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

From big Ford-style factories to logistics 4.0 spaces

In countries with the oldest industrial traditions (Europe, North America), a process of progressive dismantling of large Ford-style factories has been underway for several years now. The economic, industrial and even territorial geography of many areas in these countries has changed. A transformation reinforced by the boom in logistics driven by increasing digitisation and automation of manufacturing and distribution operations.

A market (worth over 90 million Euros in Italy alone) that has also pushed up real-estate investment in this industry. New ways of purchasing goods and products, linked above all to e-commerce, have consolidated the demand for spaces and facilities that still have considerable margins for growth. We are witnessing an international phenomenon with countries such as Great Britain, Germany and France leading the way in the ranking for investment in real-estate for logistics estimated at around 70 billion Euros on a European scale. A rapidly evolving trend backed up by a growing interest on the part of foreign investors that is also being felt in several European countries. Not to mention the United States, where large sales warehouses, distribution hubs, and supply centres located along the most important communication routes have come to symbolise a new phase in the modern-day economy. Logistics centres could revitalise their surrounding territory and result in the construction of spaces along eco-friendly services-focused guidelines that will help revitalise abandoned areas.

Industrial flooring plays a decisive role and, specifically to meet the demands of a changing market, Mapei has launched the "Concrete Flooring Solutions" range focused on sustainability and durability. In this special issue dedicated to the range of products for industrial concrete floorings, we are showcasing applications designed for every stage of a project from studying the design mix to protection and finishing operations.

Economic uncertainties connected with the shortage of raw materials and rising prices have not prevented Mapei Corp., one of the Mapei Group's North-American subsidiaries, from growing: last year in the United States it recorded an 18% increase in sales (compared to 2021) and the Group aims to hit one billion dollars in net sales in North America by the end of 2023. An ambitious growth plan supported by the opening of new plants and warehouses and the expansion of manufacturing lines at the focus of the "Teamwork" section of this issue of *Realtà Mapei International*.

MAPEI PRESENTS ITS NEW LINE FOR INDUSTRIAL FIBER-REINFORCED CONCRETE FLOORING

The Pritzker Prize 2023 has been awarded to the British architect David Chipperfield who, among other projects, designed the extension to Anchorage Museum in Anchorage (Alaska, USA) to which Mapei contributed through its own range of products for cementitious floors.

Mapei's ongoing focus on the issues of sustainability and environmental impact is epitomised by an innovative project: the recovery and reuse of paper from bags holding its materials to make other "green" containers.

Enjoy your reading.

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Maria Luisa Filangeri, the captain of Sassuolo's women team

Cover story
The focus of this issue of *Realtà Mapei International* is on Mapei solutions for concrete floorings including the new Fibers line. The picture on the cover shows the concrete floors in Cordys Capital logistics center in Szirmabesenyó (Hungary) after completion

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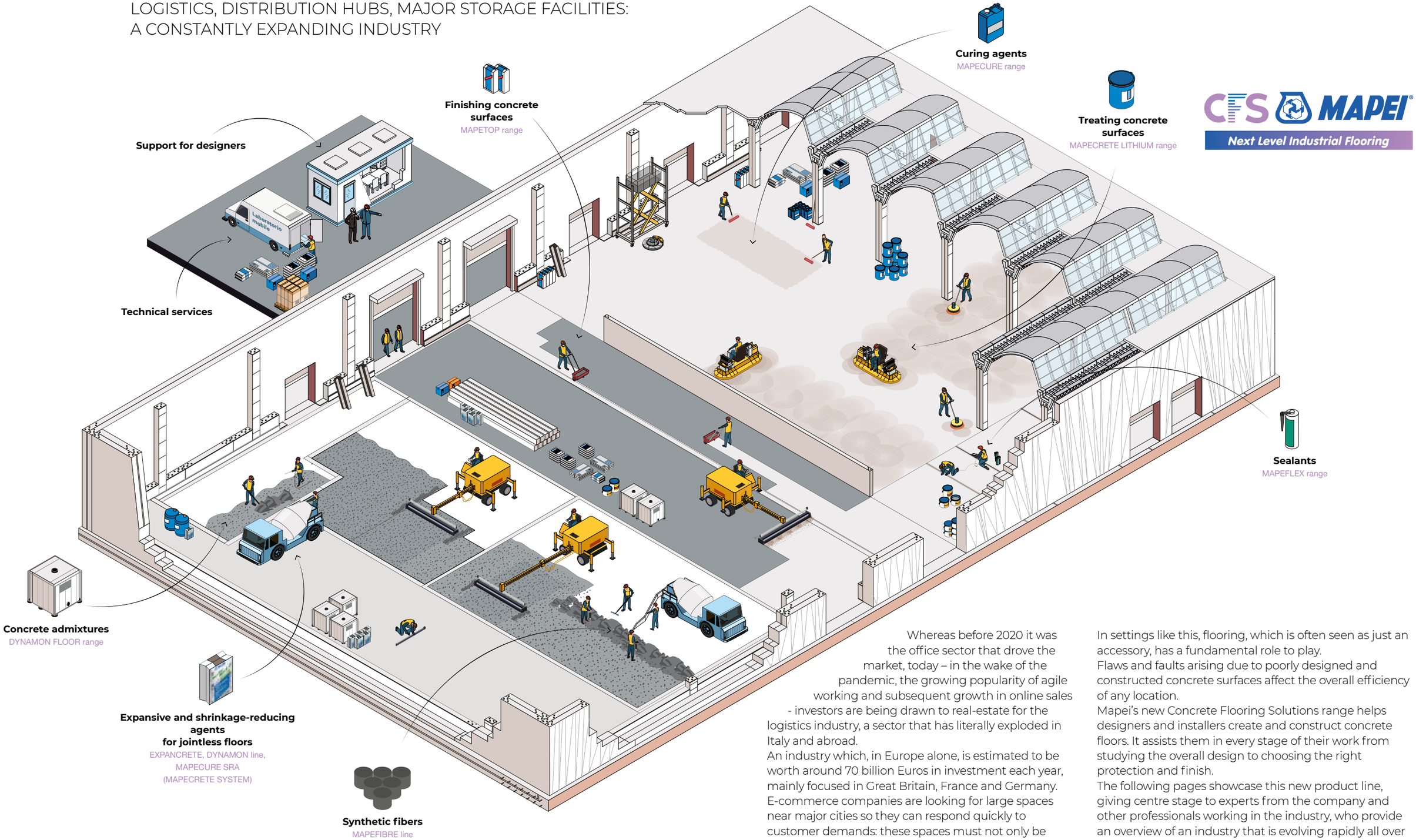
Industrial flooring: a full range of products

LOGISTICS, DISTRIBUTION HUBS, MAJOR STORAGE FACILITIES: A CONSTANTLY EXPANDING INDUSTRY



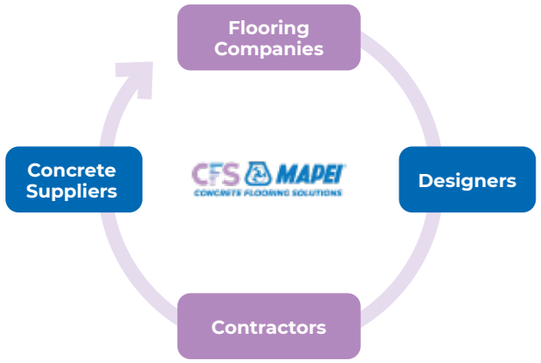
Whereas before 2020 it was the office sector that drove the market, today – in the wake of the pandemic, the growing popularity of agile working and subsequent growth in online sales - investors are being drawn to real-estate for the logistics industry, a sector that has literally exploded in Italy and abroad.
An industry which, in Europe alone, is estimated to be worth around 70 billion Euros in investment each year, mainly focused in Great Britain, France and Germany.
E-commerce companies are looking for large spaces near major cities so they can respond quickly to customer demands: these spaces must not only be functional but also innovative, sustainable, flexible and highly automated.

In settings like this, flooring, which is often seen as just an accessory, has a fundamental role to play.
Flaws and faults arising due to poorly designed and constructed concrete surfaces affect the overall efficiency of any location.
Mapei's new Concrete Flooring Solutions range helps designers and installers create and construct concrete floors. It assists them in every stage of their work from studying the overall design to choosing the right protection and finish.
The following pages showcase this new product line, giving centre stage to experts from the company and other professionals working in the industry, who provide an overview of an industry that is evolving rapidly all over the world, as testified by those building projects that have opted to use Mapei products.

by **Marco Paparella**

A full proposal with a new product line

CONCRETE FLOORING SOLUTIONS: INNOVATIVE SOLUTIONS FOR DURABLE CONCRETE FLOORING



Concrete Flooring Solutions is aimed at designers working in the logistics sector, as well as flooring contractors and manufacturers of concrete.

Mapei SpA's Concrete Flooring Solutions team. From left: Marcello Pinto, Matteo Draconte, Marco Paparella, Gianluca Fiore and Marco Magistrali.

E-commerce and online shopping, and then the pandemic, have profoundly changed the way we shop. Large quantities of goods are moved around the world and arrive effortlessly in our homes. And this is a global phenomenon.
Those large logistics hubs we see springing up around major motorway junctions play a vital role in this process. Inside these structures one of the most important components is the concrete industrial floor.
Vertical racking carrying heavy loads and the frequent passage of forklifts means the floors require special attention when being designed and installed.

To meet this growing demand, Mapei decided to put a team of experts out in the field: which is how the Concrete Flooring Solutions (CFS) line was born. The word "solutions" is the very essence of this proposal: it does not just mean selling products but working alongside our clients to propose solutions.
The new line is aimed at designers, general contractors, construction companies and, last but not least, those who install flooring: the professionals who find themselves having to analyse a civil or industrial construction project that involves the installation of a concrete floor.

Mapei does not want to limit itself to being just a supplier, but rather a reliable partner who you can turn to for concrete solutions for all your various construction needs.

Support in design and product selection
Guidelines issued in many countries and international standards consider an industrial floor to be a structural element and, as such, must go through a design process. Mapei's CFS offers its clients support during the design phase, which could consist in our Design Team simply calculating the proper dimensions, right up to providing a complete structural design: in such cases we also turn to highly experienced external consultants.
An industrial floor is similar to a made-to-measure suit: it needs to be tailor-made and adapted to the needs of its specific function once in service and to the requirements of the client. In this phase we supply an optimised solution from a cost/benefit perspective, which is also verified structurally according to current applicable standards.
The second step is choosing the products and qualify the materials: we work alongside the flooring contractor and the supplier of the concrete to study the most suitable

A NEW MANUFACTURING PLANT FOR FIBERS

MANUFACTURING OUTPUT HAS DOUBLED SINCE FILI&FORME WAS TAKEN OVER IN 2018

It was 4 April 2018 when Mapei took over Fili&Forme srl, a company specialising in the extrusion of plastic materials for the manufacture of monofilaments for the household articles industry and synthetic fibers for concrete. The latter, also known as structural fibers, are a new technology for concrete and are used to partly and, in some cases, totally replace conventional metal reinforcements. They are used for various purposes such as industrial flooring, pre-cast concrete elements, shotcrete in tunnels, etc. Mapei, a trailblazer in new technologies, has fully grasped the potential of this product and decided to invest in it. In accordance with its vocation for being a global supplier of miscellaneous products, Mapei has included these fibers in a number of its product ranges, and they are now distributed in over 30 countries worldwide.
Just 6 years later, giant steps have already been taken: production output has more than doubled thanks to investments in new ranges of extrusion products; Quality, Environmental, Health and Safety systems have been awarded certification in compliance with ISO 9001, ISO 14001, ISO 45001 standards and, most significantly, a modern new manufacturing plant has been bought in San Cesario sul Panaro (Central Italy). In addition to the 8,000 m^2 of existing buildings, 10,000 m^2 of manufacturing premises, 2,200 m^2 of offices and over 15,000 m^2 of outdoor areas have been added on.
Fiber manufacturing is a continuous operation spread over three daily eight-hour shifts working six or even seven days a week.
The new plant is located just a stone's throw from the old Fili&Forme headquarters and can handle any future expansion to fiber-manufacturing business.
With an eye for sustainability, it was decided to install a photovoltaic system on the roof with a power rating of 417 kWp, that will produce an annual amount of electric energy estimated at around 480,000 kWh; the same type of investment is planned for next year on the roofs of the old buildings.
The M+ warehouse and logistics centre have also been moved to the new site: the company was founded in 2008 and has been part of the Mapei Group since 2010. M+ markets mosaic materials for wall and floors and offers qualified technical support for designers and customers throughout the entire life cycle of projects: from the original design to the choice of ideal materials right down to the final details, working alongside experts to come up with and develop the best solutions for domestic, business and public settings.
Over 60 staff are currently employed in the Group's facilities in San Cesario sul Panaro. This plant will make Mapei an increasingly significant player in Central Italy, joining forces with the company facilities in Sassuolo and the Group's subsidiaries Cercol and Adesital.

Some pictures of the Mapei manufacturing plant in San Cesario sul Panaro (Italy) devoted to manufacturing fibers.

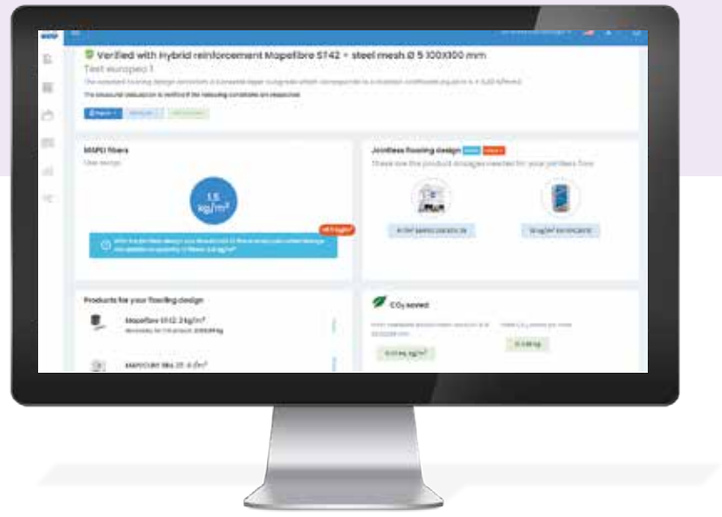
TOP OF THE PAGE. Placing concrete to create an industrial floor with an underfloor heating system.
IN THE MIDDLE. Smoothing the surface of the floor using a helicopter-type power float.
ABOVE. The new CFS line offers solutions for different applications including concrete roads inside tunnels.

mix, favouring the use of fiber-reinforced concrete and controlled-shrinkage concrete for jointless floors: putting our know-how at the service of the client.
And with our constant focus on the wellbeing of the environment and people, Mapei continues to make an important contribution to a building sector increasingly focused on the health of the planet: synthetic fibers improve the durability, ductility and fatigue behaviour of concrete and guarantee a reduction in CO_2 emissions.
The third but no less important phase is on-site checks and controls. Thanks to our Mobile Concrete Labs we are able to carry out checks on fresh concrete: this operation has the twin scope of making sure it corresponds with what was specified in the qualification phase and to intercept potential anomalies in the concrete.
We also organise training courses and workshops at various knowledge levels for our clients.
Within the comprehensive range of products for industrial floors, the new line proposes not only fibers for structural use and super-plasticising admixtures, but also dry-shake hardeners made of special well-graded quartz, anti-evaporation products, lithium silicate surface treatments and products to create contraction joints.
An increasingly specialised market requires long-lasting solutions with low maintenance costs: MAPECRETE SYSTEM, the innovative solution by Mapei for jointless floors is the answer to this need.

Not only floors for the logistics sector
Concrete Flooring Solutions supplies products and support not only to create concrete industrial floors for the logistics sector, but also for a whole host of particular applications, such as:
- coatings for hydraulic channels
- concrete roads inside tunnels
- pavements and cycle lanes
- airport applications
- mooring docks
- extruded components for roads
- architectural floors.

The approach is always the same: supplying a design according to scope, choosing the right products and supporting the client during the execution phase.

Marco Paparella. Fibers Corporate Product Manager, Mapei Group



CFS Virtual Designer App

THE FIRST APP FOR STRUCTURAL CALCULATIONS FOR INDUSTRIAL FLOORS

A unique digital tool, the result of more than ten years of Mapei experience and Research and Development in the fiber-reinforced concrete and jointless floor sector: this is the new CFS Virtual Designer App.
This is a truly versatile tool proposing countless technical solutions for industrial floors to suit any market from around the world, which has been specifically developed to comply with all the various local standards and guidelines. To be in line with the demand for sustainable solutions, apart from structural calculations for floors in fiber-reinforced concrete (FRC) and jointless solutions using MAPECRETE SYSTEM, the App also has an LCA (Life Cycle Assessment) function to calculate total CO_2 emissions of the floor itself. For the initial phase the new APP will be available to the Mapei technical staff promoting the “Concrete Flooring Solutions” project, while for the second phase we will be looking to extend roll-out of the tool to designers and end users.
The CFS App is the result of a collaboration between Mapei and Antherica Srl, an Italian company specialised in the development of Apps and software tools aimed at companies and professionals.

HOW THE APP WORKS

Thanks to its intuitive, user-friendly layout, it takes just a few steps to identify the most suitable solution for the structural design of an industrial floor, based on the specific load configuration or area of use specified by the designer or client.
The technical solution is created by calculating the correct amount of synthetic fibers required to reinforce the floor, to either partially or completely replace classic steel reinforcement, or the correct dosage of each MAPECRETE SYSTEM product in the case of jointless floors (EXPANCRETE expansive agent, super-plasticising admixtures from the DYNAMON line, and MAPECURE SRA curing admixture).
What is more, the CFS APP is an actual “fibers-community” where users can share their reference projects with Mapei colleagues around the world.
All Mapei technical documentation is available from the "Download" area: Technical Data Sheets, DOPs (Declaration of Performance) and EPDs (Environmental Product Declaration) are just a fingertip away.

by **Filippo Salis**

When a logistics park plays a key role in relaunching a territory

THE CONSTRUCTION OF SPACES, ACCORDING TO ENVIRONMENTAL CRITERIA AND WITH THE PROVISION OF SERVICES, PLAYS AN IMPORTANT ROLE IN REVITALISING ABANDONED AREAS

Within the Italian real-estate market, what trend has there been in the logistics sector in recent years? And what is the outlook for 2023?
In the last five years the logistics sector has garnered a lot of attention from international investors who have been targeting their acquisitions on more functional and strategic areas: properties along motorways and in Italian cities; a decision that can be explained by consumption via e-commerce, which more than doubled between 2016 and 2021. The logistics real estate market, as with every other sector, was exposed to a particularly tense period during the pandemic but was probably the only one that demonstrated a certain solidity and resilience at the time. Nevertheless, the volume of investments fell during the second half of 2022 (compared with the same period in the previous year), even though, overall, the total value of transactions in 2022 was not that much lower than in 2021.
Another event that effected growth in this sector, and to a certain extent slowed it down, was the Russia-Ukraine conflict, with an increase in the price of raw materials and the cost of energy. We can be hopeful for this year's outlook because of at least two factors: the first one foresees significant growth in turnover that will characterise the two-year period 2023-2024, backed by an upturn in international and online trade, while the second one sees logistics as one of the sectors that will not be amongst those most affected by the increase in the cost of energy and raw materials.

Is the sector aligned to overseas markets?
The volume invested by Italian investors in the logistics sector is lower if we compare it with other leading European countries such as Great Britain, Germany and France. This is because, in Italy, it is more difficult to explain and make international real-estate investors understand the business difficulties and the obstacles companies are faced with, obstacles that in other countries do not exist. In fact, in Italy the amount of red tape and complex bureaucracy (which needs to be simplified though public intervention to improve the offer) creates difficulties when it comes to compliance because the rules can change, not only from Region to Region, but even from town to town. The positive note is that, in part, this gap is filled thanks to a certain degree of elasticity that has been developed over the years, and also by international managers working in the sector.

> **The volume invested by Italian players in the logistics sector is lower if we compare it with other leading European countries such as Great Britain, Germany and France. Bureaucracy is the main obstacle.**

A logistics centre in Vellezzo Bellini (Province of Pavia, Italy).

What are the future scenarios for the logistics sector, considering also the constant growth in e-commerce?
The scenarios anticipated for the logistics sector seem to confirm certain necessities that have become an integral part of the sector, thanks to the constant growth in e-commerce. With that in mind, it would be quite reasonable to expect new logistics warehouses to focus increasingly on last-mile operations because of the capillary nature of the service and to meet the increasing demand from consumers. As far as the actual buildings are concerned, there seems to be two trends: warehouses of around 7.000-8.000 m^2 will be the most common – last-mile deliveries in which robots will dominate activities, ready to receive and launch drones to guarantee quick, precise deliveries; on the other hand, more and more logistics parks will be required due to the growing focus on sustainability from a 360° perspective, which will also make considerable use of automation and robots.

What good practices are adopted to make logistics buildings sustainable? What certification is required to ensure their durability and safety?
Converting and redeveloping buildings, opting for brownfield sites – to consume as little land as possible – and complying with ESG (Environmental, Social and Governance) criteria are all topics contemplated by the concept of sustainability in the logistics sector, which is intended as both a starting point and a final objective. A concrete example is the creation of logistics parks with environmental certification attesting the level of attention paid during the design, construction, implementation and maintenance phases. The certification protocols adopted for such activities are LEED Platinum (which includes all those products with eco-INSTITUT-Label, NaturePLUS, EMICODE EC1^{PLUS} and Indoor Air Comfort GOLD certification) and Net Carbon Zero.

How does a building of this type dialogue in a virtuous way with the territory in which it is located?
A logistics building is able to dialogue in a virtuous way with the surrounding environment if, first and foremost, the local community perceives it as something that brings added value and an opportunity to relaunch and create growth in the territory. This can happen if certain factors are considered, such as:

- the architecture of the building generates a positive aesthetic perception and a sense of harmony with its surroundings;
- the provision of areas for employees and local inhabitants where they can meet up, relax and socialise outside the workplace (gardens, trim trails, padel courts, picnic areas, etc.);
- cycle tracks to encourage the use of green transport solutions;
- the creation of new medium to high quality employment opportunities.

All these measures play a part in revitalising abandoned areas and providing the entire social fabric with a chance to use and benefit from the renewed potential of an area which, otherwise, would have been left to its own devices, ruining the image of the territory in which it is located and diminishing its value.

> **Sustainability will become increasingly important for building conversions, with environmental certification for all phases, from construction to maintenance**

Filippo Salis. CEO of SFRE, Services For Real Estate

SFRE – SERVICES FOR REAL ESTATE

Founded in 2016 by Filippo Salis, SFRE – Services for Real Estate - is a Project & Construction Management company specialised in buildings for logistics and light-industry purposes, from both a construction and engineering perspective. It has four branches: two in Milan, one in Bologna and one in Rome. The services they offer are aimed at important national and international companies: their clients – both developers and investors - include some of the most important players on the scene. The company takes care of the various design stages – preliminary, final and executive – and is supported by the other two companies from the group: SFE, which provides engineering services in the field of safety and fire prevention, and SFCM, specialised in construction management and site safety.

by **Livio Pascali**

The importance of new standards for the application of FRC

THE FIBER-REINFORCED CONCRETE (FRC) SECTOR HAS SEEN CONSIDERABLE DEVELOPMENT IN RECENT YEARS

In the last few years there has been a lot of excitement and activity in the scientific and technical community working on fiber-reinforced concrete (FRC).
The definition of FRC can be considered one of the steps along a lengthy journey, crowned by the release of national and international guidelines and technical documents, which include CNR DT 204 and CNR DT 211 by the Italian Research Council, Model Code 2010 by fib (International Federation for Structural Concrete), and the 4th edition of the Concrete Society Technical Report no. 34.
Revisions made to the standards adopted by the sector incentivise the use of FRC when making structural elements, introducing the use of performance characteristics for structural purposes, such as residual flexural strength, which had previously not been considered.
The toughness class of fiber-reinforced concrete is defined by an alphanumeric code according to characteristic values for residual tensile strength, calculated using experimental means. For example, 2B indicates that the FRC has a characteristic tensile strength value f_{R1k} of between 2 and 2.5 MPa and an f_{R3k}/f_{R1k} ratio in the range $0.7 \le f_{R3k}/f_{R1k} < 0.9$. This enables designers that intend using the ductility of fiber-reinforced concrete to specify its characteristics directly, such as residual tensile strength f_{r1} and f_{r3}, or to specify the toughness class of the FRC. Manufacturers of concrete must use structural fibers certified according to EN 14889-1/2 and attested under System 1.
On-site control procedures and guidelines issued by national bodies responsible for public works provide designers and engineers with precise indications for the design, manufacture and control of structural elements for which fiber-reinforced concrete is used. Designers, therefore, have access to several tools to help them design and verify various types of fiber-reinforced concrete elements correctly, including floors.

