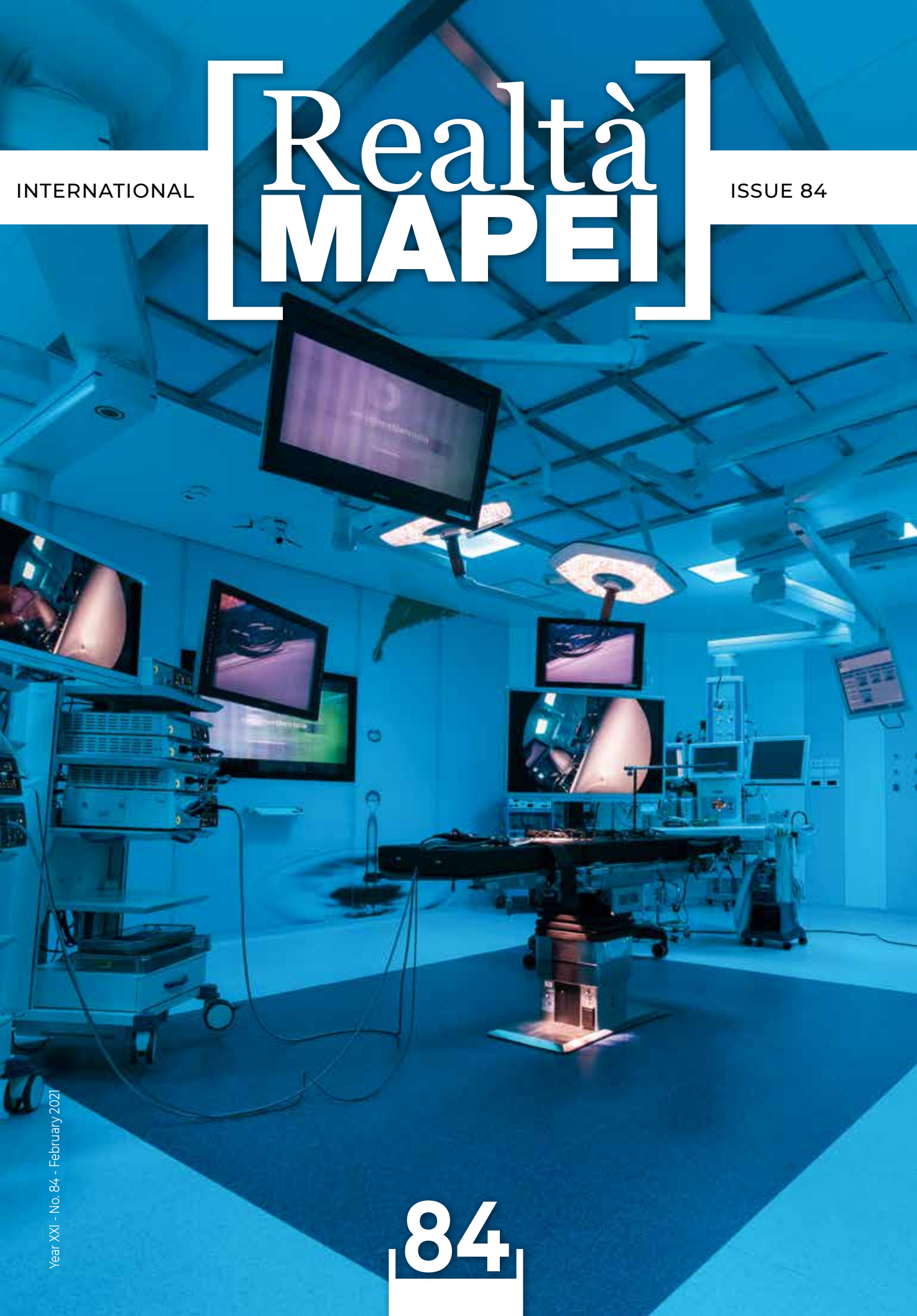
INTERNATIONAL

Realtà MAPEI

ISSUE 84



Year XXI - No. 84 - February 2021

84

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

Building for healthcare: not only in emergencies

It is now a year since the pandemic that has overwhelmed the entire world first broke out. To help repair the socio-economic damage caused by the effects of Covid-19, the European Union has launched a recovery program to emerge from this crisis and lay the foundations for a more modern and sustainable Europe. Each individual country is setting down its own agenda based on designated priorities. The stimulus package includes resources to be allocated to various industries, including infrastructure and health care. The latter is a particularly important: Spain, for example, is planning to focus a considerable share of its spending on healthcare and so has Italy. In this realm (as well, of course, in the digitalisation of health care and medical services), the goals are not just to make buildings more reliable and efficient (vital work because it is linked with seismic risks in Italy and other countries), but also to construct new hospitals, modernise "old" facilities and boost local health care.

WE ARE CONTINUING WITH OUR PRESENTATION OF MAPEI SOLUTIONS FOR MAKING HOMES MORE COMFORTABLE AND SAFER

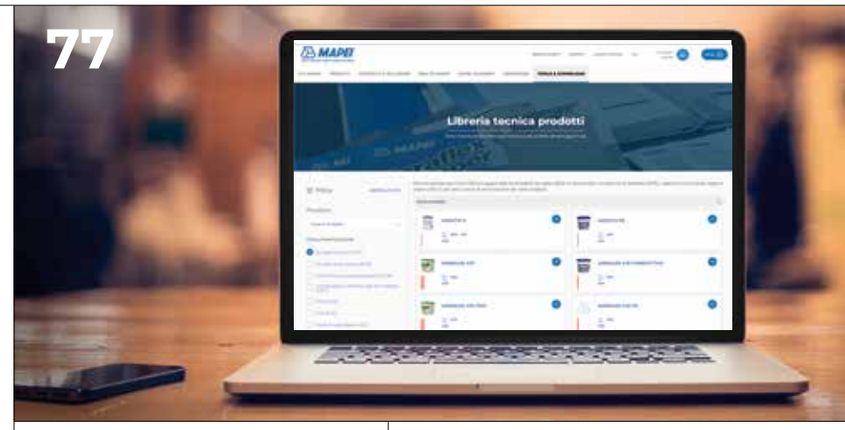
In this issue of *Realtà Mapei International* we will continue with our pre-sentation of Mapei solutions for making homes more comfortable and safer, focusing particularly on the systems used for seismic upgrading purpose.

The teamwork section focuses on India. This subsidiary of Mapei has two reasons for celebrating: its 10th year in business and the laying of the first stone in the construction of a third manufacturing plant in this gigantic country (one of the worst affected by the pandemic), which has set under way an ambitious five-year plan (2020-2025) of investments (1,798 billion US dollars) in infrastructure and major works.

There are also lots of other interesting items about Mapei's involvement in sport, social responsibility work and culture.

Enjoy your reading.

SUMMARY



IN THE SPOTLIGHT

Ultrabond Eco V4 SP p. 15, Ultraplan Eco p. 17; Mapelastic Aquadefense p. 23, Ultrabond Eco VS90 Plus p. 25; Mapecoat ACT 196 p. 27, Planitop HPC Floor p. 38, Planitop Intonaco Armato p. 49, Mapeplan TU S p. 58, Products showcase p. 80

Cover story
This issue encloses a special section on Mapei solutions used in healthcare facilities. (see p. 4-31).

Editor in chief
Guido Palmieri

Editorial contributors and English translation
Martyn Anderson, Nicholas John Bartram, Federica Pozzi, Tiziano Tiziani, Federica Tomasi, Alessandro Brambilla

Production and editorial coordination
Metella Iaconello

Social media
Francesca Molteni

Graphic designer
Barbara Mennuni

Printed by
Rotolito SpA - Pioltello (Italy)

Published by
Mapei SpA
Via Cafiero, 22 - 20158 Milan (Italy)
Tel. +39/02/376731 - Fax +39/02/37673214
website = www.mapei.com
E-mail = realtamapei@mapei.it

Realtà Mapei
Registered by the Tribunal of Milan n. 363/20.5.1991

Realtà Mapei International is published 6 times per year

Credits
Mapei Australia, Mapei Hellas, Mapei Brasil, Mapei Corp., Mapei India, Mapei Inc., Mapei China, Mapei GmbH (Germany), Mapei Suisse, Alberto Balsamo, Claudio Burgazzi, Master Group Sport, Sassuolo Calcio, Rachele Somaschini, AGO, Gomitolorosa

MAPEI FOLLOW US
/mapeispa

Healthcare facilities: modernisation and new technology

THE COVID-19 EMERGENCY HAS SPEEDED UP INVESTMENT PLANS TO BUILD NEW HOSPITALS AND MODERNISE OLD-FASHIONED FACILITIES.
THE DECISIVE ROLE OF INNOVATION WHEN CHOOSING MATERIALS

The healthcare crisis caused by the pandemic has speeded up investment plans for building healthcare facilities. Resources, starting with those Italy and other EU countries will have available through the Recovery Plans, will be used in various ways: to build new hospitals, modernise old-fashioned facilities to comply with the latest regulations (i.e. anti-seismic standards) and create more facilities by building mini-hospitals and community homes. These building projects will move hand-in-hand with those to innovate and digitalise healthcare services, partly by means of telemedicine.
New technology and innovative materials are the real challenge involved in designing and building hospitals, both when upgrading existing facilities and building from scratch. This means the choice of materials plays a key role in guaranteeing the best possible results in terms of function, appearance and eco-friendliness.
Mapei can boast plenty of experience in this sector. There now follows a presentation of products and solutions specifically for healthcare facilities and how they are employed in building operations in several countries all over the world.

Reception and communal areas


Operating theatres and diagnosis rooms


Patient wards


Canteens and bars

Systems for installing resilient materials in healthcare facilities

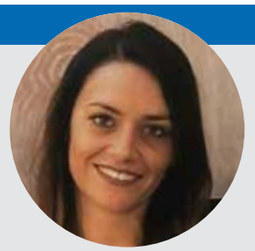
SPECIFIC PRODUCTS FOR ALL TYPES OF ENVIRONMENTS

When designing hospital facilities, the choice of floor and wall coverings is a key factor and must be made in such a way as to cater for multiple needs: first and foremost, resistance and hygiene but also good looks, to create a comfortable environment for both hospital patients and staff; functionality to reduce maintenance costs as far as possible; and durability to guarantee long-lasting quality. All this while attempting to reduce environmental impact to a minimum.
Resilient materials are often chosen by designers for walls and floors in hospitals. Mapei can boast plenty of experience of the highest order and manufactures special installation systems for materials like these in conformance with the regulations in force.
In addition to specific solutions for resilient materials, Mapei supplies a wide range of products for carrying out various types of work in hospital facilities, such as installing ceramic tiles, laying cementitious and resin floors, preparing and waterproofing substrates, sealing joints and coating walls.

Download the brochure:

The brochure entitled “Healthcare. Soft covering installation systems” outlines the best systems for installing resilient floor and wall coverings (in various hospital settings) on old or new cementitious screeds or over existing ceramic tiles or terrazzo floors.

