

INTERNATIONAL

[Realtà MAPEI]

ISSUE 89



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GUIDO PALMIERI
Realtà Mapei
International's
Editor-in-Chief

School buildings, looking to the future

The lengthy lockdown associated with the Covid-19 pandemic has brought to light the vital importance (but also the complexity and fragility) of education systems in modern-day societies. The resources made available through the Recovery and Resiliency Plans, which a number of European countries are about to launch, could provide the opportunity to adapt facilities, tools and services to the changing needs of the education system. "Buildings are the first formal education", so the Italian architect Mario Cucinella stated to emphasise that architectural design and teaching should progress hand-in-hand. Safe structures, sustainability, rethinking existing spaces, and designing new

ones, must guide policies to facilitate the development of new generations: investment in young people and in the future of our societies.

**MAPEI HAS
NOW BEEN
IN SPAIN
FOR 30 YEARS:
A PROCESS
OF CONSTANT
GROWTH**

Due to the very topical nature of the school education issue, we have decided to devote a special section of the magazine to school buildings, including a survey of Mapei contributions to various projects in several countries worldwide. A "package" of products and systems for all kinds of areas of such complex constructions as school buildings, ranging from solutions for structural reinforcement to those for the renovation of classrooms, canteens, and sports facilities.

The building industry is turning out to be a decisive factor in the 2021 economic recovery. According to Euroconstruct (a construction market forecasting network which brings research and consulting companies from 19 European countries together), this industry (+5.9% this year) was the driver behind the revival in GNPs on a European scale with Italy leading the way (+15.1%). This trend is expected to continue in Europe in 2022 (+3.6%).

The latest edition of Made Expo trade fair in Milan was a real showcase for the building industry. Together with other international exhibitions in the searade industry, it offered Mapei the opportunity to display its wide range of products.

2021 has been a year of anniversaries for numerous foreign subsidiaries. 30 years ago, the Group made its entry into Spain through Ibermapei. It has since changed its name (it is now called Mapei Spain) and grown constantly in terms of both its manufacturing and the market success. Mapei Spain now wants to play a leading role in this period that sees a boom in renovation and restoration work on the nation's historical-artistic heritage. Its portfolio already includes such prestigious restoration projects as recent work on Casa Batlló in Barcelona.

It is also anniversary time in terms of company reports. Mapei has just published the fifth edition of its Sustainability Report for both the holding company, Mapei SpA, and its Italian subsidiaries, showing just how committed the company is to every aspect of its operations: i.e. environment, culture and projects to support local communities.

Enjoy your reading

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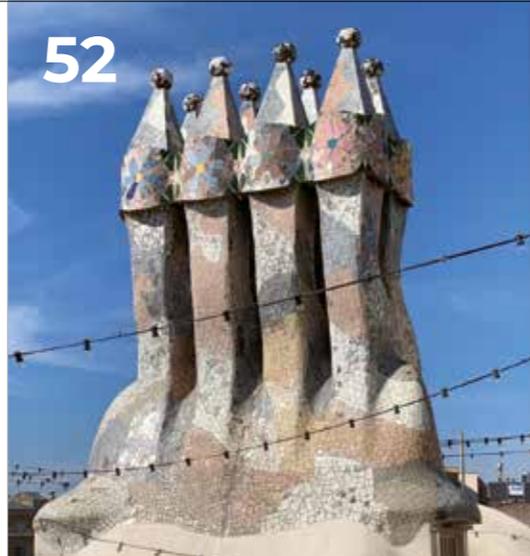
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Cover story
The Zorka Sever school has been selected for international architecture prizes, such as the Mies van der Rohe Award, and won the Viktor Kovacic Award. Mapei and Polyglass contributed to waterproofing works below ground level (pages 12-15). Photo: Marko Mihaljević.

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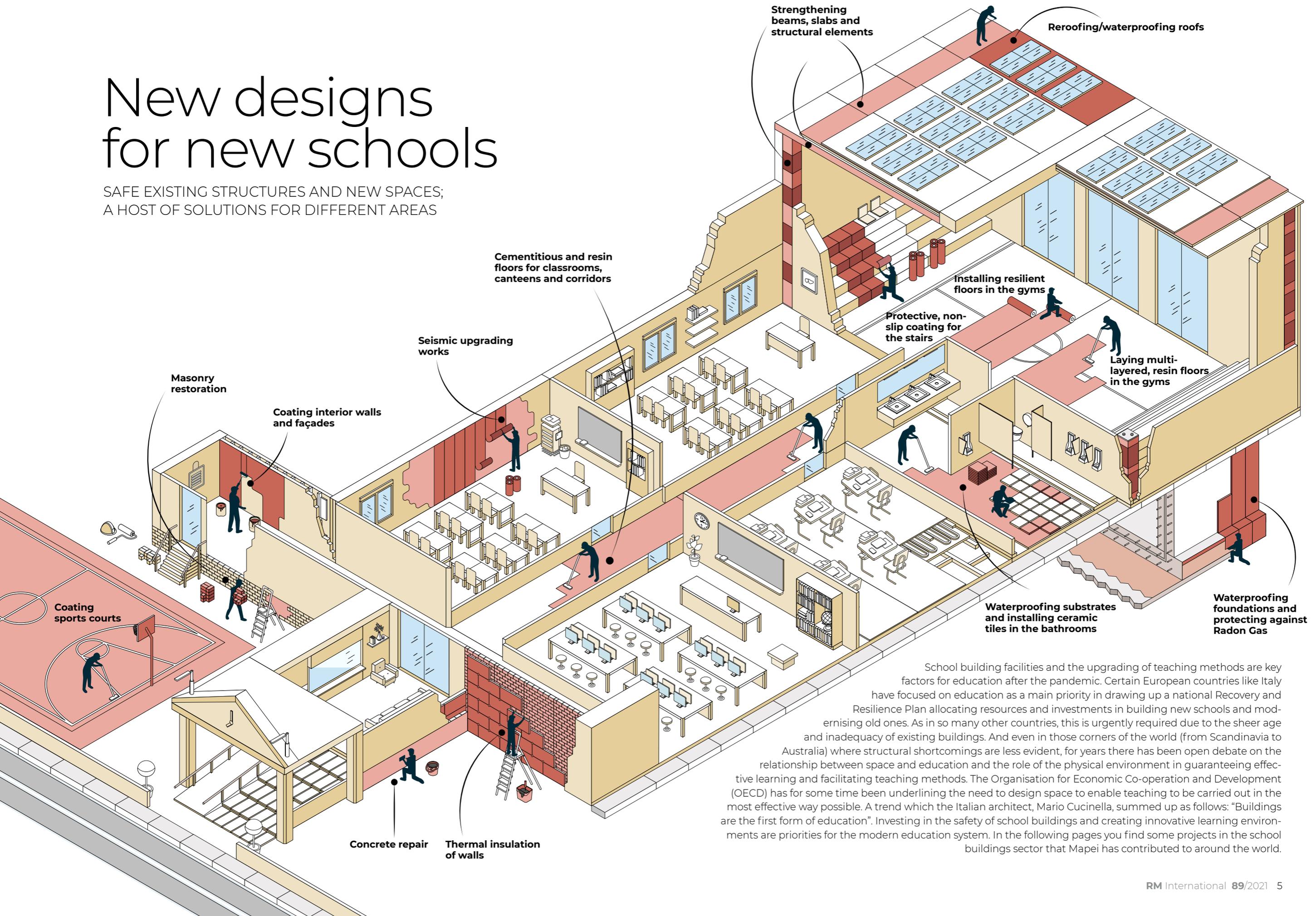
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New designs for new schools

SAFE EXISTING STRUCTURES AND NEW SPACES;
A HOST OF SOLUTIONS FOR DIFFERENT AREAS



School building facilities and the upgrading of teaching methods are key factors for education after the pandemic. Certain European countries like Italy have focused on education as a main priority in drawing up a national Recovery and Resilience Plan allocating resources and investments in building new schools and modernising old ones. As in so many other countries, this is urgently required due to the sheer age and inadequacy of existing buildings. And even in those corners of the world (from Scandinavia to Australia) where structural shortcomings are less evident, for years there has been open debate on the relationship between space and education and the role of the physical environment in guaranteeing effective learning and facilitating teaching methods. The Organisation for Economic Co-operation and Development (OECD) has for some time been underlining the need to design space to enable teaching to be carried out in the most effective way possible. A trend which the Italian architect, Mario Cucinella, summed up as follows: "Buildings are the first form of education". Investing in the safety of school buildings and creating innovative learning environments are priorities for the modern education system. In the following pages you find some projects in the school buildings sector that Mapei has contributed to around the world.



More than education to become a centre for the community

INTERVIEW WITH ALBERTO FERLENGA, FULL PROFESSOR
IN ARCHITECTONIC DESIGN AT THE IUAV UNIVERSITY IN VENICE

When designing a school, what are a designer's main sources of inspiration and what approach do they have to adopt when undertaking such a complex subject?

The main sources of inspiration in architecture are other schools that have already been built, mainly the ones that have made the most impact. In Italy, schools that have been built are not the result of ministerial programmes and the ones we can consider examples of a high level are few and were built in the past, such as the Sant'Elia nursery school in Como. On the other hand, unfortunately, we have numerous examples of schools that are not very interesting and are all similar. So really, in Italy, we don't have many great examples of school buildings. In Spain, Greece, Germany and France, on the other hand, the design of school buildings has been able to rely on initiatives launched by the government and involving numerous young architects. Also, in this historic period, there really are many examples from areas further afield such as Latin America, Africa, the Middle East and Asia. For this sector of architecture, this is generally a pretty uninteresting period in the West, where we are assisting in the re-proposal of lines and forms we have already seen. In every country, however, except maybe in Italy, there is an architectural policy for schools.

Sometime newly built schools are located on the outskirts of towns and cities. What type of relationship can be created between a school building and its surroundings?

The relationship between a school and its surroundings has always been an interesting topic. For years discussions about architecture have mentioned the possible relationships between schools and the surrounding spaces and the role school buildings could have for a series of symbolic and functional reasons. In Italy, we find ourselves faced with thousands of new schools built

between the 1950's and the 1970's and the constant recycling of existing buildings, especially in cities. It would be better if a school were to become a centre that also supplies other services and not just education, a true social and community centre. In fact, already back in 1921 in the United States, they talked about this: school buildings being social centres open 24 hours a day. But in Italy this has never happened: school buildings are gated communities and are often surrounded by land which is neglected. Buildings that rarely play a role as a centre where the local community can come together.

In your opinion, are there any examples in the history of school buildings that could be considered a point of reference for this sector of the building industry?

No, I don't believe there are, and it's a unique case in the overall history of architecture. Even though schools have such a precise and well-defined function in society, a genuine reference type has never been produced. In ancient Greece, lessons were held outdoors and then indoors in gymnasias. The Romans had their schools in taverns or in gymnasias. Then, schools and lessons were passed over and held in convents, barracks or in piazzas in Europe. Schools have never really had the opportunity to propose their own model; they have always been indebted to other types of buildings. As far as the concept of a campus is concerned, it has had very little success in Italy. This is because, in city centres, there has always been a wide range of buildings available, and it seemed logical to recycle them as schools. In a certain sense, and in certain periods, this decision has represented an important opportunity to redevelop entire areas of cities, especially in the universities field. The decision to locate universities here has attracted students to the old city centre in Venice, Milan, Pisa and Perugia, to name a few. As far as new school buildings are concerned, most

In every country, except maybe in Italy, there is an architectural policy for schools



The Francesco Montanari primary and middle school in Mirandola (Central Italy). The school was designed by Alberto Ferlenga and the NAOmi design studio (Alberto Gozzi, Fernanda De Maio, Renato Ruatti and Margherita Vanore) with Claudio Conter, Filippo Orsini, SWS and Mario Berni. Anti-seismic techniques were adopted when the school was built, one year before the earthquake that hit Central Italy in 2012. Thanks to the correct design approach, the earthquake caused no serious damage to the structure.

of them are located in areas on the outskirts. These latter types have grown over the years without any correlation between residential buildings and the school itself. Buildings with no specific architectural style and of relatively poor quality, and incapable of landscaping the area around it.

The layout of schools has changed over the years. What are today's latest design trends and what elements are needed for the schools of tomorrow?

We have been working on this topic through the PRIN (Project of National Interest) "Schools to be lived" initiative launched by the Italian Ministry of Education, University and Research and we are also doing it together with INDIRE (the National Institute for Documentation, Innovation and Educational Research), which is the operational arm regarding school buildings of the Ministry of Education. As part of the project, we are looking to reflect on a series of guidelines which had already been issued in 2012, but which didn't really have an organic continuation, and we are working together with local councils, teachers and psychologists. We are convinced that schools can have a new centrality within urban contexts which until now has never been acknowledged. The idea is to work on a case-by-case basis and turn a school building that needs to be redeveloped into a centre that reflects the specific territory in which it is located. If the school aspires to take on a more far-reaching role and function and include all those that reside in a certain place, then it needs to know how to interpret the differences or the changes it is a stakeholder in and make them understood by the others. I'll give you an example: the practical application of environmental sustainability, through a different use of the water, energy or land within the context of the school, could have an explanatory effect externally to the school, of what could be done within our own homes.

In these last two years of the pandemic, there has been a lot of talk about reopening and exploiting

schools and universities. Could this be the occasion to rethink school spaces?

The pandemic has given us the chance to observe and perceives our daily spaces in a different way and to become aware of what is lacking or how to use spaces differently. For example, a school experience beyond the confines of the walls of the school itself that could be developed on the outside or in small pavilions is complementary to what takes place inside the school, just as a digital lesson is complementary to a traditional one. These new aspects could be conserved, just like the new awareness that a school building must now have separate access points for libraries, canteens or gymnasiums, or access for the public or for students. However, all this will not lead to an enormous change to school buildings in terms of architectural structures, because their footprint would have to be doubled and, as a result, so would their cost. In my opinion there will be changes, small but significant changes, aspects the pandemic has brought to the fore and that previously seemed hardly relevant, such as more care for the outdoors that could be used for didactic purposes.

ALBERTO FERLENGA

Alberto Ferlenga is a full professor in architectonic design at the IUAV University of Venice, where he served as Rector from 2015 to 2021. Author of numerous volumes, papers and articles for leading international publications, he was also the editor of *Lotus International*, a quarterly architectural magazine, from 1981 until 1990 and has been the editor of *Casabella*, a monthly Italian architectural and product design magazine, since 1996. He has curated various exhibitions at the Triennale in Milan, the Pompidou Centre in Paris and the Maxxi museum in Rome and has designed and directed various exhibition displays, including the Italy Pavilion for the 5th International Architecture Exhibition in Venice in 1991. **Since 2017 he has been national coordinator of the PRIN (Project of National Interest) "Schools to be lived" initiative launched by the Italian Ministry of Education, University and Research.**



Redevelopment of schools: the quest for the right compromise

GIULIO MORANDINI, MAPEI GROUP'S CORPORATE DIRECTOR - BUILDING LINE, DISCUSSES THE ISSUE

What does the redevelopment of a complex building such as a school entail?

Redeveloping a complex building such as a school inevitably means having to compromise between upgrading its actual structural capacity and maintaining certain architectural standards. Various techniques can be adopted with this type of intervention; they are, however, invasive techniques that may also compromise the overall use of the internal spaces. This is why upgrading a structure generally means having to find solutions that safeguard the global functionality of the entire school. And this is undoubtedly one of the most important objectives with this type of intervention. Another important factor to take into consideration is how to schedule the work. It should be carried out when the school is closed because it is almost impossible to work if the school is open.

In general, what are the most common problems with this type of building?

A lot of schools have been around for decades and are certainly not designed according to anti-seismic criteria. This means you very often find that floor slabs are not rigid enough to distribute loads in the event of seismic activity. This is a real problem, also because floor slabs often have a very large span and, due to their very nature, they are particularly susceptible to a certain amount of flexibility. Floors need to be rigid and, the more rigid they are, the better. So we need to find rapid solutions that enable us to make them more rigid without having too much of an impact on their thickness. If you change the thickness of floors, you then find yourself having to change windowsills, doorsills and stairs. A second problem is given by

the fact that, when structures are made from reinforced concrete, the beams and pillars usually have an insufficient amount of stirrups. In the event of seismic activity, this means structures are unable to deform sufficiently to allow seismic energy to be dissipated. One of the techniques adopted, which is very effective and only slightly invasive, is the use of FRP (Fiber Reinforced Polymers). The technique in question allows any lack of stirrups to be integrated using external binding. In simple terms: it is like putting a series of "sticking plasters" around a column, which is the equivalent of having a lot of stirrups inside an element, thereby increasing the deformation capacity of the actual column in the event of seismic activity.

When local authorities have to plan work on school building stock, they are almost always faced with the problem of budgetary constraints. What solutions does Mapei propose?

Mapei has developed three solutions with works on school buildings in mind. The first one is MAPEWRAP SYSTEM which overcomes the lack of stirrups in columns and slabs. The second one is PLANITOP HPC FLOOR, a special mortar applied in very thin layers to strengthen floor slabs without changing their total thickness. The third solution regards dividing and buffer walls. Very often, in the event of seismic activity, dividing and buffer walls can become detached and overturn. During an earthquake, people run out of classrooms and go into the corridors and falling partition walls can obstruct escape routes. A few years ago Mapei developed MAPEWRAP EQ SYSTEM specifically to increase the time available to evacuate buildings. By applying this system on walls, non-structural walls can

Upgrading a school means finding solutions that safeguard the functionality of the whole building

Mapei systems are only slightly invasive, very light, rapid to apply and with a high return in terms of performance

be kept under control and we can prevent them from tipping over or exploding during earthquakes. The first ever application of MAPEWRAP EQ SYSTEM was, indeed, in a school and, to be more precise, in the Teresio Olivelli Technical Commercial Institute in Darfo Boario Terme (Province of Brescia, Northern Italy). The real advantage of the three mentioned systems is that they can be used either together or on their own. This allows designers and local authorities to consider their costs and benefits. If there is a limited budget and the school is particularly deficient in terms of seismic vulnerability, then a more precise evaluation needs to be carried out, increasing its anti-seismic protection and working on the most sensitive areas; focusing only on certain points of the structure which, during an earthquake, appear to be the most dangerous. To put it briefly: rather than extend the intervention to the whole of the building, you carry out work in targeted, localised areas.

What is the advantage of carrying out localised work?

The advantage of localised work using one or all three of the systems mentioned previously is they don't modify the global behaviour of the structure. Opting for more traditional techniques, on the other hand, modifies the rigidity of a structure and, in the event of an earthquake, creates imbalances in the whole of the structure, including where work hasn't been carried out. If we adopt localised interventions using Mapei systems – only slightly invasive, very light, rapid to apply and with a high return in terms of performance – it is like putting lots of sticking plasters but only where there are scratches, rather than opting for a plaster cast. It is better to carry out targeted, localised redevelopment work with good global performance characteristics to inhibit the main collapse mechanisms rather than a more widespread intervention on the entire structure.

ANTI-SEISMIC AND STRUCTURAL STRENGTHENING SYSTEMS

Mapei offers innovative systems for structurally strengthening schools which ensure: simple and quick application; high durability; no increase in the masses involved in the intervention, hence no modification to the stiffness of the structure. Mapei also offer systems to improve and upgrade the anti-seismic protection of our school building stock.

■ MAPEWRAP EQ SYSTEM

Patented, certified system developed to make buildings safer, such as by preventing dividing and buffer walls, as well

as ceilings from collapsing. The system is made up of MAPEWRAP EQ NET bi-directional glass fibre reinforcing fabric that forms a perfect bond with rendered substrates by applying MAPEWRAP EQ ADHESIVE, a polyurethane adhesive in water dispersion. This system is tested and certified; unobtrusive, compact, quick and easy to install. It can be applied on existing plaster and has very low emission level of VOC (Volatile Organic Compounds).



MAPEWRAP EQ SYSTEM is recommended for repairing and strengthening non load-bearing walls and secondary elements in order to improve stress distribution and increase their ductility in case of an earthquake.

A country's school building stock is a very important sector and there is a constant need to plan upgrading and structural development work. What is it like to discuss these issues with local authorities?

With local councils, particularly the smaller ones, the main contact is a designer, who is always an external figure. To make local authorities more aware of the issues, Mapei Technical Services are often invited to meetings to provide support for the designers and to offer their opinion or advice on the most appropriate systems to help overcome problems. Or, again when invited by the designer, if a set budget has been allocated, we study and design a bespoke solution that is able to balance costs and benefits. And obviously, apart from carrying out site surveys to analyse problems, our Technical Services Department always – and when I say always, I mean always! – provides support for the Director of Works during the actual application work. For instance, in the last few years, thanks to the release of the Schools Plan, the Italian Government and local authorities have become more aware of and more sensitive to the structural condition of Italian schools and I believe this will always be on the increase.



1. Offering anti-tipping protection for buffer walls and preventing the collapse of ceilings in classrooms during seismic activity with the **MapeWrap EQ System**.



