the internal floors with ULTRALITE LFT\*, whereas KERAFLEX SUPER\* adhesive was chosen to install the external ceramic floors. All the joints were then grouted with ULTRACOLOR PLUS FA\*.



## Union station Toronto (Ontario)

This historic station in the financial district of Toronto recently underwent redevelopment work to repair damage caused by the frequent floods that had occurred in recent years. The work also included both the internal and external floors, areas transited by thousands of passengers every day. This meant the waterproofing and installation system adopted had to guarantee a very high level of durability. Good waterproofing was guaranteed by using a drainage system consisting of MAPELASTIC 315\* membrane, FIBERGLASS MESH\* and MAPEADRAIN 30\* drainage fittings. The granite floor slabs were installed using ULTRALITE S2\* adhesive while ULTRACOLOR PLUS FA\* was used to grout the joints.



## Horseshoe Bay promenade West Vancouver (British Columbia)

The promenade of this small town overlooking the sea was recently transformed by turning the old asphalt surfaces into Mediterranean-style paving in cobblestones and slabs of granite. The new paving had to be resistant to the damp climate, freeze/thaw cycles, seawater and de-icing salts, as well as to stresses from the intense traffic. The compressive strength of the surfaces, for example, had to reach 60 Mpa after 28 days. A solution was found by employing MAPESTONE system, specifically developed to install stone paving, which included the use of MAPESTONE TFB 60 installation mortar and MAPESTONE PFS 2 grouting mortar for joints.



**Minoru Centre for Active Living sports centre  
Richmond (British Columbia)**

This sports centre features six indoor swimming pools, two saunas, a Turkish bath and a gym. During construction work the substrates for the swimming pools were prepared using dedicated products for repairing

concrete such as PLANISEAL VS\*, PLANISEAL MSP\* and PLANITOP 23\*. Waterproofing of the surfaces in the swimming pools was completed by applying MAPELASTIC 315\* prior to bonding ceramic tiles with KERABOND adhesive mixed with KERAPLY\* latex. The joints were grouted with KERAPOXY CQ epoxy mortar, which is particularly suitable for damp environments, and the expansion joints were then sealed with MAPESIL T\* sealant.



**TransEd Valley Line LRT twin tunnel project  
Edmonton (Alberta)**

Between March 2017 and April 2018 in the city of Edmonton, 400 m long twin tunnels running between 3.5 and 18 m deep were excavated. The tunnels are part of a project to build a public transport system, backed by an investment of 1.2 billion Euros. A complete system by Polyglass, a subsidiary of Mapei Group, was chosen to waterproof the tunnels. The system included the use of MAPEPLAN TUS 25 synthetic membrane, MAPEWRAP 11 and MAPEWRAP 12 epoxy adhesives and MAPEBAND 500 rubber tape. A damaged joint in one of the tunnels was repaired by injecting IDROSTOP MULTI-11 system.

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

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# The challenge of low-clinker cements

INNOVATIVE SOLUTIONS FOR CARBON NEUTRALITY FROM CEMENT TO CONCRETE

In recent years, the cement industry has been facing new challenges related, above all, to the need to reduce CO<sub>2</sub> emissions to achieve carbon neutrality. The production of cement is one of the main sources of CO<sub>2</sub> emissions: it is estimated that it contributes to 8% of global emissions. They are produced by the decarbonation of calcareous minerals used to produce clinker and by the large quantities of fuels necessary to reach high burning temperatures. Overall, it is estimated that for each ton of clinker, approximately 0,85 tons of CO<sub>2</sub> are produced and emitted into the atmosphere.

To achieve carbon neutrality by 2050, the cement industry is implementing various actions. These include, for example, increase of use of alternative fuels, reduction of clinker to cement ratio, use of natural gas and hydrogen, use of alternative raw materials, carbon capture, usage and storage, renewable energy and efficiency, local supplying and green transports.

Among these actions, the most rapidly effective one is the reduction of the clinker content of the cements. Currently, in Europe the average clinker/cement ratio is around 0,75: to significantly contribute to neutrality it is estimated that it will have to be reduced to 0,65.

## Opportunities of the current standards

To a certain extent, a reduction in clinker/cement can be achieved with the types of cement classified according to European standard EN 197-1. Thanks to the optimization of the chemical-physical characteristics of the cements and, above all, the use of specific additives, it is often possible to obtain significant reductions of 3-4% of clinker while maintaining the same performance of the cement. However, if we consider the cements mostly used to produce concrete (CEM I and CEM II/A-L), it is not possible to further lower the clinker/cement ratio. EN 197-1 also allows making greater use of composite cements in the production of concrete: this enables a strong reduction of the clinker/cement ratio. For example, pozzolanic cements with natural pozzolana (P) are an alternative that can be exploited in various parts of the world by taking advantage of the pozzolanic activity of sands of volcanic origin.

A further step in this direction took place in 2021 with the publication of the EN 197-5 standard in which new composite and ternary cements with very low clinker content are classified. The use of these cements would make it easier to achieve



the objectives of carbon neutrality. For example, limestone-calcined clay-based cements fall within this standard. Finally, European standard EN 197-6, which was published in 2023, introduces the possibility of using recycled concrete fines as a supplementary cementitious material which, within certain limits, behave like limestone. The use of this new component allows to reduce the consumption of natural raw materials and waste to be sent to landfill. It is therefore part of a broader circular economy program for concrete.

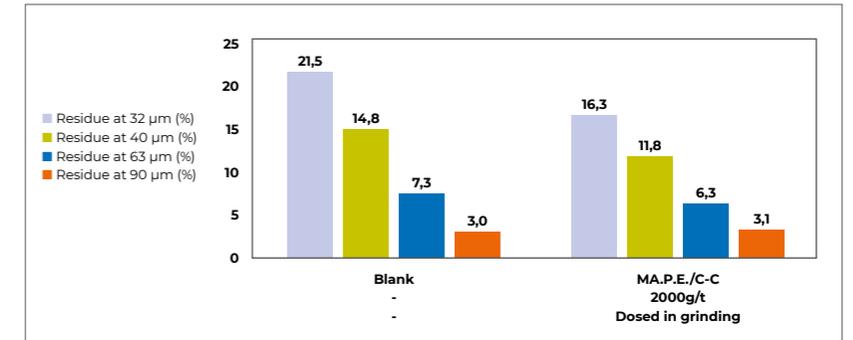
## Issues related to the low-clinker cements

Alongside the environmental and economic benefits associated with lower clinker/cement, concretes produced with blended cements can also have improved properties. For example, cements containing

pozzolanic materials such as natural pozzolana or calcined clay, can lead to a greater resistance to external attacks and, consequently, greater durability. Unfortunately, the use of this type of cements frequently presents critical aspects related, above all, to the high specific surface and the high adsorbing capacity of the supplementary cementitious materials. These characteristics can lead to a higher demand for water, a loss of workability of the fresh concrete and a loss of the effectiveness of the superplasticizers used in the concrete production.

## The new MA.P.E./C-C cement additives

To mitigate the issues related to the low-clinker cements, Mapei has developed a new range of cement additives called MA.P.E./C-C (from Cement to Concrete). These additives have the peculiarity of,



1. Air-jet granulometry of the CEM IV/A (P) cement reproduced with and without MA.P.E./C-C.



2. Flow test used to assess the workability of cements.

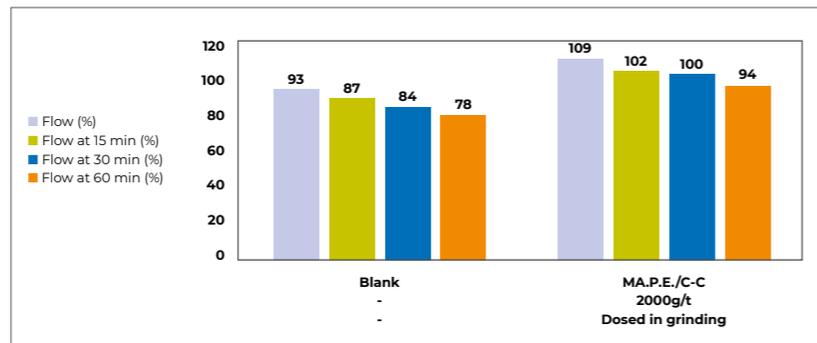
beside improving the grindability and mechanical performance of cement, lead to an enhancement of the workability both in mortar and concrete application. In this article, some significant examples are shown to prove their effectiveness.