FRC for industrial floors
One of the fields for which fiber reinforced concrete may be immediately applied is, undoubtedly, the industrial floors sector. A floor needs to go through an actual design process to calculate the dimensions of the slab by verifying its capacity at the ultimate limit state, but also by verifying its serviceability limit state with respect to deformations and cracking phenomena in the slab.
Evaluating the strength of a floor in FRC is different than with a conventional floor in reinforced concrete (RC) because of the different reaction of the material.

Evaluating the strength of a floor in fiber-reinforced concrete is different than with a conventional floor in reinforced concrete

The concept behind fiber-reinforced concrete is that the concrete should have a certain amount of residual tensile stress once cracking occurs within the matrix, something that in conventional reinforced concrete is fully accounted for by the steel reinforcement, generally consisting of electro-welded mesh. Having said that, with respect to a floor made from reinforced concrete, the same verifications need to be carried out regarding its ultimate limit state and serviceability limit state.
The calculation methods used at the ultimate limit state are the yield line method to calculate its flexural capacity and punching tests on the loaded face and critical perimeter. For the serviceability limit state, on the other hand, they are the evaluation of cracking due mainly to deformations caused by shrinkage in the slab.
There are many possible design solutions, ranging from the use of electro-welded reinforcing mesh in combination with fiber-reinforced concrete, to the complete removal of electro-welded mesh and the use of fiber-reinforced concrete only. Which design solution to adopt should be decided by the designer and depends on the calculations carried out and the conditions around the slab.
Whenever fiber-reinforced concrete is used, the installation process of an industrial floor can be optimised, in that the amount of electro-welded is reduced (or even eliminated in certain cases) and, as a result, site operation times can also be optimised due to installation being that much quicker.
Fiber-reinforced concrete also plays an essential role in floors when dealing with deformations in the slab which, if not evaluated correctly (at the serviceability limit state), in certain cases could generate higher stresses than the tensile strength of the matrix and, as a result, trigger the formation of undesired cracking.

Reduction of contraction joints
Cracking in floors is one of the main causes of disputes and, in most cases, appears within a few days of installation. Cracking can be caused by a number of phenomena, such as the section being inadequate for the expected loads, a high level of deformations due to shrinkage, installation errors or large variations in the section. In general, the main cause is incorrect calculation of the dimensions and the distribution of contraction joints.
The function of contraction joints is to “funnel” any shrinkage cracks that appear to stop them spreading randomly across the surface of the floor. To that end, it is very important to carry out a preliminary evaluation of the layout and position of any pillars or pronounced vertical features on the floor in order to have an optimal distribution of the contraction joints, whose maximum distance must be calculated according to various parameters, such as friction at the slab/substrate interface, thickness of the floor and type of concrete.
If the contraction joints are set at a larger distance, passing from a pitch of 3.5-4 m to a pitch of 10-30 m, the floor becomes jointless (basically no contraction joints and with construction joints only) and it is essential that the floor is verified when in service in order to evaluate and prescribe the maximum deformation due to hydraulic shrinkage. In so doing, FRC becomes compensated-shrinkage FRC and the product itself, because of the variety of performance characteristics it has to ensure, becomes a set consisting of numerous components and, therefore, a “system”.

The use of FRC allows the amount of electro-welded mesh to be reduced or even eliminated in certain cases

On the basis of what we have discussed, it is clear that, in order to design an industrial floor correctly, there needs to be a thorough and deep understanding of the materials being used, that is, concrete and strengthening fibers, and the way they interact with specific admixtures, expansive agents and self-curing agents, as well as the mechanical characteristics obtained by their various combinations.
Determining the correct balance for a floor in fiber-reinforced concrete cannot be limited, therefore, to simply selecting the right type of fiber and its relative dosage rate.
A designer also needs to have specific knowledge of mix-design, which is complex and fundamentally different to other types of concrete.
The design of industrial floors in fiber-reinforced concrete is receiving a growing amount of interest from all those involved in this sector thanks to the intrinsic potential of the material itself and the wide-ranging development prospects.
In the near future, certain distinctions from an operational and standards perspective will probably need to be considered for this specific application, but that doesn’t alter the fact that we can now consider the installation of industrial floors using FRC as one of the best solutions possible.
We now have almost everything we need to design and install an industrial floor in fiber reinforced concrete.

ABOVE. A view of the concrete floors completed in the Docks logistic centre in Arquata Scrivia (Italy).

Livio Pascali. Adjunct Professor, Civil, Chemical and Environmental, and Materials Engineering Department, University of Bologna (Italy)

by **Matteo Draconte**

So many advantages with fiber-reinforced concrete

PRACTICALITY, LOWER COSTS AND LESS IMPACT ON THE ENVIRONMENT BY USING SYNTHETIC MACRO FIBERS

Fiber-reinforced concrete has become one of the most widely used materials to make industrial floors and numerous standards and guidelines around the world acknowledge its function for structural purposes. Designers, therefore, play a fundamental role; they need to define the characteristics of the materials to be used and perform structural calculations, where required. Once designed, the floor must then undergo the prescribed checks, both during installation and again on the final, completed floor.

The mix design of the concrete employed has a decisive role in creating a high-quality industrial floor. With the introduction of synthetic macro fibers in concrete, traditional steel reinforcement can be either reduced or completely replaced in industrial floors, bringing benefits such as lower costs and more practical installation, as well as a considerable reduction in CO_2 emissions. What is more, the use of fibers also makes concrete, which is essentially a brittle material, significantly more ductile and tougher.

What makes synthetic fibres sustainable technology may be easily identified during both the manufacturing phase and the application phase of the product itself

Synthetic macro fibers

The use of macro fibers in industrial floors is rapidly increasing all around the world, thanks to the growing number of designers and construction companies that acknowledge their capacity to meet design requirements.

Macro fibers provide three-dimensional reinforcement within the matrix and a structural contribution to the concrete, in compliance with European standard EN 14889-2:2006, “Fibers for concrete. Polymer fibers. Definitions, specifications and conformity”, which defines them as “for structural use”.

When they are used to improve the load-bearing properties of concrete, synthetic macro fibers undergo testing according to European standard EN 14651 which contains the test method for measuring the toughness class of fiber-reinforced concrete and, therefore, the residual performance properties of concrete after cracking.

As mentioned previously, not only does the use of fiber-reinforced concrete enable traditional steel reinforcement to be reduced to a minimum or replaced completely, it also speeds up construction times on site, improves the level of safety in the workplace and minimises the impact of transporting materials.

There are currently two associations, MSFA (Macro Synthetic Fibres Association) in Europe and FRCA (Fiber Reinforced Concrete Association) in the USA, through which Mapei and other leading companies from the construction materials sector work with designers and the most prestigious universities to promote this innovative technology and its numerous advantages on the market.

Reducing environmental impact

What makes synthetic fibers sustainable technology may be easily identified during both the manufacturing phase and the application phase of the product itself.

Synthetic fibers are manufactured by melting granules of different types of polymers together and then extruding filaments in differing forms and with different mechanical characteristics.

All waste material from the manufacturing process is constantly collected and recycled, classifying the production of synthetic fibers as a “zero-waste” process according to Circular Economy principles.

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1. An industrial concrete floor under construction.
2. MAPEFIBRE ST 50 TWISTED are twisted-type polymer macro fibres for structural use.
3. MAPEFIBRE ST 42 are corrugated-type polymer macro fibres for structural use.
4. A concrete floor, created using fibers, upon completion of work.

4

Another aspect that makes synthetic fibers a sustainable technology regards their application, which is far more cost-effective if compared with traditional steel reinforcement.

Eliminating the transport and application/positioning of steel mesh also leads to a significant reduction in the amount of construction materials consumed and, as a result, a reduction in equivalent CO_2 emissions.

Design support

With such a modern and increasingly sustainable approach, designers play a key role in choosing to opt for materials with low impact on the environment. This means they have to calculate the analysis of a building’s life cycle and identify construction techniques and processes that would reduce the time required for their construction.

In line with this approach, the Concrete Flooring Solutions line by Mapei provides support for floor designers, proposing sustainable and innovative solutions, through the use of fiber reinforced concrete containing Mapei macro fibers for structural use.

Fibers also enable concrete to become significantly more ductile and tougher

Matteo Draconte. Corporate Product Line Specialist, Fibers, Mapei Group

A product system for jointless floors

MAPECRETE SYSTEM ALLOWS TO OBTAIN CONCRETE SURFACES WITH HIGH DIMENSIONAL STABILITY, ELIMINATING OR REDUCING CONTRACTION JOINTS

Concrete is, by its very nature, subject to hygrometric shrinkage which is often one of the main causes of cracking in an industrial floor. To control this phenomenon, it is crucial that contraction joints are included in a floor in order to improve its durability and guarantee its service life.
To eliminate cracking induced by shrinkage, and weak points in general, in 2003 Mapei developed MAPECRETE SYSTEM, a solution that makes it possible to obtain concrete with high dimensional stability and create shrinkage-compensated industrial floors, without including contraction joints. Compensating for shrinkage enables contraction joints to be avoided up to a pitch size of 1,000 m^2, or even more.
The system is based on the principle that shrinkage in volume may be compensated for by expansion in volume appropriately contrasted by structural strengthening. This effect is achieved by combining different products working in synergy.
MAPECRETE SYSTEM is a modular system and is applied by combining four products which, if added at appropriate dosage rates, control shrinkage in concrete and prevent the formation of cracks:

- an acrylic-based super-plasticising admixture from the DYNAMON FLOOR range to achieve a low water/cement ratio and high workability;
- an expansive agent from the EXPANCRETE range for shrinkage-compensated concrete: when added to the mix, it reacts with the mixing water and increases its volume;
- MAPECURE SRA liquid admixture to reduce hygrometric shrinkage in concrete;
- structural synthetic and steel fibers from the MAPEFIBRE range;

MAPECRETE SYSTEM exploits the synergic effect of each single component to increase the expansive effect of concrete during the first phase of curing and reduce the effect of shrinkage during the second phase, thereby preventing the formation of cracks and obtaining concrete that is dimensionally stable.

Application and advantages
MAPECRETE SYSTEM is a flexible system and may be adapted to suit various types of application. Apart from industrial floors, it may also be used for multi-storey carparks, precast concrete structures, sport courts, road decks and piles for viaducts, viaduct slabs, hydraulic works. etc. The system offers numerous technical and economic advantages, such as:

- drastic reduction in hygrometric shrinkage;
- resistance to shrinkage-induced cracks;
- control of curling effect;
- elimination of contraction joints;
- elimination of costs for maintenance work on contraction joints and better flatness;
- rapid installation;
- the possibility of eliminating steel meshes.

Industrial floors made using the MAPECRETE SYSTEM can be treated with various surface finishing systems, as you can read in a dedicated article in this issue of the magazine.
The use of surface hardeners, consolidating impregnators, thixotropic water-repellents and anti-stain products is an optional, but becomes a necessary component when looking to complete the system in order to achieve the maximum levels in terms of quality and performance.

by **Marco Scrocchi**

Fewer maintenance problems: activities do not stop

APART FROM ENSURING DURABILITY, MAPECRETE SYSTEM GUARANTEES MINIMUM SHRINKAGE AND CURLING EFFECT ON CONCRETE FLOORS

Your company has been operating in the industrial flooring sector for a number of years. What changes have you seen in the requirements of designers and clients over the years?
In the last five or six years, designers and clients have completely changed their approach to this type of work and, nowadays, an industrial floor is always subject to a preliminary study. The study takes into account not only the use of the structure, but also other factors such as the hydrogeological conditions of the area, the static and dynamic loads the floor will be subjected to and the characteristics required for the surface (resistance to abrasion and attack from chemical substances and, in the case of external floors, its resistance to de-icing salts). Once the preliminary study has been completed, the designer proposes the most suitable solution to the client, whether for a logistic hub, a harbour, an airport, a manufacturing facility, a hospital. For the logistics sector in particular, the preliminary study allows to design and create durable concrete floors on which maintenance work can be carried out without interrupting normal operations.

Where are jointless concrete floors mostly used?
Jointless floors (which are certainly more expensive than conventional floors) are requested for logistics hubs and manufacturing companies in particular, where surfaces have to withstand heavy stresses and loads, and it is only possible to carry out a limited amount of maintenance work so as not to disrupt normal production processes or logistics operations. In fact, this type of floors requires less maintenance so they are more suitable for spaces where fast-moving forklifts running on extremely hard, non-elastic wheels are used, which load the surface and, over time, can damage contraction joints (which, as a consequence, need maintenance work).
Apart from logistics hubs, we have also installed jointless floor in warehouses where scrap metal and cereals are processed in which the vehicles (with blades) used can drag along the floor, causing mechanical damage. This type of floor is also employed in cleanrooms: in this case the surface, which is then coated with resin-based finishes, cannot have any joints. As a result, the concrete substrate also needs to have no joints.

What are the advantages of this type of floor?
Apart from the lower amount of maintenance and longer durability mentioned previously, we should also add that the concrete used for this type of intervention guarantees minimum shrinkage and curling, which means it is possible to create surfaces with tighter tolerances in terms of flatness than those specified by current standards. In many logistics hubs the floors are used by forklifts that can reach up to quite considerable heights, so it is essential that surfaces are flat and level. The fact that a jointless floor has no change in volume over time is very important.

What added value does MAPECRETE SYSTEM bring to this type of installation? And why do you use this system?
As the name suggests, MAPECRETE SYSTEM is a complete product system and it may be adapted to anywhere, including overseas. The preliminary analysis phase identifies the admixtures specific for the floor and their suitability for controlling hygrometric shrinkage, which is of great help to users and means floors can be installed “without surprises”. We have been using this system for many years, with excellent results.

You often work with Mapei. What are the strong points of this relationship?
Mapei provides a complete, 360° service which includes not only a complete product system, but also cutting-edge technical support, which commences at the initial study phase of the mix and then continues with assistance on site. We have established a virtuous relationship because, with the technical support we receive from Mapei, we can also provide feedback from site about the MAPECRETE SYSTEM and its performance “in the field”, and this information can be really useful for the Mapei experts who test and develop products.

Marco Scrocchi. CEO of Ferrocemento RS Srl

by **Andrea Invernizzi**

Hardeners and surface protectors

TWO PRODUCT FAMILIES TO IMPROVE PERFORMANCES AND ENHANCE THE DURABILITY OF CONCRETE FLOORS

Concrete floors are structures that, by their very nature, are highly subjected to all types of stress: bad weather, vehicle traffic, impact loads, abrasion, thermal shocks, aggressive chemicals and permanent loads, to name just the most common. For a number of years products have been available to improve their performance characteristics, preserve their durability and reduce maintenance costs. The simplest solutions consist of the application of products on a new or existing concrete floor, bringing clear benefits in terms of surface strength and resistance and protection for the substrate.
Mapei has a vast and complete range of solutions available for this scope, with reliable, simple solutions that can be applied quickly – a very important characteristic when working on large surfaces. Not only do treated floors have better performance properties, but they also benefit in terms of durability and ease of maintenance.

Dry-shake and liquid products are available in various colours and are applied while placing concrete and once it has hardened

Some of these products are applied when placing a concrete floor, while others are applied once the concrete has hardened, with no time-limit regarding their application. This means the characteristics of a floor may be improved as early as the design stage by adopting the most appropriate countermeasures. As a result, the materials and techniques adopted vary and can be divided into two main families according to their main function:

- surface hardeners: products and solutions designed to increase the wear-resistance of a floor's surface, available in either powder or liquid form;
- surface protectors: products and solutions designed to protect the surface of existing floors to prevent the possible penetration of aggressive substances or substances that could modify them aesthetically.

The distinction between these two families is not always clear and identifiable, in that surface hardeners in liquid form may often function also as surface protectors and, therefore, can overlap with the second group, but is a convenient way of presenting Mapei solutions in this vast sector.

A wide range of hardeners

In the first family, we may separate the products into "dry-shake" and "liquid" surface hardeners. The first type hardeners are ready-to-use anhydrous mixtures of hydraulic binders, special additives, fibers and selected, particularly hard aggregates applied on the floor using the "broadcast" method: they are distributed on the surface of placed concrete once it has set and been smoothed over and are incorporated into the surface of the concrete with a power-trowel with rotating blades (known as a "helicopter"). This creates a hard, smooth, compact and highly resistant surface on internal and external floors. These products are available in various colours so floors can also have a highly attractive finish.
Dry-shake surface hardeners are mainly divided according to the type of aggregate they contain, which characterises their final surface hardness and resistance to wear. This leads us to having the following families of Mapei hardeners:

- MAPETOP N: dry-shake hardeners made from natural aggregates, more often than not quartz, for industrial and commercial floors;
- MAPETOP S hardeners contain extremely hard synthetic aggregates and are suitable for withstanding stresses and loads on industrial floors subjected to severe service conditions, such as intense vehicle traffic (including vehicles with very hard wheels) or to objects being dragged across them frequently;
- MAPETOP M hardeners contain metallic aggregates, for the surface of floors subjected to extreme service conditions and frequent impact loads.

In the same family there are also liquid surface hardeners, silicate-based solutions that may also contain additives and polymers. These are applied on hardened floors and, thanks to the reaction that takes place between the silicate and the free lime in the cementitious matrix, their hardness and resistance to wear increase considerably, they have lower penetration of liquids and practically no formation of dust while in service. These products are suitable for new and existing floors and are the perfect complement to dry-shake hardeners from the MAPETOP line.
This family consists of mainly lithium silicate-based products, such as:

- MAPECRETE LI HARDENER for industrial and commercial floors;
- MAPECRETE LITHIUM+, which makes treated surfaces highly water-repellent;
- MAPECRETE LITHIUM PROTECTOR, which creates a protective surface film that can then be given a shiny finish by going over the surface with a high-speed polishing machine;
- MAPECRETE LITHIUM CURE: a perfect combination between surface protector and curing aid for freshly placed concrete.

Effective final protection

The range of Mapei solutions available is completed, therefore, by the second family of products, which protect surfaces but without significantly increasing their hardness. This protective effect may be through the formation of a film, such as with MAPECRETE U-PROTECTOR, or with products that penetrate into the substrate to make it water and/or oil-repellent, such as MAPECRETE CREME PROTECTION and MAPECRETE STAIN PROTECTION; the latter two products are not visible once applied. These solutions are perfect for treating polished cementitious substrates, such as "Terrazzo-alla-Veneziana" floors and may be used with self-levelling cementitious products from the ULTRATOP range.
Improving the characteristics of the surface of floors is, therefore, an increasingly widespread need which brings long-lasting benefits in terms of preservation and durability, as well as their aesthetic properties. And, of no less importance, with a highly advantageous cost/benefits relationship.

Andrea Invernizzi. Resin & Cementitious Flooring Line, Mapei SpA (Italy)

The protective effect is obtained by forming a film or with products that penetrate into the substrate to make it water-repellent

TOP OF THE PAGE. Distribution of the dry-shake surface hardener on freshly placed concrete.
ABOVE. Smoothing and compacting with a power-trowel.

LEFT. Storage yards covering an area of 18.6 hectares were constructed in the Port of Gdynia-Concrete floors were completed with Mapei fibers and admixtures.

Gdynia (Poland)

Storage yards in the port of Gdynia

A COMPLETE SYSTEM FOR A PROJECT CHARACTERISED BY ITS SHEER DIMENSION AND TIGHT SCHEDULE

The port of Gdynia has a history dating back more than a century: in fact, it was in 1920 that the Polish government decided to build the country's largest port infrastructure in this city overlooking the Baltic Sea. The port came into operation in 1923 and played a key role in the growth of the city of Gdynia and the economic development of the whole region. Today it covers an area of 973 hectares and is specialised in handling large cargo loads, particularly intermodal containers.

In recent years, the use of sea freight has been a growing trend throughout Europe and building suitable port infrastructures is becoming a priority for many countries, including Poland. And this is why the Gdynia port authorities drafted a development plan for the western part of the site, which included the construction of storage yards extending over an area of 18.6 hectares, dedicated to handling and storing freight.

A complete system to meet a tight schedule

The main contractor, NDI sp. zoo, was asked to complete construction of the storage yards in just 22 months. The project, therefore, was particularly "challenging" because of the limited time available to mix the 55,000 m^3 of concrete required and place it over the particularly large surfaces (200,000 m^2).

To overcome this challenge, a mixing plant with a daily production capacity of 1000 m^3 of concrete was installed on site. Apart from guaranteeing the right mechanical properties and workability, the mix design had to ensure the concrete was also suitable for placing in temperatures ranging from 5 to 35°C.

Mapei Polska, the Group's Polish subsidiary, played an important role in achieving the objectives by offering constant support during the design phase of the surfaces and during preparation of the mix design, thanks also to the use of vehicles and equipment from Mapei Concrete Mobile Lab. All this effort led to the selection and use of a complete Mapei system for concrete paving, consisting of MAPEFIBRE ST42 structural polymer fibres, DYNAMON SR3 and MAPEPLAST BV34 super-plasticisers and MAPEAIR AE20 air entraining admixture. Thanks to these products, two different concrete mixes were formulated with two different consistency classes: S2 and S4.

The use of innovative technologies, such as those supplied by Mapei, and exemplary planning and management of all operations enabled the first phase of the construction work on the storage yards to be completed one year ahead of schedule.

Find out more
DYNAMON SR3

PROJECT INFORMATION
Period of construction, September 2020 – March 2022
Period of the Mapei intervention: March 2021 – November 2021

Design: Mosty Gdańsk
Owner: Port of Gdynia Authority S.A
Main contractor: NDI Sp. z o.o.
Flooring contractors: Painpol, Dromaxx

Mapei coordinator: Jordan Adamczewski, Mapei Polska (Poland)
Photos: NDI Group

MAPEI PRODUCTS
Fibers: Mapefibre ST42

Admixtures for concrete: Dynamon SR3, Mapeplast BV34, Mapeair AE20

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

Szirmabesenyő (Hungary)

Cordys Capital logistics centre

HIGH-STRENGTH POLYMER FIBRES TO WITHSTAND HIGH VOLUMES OF GOODS-HANDLING TRAFFIC

The city of Szirmabesenyő is in northern Hungary in the Borsod-Abaúj-Zemplén County which, apart from being a popular tourist destination thanks to its local gastronomic delicacies and outstanding natural beauty (two local sites have been designated UNESCO World Heritage sites), the local economy is also going through a period of growth. For Hungarian investors conditions are particularly favourable to launch new projects, which is why Cordys Capital, a real estate company specialised in the logistics sector, chose the area for a new 25,000 m² logistics hub.

A floor up to the task

The complex, construction of which was completed at the end of 2022, consists of a reinforced concrete frame structure covered with masonry panels.

Apart from erecting 192 columns to support the roof structure, the main contractor, Perfect Construct Ltd, wanted to install a floor that would guarantee excellent performance properties, mechanical characteristics and durability, to be in line with the overall build quality, and withstand the high volume of traffic expected for handling and moving goods.

An innovative and functional solution needed to be found and Perfect Construct Ltd turned to Mapei Kft., who proposed a complete system for the construction of fiber-reinforced concrete floors.

Rather than use steel fibers, as specified in the original project, the experts from Mapei Kft. proposed the use of high strength polymer fibres, in this case MAPEFIBRE ST 50 TWISTED, which were added during the mixing phase of the concrete along with DYNAMON SR31 super-plasticising admixture and MAPECURE SRA curing admixture

The fibers enabled the steel reinforcement to be eliminated, but still guaranteed a high level of ductility and toughness for the concrete, while the admixtures enabled the concrete to maintain its workability for a long time, made it easier to place and helped maintain its high mechanical performance properties and, at the same time, reduced hydraulic shrinkage and the risk of the formation of micro-cracks.