2. Localised strengthening of beam-pillar joints using carbon fibre fabrics from the **FRP System** line.



3. External connections between buffer walls and the reinforced concrete structure (anti-tipping system) using mesh and mortar from the **FRCM System** line.



4. Strengthening a floor with an added layer to form a compact layer using **Planitop HPC Floor**.

■ **PLANITOP HPC (HIGH PERFORMANCE MICRO-CONCRETE) TECHNOLOGY**

An exclusive strengthening system made up of micro-concrete with very high compressive strength, high ductility and the capacity to absorb high fracture loads. This product is a fibre-reinforced concrete that contains a high percentage of steel fibres which, by exploiting their residual tensile strength, increase the overall load-bearing capacity and ductility of structures (two properties which are fundamental in areas at risk of seismic activity). This technology consists of a special formula, PLANITOP HPC, developed

to strengthen load-bearing structures (slabs, pillars, joints) with a layer of compact cladding (1.5-3 cm thick) and is used alongside PLANITOP HPC FLOOR, which was developed to strengthen the outer face of concrete, brick/cement and wooden floors by applying a strengthened, compact added layer (1.5-2.5 cm thick) without any further reinforcement.

■ **MAPEI FRG SYSTEM**

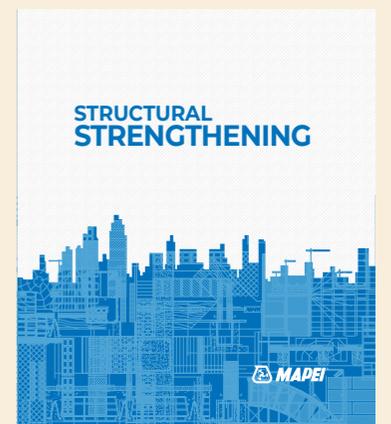
The various systems that form the macro-family of FRG (Fibre Reinforced Grout) are made up of an inorganic matrix (mortar) in which strengthening fibres in the form of mesh are embedded. FRG systems

may be divided into the following families: FRCM (Fibre Reinforced Cementitious Matrix) and CRM (Composite Reinforced Mortar) systems. FRCM systems are made up of special fibre-reinforced mortars applied in low thickness layers (around 1-1.5 cm) in combination with various types of strengthening mesh (made from A.R. (alkali-resistant) glass, basalt or carbon fibre). These systems allow the mass and rigidity of the strengthening package to be reduced effectively while significantly increasing its mechanical properties. CRM systems are made up of mortars suitable for

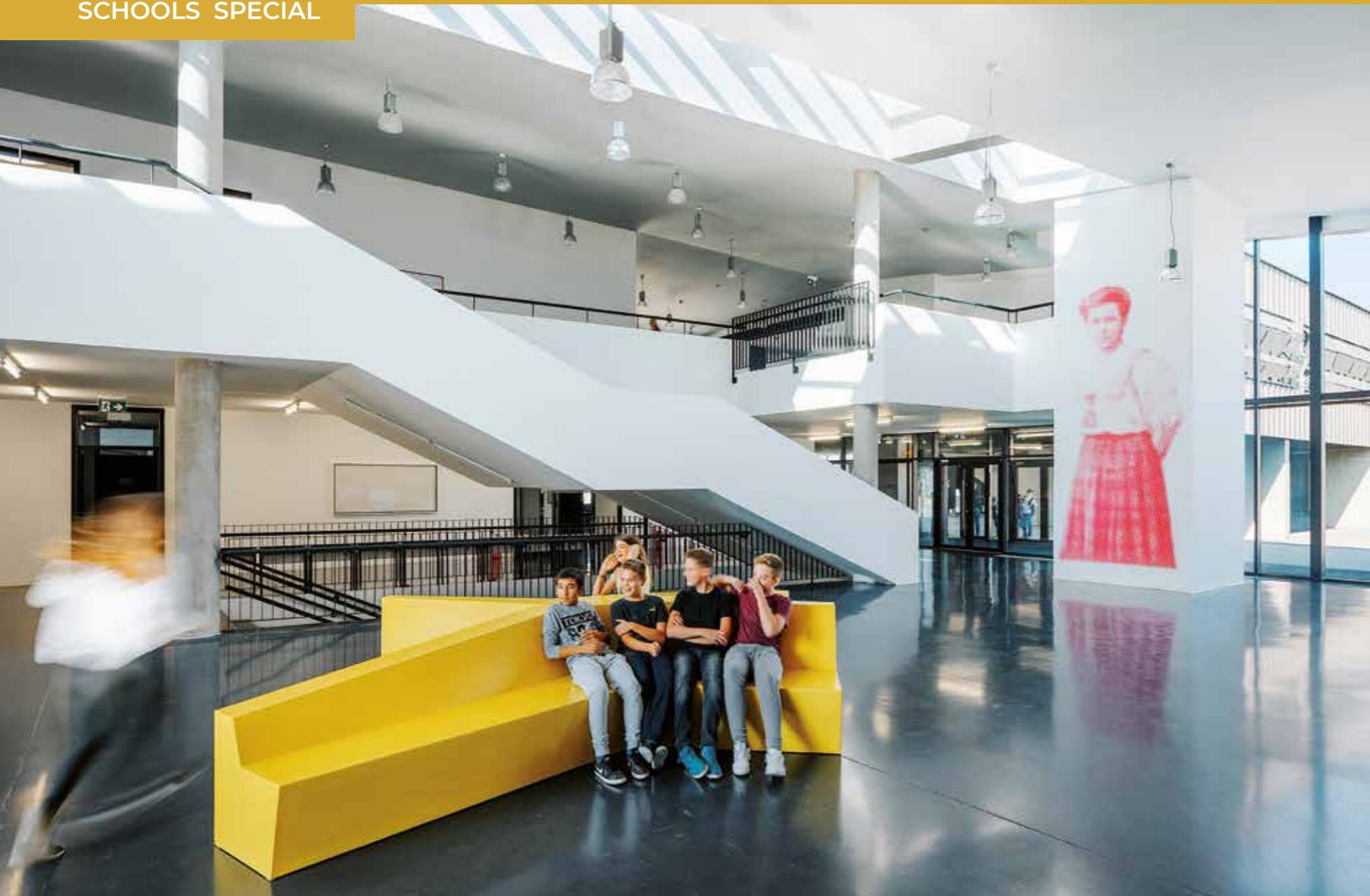
application in layers up to 3-4 cm thick, so they also cover the surface of uneven (masonry, combined with A.R. (alkali-resistant) glass fibre mesh. Because of the thickness applied, the system needs to be connected mechanically to the masonry with glass fibre connectors. The aim of this technology is to improve the mechanical properties of masonry and increase the level of collaboration between the elements making up the masonry. FRCM technology can also be used for local intervention to ensure anti-tipping protection of non-structural and partition walls

■ **MAPEI FRP SYSTEM**

Structural strengthening system comprising high strength and very high strength fibres and epoxy matrixes specially formulated for the repair and static and seismic upgrading of structures made from normal, pre-stressed and reinforced concrete, steel, masonry or wood. There are various types of fibres that characterise this type of structural composite: carbon, glass, steel and basalt. This system increases the performance characteristics of structures by increasing their strength and ductility.



Download the "Structural strengthening" manual!



Popovača (Croatia)

Zorka Sever Primary School

WORKING BELOW GROUND LEVEL IN A SCHOOL LOCATED NEAR A WATERCOURSE

In Popovača, a town in the north-east of Croatia, the new Zorka Sever primary school opened in 2019. It was built in an area on the edge of the town characterised by fields and family homes. Apart from the classrooms and services normally found in a school, the complex also has a sports centre and outdoor playing fields which are used by both the pupils of the school and local sports associations.

The entire structure extends over a 8,000 m² area and was built near a river where the water flows with a constant depth of around 1 m. This proved to be quite a challenging problem for the contractor because the ground and foundations had to be waterproofed using a quick and simple system which would last over the years.

The project proved to be so innovative and successful that was nominated for the prestigious international Mies van der Rohe and Piranesi architectural awards. It also won the Viktor Kovačić Award 2018, awarded by the Association of Croatian Architects, as a case of successful achievement in architectural creativity.

ABOVE. In Popovača, a town in the north-east of Croatia, a new primary school was completed with an award-winning design.

RIGHT. Apart from the classrooms and services, the complex also encloses a sports centre and outdoor playing fields.





ABOVE. MAPEPLAN UG waterproofing membrane was used to waterproof the foundations.

Safe waterproofing of the foundations

Mapei Croatia d.o.o.'s Technical Services was asked to carry out a survey of the site and proposed the application of a system of waterproofing membranes manufactured by Polyglass, a subsidiary of the Mapei Group.

MAPEPLAN UG waterproofing membrane was proposed as the solution to waterproof the foundations. This is a single layer colour geomembrane with an orange signal layer. It can be applied as a water barrier in tunnels and underground constructions of any type and is available in various thickness (15, 30 and 20 cm) and a standard 20 m length.

A base layer of concrete was first created, over which a layer of POLYDREN PP was applied, a non-woven geotextile to be used as compensation, levelling, protection and filter layer. MAPEPLAN UG was then applied over this layer with overlaps of at least 10 cm between adjacent sheets. Particular sections of the areas to be waterproofed were finished off using MAPEPLAN D 15 unreinforced synthetic waterproofing membrane manufactured from plasticized polyvinyl chloride PVC-P, produced in a multi-extrusion process, with high quality raw materials.

A section of MAPEPLAN D 15 at a height of 5 cm above the level of the finished floor was fixed with MAPEPLAN METAL SHEET.

For waterproofing the pillars, joints and masonry of the foundations, it was recommended to use PLANISEAL 88 osmotic cementitious mortar, which was applied in three layers over the surface, with a pause of several hours between each coat to avoid capillary rising damp affecting the wall.



Find out more
PLANISEAL 88

TECHNICAL DATA

Zorka Sever primary school, Popovača (Croatia)

Year of construction: 2013-2018

Period of the Mapei

intervention: 2014

Intervention by Mapei:

supplying products for waterproofing foundation

walls and structural elements

Owner: Popovača City Council

Design: XYZ arhitektura d.o.o.

Works direction: Arhingtrade d.o.o.

Main contractor: Gradnja d.o.o.

Waterproofing contractor: Izolacija d.o.o.

Mapei coordinator: Fausto

Ferlin, Mapei Croatia d.o.o.

Photos: Marko Mihaljević

MAPEI PRODUCTS

Waterproofing

foundations: Planiseal 88

Sealing joints: Mapeflex PU 45 FT

POLYGLASS PRODUCTS

Waterproofing

foundations: Polydren PP, Mapeplan UG, Mapeplan Metal Sheet, Mapeplan D 15

For further info on products visit mapei.com and polyglass.com



School architecture: a laboratory of innovation

WE SPOKE WITH THE AWARD-WINNING CROATIAN ARCHITECTS MIA ROTH ČERINA AND TONČI ČERINA, XYZ ARHITEKTURA AND ROTH & ČERINA

What does designing a school involve in the year 2020, in Croatia in particular? Are the buildings mainly single-block structures with a corridor-classroom layout or is a good percentage of the buildings based around more modern principles?

School architecture has ideally been the forerunner of new tendencies, but the spatial organization is not necessarily the carrier of innovation. In quite a number of projects and sites, it is the in-between space which embodies progressive ambitions. Many examples of recent school architecture in Croatia are proof that school architecture is a continuous laboratory of innovation projected towards the future.

A primary school like Zorka Sever is attended by children aged between 6-11 years. How have you tackled problems associated with children of such a wide age range during this important stage in their school education?

The Croatian elementary school system combines children from 6 to 14, and addressing this range was an important aspect of the design. The school sits on two volumes, one

housing public spaces and lower classes, the other housing sports areas. They are bridged by an upper floor containing higher classes, spanning both volumes, and the heterogeneous design is enveloped by a common pitched roof. The classrooms of younger children are assembled in a cluster of their own, under the roof's lowest height, so when the children go out of their ground-floor classrooms, the volume of the school seems connected to the surrounding houses, close to the rural matrix of the local community. Interiors extend towards the botanical garden in a protected environment. The older children, whose classrooms are located on the upper floor, enjoy the atmosphere of a busy street, with views towards the outside and the communal spaces.

Waterproofing was carried out using Polyglass solutions. How important is it for an architectural designer to have a good understanding of the building materials available on the market and to actually test them out in person?

The materialization of an idea is an integral part of the design process

and being familiar with the materials and details which will embody both its functions and strengths is crucial. The right materials underline the basic concepts behind a project. In the case of a school, the materials embody many properties – durability, character, comfort – and this is even more crucial in the larger spaces such as communal spaces or classroom floors.

The Zorka Sever school project has been nominated by panels of judges for international prizes, such as the Mies van der Rohe Award, and won the Viktor Kovacic Award. In your opinion, what is it about your project that has caught the eye of these panels of judges?

Architects always give their best possible answer to a program, so it is difficult to speak from a jury's point of view. The award and nomination explanations mentioned the strong sense of place created, connecting local values with a contemporary idea of school, the new identity the project brought to the neighbourhood, the multiple ambiances that users could readily exploit.



Debrecen (Hungary) International School of Debrecen

WATERPROOFING ROOFS AND INSTALLING RESILIENT FLOORS
AND CERAMIC TILES IN A TOP-LEVEL EDUCATION FACILITY

Debrecen is Hungary's second biggest city and an important cultural center located in one of the most dynamically developing areas of the country. It hosts the offices of many Hungarian and foreign corporations, as well as a large green space called the "Great Forest" in its northern area.

One important goal of the city management is to set a globally competitive standard in the field of public education. To meet this objective, in 2019 the City Council opened a new facility, the International School of Debrecen (ISD), providing education in English language to children from kindergarten to high school. The building

was built in the immediate surroundings of the Great Forest and symbolizes the aim for sustainable architecture in harmony with nature.

Mapei Kft, the Group's Hungarian subsidiary, supplied products for waterproofing roofs, preparing substrates and installing ceramic tiles and resilient materials.

Polyglass solutions for waterproofing the roofs

The company in charge of roof waterproofing chose to employ products by Polyglass, a subsidiary of the Mapei Group. The numerous details, angular shapes, sides and corners of the semicircular building posed enormous

LEFT. Products by Polyglass (Mapei Group) such as POLYVAP RADONSHIELD P-AL, POLYDREN PP, MAPEPLAN M B_{ROOF} t1 ensured a proper waterproofing of the roofs.

challenges to the staff entrusted to install the waterproofing membranes. However, the skilled team of the waterproofing contractor and the innovative Polyglass products ensured that the works were completed flawlessly. First of all, the concrete roof slabs were treated with POLYPRIMER bituminous primer to promote the adhesion of following layers. POLYVAP RADONSHIELD P-AL bituminous membrane was then applied over the entire surface, to form a vapor barrier over the straight-layer flat roof from below. Thermal insulation panels were then installed on top of this layer, with slopes formed using a second layer of thermal insulation panels. POLYDREN PP polypropylene woven non-woven geotextile was then installed to make sure that the emissions of plasticizers from the PVC products would not damage the thermal insulation panels. MAPEPLAN M B_{ROOF} t1 single ply waterproofing membranes with a white top layer were mechanically fixed onto wooden structural supports.

Installing ceramic tiles in service areas

Prior to the installation of ceramic tiles in the kitchens and service areas, it was necessary to form fast-drying, normal setting screeds with the aid of a special hydraulic binder, TOPCEM. The substrates were then levelled off with ULTRAPLAN ECO 20, a self-levelling compound manufactured and distributed on the Hungarian market by Mapei Kft.

The 30 x 60 cm ceramic tiles were installed thereupon with KERAFLEX EASY S1 deformable cementitious adhesive with extended open time, high wetting capacity and very low emission level of volatile organic compounds (VOC), which is particularly recommended for bonding large-size ceramic tiles over large areas of flooring. Joints were then grouted with ULTRACOLOR PLUS high-performance, quick-setting and drying polymer-modified mortar available in numerous color shades.



ABOVE. In the corridors, stairs and study rooms wood-effect vinyl floors were installed with ULTRABOND ECO 571 2K polyurethane adhesive.



ABOVE. In several study rooms PVC floors were bonded with ULTRABOND ECO V4 SP.

Vinyl floorings for the corridors, stairs and study rooms

In the rooms designed for group study, as well as in the corridors and stairs, vinyl floorings were installed on screeds built using TOPCEM and smoothed over with ULTRAPLAN ECO 20. The adhesives chosen to bond the vinyl flooring were ULTRABOND ECO V4 SP, universal adhesive in water dispersion, suitable for all kind of resilient floor coverings, and ULTRABOND ECO 571 2K two-component polyurethane adhesive, which is used for installing PVC and rubber floorings both internally and externally on absorbent and non-absorbent surfaces. Skirtings were installed with ADESILEX LP, a contact polychloroprene adhesive providing a strong bond immediately upon application.



Find out more
ULTRABOND ECO 571 2K

TECHNICAL DATA

International School of Debrecen, Debrecen–Pallag (Hungary)

Period of construction: 2018–2019

Period of the Mapei intervention: 2018–2019

Intervention by Mapei: waterproofing roofs, installing ceramic tiles and resilient floorings

Owner: Municipality of

Debrecen

Design: BORD Architectural Studio

Main contractor: Hunép Universal Zrt.

Contractor for waterproofing works: Deszig Kft.

Ceramic installation contractor: Hunép Universal Zrt.

Resilient flooring contractor: Sándor Tóháti

Mapei distributor: GSV Kft.

Mapei coordinator: Krisztián Szénás, Mapei Kft. (Hungary)

MAPEI PRODUCTS

Waterproofing roofs:

Polyprimer, Polyvap Radonshield P-AL, Polydren PP, Mapeplan M B_{roof} t1, Mapeplan Metal Sheets

Preparing substrates:

Topcem, Ultraplan Eco 20*

Installing ceramic tiles:

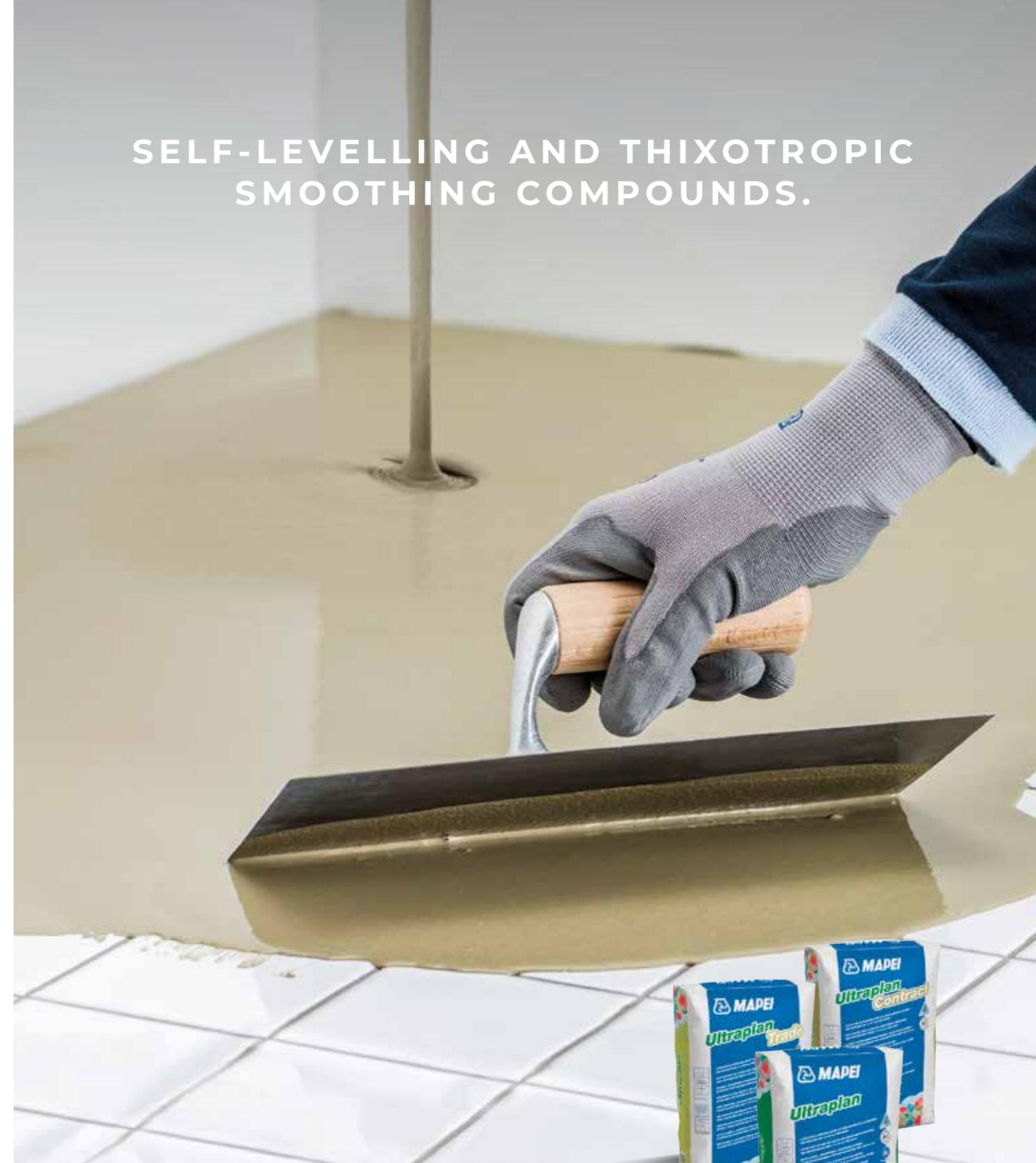
Keraflex Easy S1, Ultracolor Plus

Installing resilient floors:

Ultrabond Eco 571 2K, Ultrabond Eco V4 SP, Adesilex LP

* This product is distributed on the Hungarian market by Mapei Kft. mapei.com, mapei.hu

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Pudong, Shanghai (People's Republic of China) Shanghai American School

RESISTANT CEMENTITIOUS FLOORS FOR STUDENTS FROM 44 COUNTRIES

The Shanghai American School for Children of Foreign Personnel (SAS) is the largest in China and one of the most prestigious international schools in Asia.