## Improving the quality of a pozzolanic cement

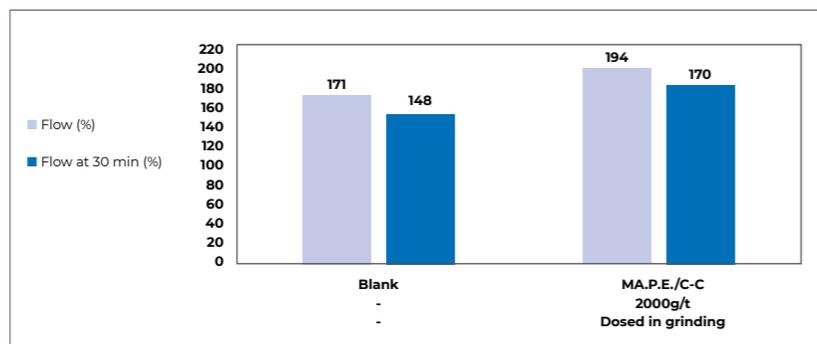
The first example deals with a pozzolanic cement, CEM IV/A (P) according to EN 197-1. The pozzolana available in the cement plant is highly active but has the defect of absorbing a lot of water due to its high specific surface. This feature causes a high demand for water and poor workability in concrete applications, which make it extremely difficult to use. The cement has been reproduced according to the industrial recipe (69% clinker, 4% gypsum, 27% pozzolana) in the Mapei Reserach &

Development laboratory, with and without dosing MA.P.E./C-C during grinding in laboratory mills. The fineness of the laboratory cements has been estimated by the air-jet sieving method according to EN 196-6 standard. The results are shown in Figure 1. MA.P.E./C-C additives have made it possible to significantly improve, at a same grinding time, the fineness of the cement thanks to the introduction of specific components in their formulation. MA.P.E./C-C will therefore be able to reduce the energy required to produce cement or else increase the production rate keeping the same energy consumption. The main problem of the cement is its bad workability which is mainly due to its high adsorption of water. Workability of cements has been assessed on a standard mortar according to EN 1015-3 (Figure 2). With this method, a flow value

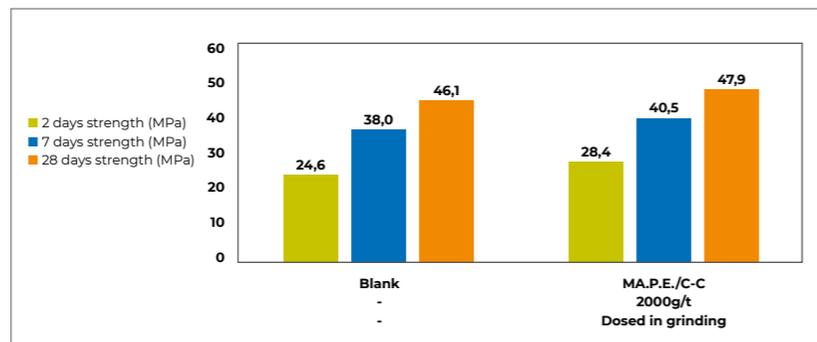
is determined from the increase in diameter of a fresh mortar specimen, placed on a specific table using a mould, to which a given number of vertical impacts are applied by lifting the table and letting it fall from a given height. The test has been repeated at fixed times from the mixing to assess the loss of workability during time. As shown in Figure 3, MA.P.E./C-C has allowed to greatly increase the initial workability. Moreover, it has maintained the workability over time with a flow value that, after 60 minutes, is still higher than the initial flow value of the blank sample. It is well known that sometimes performance of concrete is different from those obtain from mortars. For this reason, to simulate the effect in concrete application, the same tests have been performed on Cement Equivalent Mortars (C.E.M.). These mortars, whose composition is deduced from that of concrete, have rheological properties very similar to those of concrete. To prepare C.E.M. without supplementary use of concrete additives, it was decided to work with a high amount of water ( $w/c=0,61$ ) to simulate semi-fluid concretes. The results, shown in



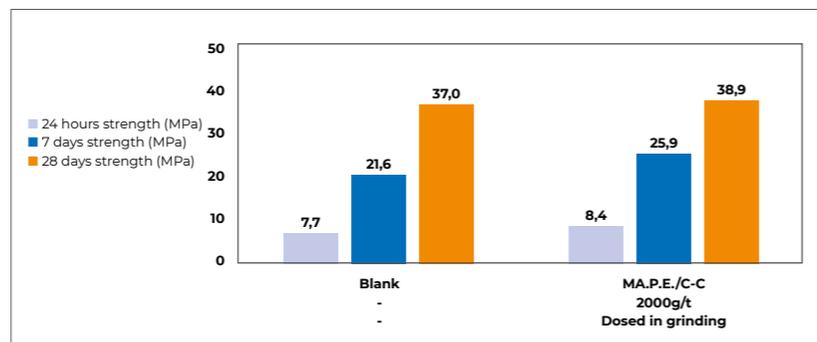
3. Flow values of CEM IV/A (P) standard mortars.



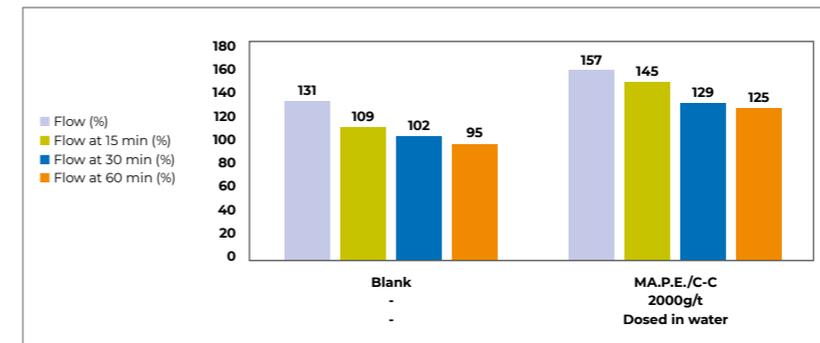
4. Flow values of CEM IV/A (P) Concrete Equivalent Mortars (C.E.M.)



5. Mechanical strength of CEM IV/A (P) standard mortars.



6. Mechanical strength of CEM IV/A (P) Concrete Equivalent Mortars (C.E.M.).



7. Flow values of the special cement standard mortars with and without MA.P.E./C-C.

Figure 4, have confirmed those obtained on standard mortar: an increase in the initial flow value and its maintenance over time. These are clear indications that MA.P.E./C-C can increase workability both in mortar and concrete application. Figures 5 and 6 show the effect of MA.P.E./C-C on the development of mechanical strength for the same mortars described above. The addition of MA.P.E./C-C has allowed to enhance the performance in every mortar condition and for every curing time. This characteristic will reasonably allow to improve the production process of the pozzolanic cement by reducing ulteriorly the clinker/cement ratio or reducing the fineness.

#### Improving the quality of a special cement

The second example relates to a special cement produced by replacing around 50% of clinker with a secondary raw material to considerably reduce the specific emission of CO<sub>2</sub>. The secondary raw material used for this cement is a blend of calcined clay and recycled inert minerals characterized by a high porosity that leads to a high request of water.



8. Rheometer equipped with a ball measuring system.

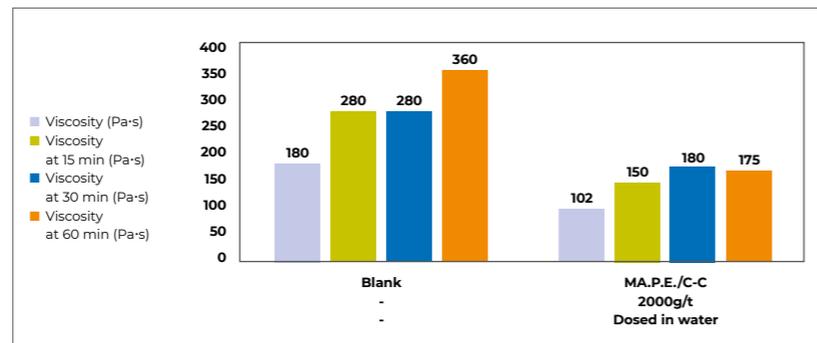
Consequently, the cement shows a noticeable loss of workability and an increase of viscosity of the fresh concrete, which make it difficult to use it in concrete applications. For this type of cement, the use of MA.P.E./C-C additives was tested on an industrial cement by adding them in the mixing water of standard mortars with an increased water/cement ratio ( $w/c=0,6$ ). As shown in Figure 7, MA.P.E./C-C additives have allowed to greatly increase the initial workability of the industrial cement and to maintain it over time, with a flow value that, after 60 minutes, is still in line with the initial flow value of the blank sample. The viscosity of the mortars has been tested using a rheometer equipped by the so-called "ball measuring system" (Figure 8) at a shear rate of 1s<sup>-1</sup>. The evolution of viscosity has been monitored for 60 minutes from

**The use of MA.P.E./C-C additives will allow to produce more sustainable cements with enhanced grindability, strength and workability**

the mixing of the mortars. The results, shown in *Figure 9*, have confirmed the increased fluidity of the mortar with MA.P.E./C-C cement additives. Moreover, MA.P.E./C-C maintain a low viscosity of the fresh mortar over the time: viscosity at 60 minutes from the mixing is lower than the initial viscosity of the blank sample.