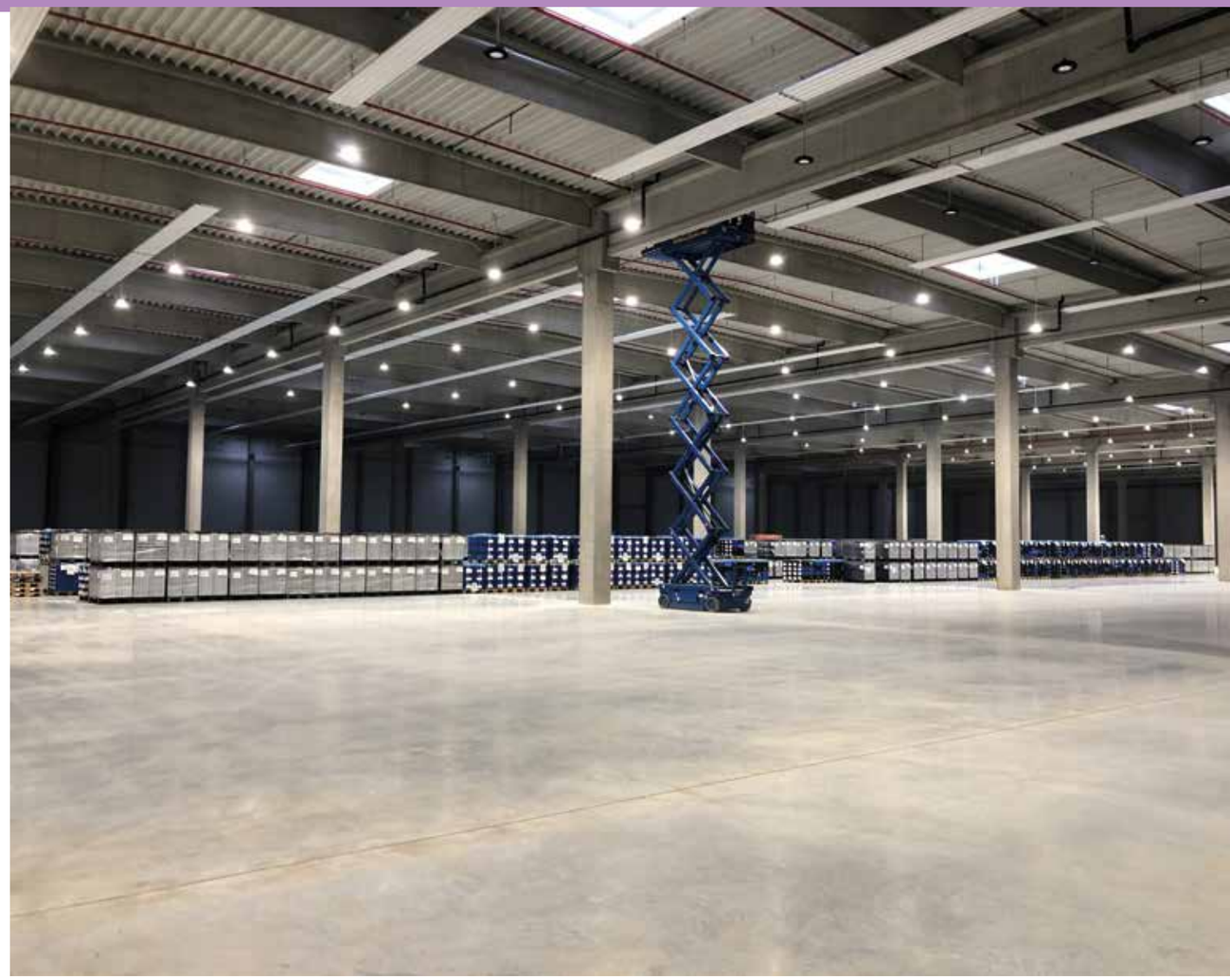
Once the concrete floor had been placed, the finishing treatment was carried out with MAPETOP N AR6 ready to use, pre-blended dry shake hardener which, thanks to its high strength and resistance to abrasion, is particularly recommended to create anti-wear layers for concrete floors in industrial and commercial environments.

Once the surfaces had been treated, the final step was to prevent evaporation taking place too quickly by applying MAPECURE E30, a film-forming curing agent in water solution that helps provide more resistance to wear and reduces the amount of dust that forms on the surface of floors.

Thanks to this specific Mapei system, a jointless floor was created within several pitches, each measuring 500 m². This solution met with full approval of the flooring contractor, which was able to create a surface free of cracks and without having to move joints despite the extensive pitch areas.

Thanks to the excellent results achieved, it was later decided to use the same system for the external concrete floors.

Find out more
DYNAMON SR 31



ABOVE. MAPEFIBRE ST 50 TWISTED fibers allowed to create a jointless concrete floor without having to use steel mesh.
LEFT. Thanks to a specific Mapei system, the floor features no joints within pitches, each measuring 500 m².

PROJECT INFORMATION
Cordys Capital logistics center, Szirmabesenyő (Hungary)
Period of construction: 2022
Period of the Mapei intervention: 2022
Design: Anplan Ltd.
Owner: Cordys Capital Ltd.
Main contractor: Perfect Construct Ltd.
Flooring contractor: Perfect Construct Ltd.
Mapei coordinator: Csaba Miklós, Mapei Kft. (Hungary)
Photos: Perfect Construct Ltd.

MAPEI PRODUCTS
Fibers: Mapefibre ST 50 Twisted
Admixtures for concrete: Dynamon SR31, Mapecure SRA
Finishing concrete surfaces: Mapetop N AR6

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

Barcelona (Spain)

SteelMed warehouse

CREATING A HIGHLY RESISTANT SURFACE TO THE STRESSES OF HEAVY LOADS

Steelmed is part of the Spanish steelmaking Hiemesa which produces, commercializes and distributes sheet steel for industry. In 2020 the company decided to extend its storage facilities in the port of Barcelona. It was required to install a durable and strong pavement for the 900 m^2 indoor and 600 m^2 outside the warehouse, while ensuring a high aesthetic impact.
Before installing the floor, it was necessary to carry out the proper structural calculations and determine the most suitable type of concrete for this project. Designers opted for a fiber-reinforced concrete mix rather than a conventional solution using a double layer of steel mesh. After carrying out an on-site and detailed survey, Mapei Spain's technicians, the Spanish subsidiary of the Group, proposed adding structural polymer macro fibers, MAPEFIBRE ST 50 TWISTED, to the concrete mix design.

Structural polymer macro fibers for high performance concrete floors

Once the characteristics of the substrate and the loads that the concrete slab would have to withstand had been clarified and defined, the performance characteristics of the materials required to create the substrate were also specified.
After careful consideration, it was decided that a C30/37 concrete - with a maximum aggregate size of 20 mm and a compressive strength, after 90 days, of more than 35 MPa - would be the most suitable solution for this project. The required concrete also needed to have a fluid consistency (S3), a water/cement ratio of less than 0.50 and a flexural strength around 4.0 MPa.
It was decided to install a slab with a thickness of at least 30 cm with contraction joints every 5 m.
The concrete was reinforced by adding MAPEFIBRE ST 50 TWISTED fibers to the mix-design at rate of 4 kg/m^3, the equivalent of more than 600,000 fibers per m^3. The main aim was to achieve a resistance level close to or above 2 MPa in compliance with the European standard EN 14651.
MAPEFIBRE ST 50 TWISTED are class II structural polymer fibers complying with EN 14889-2:2006 standard. They have a length of 50 mm and are designed to improve the performance characteristics of conventional concrete, precast concrete and shotcrete. They are an excellent alternative to traditional electro-welded mesh reinforcement used to distribute loads, limit crack phenomenon due to plastic shrinkage, and produce high-ductility concrete.

Surface treatment of the concrete floor

The concrete surface slabs were treated with MAPETOP S AR6 which is a ready-to-use industrial surface-hardener made from Portland cement, well-graded quartz and corundum aggregates and special admixtures.
MAPETOP S AR6 is highly recommended for creating wear-resistant surfaces on concrete floors subjected to heavy traffic in industrial and commercial environments. This product also has excellent resistance to atmospheric agents, freeze/thaw cycles and de-icing salts, making it ideal for outdoor floors.
Because of their stiffness, certain types of structural polymer fibers available on the market can create problems with the final surface finish, both when the concrete is being placed and over time. However, concrete floors reinforced with MAPEFIBRE ST 50 TWISTED fibers and finished with MAPETOP S AR6 do not have this issue.
In addition, tests carried out on the floor (compressive and flexural strength) returned excellent values (34 MPa and 3.9 MPa, respectively, after 28 days).
Therefore, the solution proposed fully complied with the client's requirements, guaranteeing concrete surfaces that are highly resistant to loads, stresses and wear and with an excellent finish from an aesthetic point of view.

This article was taken from issue 31/2022 of "Realidad Mapei", the magazine published by the Group's Spanish subsidiary Mapei Spain, whom we kindly thank.

José Antonio Rodríguez. Technical Director, Admixtures for Concrete, Mapei Spain

Find out more
MAPEFIBRE ST50 TWISTED

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IN THE FACING PAGE. A complete view of the concrete floor in the SteelMed warehouse completed using MAPEFIBRE ST50 TWISTED macro fibers and finished off with MAPETOP S AR6.
1. The concrete underwent numerous tests to calculate its abrasion resistance.
2. One of the installation phases of the concrete floor.

PROJECT INFORMATION
SteelMed warehouse, Barcelona (Spain)
Period of the intervention: 2020-2021
Intervention by Mapei: Supplying products to build and finish the industrial concrete floors
Design: Projectes y Construccions Domènech S.L.
Client: Steelmed
Flooring contractor: Ruica Pavimentos
Concrete suppliers: Beton Floor and Promsa
Mapei coordinator: José Antonio Rodríguez, Mapei Spain

MAPEI PRODUCTS
Preparing concrete mix-design: Mapefibre ST50 Twisted
Finishing concrete surfaces: Mapetop S AR6

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

Bologna (Italy)

Freight village

NEW JOINTLESS FLOOR INSTALLED THANKS TO MAPECRETE SYSTEM IN A LOGISTICS HUB WITH THREE INTERMODAL TERMINALS

Bologna freight village opened in 1971 to decongest the city's busy roads, promote the use of rail and intermodal transport options and stimulate the development in Bologna of an area specialised in freight transport and logistics. Over the years the village has become a point of reference for a number of industries operating in the area. The hub is located in a strategic area for freight traffic, at the intersection between various key national and international motorways such as Corridor 3 (Mediterranean), Corridor 5 (Scandinavian–Mediterranean) and Corridor 1 (Baltic-Adriatic), which are all part of ERTMS (European Rail Traffic Management System), a major industrial project implemented by the European Union to make rail transport safer and more competitive.

The hub has three intermodal terminals and extends over an area of more than 4 million di m², 665,000 m² of which are used for rail facilities and 800,000 m² are dedicated to warehouse space.

And this dynamic context is the backdrop for the installation of new industrial flooring, carried out thanks to support and solutions provided by Mapei's Concrete Flooring Solutions division.

ABOVE. Some of the installation phases of the floor: left, offloading concrete; right, placing the concrete with a laser screed machine

Products working in synergy to create a jointless surface

A new 9,000 m² floor with no contraction joints was installed in the freight village using MAPECRETE SYSTEM, a modular system consisting of four products that, together, make it possible to obtain concrete with very high dimensional stability and create compensated shrinkage jointless industrial floors.

The 18 cm thick floor was installed on a 1,500 m² surface with 8 mm diameter 200 x 200 mm steel mesh at the base.

MAPEFIBRE ST 50 TWISTED class II structural polymer fibres were added to the concrete mix at a rate of 1.5 kg/m³.

The concrete was also admixed with DYNAMON FLOOR 20 acrylic-based super-plasticiser, specifically developed for concrete in hot weather.

The MAPECRETE SYSTEM allowed the creation of jointless floors within pitches of 1000 m², by adding EXPANCRETE expansive agent and MAPECURE SRA 55, a liquid super-plasticizing admixture used for reducing the shrinkage of concrete, to the concrete mix.

MAPETOP N AR6 pre-blended surface hardener was then broadcast over the surfaces, while MAPECRETE LI HARDENER, a lithium silicate-based liquid surface treatment, was chosen to finish off the floor while increasing its strength and resistance to abrasion and reducing the penetration of liquids into the floor.

Find out more
MAPETOP N AR6

PROJECT INFORMATION
Freight village, Bologna (Italy)
Year of construction: 2022
Year of the Mapei intervention: 2022
Intervention by Mapei: supplying products for building fiber-reinforced concrete floors
Owner: Prologis
Main contractor: GSE
Flooring contractor: Ferrocemento RS
Works direction: Prologis
Mapei coordinators: Marco Paparella and Marco Magistrali, Mapei SpA (Italy)

MAPEI PRODUCTS
Fibers: Mapefibre ST 50 Twisted
Admixtures for concrete: Dynamon Floor 20, Expancrete, Mapecure SRA 55
Finishing products: Mapecrete LI Hardener, Mapetop N AR6

For further information on products, please visit mapei.com

by **Emanuele Rava**

Design plays a fundamental role

THE INPUT FROM A PROFESSIONAL MEETS THE CRITERIA TO GUARANTEE USER SAFETY

The principle, by which an industrial floor that acts as a support base for medium or heavy-duty racking should be designed by a qualified professional, is the right approach in your opinion?

I I believe that all industrial floors, if we take their purely aesthetic finish out of the equation, must be designed correctly in order to guarantee the safety of users. Amongst the floors that need to be designed, I would certainly include those for the logistics sector. We are going through an "historic moment" in which industrial floors for the logistics sector represent the lion's share of the overall number of floors installed and, because of their particular area of use, we can often see very tall industrial racking (<11/12 m) with significant loads acting on the support foot (in many cases < 150 kN on the support foot). What is more, floors are being used more and more often as a foundation element for mezzanine floors with loads in the order of 200/250 kN acting on the support slab. In such cases, there is no doubt that floors need to be designed because of the very fact they have to fulfil a 360° structural function and act as a foundation for the elements installed on it.

Another important issue regards how racking is anchored to the floor: the thickness of the floor must take into consideration the anchoring depth of the tie-rods for the racking, so it needs to be dimensioned accordingly.

The thickness of the floor must take into consideration the anchoring depth of the tie-rods for the racking

Regarding the approach to design, I believe that professionals currently have all the tools they need to proceed with the design and that excellent work is being done in several countries to develop new design guidelines that will then become a fundamental tool for professionals.

Designing an industrial floor, however, is not limited to structural calculations. Although this undoubtedly represents a fundamental part of the process to calculate its thickness, mechanical strength and reinforcement (mesh, fibers, etc.), it is not the only one, one needs to consider a host of other aspects, such as:

- type of finish;
- surrounding atmospheric conditions;
- type of exposure the floor is subjected to;
- the presence or not of cuts and the relative layout;
- the size of elements used for second pours.

So, when we talk about designing an industrial floor, we need to take into consideration all the other aspects that play a part in its execution in order to supply a completed floor according to specification.

What type of indications should be included in technical specifications for concrete placed in cold weather to prevent excessive delays before carrying out grinding operations or broadcasting the surface, which sometimes might lead to degradation of the concrete?

Defining what precautions need to be taken when choosing the materials and placing the concrete is also very important during the design phase of a floor. It is be very important to measure the temperature of the concrete when carrying out preliminary checks, which should be between 10 and 13°C during the initial phase. The use of admixtures must also be considered, to reduce the amount of water in the mix and accelerate the setting time of the concrete, so that operators can "access" the floor after a short time and commence with the finishing process. Another very important precaution is to protect placed concrete from wind and cold. A tightly-controlled schedule for placing the concrete should be defined in order to understand if, during that phase, the area will be completely closed off or if temporary measures need to be taken; this is particularly important for any areas of placed concrete close to openings. It goes without saying that, once the concrete has been placed, damp-curing is always recommended by protecting it with sheets.

What should be included in technical specifications in the case of concrete placed in hot weather and what practical suggestions would you have?

In summer it is important to establish what period of the day concrete should be placed, in order to ensure that its initial setting phase takes place when the temperature is not too high in order for the concrete to cure correctly. This is why we usually opt to place concrete very early in the morning or late in the evening. It is also very important to include suitable admixtures in the concrete and to adopt the damp-curing method.

Placed concrete requires particular attention and precautions in summer and winter and to overcome the impact of freeze/thaw cycles

Aerating products are used for concrete floors installed in areas where there are potential freeze/thaw cycles. The use of de-icing salts containing chlorides (sodium, calcium) on such floors in winter is not always taken into consideration and this can often lead to rapid degradation of the slab. What can be done to avoid this type of problem?

External floors exposed to freeze/thaw cycles is quite a delicate subject and, because the various standards covering the topic are also not always clear, the problem is not always approached in the correct way. Let's start with the fact that the exposure class for concrete exposed to freeze/thaw cycles is class XF according to European standard EN 206:2006. This means that external floors should be made using this type of concrete, even though aerated concrete is not a favourite amongst flooring specialists because it is difficult to work with. Aas a result, in certain cases, they look for alternative solutions to simplify installation of the floor.

In addition, there is also the fact that, whenever salts are used in winter, you can revert to exposure class XD concrete which is considered very high-performance concrete, but has significant additional costs.

Considering the results and the durability of the floor, a valid alternative is to use XC3 or XD1 class concrete and to protect it with waterproofing agents (such as a silicate-based product).

To create a really tough industrial floor, more and more often the use of fibers is prescribed in concrete. Is it better to use fibers or a double layer of steel mesh? Should the design give precise indications regarding its toughness and the relative checks? What advantages are there and what precautions should be adopted to create homogeneous concrete?

The subject of fibers is particularly dear to me because I have always designed industrial floors with structural fibers. And with regards to the subject of design, my answer is one only: it is absolutely necessary to draft a design. The design should be drafted following the relative standards, which are sometimes under constant development. And as far as which type of reinforcement is the best is concerned, my answer is: it depends.

There are situations in which steel reinforcement is more suitable for a certain type of floor, while there are other situations where the use of fibers gives better performance properties, including from a purely operational perspective (such as when installing an industrial floor with a laser screed machine).

In this historic moment, in which the price of steel is sky-high and it is becoming increasingly difficult to purchase steel mesh, flooring contractors are looking for alternatives (such as the use of fibers) to meet the requirements of technical specifications and, at the same time, remain within budget.

Using fibers allows to make concrete that has the intrinsic capacity to prevent the formation of cracks and, as a result, improves not only its structural aspects, but also finishing operations.

Nevertheless, to create a homogeneous concrete mix, it is important to add the fibers in the mixing plant so they are distributed correctly and evenly in the concrete.

Emanuele Rava. Chairman of the Board of Directors and Technical Director, C.S.ING.

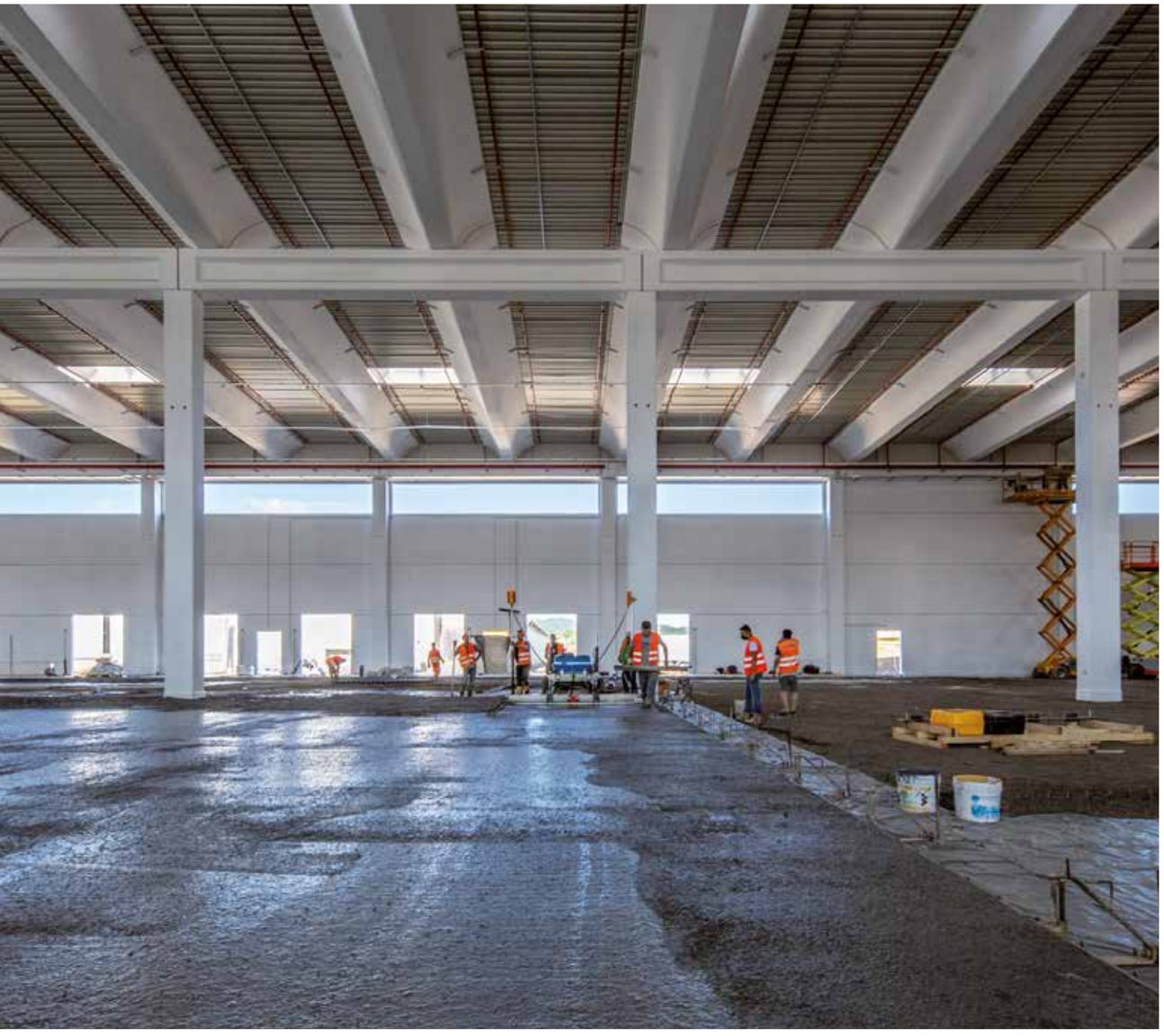
C.S. ING.

C.S.ING. Srl is an Engineering Company founded through a collaboration between Emanuele Rava and Daniele Barbera, who have been working in the field of Civil Engineering for a number of years with a particular interest in Structures, Fire Safety Systems, Plant Engineering and the Environment.

Arquata Scrivia (Alessandria, Italy)

Docks logistics centre

USING STRUCTURAL POLYMER FIBERS HAS ENABLED THE AMOUNT OF STEEL REINFORCEMENT IN THE FLOOR TO BE REDUCED



MAPEFIBRE ST 50 TWISTED macro structural fibers and the acrylic-based superplasticiser DYNAMON FLOOR 20 were added to the concrete mix used to make the floors.

Located at the crossroads between traffic networks running from the Liguria region (Western Italy) to Milan and from Turin to the other side of the Alps, as well as being the natural hub for the ports along the coast of Liguria (Northwestern Italy), the Docks integrated logistics centre in Arquata Scrivia is a support for traffic management operations for goods entering and exiting ports in Liguria. The integration of ports, rail and road networks, inland intermodal hubs and other infrastructures is a decisive factor in the area's competitiveness. Optimisation of the flow of vehicles will be further consolidated once the Terzo Valico (or Third Pass) high-speed railway has been completed, which will ensure that goods offloaded at the port of Genoa can reach the heart of Europe quickly, creating new logistics opportunities for this area.

Within the Docks centre in Arquata Scrivia, a new structure has been constructed that will be used to store tinned tuna. And within this area of around 13,000 m^2, a new floor was installed with the technical support and solutions from Mapei Concrete Flooring Solutions (CFS), the new line of products and services aimed at the industrial flooring sector.

The Mapei team took part in the design of the floor slab and in the prequalification phase of the concrete mix design – both at the mixing plant and by carrying out on-site testing, thanks also to the company's mobile laboratories – and suggested the most suitable products for mixing the concrete and finishing off the floor.

Quick application and cost containment with structural fibers

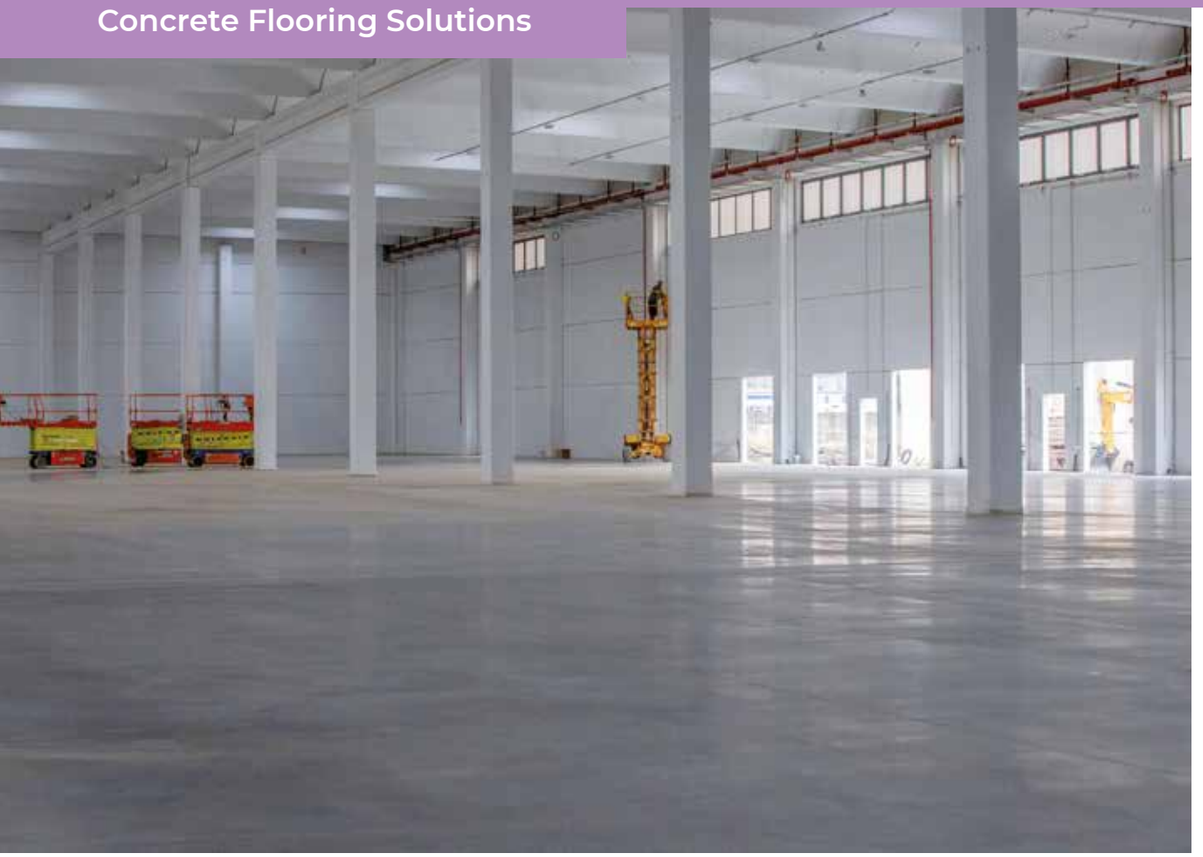
The first working hypothesis for the floor in the structure considered embedding two layers of steel reinforcement within the concrete slab. The CFS team, on the other hand, proposed the use of synthetic fibers to strengthen the concrete, a choice which reduced the amount of steel reinforcement required.