It was founded by the American Consulate on September the 17th, 1912, less than a year after the fall of the Qing Dynasty, the last imperial dynasty in China. It was attended by 38 students and located in Shanghai's Hongkou neighborhood, a district just north of the Bund that had long served as a popular home of American expats. In 1923, SAS opened a new campus location at 10 Hengshan Lu in a Victorian-style administration building.

In 1950, Shanghai closed to foreign-owned businesses and SAS students took a 30-year recess. In 1980 SAS was re-founded and a new space for it was completed on the grounds of the U.S. Consulate.

The 1990s saw a jaw-dropping building boom and, once again, both Shanghai and SAS were in lock-step. At SAS, the decade began with the school sharing space with the famous Shanghai Girls No. 3 School before outgrowing its facilities.

At the start of the new century, Shanghai American School had built not one home but two campuses, in Puxi and Pudong. Both have experienced major additions ever since. This growth echoed the expansion of Shang-

hai itself. Today the over 2,000 students attending the school come from 44 countries and regions, including kindergartens, elementary schools, junior high schools, and high schools.

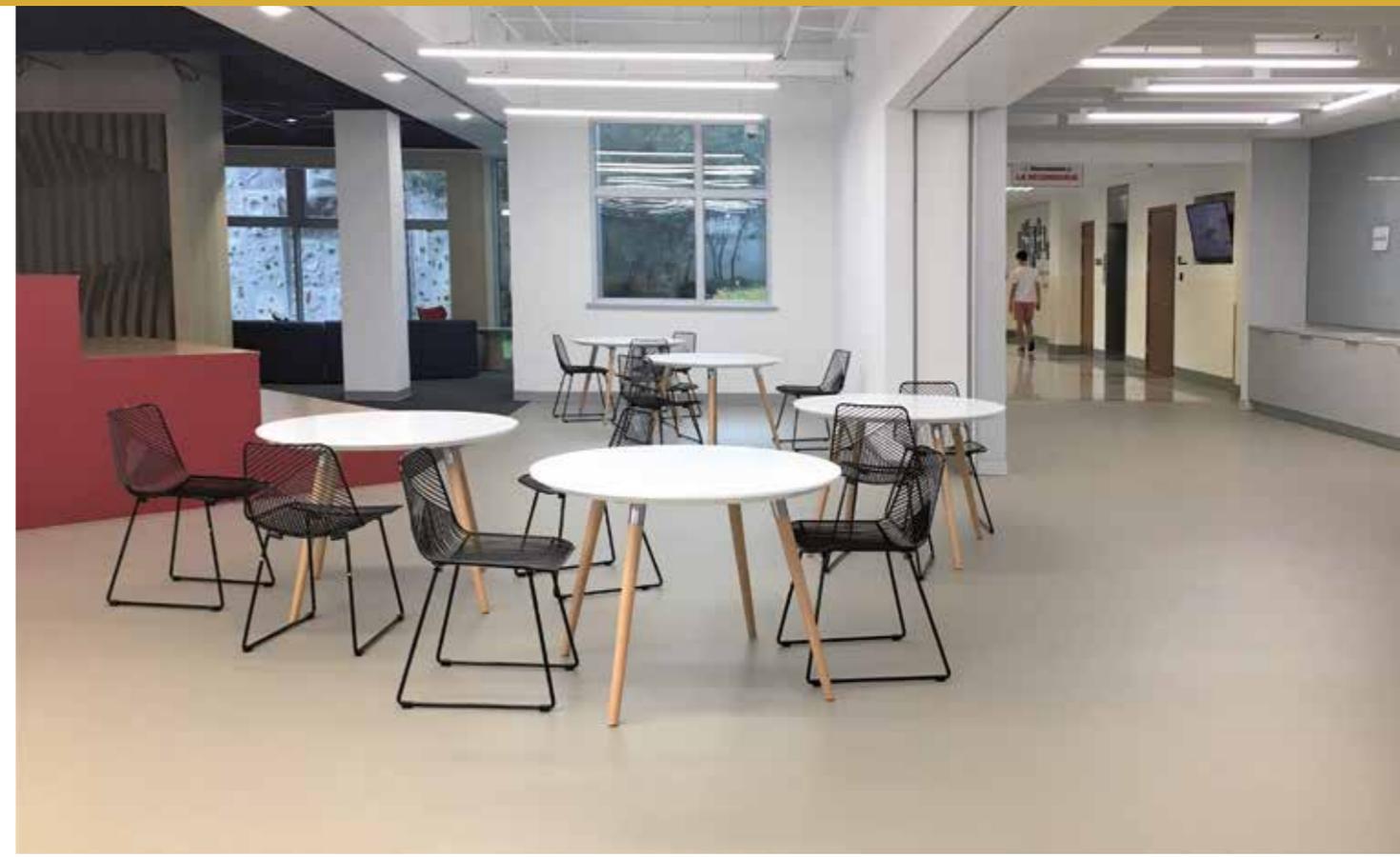
109 years after the first school bell rang, Shanghai American School remains a reflection of both its American roots and Shanghai location.

New floors for the SAS campus in Pudong

SAS shares Shanghai's drive towards innovation, as seen by tech-forward learning spaces such as its maker spaces and design studios, and by Signature Programs such as the Innovation Institute.

To ensure the ideal conditions for education activities and the wellbeing of students, teaching staff and employees, the floors of several areas (offices, common rooms, classrooms) were recently renovated in the school campus in Pudong for a total surface area of 1000 m².

To guarantee abrasion-resistant floors and perfectly flat surfaces with a high aesthetic impact the ULTRATOP system was chosen. This system is particularly recommended for internal floors in industrial facilities (including areas used for storage), shopping centres, and restaurants as well as schools or areas subjected to intense foot traffic.



The system included the use of PRIMER SN, two-component fillerized epoxy primer, which was specifically formulated to carry out preliminary priming treatments on substrates before applying self-levelling cementitious mortars from the ULTRATOP range and epoxy and polyurethane resin systems from the MAPEFLOOR range. While still fresh, the layer of PRIMER SN was fully blinded with QUARTZ 1.2. Once the primer had hardened, the excess of quartz was removed and the surface was lightly sanded to eliminate loose residues of quartz sand.

ULTRATOP, ultra-fast setting, self-levelling mortar based on special hydraulic binders, was then applied on the surfaces, before finishing them with MAPEFLOOR FINISH 58 W, a two-component, aliphatic polyurethane coating product in water dispersion. MAPEFLOOR FINISH 58 W improves the surface resistance to wear and scratches while limiting the absorption of liquids.



Find out more
ULTRATOP

TECHNICAL DATA Shanghai American School (SAS), Pudong, Shanghai (PRC)

Period of renovation: 2017
Intervention by Mapei:
supplying products to lay
cementitious floors
Owner: SAS

Flooring contractor:

Shanghai Pingsheng
Engineering Technology
Co., Ltd
Mapei coordinator: Peter
Liu, Mapei Construction
Materials (Guangzhou) Co.
Ltd. (PRC)

MAPEI PRODUCTS

Preparing substrates:

Primer SN

Laying cementitious floors:

Ultratop, Mapefloor Finish 58 W

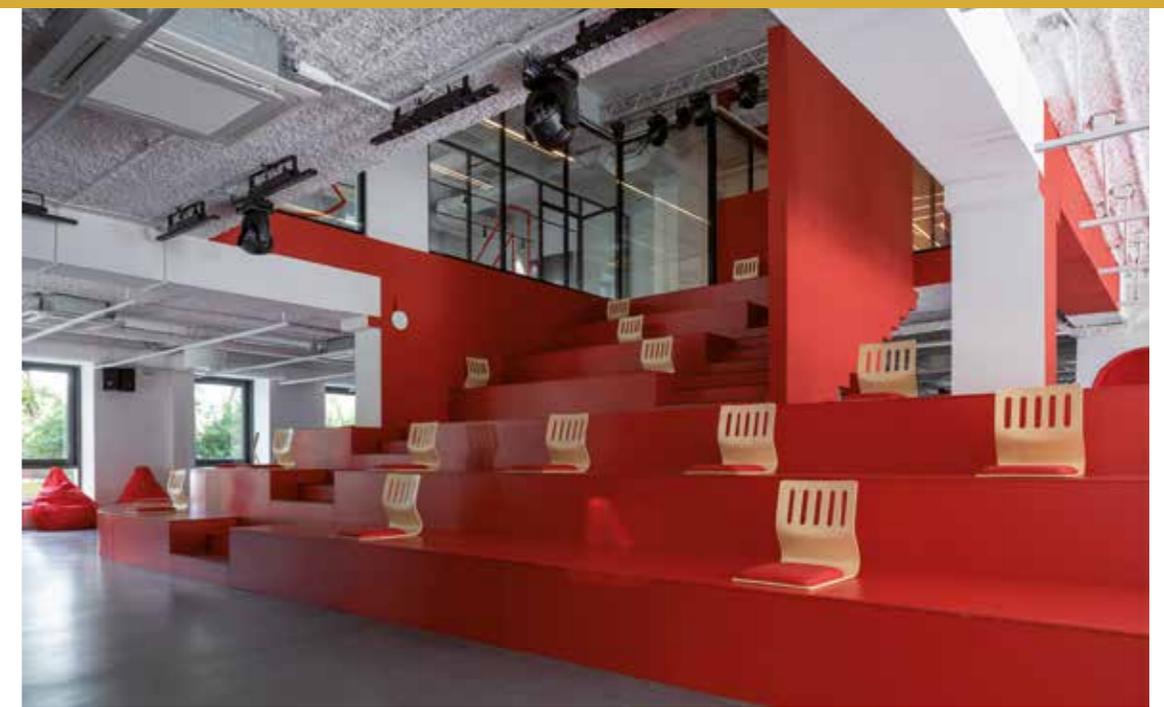
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IN THE FACING PAGE.

The Shanghai American School for Children of Foreign Personnel (SAS) is one of the most prestigious international schools in Asia attended by over 2,000 students.

ABOVE. The cementitious floors were completed with the ULTRATOP system, which involved the use of PRIMER SN, ULTRATOP, and MAPEFLOOR FINISH 58 W.

RESISTANT AND
SAFE FLOORS FOR
THE CLASSROOMS
AND COMMON AREAS



Moscow (Russian Federation) TUMO international school of creative technologies

TUMO is an international school specializing in creative technologies that operates all over the world: beside Moscow, one finds TUMO schools in Paris, Beirut (Lebanon), Yerevan (Armenia) and several other cities. In 2016, TUMO topped the list of the world's most innovative schools compiled by French magazine "We Demain", surpassing AltSchool in

San Francisco (USA), Fuji Kindergarten in Tokyo (Japan) and Steve Jobs School in Amsterdam (Netherlands). TUMO has a unique teaching system without teachers or grades. Children learn independently, doing tasks and attending workshops by industry leaders.

In 2020, TUMO centre for creative technologies opened in Moscow for teenagers from 12 to 17 years old. It welcomes children from all over Russia: in addition to full-time programs, an online training program is offered. The school is located in the city centre, near Moscow City, on the banks of the Krasnogvardeisky pond. The school has its own building with a study area, dedicated rooms for workshops and a relax zone on the roof. Its architectural concept was developed by CNTEZ architects and Alllevels architecture & engineering: a modern design, largely dictated by the development of technology and ergonomics. Full-time students can use all the available equipment: recording studios, a robotics studio, video cameras, graphics stations and tablets, 3D printers.



Ultratop Loft for the floors of the classrooms and common areas

To ensure that beautiful, safe and resistant surfaces were created, ULTRATOP LOFT system was chosen to complete over 1,850 m² of floorings in the classrooms and common areas in a very short time.

ULTRATOP LOFT System was the perfect solution for the educational center, as it offers high aesthetic impact, reliability, high mechanical strength and excellent resistance to wear and high levels foot traffic. First of all, PRIMER SN epoxy primer, preliminary prepared with QUARTZ 0.5 quartz sand, was applied on the surfaces, which had been mechanically prepared in order to have a suitable rough surface.

The main coat was then applied, made up of two coats of ULTRATOP LOFT F, one-component trowellable coarse-textured cementitious paste. PRIMER LT was spread between the two coats of ULTRATOP LOFT F to

improve adhesion and regulate the absorption, after the surfaces were properly sanded.

The finishing coat involved the use of ULTRATOP BASE COAT, an acrylic formulation in water dispersion used as a base coat before applying protective finishes on ULTRATOP line coatings, and MAPEFLOOR FINISH 50 N, an aliphatic transparent polyurethane finish used to create a transparent, semi-gloss, protective, dust-repellent and wear-resistant film.

MAPEFLOOR FINISH 58 W was then applied by spray twice to create a final matt effect on the flooring while increasing its abrasion resistances.



Find out more
ULTRATOP LOFT SYSTEM

IN THE FACING PAGE.
The new TUMO education centre opened in Moscow in 2020.

ABOVE.
The ULTRATOP LOFT system was used to create resistant and attractive floors in the classrooms and common areas.

TECHNICAL DATA
TUMO International school of creative technologies, Moscow (Russian Federation)
Period of construction: 2018-2020
Period of Mapei intervention: 2020

Owner: TUMO
Design: CNTEZ architects and Alllevels architecture & engineering
Structural design: Alllevels architecture & engineering
Flooring contractor: DBS Group
Mapei coordinators:

Sergey Bezrukov and Oleg Ignatiev, AO Mapei (Russian Federation)

MAPEI PRODUCTS
Preparing substrates: Primer SN, Quartz 0.5
Laying cementitious floors: Ultratop Loft F, Primer LT,

Mapefloor Finish 50 N, Mapefloor Finish 58 W

For further info on products visit mapei.ru

Milan (Italy)

ICS Symbiosis

SAFE WATERPROOFING OF THE ROOFS WITH POLYGLASS PRODUCTS



© Ugo De Berti

The ICS Milan International School is part of Globeducate, one of the major networks of international schools in the world with more than 50 premium schools educating over 25,000 students in 60 countries. Their mission is to provide an extended community of students of different nationalities, cultures and backgrounds with a complete educational experience. The school has 4 campuses in the Milan area, one of which is the ICS Symbiosis for students from 4 to 18 years of age. It extends over a surface of 10,000 m² in Porta Romana, a district undergoing considerable transformation, and is committed, together with Milan City Council, to making this part of the city a cultural district in every sense of the word.

The building was designed by Barreca & La Varra (who also designed as Boeri Studio the multi award-winning Vertical Forest) after listening to the answers from children who, when asked "What would your ideal school be like?", said they were looking for a space that is alive and creative, a place where they can meet up and experiment, even after the bell has been rung. And this is precisely why ICS Symbiosis has areas dedicated to socialising away from the classroom environment and communal spaces, such as the indoor gymnasium and semi-Olympic indoor swimming pool (25 m), while the external area of around 6,000 m² has a polyfunctional playing field.



The roofs were waterproofed with a complete system by Polyglass, made up of POLYPRIMER, POLYVAP RADONSHIELD P-AL, and FUTURA RS P.

Waterproofing for the roofs

The design of the ICS Symbiosis building specified the use of waterproofing materials that meet the most rigorous market criteria in terms of quality and comply with current norms and standards. Polyglass SpA, a subsidiary of the Mapei Group, supplied the materials to waterproof the roofs, for a total area of around 5,400 m².

The first step was to apply a coat of rapid-drying, solvent-based bituminous POLYPRIMER, which is used as an adhesion promoter to block the dusty and porous nature typical of concrete surfaces so that distilled polymer-bitumen membranes can be applied more quickly. This product was also chosen for its rapid-drying and excellent penetration properties and because it bonds so well to substrates.

The next step was to apply POLYVAP RADONSHIELD P-AL membrane, which acts as a vapour barrier. This membrane is made from a special distilled bitumen compound modified with polypropylene, reinforced with a stabilized polyester nonwoven composite carrier laminated with aluminium foil. Thanks to its high technological content, POLYVAP RADONSHIELD P-AL has the capacity to preserve thermal insulation and ensure the overall functionality of a waterproofing system. It is used especially in the case of high levels of relative humidity in order to eliminate, or reduce, the formation of condensation within the system and prevent the entire waterproofing solution being compromised.

To complete the system, a thermal insulation panel made of rigid, closed-cell polyurethane foam, was added between two supports: the one on the top is made of bituminized glass fiber and the one at the bottom is made of saturated mineralized glass fiber. Finally a double layer of FUTURA RS P membrane was applied. The special distilled bitumen compound modified with polypropylene (APP) and polyolefin (APAO/TPO) and the mechanical properties of the reinforcement (excellent elongation and tensile strength) make this type of membrane suitable for even the most demanding areas of use.

Also, the special formulation guarantees unique characteristics in terms of flexibility at low temperatures (flexible down to -25°C), making the waterproofing system more durable and long-lasting.

Lastly, because of the type of use of the roof, industrial flooring was installed incorporating a double separation layer of LDPE film.

Through the supply of reliable, cutting-edge waterproofing materials, Polyglass SpA took part in this project of high architectural significance, guaranteeing protection and comfort for all the rooms in the school.



Find out more
POLYVAP RADONSHIELD P-AL

TECHNICAL DATA

ICS Symbiosis school,
Milan (Italy)

Period of construction:
2018-2020

Owner: Covivio Saas – ICS
Milan International School
Intervention by Polyglass:

2020

Design: Barreca & La Varra
Main contractors: Setten
Genesio SpA, Bouygues
E&S InTec Italia SpA,
Metalsigma Tunesi SpA

Waterproofing contractor:
Norkos Imp. Srl

Polyglass coordination:

Technical Support,
Polyglass SpA
(Mapei Group)
Photos: Barecca & La Varra,
Valter Repossi

POLYGLASS PRODUCTS

Waterproofing roofs:
Polyprimer, Polyvap
Radonshield P-AL,
Futura RS P

polyglass.com
mapei.com

WE SPOKE WITH
GIANANDREA BARRECA
AND GIOVANNI LA VARRA,
DESIGNERS OF THE ICS
SYMBIOSIS SCHOOL
IN MILAN



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A design inspired by identity and dialogue

The new Symbiosis campus of the ICS Milan International School is part of the Symbiosis Masterplan, the business district developed by Covivio (one of the biggest European real estate companies) hosting the offices of various large international companies. What was the starting idea behind this project?

We designed a building with an easily recognisable identity that would dialogue with the iconic buildings already present in the area, or which are currently in the design stage. A fluid system of curves envelops the whole complex and turns the “problem” at its source into an element of strength and value. Indeed, the plot on which the building stands is relatively small – schools have always been built horizontally, spread across the ground, occupying and consuming a lot of land – so we decided to compress the volumes and spaces to the maximum and construct a vertical school.

Symbiosis is the only large urban transformation project in Milan that is not based on the presence of residential properties, but rather of business units. How does the school building integrate with its surroundings?

This is an area which, in the coming years, will feature telecommunication, biomedical, food and energy companies: to have a school within Symbiosis is an interesting element as the students of the ICS school will be surrounded by chances to exchange and interact, they will have the future constructed around them. On the edge of Symbiosis, there is also one of Milan’s largest and most successful collections of contemporary art, and so this middle-ground territory, in which the Milan of the 20th century cultivated a fragmented industrial sector, is changing its skin and becoming something different, more mature and aware of the future, focused on tomorrow, just like a school should be.

The architectonic structure of ICS Symbiosis school is based on the liveability of the surroundings, con-

nected to each other by terraces, porches and large balconies. What are the design paradigms to create a welcoming school environment?

A study of the flows and routes is undoubtedly one of the most significant aspects when designing any building, but even more so with a school: in this case we decided to delineate a plurality of collective spaces to provide the students and children with the opportunity to move around freely and safely within the building, which is not simply a box containing traditional classrooms; it is an organism in which vertical spatiality, double and triple heights, come together and connect to a horizon of spaces external to the floors, and not only at ground level. A corridor, for example, is usually a rather narrow space which is used for little more than to transit from one place to another. In this dimension, on the other hand, of collective spaces and constant flows of students, the corridor itself becomes a space for life, furnished with a seamless series of large pieces of furniture along its entire length so that, when changing classes and moving from one classroom to another, it becomes a place where you can also spend time, a place for working, studying, meeting, discussing, and forms a kind of spinal cord for each floor that innervates the classrooms.