Resilient materials: the strong points



FLEXIBILITY, STRENGTH, RESISTANCE AND HYGIENE. WE TALKED ABOUT THE MAIN FEATURES OF THESE FLOORS WITH PAOLA DI SILVESTRO, CORPORATE PRODUCT MANAGER FOR THE RESILIENT, LTV AND TEXTILE PRODUCT LINES

What are the main reasons for opting for resilient floor and wall coverings in hospitals?
Resilient materials represent a good balance when trying to meet the various requirements for flooring in hospitals. They guarantee a seamless surface that can be made to "climb" the walls, thereby eliminating corners and edges in the flooring where dirt and bacteria can collect. This means they meet all the requirements regarding the levels of sanitisation normally expected in hospitals.
Resilient materials can also be installed and replaced very quickly. Hospitals seem to be continuous building sites and any renovation work needs to be carried out in as short a time as possible. You need flexibility and resilient floors are the most suitable for these changes.
The wide variety of resilient materials now available on the market means you can choose the most suitable one for the various settings. For example, in corridors subjected to intense levels of traffic, or in areas where heavy instruments are standing – such as in operating theatres – it is possible to opt for extra-resistant materials with the capacity to withstand much heavier levels of wear than normal. Their resistance, however, does not compromise on comfort, a feature which is just as important in hospitals: a comfortable floor that is also resistant to wear helps make the working day less tiring. And the fact that it is non-slip means it is also safer for hospital staff and patients.
Resilient flooring itself is highly technical but, at the same time, it allows you to create colour co-ordinations and patterns that help make surroundings more pleasant and welcoming, and you can also make it easier for people to find their way around by applying markings.
Lastly, I would also like to highlight how resilient floors throughout this sad period have made a contribution, and are still contributing, to the building of new hospitals in record time, and often without being bonded, while maintaining their required monolithic nature. Temporary hospitals, reconversions of existing structures and field hospitals are the answer to the ongoing healthcare emergency. For these types of setting, too, designers tend to choose resilient flooring and opt for "fast-track" installation systems, which allow floors to be put into service very quickly, while at the same time guaranteeing maximum functionality and durability.

Throughout this sad period resilient floors have made a contribution, and are still contributing, to the building of new hospitals in record time

In order to obtain a floor covering that can withstand intense traffic without showing up defects over the years, it is essential to install coverings on an adequate substrate. What characteristics should it have?
We can never overlook the importance of creating an adequate substrate to properly install floors. Mechanically strong and resistant, dry and/or smooth: that is how a substrate should be if it is to receive resilient flooring.
Resilience is a property that makes these types of floor unique and special and gives them the ability to absorb impacts and deformations without becoming damaged. It is thanks to this characteristic that loads acting on resilient flooring are not distributed over the surface; rather, they are transferred directly to the substrate which is made up, in most cases, of a screed and a skim coat, and must have the appropriate mechanical characteristics to support the loads.
For this reason, Italian standar UNI11515-1 specifies that the compressive strength of screeds taken after 28 days must be 30N/mm^2.
Mapei offers specific solutions made up of pre-blended mortars, binders, additives and special fibres in order to make screeds that comply with the most varied performance requirements. Since resilient floor and wall coverings are also impermeable and are not breathable, it is necessary to verify that substrates are completely dry and sufficiently insulated against sources of rising damp prior to their installation: if they do not meet these criteria, the flooring could swell or become detached.
According to UNI 1151-1, the level of residual moisture in the screed must be less than 2% throughout its entire thickness. With screeds made from sand and cement, it takes months to reach this kind of level and sometimes, to speed up installation of the flooring, you have to intervene by laying an expensive moisture barrier. TOPCEM PRONTO and MAPECEM PRONTO pre-blended screed mortars, on the other hand, allow portions of screed to be rebuilt that dry quickly (4 days) or very quickly (24 hours).
Lastly, because of the reduced thickness characteristic of resilient floors, the sustrate must be flat and smooth to avoid any imperfections and irregularities becoming visible on the surface of the floor.
For instance, UNI 11515-1 standard prescribes that, if they are subjected to the types of stresses and loads typically associated with hospital surroundings, then they must be at least class CTC25F5 A2$_{fl}$, which means their compressive strength must be at least 25N/mm^2.
Mapei also offers specific solutions for skimming and levelling off substrates in healthcare settings made up of primers, skimming and smoothing compounds and other complementary products. The range of self-levelling smoothing compounds specific for flooring in healthcare structures has evolved considerably over the years and become more extensive with the introduction of innovative products. Over the course of the last year, for example, the ULTRAPLAN family has become larger with the introduction of the latest additions, ULTRAPLAN CONTRACT and ULTRAPLAN TRADE.

Mapei also offers specific solutions for preparing, skimming and levelling off substrates in healthcare settings, in order to guarantee a safe installation of coverings

Problems are sometimes caused by incorrect installation procedures. What can you do to put things right?
Only if you have considerable knowledge of resilient flooring can you be aware of the numerous solutions it offers and how important it is to design this type of flooring carefully. Just as important is how the work is carried out by the floor layer during the "installation process". In fact, it is during the installation phase that resilient flooring is prepared in order to carry out its most important function: to be a reliable solution, for many years, right under our feet.

In healthcare structures it is absolutely essential to carry out repair work as quickly as possible. Do Mapei products take this into consideration and, if so, how?
Hospitals and care homes are often the subject of significant improvement, expansion and renovation projects. Renovation work needs to be carried out as quickly as possible to avoid impacting on the services available to patients. You need flexibility and resilient floors are the most suitable for these changes.
Mapei has a range of "Fast Track Ready" solutions available, made up of pre-blended screed mortars, primers, smoothing and levelling compounds, adhesives and complementary products, that allow floors to be put into service extremely quickly, thereby avoiding having to put a stop to important activities for long periods of time, while at the same time guaranteeing maximum functionality and durability over the years.

Which innovations – the result of work carried out by the Mapei Research & Development team – have proven to be the most significant regarding their use in hospitals?
Since the company was founded, Mapei has developed a complete range of products and integrated systems for installing resilient flooring in hospitals and healthcare structures. Mapei products and systems also meet the most varied requirements of designers and of those who use them. And we intend continuing along this path by proposing specific cutting-edge, reliable and professional product lines, with particular attention on sustainability, performance properties, ease of installation and rapid solutions.
Manufacturers of resilient flooring have introduced innovative types of products to the international market, highlighting the aspects that contribute to people's well-being and promoting naturalness and sustainability.
Volatile organic compounds (VOC) emissions for resilient flooring, evaluated after 28 days , range between 10 µg/m^3 and 100 µg/m^3, that is, from 10 to 100 times lower than the levels required for the German and French markets, and from 15 to 150 times lower than the levels required for the CAM (Minimum Environmental Criteria) protocol, prescribed by the Italian Ministry of Environment, which is mandatory for public procurements in Italy. Not only are they 100% recyclable, in many cases they may also be "re-used" at the end of their service life as active compounds in the production of new resilient flooring.
Mapei develops products and solutions that have a low impact on the environment and measures the environmental effects they have during their whole life cycle by applying LCA (Life Cycle Assessment) methodology, and documenting the results by using EPDs (Environmental Product Declarations). Most Mapei adhesives have very low emission levels of VOC and are certified Emicode EC1^{PLUS} (GEV), Blauer Engel (the German Ecolabel) and M1 (Finnish certification released by Building Information Foundation, RTS).
Amongst the innovative products introduced to the market in recent years, of particular interest to the hospitals sector is MAPECOAT WET & DRY R11, a transparent, protective finish for all types of resilient flooring. Apart from being easy to apply and having a non-slip finish, it is characterised by its resistance to aggressive chemicals, cleaning products and disinfectants. Its formulation was recently improved by adding special, wide-spectrum biological protective agents with the capacity to contrast the deposit and proliferation of bacteria on surfaces, including those washed and disinfected frequently. This means perfect protection, high level of hygiene, and compliance with ISO 22196 standards (Measurement of antibacterial activity on plastics and other non-porous surfaces).

Amongst the innovative products introduced to the market in recent years, of particular interest to the hospitals sector is MAPECOAT WET & DRY R11, a transparent, protective finish

In their words

Installing in health care facilities: what our clients have to say

WE ASKED COMPANIES SPECIALISING IN INSTALLING FLOORS AND SURFACES IN HOSPITALS TO TELL US MORE ABOUT THEIR WORK IN HOSPITALS AND THE HELP PROVIDED BY MAPEI PRODUCTS

1. With regards to hospitals and other health care facilities, what building projects have you worked on over the last few years? Have you been involved in urgent work to build Covid departments?

2. What future projects you have in this sector?

3. What kind of works do you carry our most frequently in hospital facilities?

4. What are the strong points of your partnership with Mapei?

PAUL BELLUZ
THE BELLUZ GROUP, HAMILTON (ONTARIO, CANADA)

1. Over the last few years a couple of projects have been: Sunny Brook, Toronto (Ontario); Humber River Hospital, Toronto; St Josephs General Hospital, Toronto; Wentworth Lodge, Hamilton (Ontario). We have not worked on Covid related sites but suspected that the renovation North York General Hospital may be related to Covid because of all its future bedding areas.

"Our installers like using Mapei products and consider them installer friendly"

2. We will work in the North York General Hospital in Toronto.

3. We mainly take care of the installation of vinyl sheet and wall coverings, working in partnership with the manufacturers of adhesives.

4. The strong point of the partnership with Mapei is having the availability of a representative to help with solutions and recommendations which in turn is great product support. The reliability of the products and their ease of use is another benefit. Besides, the installers like using the Mapei products and consider them installer friendly.

TOMASZ LEGIERSKI
PRESTO, KONSKIE (POLAND)

1. From the very beginning of our activity many years ago, we have been focusing on the realisation of healthcare projects. Both newly built facilities such as the Provincial Complex Hospital in Kielce, the Military Medical Institute in Warsaw or the Hospital in Otwock near Warsaw, as well as renovated facilities, e.g. the Clinical Hospital in Katowice or the Polish Mother's Health Centre Institute in Łódź, and smaller units located in central Poland. Recently, we have been delivering and installing Covid 19 wards at the MSWiA Hospital in Kielce, a large hospital with a 10,000 m² flooring area, as well as the hospital wards at the District Hospital in Busko Zdrój.

2. We currently have no plans for any more healthcare projects specifically designed for Covid 19.

3. We comprehensively deliver and install resilient coverings for floors, walls and stairs, as well as for ESD rooms (like operation theatres, MRT, CT, X-ray and/or computer rooms) and wet rooms.

4. The most important from our point of view is The Partnership, especially in the realization of each project, both in technical and business aspects. The marketing and personal support that we can always count on from Mapei Polska team is also important.

ADAM AMPARAN
AMPARAN FLOORING (CALIFORNIA, USA)

1. We have been involved with projects at Valley Children's Hospital, Community Regional Medical Centers, Stanford Health Care, Adventist Health Facilities up and down the Valley, DaVita Dialysis Clinics, Family Health Care Network Facilities, Fresenius Medical Centers, among other projects. As for the Covid facilities, we helped to fast-track the BCBH Refresh Project at Stanford Health Care in Palo Alto, at the beginning of the pandemic last year. We also have worked with Community Regional Medical Centers in Fresno (California) to install flooring in overflow Covid-19 areas.

"We were in charge of flooring installation in the Ridley Tree Cancer Center project (read more at p. 28)"

2. We have ongoing work at Valley Children's Hospital, Community Regional Medical Centers, Stanford Health Care, Adventist Health Facilities up and down the Valley, and VIBRA Rehab Hospital in Bakersfield, along with others.

3. We mostly perform vapor emission control along with installation of resilient flooring and carpet tile with top set base.

4. We would attribute most of the strength in our partnership to the relationships we have built with our sales rep, Patrick Cooney, along with other members of the Mapei team. We have worked together to establish a strong reputation for our concrete repair/moisture control and installation services of various flooring types that utilize Mapei products to meet the many needs of our industry.