Thanks to this solution, the finished 20 cm-thick floor only required one layer of 8 mm diameter, 200 x 200 mm steel mesh, which was positioned at the base of the slab.

To make the actual concrete mix (strength class C30/37), MAPEFIBRE ST 50 TWISTED structural polymer fibers were included in the mix: 50 mm in length, the fibers were added to the mix at a rate of 1.5 kg/m^3.

The mix also included DYNAMON FLOOR 20, an acryl-

MAPETOP N AR6 and MAPECRETE LI HARDENER were used to finish the floors, before smoothing them with "helicopter" power trowel.



ABOVE. MAPECRETE LI HARDENER was chosen to finish off the floor, a surface treatment product in liquid form.

ic-based super-plasticiser specifically designed for making concrete in hot weather.
This design choice led to the following advantages:

- the concrete mix design was optimised and concrete could be placed more efficiently using a laser screed machine, without resorting to pumps;
- preparation of the steel mesh was much simpler and quicker and using less steel also helped contain costs;
- the floor was completed more quickly (1,200 m²/day).

Hardeners for the final surfaces

The surface was then broadcast with MAPETOP N AR6, a pre-blended, ready to use shake hardener made of special well-graded quartz, Portland cement and special admixtures. This product, as with other hardeners from the CFS line, creates surfaces that are hard, smooth, compact and resistant to wear and atmospheric agents, freeze/thaw cycles and de-icing salts.
MAPECRETE LI HARDENER was chosen to finish off the floor, a surface treatment product in liquid form with a consolidating effect made from lithium silicate, which improves surface hardness and resistance to abrasion and reduces the amount of liquid penetrating into the floor.
The final operation was to seal the joints with MAPEFLEX PU 45 FT high modulus, rapid-hardening polyurethane sealant and adhesive.

Find out more
DYNAMON FLOOR 20

PROJECT INFORMATION
Docks logistics center, Arquata Scrivia (Province of Alessandria, Italy)
Year of construction: 2021
Year of the Mapei intervention: 2021
Intervention by Mapei: supplying products for reinforced concrete floors
Owner: Opificio Area Logistica e Servizi
Flooring contractor: Ferrocemento RS srl
Photos: Elisa Todarello
Mapei coordinator: Marco Paparella, Mapei SpA (Italy)

MAPEI PRODUCTS
Concrete mix: Mapefibre ST 50 Twisted, Dynamon Floor 20
Finishing concrete surfaces: Mapecrete LI Hardener, Mapetop N AR6
Sealing joints: Mapeflex PU 45 FT

For further information on products, please visit mapei.com

Other projects

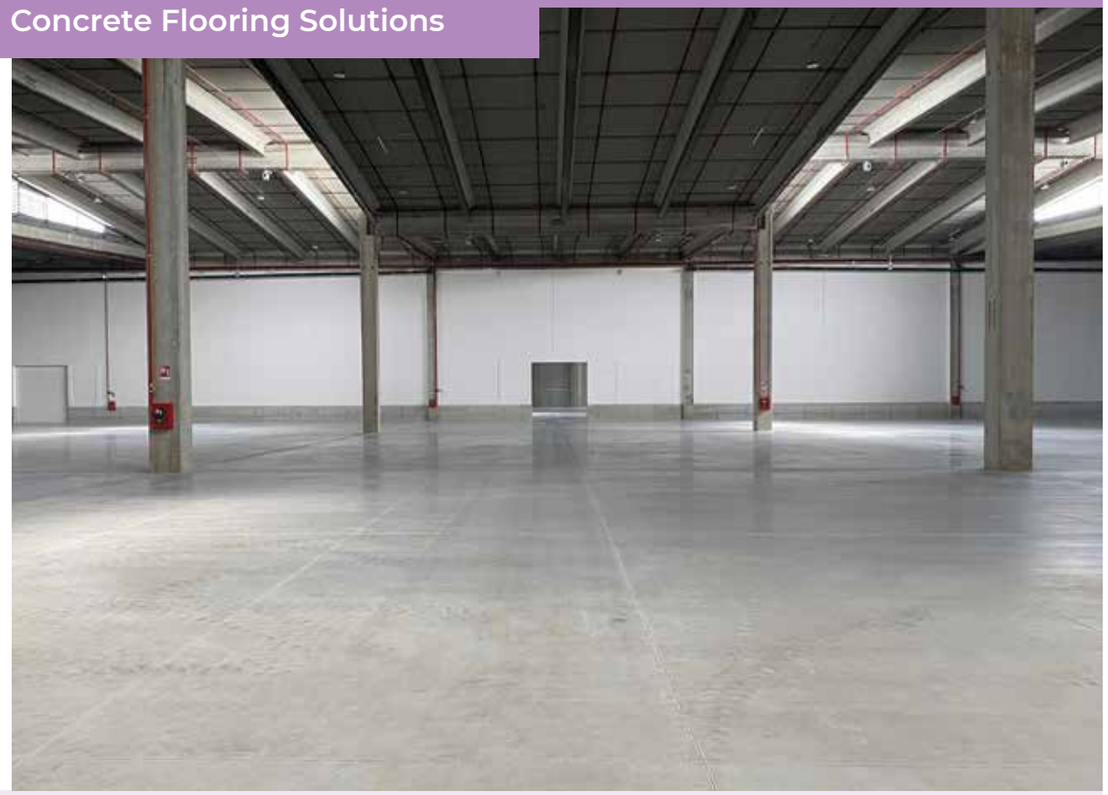
FROM ICE RINKS AND SPORTS PITCHES TO LOGISTICS HUBS IN PORTS AND AIRPORTS: SOLUTIONS FOR CONCRETE FLOORS FOR VARIOUS TYPES OF USE

Ice rink
Schilpario (Bergamo, Italy)

Over the course of the last few years, the ice rink in Schilpario has undergone various refurbishment works and now boasts a permanent ice rink. The most recent investment of 535,000 Euros was used to create an ice rink, which will also be used to hold training sessions for the Italian teams participating at the Milan-Cortina 2026 Winter Olympics. The base for the rink consists of a concrete slab made using the MAPECRETE SYSTEM, which included the use of DYNAMON FLOOR 20 acrylic-based super-plasticiser, MAPECURE SRA curing agent, EXPANCRETE expansive agent and MAPEFIBRE ST 50 TWISTED fibers. The result is a durable surface with high mechanical properties and very little risk of cracking, without having to use steel mesh.

TK Sparta sports centre
Prague (Czech Republic)

To create 9 tennis courts in this prestigious club located in the Czech capital, it was decided to use MAPECRETE SYSTEM, which included the PCE-based DYNAMON PCT 631 superplasticising admixture, EXPANCRETE expansive agent and MAPECURE SRA shrinkage-reducing admixture. By guaranteeing a high reduction of hygrometric shrinkage in concrete, the system enabled contraction joints to be eliminated, thereby also preventing any risk of cracking and allowing work to be carried out more quickly. Thanks to the use of MAPEFIBRE ST 42 structural polymer fibers it was also possible to completely eliminate the use of steel mesh. The MAPECRETE SYSTEM solution using synthetic fibers is an ideal system for constructing concrete bases for flat, safe and strong surfaces including those of sport courts.



C1L3 Fiumicino Interport Logistics Hub

Fiumicino (Rome, Italy)

The area around Fiumicino is set to become the beating heart of central Italy thanks, first and foremost, to its strategic position: it is located near one of the country's main airports, rail networks, the Rome-Civitavecchia motorway and the future commercial port. Enough to garner interest from major players in the logistics sector, including Amazon, Gruppo Tonon and Logicor.
This is the context behind two decisions taken recently by Fiumicino Town Council, the first of which aims to give new impetus to a project launched in 2000 to exploit the growth of e-commerce by creating a large interport. Once the first warehouse had been constructed, work was interrupted, and the project was mothballed. This decision, however, released the entire area of the interport and paved the way to the completion of the outstanding works and the start of a series of new ones.
The company LF1 Srl is building and redeveloping industrial buildings destined to be used for logistics operations, the first of which was recently completed using products from the Concrete Flooring Solutions line by Mapei.
To create the industrial concrete floor, Mapei experts proposed using MAPEFIBRE ST 50 TWISTED structural polymer fibers, which were added to the concrete at the mixing plant, along with the super-plasticising admixture DYNAMON FLOOR 20 and MAPECURE SRA 20, a liquid admixture with a plasticizing effect for reducing the shrinkage of concrete. This system (MAPECRETE SYSTEM) enabled a durable, jointless floor to be created with high mechanical properties. The floor was finished off with MAPETOP N AR 9 and then treated with MAPECRETE LITHIUM CURE, a silicate-based anti-evaporation product which helped protect and consolidate surfaces and leave floors with an easy to clean, shiny, anti-dust effect finish resistant to stains and efflorescence.

by **Luigi Di Geso**

Economic uncertainty does not stop growth

MAPEI CORPORATION IS GROWING STRONGER IN AN UNSTABLE MARKET HAVING TO COME TO TERMS WITH RAW MATERIALS SHORTAGES AND RISING PRICES: SALES IN THE STATES INCREASED BY 18% IN 2022 COMPARED TO 2021

Covid-19, raw material shortages, price increases — all of these issues have posed serious challenges for Mapei Corporation in the past few years. However, they have also provided us with the opportunity to learn quickly, to adjust rapidly, and to meet these challenges and to grow in a turbulent market - growing a strong 18% from 2021's numbers. In fact, the net sales amount in 2022 for Mapei Corporation in the USA was over 856 million US dollars. Mapei subsidiaries in North America (USA, Canada, and Puerto Rico/ the Caribbean) totaled 1 billion US dollars in gross sales.

This is a remarkable performance in contrast with the US economy. In Q4 2022, the American GDP grew by 2.9%[1], according to the U.S. Bureau of Economic Analysis (BEA). The growth of the U.S. economy in Q1 2023 is predicted to be an even slower continuation of the previous quarter as the effects of high inflation and high interest rates combine to have a chilling effect. In fact, according to the forecasting models at Bloomberg Economics, these interest rate increases have created a 72% increase in the risk of an economic recession by Q1 of 2024[2].

The U.S. Federal Reserve Board's Federal Open Market Committee stated: "Inflation has eased somewhat but remains elevated. Russia's war against Ukraine is causing tremendous human and economic hardship and is contributing to elevated global uncertainty. The Committee is highly attentive to inflation risks.[3]"

The BEA further reports that "Within residential fixed investment, the leading contributors to the decrease [in GDP] were new single-family constructions."[4] That downturn for the construction industry is echoed in

MAPEI PRODUCTION PLANTS IN THE USA

> **Our brand is perceived as a market leader. This helps us maintain our position as the most popular brand on the US market**

1

2

3

1. In Atlanta (Calhoun), Georgia, a new 19,500 m² production plant began operations in early 2022.
2. In Houston (Texas) a new plant will start manufacturing powdered products and concrete admixtures and grinding aids in the spring of 2024.
3. In Orlando (Wildwood), Florida, a distribution and warehouse facility is being extended and 3 new production lines are being added.

forecasts from most of the leading indicators, including ConstructConnect whose Spring 2023 Construction Starts Forecast states: "Total construction starts are expected to decline 4.8% in 2023."[5]
But amid the caution, there is some room for hope. The U.S. Bureau of Labor Statistics (BLS) released their report for 2022 on January 19, 2023. The report highlighted the fact that "Median weekly earnings of the nation's 118.8 million full-time wage and salary workers were 1,085 US dollars in the fourth quarter of 2022 (not seasonally adjusted). [...] This was 7.4% higher than a year earlier, compared with a gain of 7.1% in the Consumer Price Index for All Urban Consumers (CPI-U) over the same period."[6]
This is hopeful news, not only for the U.S. economy, but also for Mapei because, as you will see, while new housing starts may be down, remodeling of existing homes may be on the rise and an increase in earnings for full-time wage and salary workers may contribute to that factor.

A wide product portfolio to seize all the opportunities

Mapei Corporation's commercial business is still showing positive signs of growth. As remodeling becomes a more popular alternative to purchasing a new home, our commercial placement in popular home improvement stores will meet this need.

> **From Georgia to Florida: new plants, warehouses and production lines are being opened or extended to boost manufacturing output**

The fact that our product is available at a "good, better, best" array of consumer price points, while being perceived as an industry leader is a helpful driver as well. All of this combines to help us maintain our position in the market as the No. 1 desired brand.
We are also very well integrated with the architectural community, which means that we should fare much better in those sectors of the construction business. Our data is now listed on Arcat, MasterSpec, and SpecLink, which means that now architects and specifying engineers can easily find the latest Mapei product information, including sustainability documentation and CADs from any device, including a mobile phone. This puts Mapei expertise at their fingertips no matter the specification app or the time of day.
Additionally, we are heavily involved in major infrastructure projects, which will be a continued driver for us in 2023. Our Admixtures for Concrete line will be debuting a new line of products that will combine innovation and sustainability, creating a renewed focus for the concrete admixtures segment of the industry.
Our Underground Tunneling Team (UTT) is involved in several major projects now, keeping Mapei injection waterproofing materials and soil conditioning solutions active in the underground market.
Our Concrete Restoration Systems are also actively involved in major projects ranging from Department of Transportation (DOT) initiatives to popular fast-food restaurant franchises.
All these initiatives join our core business - the mortars and grouts - to keep us moving forward and growing despite the hesitant economic forecast. There are projects to be won and we have the staff, the products, and the commitment to win them.

Strength and growth

We have grown in the face of this national "uncertainty," staying steady and continuing to support our customers throughout North America. Our expansion encompasses the following facilities and production capabilities:

- **Atlanta (Calhoun), Georgia:** This 210,000 sq. ft. (over 19,500 m²) production plant began operations in early 2022.
- **Houston, Texas:** This is a 200,00 sq. ft. (18,580 m²) space that will feature both powder production as well as distribution for admixtures/grinding aids and raw material storage. The powder lines are scheduled to begin production in the spring of 2024.
- **Orlando (Wildwood), Florida:** This location began operation as a warehouse and distribution center in 2018. We are adding 150,000 sq, ft. (14,000 m²) of warehouse and three lines to bring the total square footage to 260,000 sq. ft (24,000 m²). The Grand Opening of the new facility is slated for the spring of 2024.

Mapei Corporation has also grown with the introduction of new products that are "different"

than the setting materials for which we are so well-known. Our Concrete Restoration Systems division recently launched PLANITOP 3D, mortar/ink used for printing large-scale construction projects. Our Admixtures division is launching the CUBE SYSTEM, combining sustainability and innovation for the concrete industry. To further this commitment to sustainability, we are also launching the RE-CON line of products, including RE-CON ZERO EVO which transforms returned concrete into a usable product. Our Tile & Stone Installation Systems division has launched the MAPELEVEL EASY line of accessories, which includes wedges, threaded spacers, and spinning or clickable caps.

> **“In North America we expect to reach 1 billion US dollars of net sales by the end of 2023, a goal I believe is achievable**

All of this combines to create a company that is hopeful in the face of uncertainty and poised to meet future challenges with a comprehensive plan for growth. With focus and strong attention to detail, we will meet and surpass our goals. Therefore, this year, Mapei subsdiaries in North America (comprised of Mapei Corporation, Mapei INC., and Mapei Caribe) is committed to, and convinced that, we will attain our net 1 billion US dollar goal by the end of 2023. I am convinced that this goal is attainable. After all, in the words of the late Giorgio Squinzi, “at Mapei we never stop pedaling.”

Luigi Di Geso. President and CEO, Mapei North America.

*NOTE: As of publication, the economic data contained herein is accurate and up to date per the latest government information.
[1] https://www.bea.gov/data/gdp/gross-domestic-product
[2] https://www.bloomberg.com/news/articles/2022-06-15/us-recession-risk-hits-72-by-2024-as-fed-hikes-rates-to-curb-inflation#:~:text=US%20Recession%20Risk%20Hits%2072,Threatening%20Biden%27s%20Second%20Term%20%2D%20Bloomberg
[3] https://www.federalreserve.gov/newsevents/pressreleases/monetary20230201a.htm
[4] https://www.bea.gov/news/2023/gross-domestic-product-fourth-quarter-and-year-2022-advance-estimate
[5] https://www.constructconnect.com/hubfs/Starts%20and%20PIP%20Forecast%20Reports/2023%20Q1%20CC%20Construction%20Starts%20Forecast%20Report.pdf
[6] https://www.bls.gov/news.release/wkyeng.nr0.htm

GREATER COMMITMENT TO SOCIAL RESPONSIBILITY

During this time of hesitation, we are more than ever committed to our pillar of Social Engagement. Through our strategic partnership with Black Buffalo 3D (manufacturer of 3D printers) we have embarked on an effort to manufacture, via 3D printing with our PLANITOP 3D mortar/ink, homes for families who are economically challenged. The system has been awarded ICC-ES AC509 certification, which means that walls constructed with PLANITOP 3D have been found to meet the same code requirements as traditional concrete walls. Large-scale 3D construction printers and ink/mortar are now poised to improve the way that the world faces challenges related to affordable housing, emergency shelters, and resilient infrastructure. This innovation provides a faster, more efficient, and more affordable approach to residential and commercial custom construction, putting affordable housing within the reach of more people. Currently we have projects in Virginia, and we have projects that are in early planning stages in Texas, and Oklahoma.
Our affiliation with the Gary Sinise Foundation has remained strong, throughout the Covid-19 shutdown and now with the shortages facing the building industry. The Foundation’s mission is to build smart homes using donated materials and to present them free-of-charge to the men and women who have been wounded in the service of our country. Although the numbers of homes built have declined in recent years, first due to Covid-19 and now due to building materials issues, the program has never stopped building homes. In 2022, we donated installing materials and systems for heating floors for six homes.
Our commitment to social engagement is also deeply felt at the local level, across the USA, at each of our locations. In fact, in 2022, our West Chicago location raised 11,740.00 US dollars for the American Cancer Society by holding a walk in honor of National Breast Cancer month. This event was so successful that many other locations will be adopting this format this year.

by **Mariangela Zappia**

From energy to major works: so many opportunities for Italian companies

MARIANGELA ZAPPIA, ITALIAN AMBASSADOR TO THE UNITED STATES: INVESTMENT PLANS APPROVED IN WASHINGTON OPEN UP ENTIRELY NEW SCENARIOS

Trade between Italy and the USA is continuing to grow: economic relations are a pillar of the relationship between Rome and Washington, which remains the leading non-EU destination for Italian exports. How can these relations be strengthened?
The economic partnership between Italy and the US is exceptional and is continuing to grow. The commercial exchange of goods between our two countries reached a new record level of almost 100 billion US dollars in 2022, 70 billion of which were Italian exports.
The United States boasts immense potential. It is a market of more than 350 million people with certain states still not entirely within the scope of Italian products and services; this country is also the cradle of hi-tech and innovation and the leading global finance hub, factors that open up endless opportunities for local partnerships and investment.
More specifically, in addition to traditional 'Made in Italy' sectors, there is ample room for expansion into the most innovative sectors, where the vitality and capabilities of our companies are increasingly being recognised.
Opportunities to strengthen our economic partnership even further also come from the current international situation. In the wake of changes to value chains brought about by the pandemic and then the war in Ukraine, trusted partners like Italy and the US are bound to work together even more closely. Italy’s entire system of representation in the US, consisting of the Embassy along with 9 Consulates, 6 Italian Cultural Institutes, 5 ICE (Italian Trade Agency) Offices, 2 ENIT (Italian National Tourist Board) offices, as well as 5 Chambers of Commerce and the recently launched Italian Innovation and Culture Hub in San Francisco, is doing its part to help businesses abroad and further strengthen economic relations between Italy and the US.

There are over 1,200 Italian companies operating in the USA. What are the most interesting business niches for Italian industry?
Bilateral investment is very significant, with FDI (Foreign Direct Investment) stocks standing at around 30 billion US dollars in both directions. Italian business in the US is mostly concentrated in the retail (textiles/clothing), mechanical engineering, farm-food, automotive, energy, logistics, infrastructure, defence and aerospace industries.
The most interesting business sectors for Italian industry are undoubtedly those with high technological content. They favour reciprocal 'contamination' with the exporting of Italian 'know-how' and, at the same time, the acquisition of new skills in terms of innovation and manufacturing processes from American partners. In addition to its acknowledged skills in the fashion, furniture, and farm-food businesses, Italy is a leader here in numerous other sectors ranging from hi-tech machinery and pharmaceuticals to renewable energy, the aerospace industry and building/construction. Thanks to an ability to combine tradition and innovation, our businesses can find opportunities for growth and expansion on this market.

> **“The Italy-US economic partnership is growing steadily. Trade exchange hit a record high of almost 100 billion US dollars in 2022**

There are many big names in Italian industry in the USA. Can big businesses also be a driving force for

Italian SMEs (small and medium-size enterprises) hoping to break onto the American market?
The American market is a very complex and intricate market. Large Italian industrial groups, thanks to their adaptability and the greater resources at their disposal, can undoubtedly also be a driving force for SMEs, opening up export and investment opportunities for them along their respective supply chains and facilitating the transfer of knowledge and skills from the American market to the Italian market and vice-versa. It is also important for SMEs to take advantage of the opportunities offered by the so-called 'Sistema Italia' (Italian System), thanks above all to the work of ICE.
There are numerous projects focused specifically on SMEs interested in the American market. To give an example, Cassa Depositi e Prestiti bank, in conjunction with the Embassy and ICE, recently launched its own business matching platform in the USA specially for SMEs, with the aim of fostering the creation of new networks and partnerships between Italian and American companies.

Energy and infrastructure: there are major investment plans in the USA. Is this both an opportunity and a challenge for Italian companies?
Major investment plans approved in the USA open up entirely new scenarios, not without some critical issues for the European industrial system, but also full of opportunities for Italian companies as well. Thanks to the action taken by the European Union, partly prompted by Italy, to neutralise the potentially distorting effects of measures adopted in the US concerning companies based in Italy and Europe, new opportunities will open up in addition to those our companies already established in the US are taking advantage of thanks to the incentives and subsidies provided by the US administration's measures.
In both the energy and infrastructure sectors, Italy is particularly at the forefront, thanks to its know-how in terms of innovation and the various investments made over the years. The strong presence of Italian companies in the US in these sectors allows us to play a central role in the country's transition.

Investing in the United States: 5 tips to be competitive
First and foremost, you must prepare your investment plan very carefully. America is the land of opportunity, but the 'American dream' must be chased with circumspection, because there are many differences between the European market and that of the United States and no lack of difficulties to be overcome. I would then recommend:
❶ Open a local office preferably employing American staff;
❷ For larger and more complex businesses, I believe it is essential to establish a partnership with an American enterprise or make an acquisition;
❸ In connection with the previous points, you need to fully understand the regulatory framework;
❹ Look at investment in the US also as an opportunity to acquire new skills with reciprocal interaction and exchange potentially benefiting our country, too;
❺ To do this, it is important to be able to rely on the right partners from the Embassy to Consulates, from ICE to investment banks and even expert consultants with proven experience.