The choice of colours is also decisive in creating more welcoming surroundings, and this idea also came to light during the workshops we organised with students from other ICS campuses in Milan.

Waterproofing was carried out using Polyglass membranes. How important is it for a designer to have personally seen and tested the various building materials available on the market?

There is no doubt that no project, even if it seems great on paper, can deliver its full potential and value to the final users if quality materials are not used, so it is fundamental for us to be able to rely on certified materials that comply with the most stringent safety standards and that are able to help our projects last over time.

We wanted to create a building that would integrate into a new district that is already focused on the future

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New school buildings and renovation works

MAPEI PRODUCTS WERE USED IN NUMEROUS SCHOOLS ALL OVER THE WORLD TO COMPLETE INTERVENTIONS IN DIFFERENT AREAS



Wilbur O. and Ann Powers College of Business at Clemson University

CLEMSON - SOUTH CAROLINA, USA

Clemson University is well known for its top-ranked football team, the Tigers. Often, its academic program is overshadowed by their strong athletic program, but academically, Clemson consistently ranks among the top 20 universities in the USA. In October 2020, the Clemson University College of Business was renamed as the Wilbur O. and Ann Powers College of Business at Clemson University after two alumni made a 60

million US dollar grant to the school. The department was renovated and made use of Mapei adhesives to install textile, rubber and LVT floors in hallways, offices and other areas of the building. A complete system manufactured and distributed in the USA by Mapei Corp. (ULTRAFLEX LHT, ULTRACOLOR FA, FLEXCOLOR CQ) ensured safe installation of mosaics on walls and floors in the kitchens and bathrooms.

Faculty of Psychology, University of Malaga

MALAGA - SPAIN

Mapei took part in the construction of this structure at two key stages: installation of ceramic tiles on the façade and the creation of resin floors inside the structure.

For the first of the two stages, tiles were bonded with ULTRALITE S2 before grouting joints with FLEXCOLOR and sealing expansion joints with MAPESIL AC. For the second of the two stages, MAPEFLOOR COMFORT SYSTEM AR/X was chosen to ensure the flooring in various areas inside the faculty would be elastic and resistant to UV rays. To guarantee good soundproofing properties against noise from footsteps and a high level of comfort underfoot, MAPECOMFORT FL mat was also incorporated in the flooring.



Owairaka District Primary School

MT ALBERT - AUCKLAND, NEW ZEALAND

The school's name means "where Wairaka lived" and hints at Wairaka, a Māori ancestor known as a strong leader of her people. The school is attended by 493 students from a multicultural community. When renovating the roof and gutters, the Ministry of Education required a high-quality waterproofing membrane that also provided a no flame, no torch, no fire risk solution. MBP (NZ) Ltd, exclusive distributor of Mapei products in New Zealand, was able to meet this request by supplying SPIDER P SA, manufactured by Polyglass (Mapei Group). Approximately 160 m² of this self-adhesive bitumen membrane was installed over the plywood surface on the rooftop including all gutters, after treating the surfaces with IDROPRIMER.

Primary School

VILLANUEVA DE ALGAIDAS - SPAIN

Thanks to the creative use of colour and a Mapei system developed specifically for sports surfaces, the outdoor playground of the primary school was transformed from a worn out surface into an area that any child would love to play on: a brightly coloured surface where the children can now play various sports and games in safety, featuring a large smile in the centre. The first step was to treat the surface with MAPECOAT TNS PRIMER EPW epoxy primer. A layer of fine-textured MAPECOAT TNS COLOR coloured coating was then applied to ensure a good non-slip finish, as well as high resistance to UV rays, smog, and various climatic conditions. The playground was then marked out using MAPECOAT TNS LINE.



Madre Teresa di Calcutta Comprehensive School TORO - BENEVENTO, ITALY

The special MAPEWRAP EQ SYSTEM was applied to the intrados of the floors to prevent them collapsing.

This involved the application of a first coat of MAPEWRAP EQ ADHESIVE, a layer of MAPEWRAP EQ NET glass fiber fabric and a second coat of MAPEWRAP EQ ADHESIVE. Once the adhesive had dried, a layer of white PLANITOP 200 was applied.

After treating the floor with PRIMER 3296, the extrados was consolidated with PLANITOP HPC FLOOR. New ceramic floors were installed with ADESILEX P9.



Wildwood School LOS ANGELES - USA

Founded in 1971, Wildwood School is a nationally acclaimed school founded on a progressive, research-based approach. It occupies a single large building consisting of a twin-barrel roof structure. The previous roof was showing signs of wear and a tough and durable roof system was needed to withstand frequent foot traffic. The existing roof structure was reroofed using products by Polyglass (Mapei Group). After priming the surface with POLYGLASS PG-100 Fast-Drying Asphalt Primer, the 2-layer POLYFRESKO G Roof System was applied, which consists of a POLYFLEX APP modified bitumen membrane welded directly to the roof, followed by the application of POLYFRESKO G Modified Cool Cap Sheet.

University of Guanajuato GUANAJUATO - MEXICO

The facade of the mid-18th century building hosting the Faculty of Architecture and Civil Engineering of the University of Guanajuato had begun to crumble and needed to be restored with materials capable of withstanding vibrations and humidity. It also had to be painted following a color scheme compliant with the building codes of the city of Guanajuato as a World Heritage Site. Mapei supplied a complete structural strengthening and masonry restoration system involving products such as MAPENET 150 and MAPEGRID G 120 to reinforce the façade, MAPE-ANTIQUE RINZAFFO to ensure a solid masonry backing, and MAPE-ANTIQUE ECOLASTIC to waterproof the ceiling.



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Partner of Italy Pavilion at Expo 2020 Dubai



Municipality indoor gym in Brogliano (Vicenza, Italy) refurbished by using PU MULTISPORT SYSTEM.



Sports surfaces to play safely

FROM MAPEI COMPLETE SYSTEMS FOR GYMS AND OUTDOOR SPORTS AREAS

Numerous studies carried out by the medical and scientific communities indicate that physical activity is one of the most important elements for the prevention of chronic and non-transmittable diseases.

Introducing effective policies for promoting sport among people of all ages, starting with school children, is vitally important for hitting one of the goals set by the United Nations for keeping the world population healthy. Sporting activities carried out in school hours undoubtedly have a beneficial effect on the growth of children, but it also has considerable educational value by teaching children fair play and the rules of sports. In fact, it is through sport that children learn to respect not only their classmates, but also their opponents, as well as encouraging a balanced development and helping to cultivate positive relationships.

The lack of sports facilities in schools

The presence of sports facilities in schools (such as gyms and swimming pools) takes on a central role in children's growth. Apart from phys-

ical education lessons in the morning, school gyms could also be used in the afternoon for other activities and become a reference point for families from the local area, as well as safe surroundings out of school hours.

But how many schools have basic sports facilities? And how many schools have a gym for its pupils? According to data collected by the Ministry of Education in 2017, in Italy less than half of schools have basic sports facilities: only 4 out of 10 schools have a gym or swimming pool, which shows there is a high degree of variation in the level of accessibility to sports for children, particularly in geographic terms.

Recently, the Undersecretary of State for Sport in the Italian Prime Minister's Office, Valentina Vezzali, emphasized the importance of school sport. "We are working on introducing Physical Education classes into the first classes of primary schools to get young children interested in sport. Another challenge will be to ensure school gyms are open in the afternoon so that sport clubs can use them, because not all of them have access to facilities

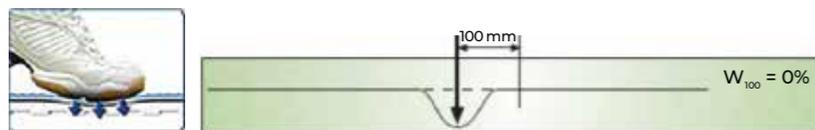
like these. Sport means well-being, so we must get young children involved in sport. We are ranked fifth in Europe for practicing sports and I am doing everything I can to make sport available to everybody. Education and sport should move hand-in-hand, it is the only way we can become a better country."

The Italian National Recovery and Resilience Fund allocates over 300 million for boosting sports infrastructures in schools in order to raise the standards of sports facilities and, in this way, also combat the problem of rising numbers of school children dropping out, which - particularly in certain areas of Italy - is reaching extremely worrying percentages.

Solutions for sports surfaces

Regarding school gyms, there is now a host of materials and systems available to create indoor multi-sports surfaces. Nowadays, designers having to decide which system would be the most suitable to use can consult the reference standard EN 14904: "Surfaces for sports areas – Multi-sport floor systems for indoor use - Specifications". This European standard indicates the main characteristics of flooring and has three different classes of mandatory requirements that indoor sports surfaces must comply with:

- Safety requirements for athletes: shock absorption, slip/skid-resistance and vertical deformation.
- Technical requirements of flooring: ball bounce, resistance to wear, gloss.
- Essential requirements: fire reaction class.



The PU MULTISPORT COMFORT system is certified according to European standard EN 14904 and is classified as P1 "point-elastic" flooring thanks to its elastic behaviour. [picture of a trainer].

Mapei offers designers of sports facilities a complete range of technical solutions for the construction, maintenance and upgrading of indoor sports surfaces, which are particularly suitable for the schools sector.

The Mapei Research & Development laboratory has created the multi-layered system PU MULTISPORT COMFORT, specifically developed for indoor sports flooring and particularly suitable for use in schools, consisting of two-component, coloured polyurethane resins in combination with a high-performance, elastic, granular rubber mat.

The system involves the bonding of MAPECOMFORT PU rubber mat to the sub-base (such as concrete) with ADESILEX G19 epoxy-polyurethane adhesive and then coating the mat with PU SEALER 750 polyurethane resin-based elastic undercoat and filler (photo 1) with improved viscosity and good workability, suitable for filling surface pores in MAPECOMFORT PU 9 mm elastic mat.

The next coating consists in the application of a layer at least 2 mm thick of PU 700 SL two-component, self-levelling polyurethane resin (photo 2). The rheological characteristics of this product make it easy to apply and spread and, at the same time, level and even out the surface to which it is applied. It is worth noting that the specific properties of PU 700 SL help improve the seamless elasticity of multi-layered systems such as PU MULTISPORT COMFORT, PU MULTISPORT PROFESSIONAL and PU PROFESSIONAL, which are used to improve the level of playing comfort on surfaces subject to intensive use.

And lastly PU MULTISPORT COMFORT involves the application of at least two coats of PU 200 FINISH two-component, coloured polyurethane topcoating, suitable for colouring different areas of play and for marking out courts and pitches. PU 200 FINISH, just like the self-levelling product PU 700 SL, is available in 35 standard colours and in a wide variety of bespoke colour shades using



1



2



3

1. Spread of the adjusted viscosity polyurethane pore-filler PU SEALER 750.
2. Application of the colored polyurethane self-levelling PU 700 SL.
3. Play areas were completed by using the anti-slip colored polyurethane PU 200 FINISH.

the ColorMap automatic colouring system.

The PU MULTISPORT COMFORT system is certified according to European standard EN 14904 and is classified as P1 "point-elastic" flooring thanks to its elastic behaviour. The term "point-elastic" indicates the capacity of flooring to deform when an athlete steps on it and refers to a very specific, limited area in proximity to where the load is applied. This feature of the PU MULTISPORT COMFORT system, combined with a shock-absorption capacity of more than 25%, makes it particularly suitable for use in schools, especially in areas that will be subjected to intensive use. To sum up, the monolithic nature of the system, combined with its considerable elastic properties, offer a high level of playing comfort to athletes competing in various sports.

Lastly, particular attention needs to be paid to the "Essential requirements" as specified in EN 14904, that is, the fire reaction class of the flooring. The PU MULTISPORT COMFORT system, classified as B_{FL}-s1 (in compliance with EN 13501-1), helps reduce fire load in indoor spaces.

A new topcoating for existing sports surfaces

The portfolio of the Mapei sports flooring line for indoor surfaces in schools is complemented with the



4. Application of the colored polyurethane anti-slip topcoating PU GYM REFRESH..

innovative two-component, coloured, aliphatic polyurethane topcoating PU GYM REFRESH, developed for coating and protecting existing indoor sports surfaces. In the case of existing sport surfaces (in PVC, rubber or linoleum) that are badly worn and have lost their minimum safety characteristics (slip-resistance, for example), it is now possible to avoid having to remove the old surface and refurbish it by roller-applying a coat of the new, slip-resistant coloured topcoating PU GYM REFRESH (photo 4.). As long as the existing flooring in PVC, rubber or linoleum is dry, sound and flat, there is no need to remove it; you give it a thorough cleaning with an ULTRACOAT PAD (red or green) or with a degreasing washing cycle using special dewaxing products (MAPEFLOOR WAX REMOVER). By applying the new "refresh" product, the indoor surface's minimum safety characteristics for carrying out sport are restored, limiting the overall cost of the intervention.

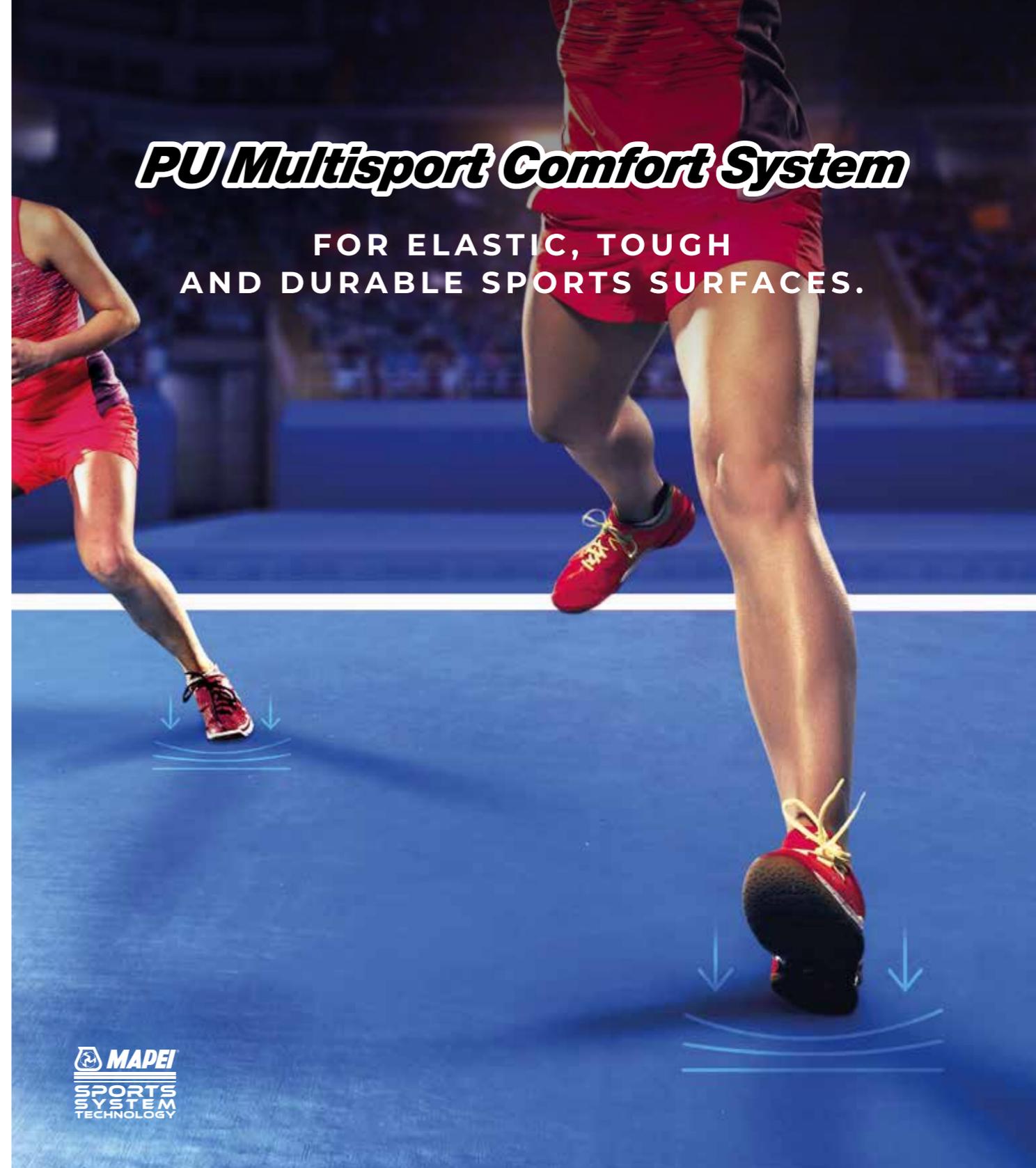
Going more into detail, it is worth pointing out that treating a surface with PU GYM REFRESH gives the flooring an adequate level of slip-resistance, including in wet conditions,

and a higher level of resistance to wear, mandatory characteristics to carry out sporting activities. Thanks to its high resistance to abrasion and scratches, PU GYM REFRESH improves mechanical characteristics and preserves both the integrity of joints in existing prefabricated flooring that needs to be frequently cleaned and the durability of the surface itself. PU GYM REFRESH is available in 35 standard colours. Also, by using the ColorMap automatic colouring system, the coating can be supplied in bespoke colours on request according to the colour or colours in the project specifications. Particularly noteworthy is the uniformity in colour and covering capacity of PU GYM REFRESH in comparison to traditional coatings which also makes it suitable for restoring the functionality of worn flooring, and that the same coating can also be used to mark out new court and pitch lines on the playing surface. And lastly, PU GYM REFRESH stands out for its reduced dirt pick-up and, above all, its capacity to increase a surface's level of protection against bacteria (in accordance with ISO 22196:2011) where a high level of hygiene is required, combined with extended resistance to cleaning cycles, such as in schools and play areas in general.

Elisa Portigliatti, Sport Line Corporate Product Manager, Mapei Group

PU Multisport Comfort System

FOR ELASTIC, TOUGH AND DURABLE SPORTS SURFACES.



PU Multisport Comfort is a multi-layer, polyurethane system for creating **tough, elastic indoor sports surfaces with a high level of playing comfort**. According to the EN 14904 standard, it's designed to enable rapid application over either old or new flooring to reduce downtime.

EVERYTHING'S OK
WITH **MAPEI**

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



Partner of Italy Pavilion at Expo 2020 Dubai

All-round solutions for building

AT MADE EXPO 2021
MAPEI SHOWCASED ITS
PRODUCTS PORTFOLIO
FOR A SUSTAINABLE
BUILDING INDUSTRY



Mapei solutions for structural strengthening and thermal insulation were in the spotlight at MADE expo 2021.

Technology, sustainability, innovation in building materials, cyber security, artificial intelligence, digitalisation: these issues took centre stage at the 2021 edition of MADE expo in Milan, which this year also included the Safety and Smart Building Expo exhibitions. The three events, held simultaneously for the first time, provided an all-encompassing overview of materials, technologies and regulations for the building industry and urban environment with the help of the over 700 companies attending an event that attracted more than 45,500 business operators.

A complete range of products

From foundations to rooftops, from the residential sector to the commercial and industrial sectors, right up to infrastructures, sports facilities and street furniture: Mapei is able to provide solutions for every need arising in the building industry. Which is why the two Mapei stands for the 2021 edition of MADE expo were designed to take visitors on a journey through the solutions available for every type of requirement. The biggest stand in pavilion 2 showcased the company's complete portfolio of products for the building industry. And in a different stand in the same pavilion, Mapei also exhibited its line of admixtures for concrete. There were numerous solutions to make the interior spaces where we live more beautiful by fol-

lowing the latest design trends: from decorative wall coatings for the bathroom to creative and functional resin floorings, suitable for sitting rooms. There were also products for structural strengthening work on walls to counteract the effects of seismic activity and to strengthen floors. For the external part of buildings, apart from cutting-edge technologies for waterproofing roofs and balconies, Mapei also proposed solutions for renovating façades and coating external thermal insulation systems.

New solutions by Mapei

Among the new solutions proposed by Mapei at MADE expo, one finds new systems for thermal insulation: MAPETHERM X2, used to intervene on old buildings, and solutions combining structural strengthening and thermal insulation systems so that a single intervention can be carried out on private homes with less inconvenience for dwellers and reduced working times.

MAPE-ANTIQUE NHL ECO RISANA was also in the spotlight at MADE expo, the new one-component, cement-free, salt-resistant, dehumidifying eco-render for masonry renovation, made from natural hydraulic lime.

Mapei also showcased the CUBE System project aimed at reducing CO₂ emissions along the concrete production chain.