**MA.P.E./C-C: a sustainable technical solution**

These examples demonstrate that MA.P.E./C-C, the new range of cement additives developed by Mapei, can help cement producers and users in the most difficult cases, thanks to the combination of numerous benefits: increased grinding efficiency, improved workability in mortar and concrete, increased mechanical strength. Moreover, they show the versatility of these new additives: they can



9. Flow values of the special cement standard mortars with and without MA.P.E./C-C.

be used in the case of a high substitution rate of clinker with materials that, under normal conditions, would lower the quality of the cements making it very difficult to use. MA.P.E./C-C additives make it possible to solve these problems and represents an answer to the challenge that the cement industry has to face in the coming decades.

In fact, these additives can make it possible to produce cements with a lower clinker content, lower production costs, lower CO<sub>2</sub> emissions and with a higher quality, whose effects will be noticed in the applications of both mortars and concrete.

**Emanuele Gotti**, R&D, Cement Additives Division, Mapei Group

**A DEDICATED DIVISION FOR THE CEMENT INDUSTRY**

In 2000 Mapei introduced the "Cement Grinding Additives" line, products dedicated to cement production with the visionary idea of helping the Construction Industry become a carbon-neutral industry starting from its main raw material: cement. These additives are meant to be used during the cement production process, to support the cement industry on the roadmap to produce modern cements with zero CO<sub>2</sub> emissions. When Mapei first approached this market, only



traditional Grinding Aids were available: additives that are mainly formulated to solve agglomeration problems within cement mills and reduce electrical energy consumption. Since then, many innovations have been brought onto the market by Mapei Research & Development laboratories, evolving from the original Grinding Aids to the most advanced MAPE C-C additives, a real "bridge" between cement and sustainable and durable concrete. Find out more <https://cadd.mapei.com/en/>



**LESS CLINKER IN YOUR CEMENT**

**MAPE C-C | HIGHER PERFORMANCE, LOWER IMPACT.**

Cement Grinding Additives from the MAPE C-C range enable you to produce cement with lower clinker content, lower CO<sub>2</sub> emissions and better rheological properties than traditional cement. Passing from "Cement-to-Concrete", MAPE C-C products improve concrete performance and sustainability. Great innovation from Mapei, the Italian company that has been revolutionising the construction chemicals sector for 85 years while maintaining a coherent and unique identity at all times.



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# MADE Expo

FROM WATERPROOFING SOLUTIONS FOR UNDERGROUND STRUCTURES TO THERMAL INSULATION: SO MANY PROPOSALS IN THE NAME OF SUSTAINABILITY

The MADE Expo trade fair was held from 15<sup>th</sup> to 18<sup>th</sup> November at the FieraMilano exhibition centre in Rho (near Milan, Italy), a two-yearly appointment which this year featured two events in the name of innovation and sustainability: the Constructions area, featuring software, materials and technologies for design and Building Information Modelling (BIM), and the Building Envelope area dedicated to an exhibition of doors, windows, façades and roofs. The exhibition is part of MIBA-Milan International Building Alliance, an initiative combining four events (apart from MADE Expo there was also GEE-Global Elevator Exhibition, SBE-Smart Building Expo and Safety) which closed its first edition with more than satisfying results: around 80,000 operators from 111 countries were able to appreciate displays from more than 1,350 different exhibiting companies.

## Coloured coatings with offset CO<sub>2</sub> emissions

On the Mapei stand attention was focused on the ZERO Line, featuring products whose CO<sub>2</sub> emissions are measured throughout their life cycle and then offset through the acquisition of certified carbon credits in favour of renewable energy and forestry protection projects<sup>1)</sup>; a dedicated proposal for those designers who choose to make a contribution to responsible building. The line, which already includes numerous products for waterproofing systems, installing ceramic tiles and stone and for the building sector in general, has been extended with the introduction of professional paints such as SILANCOLOR PITTURA ZERO, ideal for completing renovation cycles on masonry with rising damp, and ELASTOCOLOR PITTURA ZERO to complete protective anti-carbonation cycles on concrete structures.



**LEFT.** Profilpas, a subsidiary of the Group, was also present at the trade fair showcasing solutions for showers and for external applications on balconies and terraces.

With the introduction of these two professional paints, which will be available on the international market in 2024, Mapei completes two cycles consisting entirely of offset products from the ZERO Line.

## Resistant thermal insulation without renouncing on aesthetics

The new MAPETHERM MATERIA decorative effects were launched at MADE Expo, a combination of colour, aesthetics and durability. Using MAPETHERM FLEX RP, an elastic skimming paste and base coat resistant to biological agents for internal and external use, it is now possible to create numerous aesthetic effects on façades, including thermal insulation systems, while maintaining excellent resistance to hail. Colour is also the protagonist with the EXTRA colour chart, specifically developed for external applications: a collection of 315 carefully selected shades to ensure long-lasting protection for surfaces.

## Versatile waterproofing for underground structures

MAPEPROOF FBH was also on display at the trade fair, a fully-bonded waterproof HDPE sheet membrane, laminated with non-woven fabric for waterproofing underground structures. Along with a host of accessory items and post-pour adhesive membranes (MAPEPROOF SA, MAPEPROOF AL 1200 AP, MAPETHENE HT and MAPETHENE LT), it integrates with and completes other Mapei waterproofing systems for underground structures. Once concrete has been placed, MAPEPROOF FBH adheres completely to it and remains bonded over time without any lateral migration of water between the foundation structure and the membrane. In so doing, it forms a highly effective barrier against water table, moisture in the ground, radon and methane.

<sup>1)</sup> CO<sub>2</sub> 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.

## RESTORATION IN THE NAME OF SUSTAINABILITY

The correct approach needs to be adopted when consolidating and restoring historic buildings or when carrying out conservative renovation work: and this is why choosing the right products is vital. Mapei is able to combine research into materials from the past with innovative technologies and environmental awareness. The company now offers the possibility of even more sustainable restoration work with the introduction of the MAPE-ANTIQUÉ range as part of the ZERO<sup>1</sup> portfolio of products. With its dedicated product line for conservative restoration work on buildings of historic and architectural interest Mapei participated at the “Agorà del Restauro” exhibition, a dedicated space promoted by Assorestaurò (Italian Association for Architectural, Artistic and Urban Restoration) which put the spotlight on the restoration sector and hosted numerous events. On 17<sup>th</sup> November Davide Bandera, Product Manager for the Restoration Systems for Historical Buildings Line, and Marco Mazzetti, Corporate Environmental Sustainability Coordinator, made a presentation at the convention “Restoration, innovative materials and sustainability: from CAM (Minimum Environmental Criteria) to environmental sustainability and energy protocols”.



# Autumn trade fairs

FROM INTERIOR DESIGN TO SPORTS SURFACES AND THE MARINE INDUSTRY: THE RICHNESS OF THE MAPEI RANGE ON DISPLAY AT SOME OF THE MOST RECENT EXHIBITIONS

## SUPERFACES

**Rimini (Italy)**  
11<sup>th</sup>-13<sup>th</sup> October

Superfaces is the leading Italian B2B marketplace dedicated to materials for architecture and interior design including floor coatings and building materials. The 2023 edition witnessed decisive overall growth with +19% professional visitors compared with 2022. Mapei presented its MAPEI 4 LVT systems – specifically developed for installing LVT (Luxury Vinyl Tiles) and SPC (Solid Polymer Composites) – that guarantee reliability and durability



when renovating lots of environments, including bathrooms and damp areas. Choosing MAPEI 4 LVT means quicker installation without creating dust and noise and avoids having lengthy interruptions to normal activities in environments such as the hotel sector.

Also showcased were the TX – dedicated for installing textile materials – and the DÉCOR product lines – dedicated to decorative fiberglass and wallpaper and their use also in damp surroundings, like in the showers. Attention was also focused on the levelling compounds that enable areas to be renovated without having to remove the existing substrates beforehand. Mapei proposed PLANIPREP 4 LVT, a ready-to-use grout smoother, and PLANIPREP CONTRACT, fine-grained thixotropic cementitious smoothing compound.