ASIF CHOHAN, CARPETLAND
DUBAI (UAE)

1. We install an average of 2 million m² of flooring per year. Our most recent large projects include Cleveland Clinic in Abu Dhabi (60k m²) and Al Ain Hospital (100k m²). Other projects have included 4 hospitals for Al Salama in Abu Dhabi, Rashid Hospital in Dubai, and many smaller projects.

2. Despite significant investment in healthcare facilities, measurements of healthcare provision in the GCC (Gulf Cooperation Council), such as the number of beds per head of population, show that further investment is still required. All regional governments have plans to build more hospitals and clinics. We are currently working on significant extensions to the facilities in Cleveland Clinic, including a new Oncology building.

"By using Mapei products we can ensure that every single flooring installation will meet our high standards and enable us to enhance our reputation."

3. Most projects are still new builds, but refurbishment is increasing. Our work is usually "supply and apply" of a flooring solution installed on a screed provided by the contractor. Mapei's technical support on such projects is particularly valuable, helping us to ensure that our flooring solutions are always installed on sound, dry substrates.

4. We have a huge choice of suppliers but Mapei provides excellent value for money: superb technical support and a comprehensive range of high-quality products at reasonable prices that solve every conceivable challenge we ever face on-site. We know that by using Mapei products we can ensure that every single flooring installation will meet our high standards and enable us to maintain and enhance Carpetland's reputation.

INSTALLING RESILIENT MATERIALS IN A CUTTING-EDGE FACILITY MAINLY INTENDED FOR MOTHERS AND THEIR CHILDREN

Melbourne (Victoria, Australia)

JOAN KIRNER WOMEN'S AND CHILDREN'S HOSPITAL

Melbourne's West has seen rapid and continuous growth for many years now, with increasing numbers building homes, raising families, and having babies. Consequently, this area has seen a growing demand for women's and children's health services.

The new Joan Kirner Women's and Children's Hospital was completed in May 2019 and provides a family-centred facility that allows women in the district to give birth closer to home. The centre will provide care for thousands of children in the decades to come.

The hospital boasts modern health care facilities with eye-catching art and design, as well as the world's first-ever neonatal intensive care unit, 39 special care nursery cots, 64 maternity beds, 32 paediatric beds, 20 labour delivery rooms, and 4 dedicated operating theatres.

This facility is a fitting testament to Joan Kirner's legacy. Victoria's first female premier (1990–1992), Joan Kirner was a social justice warrior and a tireless voice for women, children, and families.

Designed for families

The design was developed by Lyons architects with a "Salutogenic" approach to the build. Natural colour schemes, spaces with views, plenty of natural light and intuitive way-finding which is simulated by the use of shapes and dynamic, modern design. The floors and walls have seamless cohesion as circular shapes sprawl over each level, colour co-ordinated with all other finishes of the build. The building itself has become a jewel in the heart of the western region of Melbourne.

The technicoloured interior is truly breathtaking. Each level has a different colour scheme associated with the branch of healthcare it coincides with. Floor to wall vinyl accompanied by circular shapes promotes relaxation, warmth and creativity to the patients treated in this space.

Substrate preparation

Floor91 was the company contracted to complete the installation of the wall and floor coverings in the first stage of the refurbishment. Preparation included extensive diamond

ABOVE. An external view of the hospital.
IN THE FACING PAGE. Substrates were treated with ECO PRIM T PLUS and levelled with ULTRAPLAN ECO before installing resilient materials.

Problems and solutions

Mapei high-performance products ensured a proper preparation of the substrates, which is essential to guarantee a safe installation of resilient coverings. Waterproofing compounds such as MAPEGUM WPS were applied in the wet areas. Mapei adhesives (ROLLCOLL, ADESILEX G19, and ULTRABOND ECO V4 SP) ensured a perfect bonding of vinyl wall and floor coverings in record time, to meet the contractor's needs.

IN THESE PAGES. Vinyl coverings were installed in different areas with ULTRABOND ECO V4SP on floors and ROLLCOLL on walls. Textile floors were, on the other hand, installed with ULTRABOND ECO TACK.

grinding, screeding and waterproofing. Materials installed ranged from floor and wall vinyl to carpet tiles, matting and stair nosing. The 8 Level installation took place over 6 months with 85% of the work completed over 18 weeks.
Mapei products were used for substrate preparation as well for the installation of the floor and wall coverings.

With over 80% of the concrete floors needing to be levelled, the substrates were firstly primed using ECO PRIM T PLUS, low odour acrylic primer in water dispersion with very low emission level of volatile organic compounds (VOC), followed by the application of ULTRAPLAN, a self-levelling, ultra quick-hardening smoothing compound for thicknesses from 1 to 15 mm, with a very low emission level of VOC, preparing substrates to receive any kind of floor covering where an excellent resistance to loads and traffic is required.
Concrete substrates that only required small patching repairs were rectified using PLANIPREP SC, a fibre-reinforced skim coating compound distributed in Australia by Mapei Australia, and NIVORAPID, ultra-fast setting, thixotropic, cementitious levelling compound for horizontal and vertical surfaces.
Some parts of the flooring had lead sheeting installed to act as a barrier between x-ray rooms and offices.
These areas were levelled using NIVORAPID mixed with LATEX PLUS to improve the deformability and bonding strength of the levelling mortar.

Waterproofing wet areas
The floors and walls in the bathrooms and wet areas were waterproofed using MAPEGUM WPS, fast drying flexible liquid waterproofing membrane. Once the second coat of this product was dry, the substrates in these areas were primed with a layer of undiluted ECO PRIM T PLUS, smoothed with PLANIPREP SC in preparation to install the vinyl coverings. MAPEFLEX PU 45 FT paintable, rapid, high modulus polyurethane sealant and adhesive was used for sealing expansion and distribution joints. All wet area vinyl coverings were installed using ADESILEX G19, two-component, epoxy-polyurethane adhesive for resilient and textile floorings.

Installing vinyl and textile coverings
Over 60,000 m² of vinyl floors supplied by Tarkett were installed in the public areas using ULTRABOND ECO V4 SP, a high-performance adhesive especially suitable for installing PVC and rubber flooring as well as a universal adhesive for all common resilient floor coverings.
About 28,000 m² of vinyl coverings were, on the other hand, installed on walls using ROLLCOLL, a universal adhesive in water dispersion for vinyl and textile floor and wall coverings. In other areas, textile floors were installed by using ULTRABOND ECO TACK, acrylic tackifier dispersed in water with a very low emission level of volatile organic compounds (VOC).

TECHNICAL DATA
Joan Kirner Women's and Children's Hospital, Melbourne (Victoria, Australia)
Period of refurbishment: July 2017 – April 2019
Period of the Mapei intervention: July 2018 – March 2019
Owner: Victorian State Government
Design: Lyons Architect
Main contractor: Lendlease Pty Ltd.
Installation company: Floor91
Project manager: Shane Ward, Floor 91
Mapei coordinator: Jamie Billing, Mapei Australia

MAPEI PRODUCTS
Preparing substrates:
Primer MF, Mapeproof 1K Turbo*, Latexplan Trade*, UC Leveller*, Eco Prim T Plus
Waterproofing substrates:
Mapegum WPS
Sealing expansion and distribution joints:
Mapeflex PU 45 FT
Installing vinyl floors:
Ultrabond Eco V4 SP, Adesilex G19
Installing vinyl wall coverings: Rollcoll
Installing textile floors:
Ultrabond Eco Tack

*These products are distributed on the Australian market by Mapei Australia

For further information on products see mapei.com and mapei.com.au

ABOVE. Edmundo Vasconcelos Hospital was originally designed by Oscar Niemeyer and renovated in 2017-2018.
TOP THE PAGES. Sheet vinyl floorings by Gerflor were bonded with MAPECRYL ECO adhesive in the corridors, waiting and communal areas, after preparing substrates with TOPCEM and ULTRAPLAN ECO.

TECHNICAL DATA
Edmundo Vasconcelos Hospital, São Paulo (Brazil)
Period of construction: 1950s
Period of renovation: 2017 – 2018
Period of the Mapei intervention: 2018 – 2019
Owner: Edmundo Vasconcelos Hospital Complex
Project manager: Eng. Maria Paula Castelar, Edmundo Vasconcelos Hospital
Main contractor: Brandão & Marmo Eng.
Installed materials: sheet vinyl floors by Gerflor
Design: Zanettini Architectura
Mapei coordinators: Fellipe Pellegrini Scripilliti, Mapei Brasil Materias de construção, Ltda (Brazil)

MAPEI PRODUCTS
Preparation of substrates: Primer G, Eco Prim Grip, Ultraplan Eco, Planicrete, Topcem, Planiprep SC*
Installing sheet vinyl floorings: Mapecryl Eco

*The product is distributed on the Brazilian market by Mapei Brasil

mapei.com mapei.com.br

São Paulo, Brazil

EDMUNDO VASCONCELOS HOSPITAL

RENOVATION WORKS IN A HOSPITAL ORIGINALLY DESIGNED BY OSCAR NIEMEYER

Edmundo Vasconcelos Hospital, located in the São Paulo, is renown for combining modern architectural characteristics from its original design by Oscar Niemeyer with the tropical landscaping design of Roberto Burle Marx and beautiful decorative murals signed by Di Cavalcanti to add freshness, beauty and tranquility to a healthcare facility. This historic hospital in Brazil underwent a major internal remodeling project from 2017 to 2018 which included everything from electrical, mechanical, and hydraulic infrastructure upgrades to brand new floor and wall coverings, furnishing and equipment to provide a more modern contemporary interior design.

Works in an operational hospital
Considering that the hospital devotes over 25.000 m² areas to inpatient services, specialty medical consultations, emergency rooms as a well as a state of the art surgical center and a complete diagnostic center, keeping the complex operational during the remodeling project required careful planning and on-time execution. An exterior elevator system was used to provide direct access to the remodeled areas for workers and material deliveries, without disrupting the activities in the hospital.
To minimize noise interruptions, the main contractor Brandão & Marmore also used a compressed air demolition system to remove the deteriorated screed mortars with minimal sound and dust pollution.
Mapei worked closely with Zanettini Architecture, and well as the hospital´s engineering department and the flooring contractor, to specify the complete substrate preparation and flooring installation system which would ensure that the tight time schedule and long term durability goals could be successfully achieved.
The fast setting and quick-drying hydraulic binder TOPCEM provided the high compressive strength screed which was ready for floor installation in just four days.
PRIMER G was then used to prepare the surface and the high compressive strength (26 MPa) self-levelling underlayment ULTRAPLAN ECO was used to create a smooth fast-drying substrate to install the Gerflor sheet vinyl with MAPECRYL ECO solvent-free, multi-use acrylic adhesive. The flooring design combined wood grained inserts in curved formats with traditional homogenous sheet vinyl, resulting in a significant modernization to a classic building.

© Dialog

Grande Prairie (Alberta, Canada)

GRANDE PRAIRIE HOSPITAL

A CUTTING-EDGE FACILITY DEVOTED TO PROVIDING PRIMARY HEALTHCARE AND CANCER CARE

As mentioned on Dialog design studio's website, the Grande Prairie Regional Hospital is a green field replacement regional hospital that serves immediate residents of Grande Prairie, and provides support care for Northern Alberta, North Eastern British Columbia and North Western Saskatchewan (Canada). The project provides a wide variety of healthcare services including in-patient units with a 240 total bed capacity, outpatient ambulatory care, emergency, diagnostics, obstetrics, surgery, pediatrics, acute geriatrics, mental health and intensive care. It also provides cancer care as part of the Alberta Cancer Corridor Initiative, so that patients undergoing chemotherapy or radiation do not have to travel to Edmonton, about 450 km faraway. The complex covers a total surface area of 5,878 m².