In the name of innovation

THE NEW SOLUTIONS PRESENTED BY MAPEI AT THE EXHIBITION IN MILAN SHOWCASED SUSTAINABILITY

MAPETHERM X2 SYSTEM Double the insulation, reduce emissions

MAPETHERM X2 System is the new Mapei system that doubles external insulation. A method that allows old and obsolete external insulation to be used as a base for a higher performing external insulating system. It is highly sustainable because it makes the most of the old external insulation. By keeping the old external insulation there are savings in disposal costs, the production of potentially hazardous

waste is avoided and purchasing of new materials is rationalised: a win for both you and the environment. Beside the reduced environmental impact, the system offers other advantages such as

- it uses all types of insulation panels, including those entirely made from recycled materials;
- it may qualify for local energy-saving incentive programs;
- it gives facades a new look;
- it reduces overall costs;
- reduces overall working times.



Find out more
MAPETHERM X2 SYSTEM

MAPETHERM X2: STRENGTHENED CYCLE

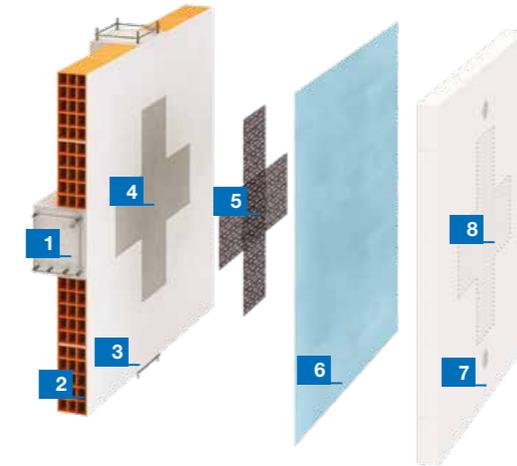


1. Old deteriorated external insulation
2. Hygieniser: **Silancolor Cleaner Plus**
3. Primer: **Malech**
4. Adhesive: **Mapetherm ARI GG**
5. Insulating panel: 100% recycled polystyrene
6. Fasteners: **Mapetherm-Ejotherm S1**
7. Reinforced skim coat: **Mapetherm Flex RP + Mapetherm Net**
8. Final thick coating: **Elastocolor Tonachino Plus**

Combined interventions: strengthening and external thermal insulation

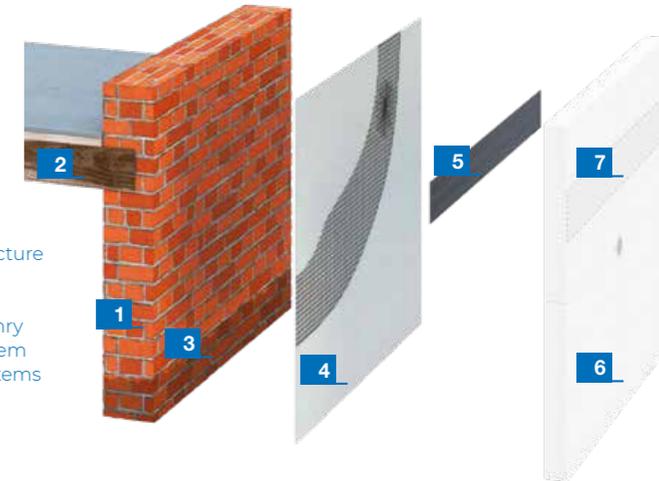
Mapei products from different lines may be integrated to form complete solutions that guarantee certified quality, excellent performance characteristics, reliability, and durability. These include structural strengthening and thermal insulation products that were presented at MADE expo in their combined versions: perfectly compatible systems, for both reinforced concrete and masonry buildings, that enable the structural conditions of buildings to be improved by reducing their vulnerability while, at the same time, improving the building's energy efficiency. This combined solutions also reduce overall work times and takes full advantage of the interaction between the products.

APPLICATION PHASES ON A REINFORCED CONCRETE BUILDING



1. Existing reinforced concrete structure
2. Existing non-structural wall
3. Chemical barrier
4. Removing areas of damaged/deteriorated render
5. Strengthening with FRP systems
6. Anti-tipping protection of non structural walls with MapeWrap EQ system
7. External thermal insulation
8. Area with no plugs or fasteners

APPLICATION PHASES ON A MASONRY BUILDING



1. Existing masonry structure
2. Existing floor slab
3. Chemical barrier
4. Strengthening masonry using FRCM o CRM system
5. Binding with FRP systems
6. Thermal insulation
7. Area with no plugs or fasteners



One single lime-based products for dehumidifying masonry

MAPE-ANTIQUE NHL ECO RISANA was also in the spotlight at MADE expo, the new one-component, cement-free, salt-resistant, dehumidifying eco-render made from pure natural hydraulic lime. Thanks to its high breathability and high porosity it is ideal for renovating masonry buildings, including those of historic and architectonic interest. It has a limited content of recycled materials and does not contain or give off toxic substances. Lime, in comparison with Portland cement, gives off a lower amount of CO₂.



Find out more
MAPETHERM X2 SYSTEM

CUBE SYSTEM: technologies for more sustainable concrete

Concrete is far from being considered as a sustainable material, particularly due to the massive amounts of CO₂ emissions associated with the production of Portland cement. In 2014, CO₂ emissions from the cement industry amounted to 2.2 GT, the second highest contributor of direct industrial emissions of CO₂. Amongst the various levers in the hands of the cement industry to control greenhouse gas emissions and limit global warming to 2°C by 2100 (a pathway set by the 2DS Scenario, launched by IEA, International Energy Agency), the industry has a number of innovative technologies that will assist in reducing its carbon footprint. These include carbon capture and reducing clinker/cement ratio. These options and solutions are paving the way to a reduction of cumulative CO₂ emissions in line with the EU roadmap for 2050. One such approach is the use of reactive additives (such as blast-furnace slag, fly ash and natural pozzolans) to partially replace clinker in the manufacture of cement. This is a fundamental part of the strategy enabling the entire chain to reduce CO₂ emissions by 55% by 2030 and help achieve Carbon Neutrality by 2050 as mentioned in the European Union's strategies.

Mapei's contribution to more sustainable concrete

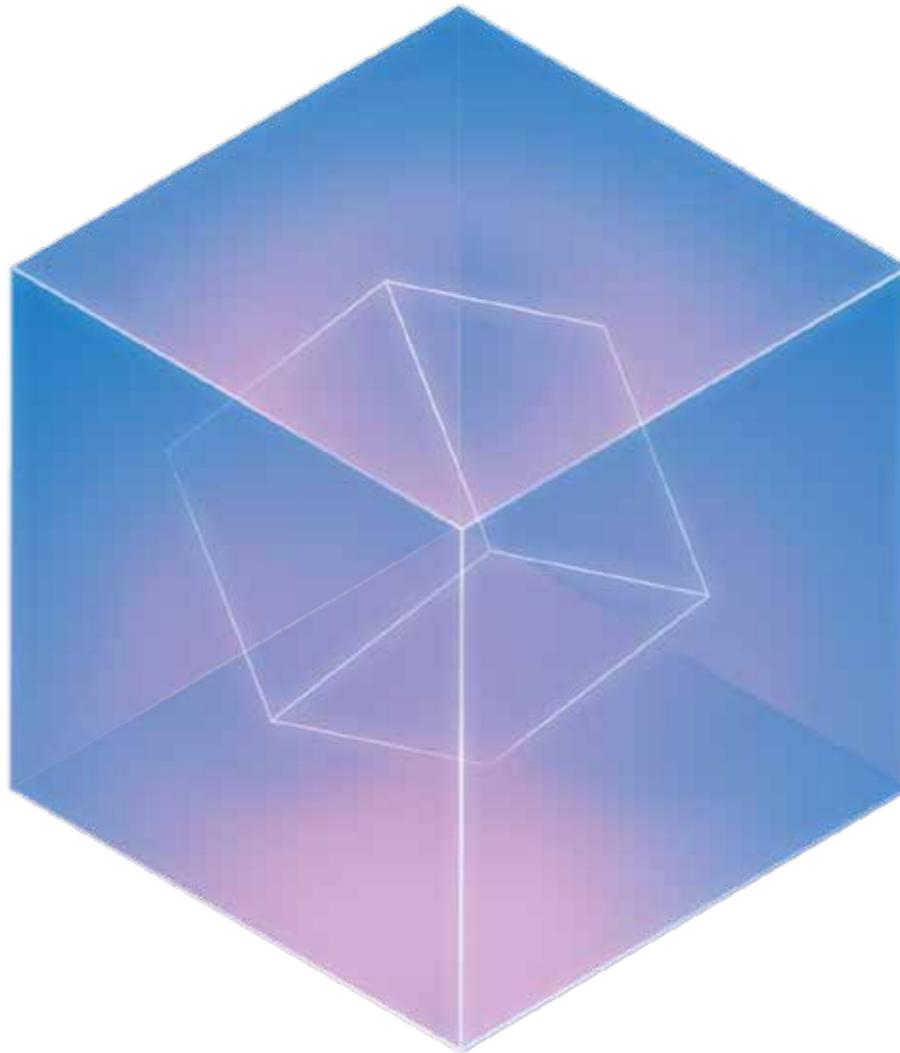
The use of cement with lower clinker content and recycled aggregates in concrete production presents several challenges for the concrete industry. Mixes generally demand increased water contents to achieve and maintain optimal rheological properties but also inhibit the development of both early and late stage mechanical properties. At Mapei we are committed to improving the sustainability of the construction industry, while supporting our customers in this very dynamic environment. To this end, we have developed a range of admixtures that can reduce or eliminate the problems that the industry faces as a result of the changing performance of its cements and aggregates, ensuring the industry meets the environmental targets set while maintaining concrete performance at all stages.

An integrated approach with CUBE System

The complexity of this challenge is increased further due to the regionality of the concrete industry. In recognition of this, Mapei has developed the CUBE System: an integrated approach that helps the concrete industry overcome the difficulties of reduced clinker cements and aggregates of varying quality through the various phases of production, placement and on site work. CUBE System actively helps the industry maintain its high standards while reducing the climatic impact. It helps the concrete market become more sustainable by supplying different products, technologies and tools: a line of superplasticizers designed to face the challenges of sustainable concrete; innovative technologies for admixtures for the new cements with reduced clinker content; a complete proposal of hardware and software for the quality control of concrete; a new digital tool for calculating the carbon footprint of concrete.

The CUBE System was recently launched in the Italian market at the MADE expo trade fair and will be introduced to the international market through 2022.

FROM MAPEI
R&D, INNOVATIVE
SOLUTIONS AND
SERVICES TO HELP
REDUCE THE
ENVIRONMENTAL
IMPACT OF THE
CONCRETE INDUSTRY



New generation admixtures

DYNAMON CUBE is the new line of superplasticizers specifically designed to face the challenges of sustainable concrete. They make use of polymers designed to work with CEM III, CEM IV and CEM V and any kind of SCM; recycled aggregates such as special absorption inhibitors (RE-CON AGG Technology); and specific gradual-release polymers guaranteeing that workability and low viscosity are maintained for longer times without delaying the setting phase.



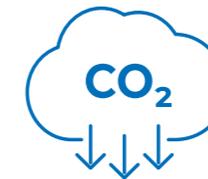
Strength enhancers

The **MAPECUBE** line is the next generation of admixtures for the new cements with reduced clinker content and lower carbon footprint. It makes use of technologies based on nano-composites of silicate hydrates which promote Secondary Nucleation (SN), Augmented Pozzolanic Reaction (APO) and Alkaline activation (AA). They ensure a more rapid and extended hydration reactions and better development of the microstructure of the cement pastes and **enable the development of higher mechanical strength** both in short and long term.



Advanced monitoring of the quality of concrete

Mapei also offers a **complete proposal of hardware and software** for the optimization of mixtures, quality control and reduction of the environmental footprint of concrete. This includes an automatic system to regulate the quality during transport; the record and availability of all data concerning quality, slump, temperature, rotation speed, mixing procedures, admixture dosage; a mix design system to optimize the concrete recipe, and results tracking.



Concrete Carbon Footprint Calculator

Mapei has recently provided professionals of the concrete industry with a digital tool, available on the website dedicated to concrete technologies which allows **the environmental impact of a specific concrete mix to be calculated in terms of CO₂ emissions**. The calculator requires some parameters to be entered, such as the resistance class of the concrete, the slump and the exposure class, before working out its overall environmental impact measured in CO₂-eq. The calculator highlights **the difference, in terms of environmental footprint, between "standard" concrete and concrete formulated using the CUBE System** technology. The tool is available on the CIS (Concrete Industry Solutions) website : www.mapei.com/cis/en/concrete-carbon-footprint.



Find out more
**CONCRETE CARBON
FOOTPRINT CALCULATOR**

Showcasing the ship-building industry

AUTUMN IS THE TIME FOR TRADE FAIRS IN THE SHIPBUILDING INDUSTRY. MAPEI TOOK PART IN FOUR IMPORTANT EVENTS IN THIS SECTOR IN THE USA, UNITED KINGDOM AND NETHERLANDS AND SHOWCASED THE PRODUCTS IT HAS DEVELOPED FOR CARGO AND CRUISE SHIPS, MILITARY/OFFSHORE VESSELS AND YACHTS. PRODUCTS MEETING INCREASINGLY HIGH STANDARDS OF COMFORT AND INHABITABILITY THROUGH A COMBINATION OF GOOD LOOKS, FUNCTIONALITY, SAFETY AND HYGIENE

Metstrade

16TH-18TH NOVEMBER - AMSTERDAM (NETHERLANDS)

Featuring an exhibition attended by people and an extensive schedule of streamed events, the 2021 edition of METSTRADE focused the spotlight on the latest developments in the shipbuilding industry. They included products by Mapei Marine, such as those developed for top-quality ships that combine good looks and functionality. Other featured products were MAPEDECK TERRAZZO, a system for creating "terrazzo-alla-Veneziana" floorings for embellishing interiors in ships and

yachts; 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 materic effect finish on internal floors and walls; and MAPEDECK TEAK EVOLUTION, a self-levelling resin coating for creating floorings with a realistic wood-effect finish.



Seatrade Cruise Global Conference

27TH-30TH SEPTEMBER - MIAMI (FLORIDA, USA)

This event, which the Seatrade Cruise community devotes to innovations in the shipbuilding industry, was held at the Miami Beach Convention Center from 27th to 30th September. The Mapei Marine stand showcased products the Group has developed for this specific industry, such as products for substrates, interior and exterior coatings, and sealants. Attention focused on MAPEDECK TERRAZZO, an epoxy system for creating "terrazzo-alla-Veneziana" floorings, and MAPEDECK TEAK EVOLUTION, a resin-based self-levelling product designed to create seamless "teak effect" finishes, with the



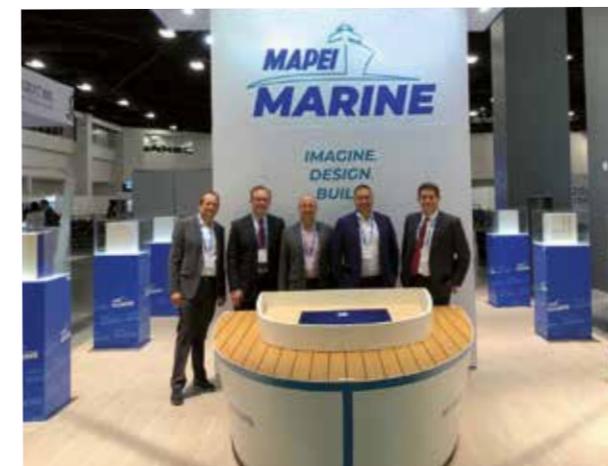
distinctive veins found in wood, on both interior and exterior decks. In addition to Guido Sardi, Business Development Manager for Mapei Americas' Marine Division, the fair was also attended by Marco Bevilacqua, the new Senior Sales and Business Development Representative for Mapei Marine in the USA. *In the picture on the left, Mapei Marine staff at Seatrade Cruise Global Experience: Mike Daniels, Marco Bevilacqua, Lorna Stoke, and Guido Sardi.*

Cruise Ship Interiors Expo

10TH-11TH NOVEMBER, MIAMI (FLORIDA, USA), 1ST-2ND DECEMBER - LONDON (UNITED KINGDOM)

Mapei Marine stood out at the two American and European versions of Cruise Ship Interiors for the products it showcased to professionals involved in the interior design of ships, vessels and yachts. The Mapei solutions displayed at these events are not just innovative and reliable, they are also eco-sustainable as they guarantee long-lasting and hygienic surfaces, while reducing the need for maintenance. Mapei Marine showcased products certified in accordance with the standards of the marine industry (IMO/MED), such as MAPEDECK

TERRAZZO epoxy system for the surfaces of bars, restaurants, lounges and suites; MAPEDECK MIRUM decorative, polyurethane skimming compound for top-end horizontal/vertical surfaces (even in areas in permanent contact with water); and MAPEDECK TEAK EVOLUTION, a resin coating that has been specifically created to form textures and shades characteristic of teak, without involving the high costs or maintenance needs of wood. *In the picture on the left, Guido Sardi, Mike Daniels, Marco Bevilacqua, Andrea Gerardini, Sebastiano Rivera.*





LEFT. Costa Smeralda, owned by Costa Crociere, it is the fifth largest cruise ship in the world and the second to be fully powered by liquefied natural gas (LNG).

BELOW. Mapei products were used to bond and grout ceramic tiles and mosaics in several areas such as the Colosseo theatre and the spa.

Finland/Italy

Costa Smeralda cruise ship

SPECIFIC PRODUCTS BY MAPEI MARINE ON BOARD OF THIS EXCELLENCE-CLASS CRUISE SHIP

Costa Smeralda is the largest ship ever commissioned and operating for Costa Crociere, which is part of the Carnival Corporation & plc Group. At 185,010 gross tonnage (GT), it is the fifth largest cruise ship in the world and the second to be fully powered by liquefied natural gas (LNG).

The ship hosts 1,550 balcony cabins, 13 swimming pools and hot tubs, 11 restaurants and snack bars, 19 bars and lounges. Guests on board can enjoy an aqua park on the highest deck of the ship, a next-generation spa and gym, performances and shows every night at Colosseo theatre and much more.

The cruise ship was built by Meyer Turku, a Finnish shipbuilding com-

pany owned by Meyer family. One of the leading European shipbuilding companies, Turku Shipyard was founded in 1737 and, today, has Tim Meyer as its managing partner.

Safe solutions for beautiful interiors

Mapei Marine, a subsidiary of the Group specialized in the marine sector, and Mapei OY, the Group's Finnish subsidiary, delivered several products to prepare the substrates and install floor and wall coverings in this cruise ship.

The floor substrates in corridors were levelled with ULTRAPLAN MARINE 1400, one-component, fibre-reinforced, rapid-hardening cementitious self-levelling mortar, which is often

used for internal bridge decks on ships.

On the other hand, MAPEDECK LITESCREEED was used to level off substrates on top of steel decks in the Colosseo theatre. This is a two-component polyurethane resin-based formulate which can ensure high-strength and good resistance to chemicals and abrasion.

ULTRAPLAN MARINE FIRE self-levelling, fibre-reinforced cementitious mortar was also used in internal areas to level off substrates before installing floor coverings.

Ceramic tiles and mosaics were bonded in several public areas (spa, shops, Colosseo theatre) with KERAPOXY, KERAFLEX MAXI S1 and ULTRALITE S2 adhesives. In some

internal areas, such as the spa, ULTRABOND ECO PU2K, two-component, solvent-free, high performance polyurethane adhesive with very low emission level of volatile organic compounds (VOC), was also applied on the aluminum substrates of walls to bond different types of ceramic tiles. Joints were grouted with ULTRACOLOR PLUS anti-efflorescence, quick-setting and drying polymer-modified mortar or with KERAPOXY epoxy grout where a higher protection against bacteria and chemicals was required. KERAPOXY DESIGN grout was instead used where a higher decorative effect was needed.



© Meyer Turku



Find out more
MAPEDECK LITESCREEED

TECHNICAL DATA

Costa Smeralda cruise ship, Finland/Italy
Period of construction: 2018-2019
Period of the Mapei intervention: 2018-2019
Owner: Carnival

Corporation & plc
Main contractors: Meyer Turku, Neptun Werft
Mapei Marine coordinator: Lindholm Jesse, Mapei OY (Finland)
Photos: Meyer Turku

MAPEI PRODUCTS

Levelling substrates: Ultraplan Marine 1400, Mapedeck Litescreed, Ultraplan Marine Fire
Installing ceramic tiles: Kerapoxy, Ultrabond Eco PU 2K, Keraflex Maxi S1,

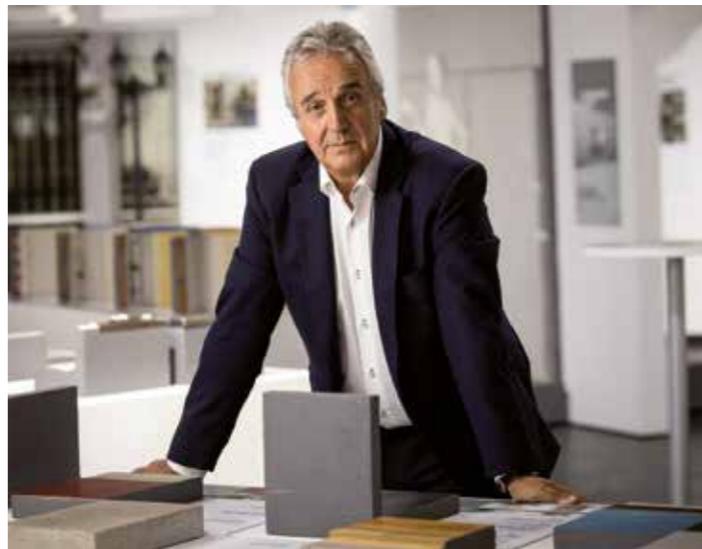
Ultralite S2
Grouting joints: Kerapoxy Design, Kerapoxy, Ultracolor Plus

For further info on products visit mapei.com

30 years in Spain

Boom in redevelopment: we are in the mix

FRANCESC BUSQUETS, GENERAL MANAGER OF MAPEI SPAIN: PLENTY OF BUILDINGS IN SPAIN ARE NOT ENERGY EFFICIENT. WE ARE READY TO CONTRIBUTE TO FACE THIS CHALLENGE



Mapei Spain is celebrating its 30th anniversary: how has it changed and how has its presence on the local building market expanded?