Which initiatives are carried out by Italian representations in the USA to support investment in the American market.
There are numerous initiatives closely coordinated by the diplomatic-consular network in the USA with a view to implementing the Ministry of Foreign Affairs and Coordination's global vision. From specific events linked to certain economic sectors (such as the farm-food industry, the design/craft industry or the so-called "space economy"), to initiatives focused on the excellence of Italian companies in terms of innovation and sustainability, the Embassy works with Consulates, ICE Offices and all the players of 'Sistema Italia' in the USA to promote Italian industry across the board.
There are important projects supporting Italian investment in the USA. In addition to widescale action taken by the ICE, I would like to mention the launch (supported by the Embassy) of the Transatlantic Investment Committee as a catalyst for investment across both sides of the Atlantic in emerging sectors, and also operations promoted by the Italian Innovation and Culture Hub in San Francisco, which is a modern and flexible means of supporting businesses, start-ups and research centres with high innovative content.
The network made up of the Embassy, Consulates and ICE organises hundreds of promotional events, carries out constant trade defence action, promotes investment, provides information, facilitates involvement in trade fairs in the USA and Italy, assists hundreds of companies from large groups to SMEs and start-ups to expand on this market, and promotes scientific/technological cooperation and training.

"The United States boasts immense potential, but the American dream must be pursued with circumspection: the first piece of advice is to carefully prepare an investment plan

THE IMPORTANCE OF BEING TRANSATLANTIC

by **Simone Crolla**

To objectively and acutely analyse relations between Italy and the US, we must start from a premise: the international context is profoundly different from how it was a few years ago.
The pandemic and the war in Ukraine have changed the global geopolitical landscape that now includes competition between the US and China.
So, considering the current situation, it is more crucial than ever that US-European relations are further strengthened by focusing on shared project platforms and joint investment projects to meet the challenges coming from China (such as the Belt and Road Initiative).

The fact that the US has implemented the Inflation and Reduction ACT (IRA) should not be seen as a barrier to attracting investment to Europe, as it is now increasingly evident that it is crucial to have manufacturing facilities on both sides of the Atlantic for businesses aiming to be fully competitive.
On the contrary, the US move should be backed by a transatlantic roundtable on how to fully implement the redesign of value chains according to the concept of friendshoring, thereby favouring American investment in Europe with security being the leading factor to be taken into account.

Italy has the extraordinary opportunity to be the main diplomatic player in bringing both sides of the Atlantic closer together

What should the goal be? To get back to discussing a treaty between the US and EU to reaffirm transatlantic leadership. And yet what appears to be a necessary and almost "mandatory" way ahead for some transatlantic observers is being hindered by certain industrial and political stances - especially from Germany and France - that have exacerbated relations with the US, portraying the IRA as a threat to certain European industries (e.g. automotive) already highly exposed to competition from China.
The problem with Europe is that a genuine agenda of European priorities is struggling to be enforced, leaving room for national agendas that often clash with the industrial needs of Europe as a whole.
Europe's priority should now be to create even closer ties with the US that is currently led by one of the most "pro-European" administrations ever. This must be achieved by focusing on converging points of interest and working to smooth out and blur any obvious differences.
Precedents regarding the Digital Services Tax, current discussions about the European Cybersecurity Scheme (EUCS) and EDIRPA (European Defence Industry Reinforcement through common Procurement Act) in Aerospace & Defence are not helping reconcile transatlantic interests.
The following economic figures confirm the crucial importance of this relationship:
- Record Italian exports in 2022: in November 2022, Italian exports reached 62.8 billion US dollars (+3.0% compared to 2021 not including December)
- Trade between Italy and USA reached 88.1 billion US dollars (+6.5% not including December)
- Record US exports to Italy.

In terms of investment:
- US FDI (Foreign Direct Investment) in Italy: 28.1 billion US dollars (+2.4% compared to 2020)
- Italian FDI in USA: 34.4 billion US dollars (+7.4% compared to 2020).

If both the US and Europe boost their investment - the TTIP (the free trade agreement negotiated between the US and the European Union that sunk in 2016) would have served precisely this purpose – this would force China to face a fact that very few people seem to be aware of: the transatlantic bloc is the world's largest market, it is an extraordinary manufacturing and technological platform capable of dictating the rules and asserting its leadership.
We are masters of our own destiny; it is up to us alone to decide what we want to be when we "grow up".
Thanks to its jockeying for position over recent months, Italy has the extraordinary opportunity to be the main diplomatic player in bringing both sides of the Atlantic closer together.
All of us, as standard bearers of close transatlantic relations, have a responsibility to try and make this happen for the good of Italy and Europe.

Managing Director, American Chamber of Commerce in Italy (AmCham)

by **Donato Grosser**

Slowdown in the construction market

THE EFFECT OF INTEREST RATES HIKES ACROSS THE ENTIRE SECTOR: RISING COSTS FOR FAMILIES AND INVESTORS

The construction and housing sector in the United States had already started to slow down in the second quarter of 2022, the main cause being a general increase in interest rates. Going into detail, interest rates for thirty-year fixed-term mortgages rose from around 2.6% at the start of 2022 to 6.6% at the beginning of 2023. These increases were generated by the decision from the Federal Reserve, the United States central bank, to combat inflation, which had reached intolerable levels.

In this article we will analyse the four main markets in the "housing" sector: new residential buildings, sales of existing houses, remodelling work in the residential sector and the market trend in office and warehouse space.

The housing and construction sector is probably the one most impacted by rising interest rates. Building contractors see their costs increase and the same thing happens to families looking to buy a house or carry out maintenance and remodelling work by financing their purchases or the cost of work through bank loans.

New residential constructions

The effect of interest rate increases could be seen very quickly. Back in May 2022 the number of Housing Starts had already fallen from 1.80 to 1.56 million units compared with April. In December the number of Housing Starts fell to an annual average of 1.38 million units.

We need to point out, however, that in spite of the decline in new constructions, the figure of 1.3 - 1.4 million residential units is still at its historic average level. We just need to think back to the great depression thirteen years ago when there was a collapse in the number of Housing Starts to around 500,000 units. That crisis was generated by financial factors. Now, on the other hand, the drop in new constructions is a phenomenon basically caused by a balance between market demand and supply, influenced by the cost of high interest rates.

There is a drop in residential constructions, but we are a long way from the collapse registered 13 years ago

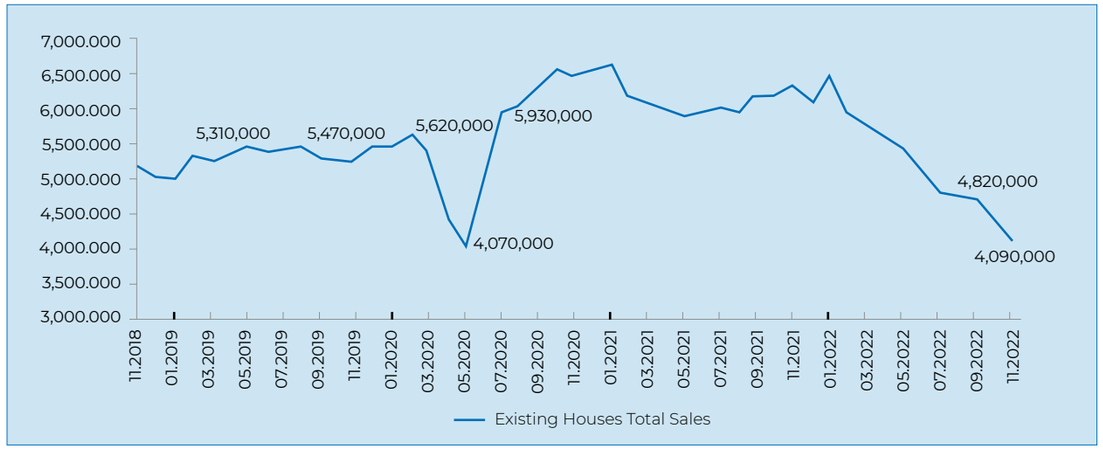
Existing houses

The increase in interest rates had an immediate effect, including in the market for existing houses. From January 2022, for eleven consecutive months, there was an uninterrupted fall in sales, something that had not occurred since 1999. Between January and December sales of existing houses fell from 6.5 million to 4.2 million units: it was not since 2014 that such low levels had been recorded. The increase in interest rates for home mortgages meant that monthly payments more than doubled for those who had bought a house and many families had to postpone buying and put it off to sometime in the future, as shown in the graph on top of the facing page.

The residential remodelling market

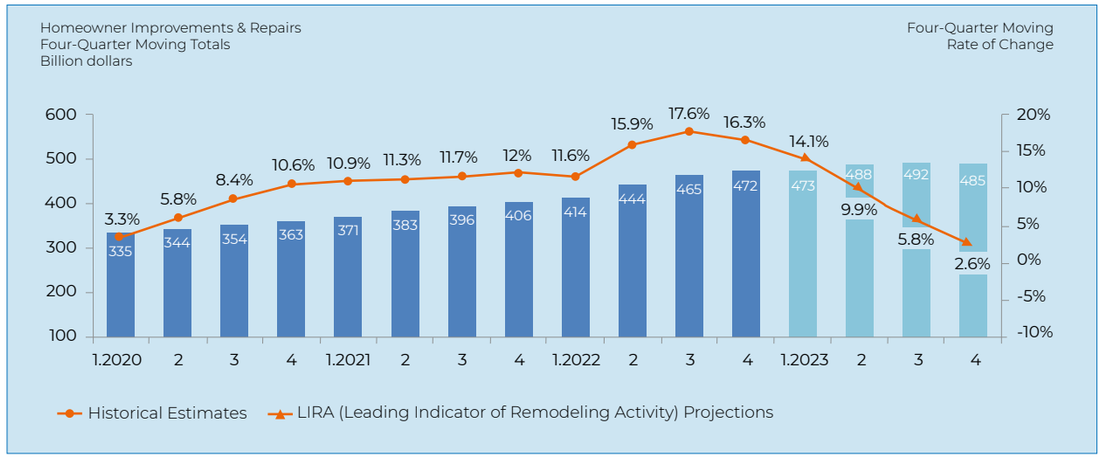
After a number of years of significant increases in spending on remodelling work, the forecast for 2023 is for very modest growth. This is what emerged from the most recent Leading Indicator of Remodeling Activity (LIRA) report, recently issued by the Joint Center for Housing Studies of Harvard University. LIRA forecasts a significant slowdown in the increase in home remodelling and maintenance spending, from 16.3% at the end of 2022 to 2.6% by the end of 2023, as shown in the graph in the middle of the facing page. Carlos Martín, Director of the Remodeling Futures project at the Center, stated that "The slowdown in sales of existing houses, the increase in the price of houses and re-mortgaging activities, along with the growing concern of a recession, are the factors that will contribute to the cooling-off of remodelling work. This means that, in the immediate future, homeowners will probably withdraw from high-level discretionary projects and concentrate their spending on replacing only what is necessary and on smaller projects".

HOUSE SALES FALLING



NATIONAL ASSOCIATION OF REALTORS

SPENDING DOWN IN 2023 FOR REMODELLING WORK



JCHS Source: Joint Center for Housing Studies of Harvard University.

The commercial real estate market

The commercial sector seems to be the one most hit by the increase in interest rates. An article published in the Wall Street Journal on 17th January 2023 pointed out that, "The hit of higher interest rates comes at a moment of increasing weakness in a large part of the commercial real estate market. This market has already been impacted by the forecast of an economic downturn and investors are looking for lower-risk solutions, such as fixed-interest bonds".

The demand for office buildings is in crisis because of the rise in remote working and by employees being laid-off in the technological and financial sectors. To fill spaces that have remained empty, owners of offices are offering companies generous incentives. At the end of the third quarter in 2022 the percentage of vacant offices in the United States was at 12.3%, a level seen 13 years ago during the financial crisis. In the final quarter of 2022 warehouse rentals fell by 28% compared with the third quarter, which also suffered a fall. Around 68 million m² of warehouse space was rented out in 2022, 18% lower than in 2021. The situation is worrying because, every week, there is news about companies laying-off employees: Amazon has announced they are laying-off 18,000 employees, many of which work in either warehouses or offices. Microsoft announced they are laying-off 10,000 employees and Google 12,000. Goldman-Sachs has also announced they will be laying-off three thousand. And the list will probably become even longer.

The commercial market is the one most hit by the slowdown: remote working and laying-off employees in the technological and financial sectors weigh heavily on demand

To conclude, we are witnessing a general slowdown in the residential and commercial sectors. We need to hope that the Federal Reserve manages control inflation relatively soon so that the United States economy can return to normality.

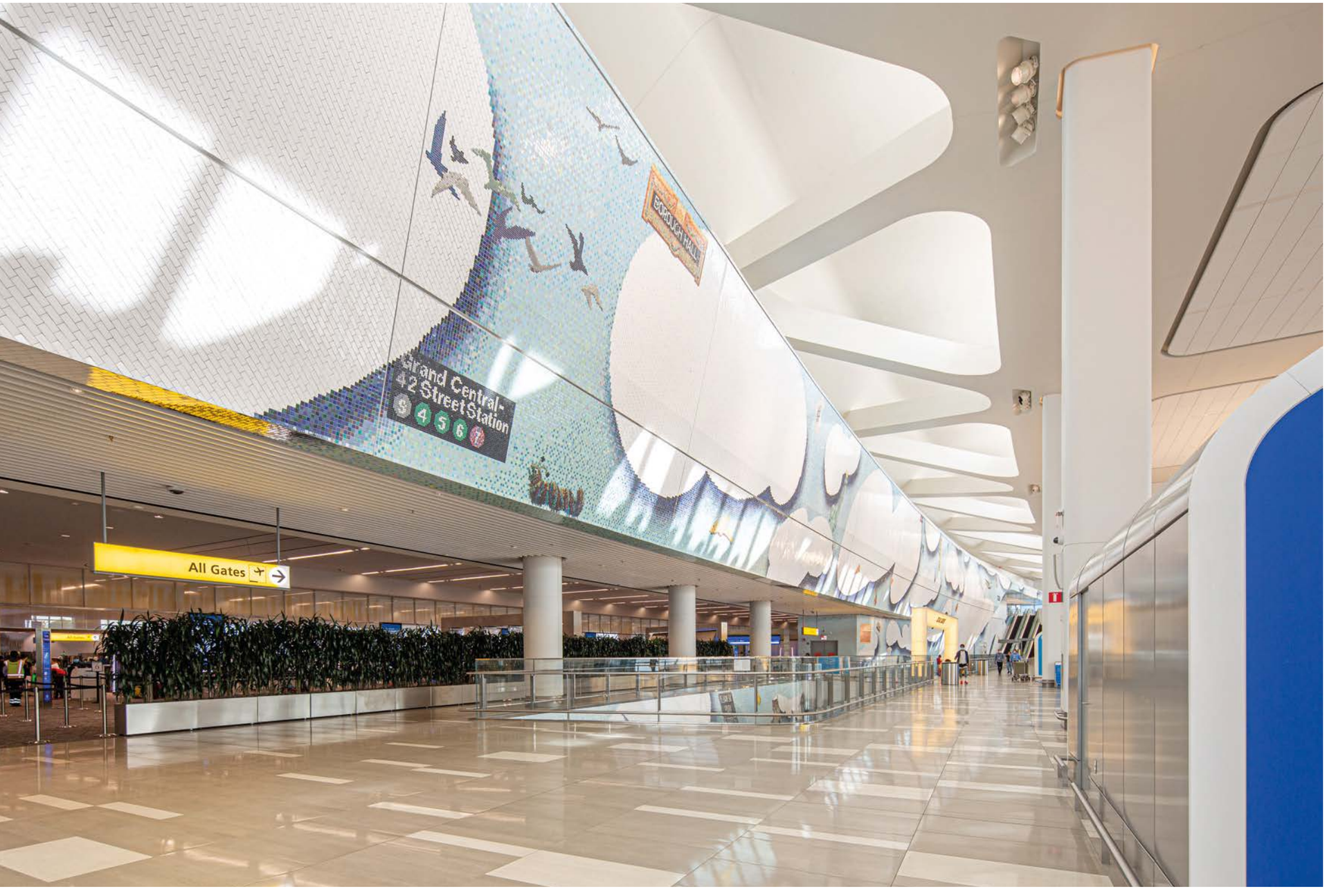
Donato Grosser. D. Grosser and Associates, New York.

BELOW LaGuardia Airport, whose Terminal B was lately renovated, sports a mosaic mural completed with Mapei products .

Queens (New York)

LaGuardia Airport

ADHESIVES AND GROUTS TO CREATE A HUGE WORK OF ART



LaGuardia Airport (LGA) is an international airport located in the borough of Queens, New York, that spans across 680 acres (275 hectares) of land. It was originally built in 1939 and named after New York City's mayor at the time, Fiorello La Guardia. Today, LaGuardia Airport is the third busiest airport in New York City.

Over the years, parts of the airport interior became severely outdated and aesthetically too old-fashioned for a place such as New York City, which is known for its diverse, fast-paced, ever-evolving and unforgettable landscape. In 2019, to revitalize the layout of Terminal B, New York City's Public Art Fund teamed with LaGuardia Gateway Partners to commission an art program to capture the creativity, artistry and energy of the city.

Revitalizing Terminal B was no small feat. Because the terminal is one of the largest and busiest epicenters for travel to and from New York City, construction would need to be functional but grand, unique yet universal, beautiful and iconic.

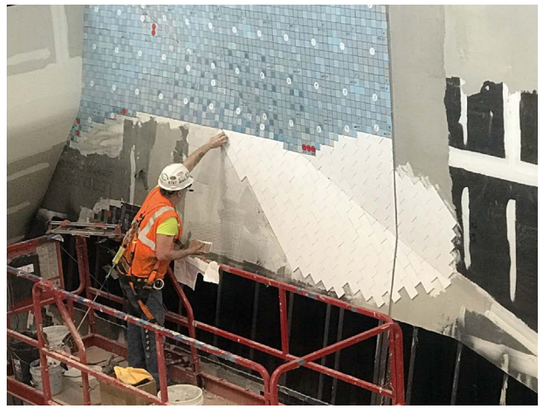
Four internationally recognized artists (Laura Owens, Sarah Sze, Sabine Hornig and Jeppe Hein) were chosen to design large-scale installations throughout the arrivals and departures hall of Terminal B. The mosaic mural was designed by Owens and serves as a celebration of the history, culture and architecture of New York City. It features 80 iconic images from New York City's five boroughs, ranging from the Statue of Liberty and the Staten Island Ferry to a MetroCard and a slice of pizza. Handmade glazed ceramic and subway tiles (5 x 5 cm, 2.5 x 2.5 cm and 10 x 10 cm) were used to create the images, which are all connected by a backdrop of sky and clouds. 7.6 x 15 cm white subway tiles (a type of thin, low-fired and glazed tiles) were used to form the clouds.

4 shades of KERACOLOR S

Products from Mapei Corporation's (a subsidiary of the Group) Tile & Stone Installation Systems line were put to work in order to complete the mosaic wall-tile project.

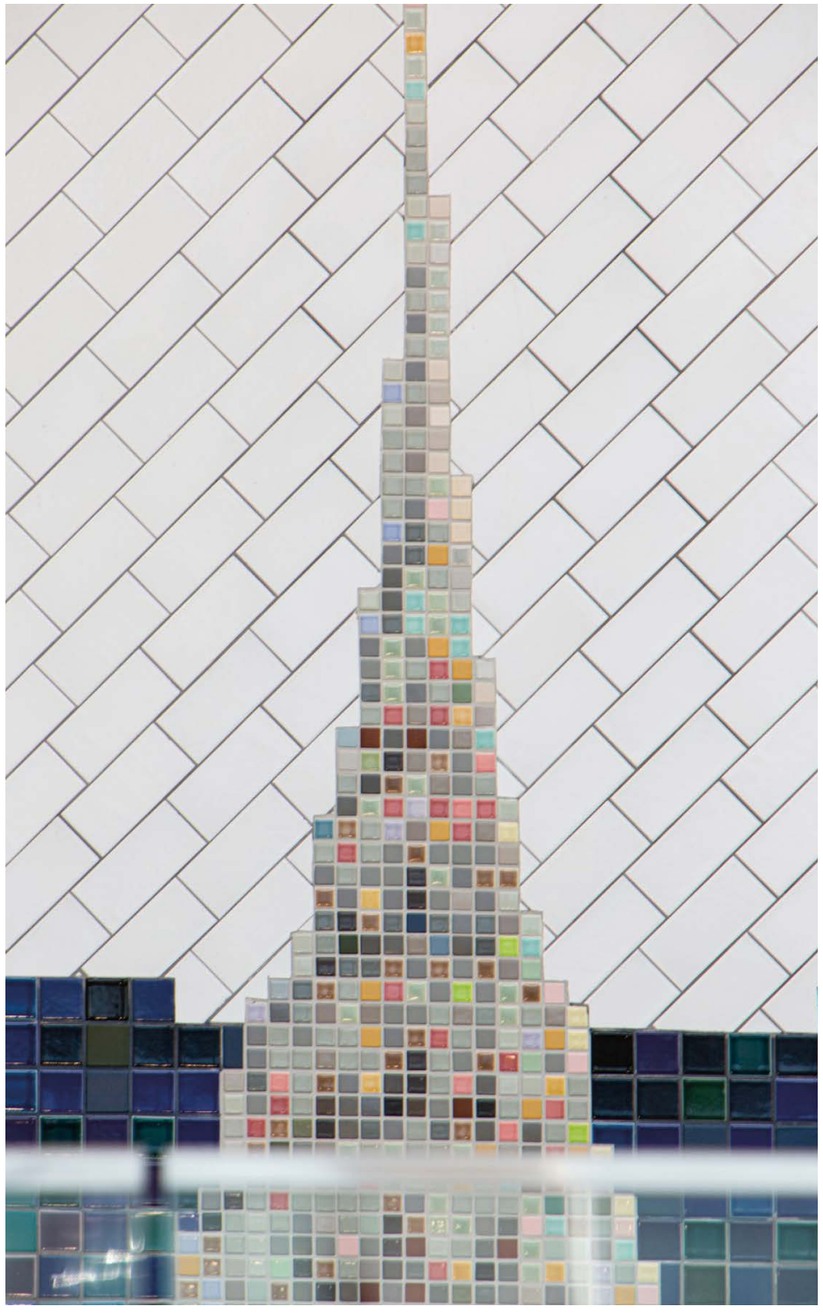
Over 25,000 square feet (2.323 m^2) of tiles – in various shades, sizes and colors – were installed by BRB Ceramic Tile, Marble & Stone Inc. from August 2019 to May 2020. The work was consistent, significantly detailed and a big challenge for installers creating this seamless design continuity.

PLANITOP 330 FAST rendering mortar was used to level the wall substrates and taper the transitions for an easier installation. Used to bond the tiles, TYPE 1 adhesive provided excellent adhesion, extended open time and low



TOP OF THE PAGE. In the arrivals and departures area a big mural mosaic was created by using over 2,323 m² of tiles.
ABOVE. The mosaic tiles were installed with TYPE 1 adhesive before grouting joints with four different color shades of KERACOLOR S cementitious grout.

VOC (volatile organic compounds) emissions.
The mural consists of 135 colors (36 of which were custom developed by the tile makers) and required three different shades of KERACOLOR S cementitious grout (in the colors "Rain," "Pearl Gray" and "White") and "LaGuardia," a customized gray grout color that is unique to this project and was developed and supplied by Mapei Corporation.
To create depth in the sky portion of the mural, the grout color "Rain" was used predominately in the clearer sections of the sky; "Pearl Gray" was used inside the entire cloud area and acted as a transition color between darker shadows. In addition, "LaGuardia" was used in the darkest parts of shadows (generally underneath clouds) in the mosaic, while "White" was used alongside cut subway tiles in curved areas for a smooth transition. To touch up joints and create a uniform transition between colors for a clean finish, ULTRACARE GROUT REFRESH ready-to-use, polymer-modified colorant and sealer for grout joints was applied. MAPESIL T 100%-silicone sealant was also used, offering excellent elongation and flexibility as well as aiding in the prevention of mold and mildew.
All the products mentioned in the article are manufactured and distributed in the US market by Mapei Corporation, Mapei Group's US subsidiary.
The mosaic mural now gracing the walls of LaGuardia Airport's Terminal B is iconic, historic and unique. In addition, the mural is now a candidate for designation by the Guinness Book of World Records as one of the largest indoor murals in the world.



LEFT. The mural features 80 iconic images from New York City's five boroughs, ranging from the Statue of Liberty to the Empire State Building by using handmade glazed ceramic and subway tiles grouted with KERACOLOR S epoxy grout in 4 different shades.

PROJECT INFORMATION
LaGuardia Airport, Queens, New York
Period of construction: 2019-2020
Period of Mapei intervention: 2019-2020
Owner: Port Authority of New York and New Jersey
General contractor: BRB Ceramic Tile, Marble & Stone Inc.
Installer company: BRB Ceramic Tile, Marble & Stone Inc.
Project manager: Ed Connors
Mapei coordinator: Darin Shocker, Mapei Corporation (USA)
Photos: Virtual360NY

MAPEI PRODUCTS
Preparing substrates: Planitop 330 Fast*
Installing mosaic tiles: Type 1*
Grouting tile joints: Keracolor S*
Sealing expansion joints: Mapesil T*
Finishing joints: UltraCare Grout Refresh*

* These products are manufactured and distributed in the US market by Mapei Corporation, Mapei Group's US subsidiary.