The design of this new complex is unique in how it respects site opportunities, while providing abundant natural light in patient rooms and access to courtyards and gardens.

"The design is beautiful, and the functionality of the rooms is so well considered" said David Ponich, Director of Capital Management, North Zone-Alberta Health Services.

Specific solutions for different coverings

After hiring a new primary contractor, the provincial government of Alberta overcame delays and cost over-runs to complete this new regional hospital and cancer care center.

Beginning in 2018, Mapei products helped the new installers complete unfinished work in various areas: 2,450 m² of resin flooring for the ambulance bay and basement, 9,290

Problems and solutions

Mapei systems provided the right solution for the installation of different types of floorings in the hospital: resin flooring were laid in the ambulance bays and basement; PVC floorings were installed in corridors and patient-care rooms; large-size ceramic tiles were bonded on stairs, floors and walls in the entrance and other areas of the complex.

Mapei was able to offer innovative, safe and easy-to-use system for each type of intervention.

m² of resilient flooring, 8,360 m² of large-size ceramic tile installation for walls and floors, as well as waterproofing substrates in select areas.

Solutions for substrate preparation and resin floors

The concrete substrates of several areas in the basement were treated with PRIMER L acrylic latex primer and levelled with ULTRAPLAN M20 PLUS, high-strength, self-levelling, cement-based underlayment.

Resin floors were completed in the basement by using MAPEFLOOR I 302 SL as a primer and then again as an epoxy resin basecoat, followed by the application of MAPEFLOOR FINISH 54 W/S to provide a semi-gloss polyurethane aliphatic topcoat.

In the ambulance bay, the substrate was treated with PRIMER SN, before applying MAPEFLOOR PU 400, a polyurethane basecoat specifically designed for use as a waterproofing membrane, and MAPEFLOOR FINISH 450 aliphatic polyurethane topcoat.

Floors in phase two of the project were levelled using PRIMER L and ULTRAPLAN M20 PLUS. Coverings will be installed later on.

Installing PVC floors

PVC floorings for corridors and patient-care rooms were installed using ULTRABOND ECO 360 high-performance adhesive with a low emission level of volatile organic compounds (VOC). The adhesive is manufactured and distributed in Canada by Mapei Inc and has been designed specifically for installing homogeneous and heterogeneous solid vinyl flooring. With its strong, durable, moisture-resistant and alkali-resistant bond, it is ideal for commercial and institutional applications.

ULTRABOND ECO 360 has an excellent open time, develops strength quickly, performs well under rolling loads and resists indentation. Its low volatile organic compounds content makes it ideal for use in hospitals and medical centers. ULTRABOND G21 adhesive, which is also manufactured and distributed on the Canadian market by Mapei Inc., was used in areas where the substrate required a more challenging bond.

Bonding large-size ceramic tiles

ULTRAFLEX LFT was used for installing large-size ceramic tiles on floors, while the walls' large-size tiles required the use of MAPEI ULTRALITE MORTAR. Contractors used KERAPOXY CQ epoxy grout for all the tile joints. All the above-mentioned products, except for KERAPOXY CQ, are manufactured and distributed in Canada by Mapei Inc.

1. Applying ULTRAPLAN M20 PLUS self-leveling compound in phase two of the complex to level substrates.
2. The resin floors in the basement are made up of a main coat of MAPEFLOOR I 302 SL and a ptotective coat of MAPEFLOOR FINISH 54 W/S aliphatic polyurethane finish.
3. The large-size ceramic tiles were installed on the stairs with MAPEI ULTRALITE MORTAR PRO.

4. The Grande Prairie Hospital's inviting main entrance showcases the large-size ceramic tiles installed using Mapei systems for tile and stone installation.

TECHNICAL DATA
Grande Prairie Hospital
Grande Prairie (Alberta, Canada)
Period of construction: 2011-2020
Period of the Mapei intervention: 2019-2020
Owner: Alberta Health Services
Design: Dialog
Contractor: Clark Builders
Mapei coordinators: Brent Johnsen and Trevor Vermeulen, Mapei Inc. (Canada)
Photos: Dialog

MAPEI PRODUCTS
Substrate preparation: Mapecem Quickpatch*, Mapefloor PU 400*, Ultraplan M20 Plus* Mapefloor Finish 54 W/S*, Mapelastic AquaDefense, Planibond EBA*, Primer L*, Primer SN
Installation of ceramic tiles: MAPEI Ultralite™ Mortar*, MAPEI Ultralite Mortar Pro*, Ultraflex LFT*
Laying resin floors: Mapefloor Finish 450*, Mapefloor I 302 SL
Installing PVC floors: Ultrabond ECO 360*, Ultrabond G21*
Grouting joints: Kerapoxy CQ

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

For further information on products see mapei.com

Magoula (Greece)

ATTICA REHABILITATION CENTER

A STATE-OF-THE-ART MEDICAL FACILITY COMPLETED WITH HIGH-TECH PRODUCTS FOR BUILDING

The Attica Rehabilitation Center, located a couple of kilometers away from Athens within the Attica region (Greece), is a state-of-the art medical facility offering rehabilitation services. The center started operating in 2020 and can boast the largest hospitality capacity in Greece with its facilities covering a 15.000 m² surface.
The building's design was oriented towards energy efficiency solutions. The MAPETHERM system was chosen for thermally insulating external walls. In detail, MAPETHERM EPS panels were installed on the walls using MAPETHERM AR1 GG cementitious mortar. The panels were further secured with MAPETHERM LTX fixing plugs. MAPETHERM AR1 GG was used as a smoothing and levelling compound over the thermal-insulation panels and was reinforced with MAPETHERM NET glass fibre mesh. QUARZOLITE BASE COAT coloured acrylic undercoat was applied, before the application of QUARZOLITE TONACHINO coloured acrylic protective plaster.

IN THE FACING PAGE. Large-size ceramic tiles were installed in the communal areas with KERAFLEX MAXI S1 adhesive. Tile joints were grouted with KERACOLOR FF mortar.
LEFT. The substrates of the swimming pools were waterproofed with MAPELASTIC SMART before installing ceramic tiles with KERAFLEX MAXI S1.

Waterproofing the pools

When building the two swimming pools of the complex, MAPELASTIC SMART two-component, high-flexibility cementitious mortar was used for waterproofing and protecting the substrates of the internal surfaces. Ceramic tiles were installed thereupon using KERAFLEX MAXI S1 deformable cementitious white adhesive.
The tile joints were grouted using KERAPOXY CQ two-component epoxy grout. The floor and wall substrates in the bathrooms were waterproofed with MAPELASTIC AQUADEFENSE. MAPEBAND PE120 PVC waterproofing tape was used in combination with MAPELASTIC AQUADEFENSE waterproofing membrane and applied on all the floor to wall and wall to wall corners. Porcelain tiles were installed over the waterproofing layer with KERAFLEX MAXI S1 adhesive while the tile joints were grouted with ULTRACOLOR PLUS.

Cementitious coatings and ceramic tiles for communal areas

ULTRATOP LOFT system was applied on the vertical surfaces in the bar-restaurant area to create decorative cementitious coatings with a mottled effect.
In all communal areas, both internally and externally, large-size porcelain tiles were installed with KERAFLEX MAXI S1 adhesive while the joints were grouted with KERACOLOR FF.
In all external areas, a waterproofing layer of MAPELASTIC two-component, elastic cementitious mortar was applied beforehand to ensure protection.

TECHNICAL DATA
Attica Rehabilitation Center, Magoula (Greece)
Period of construction: 2019-2020
Year of the Mapei intervention: 2020
Owner: Christos Papastergioy
Design: Argyro Varvarousi
Main contractor: Drosos Construction
Ceramic tile installation contractor: Drosos Vangelis
Project manager: Drosos Vangelis
Mapei coordinator: Maria Vardava, Mapei Hellas (Greece)
Photos: Michaerl Koronis

MAPEI PRODUCTS
Thermal insulation: Mapetherm AR1 GG, Mapetherm LTX, Mapetherm Net, Mapetherm EPS
Wall coatings: Quarzolite Base Coat, Quarzolite Tonachino
Preparing and waterproofing substrates: Eco Prim Grip, Mapelastic, Mapelastic Smart, Mapelastic AquaDefense, Mapeband PE 120
Installing and grouting ceramic tiles: Keraflex Maxi S1, Ultracolor Plus, Keracolor FF, Kerapoxy CQ
Laying cementitious coatings: Primer SN, Quartz 0.5, Primer LT, Ultratop Loft F, Ultratop Loft W, Ultratop Easycolor, Ultratop Base Coat, Mapefloor Finish 52 W

For further information on products see mapei.gr. and mapei.com

Monza (Italy)

SAN GERARDO HOSPITAL

PRODUCTS THAT RESPECT THE ENVIRONMENT AND PEOPLE'S HEALTH TO INSTALL RESILIENT FLOOR AND WALL COVERINGS

1

2

1. The floor substrates were levelled with ULTRAPLAN ECO before bonding rubber coverings thereupon.
2. Rubber floors were installed with ULTRABOND ECO VS90 PLUS water-dispersion adhesive.

Situated in Northern Italy, the San Gerardo Hospital in Monza is the fourth largest public hospital in the Lombardy Region. It is connected to the Faculty of Medicine and Surgery of the Bicocca University of Milan.
Its Reception Centre is the new forepart of the San Gerardo Hospital in Monza: a four-story building (with a further two floors below ground level) with a total area of 25,000 m² of floor, almost entirely covered with the latest generation of PVC, vinyl and rubber coverings installed using the most innovative Mapei products for this type of coverings.
The hospital has 83 specialised out-patient departments equipped with cutting-edge instruments, along with operating theatres for minor surgery and a 350-seat conference hall.

Installing rubber floorings

The project was required to guarantee maximum hygiene and eco-sustainability and Mapei solutions helped achieve this goal.
The substrates were prepared with EPORIP epoxy adhesive to seal the cracks and with PLANIPATCH+LATEX PLUS to seal control joints. Where required, NIVORAPID ultra-fast setting, thixotropic, cementitious levelling compound was used to repair some areas of the screeds.
After applying PRIMER G, diluted with water, ULTRAPLAN ECO ensured perfect levelling of the surfaces.
Rubber coverings with multi-coloured granules supplied by Artigo were installed on floors with ULTRABOND ECO VS90 PLUS, hard set, highly shear resistant, wet-bed dispersion adhesive. The coves were bonded with ULTRABOND ECO FAST TRACK, fast grip adhesive in water dispersion.

Vinyl and textile coverings on the walls

Rubber coverings by Artigo were bonded on the walls with ULTRABOND ECO 380 fast initial tack and very long open time adhesive.
"Suwide" PVC coverings by Liuni were installed on walls with ADESILEX MT32 thixotropic adhesive in water dispersion, especially suitable for bonding of all types of wall coverings.
"Polyclad" vinyl wall coverings by Polyflor are being bonded with ULTRABOND ECO V4 SP . This is a very high-performance adhesive for PVC and rubber flooring in commercial and public projects as well as a universal adhesive for all types of resilient floorings.

Ongoing work

The central block of the hospital is currently being renovated. In this area resilient coverings are again installed on floors and walls with Mapei products. The sustrates are again being preapared by using EPORIP to seal cracks, PLANIPATCH+LATEX PLUS for repairing, levelling and smoothing, NIVORAPID for minor repairs, and ULTRAPLAN ECO for levelling the surfaces..
Esapalette heterogeneous vinyl floorings by Liuni were bonded with ULTRABOND ECO V4 SP. Coves were again bonded wth ULTRABOND ECO FAST TRACK.
"Suwide" PVC wall coverings by Liuni are being installed with ADESILEX MT32. "Murale" coverings by Liuni were, on the other hand, bonded with ULTRABOND ECO V4SP.