We have grown following the needs of the market. Like the other subsidiaries of the Group, we have been evolving through specialization, increasing our reference projects, and meeting our local market customers' needs. There are a few milestones we can mention which I can summarize as follows: the opening of new warehouses and offices in strategic areas at the beginning of the 90s; the investment in new manufacturing plants through the acquisition and further investment

in the facilities in Amposta in 1998 and Cabanillas del Campo in 2005 (the year I joined the company); the creation of the current corporate headquarters in Santa Perpètua de Mogoda (Barcelona) and, finally, the acquisition in 2018 of Tecnopol, a market leader in the waterproofing market segment with a very specialized and advanced technology, R&D facilities and a broad internationally customer base.

The international economy is up and running again: what are Mapei Spain's goals for growth in the coming years?

We are ambitious and optimistic

because we believe that the market is going to need and trust more and more our products and systems, which are efficient, innovative, sustainable and the right choice, for example, in renovation. Building renovation has skyrocketed in Spain in the latest few months and professionals are choosing Mapei products and services more than ever.

Energy-saving is a key issue for all economies. There is great potential for growth in Spain: for example, there are much less thermal insulated surfaces than in countries like Italy. Will this provide a new challenge and a fresh

opportunity for Mapei Spain?

To answer this question, I will use a recent figure from Anfapa, the Spanish Association of Mortar Manufacturers and Thermal Insulation Systems. Italy already has 18 million m² of external thermal insulation. However, Spain, with a similar building stock, only has 4 million m² which is certainly due to a cultural mistake, as most people think that Spain is not a 'cold country'. This statement is basically wrong: we know that it takes 3 times more energy to decrease the temperature by 1°C than to increase it by 1°C. If Spain wants to contribute to the European Union's 2030 Climate Target Plan and its objectives to achieve climate neutrality by 2050, it must begin to thermally insulate its buildings rapidly. Out of a 25-27 million buildings, only 1% Spanish buildings are estimated to own an A- or B-class energy certification. This is a tremendous challenge and both public administration bodies

and companies can absolutely count on Mapei to win it.

Mapei Spain is heavily involved in upgrading the nation's historical-artistic heritage: will this continue to be an expanding sector in the future?

Sure. We have been collaborating closely with architects that are highly specialized on the legacy left by geniuses such as Gaudí and other Modernist architects. We are very proud of this, but we are also aware that it is quite a significant responsibility and a big challenge. Being part of a Group with 80 years of technical experience, highly committed to innovation and R&D, with a mother company based in one of the most important countries in terms of historical buildings to preserve, we can boast a strong experience in this kind of jobsites. This allowed us to take part in different restoration projects supplying product and systems to worldwide renowned buildings

MAPEI SPAIN

1991
THE YEAR IT WAS FOUNDED (UNDER THE NAME IBERMAPEI)

165
STAFF

2
MANUFACTURING PLANTS IN AMPOSTA AND CABANILLAS DEL CAMPO

55.6
MILLION EUROS
TURNOVER FORECAST FOR 2021

MAPEI SPAIN: 30 YEARS OF GROWTH

Mapei's thirty-year history in Spain began back in 1991 when its first facility opened in Alcorcón near Madrid. Since then, it has expanded through the setting up of several trade offices in strategic areas of the country: in Badalona, near Barcelona, in 1992; in Majorca in 1996 to supply the Balearic Islands; and in Onda, near Castellón, in 1997 close to the biggest national ceramics district. In that same year the Spanish subsidiary, which was then known as Ibermapei, took over Hidro Recubrimientos, a manufacturer of coloured renders for outdoors. Local manufacturing soon followed with the opening of a plant in Amposta near Tarragona in 1999 and then the opening of another plant in Cabanillas del Campo in central Spain in 2005. Its headquarters in

Santa Perpètua de Mogoda near Barcelona have been in operation since 2012 with plenty of room for product storage, offices, and training facilities. The subsidiary, which has been known as Mapei Spain since 2016, now employs 165 staff, had revenue of over 48 million Euros in 2020 (with a forecast to rise to 55.6 million in 2021), and can boast a maximum manufacturing output of 205 million kg of product in powder form and 50 million litres of liquids, in addition to an extensive sales network covering the entire country. Tecnopol Sistemas, S.L.U., a leading manufacturer and distributor of waterproofing and thermal insulation systems for the building industry, has been part of the Group's Spanish operations since it was taken over in 2018.

Renovation has skyrocketed in the latest few months and professionals are choosing our products more than ever



like the Sagrada Familia, the Hospital de Sant Pau or Casa Batlló (see the article in the following pages).

What are the latest market niches in the building industry and latest product lines in the company's development plans?

We are going to continue to focus on refurbishment and look for any opportunities and new market niches that may open up. We have more than 20 product lines and 2,000 reference projects, so I modestly believe that we can offer a portfolio of products and systems to cover any market need while having plenty of room for improvement. If a new business opportunity in Spain shows up, I am sure the Group (Mapei and Tecnopol) will be able to exploit it.

Mapei Spain has been focusing on sustainability for years: how is this principle incorporated in the company's operations?

Sustainability in our products and processes is a must for Mapei in Spain. We help specifiers, endorsers and clients to carry out all kinds of innovative and sustainable projects through LEED, BREEAM, DGNB, VERDE seals and certifications. As for the last 3/4 years, we have created a Prize for Architectural Sustainability which enjoys a good reputation in

the Spanish market since its principles focus on sustainability regardless of the brand of the materials used in the project design.

Do you work with manufacturing associations and consortiums to reinforce the leadership of the Mapei brand?

Indeed, I have held the Presidency of Anfapa and Mapei Spain's staff is part of many other associations (Anfah for Concrete Admixtures, AIFIM for Waterproofing Materials). Mapei Spain actively participates in all the associations that may strengthen our brand. It is very important that

all manufacturers work together to protect transparency, ethics, compliance with standards and the thousands of existing jobs in our companies. I must admit that we have to deal with uncertainty in some areas such as the increase in the cost of energy and inflation in general, the recent major disruption of the global supply chain in pandemic times, shortages of key raw materials, lack of specialized contractors, etc. The authorities should resolve these issues as soon as possible, if they want the current economic recovery, which is certain real but also fragile, goes forward.

- 1. Mapei Spain's manufacturing plant in Amposta, opened in 1995.
- 2. The Spanish subsidiary's plant in Cabanillas del Campo opened in 2005.
- 3. The headquarters of Tecnopol, a Spanish manufacturer of waterproofing materials that joined the Group in 2018.

COMMITMENT TO SUSTAINABILITY

For Mapei Spain sustainability is a real commitment to the environment and future generations. With this in mind, the company, working in partnership with GBCe (Green Building Council of Spain), set up the Premio Mapei a la Arquitectura Sostenible in 2017. The project is aimed at promoting sustainable architecture projects that stand out for their quality, innovation and respect for the setting and environment from the very beginning to the end of their lifecycle. Over the years, the prize's prestige has grown, and the most recent editions have attracted many more entrants presenting works of a higher standard. This year Mapei Spain has also written its first

"Sustainability Report" along the lines set by the mother company Mapei SpA for assessing its own operations in Italy. In this report the subsidiary emphasizes how its commitment to sustainability includes attention to human resources, the community and region in which it operates, in addition to its traditional focus on Research & Development. "Sustainable" is something that also applies to the gift Mapei Spain handed out to celebrate its 30th year in business: a green ornament that looks rather like a "garden in a bowl" that was sent to 250 of the Spanish subsidiary's closest business partners in November.



LEARN AS YOU PLAY

Mapei Spain has often caught the eye on the Spanish building market for the originality of its marketing/communication operations. Previous creative campaigns have focused on sustainability, transparency and solidarity, but recently it has attracted plenty of curiosity for its game called "Stop Humedad!" that tests and raises professionals' understanding of humidity, firstly through video clips, information and individual quizzes and then, later, based on proper group challenges with prizes awarded according to the number of points you score.



Barcelona Casa Batlló

STRUCTURAL STRENGTHENING WORK AND RESTORATION OF THE CRYSTAL SPHERES ON THE CHIMNEYS

Casa Batlló is one of the most famous tourist and cultural attractions in Barcelona, attracting more than one million visitors every year and, since 2003, a UNESCO World Heritage Site. The building, which is located at number 43 in Paseo de Gracia and was originally designed in 1877 by Emil Sala Cortés, owes its fame mainly to the architect Antoni Gaudí. In the era in which the Paseo, which used to connect Barcelona and the city of Villa de Gracia, became one of the city's main thoroughfares and started to become the site of the residences of the city's most notable families, the building was bought by the textile businessman D. Josep

Batlló y Casanovas, who commissioned its reconstruction by Gaudí in 1904. The first project was to destroy the building which Gaudí, however, managed to prevent, by redesigning its interior and completely changing the façade. He also transformed it into a more functional place, as well as an artistic and architectural jewel which, according to a few experts, was a pioneer work of the 20th century avant-garde movement. Today, Casa Batlló, which over the years has changed ownership and type of use several times, belongs to the Bernat family, which completely renovated it and opened it to the public for cultural visits and to host social events.



Casa Batlló was built in the centre of Barcelona in 1877. In 1904 Antoni Gaudí redesigned it and turned it into an artistic and architectural jewel.

RIGHT. Structural strengthening work was carried out on the arches, vaulted ceilings and masonry using a system consisting of PLANITOP HDM RESTAURO, MAPEGRID G 220 and MAPEWRAP G FIOCCO.



Structural strengthening in the interiors

Since 1940 the building has undergone restoration, renovation, structural and consolidation work several times with the aim of turning it, on the one hand, from a mainly residential use to a more public use (for administrative, commercial and cultural purposes) and, on the other hand, to bring the structure in line with new norms and standards. A Master Plan, prepared by a team of technicians among which is Joan Olona (see the interview in the following article), was approved in 2014 to bring the building in line with current fire norms and standards and to improve the route followed by visitors through the internal spaces of the building. As a result, between 2015 and 2017, a stairway and lift were designed and installed to improve access between the various floors of the structure, from the basement to the attic. The lift runs between the second floor and the roof, whereas the staircase connects all the floors and occupies an area measuring 5.5 m by 3 m. The staircase has a metal structure which has been deliberately kept at a certain distance from the nearby walls, apart from in several points where the ceramic covering has been partially removed. The staircase does not create any problem of stresses or loads on the nearby walls but, to make them stronger and, at the same time, more ductile, the masonry has been strengthened using composite materials from the Mapei structural strengthening and masonry restoration lines.

Work started with the application of a first coat of PLANITOP HDM RESTAURO two-component, pre-blended, fibre-reinforced, high ductility mortar made from natural hydraulic lime (NHL) and Eco-Pozzolan to level off the substrate. MAPEGRID G 220 alkali-resistant glass fibre mesh was then placed on the mortar, a product which is particularly recommended for "reinforced" structural strengthening work on stone, brick, tuff and mixed masonry structures.

The strengthening work was carried out before demolishing the part under the wall, leaving just the right amount of MAPEGRID G 220 mesh so



that it could be folded back onto the opposite side and the reinforcement intervention could be completed by making an overlap. Holes were drilled in the masonry and MAPEWRAP G FIOCCO unidirectional high strength glass fibre cords were inserted into the holes, creating a series of "structural connections" inside the existing masonry. Then, a second layer of PLANITOP HDM RESTAURO was applied to complete the intervention. A final skim coat was applied to the masonry using MAPE-ANTIQUE FC CIVILE, a transpirant, salt-resistant, fine-grained mortar made from lime and Eco-Pozzolan. The same system was used for the structural strengthening work on the arches and vaulted ceilings in several areas inside Casa Batlló and in the attic. PLANITOP HDM RESTAURO, reinforced with MAPEGRID G 220, was also applied on the sub-



strate for the trencadis (or broken mosaics), the glass and ceramic mosaic covering of the façade, to repair the old cracks and prevent them opening up and fracturing the ceramic coverings. Instead of using a mortar, MAPEROD G pultruded glass fibre bars were used for crack-stitching, as this product is ideal for repair and structural strengthening work on damaged concrete, wood and masonry elements.

New spheres for the chimneys on the roofs

Mapei also left its mark on the "highest" points of the work by Gaudí. In fact, through its subsidiary Mapei Spain, the Mapei Group was involved in the restoration work on the crystal spheres positioned above the chimneys towering over the roof of Casa Batlló. To fasten the spheres to the mouths of the chimneys, MAPEWRAP G FIOCCO glass fibre cord was used again, this time impregnated with MAPE-ANTIQUE I super-plastic, salt-resistant, fillerized hydraulic binder made from lime and Eco-Pozzolan, which is normally used to make injection slurry for consolidating stone, brick, tuff and mixed masonry.



Find out more
PLANITOP HDM RESTAURO



TOP OF THE PAGE.

On the external faces of the vaulted ceilings, some of the cracks were "stitched" using MAPEROD G glass fibre rods.

ABOVE. The crystal spheres were fastened to the tops of the chimneys using MAPEWRAP G FIOCCO impregnated with MAPE-ANTIQUE I.

TECHNICAL DATA
Casa Batlló, Barcelona Spain)
Year of construction: 1877
Original design: Emil Sala Cortés
Year of reconstruction: 1904
Design: Antoni Gaudí
Period of renovation: 2015-2020
Period of the Mapei

intervention: 2015-2020
Designers: Joan Olona, Xavier Villanueva, Mireia Bosch, Ana Atance and Ignasi Villanueva; Eskubi Turró Arquitectes
Structural strengthening contractor: Constructora D'Aro
Mapei distributor:

Siesmo
Mapei coordinators: Ismael Carreño Raya and Joan Lleal, Mapei Spain
MAPEI PRODUCTS
Structural strengthening and consolidation of masonry: Planitop HDM Restauro, Mapegrid G 220, Mape-Antique

FC Civile, MapeWrap G Fiocco
Fastening the crystal spheres to the chimneys: Mape-Antique I, MapeWrap G Fiocco
For further info on products visit mapei.es and mapei.com



New materials deployed to restore the ambience of the original building

INTERVIEW WITH JOAN OLONA, A MEMBER OF THE TECHNICAL TEAM THAT DREW UP THE MASTER PLAN FOR THE RESTORATION OF CASA BATLLÓ

The restoration of historic buildings has always been a complex undertaking. Are the works on buildings by Antoni Gaudí even more complex?

Because of the construction techniques, layouts and materials employed by Antoni Gaudí, his works are a constant source of surprise. The solutions he chose are an indicator of his enormous creativity and ingenuity and this is one of the reasons behind the decision taken by UNESCO to include seven of his works in the list of World Heritage Sites. The Master Plan for the work on Casa Batlló, approved in 2014, established a baseline: that the restoration of any work by Gaudí must ensure that his original architectonic decisions are maintained; it shouldn't be limited to a purely practical intervention, but should attempt to reconstruct the critical context of the architecture. What is more, Casa Batlló is itself the result of work by Gaudí on a pre-existing building. For us, this was an even more complex chal-

lenge because, when carrying out restoration work, we have to verify what is the actual work of Gaudí, what came before him and what, on the other hand, came after him.

What were the various works carried out according to the Master Plan on Casa Batlló?

The first phase was dedicated to a thorough analysis of solutions that would improve accessibility to and evacuation from the building to bring the functionality of this house/museum in line with the requirements of its new type of use. As far as the actual restoration work was concerned, there were three main areas we worked on. The first area was the main floor with renovation work on the original render that had either disappeared or become unrecognisable. The second area concerned restoration work on the façade and attic that completes the building, while the third area was the chimneys on the roof. In addition, work was also carried out on the upper and lower parts of the courtyard.

What did you discover while carrying out the restoration work?

As far as the façade was concerned, we discovered that two different types of mortar had been originally used to bond the fragments of ceramic used to cover the facade: a white one, presumably lime-based, and a grey one made from Portland cement. Two different mortars had also been used on one of the groups of chimneys on the roof. In this case, we found that mortar made from Portland cement had been used along with a natural cementitious mortar. Thanks to an interview the architect Bassegoda gave in 1970 to Josep Bayó, the owner of the construction company that built Casa Batlló, we know that these chimneys used to be adorned with crystal spheres containing coloured sand. So, while carrying out the restoration work, we also had new crystal spheres made and, instead of the steel cornices originally used that had caused them to break, we adopted a system consisting of fibre-reinforced mortar and glass fibre cords to fasten the spheres to the mouths of the

chimneys.

Over the last few years, has there been an evolution in the construction techniques and solutions employed in restoration work on our historic and cultural patrimony?

The biggest problem is due to the need to have skilled craftsmen on hand who are able to reproduce the original construction techniques. In spite of this, there are industrial materials available today which, thanks to Research & Development work carried out by companies, allow us to adapt even more accurately to traditional solutions. Mortars made from natural hydraulic lime (NHL), strengthened with fibres or glass fibre meshes, enable the impact of an intervention to be reduced, minimising the increase in weight and increasing the load-bearing capacity and deformability of walls far more than what could be achieved with systems made up of cement and metallic mesh. Nowadays, thanks to their enormous adaptability, systems consisting of glass fibre or fibre threads



Nowadays, systems consisting of glass fibres or fibre threads open up a wide range of possibilities in restoration operations on our historic and artistic heritage

open up a wide spectrum of new possibilities in restoration operations on our historic and cultural heritage.

Are sustainability criteria applied when designing work packages on historic buildings?

Any work carried out on an existing building or construction can be considered, by its very nature, sustainable. The "3 R" rule exemplifies this: if you avoid destroying a building or the parts that make up the building, this implies a Reduction in the use of materials, but also in the consumption of energy and, therefore, less impact on the environment. It also means Re-using a material in a process that requires energy. If it is then necessary to demolish and break up materials, Recycling becomes a valid alternative to having to dispose of waste material.

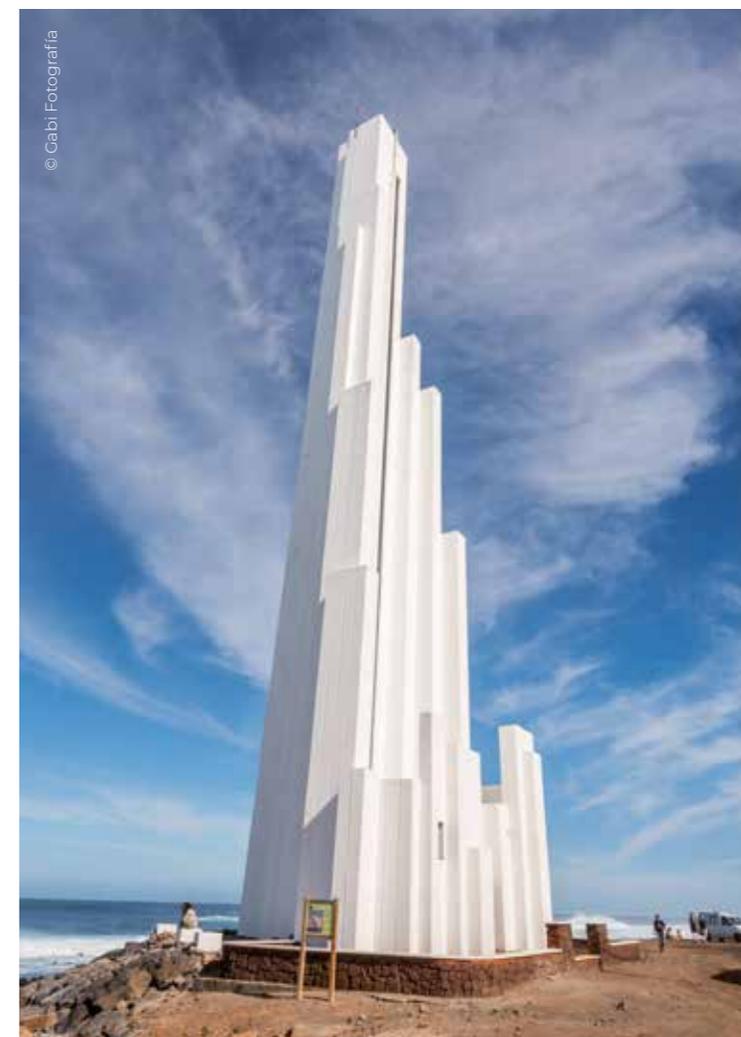
Vuelta a España with Mapei products

FROM VIADUCTS TO SHOWROOMS: A ROUND-UP OF WORKS IN VARIOUS AREAS AROUND THE COUNTRY



San Cristobal de La Laguna (Tenerife, Canary Islands)

The lighthouse, located on the north-west coast of Tenerife, was built in 1992. In 2019 it was completely restored. The works included removal of the old coating and all the damaged and deteriorated section of concrete down to the rebar, which was then protected by applying MAPEFER 1K anti-corrosion mortar. The section removed was reintegrated with MAPEGROUT T40 fibre-reinforced thixotropic mortar, specific for repairing concrete. After applying a coat of MALECH acrylic water-based primer, the repaired surfaces were protected and painted with white-colored ELASTOCOLOR PAINT.