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

Rantoul (Illinois)

Rantoul Family Sports Complex

MAPEI CORP. SUPPLIED A COMPLETE SYSTEM TO INSTALL SAFE AND COMFORTABLE TURF PITCHES

The Village of Rantoul, Illinois, decided upon a creative means of gaining extra revenue, boosting their restaurant, retail, and hospitality services while improving their city's standard of living — and having a little fun. In a bid to capitalize on "Sports Tourism," they decided to construct the largest multi-sports complex in the Midwest. Using a bond measure, as well as private contributions, donations, sponsorships, and grants they created the Rantoul Family Sports Complex, a 1,552,267 sq. ft. (144,210 m²) multi-sport, artificial turf sports park featuring eight ballfields, one softball field, two little league/challenger fields, and eight soccer/multipurpose fields, a splashpad, and a playground. Located at the intersection of three major interstates, the unique sports complex is designed to draw people from the cities of Chicago, Indianapolis, and St. Louis as none of the cities have sports fields equal to the caliber of those found at the new complex.

Mapei products take the field

A field is a field, right? No. Because these fields at the Rantoul complex were created using Mapei products for installing turf. As stated in an interview with "Illinois Newsroom" newspaper, Ryan Reid, the facility's Director of Sports Operations stated, "The synthetic turf is brand new state of the art. We use a rubber-sand combination that keeps the turf cool and comfortable to play on. It's like playing on real grass."

The lack of maintenance costs combined with their ability to guarantee comfort and safety for the turf coverings made the use of Mapei products for turf a win/win.

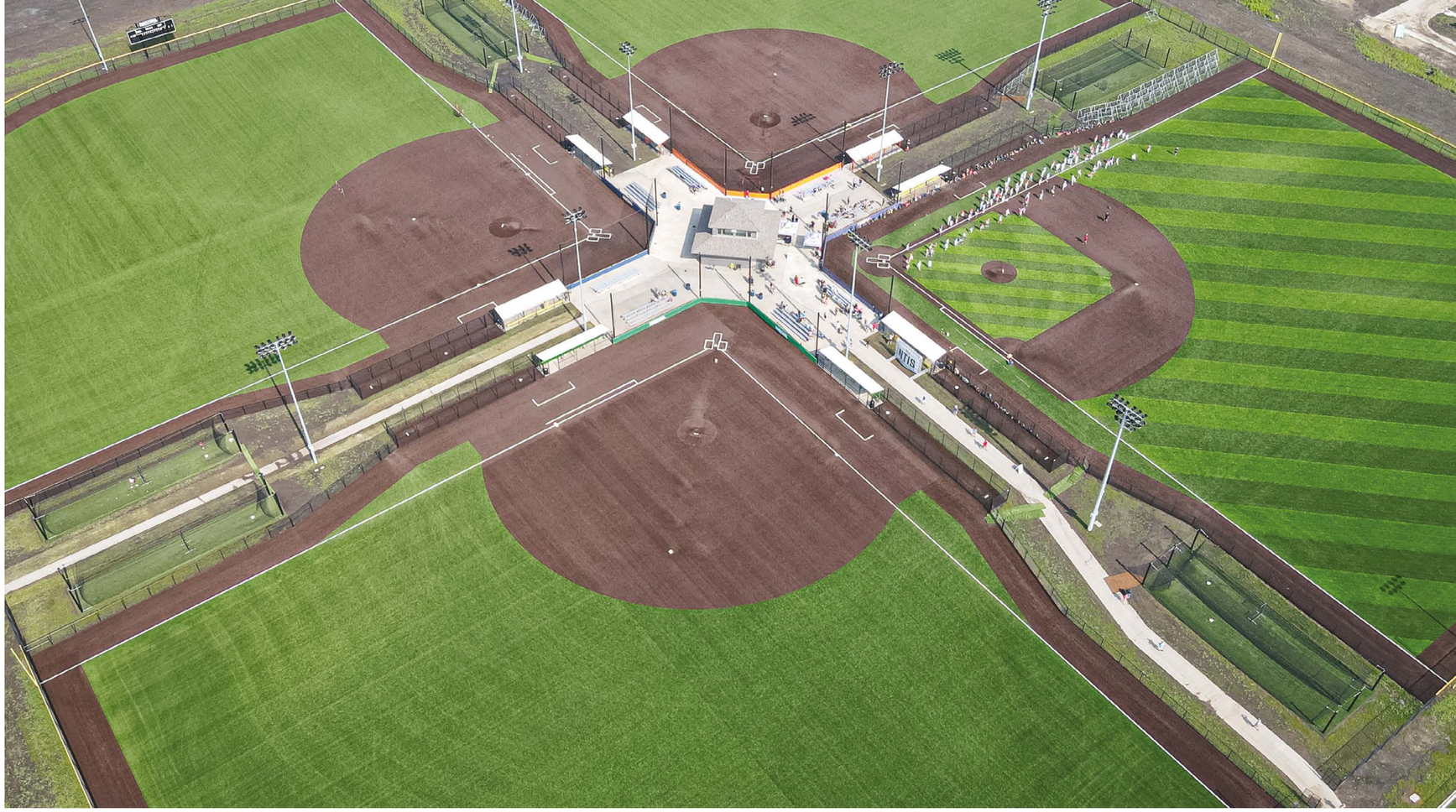
Mapei Corporation's (a US subsidiary of the Group) sales representative worked closely with the installing contractor to ensure that Mapei products were correctly used. The system proposed by Mapei included the use of ULTRABOND TURF PU 2K two-component, solvent and water-free polyurethane adhesive for bonding ULTRABOND TURF TAPE jointing strips between the synthetic grass sheets, by using a special application tool, the ULTRABOND TURF GLUE BOX.

ULTRABOND TURF TAPE and ULTRABOND TURF GLUE BOX are manufactured and distributed on the US market by Mapei Corporation.

The use of this system allowed the contractor to win the main challenge of the project, its sheer size, and meet the tight deadline which was due to the fact that the jobsite had to close for the winter months when the fields were blanketed by snow.

The sports complex is now open. The Village of Rantoul has been revitalized thanks to the concept of "Sports Tourism" and the Rantoul Family Sports Complex features cutting-edge turf fields completed with Mapei products.

Find out more
ULTRABOND TURF PU 2K



ABOVE. The Rantoul Family Sports Complex features eight ballfields, one softball field, two little league/challenger fields, and eight soccer/multipurpose fields, all made of turf.
LEFT. The turf was installed by using a complete system including ULTRABOND TURF PU 2K adhesive, ULTRABOND TURF TAPE and the application tool ULTRABOND TURF GLUE BOX.

PROJECT INFORMATION
Rantoul Family Sports Complex, Rantoul, Illinois
Period of construction: Summer 2020 – May 2021
Period of the Mapei intervention: 2020 - 2021
Owner: Village of Rantoul
Main contractor: Byrne and Jones
Installation company: Byrne and Jones
Project manager: Kevin Reynolds, MWSTS
Mapei coordinator: Lee Hefner, Mapei Corporation

MAPEI PRODUCTS
Installing turf:
Ultrabond Turf PU 2K, Ultrabond Turf Tape*, Ultrabond Turf Glue Box*

* These products are manufactured and distributed on the US market by Mapei Corporation.

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

Colorado Springs (Colorado)

Pikes Peak Summit Complex

CUTTING-EDGE PRODUCTS FOR BUILDING THE MOST SUSTAINABLE HIGH-ALTITUDE (4.302 M) STRUCTURE IN THE UNITED STATES

Known as “America’s Mountain,” Pikes Peak is iconic. It is one of the most visited mountains in the world and a top tourist destination for the state of Colorado. The summit, at 4,302 m above sea level, is a US National Historic Landmark (NHL), and the mountain itself, in addition to the spectacular views it affords, holds a special place in America’s heart.

Maintained by the City of Colorado Springs, which sits at the base of the mountain, the Visitor Center at the summit is reached by an estimated 750,000 people per year. That ascent can be made via hiking or driving up Pikes Peak Highway.

For the crews who worked to build the new Visitor Center, America’s Mountain became a symbol of pride for more than patriotic reasons. They had to overcome several challenges: covering by car 30.6 km, making 156 turns, and climbing 1,132 m up a 7% grade with construction materials and heavy equipment; lack of oxygen, restrictions related to COVID-19, extreme cold weather. It is a scenario straight out of an “adventure” movie.

The summit of sustainability

For Mapei Corporation, a US subsidiary of the Group, the Visitor Center became an opportunity for involvement from the very beginning in a very special project, providing assistance on product selection for the most environmentally conscious construction project on one of North America's highest mountain peaks.

The City of Colorado Springs wanted to ensure that the building program was environmentally sound. They decided to pursue multiple green building certifications, including LEED and The Living Building Challenge (LBC). For instance, on top of the logistics of just getting materials up the mountain, the Pikes Peak design team considered factors including designing the building in such a way as to be Net-Zero water-ready. This means the building is able to, among other features, gather and reuse rainwater and snow.

Mapei Corporation’s Sustainability team, led by Sustainability Manager Brittany Storm, has been involved in this project since early 2019, consulting with the tile contractor, architectural firm, and the general contractor to make recommendations and provide proof of sustainable products that meet the requirements of both certifications.

“We advocate to be involved with the design team early in a project, especially when it comes to sustainability, as the design and construction teams are not expected to know every manufacturer’s product line inside and out. Then add having to know each product’s sustainable attributes and certifications on top of that,” Storm said.

But what works for one green building system may not work for another. Storm explained the challenge, “We had to work with contractors, design team, construction team to strategically select products that not only met the performance, aesthetic, and other traditional considerations but also LEED’s and LBC’s sustainability requirements. While there are synergies between the two green building standards, there are also product requirements that would work for one standard but not the other. We had to juggle both standards and find products that took both traditional (durability, technical performance and aesthetic impact) and sustainable considerations into account.”

This effort was not wasted: the Pikes Peak Summit Visitor Center achieved LEED Platinum certification and is currently the most sustainable high-altitude (4.302 m) structure in the United States.

Working at the Summit of America

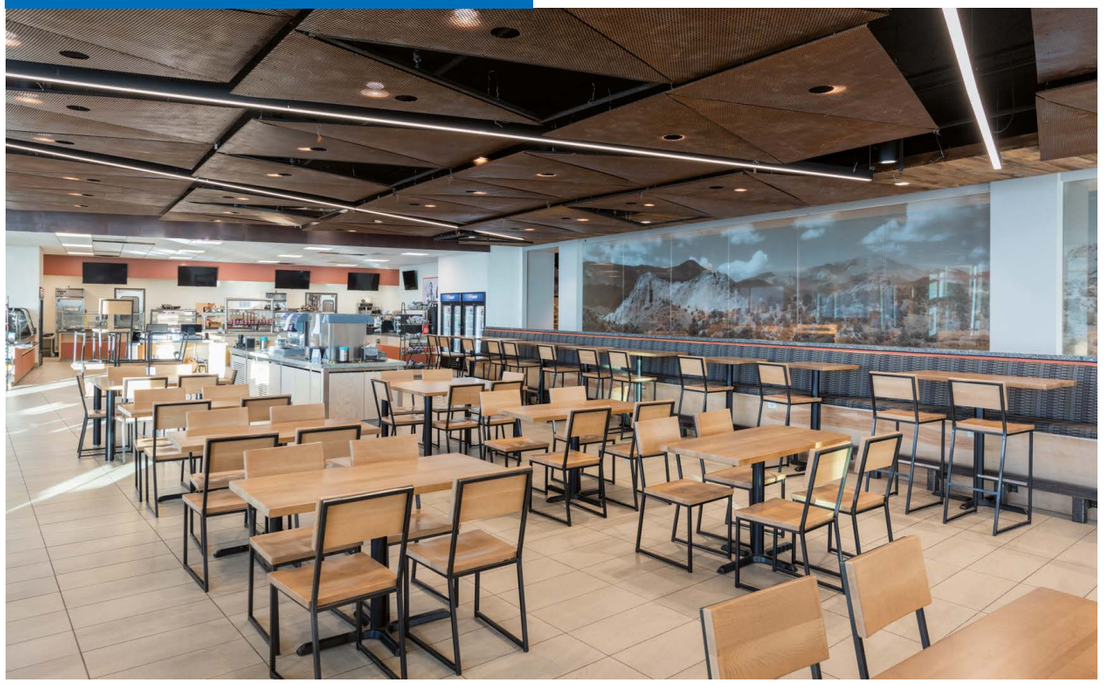
Ultimately, more than 15 Mapei products across three product lines were chosen to build the Visitor Center due to their sustainability features (low emission level of Volatile Organic Compounds; use of recycled materials and local raw materials, Environmental Product Declarations, etc.).

Mapei products were used in both the external areas and internal areas. Going into detail, inside the monument that marks the summit of Pikes Peak, the substrates were waterproofed by applying MAPELASTIC TURBO elastic membrane; stone slabs were installed thanks to the use of GRANIRAPID SYSTEM cementitious adhesive system; the joints were grouted with ULTRACOLOR PLUS FA cementitious mortar and the expansion joints were sealed with MAPESIL T elastic sealant.

Mapei systems were also employed in the interior areas of the center, such as the system used to prepare the substrates for all the floors, consisting of PRIMER L acrylic primer, NOVOPLAN EASY PLUS levelling mortar and MAPECEM QUICKPATCH patching compound.

In the toilets adequate waterproofing of the substrates needed to be guaranteed, a challenge easily overcome

IN THE FACING PAGE. At 4,302 m above sea level, Pikes Peak Summit is one of the most visited mountains in the world. The Visitor Centre on the summit is a unique and highly sustainable structure offering several services to visitors.
ABOVE. GRANIRAPID SYSTEM cementitious adhesive system was used to bond the stone slabs in the Pikes Peak Summit Marker.



ABOVE. Several Mapei products were used in the interior areas to install and grout ceramic floors in the kitchen, restaurant, shop and toilettes.

by applying MAPELASTIC AQUADEFENSE ultra rapid-drying, elastic, liquid waterproofing membrane.
Installation of ceramic tiles on the stairs was carried out using ULTRAFLEX 3 one-component, modified polymer-based adhesive.
Different types of grouts for joints were used according to the different surroundings and type of use: ULTRACOLOR PLUS cementitious grout for the joints in the ceramic flooring in the entrance and sales areas; KERAPOXY CQ bacteriostatic epoxy grout with BioBlock® technology for the joints in the bathrooms, thanks to its excellent cleanability, resistance to aggressive substances and general healthiness; KERAPOXY IEG CQ epoxy grout for the joints in the kitchen because of its high resistance to stains, high temperatures and frequent cleaning with enzymatic cleaners. KERACAULK S sealant was used to seal the floor/wall joints and the joints in the corners of the floor and wall coverings.
PLANIGROUT 755, PLANIGROUT 712 and PLANIGROUT 728 non-shrinking construction grouts were used to create the cementitious baseplates for the wastewater treatment equipment.
All the products mentioned in this article, apart from MAPELASTIC AQUADEFENSE, MAPELASTIC TURBO and KERAPOXY CQ (which are also available on the international market), are manufactured and distributed on the United States market by Mapei Corp.

Find out more KERAPOXY CQ

PROJECT INFORMATION
Pikes Peak Summit Complex, Colorado Springs, Colorado (USA)
Period of construction: 2019-2021
Period of the Mapei intervention: 2019-2021
Project owner: City of Colorado Springs
Main contractor: GE Johnson
Installer contractor: Rampart Tile
Project manager: Steve Gray, Rampart Tile
Mapei coordinators: Brittany Storm and Jim Whitfield, Mapei Corporation (USA)

MAPEI PRODUCTS
Preparing substrates: Primer L*, Novoplan Easy Plus*, Mapecem Quickpatch*
Waterproofing substrates: Mapelastic Turbo, Mapelastic AquaDefense
Installing ceramic tiles: Granirapid System*, Ultraflex 3*
Grouting joints: Ultracolor Plus FA*, Kerapoxy CQ, Kerapoxy IEG CQ*
Sealing expansion joints: Mapesil T*, Keracaulk S*
Building mortars: Planigrout 755*, Planigrout 712*, Planigrout 728*

* These products are manufactured and distributed on the US market by Mapei Corporation.

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

Projects across the board

HOSPITALS, TUNNELS, HOTELS, AND UNIVERSITIES: A ROUND-UP OF PRESTIGIOUS BUILDINGS CONSTRUCTED OR RENOVATED USING MAPEI SOLUTIONS

Radisson Hotel Valley Forge
King of Prussia (Pennsylvania)

This large octagonal tower is home of a hotel from the Radisson chain. Built in 1972, the façades of the tower were starting to show their age. Refurbishment and restoration work got underway in 2021 which included the application of materials by a specialised “acrobatic” building team. Working suspended from ropes down the sides of the building, the team removed the layer of damaged concrete, cleaned the surfaces and then reintegrated the areas where the concrete had been removed with PLANITOP XS, PLANITOP X and PLANITOP 18 ES mortars and MAPEFLEX EMC-1 patching compound, after applying an anti-corrosion treatment of MAPEFER 1K on the exposed rebar. The façades and the surfaces of the balconies were then finished off with a coloured layer of MAPECOAT DECK T and ELASTOCOLOR COAT coatings to guarantee durability and resistance to wear, as well as high aesthetic impact.

Bellevue Tunnel
Bellevue (Washington)

This 650 m-long tunnel was constructed using the sequential excavation method (SEM) and is part of a project to construct a 22.5 km railway line between the cities of Seattle and Redmond. 121 million dollars (111 milion Euros) were invested in the tunnel and several critical problems had to be overcome during

its construction (water ingress and infiltrations and damp areas). Construction works also included the application of a waterproofing system for the surfaces in the tunnel, MAPELASTIC TU SYSTEM NA, which was supplied by Mapei Corporation. The system consisted of levelling the substrates before applying three layers of MAPELASTIC TU membrane by spray in different colours (white, blue/green and white), followed by the application of shotcrete. In several areas where the MAPELASTIC TU had been damaged, repairs were carried out using MAPEPROOF AL NA synthetic membrane.

Wilbur O. and Ann Powers College of Business at Clemson University
Clemson (South Carolina)

Clemson University is very famous in the United States because of its multi award-winning football team, the Tigers. This excellence in the field of sports often overshadows the University's academic record which has led to it being classified amongst the country's top 20 universities. In October 2020 it was "renamed" the Wilbur O. and Ann Powers College of Business at Clemson University after two of its former students, Wilbur and Ann Powers, made a donation of 60 million dollars. It was also thanks to this donation that it was possible to give the university buildings a new look, designed by LMN Architects. Various adhesives and products to prepare substrates by Mapei Corporation were chosen to install floor and wall coverings in textile materials (ULTRABOND ECO 811 and ULTRABOND ECO 575) and LVT (PLANIPREP SC and ULTRABOND ECO 373), as well as for mosaics and ceramic tiles (ULTRAFLEX LHT, ULTRACOLOR PLUS FA and FLEXCOLOR CQ) in the toilets, kitchens and cafeteria.

Ridley Tree Cancer Center
Santa Barbara (California)

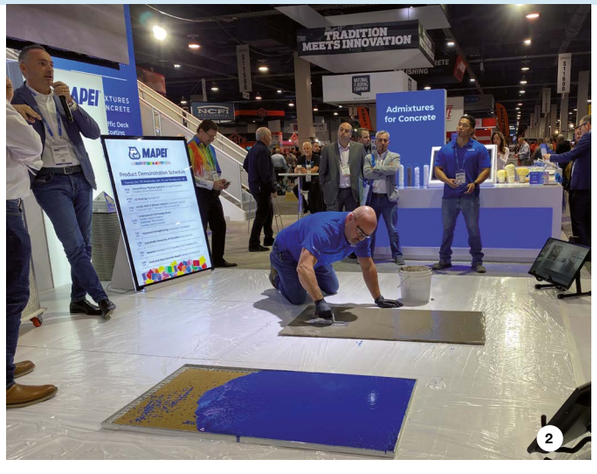
Ridley Tree Cancer Center is a medical facility of excellence affiliated with the famous Sansum Clinic in Santa Barbara. It was constructed close to a stream that normally only carries water during certain periods of the year, but which had turned into a river at the end of a particularly lengthy period of drought, causing problems of moisture in the recently placed concrete slab. To overcome these problems, PLANISEAL VS epoxy coating was used to create a moisture barrier on the concrete slabs of all three floors of the structure. PRIMER WE epoxy primer was then applied to improve adhesion of the next layers. After levelling off the substrates with ULTRAPLAN 1 PLUS, resilient flooring was installed with ULTRABOND ECO 711 adhesive.

All the products mentioned in this article are manufactured and distributed on the US market by Mapei Corporation, a subsidiary of the Group.

WORLD OF CONCRETE

MAPEI SHOWCASED A VARIETY OF PRODUCTS FOR THE CONCRETE INDUSTRY AND LAUNCHED TWO NEW PRODUCT LINES IN THE STATES

1



2

3

1. Mapei Corporation had a 2400 m² stand at the 2023 edition of World Concrete.
2. Over the three days of the event, products from various Mapei lines were the focus of demonstrations that aroused great interest among trade fair visitors.
3. Sven Henrik Norman, Corporate Product Manager of the RE-CON line, demonstrated with the help of a concrete mixer how RE-CON ZERO EVO can be used to make use of returned concrete.

"This edition far exceeded our expectations". That is how Jackie James, Vice-President of World of Concrete, described the latest edition of the US trade fair dedicated to concrete technology that took place from 17th to 19th January in Las Vegas (Nevada) and totalled more than 48,000 visitors. The 2023 edition also boasted a high number of exhibitors (around 1,500) from 120 countries, who showcased their latest products and solutions over an exhibition area of more than 65,000 m².

Plenty on offer

For Mapei Corporation, one of the Group's North American subsidiaries, World of Concrete has long been an important event and, once again this year, it had a 2400 m² booth at the exhibition including a large area reserved for product demonstrations inside the centre. The company used the event to showcase Mapei products for various realms of the building industry, such as its ULTRATOP LOFT range of one-component cementitious pastes for decorative floors; MAPECOAT DECK acrylic-based systems for waterproofing and finishing roofs, balconies and pedestrian paths, which are distributed on the US market by Mapei Corp.; injection products for waterproofing and soil-conditioning products developed by the Mapei Underground Technology Team (UTT) for underground works; products for repairing concrete from the PLANITOP range; structural strengthening systems from the MAPEWRAP and CARBOPLATE ranges; and polyurethane sealants from the MAPEFLEX range.

The public at World of Concrete 2023 saw these products "at work" thanks to entertaining demonstrations by the Mapei team led by Sam Biondo, the official "presenter" of Mapei Corp., who took questions and gave tips for the public to highlight their benefits in terms of use and performance.

A multi award-winning product

Also in the spotlight was PLANITOP 3D, a mortar/ink developed by Mapei Corporation's Research & Development Laboratories in partnership with the supplier of Black Buffalo 3D printers. The product, which allows for the cost-effective and time-saving construction of residential units using 3D printing, was the focus of a presentation led by Kevin Smith, Mapei Corp.'s Concrete Restoration Systems' Director of Product Development/Management & 3D Building, and Peter Cooperman, Black Buffalo 3D's Chief Marketing Officer, about building homes for the non-profit organisation Habitat for Humanity. The product, which has also been awarded ICC- ES - AC509 certification for 3D automated construction for concrete walls, earned Black Buffalo 3D the Global Innovation Award from the North American Home Builders Association (NAHB).

Two product lines 'land' in the USA

The 2023 edition of WOC was the setting for the launch of two Mapei product lines in the United States: one dedicated to fibers and Concrete Floorsing Solutions presented by Marco Paparella, Corporate Product Manager of the Fibers range, and the RE-CON range designed to reduce the environmental impact of concrete by reducing the amount of water and cement used, reusing returned concrete and washing concrete mixers in a more sustainable way. To illustrate the advantages of this latter range, a concrete mixer was brought into the centre of the demonstration area: placing bits of returned concrete into the mixer together with RE-CON ZERO EVO admixture, the audience was shown how returned concrete can be converted into reusable aggregates for new mixtures.

WHAT THEY HAD TO SAY....

Gerald LaPier
Director of Concrete Admixtures, Mapei Corporation

We have tapped into the US market's need to manufacture more durable concrete floors, and Mapei's broad portfolio of fibers can meet this demand very effectively. We work in synergy with the sales force to convince our customers to switch from conventional metal reinforcement to fiber-reinforced concrete. It's all about 'educating' customers and construction companies about the benefits of fibers in terms of durability.

Sven-Henrik Norman
Corporate Product Manager, RE-CON line

We have recently launched the RE-CON range in the United States, where some concrete manufacturers, such as United Ready Mix LLC in Colorado, have begun conducting large-scale tests on our products at their plants with the aim of optimising the handling of returned concrete.