TECHNICAL DATA
San Gerardo hospital, Monza (Italy)
Year of construction: 2016 and on-going
Period of the Mapei intervention: 2016 and ongoing
Intervention by Mapei: supplying products for installing PVC, rubber and vinyl floors and walls
Owner: San Gerardo hospital
Works direction: Sangeco Società Consortile A R.L.
Main contractor: Sangeco Società Consortile A R. L.
Installed materials: vinyl coverings by Liuni SpA and Polyflor; rubber floorings by Artigo
Mapei distributor: Liuni SpA
Mapei coordinators: Antonio Salomone and Paola Di Silvestro, Mapei SpA (Italy)

MAPEI PRODUCTS
Preparing substrates: Eporip, Ultraplan Eco, Latex Plus, Nivorapid, Planipatch
Installing rubber floors: Ultrabond Eco VS90 Plus
Installing vinyl floor and wall coverings: Ultrabond Eco V4 SP, Ultrabond Eco 380, Adesilex MT32, Ultrabond Eco Fast Track

For info on products: mapei.com

Bari (Italy)

FIERA DEL LEVANTE COVID HOSPITAL

"FAST-TRACK" INSTALLATION SYSTEMS ADOPTED TO CREATE THREE PAVILIONS WITH 152 INTENSIVE CARE BEDS IN IN JUST 45 DAYS

Built in record time – work started on December 1st and was completed after 45 days at the Fiera del Levante exhibition centre – the new Policlinico di Bari Hospital will be directly responsible for the running of the new structure's intensive care and post-intensive care units.
Apart from Mapei, more than 40 other companies took part in the work to prepare 10 wards over an area of around 15,000 m², along with 2 operating theatres, a TAC and x-ray centre and a clinical laboratory. The hospital hosts 10 intensive care units with 16 beds each, which will be taken apart and used again once the emergency is over. The first patients were transferred at the beginning of February and the Covid centre was put into service.

IN THESE PAGES.
PVC floors were installed in several areas of the hospitals using Mapei adhesives such as MAPECONTACT, ULTRABOND ECO FIX and ULTRABOND ECO V4 EVOLUTION. Interior walls were coated with MAPECOAT ACT 196 enamel.

Ultra-rapid installation and durability over the years
The floor and wall coverings installed in the new hospital were all supplied by Tarkett: Tapiflex Genius multi-layered vinyl floor for most of the surfaces, Primo SD static-dissipative vinyl floor in the operating theatres, Primo Safe T homogeneous vinyl floor in the bathrooms, as well as Wallguard homogenous vinyl covering and Aquarelle heterogeneous vinyl covering for the walls. Amongst the adhesives recommended to install these coverings, the main ones were ULTRABOND ECO V4 EVOLUTION universal adhesive in water dispersion, ULTRABOND ECO FIX pressure sensitive adhesive and MAPECONTACT double-sided reinforced adhesive strip.

Resin floors and coatings
The forecourt used as a waiting area for ambulances with an old industrial-type concrete floor substrate with no vapour barrier was mechanically prepared by diamond grinding treatment over the MAPEFLOOR SYSTEM 51, an opaque, multi-layered, vapour-permeable epoxy coating system in water dispersion. The product chosen to finish off the walls in the new hospital was MAPECOAT ACT 196, an enamel paint for interior walls, highly washable and resistant to bacterial attack, containing protective, wide spectrum biological agents to contrast the spread of bacteria on surfaces. Because different types of surface needed to be painted, they had to be treated beforehand with DURSILITE BASE COAT coloured smooth acrylic base coat to even out their absorption and form a more uniform layer.

Installing ceramic tiles
120x60x1 cm ceramic tiles were installed in the administration-managerial area on the first floor of the complex.
The ceramic tiles were bonded using KERAFLEX EXTRA S1 cementitious adhesive, while the joints were grouted with ULTRACOLOR PLUS mortar and the expansion joints were sealed with MAPESIL AC.
It was an extremely intricate project", so the Site Director Mr. Festa added, "cutting-edge products were chosen for this building project so that such an important work could be completed on a very tight schedule."

TECHNICAL DATA
Covid hospital at Fiera del Levante, Bari (Italy)
Period of construction: December 2020 – January 2021
Period of Mapei intervention: December 2020 - January 2021
Intervention by Mapei: supplying products to install PVC floors , bonding ceramic tiles and coating walls
Owner: Apulia Regional Government
Main contractors: A.T.I.– Cobar S.p.A. and Item Oxygen Srl
Project manager: Antonio Mercurio
Feasibility survey: Michele Carella, Antonio Mercurio
Executive design: Studio Magnanimo Ingegneri Associati Srl, Mirizzi Architetti Associati
Safety coordinator: Pierpaolo Ruggiero
Works direction: Antonio Mercurio, Michele Carella
Technical site direction: Domenico Barozzi
Operational site direction: Giuseppe Festa, Pietro Manfredi, Michele Piscullil
Installation companies: Emmepi Srl, Syr Pavimenti srl, Pavimenti Italia srls, Ediltecno Group srl, Loconsole Pavimentazione & Rivestimenti
Mapei cooordinators: Achille Carcagnì, Luca Carcagnì, Alessandro Coscia, Michelangelo Occhiogrosso, Michele Cannarile, Gianni Villani, Angelo Coco, and Sebastiano Panebianco, Mapei SpA (Italy)

MAPEI PRODUCTS
Installing PVC floors:
Ultrabond Eco V4 Evolution, Ultrabond Eco Fix, Mapecontact
Wall coatings: Dursilite Base Coat, Mapecoat ACT 196
Resin floors: Mapefloor I 500 W, Mapecolor Paste, Quartz 0.5, Mapefloor Finish 52 W
Concrete repair: Mapegrout Thixotropic
Installing ceramic tiles:
Keraflex Extra S1, Ultracolor Plus, Mapesil AC

For info on products:
mapei.com

Ridley Tree Cancer Center

SANTA BARBARA (CALIFORNIA, USA)

Ridley Tree Cancer Center is affiliated with world-renowned Sansum Clinic in Santa Barbara. A new build, it is situated in a physically stunning location, near a seasonally active creek. The year of the build was also the year that California's decades-long drought ended, turning the seasonally active creek into a river and raising the water table causing moisture issues for the building's newly poured concrete slab.
This problem was solved with Mapei products.
After proper surface preparation, the crew used PLANISEAL VS to create a a moisture-resistant barrier on top of the concrete on each of the building's three floors.
Next, they applied PRIMER WE, a water-based epoxy primer to enhance the adhesion of self-levelers. That self-leveler was ULTRAPLAN 1 PLUS, a quick-setting, self-leveling, self-drying underlayment and repair mix. Within a matter of hours, the crew was able install resilient floorings with ULTRABOND ECO 711 adhesive.

TECHNICAL DATA
Period of construction: 2016-2018
Period of the Mapei intervention: April – June 2017
Owner: Cancer Foundation of Santa Barbara and Sansum Clinics
Design: Brian Cearnal, Lisa Liles, Mike Fields, and Jose Vaca, Cearnal Collective LLP and Boulder Associates
Main contractor: GL Bruno Associates Inc.
Flooring contractor: Amparan Flooring, Inc. (Ozzie and Adam Amparan)
Project manager: Mike Bogna
Mapei coordinator: Patrick Cooney, Mapei Corp. (USA)
Photos: PatrickWPrice.com

MAPEI PRODUCTS
Planiseal VS*, Primer WE*, Ultraplan 1 Plus*, Ultrabond Eco 711*

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

CUHK Medical Centre

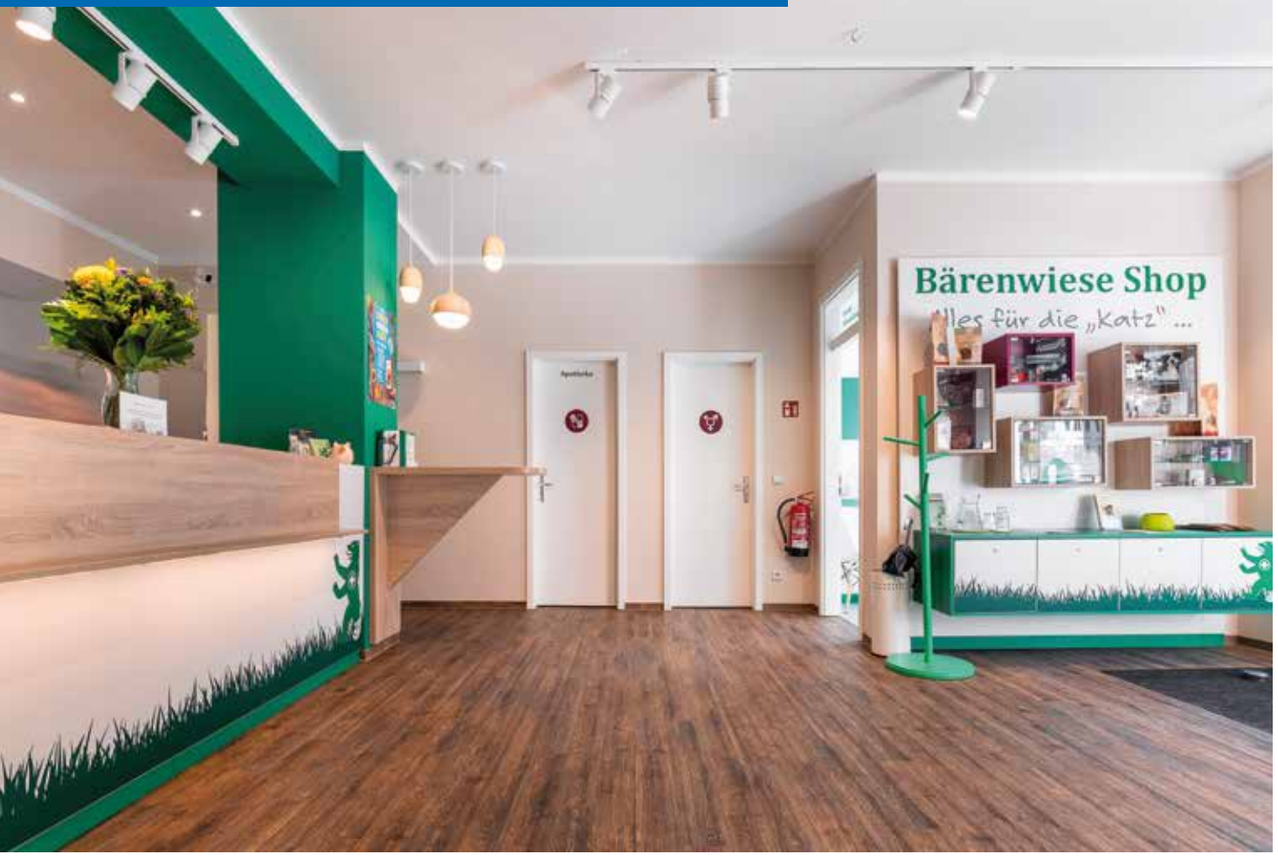
HONG KONG

The Chinese University Hong Kong Medical Centre started to operate in January 2021. It provides full range of medical services with the mission to bridge the service gaps between public and private healthcare in Hong Kong. It is well designed to house all the advanced equipment and to be user-friendly for all patients, staff and visitors.
PRIMER G, synthetic resin-based water-dispersion primer with very low volatile organic compounds (VOC), together with NOVOPLAN DA, a fast hardening self-levelling smoothing compound distributed in Hong Kong by Mapei China Ltd, were used to provide a proper substrate for the installation of resilient floors which could withstand the loads and traffic of daily hospital operations.
MAPECRYL ECO, multi-purpose adhesive with very low emission of volatile organic compounds (VOC), was used for installing 40,000 m² of resilient coverings supplied by Tarkett on walls and floors.