Francisco Laporta sports centre Alcoy (Alicante, Comunidad Valenciana)

The ULTRACOAT SPORT SYSTEM was chosen to renovate, protect and colour the wooden flooring of the basketball courts in this polyfunctional sports centre and make their surfaces more suitable for play. The system involved the application of ULTRACOAT PREMIUM BASE water-based polyurethane finish; ULTRACOAT HT SPORT water-based polyurethane lacquer and ULTRACOAT SPORT COLOR pigmented, water-based acrylic varnish. This system has been approved by FIBA (International Basketball Federation) as suitable for the surface of basketball courts.

5 Ojos Viaduct Aspe (Alicante, Comunidad Valenciana)

This viaduct was in a very poor state of repair due to the aggressive action of atmospheric agents, flooding and the actual age of the structure and recently underwent restoration work, which also involved support from experts from

the University of Alicante. Numerous Mapei products were used during the work to restore the masonry of the viaduct: MAPE-ANTIQUÉ MC and MAPE-ANTIQUÉ I to consolidate the stone masonry, MAPE-ANTIQUÉ ECOLASTIC to waterproof surfaces, MAPE-ANTIQUÉ RINZAFFO to make de-humidifying renders. Structural strengthening work was also carried out on several parts of the viaduct using MAPE-ANTIQUÉ STRUTTURALE NHL and MAPEWRAP C FIOCCO.

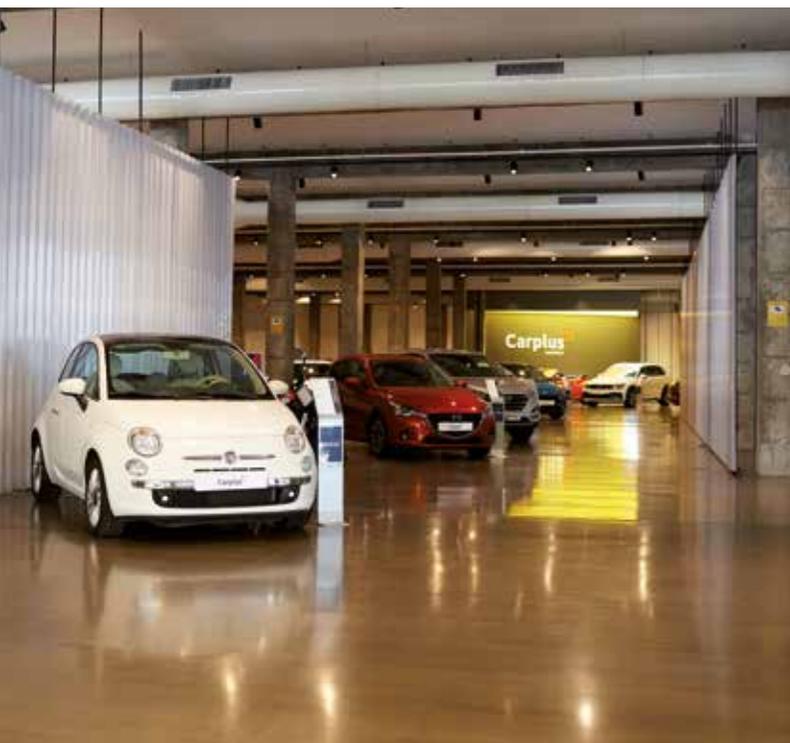


Tennis courts at Villa de El Espinar Segovia (Castilla y León)

The Castilla y León Villa de El Espinar Open is one of the most important tennis tournaments in Spain; since 1991 it has been part of the ATP Challenger Tour and, since 2015, of the ITF Women's Pro Circuit. In 2019 the 7 courts were renovated to create a resin playing surface certified by the Tennis Federation as class "1. Slow". The first step was to use MAPE-ASPHALT REPAIR 0/8 reactive asphalt to repair the cracks in the existing surfaces. MAPECOAT TNS PROFESSIONAL was then applied, consisting of a layer of MAPECOAT TNS WHITE BASE COAT acrylic semi-flexible waterborne textured base coating followed by two coats of MAPECOAT TNS FINISH 1 coloured acrylic resin-based coating product. Lastly, MAPECOAT TNS LINE TEX was used to mark out the lines for the courts.

Hyundai showroom (Las Palmas de Gran Canarias Canary Islands)

To ensure the floors of the showroom were resistant and had an attractive finish, it was decided to use the cementitious ULTRATOP SYSTEM after lightly milling the substrate, removing all the dust that had been given off and repairing the old cracks. A coat of PRIMER SN epoxy primer was then applied, which was fully blinded with QUARTZ 1.2, followed by a layer of ULTRATOP self-levelling mortar, left to harden for about 2 days. The surfaces were then dry-polished with diamond disks before applying a special anti-stain impregnator, MAPECRETE STAIN PROTECTION, up to saturation, followed by a protective layer of MAPELUX OPACA metallic wax. Lastly, the expansion joints were sealed with MAPEFLEX PU 30 NS.



Guangzhou Tennis Stadium, China

Mapecoat TNS, a multi-layer, acrylic waterborne system for creating and restoring tennis courts: a complete range of **tough, durable systems classified according to the ITF Court Pace** to meet the playing requirements of all sports centres. Available in 36 and any customized highly resistant colours.



EVERYTHING'S OK WITH MAPEI

Learn more on mapei.com



ITALIA
LA BELLEZZA UNISCE LE PERSONE
BEAUTY CONNECTS PEOPLE
الجمال يجمع الناس

Partner of Italy Pavilion at Expo 2020 Dubai

Sustainability according to Mapei

THE GROUP PRESENTS ITS FIFTH SUSTAINABILITY REPORT

Over 770 million Euros distributed to stakeholders in 2020, 13% of turnover from products with formulations less than three years old, 36.3 million Euros spent on Research & Development, over one thousand hours of technical training for over 36,000 participants, and over 80% of purchased goods (in weight) from Italian suppliers. These are just some of the most important figures confirming Mapei SpA's (the Group's holding company) commitment to environmental-social responsibility published in its fifth Sustainability Report.

Drawn up in accordance with GRI (Global Reporting Initiative) Sustainability Reporting Standards, it covers operations carried out in Italy in 2020 by the holding company and its Italian subsidiaries Adesital, Cercol, Mapei Marine, Mosaico+, Polyglass, Vaga and Vinavil, for a total of over 2300 staff, 99% of whom with a permanent work contract.

For the first time this year, the Group has decided to expand its reporting activity on sustainability to encompass the Mapei subsidiaries operating in four European countries - France, Norway, Poland and Spain, as well as its Polish subsidiary Gorka - as a pilot project in preparation for drawing up a European-scale Sustainability Report for 2021.



SERVING THE COMMUNITY EVEN DURING A CRISIS

2020 has been an unprecedented year almost totally dominated by the Covid-19 pandemic, which has called for increasingly rapid digitalisation and a focus on sustainable growth. In this context, Mapei SpA has been able to respond rapidly to emerging needs while maintaining a high standard of efficiency, safety and quality, particularly thanks to investment it has made over the years in its own plants and systems, digitalisation and training. To keep on supporting the community even during the current crisis, Mapei SpA has been involved in various social responsibility projects to help hospital facilities and staff working in the front line in the fight against the virus.

"In this unpredictable situation - so Veronica Squinzi noted, Mapei's CEO - Mapei has proven to be a solid but flexible company capable of adapting effectively to change while remaining faithful to its corporate strategy. In accordance with its vocation for growth and innovation, throughout 2020 our Group continued to invest in building work increasingly focused on the environment, respect for different cultures, and the health of users".

Marco Squinzi, also Mapei's CEO, went on to say: "We believe the path to sustainability is through innovation. That is why Mapei's research is focused on optimising its high-quality long-lasting products causing reduced environmental impact: circularity, sustainability and innovation are the real keys to developing increasingly sustainable products from an environmental-social perspective".

Mapei SpA's commitment to an increasing circular economy was acknowledged when it was awarded the 'Best performer in the circular economy 2019/2020' prize, an important award mainly given for its Research & Development work. Mapei stood out in the 'major manufacturing companies' category through a project for making low environmental impact asphalts by reusing waste material.

Mapei products can reduce the impact of structures on the environment and guarantee the comfort and safety of their users. They also help meet international protocols to obtain certifications for sustainable buildings, such as LEED (Leadership in Energy and Environmental Design). Even during the Covid-19 health care emergency, the Group has never stopped caring for its own people, who make up the Mapei Family. This was acknowledged in the rankings published in September 2020 by the German Quality and Finance Institute for "Italy's Best Employers for Women", which placed Mapei among the top 200 companies in Italy.

SPORT AND CULTURE IN THE COMPANY'S DNA

As has always been the case since it was first founded, Mapei SpA has maintained its commitment to all kinds of projects and activities in the world of culture, supporting major Italian cultural foundations such as La Scala Opera House and Santa Cecilia National Academy. It has also continued to support other enterprises such as No'hma Theatre, the Triennale Milano exhibition centre, the laVerdi Symphony Orchestra in Milan, FAI (National Trust for Italy) and the Peggy Guggenheim Collection in Venice. Mapei has been working alongside these institutes for a considerable time now.

The Mapei Group has always had a passion for sport, with Sassuolo football club taking pride of place nowadays. The 2019/2020 season of the Italian Serie A was particularly important because it coincided with the club's centenary and the launching of

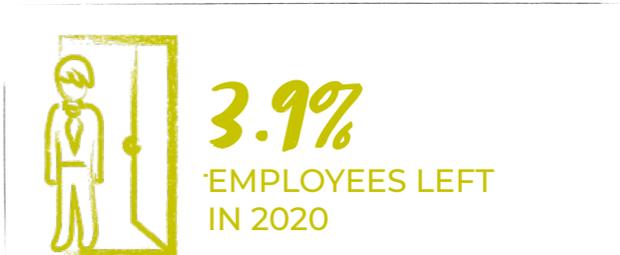
the Generation S project aimed at promoting the values of football among young people. Mapei's commitment to the world of sport also embraces other disciplines, including volleyball, tennis, golf and motorsport. In order to maintain its very close ties with the community, Mapei SpA also supports various social projects every year, making its own contribution to numerous associations like Arché Foundation, Cervia Garden City-May in Bloom festival, and Cresco Award - Sustainable Cities (see the next article on this initiative).

A summary of the 2020 Sustainability Report in English language is available at mapei.it.

The company's products can reduce the impact of buildings on the environment

SUSTAINABILITY: FACTS AND FIGURES

All the figures are related to Mapei SpA's and the Mapei Group's Italian subsidiaries*



*U.S. Sassuolo Calcio s.r.l. and Mapei Stadium s.r.l. are excluded from these bounds.



Cresco Award Sustainable Cities

THE MAPEI BUSINESS PRIZE HAS BEEN AWARDED TO PESARO CITY COUNCIL FOR THE BRANCATI SCHOOL PROJECT



ABOVE. Stefano Deri (on the left), Mapei Group's Corporate Product Manager - Wall Coatings Line, and Matteo Ricci, Mayor of Pesaro (Central Italy).

A building's energy performance, once considered rather insignificant, is becoming increasingly important due to environmental restrictions and the rising costs of fuel and energy. These issues have brought to the fore the need to constrain heat dispersion in homes and led to the development of solutions that have brought about an authentic revolution in the building trade. Mapei, which has always paid careful attention to sustainability and energy saving, has dedicated this year's Cresco Award-Sustainable Cities Business Prize to the issue of "Sustainable thermal insulation in energy upgrading projects for public residential buildings". Promoted by the Sodalitas Foundation (a Foundation promoting social responsibility among businesses) in partnership with ANCI (National Association of Italian City Councils), the Cresco Award is aimed at focusing on city councils' commitment to developing new areas along sustainable lines from an economic, social and environmental viewpoint. The Mapei Business Prize has been awarded to Pesaro City Council (Central City) for its "Green Public Procurement and Sustainability: Brancati School" project combining innovation and attention to the envi-

ronment. The prize-giving ceremony was held in Parma (Central Italy) on 10th November during ANCI's 38th Annual Assembly. The school, which pupils have nicknamed "the-save-the-planet school", is designed to be a genuinely sustainable school building through the implementation of the principles of the circular economy by means of a new approach to public tenders transforming requisites in terms of quality and environmental protection into technical requisites, so certain performance ratings become mandatory. The aims are miscellaneous: to redevelop the entire school complex (consisting of a middle school and a primary school), build a new gym and civic centre and create an energy community and sustainable "pilot neighbourhood" to be replicated in other parts of the city. Pesaro City Council will receive Mapei's technical advice to help decide which technical-static operations need to be implemented in to get the best energy performance ratings for the buildings and ensure the best solutions are adopted.



Honouring Giorgio Squinzi

A MEDAL IS BEING AWARDED TO COMMEMORATE THE BUSINESSMAN'S COMMITMENT TO DEVELOPING THE ITALIAN CHEMICALS INDUSTRY

Giorgio Squinzi, the former CEO of the Mapei Group, who passed away in October 2019, was honoured during a special studies day organised by the Italian Chemicals Society that was held at the Mapei Auditorium in Milan on 22nd October. It provided the opportunity to award the first Giorgio Squinzi Medal set up by the Society's Industrial Chemicals Division to commemorate Mr. Squinzi's commitment to develop the Italian chemicals industry.

The proceedings were chaired by Martino Di Serio, President of the Industrial Chemicals Division. Mapei was represented by Marco Squinzi, CEO of the Group, Laura Squinzi, President of the Board of Directors, and Giorgio Ferrari, team leader of the Mapei Research & Development Laboratory in Milan. Some short speeches and personal recollections allowed those present to paint a picture of a businessman who was firmly convinced that scientific research could drive progress. Indeed, Giorgio Squinzi made Research & Development one of the pillars of Mapei's operations and equipped the company with cutting-edge research laboratories. Equally convinced of the importance of interaction between the academic and business worlds, he developed numerous partnerships between Mapei and important Italian universities. Mr. Squinzi also believed in the importance of "working as a team" with other companies in the sector and, as President of the Italian Federation of the chemical industry (from 1997-2003 and from 2005-2011), contributed to the growth of the Italian chemical industry.

The Medal named after him will be awarded annually

to a researcher no older than forty-five, who has made a particularly innovative or practical contribution of scientific importance to the industrial chemicals sector. This year's award went to Federico Bella, an associate professor at Turin Polytechnic "for his notable scientific-practical contribution to developing innovative materials for electrochemical processes in the renewable energy sector". During the day's proceedings, Professor Bella, who was awarded the Medal by Laura and Marco Squinzi, gave a speech entitled "The chemicals industry for the energy sector: the challenges we are facing from 2021 to 2030". "I am delighted to award this medal - so Marco Squinzi announced - to honour my father's memory and also to once again confirm Mapei's commitment to research, a commitment that enables us to promote young researchers, be increasingly competitive on global markets, and tackle the challenges of sustainability, with positive implications for the development of the Italian chemical industry as a whole".



RIGHT. From left on, Federico Bella, winner of the Giorgio Squinzi Medal, Laura Squinzi, President of Mapei's Board of Directors, and Marco Squinzi, CEO of the Mapei Group.



© Photo courtesy of Pritzker Architecture Prize

I am searching for depth, meaning, poetry, pleasure. That's what being an architect means today. Don't try to stretch a city into places where it isn't there. It means starting from reality and then enriching it.

Jean Nouvel



The Louvre Abu Dhabi Museum was officially opened in Abu Dhabi in 2017. Mapei supplied products for bonding stone slabs in the complex.

Jean Nouvel's dematerialised architecture

WINNER OF THE AWARD IN 2008, THE FRENCH ARCHITECT EXPLOITED THE POTENTIAL OF TECHNOLOGY TO CREATE BUILDINGS OF SUBLIME AESTHETIC SPLENDOUR.

In 2008 Jean Nouvel became the second French architect – the first one was Christian de Portzamparc in 1994 – to win the Pritzker Prize, a prize established by the Pritzker family through their Hyatt Foundation in 1979 and awarded every year to a living architect. According to Peter Palumbo, Chairman of the jury, the award is recognition of the French architect's "new approaches to the usual architectural challenges. For Nouvel, style doesn't exist in architecture. It's more a question of context, interpreted in the wider sense of the word to include the culture, the place, the programme and the users, that lead him to developing a different strategy for every project". The jury also recognised "his perseverance, imagination, exuberance and insatiable need for creative experimentation". Born in 1945 Nouvel wanted to be a painter but, in the end, he chose architecture which he considers to be, first and foremost, visual art and the production of images. After graduating from the National

School of Fine Arts in Paris in 1972, he opened his first studio. Right from the very start of his career, Nouvel became a messenger for the social and cultural significance of architecture. His first prominent work was the Dick Home in Troyes (France) in 1976, followed by a succession of projects around the world, characterised by the use of different innovative technical solutions for their shells and the ability to create a new relationship with the surrounding landscape and natural light. In 1981 the President of France, François Mitterand, launched the "Grands projets" initiative for Paris and Jean Nouvel was invited to take part in the competition to design the Arab World Institute, which he won. The main façade of the building is in aluminium and glass, inspired by traditional ornamental Arabic motifs. He designed the INIST (Institute for Scientific and Technical Information) in Nancy, Lyon Opera House and the Onyx cultural centre in

Saint Herblain. In 1994 he founded Ateliers Jean Nouvel and, in the following years, the design studio worked on international projects of various sizes and for various types of use. Amongst the most significant are the Vinci International Congress Centre in Tours and the Cartier Foundation in Paris. The start of the 1990's saw an increase in the number of projects outside France, such as the Lucerne Culture and Congress Centre in Switzerland and Galeries Lafayette in Berlin. Nouvel also took part in the architectural competition for the reconstruction of the Reichstag building in Berlin, which was won by Norman Foster. Other important projects followed, such as the Temporary Guggenheim Museum of Art in Tokyo, the Galicia Cultural City in Santiago de Compostela (Spain), the Dentsu Building in Tokyo, the BIS (Bank for International Settlements) in Basel (Switzerland), the Carnegie Science Center in Pittsburgh (Pennsylvania, USA) and the Landmark Loft in New York.

Light and surfaces: the absolute protagonists

A characteristic trait of Jean Nouvel's works is the dematerialisation of architecture where light and surfaces, rather



The Philharmonie de Paris concert hall, designed by Jean Nouvel and opened in 2015, is located in the La Villette park in Paris.

than their material quality, become the absolute protagonists. And as Nouvel declared, "The era of fortress-buildings, of Beaubourg-style exposed machinery, is over. We are no longer excited to see how a plane flies or what the inside of a watch looks like. Today, it is technology itself that enables us to hide technicality. Just think about the flat screens of new televisions: the "motor" has been miniaturised, all that's left is the picture on the screen. It's the aesthetics of miracles". His most recent designs are buildings for the public and private sectors where there has been a return to the expressive

value of technological solutions. Examples such as the shell of the Philharmonie de Paris concert hall built in 2014, the lace-effect patterns protecting the Doha Tower built in 2012 from sun and sand, or La Marseillaise skyscraper built in Marseille in 2018 with a façade in coloured concrete. A synthesis of this more recent evolution is undoubtedly the Louvre Museum in Abu Dhabi inaugurated in 2017, characterised by the presence of water and its large, honeycomb-effect translucent roof used as protection from the external climate (see the article on this project in *Realtà Mapei International* no. 79).

Winter training: personalised plans

FROM SKIING TO SUMMER SPORTS: TRAINING FOR ALL YOUR COMPETITIVE AND RECREATIONAL NEEDS AT THE MAPEI SPORT CENTRE

The days are getting shorter and the temperatures are dropping and as winter comes there is often less time and desire to train. But that does not apply to everybody: there are certain sports, like skiing for instance, which require a totally different training schedule from summer sports, because the most important competitions are held right in the middle of the cold season. Obviously, the opposite applies to summer sports when winter becomes a vital period for recharging your physical-mental batteries before getting back

into full training. Whatever your sport is, it is important not to take too long a break. You should take advantage of the winter to train those aspects that tend to be overlooked during the competitive season, but which are, however, so important for performing well. For instance, you might focus your training on compensating for any asymmetries or imbalances you might have. Continuity between indoor and outdoor training is also vital for preventing injuries and avoiding putting on too much weight.