## FSB

**Cologne (Germany)**  
24<sup>th</sup>-27<sup>th</sup> October

The 2023 edition of FSB, the international trade fair dedicated to outdoor spaces and sports, leisure and fitness facilities held in Cologne from 24<sup>th</sup> to 27<sup>th</sup> October, drew in 522 exhibitors from 42 countries. Mapei was amongst the exhibitors, showcasing an extensive portfolio of solutions for creating various types of sports surfaces. On one side there was the MAPESOIL drainage system, used in the upgrading of sublayers for football pitches



(grass, hybrid or synthetic) and bunkers on golf courses, and adhesives from the ULTRABOND TURF line for bonding synthetic grass. And on the other side there were numerous multi-layered acrylic resin-based systems from the MAPECOAT TNS line, which may be used

to create high performance, non-slip, durable and coloured surfaces for tennis and basketball courts and cycle tracks. In the spotlight, thanks to the highly popular live demonstrations, were PU GYM REFRESH, a polyurethane finish for protecting, renovating and upgrading existing sports surfaces in schools and other settings, and MAPECOAT TNS REINFORCED, a system that combines acrylic resin coating products with glass fibre mesh for highly durable refurbishment of indoor and outdoor tennis courts.

And, for wooden sports courts, ULTRACOAT SPORT SYSTEM could certainly not be missing, a complete water-based finishing system for sport parquet, including a pigmented varnish, ULTRACOAT SPORT COLOR, available in 8 colors for marking lines of sports parquet, approved by FIBA (International Basketball Federation).

## METSTRADE

**Amsterdam (Holland)**  
15<sup>th</sup>-17<sup>th</sup> November

The 2023 edition of METSTRADE attracted 17,000 professionals of the shipbuilding industry and over 1,400 exhibiting companies from 15<sup>th</sup> to 17<sup>th</sup> November 2023 in Amsterdam. Since 1988 the exhibition has established itself as the largest B2B exhibition of materials and systems for the marine industry in Europe. This edition focused the spotlight on the latest developments in the shipbuilding industry such as products by



Mapei Marine, developed for top-quality ships that combine good looks and functionality. Among the featured products were MAPEDECK MIRUM, a decorative polyurethane skimming compound, available with numerous textures, for creating an attractive finish

in vertical/horizontal indoor and outdoor surface; MAPEDECK MONODESIGN smoothing and levelling compound for creating decorative coatings with a marbled effect finish on internal floors and walls; MAPEDECK TEAK EVOLUTION, a self-levelling resin coating for creating floorings with a realistic wood-effect finish; and MAPEDECK DESIGN, a self-leveling, polyurethane resin which is applied globally and used to form a seamless floor on internal and external decks.



## LONDON BUILD

**London (UK)**  
15<sup>th</sup>-16<sup>th</sup> November

London Build is the UK's biggest trade fair devoted to the construction industry. This year it was held on 15<sup>th</sup> and 16<sup>th</sup> November and featured over 30,000 attendees, 350 exhibitors, more than 500 speakers across 8 stages.

Mapei UK exhibited at the London Build Expo at Olympia London with a stand promoting its product systems that can be applied from



basement to roof via a CAD drawing of a multistorey building.

The stand also featured the slogan of "Building a present designed to have a future" that was extremely relevant to the slogan of the expo "Tomorrow's London. Built today."

Mapei UK Specification team represented the company at the show and were there to engage with a variety of visitor types across the two days. The majority of visitors who interacted with the stand were Director level or above with many meeting requests scheduled and samples requested.

In addition to the Specification Team, the Business Development Manager for Profilpas, Jack Troth, was also in attendance and educated visitors on the Profilpas brand and how Profilpas products (profiles for wall and floor coverings, skirting boards, bathroom systems and laying solutions) work alongside the extensive range of Mapei products.

# Chemical industry decisive for the environmental transition

NEWLY APPOINTED PRESIDENT BUZZELLA AT THE THE ASSEMBLY OF THE ITALIAN FEDERATION OF THE CHEMICAL INDUSTRY: WE ARE THE MOST EXPOSED TO GREEN DEAL RULES



The new Federchimica vice presidents: from left on, Fulvio Renoldi Bracco, Bernardo Sestini, Adriano Alfani, President Francesco Buzzella, Director General Claudio Benedetti, Ilaria di Lorenzo and Marco Squinzi.



Francesco Buzzella is the new President of Federchimica (the Italian Federation of the chemical industry). He was elected on 30<sup>th</sup> October, 2023.

Without a strong chemical industry, the environmental transition process will be impossible to achieve, and there will be a risk of Europe losing ground. That was the message delivered by the newly elected President, Francesco Buzzella, at the Federchimica (the Italian Federation of the chemical industry) assembly held in Milan on 30<sup>th</sup> October.

Mr. Buzzella recalled the central role of chemistry for the whole of industry. "Chemicals", he explained, "are found in 95% of all manufactured goods in everyday use and contributes to the competitiveness of Italian design and manufacturing and industry in general. Our capacity for innovation and our excellent environmental performance in terms of both process and product allow us, in fact, to be the driver for technology and sustainability for all downstream sectors".

**The challenge of Green Deal**  
It is precisely because of the role it plays in the overall framework of our industrial system that chemicals is the sector most exposed to the effects of the European Green Deal, especially in terms of regulation: "We

risk losing," so the President of Federchimica went on to say, "our competitive edge over non-European competitors since we will be forced to adapt to a framework of regulations designed, I fear, on a timeframe and in ways that will make it unworkable or, worse still, detrimental to our development and that of future generations. EU environmental targets are certainly virtuous but will not make any significant impact on global pollution as they cannot offset the rise in emissions from developing countries".

**We need to support this transition with the help of resources that put industry and its competitiveness back at the focus of the European Union agenda**

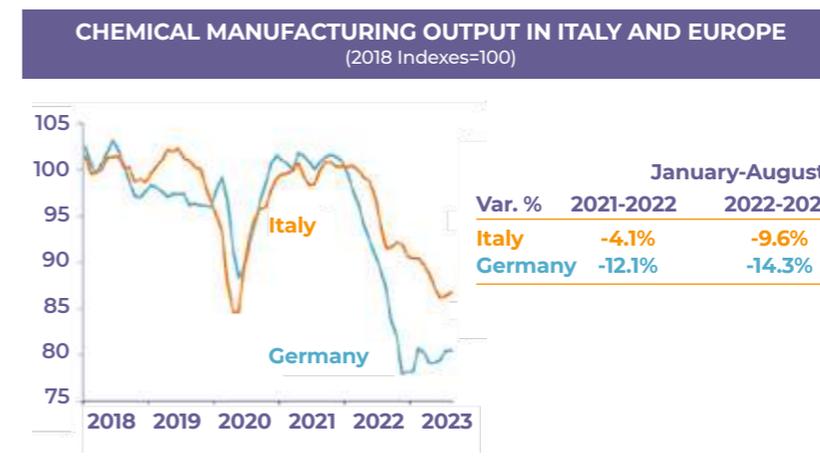
This means the environmental transition requires a powerful chemicals industry that can produce technological innovations in three directions so as to progressively replace fossil fuels (currently still needed), reduce CO<sub>2</sub> emissions, and change the energy mix. According to Buzzella, "we need to accompany this delicate and important transition with resources and means of support that put industry and its competitiveness back at the focus of the European Union agenda". The energy transition (the chemicals industry is energy intensive) will also have to be "sustainable, socially and economically, or else we will be progressively impoverished".

**The challenges of Green Deal**  
According to Buzzella, "Excessively high energy prices will force many of our companies to manufacture outside Europe, meaning unfair competition for European companies and even among European countries themselves". The difficult energy situation, with heavy dependence on foreign nations, is the result of poor investment, and four types of actions need to be taken to rectify the current imbalances: extracting all the gas available in Europe and Italy, reforming the electricity market by harmonizing it with other markets, simplifying the authorization processes for renewable sources, and making use of waste as raw materials coming from renewable sources according to the circular economy paradigm.

"Institutions", so Buzzella insisted, "must help us remove bureaucratic barriers, simplifying regulations and making authorization procedures more efficient: an indispensable step towards creating new plants to serve the ecological transition by providing suitable support for taking on the challenges posed by this transformation while making processes and products more sustainable". The issue of environmental and energy transition is part of the overall framework of the Italian chemicals industry that is still very uncertain from a manufacturing viewpoint. In 2023, so the President of Federchimica pointed out, the

**Our capacity for innovation and excellent environmental performance allow us to be the driver for technology and sustainability**

Italian chemical sector will suffer an estimated 9% drop in production, which follows a 4% drop recorded in 2022: for 2024 only a modest increase of 1% is expected and, in any case, this is likely to be negatively impacted by rising energy costs and the overall economic situation. Mr. Buzzella is sending out a clear message to Italian politicians: "Businesses do not just need short-term bonuses, they require serious and lasting industrial policies that restore confidence in the future, especially for young people who must be guaranteed more opportunities for skilled work".