THE INTERNATIONAL SURFACE EVENT

The International Surface Event

SPOTLIGHTING MAPEI SYSTEMS FOR BONDING RESILIENT MATERIALS AND COMPLEMENTARY PRODUCTS FOR INSTALLING CERAMIC TILES

ABOVE. The Mapei Corporation's booth at TISE 2023 was awarded the "Best in Show" prize by *Tile Magazine*.

20,000 professionals from the building industry gathered at Mandalay Bay Convention in Las Vegas from 31st January 2nd February for TISE, an event comprising three trade fairs: Surfaces, an exhibition focused on various types of floor and wall surfaces; StonExpo/Marmomac, a US trade fair for stone products and technologies; and TileExpo, an exhibition for the ceramics industry. Thanks to this synergetic combination, the public got the chance to find out about innovations and trends from 'neighbouring' sectors, all on the same days.

The opportunity was also seized, as has been the case for several years now, by Mapei Corporation, one of the Group's North American subsidiaries, which showcased its wide range of products and systems for installing ceramic, stone and resilient coverings. An exceptional showcase: the company booth won the "Best in Show" award that *Tile Magazine* presents to the most creative and effective displays.

At the centre of the booth, a large 2000 m² area was dedicated to demonstrations: a team of experts, led by Sam Biondo, demonstrated to the public how to use Mapei products and just how effective they are.

Products for resilient materials and ceramics

The undisputed star attractions were the products for the installation of different materials: for example, the ULTRACOAT RENEWIT SYSTEM 4 LVT range, distributed on the US market by Mapei Corp., and SHOWER SYSTEM 4 LVT (also available on the international market) for installing LVT on floor and wall surfaces, including on the walls of showers.

For the installation of ceramic and stone materials, in addition to a wide range of adhesives and grouts for joints, the MAPELEVEL EASY SYSTEM was also on display. It is also distributed on international markets and designed to help installers level out any unevenness between tiles.

Mapei also captured the attention of the trade fair for its commitment to sustainability: Brittany Storm, Sustainability Manager of Mapei Corp., by using videos and captivating graphics showed the various projects and initiatives that the company has developed to make its processes and products more sustainable.

MyPlant&Garden 2023

AN EXHIBITION IN MILAN FOCUSED ON LANDSCAPING AND SPORTS SURFACES

Functional, sustainable and beautiful spaces. MyPlant&Garden, the gardening and landscape expo held in Milan from 22nd to 24th February, transformed 45,000 m² of the FieraMilano Rho exhibition centre into an enormous garden, with a full, 360° range of green solutions, from articles for the home to cultivation, from gardens to cities, from sports surfaces to landscapes, and from green infrastructures to slow mobility.
Mapei presented its portfolio of solutions for the world of landscape architecture and urban design, such as architectural stone paving and surfaces for different sports, from paddle courts to golf courses. And the world of golf was the focus of a dedicated convention organised by the company on 22nd February, “When a green is really green. Managing a golf course with sustainable innovations”. Sustainability and durability were the focus of all the proposals, with solutions developed to last a long time and to have the lowest impact possible on the environment.

Urban design, sports surfaces and golf courses

Mapei offers designers, particularly landscape architects, a complete range of solutions for paving and coating cycle lanes, piazzas, recreation and play areas and areas subjected to vehicle traffic.
Colour and creativity for urban surfaces are assured through the use of MAPECOAT TNS EXTREME two-component water-based acrylic finish: used to form a durable, coloured coating on surfaces, it allows designers to let their imagination run free and create true works of urban art.
For high performance multipurpose sports surfaces there is MAPECOAT TNS MULTISPORT COMFORT, a highly elastic multi-layered system made from acrylic resins in water dispersion and selected aggregates. It is used to form attractive, flat, seamless and highly functional surfaces.
The exhibition was also the occasion to present solutions for golf courses such as MAPESOIL GF powdered hydraulic binder, thanks to which it is possible to create drainage layers for golf courses. MAPESOIL GF was recently chosen by Montecchia Golf Club in Northern Italy, a symbol of Italian excellence in the international golfing world, where it was introduced to upgrade the drainage properties of all the bunkers placed along and around the 27 holes at the club. More than 3,000 m² of pervious surfaces that enables water to be recovered from the course, all in the name of environmental sustainability.

Two new grouting mortars for architectural paving

The architectural stone paving line has a portfolio of durable and sustainable solutions compliant with current standards and suitable for any type of paving: from stone to terracotta, right up to self-locking pavers.
Following the launch of the new MAPESTONE GR ECO, a cement and lime-free mortar formulated with natural fibres made from apple waste and mineral aggregates, the range has now been extended with the introduction of two new sustainable products, ideal for piazzas, gardens and parks:

- MAPESTONE GR7 pre-blended grouting mortar made from natural fibres, specific aggregates and inorganic Pozzolan-reaction materials rich with amorphous silica for grouting architectural stone paving suitable for pedestrian and light vehicle traffic;
- MAPESTONE GR-ECO FILL pre-blended mortar made from natural fibres, specific aggregates and inorganic Pozzolan-reaction materials rich with amorphous silica for grouting very thin joints in architectural stone paving made from self-locking pavers, terracotta bricks, porcelain or natural stone for pedestrian and light vehicle use.

Mapei well-known solutions for pervious stone paving were also in the spotlight, such as MAPESTONE JOINT polyurethane resin, which can be applied both on loose bedding (MAPESTONE JOINT CUBE) and bound bedding (MAPESTONE JOINT SLAB).
The exhibition also showcased products from two Mapei Group subsidiaries: Profilpas' systems for installing raised surfaces and Vaga's products for urban and sports surfaces, ranging from ECO DRENO and DRENO draining concretes for cycle paths, footpaths and car parks to systems for sports surfaces and the new high-performance eco-friendly aggregates.

Mapei solutions for urban and sport surfaces were in the spotlight at MyPlant & Garden 2023.

by **Alessio Chiusso**

Golf courses: how to measure their quality

IMPORTANT CONTRIBUTION FROM MAPEI WITH THE CREATION OF DRAINAGE LAYERS TO KEEP PLAYING SURFACES OPEN AT ALL TIMES

What would you say are the main characteristics of a truly sustainable golf course?
The starting point is the design of the course which can give quite significant advantages for the future management of a golf course.
There needs to be a good sublayer to create the best growing conditions for the grass. An efficient drainage system is essential to prevent puddles forming and to recover at least a part of the water, and Mapei is proposing some interesting solutions in this regard.
The irrigation system should be designed in such a way that it wets the course in a more precise manner and with lower volumes of water. It is important to choose types of grass and plants suitable for where the course is located. Where possible, grassy areas are being converted, using new varieties of grass that are more resistant to heat and drought, grass that is able to recover more quickly and take care of itself better in difficult conditions.
Golf clubs are more and more often using natural fertilizers, which tend to be more targeted according to what the grass actually requires.
To bring all these efforts together and make sure they work correctly, golf clubs employ professional figures such as greenkeepers or superintendents, which in recent years have become far more knowledgeable thanks to the training opportunities offered by organisations such as AITG, the Italian Association of Golf Technicians, and FIG, the Italian Golf Federation.

How do you measure the quality of a green?
If a green is well constructed, in line with the parameters of the USGA (United States Golf Association), and then maintained correctly over the years, it can have an average lifespan of more than 25-30 years.
It is very important to use the analysis of the soil as the primary point of reference, and this allows us to carry out targeted interventions and calibrate the fertilizer into the right doses.
The most serious problems often occur in the sublayer rather than at the surface. In most cases, the grass surface is made up of varieties of Agrostis stolonifera.
The foundations for a good quality green are:

- Ensuring it has good drainage and well aerated soil with the right area/water exchange;
- Guaranteeing the grass has deep, healthy roots;
- Having a balanced fertilisation regime targeted according to suit actual needs;
- Using more resistant and better performing varieties of grass;
- A reduction in the presence of felt that could potentially be the source of harmful pathogens;
- Ensuring the grass has the appropriate density and that the surface is regular and even;
- Carrying out all the prescribed routine and non-scheduled horticultural practices on a regular basis;
- Cutting the grass with a suitable mower with the right number of blades.

How have new products and technologies changed the approach to constructing and managing golf courses?
As far as golf course construction is concerned, we now have increasingly accurate instruments available and courses are fully mapped out using GPS.
When it comes to products, the trend now is to use materials derived from the civil engineering sector. Mapei is making an important contribution in this field with the production and creation of sublayers that can drain off large amounts of water so that the playing surface can remain open at all times, even in bad weather.
Irrigation is becoming more and more “technological” and is managed using control units and software that measure the level of moisture in the ground, which helps prevent wasting water and energy.

How does your association support the professional development of its members?
For many years the AITG, or Italian Association of Golf Technicians, has placed a lot of emphasis on training for its members.
Members have the chance to take part in two days of meetings per year, when they can listen to numerous interventions from technicians and companies operating in the sector, see previews of the best and latest developments on the market and hear about the latest changes to legislation.
AITG has always worked closely with the Italian Golf Federation and other golf associations from Italy and other nations and takes part at numerous sector exhibitions and events (MyPlant&Garden is just one such example), extending and spreading its range of actions and level of knowledge.

Alessio Chiusso. Vice President and Advisor for Course Management Division, AITG (Italian Association of Golf Technicians)

WHEN A GREEN IS REALLY GREEN

A CONVENTION ON THE SUSTAINABLE MANAGEMENT OF GOLF COURSES

How should a golf course be managed so that sustainability is the central theme? This was the topic discussed during the “When a green is really green” convention organised by Mapei on 22nd February at the MyPlant&Garden trade fair in Milan. A series of professionals discussed the theme of sustainability applied to the world of golf and spoke about technologies employed to drain off and recover water, quality aggregates and the most suitable grasses to make a course really “green”.

The opening speaker was Elisa Portigliatti, Sport Line Corporate Product Manager for Mapei, who described the advantages of using MAPESOIL GF, a hydraulic binder used to create drainage layers on golf courses. Apart from having more efficient drainage (and reducing leaching of sand), mixes containing MAPESOIL GF reduce the time required to carry out routine maintenance work on bunkers by more than 40%. The system may also be connected to an irrigation system: water that permeates through the mix has passed phytotoxicity tests which means it is suitable for recycling.
Fabio Baldassari, Key Account Manager from Vaga (a subsidiary of Mapei Group), then presented the company’s eco-sustainable pre-dosed draining products:
ECO DRENO, a type of concrete that is ideal for creating surfaces which can also be subjected to light vehicle traffic, and DRENO concrete made from natural aggregates. Both products can be painted over with products from the MAPECOAT TNS line.
The floor was then handed over to Andrea Piva and Gianni Casini from Paradello Green. Andrea Piva, the company's CEO, described the performance characteristics of Innovation Zoysiagrass, a a medium-coarse bladed turfgrass developed in the United States with fine blades, good resistance to cold weather and a very soft surface.
Apart from guaranteeing optimal playability and remaining green for many months, this type of grass consumes only 40% of the amount of water compared with common bentgrass.
Gianni Casini, Grounds Manager for Paradello, rounded off the convention by touching on some of the quality parameters used to evaluate a green, such as speed, smoothness, trueness and consistency.

LEFT. Elisa Portigliatti, Sport Flooring Corporate Product Manager for the Mapei Group, hold a speech during the convention organised by Mapei on 22nd February at MyPlant&Garden trade fair.

by **Mikaela Decio**

Make the difference, one bag after another!

A PILOT PROJECT HAS BEEN SET UNDER WAY TO SALVAGE PAPER BAGS AT THE END OF THEIR LIFE CYCLE

Sustainability at Mapei is not only reflected in the great work that Research & Development is doing to optimise products with increasingly low environmental impact while maintaining high quality and durability, but also in the packaging of the products themselves.
In recent years, we have been working on replacing virgin plastic with recycled plastic, as in the case of the Mapei wall coatings range, all in drums certified with the “plastic second life” eco-label.
With circularity in mind, we are also carrying out numerous studies into the end-of-life of our products and packaging.
For the past few years, all multilayer packaging (paper/PE middle ply/paper) of powdered products has been analysed in accordance with Italian standard UNI 11743 and actual recyclability has been assessed using the Aticelca (the Italian Association that brings together technicians and experts working in the paper industry) 501 evaluation system. The UNI standard analyses both process parameters (pulping, coarse waste, flakes and adhesive particles below 2.0 mm) and product quality (sheet formation and optical inhomogeneities).
In accordance with this standard, paper packaging is treated as it would be in a paper mill: the ensuing result is then assessed to ensure every aspect of the packaging at the end of its life cycle (i.e., emptied of any dust it might contain) is compatible with current recycling processes and can guarantee a sufficient yield in terms of recovered fibers to make it useful for making new paper.

Paper packaging waste (amongst the most abundant in Europe) is recovered rather than lost with circularity in mind

A virtuous example of circularity
All of Mapei multilayer packaging was found to be class A and B, i.e. “recyclable paper” according to Aticelca classification, producing yields of up to 90% and 80% respectively, as well as very low content in terms of glue and other substances that might disrupt recycling.
Unfortunately, this kind of packaging is not salvaged yet, which is why the paper industry is deprived of many tonnes of material that could be recycled into new packaging and paper products. Multilayer bags are rarely disposed of properly, very often they are just dumped in with the undifferentiated waste.
So, after being contacted by one of the most virtuous paper mills in Northern Italy, Cartiere SACI, we started to think about a way of retrieving packaging that was classified as recyclable.
This immediately turned out to be an uphill challenge: a third party had to be found that could act as a collection centre for the packaging: so, with the help of several Mapei SpA’s departments, i.e. sales, purchasing, Research & Development and packaging, we managed to come up with a solution.
We decided to join the REC Consortium (Recupero Edilizia Circolare), a project organised by FEDERCOMATED (the Italian National Federation of Building Material Retailers). Francesco Freri, General Manager of 4Bild, is the President of the Federation and Emanuele Della Pasqua, CEO of Vaga (a subsidiary of the Mapei Group), is one of the advisors: this is the first consortium of building material retailers for the collection of building/demolition waste.
The REC consortium brings together building material retailers interested in promoting the recovery of construction&demolition (C&D) waste. Consortium retailers can set up dedicated areas called Preliminary Collection Centres (CPR), where they collect waste based on simplified 'temporary storage' procedures. This ensures this waste (amongst the most abundant in Europe) is recovered rather than lost with circularity in mind.
Moreover, this project also means lots of the retailers' customers do not have to travel as far in their lorries to the benefit of the environment.
As in the case of C&D waste, we have decided to use the same collection method for end-of-life multilayer packaging. This kind of packaging, recovered from distributors belonging to the REC consortium, will then be sorted in collection centres and sent off to the paper mill for recycling.
Thanks to cooperation along the entire chain involving the key players of the sector (REC consortium, Cartiere SACI, Assocarta, Comieco, Assografici and Gipsac, the Group of Italian manufacturers of paper packaging), we are currently launching a pilot project for the recovery of end-of-life packaging: "Make the difference, one bag after another!".
Once the project is launched, we will monitor the quantities of packaging destined for recycling: the hope is to extend this virtuous example of circularity and cooperation along the supply chain right across Italy, and later on, right across other countries.

Mikaela Decio. Corporate Environmental Sustainability Group Leader

AN AWARD FOR THE ECO-DESIGN OF PACKAGING

For the fourth year running, Mapei has been awarded a prize in the Ecopack competition organised by CONAI in the field of eco-design. Since 2014 it has been awarding prizes to Italian companies that have adapted their packaging to make it more sustainable and reduce its impact on the environment.
Mapei entered the competition presenting two best practices:

- Replacing pallet packaging sheets made of 100% virgin LDPE polymer with sheets made of 40% LDPE and 60% PCR (second life plastic).
- Replacing IBCs (intermediate bulk containers) made of 100% virgin HDPE polyethylene for holding liquids with containers made of 30% recycled polyethylene.

Mapei's entry and those from other companies were analysed using the CONAI EcoTool, which allows the effects of eco-design operations implemented by companies on packaging to be calculated based on a simplified analysis of the entire life cycle by means of a before-after comparison in terms of water and energy savings and reduction of CO_2 emissions.

CONAI
CONSORZIO NAZIONALE IMBALLAGGI

© Photo courtesy of Tom Welsh/Pritzker Architecture Prize

David Alan Chipperfield

David Chipperfield, design as civic engagement

THE BRITISH ARCHITECT, A MASTER OF SOBER AND INNOVATIVE ARCHITECTURE, WAS AWARDED THE PRESTIGIOUS PRIZE FOR 2023

“I take this award as an encouragement to continue to direct my attention not only to the substance of architecture and its meaning but also to the contribution that we can make as architects to address the existential challenges of climate change and societal inequality”. This was the first thing the architect David Alan Chipperfield had to say upon being awarded the Pritzker Prize 2023, the highest award given for architecture. The British architect will receive the award-winning medal in Athens in May, where his studio will soon begin work on the extension to the National Archaeological Museum. It should be noted that Chipperfield will be receiving the same award Norman Foster and Richard Rogers were conferred, in whose studio he began his career after graduating.
Head of David Chipperfield Architects since 1985, he is known for his museum projects and restoration work. The jury referred to his work in the museum and exhibition sector as one of the main reasons for awarding him the prize with his “deep and sustained knowledge of the discipline” allowing him to focus on the pursuit of civic and public good. According to the jury. “David Chipperfield does his job balancing relevancy and stature. To operate anchored to the body of knowledge of the discipline of architecture requires both intelligence and modesty: to put such knowledge at the service of a given project requires talent and maturity”.
Born in London in 1953, David Chipperfield graduated from the London Architectural Association in 1977 after also attending Kingston School of Art. In 1985 he founded David Chipperfield Architects with offices in London, Berlin, Milan, Shanghai and Tokyo. The opening of the Tokyo office in 1987 allowed him to gain important commissions, such as the project for Gotoh Museum in the prefecture of Chiba. That is why the architect moved to Japan from 1988-1992, where he also designed the Toyota headquarters in Kyoto and the Matsumoto Corporation headquarters in Okayama.

Museum architecture

“While preserving a meticulous yet consistent quality of design, David Chipperfield has continually worked across a wide array of building types from public civic buildings to commercial, residential and retail structures. But from early in his career, museums have been a particular focus”.
As the jury for the prize pointed out, the first project he built in Great Britain after returning from Japan was in the museum sector: the River & Rowing Museum in Henley-on-Thames. Officially opened in 1998 and winner of several awards, this project, which focused on the relationship between a public building and its natural surrounds/urban landscape, brought the architect to the forefront of contemporary architecture. His museum projects “have always defied the notion that a museum is a place for elite culture. Over and over, he has interpreted the demands of the museum program to create not only a showcase for art but also a place interwoven with its city, breaking down boundaries and inviting the public at large to engage”. Although Chipperfield has works in both North America and Asia to his credit, it is mainly in Europe that he has demonstrated his penchant for exhibition/public facilities. It is worth mentioning the BBC Scotland headquarters in Glasgow (UK, 2007), the extension to the Kunsthaus in Zurich (Switzerland, in 2020), the masterplan for the Royal Academy of Arts in London (2018), and his project for James Simon Galerie (2018) in Berlin (Germany).
Also dating back to this period are the tricky business of the competition for the reconstruction of Neues Museum on Museum Island in Berlin that Chipperfield entered in 1993. The project drew to a close in 2009 with the opening of what is considered one of the best architectural works of the 20th century. That was followed by extensions to historic buildings such as Anchorage Museum in Anchorage (Alaska) in 2009 (when Mapei supplied the flooring products for this project), Saint Louis Art Museum in Saint Louis (Missouri) in 2013 and Zhejiang Museum of Natural History in Hangzhou (China) in 2018.
Chipperfield’s works in Italy include Mudec-Museo delle Culture in Milan, the Palace of Justice in Salerno (southern Italy), and two projects in Venice: the extension to the cemetery on the island of San Michele (2017) and, more recently - in 2022 - the renovation and requalification of the Procuratie Vecchie building dating back to mid 16th century. In Venice, Chipperfield was also the curator of the 13th International Architecture Exhibition at the Venice Biennale in 2012 entitled “Common Ground”. He is currently working on the Santa Giulia Arena in Milan that will be used to host the upcoming Milan-Cortina 2026 Winter Olympics.

His museum projects have always defied the notion that a museum is a place for elite culture

MAPEI'S CONTRIBUTION TO ANCHORAGE MUSEUM

The Anchorage Museum brings the best of Alaska to the world and the best of the world to Alaska, through a combination of art, history and science. In 2008 the museum opened its new wing (designed by David Chipperfield Architects) with a traveling exhibit called “Gold” that dazzled visitors with more than 300 gold objects.
As part of the expansion, the museum sports a dark gray cementitious floor completed with ULTRATOP ultra-fast setting, self-levelling mortar. The matte grey floor highlighted the exhibits. The project consisted of 4 floors, roughly 900 m^2 each. The specifying architects from David Chipperfield Architects wanted to have a seamless, perfectly flat, dark gray floor with a matte finish so as to not reflect exhibit lighting and thereby distract viewers' attention from displayed art & artifacts. They specified ULTRATOP Natural Gray, colored with a darker dye to obtain the desired look, which was applied on a 20 cm thick concrete slab. One of the biggest challenges the installer faced was finding a pigment that would create a dark gray color without pigment overload and without affecting the physical and installation properties of the ULTRATOP layer.
Before applying ULTRATOP in the desired shade of grey, the substrate was treated with PLANIBOND EBA, a high-modulus epoxy bonding agent, which is distributed on the US market by Mapei Corporation.

Flying start for Ambrogio Beccaria

EXCELLENT START TO THE SEASON FOR THE SAILOR WHO CAME SECOND IN THE RORC CARIBBEAN 600 REGATTA. MAPEI IS GLOBAL SPONSOR OF THE "ALLA GRANDE" PROJECT

© Martina Orsini | Ambrogio Beccaria

At 00:30 local time (5:30 Italian time) on Thursday 23rd February in a real time of two days, 13 hours, 21 minutes and 30 seconds, the "Alla Grande - Pirelli" team, whose global sponsor is Mapei, finished the RORC Caribbean 600 in the second place of the Class40 category, only 7 minutes behind the winning team skippered by Alberto Bona on board IBSA.
An excellent start to the season for the young sailor from Milan, who, as soon as he reached dry land, announced: "A wonderful second place finish. We fought all the way and made a few mistakes, but we also got a lot of things right. Sailing as a crew you learn a lot of things and I already have a lot of ideas about how to optimise "Alla Grande - Pirelli" boat, which, although still very new, turned out to be very fast!".
The fourteenth edition of the race marked the start of a new sporting season for Ambrogio Beccaria, fresh from his second-place finish at the Route Du Rhum last November.

A spectacular and tricky regatta

Organised by the Royal Ocean Racing Club since 2009, the RORC Caribbean is one of the most spectacular offshore races in the world: 600 miles around a dozen Caribbean islands. Starting from Fort Charlotte (Antigua), 71 vessels from 16 different nations divided into 8 classes started the regatta.
Ambrogio Beccaria and his team had to deal with lots of manoeuvres and tricky strategic choices during the race. In fact, the course set off northwards around Barbuda, Nevis, Saba and Saint Barth, rounded the island of Saint Martin and continued south towards Guadeloupe, circumnavigating it before heading for the last buoy off Barbuda to the finish line in Antigua.

First regatta with a crew

"It was not just my first time at the RORC, but also my first regatta with a crew on board "Alla Grande - Pirelli," so Ambrogio Beccaria told us. "I am extremely pleased with the crew that included Bernardo Zin, who knows the boat very well, Tanguy Le Glatin, who taught me how to sail properly from a technical viewpoint, and Kevin Bloch, a young sailor with an exception feel for boats, a navigator who is now in demand by many crews".

The 2023 race schedule

After completing the RORC Caribbean 600 “Alla Grande – Pirelli” will remain in the Antilles until the start of the next regatta, the Défi Atlantique, starting on 1st April from Guadeloupe. The regatta is a crewed transatlantic race in two legs: the first from Pointe-à-Pitre to Horta (Azores Islands) and the second from Horta to La Rochelle, making a total of 3,500 miles. Ambrogio will cross the Atlantic together with the sailor Alberto Riva and the man who designed "Alla Grande - Pirelli", Gianluca Guelfi.

© Martina Orsini | Ambrogio Beccaria

© Martina Orsini | Ambrogio Beccaria

IN THE FACING PAGE. On 23rd February the "Alla Grande - Pirelli" boat finished second in the RORC Caribbean 600 (Class40 category).
TOP OF THE PAGE. The “Alla Grande-Pirelli” team for the race, headed by Ambrogio Beccaria.
ABOVE. Ambrogio Beccaria and his team had to deal with lots of tricky strategic choices and manoeuvres during the race.