TECHNICAL DATA
Period of construction: 2016-2020
Period of the Mapei intervention: 2020
Main contractor: China State Construction Engineering (Hong Kong) Ltd
Design: Wong & Ouyang (HK) Ltd.
Flooring contractor: Signal Plus Building Supplies Ltd.
Mapei coordinator: Pau Chi Wai, Mapei China Ltd (Hong Kong)

MAPEI PRODUCTS
Primer G, Novoplan DA*, Mapecryl Eco

*This product is distributed on the Hong Kong market by Mapei China Ltd. (Hong Kong)



Bärenwiese veterinary care

BERLIN (GERMANY)

Bärenwiese in Berlin is the only veterinary practice in Berlin with emergency service that can be reached 24 hours a day, 365 days a year, and is equipped for all animal emergencies. Floor and wall coverings have to guarantee hygiene, durability, and a colourful environment in the facility. Around 240 m² of floors and 120 m² of wall coverings were laid in the facility with professional and eco-sustainable products. A uniform absorbency of the substrate was first achieved with ECO PRIM T PLUS acrylic primer in water dispersion. The surfaces were then levelled off with PLANIPATCH ultra fast-setting thixotropic mortar and ULTRAPLAN ECO self-levelling compound.

The floor and wall vinyl coverings were laid with ULTRABOND ECO V4 SP universal adhesive in water dispersion. ULTRABOND ECO V4 SP CONDUCTIVE adhesive was used to bond the conductive coverings in the operating theatres and laboratories.

TECHNICAL DATA
Period of construction: 2018
Period of the Mapei intervention: 2018
Customer: Bärenwiese veterinary care
Main contractor: Berliner Ausbau GmbH

Mapei coordinators: Lothar Jacob and Markus Lesinski, Mapei GmbH (Germany)

MAPEI PRODUCTS
Planipatch, Eco Prim T Plus, Ultraplan Eco, Ultrabond Eco V4 SP, Ultrabond Eco V4 SP Conductive

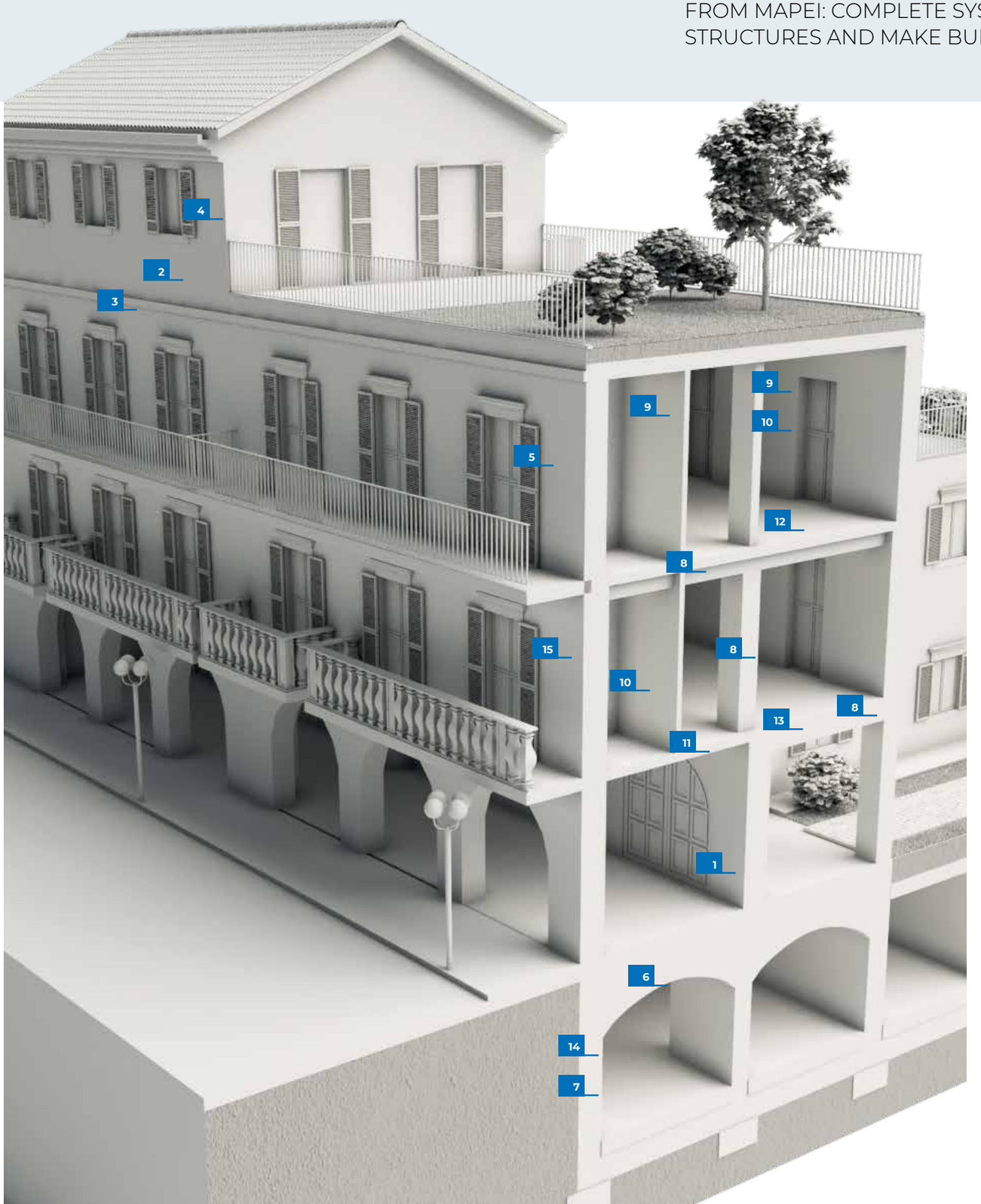
For further information on products see mapei.com and mapei.de

MAPEI FOR YOUR HOME

Structural and anti-seismic strengthening

FROM MAPEI: COMPLETE SYSTEMS TO STRENGTHEN STRUCTURES AND MAKE BUILDINGS SAFE

Following a spate of devastating earthquakes, the vulnerability of buildings and structures in the event of seismic activity has been a much discussed topic in recent decades, which has led to our attention becoming more focused on the need to upgrade the seismic capacity of what is often a very old architectural heritage, in both the public and the private sector.
Over the years Mapei, thanks also to the particularly productive collaboration between the company's R&D laboratories and several Italian and foreign universities, has developed a range of specific, cutting-edge products and techniques for the various types of problems encountered in the structural strengthening sector.
Amongst many other solutions, particularly worthy of mention are FRP (Fiber Reinforced Polymers), FRCM (Fiber Reinforced Cementitious Matrix), CRM (Composite Reinforced Mortar) technologies and the fibre-reinforced cementitious mortars from the PLANITOP HPC range.
Thanks to the extensive portfolio of products and complete systems on offer, Mapei is today in a position to propose the company as **sole partner for the upgrade and anti-seismic strengthening** of buildings.
In this issue, we would like to present just a few of the references and examples of structural strengthening work to improve the seismic capacity and safety of buildings in both the public and the private sectors.



1 FRCM system for strengthening load-bearing walls, pillars, arches and vaulted ceilings with basalt fibre mesh and cement-free, fibre-reinforced mortar in low thickness.
MAPEGRID B 250 + PLANITOP HDM RESTAURO + SILANCOLOR LINE

2 FRCM system for strengthening load-bearing walls, pillars, arches and vaulted ceilings with glass fibre mesh and fibre-reinforced mortar in low thickness.
MAPEGRID G220 + PLANITOP HDM MAXI + ELASTOCOLOR LINE

3 FRP system to prevent facades collapsing during earthquakes by binding inter-storey floors with carbon fibre or glass fabric and epoxy resin.
MAPEWRAP RANGE

4 System for tying adjacent, unconnected load-bearing masonry together with stainless steel bars
MAPEI STEEL DRY

5 CRM system for consolidating weak masonry by applying natural hydraulic lime-based "reinforced" structural render
MAPEWALL LINE + MAPENET EM 30/MAPENET EM 40 + SILANCOLOR LINE

6 FRCM system for strengthening masonry structures (load-bearing walls, pillars, arches and vaulted ceilings) with basalt fibre meshes and cement-free, high-ductility mortar in low thickness.
MAPEGRID B 250 + PLANITOP HDM RESTAURO

7 Complete system for waterproofing and restoring underground structures subjected to damp in counter-pressure and anti-condensation cycle.
MAPEPROOF LINE + MAPELASTIC FOUNDATION + MAPEGRID G 220 + PLANITOP HDM MAXI + POROMAP LINE + SILANCOLOR LINE

8 FRP system for strengthening and increasing the ductility of reinforced concrete structural elements (pillars, beams and beam-pillar joints) with carbon fibre and epoxy resin.
MAPEWRAP LINE + PLANITOP 200

9 FRCM system applied in compact layers to prevent tilting of partition walls in the event of earthquakes and tipping over of façade infill walls .
MAPEGRID G120 + PLANITOP HDM MAXI +MAPEWRAP SG FIOCCO

10 Rapid and ultra-thin system, including skim coat and a top-coat to prevent rubble/debris falling from internal partition walls and façade infill walls during earthquakes.
MAPEWRAP EQ SYSTEM + PLANITOP 200 + DURSILITE LINE

11 Rapid, compact system for strengthening and stiffening floor slabs and installing ceramic coverings on heated screeds with soundproofing.
TOPCEM PRONTO + PLANITOP HPC FLOOR + MAPESILENT LINE + KERAFLEX MAXI S1 ZERO + ULTRACOLOR PLUS

12 Rapid, compact system for strengthening and stiffening wooden floor slabs and rapid system for installing wooden flooring on soundproofing material.
PLANITOP HPC FLOOR + ULTRABOND ECO S968 1K + MAPESONIC CR

13 Rapid, compact system for strengthening and stiffening floor slabs with brick/steel joists and rapid system for installing ceramic tiles on soundproofing material.
PLANITOP HPC FLOOR + MAPESONIC CR + KERAQUICK MAXI S1 + ULTRACOLOR PLUS

14 Complete system for strengthening and waterproofing masonry below ground level with structural problems and water seepage
MAPEWALL RENDER & STRENGTHEN + MAPENET EM30/ MAPENET EM40 + PLASTIMUL RANGE

15 Rapid and ultra-thin system with elastomeric coating to prevent rubble/debris falling from façade infill walls during earthquakes
MAPEWRAP EQ SYSTEM + PLANITOP 200 + ELASTOCOLOR LINE

MAPEI FOR YOUR HOME

Piacenza (Italy)

VILLA ALBA

STRENGTHENING AND SEISMIC UPGRADING WORK FOR A PRIVATE VILLA IN NORTHERN ITALY

Villa Alba is a residential building in Piacenza (northern Italy) with three storeys above ground level (one of which is an attic) and one below ground level. The structure of the building is made from load-bearing, "two-header", solid brick masonry walls and lime mortar. The building was found to be pretty vulnerable from a seismic point of view, in that the existing structure was unable to guarantee a "box action" behaviour, as recommended by Italian Technical Standards for Constructions for masonry structures. Following an in-depth survey of the building itself and a study of its recent history, it was possible to identify when and how the original static arrangement of the structure had been modified over the years. The surveyors found that work had been carried out several times on Villa Alba since its construction between 1956 and 1958 and that the dimensions of the load-bearing walls had been gradually reduced, leaving the structure more vulnerable to static loads and seismic activity. It was also found that some of the building's vertical elements (such as two small masonry pillars in the main inside walls) were overloaded. Also, the masonry was generally in good condition in the areas where there were no flues or cable and pipe chases. From the tests carried out on the structure, it emerged that the 16 cm thick skimmed, self-supporting floors did not comply with current regulations; apart from being deformable along their plane, the effect of gravitational loads had not been verified and the way they were connected to the outer walls was inadequate.