Source: Eurostat

**Keyword**

**EUROPEAN GREEN DEAL**  
It is a package of strategic policies aimed at setting the EU on the path to a green transition, with the goal of achieving climate neutrality by 2050. It builds on the United Nations 2030 Agenda with additional goals such as reducing greenhouse gas emissions by 55% by 2030 compared to 1990 levels. Find out more at <https://encr.pw/HDsqI>

# Cresco Award: Mapei commends the City of Lecce

ONE OF THE WINNING PROJECTS COMBINES TECHNOLOGY AND SUSTAINABILITY

Once again this year, Mapei took part in the Cresco Sustainable Cities Awards that were set up by Fondazione Sodalitas in partnership with Anci (Italian National Association of City Councils) to promote sustainability in communities and commend projects by Italian municipal authorities that comply with SDGs (Sustainable Development Goals) on the UN 2030 Agenda. The awards ceremony was held on October 24<sup>th</sup> during the 40<sup>th</sup> Anci Annual Assembly in Genoa (Italy). The business prizes awarded include an award sponsored by Mapei for "Sustainable systems involving the use of low environmental impact products by means of innovative natural hydraulic lime based materials". The City Council of Lecce (Italy) was awarded this prize for its project for the repair and special maintenance of limestone paved road surfaces, which is described in the facing page. This project brings together technology and sustainability to attain significant energy savings through the use of products with low environmental impact and reduced CO<sub>2</sub> emissions. These same traits and features are also stipulated in CAM, the Minimum Environmental Criteria which are mandatory for public tenders in Italy. Lecce City Council will be able to draw on expert technical advice from Mapei's Technical Assistance team both during the design phase and on site while the technologies are being implemented.



The award-giving ceremony. From left on, Grazia Signori, Architectural Stone Paving Line Specialist for Mapei SpA, Carlo Salvemini, Mayor of Lecce, and Achille Carcagni, Area Manager for South Italy (Mapei SpA).



## REDEVELOPMENT OF PIAZZA SANT'ORONZO IN LECCE

### CEMENT-FREE, LIME-BASED MAPESTONE CALCIX SYSTEM USED TO INSTALL BASOLI PAVING STONES

Lecce City Council has launched an important redevelopment project for the roads and streets in the old part of the city which, between now and 2026, will see the antique paving renovated and then handed back to the residents and tourists. The aim of the project is to enhance the city and highlight the architectural and materic heritage of the various places, part of a plan to gradually pedestrianise the area.

The first guiding criterion is to safeguard the limestone paving which had become badly deteriorated and disjointed, by carefully removing the pavers and preserving the noblest parts, that is, the warm, tough local stone which, together with Lecce Stone used for the historical buildings, is the hallmark of this unique city in Southern Italy. Each single paving stone needs to be cleaned to remove any old mortar, inspected to check its compactness, integrity and overall condition and, in most cases, recovered and stored separately on pallets according to size, ready to be put back in place thanks to the skillful and untiring hands of the paving craftsmen. The second guiding criterion is to use only lime-based, cement-free installation products when repositioning the paving stones. Piazza Sant'Oronzo, along with Via Trichese, is the first of a long series of sites in this redevelopment project. So, this one may be considered a pilot site and will become a reference for the later ones as they get under way.

#### Innovative mortars combined with antique skills

The project and the site, overseen down to the finest detail by the architect Enrico Ampolo and by the Project Manager for Lecce City Council, architect Silvio Cillo, together with the Local Heritage Authority, will have a substrate consisting of stabilised gravel and geomesh and, to reposition the pavers, a pre-blended mortar from the MAPESTONE CALCIX line will be used.

MAPESTONE CALCIX is a system made up of cement-free pre-blended, lime-based mortars with a high content of recycled materi-

als for installing stone paving (MAPESTONE TFB CALCIX) and grouting joints (MAPESTONE PFS CALCIX) in pavements, piazzas and roads not subjected to heavy traffic, including those of historical significance.

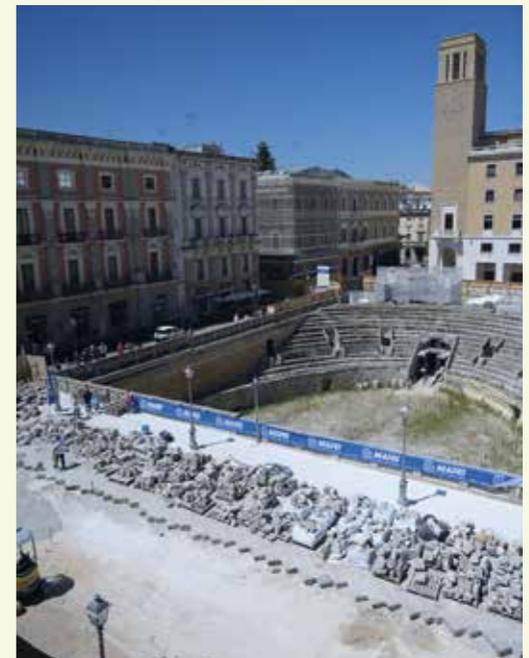
The system was developed to meet the requirements of Local Heritage Authorities looking to use cement-free, lime-based products, with the Lecce Heritage Authority pioneering its use. This led to Mapei R&D laboratories formulating a pre-blended product which is not only lime-based, but one which also contains Pozzolan materials for durability and sustainability and to support a circular economy.

We made the most of the knowhow of our "ancestors" by replicating the composition and installation practices adopted by the Romans, whose skill in building stone roads is still visible and under our feet today.

Thanks to this formulation, the compressive strength of products in the MAPESTONE CALCIX system is more than 20 MPa, considerably higher than that of traditional cementitious mortars (around 10-12 MPa).

Basically, work is carried out just like in the olden days: plastic consistency MAPESTONE TFB CALCIX mortar mixed with crushed rock and water is applied to form the installation bed, the basoli paving stones (30-50 kg each) are positioned on the installation bed and hammered into position until they are level, respecting the slope of the road and the specified pattern of diagonal rows to replicate how they were originally installed. The following day, or after a few days, joints are then grouted with MAPESTONE TFB CALCIX.

A week later the road is ready to be opened to light traffic, commercial activities, local residents and the throngs of tourists visiting the city to enjoy its beauty, colours and flavours.



ABOVE. Some views of Piazza Sant'Oronzo in Lecce (Italy), whose redevelopment work involve the use of MAPESTONE CALCIX system.

**Grazia Signori**, Architectural Stone Paving Line Specialist, Mapei SpA

# Awarding the Giorgio Squinzi Medal

THE PRIZE WAS AWARDED TO PROFESSOR VINCENZO RUSSO FROM FEDERICO II UNIVERSITY IN NAPLES

A study day organised by the SCI (Italian Chemicals Society) was held at the Mapei Auditorium in Milan on 20<sup>th</sup> November. It was attended by numerous experts as well as young researchers, who were awarded prizes for doctoral and master's theses. The day's proceedings included the awarding of the Giorgio Squinzi Medal that was established by the Italian Chemicals Society to commemorate the entrepreneur (and former CEO of the Mapei Group) who passed away in 2019 and his commitment to the development of the Italian chemicals industry. The award was presented by Veronica Squinzi and Marco Squinzi, CEOs of Mapei, and Laura Squinzi, President of the Mapei Board of Directors. Promoted by SCI's Industrial Chemicals Division, the Medal is awarded to a researcher up to the age of 45 who has made particularly notable scientific, innovative or applicative contributions in the field of industrial chemistry. Professor Vincenzo Russo, born in 1985, is



**FROM THE LEFT.** Giorgio Ferrari, R&D Group Leader, HPSS, Mapei Group, Marco Squinzi, CEO of the Mapei Group, Mario Marchionna, President of SCI's Industrial Division, Vincenzo Russo, Laura Squinzi, President of the Mapei Board of Directors, Veronica Squinzi, CEO of the Mapei Group.

Associate Professor of Industrial Chemistry at Federico II University in Naples, where he graduated in Industrial Chemistry and was awarded a PhD in Chemical Sciences. He has gained experience in the field of heterogeneous catalysis with applications in multiphase catalytic systems. The author of 137 articles in international journals, he developed

numerical methods for the simulation of multiphase reactors and the optimisation of processes related to biorefineries, mainly using catalytic processes. The awarding of the prize was preceded by a speech by Giorgio Ferrari, R&D Group Leader, HPSS (Mapei Group), who talked about Giorgio Squinzi as a man and entrepreneur.