LEFT. Jacopo Mosca (Trek Segafredo) back at Mapei Sport Research Centre to optimise his fitness training after his crash at the recent Italian Cycling Championships.



RIGHT. Marta Bassino (member of the Italian Alpine Skiing team) carrying out a vertical jump balance test.



LEFT. Dominik Paris (member of the Italian Alpine Skiing team) using the Mognoni Press.

Winter on the ski slopes

The experience of experts working at the Mapei Sport Research Centre in Olgiate Olona (Italy) is available to sportspeople who want to keep on improving and feeling fit.

This applies to recreational skiers who are desperately looking forward to a season out on the slopes after a couple of winters in lockdown.

The Centre now offers a Ski Faster and Safer service that includes pre-season fitness training and customised fitness assessment of the kind used by professional skiers on the World Cup circuit, as well as a specific 8-week training plan. Just like the fitness training and return to sport service offered by the Training Department, these training sessions are individual and personalised with a senior personal trainer following athletes step-by-step to work on their weaknesses and improve their strengths, regardless of their initial fitness level or skiing ability.

Two levels of support for skiers

Staff under Dr Claudio Pecci's supervision offer two levels of support: the "Dolomites" package designed for skiers who want help with their training but also like a certain degree of independence, which includes a testing session and 8-week training plan (a one-to-one training session once a week at the centre and a training plan to be followed on your own twice a week); and a "Kitzbühel" pro-package for higher-standard skiers who want to train more meticulously, that includes a testing session and 8-week training plan (one-to-one training sessions twice a week at the centre and a training plan to be followed on your own once a week). Both programs include the use of innovative isoinertial devices for strength training and the Mognoni's

eccentric press, the only one of its kind in the world specially designed to assess athletes of the Italian Alpine skiing team.

The "home" of cyclists

Moving on from a winter sport to a sport more suited to good weather, over the next few months the centre will once again become a "home" for cyclists who want to improve and train more confidently.

Thanks to over 20 years' experience and more recent partnerships working alongside professionals from World Tour teams like Trek-Segafredo, Mapei Sports technicians are on hand to suggest the best services for every individual client's specific needs to help them achieve their goals. The services available include assessment tests (VO₂max, lactate threshold and Wingate), an analysis of your pedal stroke, biomechanical

testing, and customised training plans for athletes of all standards.

Personalising your training can be even more significant for amateurs, particularly for preventing different types of overloads, often the result of mistakes in training prescription and modulation.

It is equally important for cyclists to arrange a "package" of services with trainers that are geared to their own individual training plans.

Based on the type of bike (cyclocross, gravel, MTB, road), whether indoor or outdoor training is preferred, and the need/desire to train at the gym or on rollers, Mapei Sport technicians will draw up unique "tailor-made" training plans.

Thanks to over 20 years' experience and recent partnerships with professionals, Mapei Sports experts are on hand to suggest tailor-made training plans

Giulia De Maio. Mapei Sport, Olgiate Olona (Varese, Italy)



GENERAZIONE S

We have some high-flying girls

DESPITE ALL THE INJURIES, SASSUOLO HAS A VERY COMPETITIVE SQUAD

Leading up to Christmas, Sassuolo women's team managed by Gianpiero Piovani was second in the table behind Juventus. The women's team has won eight of their first nine matches of the 2021-22 Serie A season.

Results that would be greeted with enthusiasm anywhere, but Piovani wants to keep a low profile: "We have already hit one of our goals for this season:

after just 9 of our 22 league matches, we have already got enough points to avoid relegation. That is a very important landmark for a club like ours, which has not been around long in the women's game" Piovani said. "We have managed to climb up to second place in the table thanks to the work done in training and meticulous attention to detail."

A very young team

In the first part of the season manager Piovani had to do without striker Haley Bugeja, who was struggling with a troublesome injury. Young Haley (born in 2004) went home to Malta for treatment and when she returned to Italy she was the match-winner for Sassuolo scoring against Napoli. "Bugeja – so Piovani noted – helped us to get an important win, but we will have to wait until the second half of the season to see her fit to play ninety minutes at her very best". As regards young players, the inclusion of Sofia Cantore, an excellent goal scorer, in the squad is a great choice. Martina Tomaselli was also doing very well, but she tore a cruciate ligament playing for the Italy Under 23 team.

LEFT. Sofia Cantore, an excellent goal scorer for Sassuolo women's team.



"GENERAZIONE S" catches the eye abroad

THE PROJECT FOR YOUNG FOOTBALLER IS OFF TO A FLYING START

To make the "Generazione S" project start properly, Sassuolo staff led the training sessions of 34 clubs on their own playing fields in November-December and the club's managers started visiting football clubs in several places that have their own youth teams. The interest in "Generazione S" is intercontinental. "Football clubs from France, England, Germany, the Ivory Coast and Japan have sent out invitations to our managers. This is proof that

the Sassuolo brand is growing," so Giovanni Carnevali (Sassuolo's CEO and General Manager) proudly told us. "Leading training sessions as part of "Generazione S" is a lot of fun for me," so Chiara Colognesi told us, a manager of Sassuolo's youngest youth team, who visited seven teams before Christmas. Chiara is used to coaching boys: "I train good, well-behave lads. Being a woman and teaching boys boosts my morale".

ABOUT "GENERATION S"

"Generation S" is a sporting and social project aimed at improving how young people are introduced into the world of football focused on amateur football clubs for males and females so they can share activities, events and training programs. The project is based on a long-term idea by Giorgio Squinzi, the Group's former CEO: "We want to transfer Sassuolo's sporting culture to smaller clubs that need support and associations that embrace our values. We want to implement real, innovative, ed-

ucational projects where they are needed, because football and sport are the best means of helping our youngsters become better people and of inspiring boys and girls". The project is divided into three main realms: Educational, Academy and Experience based around Sassuolo's main principles. The courses and conferences examine different issues: from technical-sports aspects and nutrition to psychology, marketing, education, and social networks.



The pitch on which the final was played was coated with MAPECOAT TNS RACE TRACK.

Mapei-Red Bull: together for innovative football

THE ITALIAN FINAL OF THE RED BULL 5-A-SIDE TOURNAMENT WAS PLAYED IN NAPLES ON A PITCH COATED WITH MAPEI PRODUCTS

A “sgarrupato” (“rundown” in Neapolitan dialect) football pitch in Naples, renovated with Mapei solutions, hosted the Italian national final of the Red Bull Neymar Jr’s 5-a-side football tournament on 23rd October, with the match being won by the local team from Naples. The winning team, King Sport, qualified to fly to Qatar to take part in the world final: the prize at stake was the possibility of playing against Paris Saint-Germain’s star player Neymar Junior. The event was staged on the renovated field in Ventaglieri Park in the Montesanto district of Naples,

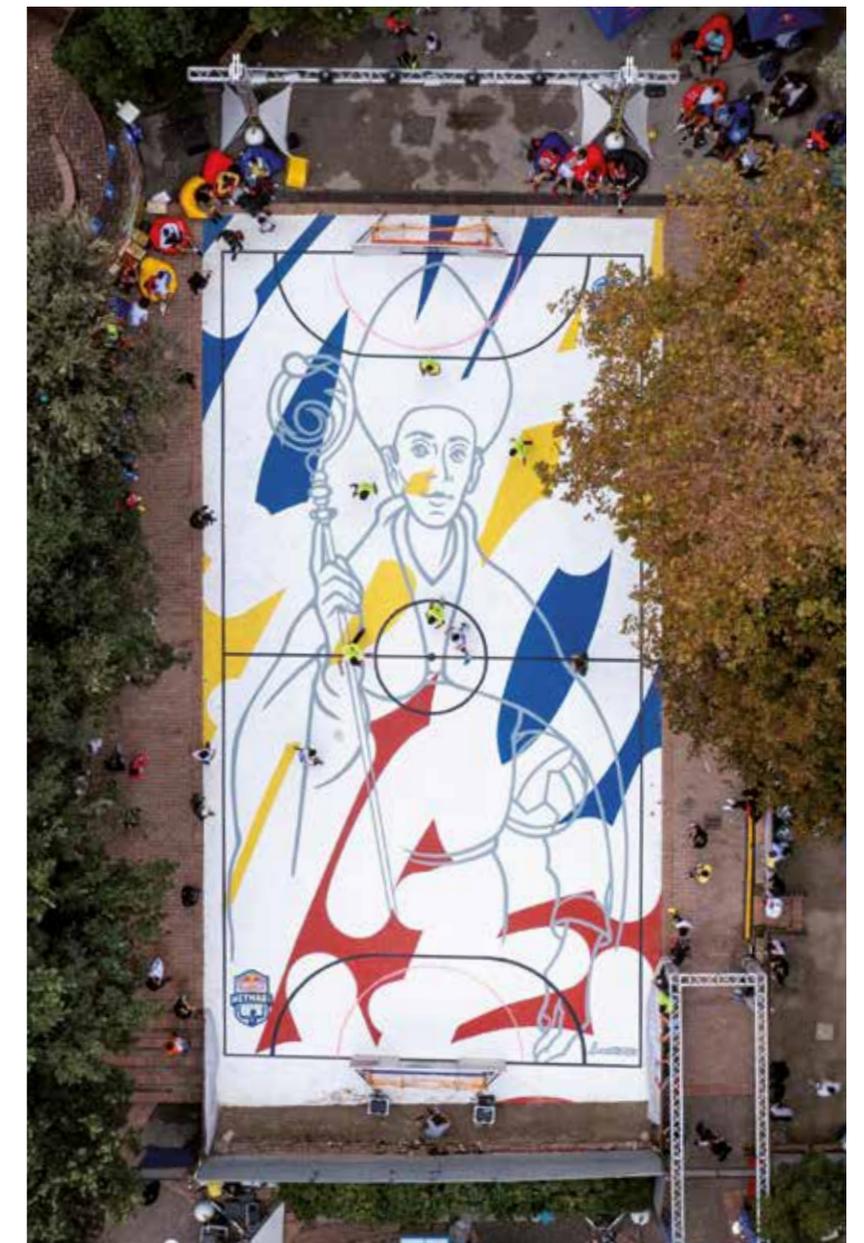
an authentic work of art created by the local artist Zeus40 depicting St Gennaro, the city’s patron saint, holding a football ready to play with the children from the local neighbourhood. The words “Napul’è” can be seen behind him as a tribute to the local Neapolitan singer Pino Daniele.

Coloured and resistant surfaces

The pitch was coated with MAPECOAT TNS RACE TRACK, an acrylic waterborne, rapid film-forming, coloured coating to protect concrete and asphalt surfaces subject to a high level of footfall. Thanks to

Mapei, the playing field can now boast a high level of slip-resistance, combined with long-lasting colours. The wide range of colours available, along with the other shades that can be obtained with the ColorMap automatic colouring system, means that personalised colours may also be created, which are able to resist prolonged exposure to sunlight. After Scalo San Lorenzo basketball court in Rome (see *Realtà Mapei International* no. 86) and Graziel-

la Fava Gardens courts in Bologna, this football pitch in Naples is another steppingstone in the partnership between Mapei and Red Bull. The common denominator in all these projects is the desire shared by both companies to act positively and purposefully to help neighbourhood life, providing sports fields for the communities of the cities involved and creating urban spaces that are accessible, safe, and long-lasting.



NEWS FROM THE MAPEI WORLD

EVENTS, TRADE FAIRS, AND INITIATIVES FROM THE GROUP'S SUBSIDIARIES

CANADA - NEW FACILITIES FOR MAPEI INC.

Mapei Inc., the Canadian subsidiary of the Group, has announced the expansion of its headquarters in Laval, which will be operational by 2023. A new manufacturing plant for powder products, a new Research & Development centre focused on concrete admixtures, and a distribution centre are planned to be built over a total area of over 4,700 m².

The facility which currently produces polymers, adhesives and admixtures for concrete will become one of the highest performing plants in terms of technology, capacity, and complexity within the Mapei North America network. In the picture below, the digging ceremony in Laval.



USA AND PUERTO RICO TOGETHER FOR HAITI

Mapei Corp, the Group's US subsidiary, and Mapei Caribe, whose headquarters is in Puerto Rico (shown in photo), have decided to join forces and make a shared donation to the Haitian Red Cross. The 5000-dollar joint donation is intended to help the local people repair the damage caused by an earthquake measuring 7.2 on the Richter scale that hit the island last August followed by tropical storm Grace. The donation will also help revive the rebuilding operations that were originally set under way in the wake of Hurricane Dorian in 2019.



AUSTRIA - NEXT GENERATION CLUB

Young Austrians joining the Next Generation Club will get the chance to be involved in training sessions held at the Mapei Austria GmbH's headquarters and internships at partner companies. Other bonuses include a trip to Italy, work gear, special insurance, discounts, vouchers and gadgets. Andreas Wolf, General Manager of Mapei Austria, noted that "Our aim is to make this kind of training attractive for young people. This program will allow us to invest in the future, creating close ties with the professionals of the future and tackling the issue of the lack of specialist manpower".



GERMANY - ULTRACOAT SPORT SYSTEM AT FSB

In partnership with Adisport, Mapei took part in the 27th edition of FSB, an international trade fair for sports facilities, as a FIBA Equipment and Venue Centre Associate (since 2019). For colouring and protecting wooden sports surfaces, Mapei presented ULTRACOAT SPORT SYSTEM, a colouring and protection system composed of ULTRACOAT PREMIUM BASE finish, ULTRACOAT HT SPORT lacquer, and ULTRACOAT SPORT COLOR varnish for marking out lines.



MALAYSIA - MAPESILENT WINS THE ARCHIDEX STAR AWARD 2021



The ARCHIDEX Star Award celebrates excellence in product design within the architecture, interior design and building industry. It is an award given during ARCHIDEX Exhibition which this year was held online last November. About 89 products were submitted from local and international exhibitors across 18 categories that covers design, innovation, technology, lifestyle and society, and standards. Mapei Malaysia's submission for MAPESILENT, a product line that the Group's Malaysian subsidiary has just introduced into the local market, was one of the 28 winners.

Available in English at mapei.it

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Mapei Structural Design

AN ONLINE SOFTWARE TO DESIGN STRENGTHENING SYSTEMS

Making the correct design of a strengthening system for existing buildings is often a very tricky process. To help designers do this, Mapei offers Mapei Structural Design, an innovative tool for making local checks on structural elements of existing buildings both quickly and reliably. Available free of charge from mapei.it and accessible from a PC, tablet or smartphone without needing to be installed, Mapei Structural Design was developed in partnership with Eucentre, an international research, training and service centre in the field of earthquake engineering and, more generally, of risk engineering. The calculations are based on the latest international guidelines, and you can choose the language to use from English, Italian, and Spanish. There is also a handbook giving examples of calculations and technical explanations, as well as video tutorials on the dedicated YouTube webpage.

Mapei Structural Design is the latest development of a service Mapei has been providing for over ten years, confirming the company's commitment to helping professionals and designers carry out their work.

HOW TO USE THE SOFTWARE

To access Mapei Structural Design just use the credentials entered when signing up to the Mapei website. Once you have completed access, you'll be able to see finished projects or create new ones by choosing from these templates:

- reinforced concrete elements
- masonry buildings
- timber beams and slabs
- non-structural elements

Each template is divided into two parts showing the ratings for both the existing section and the section reinforced using Mapei systems. You can take a look at the technical sheets of the products or get online help. After completing the sizing process, you can save the project and create a special calculation report in Word that is easy to update and outlines the various steps involved in the calculation.



QUESTIONS & ANSWERS

AN EFFECTIVE SOLUTION
FOR RENOVATION WORK
AND NEW BUILDS IN THE
CIVIL AND INDUSTRIAL
BUILDING SECTORS



By **Marco Albelice**

Using uncoupling membranes when installing ceramic and stone

When installing new ceramic flooring or carrying out renovation work, the design stage is a very important part of the process.

The elements that normally make up the various layers of a floor, from the concrete to the product used to grout joints, are all inter-connected and determine the overall behaviour of the floor covering. In certain cases, particularly, but not only, with renovation work, the installation layer for the new ceramic or natural stone floor covering no longer complies with the requirements of applicable norms and standards to receive the flooring.

Or, it could be that the more technical conditions of the substrate, such as the joints in the screed, do not coincide with the technical/aesthetic requirements of large size porcelain tiles. And it is in situations such as these that an uncoupling membrane is used.

Why should we use an uncoupling membrane when installing ceramic flooring?

Particularly when carrying out renovation work, there can be problems with substrates or substrates might no longer meet the specified requirements. If factors such as moisture, continuity (the presence of control or expansion joints), stability or waterproofness are not approached correctly, they could have a negative influence on the correct installation of the flooring.



Installing MAPEGUARD UM 35 on an existing ceramic flooring with control joints.

We should also add that, for a number of years now in various countries, the production of thin, large-size porcelain tiles has become more and more widespread.

These tiles give surfaces a more monolithic aspect and there are far fewer joints in the floor covering. It often happens that the position and layout of the joints in the screed does not coincide with the format or pattern of the large-size porcelain tiles to be installed.

Or, when installing over existing tiling, the old flooring includes joints which, at least in theory, should be respected because of the movements they are subjected to. Installing a new floor covering would mean cutting the tiles in correspondence with these joints, thereby permanently losing one of the most appreciated aesthetic features of this type of tile. An excellent solution to this type of problem is an uncoupling membrane. The membrane is positioned between the new flooring and the old substrate, preventing any underlying strains from damaging the new floor covering.

What are uncoupling membranes?

In the absence of a clear, unequivocal international reference standard, it is worth remembering that isolating membranes are defined in the *Handbook of the Tile Council of North America (TCNA)* as geometrically plastic membranes designed to create an air-gap

between ceramic flooring and the substrate. If we extend our view to include other important functions attributed to membranes, we find soundproofing membranes, anti-fracture membranes, waterproofing membranes and isolating membranes with characteristics that at times overlap, but which can also be different to meet specific design and site needs.

What is the actual purpose of uncoupling membranes?

This type of membrane allows the flooring and substrate to be independent of each other, thereby limiting the transfer of strains into the flooring. It is clear, therefore, that the use of an uncoupling/uncoupling membrane allows ceramic flooring to be installed, including large-size tiles, without being obliged to respect the joints in the substrate.

The membrane may be bonded to the existing substrate using the same adhesive as for the flooring material.

In other cases, the membrane may simply "sit" on the old substrate (such as old flooring or a cementitious substrate) and then receive the new floor covering material.

Marco Albelice. Technical Services, Mapei SpA (Italy)



PRODUCTS IN THE SPOTLIGHT

BONDING WOODEN FLOORS WITH
A LIGHT-WEIGHT ADHESIVE, REMOVING EPOXY
GROUT RESIDUES, AND WATERPROOFING
CONSTRUCTION ELEMENTS

1

Ultrabond ECO S Lite



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One-component, solvent-free (according to TRGS 610) silylated polymer-based adhesive for bonding all types of pre-finished or presanded laminated wooden flooring and medium size planks of solid wood up to 15 cm wide. It contains a high amount of resin and microbeads to make the product lighter. This makes the product easier to handle, lowers transport costs and increases its yield by 30% compared with other one-component Mapei adhesives. It contains no water, solvent, amines or epoxy resin and has very low emission of volatile organic compounds (certified as EMICODE ECIPLUS by GEV). It is easy to apply with excellent rib stability and easy to remove from hands

2

Mape-Antique Ecolastic



WATERPROOFING ELEMENTS, INCLUDING IN LISTED BUILDINGS

Two-component, elastic, salt-resistant, cement-free, lime and Eco-Pozzolan based coating used for waterproofing and protecting irregular shaped surfaces, brick vaulted roofs, screeds, roofs, storage tanks, fountains and features (such as cornices, string courses, small columns, etc.), on existing structures, including buildings with a National Heritage protection order and listed buildings. It may also be used to waterproof structures below ground level subjected to positive or negative hydraulic lift. The dry layer of MAPE-ANTIQUE ECOLASTIC maintains a high level of elasticity in all environmental conditions. Thanks to its consistency and characteristics, the waste is reduced to a minimum.

3

Ultracare Epoxy Off Gel



REMOVING GROUT RESIDUES EVEN ON VERTICAL SURFACES

High-viscosity cleaner for the removal of the residues of epoxy grouts such as KERAPOXY, KERAPOXY CQ, KERAPOXY EASY DESIGN, etc., from ceramic or glass mosaic surfaces. It is a concentrated gel that easily removes residues, stains or halos without developing harmful emissions and is suitable for use on non-absorbent materials such as porcelain, glazed ceramic and glass surfaces. The correct use of ULTRACARE EPOXY OFF GEL does not damage either the surface of the installed glass or ceramic or the joints. Thanks to its viscosity, it is ideal also for application on vertical surfaces. It does not damage metal or galvanized surfaces but a preliminary test is always recommended.



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Mapeguard UM 35

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