The next race starting on 4th June will be the Normandy Channel Race, an important two-man regatta that Beccaria won in 2022.
The yacht will then return to the ocean to take part in another prestigious regatta, the Les Sables-Horta-Les Sables (SAS) in two stages: setting sail from France to the Azores on 27th June and then from the Azores to France on 8th July.
The last race of the summer season will be the Rolex Fastnet Race, a historic crewed race that starts on 22nd July this year and will be celebrating its 50th anniversary.
The "Alla Grande - Pirelli"'s race schedule will conclude in October after competing for the first time in the legendary Transat Jacques Vabre, also known as Route du Café (Coffee Route), a transatlantic two-man race. The race, covering 4,419 miles (8,184 km) from Normandy to Martinique, is held every two years.

Sassuolo women players in nine national teams

FROM ITALY TO BELGIUM AND SOUTH AFRICA: LOTS OF SASSUOLO'S WOMEN FOOTBALLERS PLAY FOR THEIR COUNTRY'S NATIONAL TEAMS

LEFT. Benedetta Orsi plays for Sassuolo and Italy.
RIGHT. Girls from the youth team at Mapei Stadium.

Sassuolo women's football is a reservoir of talent for Italy's national teams. "As far as Italy is concerned, we are certain to see Maria Luisa Filangeri with the Italian national team", so Alessandro Terzi assured us, Women's Football Area Development Director at Sassuolo. "After being out with an injury", so Terzi continued, "Benedetta Orsi is also back in the national team for the Clark Cup, a tournament being played in England. I consider Orsi and Filangeri to be two certainties for the Italian national team: we at Sassuolo are very pleased with them".

RIGHT. Maria Luisa Filangeri plays in defence and is captain of Sassuolo.

Sassuolo also has players from other national teams. Davina Philtjens has now made over 100 appearances for the Belgium national team and continues to be one its mainstays. Lana Clelland plays in the Scottish national team. Among the players who joined Sassuolo in the summer of 2022, Refiloe Jane is captain of the South African national team that won the 2022 Africa Cup of Nations. Virág Nagy is one of the stars of the Hungary team, Isabella Kresche plays for Austria, and Evdokiya Popadinova is a regular for Bulgaria. "Moreover, in our club," so Alessandro Terzi added, "there are some bright young prospects: Lia Lonni and Melissa Bellucci play for Italy's Under 23 team and Caroline Pleidrup, a regular starter in Serie A matches, is a member of the Danish Under 23 team.

There are 232 young players registered with Sassuolo's 12 teams: from the youth team to the first team

Manuela Sciabica, born in 2006, is also in the Sassuolo squad and already scored in Serie A and for Italy's Under 19 team. Yoana Stankova plays for Bulgaria's Under 19 team and Barbora Vargova for Slovakia. "Other players at the club who have been picked for Italian age-group teams (Youth team and U17s) include Erica Di Nallo, Emma Girotto, Manuela Perselli, Alessia Gugliemini, Gloria Milani, Marika Picchirallo, Francesca Randazzo and Caterina Venturelli ", so Terzi noted.

A RECENT DEVELOPMENT

Sassuolo has not had female teams for very long, so having so many players in national teams is a great achievement. Sassuolo's Serie A team managed by Gianpiero Piovani is not doing as well as in previous seasons. "In the world of sport, every season is different from the one before and the one after", so Terzi explained. "Each season has its own story to tell with different protagonists and situations emerging. The girls of the 2022-23 Serie A team are different from those of the previous season. They need to be given time and peace of mind to take in what the team manager wants and to get to know each other properly so they are really in synch on and off the pitch". Sassuolo was busy on the transfer market in summer 2022. "We need to be patient before pass judgement on our new signings. You have to wait and work with enthusiasm: in June we will draw our conclusions. All the girls are working hard to improve, showing maximum commitment every day".

More than just sport: the club also provides educational support and career guidance

Terzi does not want to single anybody out. "The group comes before any individual player. We have had some tricky moments and once again football has shown that you have to play as a team to overcome these difficult moments."

ELITE GIRLS

The club is particularly proud of its young girls: "They always do well in a very demanding league championship. They are a very young team compared to their opponents, but they always take the initiative and have the same playing philosophy as the Serie A team. The Under 19 players managed by Davide Balugani are progressing well", Terzi added. In addition to the Serie A team, Sassuolo has 11 youth teams in various categories from the girls' team to players born in 2017. The Under 17s and Under 15s qualified for the inter-regional round of their respective championships and we will see if we can reach the national finals again this year. A lot of training is being done by our Head of the Women's Youth Sector, Riccardo Soragni, and the Sassuolo staff who train our players of the future on a daily basis."

PLAYING AND STUDYING

Do all the women's first team and youth team girls live in Sassuolo? How do you help those who study? "Lots of girls continue their academic education. Up to the Under19s category they attend school in the mornings and train in the afternoon. Our club also provides study support with the help of teachers who provide educational support and careers guidance. Plenty of attention is obviously focused on those who have decided to live away from home to concentrate on football. First-team players train in the mornings, so some of them dedicate their afternoons and free time to university studies. For example, Maria Luisa Filangeri and Martina Brustia are recent graduates in sport science and economics, respectively.

HEADING FOR 300

There are 232 female players registered to play for Sassuolo's 12 teams, training and playing in Sassuolo and Reggio Emilia (Central Italy). "The first team's goal is to finish in a high enough position in the league to help the group develop, a good starting point from which to build next season. As regards the youth teams, I never talk about league positions, we are all more focused on how we play and the skills the girls can learn to get them to first-team standards. We have noticed that the number of young female players increases every year: that means they love and enjoy the game and that our managers can keep them entertained both on the pitch and with their schoolwork. A good sign for the future", so Terzi added.

Cadel Evans Great Ocean Road Race

2023 WAS A YEAR OF FIRSTS FOR THE RACE AND MARKED THE 7TH EDITION SPONSORED BY MAPEI AUSTRALIA

The Cadel Evans Great Ocean Road Race is the first of its kind in Australia and has become part of Australian cycling history since 2015, when spectators took to the streets of Geelong in 2015 for the last chance to see Australia's most decorated cyclist compete before retiring from professional cycling.
Cadel Evans is the only Australian to have won the Tour de France. He joined the Mapei Professional Cycling Team back in 2002 and continued to train at the Mapei Sport Research Centre in Italy, under the guidance of Professor Aldo Sassi (the Centre's former Director), who was an integral part of Cadel's cycling career. Cadel also won the UCI Road World Championships in 2009 in Mendrisio (Switzerland). Mapei's relationship with him continues to this day and the company has been a Main Sponsor of the Cadel Evans Great Ocean Road Race since its inception.

The 2023 edition of the race

The Cadel Evans Great Ocean Road race has been rapidly embraced at a local and international level as an outstanding competition and spectator experience. It returned this January, after a two-year break due to Covid-19, welcoming more than 100,000 cycling fans to the Geelong, Bellarine Peninsula and Surf Coast regions across the three days, enjoying two races in the UCI WorldTour Men's Elite Road Race and Deakin University Women's Elite Road Race, as well as the VEGEMITE Family Ride and TAC People's Ride participants.
2023 was a year of firsts for the race: a new star emerged in Loes Adegeest, edging out Australia's Amanda Spratt in a two-rider sprint to collect her first WorldTour win and the 7th edition of the Women's Elite race.
In the Men's Elite race, emotions ran high as Marius Mayrhofer crossed the line in his maiden WorldTour win, after he battled wet and windy conditions throughout the 176 km course.

The starting line of the 2023 Cadel Evans Great Ocean Road Race.

498 guests hosted by Mapei Australia

This year, in Geelong, Mapei Australia welcomed 498 guests to the Mapei Hospitality Suite on Saturday and Sunday to enjoy the Cadel Evans Great Ocean Road Race. The suite was situated on the Start/Finish line: the perfect spot to enjoy the race and take in the atmosphere of the event. Guests enjoyed the opportunity to watch the Women's and Men's elite riders as they crossed the finish line. Customers braced themselves as they travelled the twists and turns of the course in dedicated Mapei pace cars, leading the riders as they travelled the course. In the venue, Mapei guests had the opportunity to meet Cadel Evans (and take a photo with him), along with several sporting heroes, including Loes Adegeest, swimmer Mack Horton, and current cyclist Simon Clarke. For those who participated in the people's ride, Cycling Sports Commentator Matt Keenan joined the group, giving them his insights on the races.

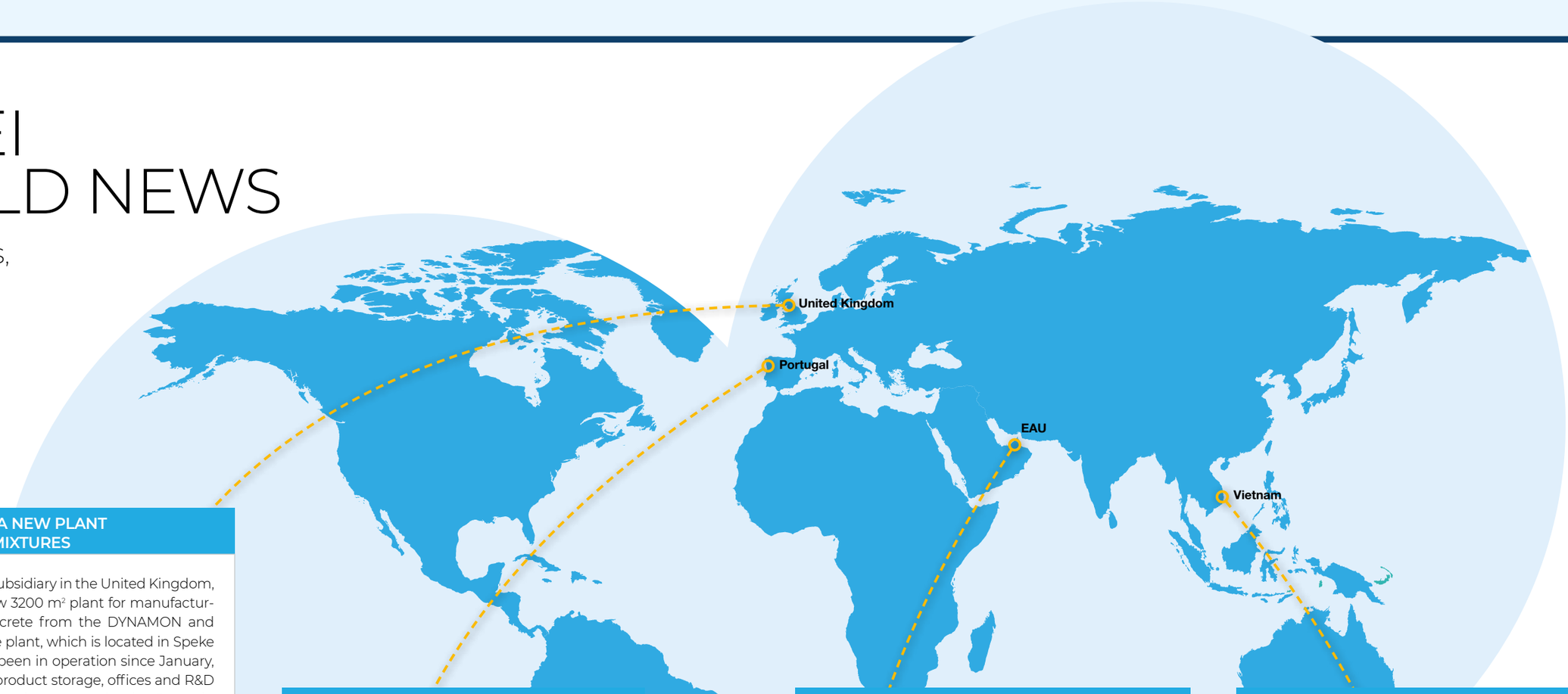
SPECIAL LIFETIME ACHIEVEMENT AWARD TO THE SQUINZI FAMILY

The Squinzi family, owner of the Mapei Group, received the Special Lifetime Achievement Award for excellence and leadership in promoting global cycling. The awards ceremony, part of events for UN World Bicycle Day, was held at the Ernesto Colnago Collection Museum, near Milan, on 9th February.
The award was presented to the Squinzi family because their direct involvement and commitment to cycling has helped raise world cycling to a higher level, making it a launch pad and contemporary business model for all teams and clubs. Ties with the world of cycling stem from a deep love of the sport on the part of first Rodolfo Squinzi, founder of Mapei, and then his son Giorgio, former CEO of the Mapei Group.
Mapei entered professional cycling in 1993 and the following year the team was already at the top of the rankings. Today, Mapei is still closely involved in cycling: since 2008, the company has been the Main Sponsor of the UCI - Union Cycliste Internationale - Road World Championships and every year it sponsors numerous Italian and international competitions.


ABOVE. The Squinzi family received the award from Ernesto Colnago, a racing bike manufacturer and UN World Bicycle Day Ambassador.

MAPEI WORLD NEWS

EVENTS, AWARDS, AND INITIATIVES BY THE GROUP'S SUBSIDIARIES



UNITED KINGDOM - A NEW PLANT FOR CONCRETE ADMIXTURES

Mapei UK, the Group's subsidiary in the United Kingdom, can now count on a new 3200 m² plant for manufacturing admixtures for concrete from the DYNAMON and IDROCRETE ranges. The plant, which is located in Speke near Liverpool and has been in operation since January, also includes space for product storage, offices and R&D activities. "This is a further investment by the Group in the UK market, which will allow us to expand our product range, as well as reduce delivery times and the environmental impact of our operations", so Phil Breakspear noted, Managing Director of Mapei UK.

PORTUGAL – BEST BRAND IN THE CHEMICALS FOR BUILDING INDUSTRY

Lusomapei was judged to be the No. 1 Brand in Portugal in the chemicals for the building industry category at the 9th edition of the 'Escolha dos Profissionais' (Professionals' Choice) award. The award is based on a certified system that assesses the level of satisfaction of brands based on qualities appreciated by consumers. Professionals with experience in decision-making for purchasing and usage decisions were in charge of the judging process. During the awards ceremony held on 11th January, Carla Santos (in the photo, centre), General Manager of Lusomapei, said: "We are proud of this award, which encourages us to grow in the right direction."

UNITED ARAB EMIRATES – AN AMATEUR FOOTBALL TOURNAMENT FOR MCC

Twenty-three football teams made up of clients of Mapei Construction Chemicals (MCC) and the MCC's own team competed in an amateur football tournament in Dubai on 19th February. Each team had five players and faced their opponents under the watchful eye of professional referees. The tournament was won by the team representing the Isam Khairi Kabani Group (in the photo) with SAS Express and Leaders Fort finishing second and third.
This was an opportunity for MCC to strengthen its ties with people working in the industry in a fun team-spirited way.

VIETNAM - MAPEI IS GOLD SPONSOR OF RUN FOR THE HEART 2023

"Run for the Heart 2023", a fundraising event to pay for surgical operations on children suffering from heart disease, was held on 12th February. The event included a running race in Celadon City, an urban area belonging to Ho Chi Minh City. 10,000 people took part in the race and raised over 214,000 euros that will go towards paying for operations on 193 children suffering from congenital heart diseases. Mapei Vietnam, the Group's local subsidiary, got involved as a Gold Sponsor of the event, also contributing to other charity side events such as the Days Virtual Run and World Heart Day Challenge.

QUESTIONS & ANSWERS

MAPE-ANTIQUE NHL **ECO RESTAURA** BY MAPEI IS THE MOST DURABLE AND INNOVATIVE SOLUTION FOR **HISTORIC STRUCTURES** AND **GREEN BUILDING**

by **Daniele Sala**

Restoration work using lime: multiple applications with one product

Respect for the environment and sustainability are fundamental requisites of the modern building sector. Adopting a sustainable approach to design means minimising the impact of new buildings on the environment with regards to construction methods and energy performance, but also striving to obtain the maximum efficacy and durability from technical solutions used for restoration and refurbishment work on existing buildings, including those of historical and architectural interest.
With the introduction of the MAPE-ANTIQUE NHL ECO range, Mapei shows its commitment once again to supplying designers, contractors, users, and clients with innovative solutions that have a low impact on the environment, embodying the concepts of eco-compatibility and sustainability. The mortars in this range are specially formulated to have a high content of recycled materials and are produced using materials with very low emission of volatile organic compounds. Another important element that denotes the direction Mapei has taken is its decision to use recyclable paper and cardboard packaging for this product, as testified by the Aticelca (the Italian association of technicians and experts working in the paper industry) logo printed on the bags.
Mortars from the MAPE-ANTIQUE NHL ECO range are 100% cement-free and made from pure natural hydraulic lime, with the ability to provide long-lasting solutions to all those problems normally associated with masonry buildings, including masonry of important and listed structures.
Sustainability also means managing site activities with more awareness and in a simpler way, thanks also to the use of fewer materials which considerably reduces the amount of waste produced: the versatility of these materials, therefore, also becomes an important element of sustainability in building work. And MAPE-ANTIQUE NHL ECO RESTAURA is a mortar that can be used for three different types of application, a perfect example of this philosophy.

Why should you choose MAPE-ANTIQUE NHL ECO RESTAURA?
Its strength is its versatility: MAPE-ANTIQUE NHL ECO RESTAURA is a multipurpose mortar recommended for refurbishing and levelling off substrates, render and mineral-based coatings on all types of buildings, including those of historical and architectural interest.

Rebuilding masonry.

Repairing renders.

Skimming old substrates.

Repairing construction features.

This mortar can be applied in layers from 3 to 30 mm thick in a single application, making it a valid solution for a host of problems typically encountered on façades, such as repointing and rebuilding substrates on masonry walls, and for partially or totally repairing render and skim coats, including those with old paintwork, thereby avoiding having to resort to demolishing heterogeneous substrates.
In addition, MAPE-ANTIQUE NHL ECO RESTAURA has excellent breathability which means it can also be applied to create skim coats in dehumidifying systems.

What are the advantages of using this product on site?
Thanks to its versatility, it can be used for a multitude of applications, so contractors require fewer materials when working on site, thereby facilitating site logistics and reducing costs. Also, thanks to its excellent workability, it is quick and easy to apply and gives guaranteed results because it is also highly compatible with all types of masonry (brickwork, tuff, stone and mixed masonry).
In addition, it is possible to embed alkali-resistant (A.R) glass fibre mesh such as MAPETHERM NET or MAPENET 150 in the mortar where required, which means MAPE-ANTIQUE NHL ECO RESTAURA can also be used to skim and level off the surface of existing render and areas of refurbished render.
Whatever type of application it is used for, the surface of MAPE-ANTIQUE NHL ECO RESTAURA may be finished off with hand tools such as a plastic, wooden or sponge float or with a power-float just a few hours after application, depending on the surrounding temperature and weather conditions.
Once applied, the surfaces may be painted or coated with a coloured, silicate-based (SILEXCOLOR range) or siloxane-based (SILANCOLOR or SILANCOLOR PLUS range) product, or with any other type of coating material.

Who is MAPE-ANTIQUE NHL ECO RESTAURA aimed at?
It is a product aimed at all professionals from the building sector: designers from the green building sector, but also designers working on historical buildings, in that all the products from the MAPE-ANTIQUE NHL ECO range are cement-free and made from pure natural hydraulic lime, compliant with restrictions often imposed by Local Heritage bodies. Thanks to the growing awareness of environmental issues, these products are increasingly in demand by contractors working on both small and large-scale sites, so easy to find from building products distributors.

Why choose Mapei?
Mapei has always been synonymous with quality, innovation and experience. We guarantee full support during every executive phase, thanks to the widespread network of specialists working on every type of site and at every level. What is more, for Mapei, training and awareness of environmental issues are crucial. Therefore, the company is making increasingly significant investments into training activities and Research and Development work focused on sustainability.

Daniele Sala. Restoration systems for historical buildings, Mapei SpA (Italy)

PRODUCTS IN THE SPOTLIGHT

WATERPROOFING FOUNDATIONS, CLEANING RESIDUES FROM CERAMICS, ENHANCING THE WORKABILITY RETENTION OF CONCRETE

1

Plastimul High Flex Plus

FOR WATERPROOFING BELOW-GROUND STRUCTURES

Multi-purpose, ready-to-use, water-based bituminous membrane, which is used for waterproofing roofs and foundations. It can be applied on concrete and cementitious screeds, existing bituminous membranes, and metal. It is versatile, resistant to UV rays, and highly flexible with excellent crack-bridging properties. It has a thixotropic consistency and is easy to apply on sloping and vertical surfaces.
PLASTIMUL HIGH FLEX PLUS forms an elastic coating which does not re-emulsify after being immersed in water for long periods of time. It meets the requirements of EN 15814 for waterproofing coatings used below-ground and is certified for use as a passive barrier to radon gas.

2

Ultracare Acid Cleaner

FOR CLEANING CERAMICS AND REMOVING RESIDUES

Concentrated acid-based cleaner in liquid form to remove stubborn cementitious grout residues from glass mosaic, ceramic and acid-resistant natural stone.
It is used to clean internal or external surfaces (including façades) that have been grouted using cementitious grouts and is ideal for cleaning after installation and to remove salt and limescale efflorescence.
ULTRACARE ACID CLEANER is also suitable to remove rust stains and engobbio from porcelain and ceramic material.
It is truly multi-purpose thanks to its acid formulation and can be used in many dilutions depending upon the specific type of use.

3

Re-Con AGG 100

FOR A LONGER WORKABILITY RETENTION OF CONCRETE

Liquid admixture, developed to mitigate absorption of water and superplasticizers in concrete aggregates, often caused by porosity (recycled concrete aggregates), high surface area (sand with high levels of fines) or contaminations like swelling clays or free mica in fine aggregates. When used in combination with a superplasticizer from the DYNAMON range, RE-CON AGG 100 allows a longer workability retention of the mix, thus improving the performance of superplasticizers and guaranteeing the water/cement ratio that was previously set. It may be used to produce any type of ready-mix concrete, with higher levels of demanding aggregates without the increase of water and cement in the mix design.

ReStelvio MAPEI 2023

SUNDAY, 9th JULY

organized by: USB BORMIO

+ STELVIO × TUTTI

E-BIKE RIDE WITH A DEDICATED START GRID

Thanks to: Parco Nazionale dello Stelvio

BORMIO - STELVIO PASS

8.50 A.M. **21 KM RUNNING RACE**
(only open to members of FIDAL and promotional associations)

9.00 A.M. **RUNNING EVENT OPEN TO ALL**

9.10 A.M. **NON-COMPETITIVE E-BIKE RIDE WITH A DEDICATED START GRID**

9.15 A.M. **RE STELVIO - MAPEI COMPETITIVE CYCLE RACE 38TH EDITION**
(for FCI's and Italian National Cycling Commission' members only)
Start for the Women's Cycle Race

9.30 A.M. **RE STELVIO - MAPEI COMPETITIVE CYCLE RACE 38TH EDITION**
(for FCI's and Italian National Cycling Commission' members only)
Start for the Men's Cycle Race

AFTERWARDS **"ALDO SASSI" MEMORIAL BIKE RIDE**
(for all those interested, alongside champions of the former Mapei Professional Cycling Team and other sport VIPs)
TWINNED WITH "PEDALA CON ALDO"

1.30 P.M. **TIMELIMIT FOR ALL PARTICIPANTS**

4.00 P.M. **PRIZE-GIVING CEREMONY IN BORMIO SPORT CENTRE**

A FREE TRAINING SCHEDULE FOR RUNNERS AND CYCLISTS IS AVAILABLE FROM: **www.mapeisport.it**

COURSE

A 21.097 km climb from BORMIO (1,225 m a.s.l.) to the STELVIO PASS (2,758 m a.s.l.)
Difference in level: 1,533 m.

STARTING LINE: VIA AL FORTE (BORMIO CITY CENTRE)
RETURN FROM STELVIO PASS TO BORMIO
STARTING FROM 2.00 P.M.

ENTRIES

FROM MARCH 1ST TO JULY 6TH
at the web site **www.usbormiese.com** or else at the Unione Sportiva Bormiese headquarters, Via Manzoni, Bormio
Maximum amount of entries: 3,000

Entry fee:
50 euros, for entries from 1ST March to 1ST June
60 euros, for entries from June 2ND to July 6TH

The fee includes:
- **Re Stelvio-Mapei jersey, which you are kindly requested to wear**
- Clothes transport service up to the Stelvio Pass
- Refreshment points alongside the course and at the finish line
- Shuttle bus service from the Stelvio Pass to Bormio (for athletes)
- Pasta Party in Bormio
- Commemorative medal
- Photo and race certificate, both available and downloadable
- Personal race time

N.B. Free entry on the website www.mapei.it for Mapei customers using their customer code and for readers of Realtà Mapei using their Realtà Mapei code

HOTEL INFO

Phone: +39 0342 903300
booking@bormio.eu
www.bormio.eu

LIMITED NUMBER MAX. 3000 PARTICIPANTS

With the support of Regione Lombardia

Pedala con Aldo · MAPEI · MAPEI SPORT

bormio the wellness mountain

QC Terme Bagni di Bormio · Banca Popolare di Sondrio · Parco Nazionale dello Stelvio / National Park Stilfser Joch · trudi · Pedranzini Bormio Alta Valtellina