## ITALIAN CHEMICALS SOCIETY

The Italian Chemicals Society (Società Chimica Italiana) is a scientific society whose members are focused on: promoting and enhancing scientific research in every field of chemistry; promoting knowledge of chemistry and the importance of its applications for the purposes of progress and people's welfare; encouraging the study of chemistry in universities



and schools; fostering the development of science in every field of life. Members carry out their duties in universities and research institutions, schools, industry, public/private research and control laboratories, and the private practice. They thereby contribute to the cultural and economic growth of the Italian nation, helping raise the quality of human life and protect the environment.

## TOG Foundation

CUTTING-EDGE CARE FOR NEURO-COGNITIVE REHABILITATION

To offer the best specialised care to young people with serious neurological pathologies: that is the aim of the TOG Foundation, a non-profit organisation set up in 2011 that opened a large integrated centre at the cutting edge in terms of technology in Milan this year. The Carlo De Benedetti TOG Centre is located in an area of Milan that used to house the old public showers and extends over three floors covering a surface area of over 3,000 m<sup>2</sup>. It houses rooms used for rehabilitation and miscellaneous services open to the community, such as a hydrotherapy pool, a "FabLab" (a small-scale workshop for the digital manufacturing of aids), and a room with immersive technologies. The centre can provide care and support on a totally free basis for 200 children and their families a year, who can count on full support including not only care and rehabilitation, but also educational support throughout their school education and preparation for professional life. Mapei supplied the project with products and technical assistance, such as products for waterproofing substrates and laying ceramic tiles both indoors and outdoors, particularly for the swimming pool area.



## Arché

HELPING VULNERABLE FAMILIES

The Arché Association was founded in Milan in 1991 by Father Giuseppe Bettoni to provide urgently needed paediatric HIV care. It now helps vulnerable children and families to become independent socially and in terms of providing housing and employment, offering support and care services. It hosts mother and child hubs in three communities, manages 39 apartments for semi-autonomous living and carries out home care and projects in local areas, prisons and hospitals. Mapei has supported the



association for many years. This year it took part in Arché Convivio, a regular autumn event hosted by the Arché Foundation, which took place on 23<sup>rd</sup> October at Palazzo Parigi in Milan. Supporters' contributions were donated to Casa Adriana and Casa Carla, which took in 64 fragile women and children in Milan in 2022, and Casa Marzia, a new community that recently opened in Rome. Casa Adriana is named after Adriana Spazzoli, the former Director of Marketing and Communication at the Mapei Group, who passed away in 2019.

# Mapei Stadium: football and culture

THE STADIUM AS A PLACE WHERE THE COMMUNITY CAN COME TOGETHER:  
PRESENTATION OF THE BOOK "MAPEI STADIUM.  
THE STADIUM OPENS UP TO CULTURE" PUBLISHED BY MARSILIO ARTE

The stadium as a space for a community and not only as a place for sport. This is the thread that runs through all the contributions gathered together in a book entitled "Mapei Stadium. Lo stadio si apre alla cultura (Mapei Stadium. The stadium opens up to culture)", presented on 22<sup>nd</sup> November at Mapei Stadium-Città del Tricolore in Reggio Emilia (Central Italy).

Published by Marsilio Arte and edited by Valentina Pigmei with photos by Filippo Vinardi, the book is a collection of writings by historians, sociologists, designers and other experts, only a few of whom belong to the world of football.

"Our aim", so Simona Giorgetta noted, CEO of Mapei Stadium, "is to make the stadium a congregation place and somewhere for hosting local cultural and social projects after the final whistle has blown at football matches". Giorgetta recalls recent initiatives that have opened up the stadium to the community, such as the Internazionale Kids Festival, an event devoted to journalism for kids held last May, with a popular science event called "The stadium is the perfect place to talk about stars", and the hosting of "Cantar Maggio con Ariosto" (Singing of May with Ariosto), the final show by Chierici High School for the Arts. "And this is just the beginning", so she concluded, alluding to future projects such as opening the stadium to host morning film screenings or becoming part of the "disability card" project which allows disabled people to visit public and private spaces free of charge. Flicking through the book, the contributors presents



The cover of the book "Mapei Stadium. The stadium opens up to culture"

us with any array of literary, historical and sociological anecdotes illustrating the fascination stadiums have for both those people who actually attend events held in them and even those who simply watch what happens inside them from afar: "These new constructions", so the writer Francesco Longo

points out", are increasingly hybrid and can transform to reveal their hidden heart and soul during the week as surprising meeting spaces of truly vital importance. They can accommodate shops, craft breweries, museums, exhibitions and coworking stations. Authentic architectural gems, they suddenly emerge as images of the future. They take over the role of royal palaces, villas, cathedrals: they are the cathedrals of the future. Literature has fallen in love with these environments, talking about and even courting them, having discovered their intimate side: ideal for experiencing life's most powerful emotions".

Pierluigi Allotti, a journalist and contemporary historian, also retraces the history of these buildings starting with the first Italian football championship that "was held over one single day on 8<sup>th</sup> May 1898, on the pitch of Umberto I velodrome in Turin and it was watched by about fifty or so spectators. The most popular sport at that time was cycling. But football was rapidly gaining in popularity and after the Great War the game started to be followed by hordes of fans". That was the start of Italy's love affair with football that continues today, what Italian writer Pier Paolo Pasolini described as a "secular religion": "It is the last sacred



**LEFT.** After being officially greeted by the Mayor of Reggio Emilia Luca Vecchi, sport journalist Sara Benci chaired a debate between Giovanni Carnevali, CEO and General Manager of U.S. Sassuolo, Vittorio Cattani, General Manager of A.C. Reggiana, Simona Giorgetta, CEO of Mapei Stadium, and Pierluigi Allotti, a journalist and contemporary historian.

spectacle of our age", he wrote.

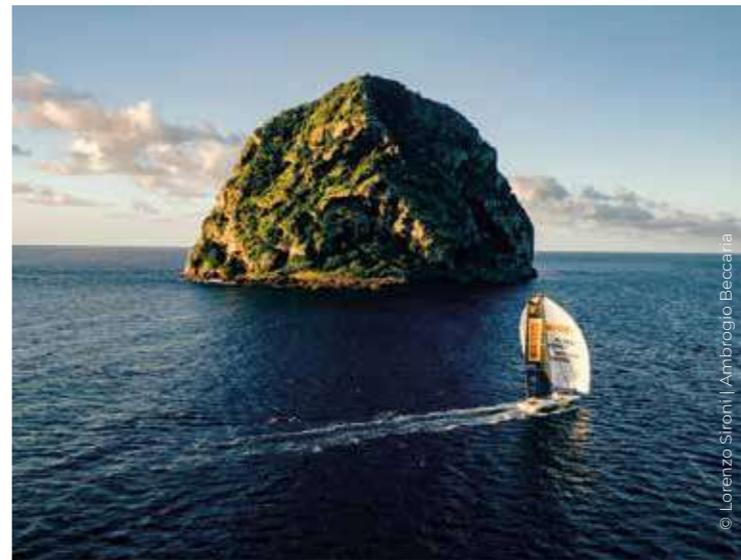
The book closes with an illustration by the artist Olimpia Zagnoli, whose work "All together now" (shown in the photo on top of the page) has been installed in the middle of the stadium's west façade: a stylised football terrace with fans singing as if they are a choir, conveying a sense of inclusion and the joy of simply being together. The artist talks about the inspiration for her work: a video from the 1960s showing Liverpool fans singing "She Loves You" by The Beatles. This gave her the idea of using the entrance of the stadium in Reggio Emilia to send out "An appeal to sing more love songs and fewer hate chants".



© Martina Orsini | Ambrogio Beccaria



© Martina Orsini | Ambrogio Beccaria



© Lorenzo Sironi | Ambrogio Beccaria

**FROM THE LEFT.** A photo of the start of the Transat Jacques Vabre; Ambrogio Beccaria and Nicolas Andrieu during the race and the finish in Martinique.

**BELOW.** The joy of the two yachtsmen at the finish in Fort-de-France.

# Atlantic victory for Ambrogio Beccaria

THE MILANESE YACHTSMAN SPONSORED BY MAPEI HAS WON THE PRESTIGIOUS TRANSAT JACQUES VABRE REGATTA

At the end of a hard-fought race full of twists and turns Ambrogio Beccaria, paired with French skipper Nicolas Andrieu, crossed the finish line first in the Transat Jacques Vabre transatlantic regatta, arriving in Martinique after 18 days, 12 hours and 21 minutes out at sea. A success on several fronts for the Mapei-sponsored yachtsman, paying tribute not only to his dexterity at handling - with the help of Andrieu - the difficulties involved in this race, but also to a boat - "Alla Grande-Pirelli" - that was developed by Beccaria himself in partnership with the designer Gianluca Guelfi. A boat that has turned to be really well-built and high-performing. "I consider the Transat Jacques Vabre an 'expert regatta'" so Ambrogio told us. "For me, it is the first major competition I have won since the 2019 Mini-Transat, which is actually more of an amateur race. Here we are in the Olympus of ocean sailing. I'm especially satisfied with how we won: Alla Grande-Pirelli was like a rocket; we were powerful and made the right choices. The finish was hair-raising, but we pulled it off". Beccaria and Andrieu won the first leg of the regatta on the route from Le Havre to Lorient (France) that the race officials designated to protect the Class40 from the storm. Having set off on the second leg, they dominated the race and were always in the leading group, alternating in the lead with the Italian skipper Alberto Bona on board "Ibsa" right through to the gripping final stretch of the regatta. The fleet of vessels eventually split up with one part heading north and the other south. Beccaria and Andrieu chose the southern route and ended up catching the better wind that blew them along to victory.