It was decided, therefore, to intervene on the structure to upgrade its overall seismic capacity, thereby enabling the client to qualify for Superbonus 110%, an Italian Government's initiative aimed at relaunching and promoting growth in the Italian economy and, above all, a chance for the country's heritage buildings to be upgraded and made more safe in the event of an earthquake.

The structural work described in this article, along with other more traditional work carried out on the building, has led to a reduction in the building's seismic vulnerability and to its risk category being upgraded by three levels, according to conventional testing methods, with respect to its situation prior to carrying out the work.

Strengthening the floor-slabs and and perimetral wrapping

To upgrade the static capacity of the floor-slabs, improve the box action behaviour of the building in the event of seismic activity and, at the same time, prevent the onset of localised mode I mechanisms (overturning and out-of-plane vertical bending), the self-supporting reinforced brick floors (SAP) without structural screed were strengthened and stiffened by adding a 3 cm-thick, HPFRC structural screed made from high-performance, fibre-reinforced micro-concrete, connected to the perimeter walls with anchors made from rebar grouted into the masonry to form a floor diaphragm resistant to seismic loads.

In correspondence with each floor, a uniaxial, carbon fibre band running around the outside of the building was applied to counteract the tensile stresses in the kerb of each floor diaphragm and to counteract the on-

1. Detailed view of the extrados of one of SAP floor-slabs before placing PLANITOP HPC FLOOR 46 and after applying PRIMER 3296; in this image, you can see the anchor bars pieces of steel fixed in place with MAPEFIX EP 385 which were then used to connect the structural screed to the load-bearing walls.
2. Applying PLANITOP HPC FLOOR 46 to form the structural screed.
3. Strengthening the wrapping band at each floor level: application of the first coat of MAPEWRAP 31 fluid epoxy resin used to impregnate the fabric on a layer of MAPEWRAP 11 two-component epoxy grout.
4. Strengthening the wrapping band at each floor level: applying MAPEWRAP C UNI-AX 600 W carbon fibre fabric. In this image you can see one of the operators flattening out the surface of the fabric with a MAPEWRAP ROLLER to prevent the formation of air bubbles or any gaps or breaks in the bond.
5. Strengthening the wrapping band at each floor level: the second coat of MAPEWRAP 31 fluid epoxy resin was also applied over the splayed ends of the MAPEWRAP C FIOCCO ties and anchored in place with MAPEFIX VE SF resin.

set of the mechanisms mentioned above.

To strengthen the floor-slabs, once all the various layers on the surface of the extrados of the SAP brick floor-slabs had been removed, their substrate was prepared for application of the structural screed by removing all loose material and roughening the surface with a power-scarifier to create a surface roughness of at least 5 mm. Lengths of B450C steel were then anchored in the outer walls with MAPEFIX EP 385 pure epoxy, resin-based chemical anchor.

After consolidating the substrates with PRIMER 3296, a 3 cm-thick layer of PLANITOP HPC FLOOR 46 was applied to form the structural screed. The effectiveness of this solution was tested and validated by the University of Brescia (Northern Italy) by carrying out a series of in-situ load tests, through which it was possible to verify an absence of slip at the interface between the PLANITOP HPC FLOOR 46 structural screed and the extrados of the floor-slab and a three-fold increase in the slab's flexural stiffness, against an increase in thickness of just 3 cm.

To form the strengthening wrapping for each floor, the first step was to remove the render from the walls. The sharp corners of the existing joists were then rounded off to a radius of 30 mm, the surfaces were levelled off and any damaged concrete was integrated with PLANITOP SMOOTH&REPAIR R4 after cleaning the surface of the exposed rebar and applying MAPEFER to prevent corrosion. The strengthening band was then formed using MAPEWRAP C UNI-AX 600 W uniaxial, high modulus, high tensile carbon fibre fabric,


1


2


3


4


5

6. Applying PLANITOP INTONACO ARMATO with a rendering machine designed for spraying two-component products, equipped with a separate mixer unit.

particularly recommended for seismic upgrading applications.
The fabric was applied using a special Mapei epoxy resin system, consisting of MAPEWRAP PRIMER 1 as a primer, MAPEWRAP 11 thixotropic epoxy putties for levelling, and MAPEWRAP 31 adhesive for impregnating and bonding.
The surface was then broadcast with dry QUARTZ 1.2 quartz sand while the resin was still wet to create a good rough surface for the skim coat. To make the strengthening system even more effective, special ties made from pieces of MAPEWRAP C FIOCCO carbon fibre cord impregnated with MAPEWRAP 21 super-fluid epoxy resin were applied transversally in correspondence with any areas where there were changes in direction, to the corners of the masonry and at every two metres along the straight parts of the strengthening band, and were anchored with MAPEFIX VE SF chemical styrene-free vinylester anchor in holes drilled into the joists.

Confinement of masonry pillars
To strengthen the masonry pillars, which have to withstand mainly axial loads, it was decided to confine them with a continuous wrapping with MAPEWRAP C UNI-AX 300 W unidirectional, high-modulus, high-tensile carbon fibre fabric. The first step was to remove the render, round off the edges to a radius of 30 mm and then smooth over the surface with PLANITOP HDM MAXI two-component, pre-blended, high-ductile, fibre-reinforced mortar. The fabric was again applied in these areas using a special Mapei epoxy resin system. The last step was to broadcast the resin while still wet with dry QUARTZ 1.2 sand to create a good rough surface for the skim coat.

Strengthening the masonry
For the in-plane strengthening of the old masonry PLANITOP INTONACO ARMATO was applied, a two-component, cement-free, pre-blended, high-ductile, natural hydraulic lime (NHL) and Eco-Pozzolan-based mortar reinforced with glass fibres, particularly recommended for increasing the strength and deformation capacity of wall panels in the event of seismic activity, without having to resort to the application of strengthening mesh. Once all the old render had been stripped off, localised areas of the damaged masonry were demolished and then re-built using the "patching" technique in correspondence with the flues, recesses and cable and pipe chases. After applying a coat of PRIMER 3296 to consolidate the substrate, a layer of PLANITOP INTONACO ARMATO was applied with a rendering machine designed for spraying two-component products, equipped with a separate mixer unit.

Claudio Burgazzi. Claudio Burgazzi Design studio

TECHNICAL DATA
Villa Alba, Piacenza (Italy)
Period of construction: 1956-1958
Period of the Mapei intervention: 2020-2021
Intervention by Mapei: supplying products for structural strengthening and seismic upgrading
Architectural design: Matteo Faroldi
Structural design: Claudio Burgazzi
Main contractor: Pre. Vale Costruzioni
Mapei coordinator: Giulio Morandini, Mapei SpA (Italy)

MAPEI PRODUCTS
Strengthening floor slabs
Primer 3296, Planitop HPC Floor 46, Mapefix EP 385
Perimetral wrapping:
Planitop Smooth & Repair R4, Mapefer, MapeWrap Primer 1, MapeWrap 11, MapeWrap 31, MapeWrap C UNI-AX 600 W, Mapewrap C Fiocco, Mapewrap 21, Mapefix VE SF, Quartz 1.2
Static strengthening:
Primer 3296, Planitop HDM Maxi, MapeWrap Primer 1, MapeWrap 11, MapeWrap 31, MapeWrap C UNI-AX 300 W, Quartz 1.2
Strengthening masonry:
Primer 3296, Planitop Intonaco Armato

For further information on products see mapei.com

Load tests at Villa Alba

Load tests were carried out on the floor-slab both before and after applying the strengthening system. Both series of tests were carried out by applying concentrated loads and measuring the amount of deflection. The loads were simulated by applying bags of cement positioned at a distance of L/4 from the supports with a footprint measuring 0.65 x 0.85 m.

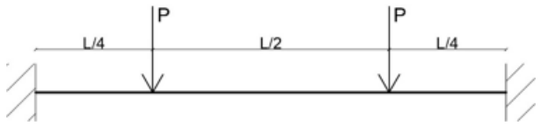


Fig. 1. Load test set-up.

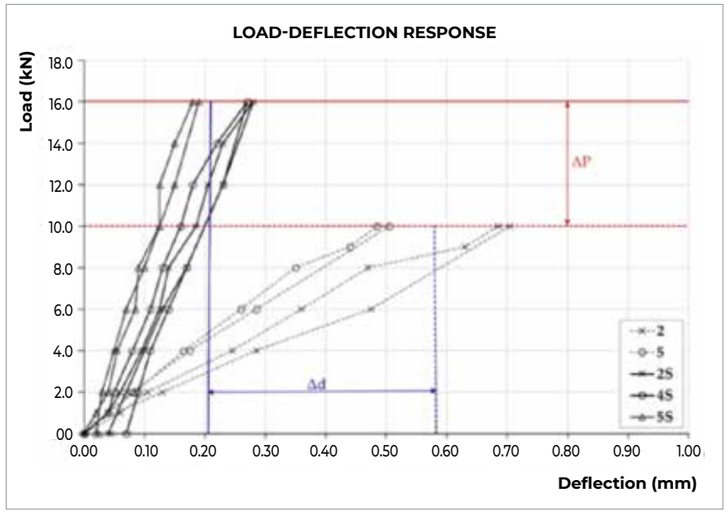
The test set-up is shown in Figure 1.
The amount of deflection was measured using centesimal displacement indicators on telescopic poles. Three indicators were positioned at the mid-point, two were positioned directly below the load points and two were placed near to the supports. Figures 2 and 3 show the position of the dial indicators and the loads.

Fig. 2. Area of load test and measuring instruments at ground level in a) pre-strengthening phase b) post-strengthening phase.

Fig. 3. Area of load test and measuring instruments at first floor in a) pre-strengthening phase b) post-strengthening phase.

In the pre-strengthening phase the load was applied in seven stages, reaching a maximum load of 10 kN (distributed over two points) and the maximum deflection, taken at the mid-point, was found to be 0.71 mm. After carrying out the strengthening work, the load was applied in eight stages, reaching a maximum load of 16 kN (distributed over two points). In this case, the amount of deflection, taken again at the mid-point, was found to be 0.28 mm.
By comparing the amount of deflection before and after the strengthening work, it was found that the PLANITOP HPC FLOOR 46 micro-concrete structural screed had increased the floor-slab's flexural stiffness by around 300%. As a result, the amount of deflection measured after applying the strengthening system was much lower (by 2.53 times). Also, the maximum load applied was 60% higher.
While carrying out the tests on the strengthened floor-slab, dial indicators with an accuracy of one thousandth of a millimetre were used to measure any slip at the interface between the PLANITOP HPC FLOOR 46 structural screed and the surface of the extrados of the SAP floor-slab. The amount of slip detected, 0.003 mm, may be considered negligible and is a demonstration of the excellent level of adhesion between the existing substrate and the fibre-reinforced microconcrete.