© Martina Orsini | Ambrogio Beccaria

## THE TRANSAT JACQUES VABRE

A two-man transatlantic regatta, the Transat Jacques Vabre is named after its main sponsor, Jacques Vabre, a French company specialising in coffee manufacturing. The race follows the historic "coffee route": setting off from Le Havre in Normandy (France) and finishing in South or Central America (Colombia, Brazil or Costa Rica). Ever since the 2021 event, the race has ended in Fort-de-France in Martinique (The Caribbean). The 2023 edition was marred by exceptionally bad weather at the start, which disrupted the starts of the yacht classes. For the Class40s, it involved a first stop in Lorient (France) with a restart after one week.

# Innovative recovery techniques

MAPEI SPORT OFFERS COLD WATER TUBS AND FLOTATION TO RECOVER LIKE CHAMPIONS



Sensorial deprivation tub.

Recovery is a key part of the training process. It is often underrated, but it counts just as much as exercise. More and more athletes are optimising the recovery process through special strategies. That is why Mapei Sport Research Centre's Training Department has equipped itself with the most of innovative machinery for cold water immersion and buoyancy now available to top sportsmen/women and sports enthusiasts of all levels, who turn to the Centre for support and assistance.

Overtraining is a physical, behavioural and emotional condition that occurs when the volume, intensity and frequency of a person's training plan exceeds their ability to recover. A common problem among both professional and amateur athletes, it is a major concern for highly active fitness enthusiasts since it

## Floating promotes deep relaxation and reduces perception of muscular pain

results in a drop in performance and increased fatigue. To avoid this, in addition to taking the right breaks between training sessions, it is advisable to optimise the recovery process, possibly by immersing yourself in cold water after exercising. This strategy can help during the recovery phase and it is crucial for athletes to recover quickly and as effectively as possible. "Various articles suggest using water preferably at a temperature of between 10-15 °C and remaining immersed in it for around 10 minutes,"

so Federico Donghi notes, Head of the Training Department at Mapei Sport. – "A further variable to take into account is how the body is immersed, with the water level reaching either above the lower limbs or up to the shoulders depending on the athlete's needs. Immersion in cold water at the end of hard

physical exercise may be useful in attenuating inflammatory processes and in some cases it may attenuate certain physiological responses associated with muscle damage. Last but not least, it seems to improve an athlete's own perception of recovery".

### Floating to reduce stress

This strategy is one of the tools used at the Mapei Sport Research Centre's Training Department to ensure the best possible recovery at the end of training sessions, but it is not the only one. Andrea Bosio, Head of Scientific Research at Mapei Sport Centre, outlines another: "The symptoms of stress are anxiety, depression and insomnia, which, in the most serious cases, can lead to burnout syndrome resulting in sleep disturbances, stomach disorders and early-onset fatigue. Among the methods of combatting it is floating". Clearly this does not just mean floating in a swimming pool or bathtub. It is a technique that attempts to restrict environmental stimulation. In a special sensory deprivation tub, like the one at the Mapei Research Centre, a person spends a varying amount of time, which can be longer than 60 minutes, in a dark, soundproof environment. This method enables deep relaxation. Scientific evidence shows that its continued use can lead to a decrease in stress, depression, anxiety, improved sleep quality and optimism.

Floating can also be useful for sports people: "The training process is stressful by nature and floating can be a valuable part of the crucial recovery phase" so Bosio went on to say. "Research results show that it can lead to an improvement in sleep quality, a lower perception of muscular pain, and a small improvement in performance in jumping and sprinting compared to normal rest. At Mapei Sport, we have been carrying out research to assess how athletes can benefit from floating during recovery and how it can help improve performance".

## Health through movement: an opportunity not to be missed

The role of exercise as a means of maintaining or improving health can no longer be ignored and is backed up by numerous scientific studies documenting its beneficial effects. Despite this, it is estimated that a large amount of people are inactive (for instance, around 40% of Italians are inactive, according to data provided by the Italian National Institute of Statistics in 2021). The term "inactive" means a person is not getting the amount of weekly physical exercise recommended by international guidelines. In fact, a weekly total of 150 minutes of aerobic exercise would seem to be the minimum amount of activity required to attain a significant reduction in their mortality risk, which can be as high as 30% (Arem and others, "Leisure Time Physical Activity and Mortality", *JAMA Internal Medicine*, 2015).

### The new Mapei Wellness Program

The "Mapei Wellness Program" is back in full swing this year, renewed in both its content and form. The programme is based on a combination of all the experience and knowledge that Mapei Sport Research Centre has gained working with top athletes and the needs of those people who simply want to get healthier through sport. It is structured in three parts: an annual clinical examination accompanied by a number of targeted examinations (including blood tests and an exercise electrocardiogram), functional assessment tests, a targeted exercise plan, and adjustments to any improper lifestyle choices. The main innovations are the introduction of new assessment tests and an all-encompassing approach to users to help improve their lifestyle. The assessment tests allow us to quantify physical efficiency levels and then customise the training process in the most effective way possible. The combined medical/technical skills of graduates in Sport Science indicate the best exercise plan for people to follow.

# MAPEI WORLD NEWS

EVENTS, PROJECTS AND INITIATIVES FROM THE GROUP'S SUBSIDIARIES

## ARGENTINA - THE FUTURE OF CONCRETE DISCUSSED IN CORDOBA

Leading South American manufacturers of concrete, admixtures, machinery and accessories gathered in Córdoba from 7<sup>th</sup>-10<sup>th</sup> November for the 9<sup>th</sup> AAHE (Argentine Association of Ready-Mixed Concrete Producers) Convention. An event that attracted 200 professionals and focused on the challenges facing concrete manufacturing, first and foremost sustainability. The event, also supported by Mapei Argentina, included speeches by experts in this field, such as Fabrizio Granieri, Corporate R&D Concrete Admixtures for the Americas, who highlighted the benefits in terms of sustainability of technologies like the CUBE SYSTEM and the admixture DYNAMON CUBE 201.



## ITALY - A NEW MANAGING DIRECTOR FOR PROFILPAS

As of September, Enrico Barison is the new Managing Director of Profilpas, a company the Mapei Group took over in September 2022 specialising in the manufacture of profiles for floor and wall coverings, shower systems and installation accessories that is based in Cadoneghe (Padova). Barison has gained plenty of experience in the realm of resilient and textile flooring (partly working with the multinational Tarkett), including commercial expertise and the management of the entire sales process with a specific focus on Southern European countries.



Barison will lead the development of Profilpas' business in Italy and abroad, helping the company integrate into the Mapei Group.

## UAE - SOLUTIONS FOR THE FOOD & BEVERAGES INDUSTRY IN DUBAI

Mapei Construction Chemicals (MCC), the Group's subsidiary in the Emirates, took part in the Gulfood Manufacturing Exhibition 2023 From 7<sup>th</sup>-9<sup>th</sup> November, an exhibition held at Dubai World Trade Center focused on manufacturing companies in the food & beverages sector, which was visited by over 3600 professionals and attended by over 2100 exhibitors from 69 countries. MCC showcased its wide range of solutions for creating floor and wall coverings in environments where food and beverages are processed, prepared, cooked and stored. In the spotlight, the MAPEFLOOR CPU+ range, which is used to create non-slip, antimicrobial, easy to sanitize, polyurethane cement-based floors with high chemical resistance.



## NEW ZEALAND - AUSTRALASIA TUNNELLING CONFERENCE 2023



The Australasia Tunnelling Conference 2023 was held in Auckland from 5<sup>th</sup>-8<sup>th</sup> November, an event focused on underground tunnelling jointly organised by the New Zealand Tunnelling Society and the Australian Tunnelling Society, which have contributed to the growth of this industry in Oceania over the last 50 years. The UTT (Underground Technology Team) from Mapei New Zealand and Mapei Australia attended the event, showcasing Mapei's wide range of solutions for this sector. In the picture: Prashant Magare, Mapei New Zealand, and Luke Foyster, Mapei Australia.



## QUESTIONS AND ANSWERS

A NEW CHALLENGE FOR DESIGNERS, AN OPPORTUNITY TO IMPROVE QUALITY OF LIFE WHILE SAFEGUARDING THE ENVIRONMENT



Antonino Munafò

# Soundproofing with sustainable systems

Urban development and an increase in the density of housing in our cities have increased possible sources of acoustic disturbance inside buildings, leading year on year to a growing need in the modern building sector: acoustic wellbeing. In many countries, the fundamental principles regarding passive acoustic requirements for buildings and safeguarding the environment against acoustic pollution are governed by laws and regulations. Thanks to our commitment to innovation and Research & Development, Mapei is today in a position to offer effective solutions compliant with these regulations that enable adequate soundproofing to be guaranteed in such surroundings, thereby contributing to wellbeing inside various types of buildings.

### Is it possible to combine acoustic wellbeing and environmental sustainability?

Acoustic wellbeing and sustainability are both concepts that have now become part of the primary requirements for modern buildings. This is why today's soundproofing sector is now able to offer cutting-edge solutions from a performance perspective and with ever increasing attention on mitigating their impact on the environment.

### What solutions does Mapei propose to counteract noise in buildings?

With thirty years' experience in the sector, the Mapei portfolio includes a range of complete systems for soundproofing floors against impact noise that may be employed in both new buildings and in existing buildings undergoing renovation work. The MAPESILENT system by Mapei is ideal for new builds for creating high performance, soundproofing floating screeds in the highest acoustic efficiency classes.

For existing buildings undergoing renovation, where work will be carried out without removing the old flooring, we recommend using MAPESONIC CR, a compact uncoupling and anti-fracture soundproofing membrane, ideal if you want to considerably improve the level of acoustic wellbeing without affecting the height of the floor, and which may be used for installing bonded, floating and removable flooring, as well as together with heating systems with low thermal inertia. All Mapei systems can be completed with a full range



ABOVE. Applying MAPESILENT ROLL (left) and MAPESONIC CR (right) waterproofing systems.

of complementary products such as perimeter strips, adhesive bands and tapes, products which are essential to guarantee maximum performance against airborne and impact noise.

### How do Mapei soundproofing products contribute to reducing environmental impact?

Mapei is committed to safeguarding the environment, using energy and resources sustainably, reducing waste materials, increasing recyclability of materials, developing products that are safe for installers and users and that guarantee that areas and rooms where they are applied are as healthy as possible.

The concrete improvements we achieve regarding sustainability are documented and communicated at regular intervals.

### Which certificates attest this characteristic?

All soundproofing products by Mapei comply with sustainability criteria of the most important environmental protocols and are certified according to the main international standards, amongst which we have LEED (Leadership in Energy and Environmental Design). LEED is the most widely adopted international certification system when it comes to the environmental sustainability of buildings.

It is adopted in more than 100 countries around the world and is based on a system of credits assigned to the design, construction and management of a structure.

As far as indoor air quality is concerned, all products from the Mapei soundproofing line are certified EMICODE EC1<sup>PLUS</sup> by the German association GEV, which attests their low emissions of volatile organic compounds (VOC), all to the benefit of installers and end users.

### Can Mapei soundproofing systems be used in combination with other sustainable products?

Absolutely, and this is one of the things that makes our portfolio so unique. The ability to offer the best and most innovative solutions to design and construct sustainably is a fundamental commitment for the Group. It requires a sense of responsibility and the ability to make concrete choices in order to supply

designers, contractors, workers and clients with products that are safe, reliable and durable over the years and which have the lowest impact possible on the environment.

Our soundproofing products integrate perfectly with our flooring systems and include pre-blended mortars for screeds, skim coats and self-levelling mortars, adhesives, grouts and sealants. Apart from offering excellent performance characteristics, all these products play a part in reducing environmental impact thanks to their high content of recycled material, very low VOC emissions, their specific formulation which reduces CO<sub>2</sub> emissions during the production phase and CO<sub>2</sub> emissions that are fully offset throughout their entire life cycle through the acquisition of certified environmental credits in favour of renewable energy projects.

### What other support do you provide for designers?

Apart from the usual support from our team of highly specialised experts, that we guarantee to all our clients during the various phases of construction work, Mapei also has Data Mapesilent available in English for professionals at <https://www.mapei.com/it/en/tools-and-downloads/professional-software#data-mapesilent>

This is a software program used to verify the acoustic characteristics of buildings and calculate the thermal transmittance of partition walls. The program also allows you to verify if project requirements meet the specified legal limits. It includes a comprehensive database of materials and components, and their relative performance characteristics taken from reports published by research institutes.

The procedures used to calculate passive acoustic requirements are taken from the European standard EN ISO 12354.



### 3 PRODUCTS IN THE SPOTLIGHT

CONSOLIDATING MASONRIES, INSTALLING TILES ON IRREGULAR SUBSTRATES AND PROTECTING JOINTS FROM STAINS: A FEW SOLUTIONS BY MAPEI

# 1

#### Mape-Antique Colabile



#### FOR BUILDINGS OF HISTORICAL OR ARCHITECTONIC INTEREST

Salt-resistant, cement-free, hi-flow natural hydraulic lime, recycled materials and Eco-Pozzolan-based masonry mortar with very low emission level of volatile organic compounds (EMICODE EC1<sup>plus</sup>-certified). It is used for conditioning and consolidating stone, brick, tuff and mixed facing walls where the layer of mortar to be applied and the shape of the structure require the use of free-flowing products. It is used for filling large internal cracks, gaps and cavities in structures such as foundations, pillars, vaulted roofs and archways, as well as for "rubble masonries" and masonry in general on existing buildings, including listed buildings of historical or architectonic interest. It is classified G according to EN 998-2 standard.

# 2

#### Ultracare Grout Protector

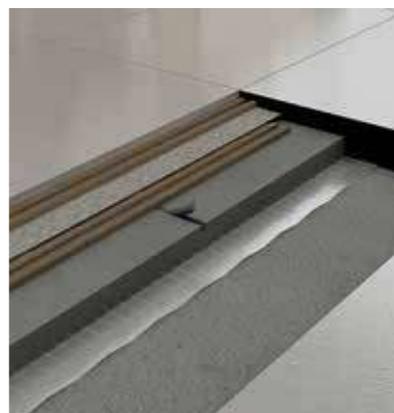


#### PROTECTING JOINTS FROM STAINS, OIL AND WATER

An ideal anti-stain protective product for the oil-hydro repellent protection of cementitious grout joints in the kitchen (splash back), bathroom, in order to reduce dirt pick-up and facilitate normal cleaning operations. It is a water-based dispersion that, when applied to the grouted surface, imparts long-lasting and periodically restorable stain protection to both cement grout and ceramic material. ULTRACARE GROUT PROTECTOR does not change the appearance, colour or gloss of the surface, does not create a film and dries quickly. It has excellent light stability and retains good protective capacity even after repeated washing. Surfaces treated with ULTRACARE GROUT PROTECTOR are suitable for food contact.

# 3

#### Mapetex System



#### LAYING ON IRREGULAR CEMENTITIOUS SUBSTRATES

MAPETEX is a synthetic, non-woven fabric that may be used indoors as an anti-fracture system or, if combined with MAPETEX STRIP adhesive tape, as a removable floor-laying system. Quick and easy to install, it can be used for laying floors on cementitious substrates that are either cracked or that have not been cured correctly, as well as for laying tiles on screeds without having to copy the layout of the existing distribution joints, to avoid unsightly cuts in the tiles particularly in the case of large-format tiles, or else as a removable system for laying internal ceramic and stone floors that also protects the substrate. MAPETEX produces a strong, highly elastic layer of non-woven fabric that protects the flooring by preventing cracks in the substrate being transmitted into the new covering.

## UltraCare®

### ALL YOU NEED TO CARE FOR SURFACES IS HERE.



CLEANING PRODUCTS



PROTECTING PRODUCTS



COMPLEMENTARY PRODUCTS



From the experience of Mapei comes **UltraCare**, the line of professional products for **cleaning, maintaining and protecting** surfaces in ceramic and natural stone. **A complete, effective system** to care for surfaces and preserve their functionality over time.



EVERYTHING'S OK WITH MAPEI

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# UNSTOPPABLE



Ph. © Martina Orsini

Ambrogio Beccaria wins the Transat Jacques Vabre 2023 in tandem with Nicolas Andrieu on board Alla Grande - Pirelli, the Class40 of which Mapei is Global Sponsor.

**Thanks** for all the emotion of this extraordinary venture across the Atlantic Ocean.

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