Prof. Fausto Minelli and eng. Fabiola Iavarone. University of Brescia (Northern Italy)



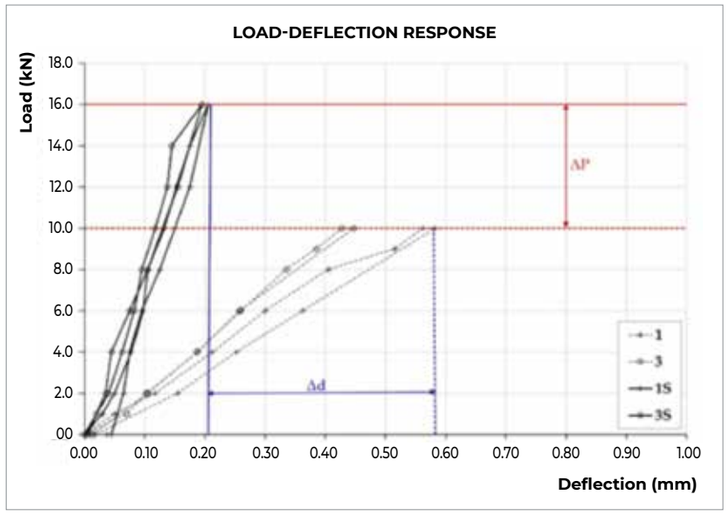


Fig. 4. Comparing load-deflection at pre-strengthening (above) and post-strengthening. (below).stages.

Reducing **seismic risk** with innovative Mapei strengthening systems based on FRP composites and applied externally only

The vulnerability of the current building stock was highlighted again in Italy by recent seismic events which, inevitably, took a heavy toll in terms of the number of victims and amount of material damage. Making structures safe, therefore, is a priority in social and economic terms in order to improve the level of safety in homes and to reduce economic loss. In this context, **priority must be given to developing and validating low-impact interventions that can be adopted quickly and minimise application times and costs with the aim of upgrading the current building stock**, whether it is used on just a single structure or implemented on a much larger scale.

The test campaign illustrated in this article analysed the behaviour of a **structural sub-assembly consisting of a beam-column joint in its original configuration and strengthened with externally-applied FRP systems**. This configuration was chosen to minimise the amount of disturbance to the occupants of the building and to avoid having to remove portions of the infill walls, making it less invasive and more cost efficient, while causing less worry for the occupants while the work is being carried out.

The experiment demonstrated the effectiveness of the technical solution proposed to restore one of the main structural deficiencies in existing reinforced concrete buildings, that is, the triggering of brittle failure mechanisms (shear failure) in non-confined joints, such as wall and corner joints.

Development of this innovative strengthening method is a result of the close relationship between Mapei S.p.A. and the DiSt (Department of Structural Engineering and Architecture) of the Federico II University of Naples, and the work carried out to develop and validate sustainable solutions using innovative materials in the building sector. Intense, experimental research work is conducted constantly to evaluate the effectiveness of cutting-edge systems to reduce seismic risk in reinforced concrete and masonry structures.

Fig. a

Fig. b

Fig. 1. Shear failure of beam-column joints following seismic activity (a), (b).

Composite materials have shown to be particularly beneficial in mitigating seismic risk because they combine an increase in a structure's ability to withstand seismic loads with the low impact (and invasiveness) their application has on the structure, which is applied mostly externally and treated as a localised intervention.

When applied to reinforced concrete structures for seismic purposes, composite materials have proven to be beneficial in eliminating brittle failure (tensile failure in joint panels, for example), which are typically responsible for much lower safety indexes than those specified when designing new buildings (Fig. 1).

FRP strengthening systems applied to non-confined joints may be combined with localised shear-strengthening on those elements which tend to be more vulnerable in the event of seismic activity, such as short pillars, which have been found to suffer more damage following seismic activity.

Prof. Alberto Balsamo. Department of Structural Engineering and Architecture, Federico II University of Naples
Giulio Morandini. Corporate Product Manager, Structural strengthening line, Mapei S.p.A (Italy).

EXPERIMENTAL WORK

The experimental test campaign was conducted in the DiSt test lab to experimentally confirm the validity of a new FRP strengthening system designed to increase the seismic capacity of non-confined beam-column joints in reinforced concrete. The advantage of this type of system is that it only needs to be applied to the outside of the building and without having to remove sections of infill walls.

Test programme and method

The experimental test campaign was carried out on two beam-column joints; the first one in its original, as-built configuration and the second one in a strengthened configuration. The two sub-assemblies were geometrically identical and were made from materials with identical mechanical properties and reinforcement. They were representative of reinforced concrete buildings typically found in medium-risk seismic zones and were designed according to construction norms and standards which are now obsolete. They were characterised by their lack of stirrups in the joint panel and deficient transversal reinforcement in the beams and columns. The columns were 300 mm square and reinforced with 8 pieces of Ø 16 mm rebar, while the beam was 300 mm wide, 500 mm deep and reinforced with 3 pieces of Ø 16 mm rebar along the upper and lower sides.

The tests were carried out using the set-up shown in Fig 2a, applying a constant, normal load at the top of the pillar and a cyclical shifting load of increasing magnitude at the end of the beam. The loading protocol is shown in Fig. 2b as a function of equivalent inter-storey drift.

Fig. 2b

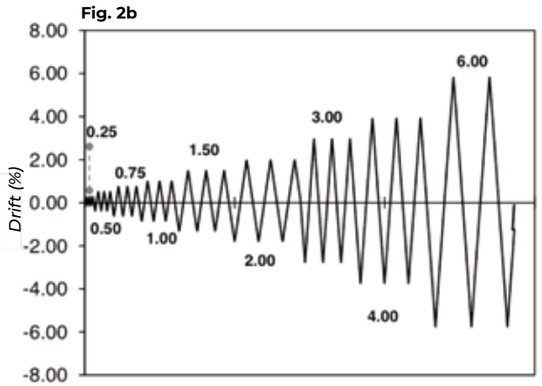


Fig. 2a

Fig. 2. Test setup (a) and loading protocol (b)

Fig. 3. Diagram of an FRP strengthening system (joint panel only): external application only.

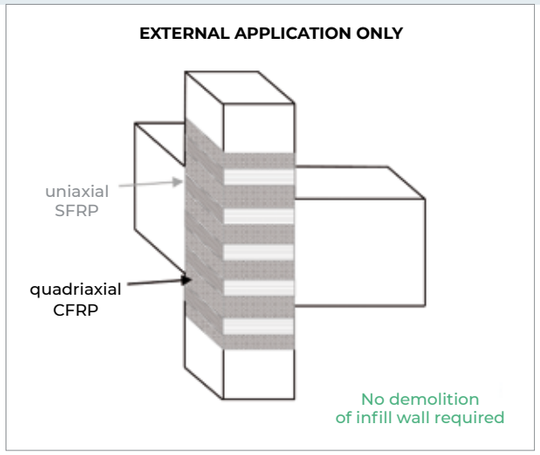


Fig. 4. Diagram of an FRP strengthening system (joint panel only): traditional strengthening system.

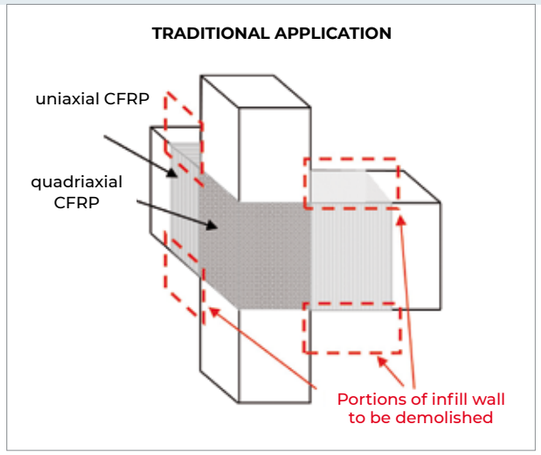
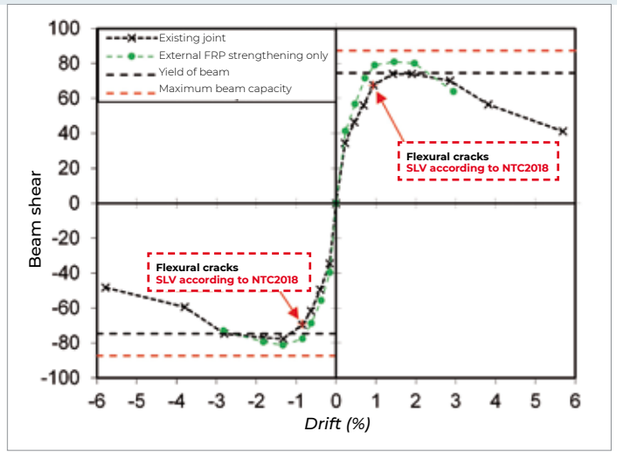


Fig. 6. Comparison of the experimental values



External strengthening system with FRP

The new system was based on the use of innovative anchoring systems (Fig 3) to replace traditional binding with uniaxial CFRP fabric wrapped around the beam in a U formation (Fig 4). According to criteria adopted to verify the strength of beam-column joints (NTC- Italian Technical Standards for construction - 2018, section 7.4.4.3.1), the resistance of beam-column joints following diagonal cracking may be entirely guaranteed by stirrups applied horizontally. The effect of the stirrups, which were not present on the joint under examination, was provided by an equivalent FRP strengthening system applied externally, consisting of quadriaxial carbon fibre fabric applied on the non-confined angle joint to prevent brittle failure in the joint panel in favour of more yield in the horizontal rebar in the adjoining beam. The FRP strengthening package may be calculated as follows:

- in accordance with the CNR DT-200/2004 and CNR DT-200R1/2013 instructions by the Italian Research Committee, the Guidelines of the Italian Supreme Council for Public Works of 24.07.2009, and the Guidelines for the Repair and Strengthening of Structural Elements, Buffer Walls and Partition Walls (ReLUIS - Italian Seismic and Structural Engineering University Labs Networks - 2011);
- by calculating the main stresses/strains (used when designing experimental tests), taking into consideration the beneficial effect of a normal force and the contribution provided by the concrete (see FIB BULLETIN No 90: Externally-applied FRP reinforcement for concrete structures).

Figs. 5 (a)(b)(c)(d)(e)(f)(g) show the main application operations and the materials used in the strengthening package (for external applications only).

Experimental validation

The effectiveness of the new system was demonstrated by comparing the results of the experimental test campaign in terms of the cyclic response (Fig 6) and by crack-mapping analysis as drift demand increased (Fig 7).
The failure mode of the as-built joint was typical of the type

Fig. 5. Application operations for the FRP strengthening system (external application only).

(a) *Drilling a series of Ø14 mm holes for the anchors.*
(b) *Pre-consolidating the surface of the concrete by applying a two-component, solvent-free, epoxy resin primer (MAPEWRAP PRIMER 1).*
(c) *Smoothing over the surface of the concrete by trowel-applying two-component, thixotropic epoxy putties (MAPEWRAP 11/12); while the smoothing compound is still fresh, apply the first layer of a medium-viscosity epoxy adhesive (MAPEWRAP 31) with a roller to impregnate the FRP fabric applied to the two external faces of the column.*
(d) *Applying the MAPEWRAP C QUADRI-AX 380 strengthening system (in compliance with CVT Technical Evaluation Certificate n° 206/2019 – Class according to the Guidelines of the Italian Supreme Council of Public Works n° 220, 9.7.2015: 210C) consisting of quadriaxial, high-modulus of elasticity, high-tensile strength, balanced carbon fibre fabric; medium-viscosity epoxy adhesive (MAPEWRAP 31) and broadcasting the surface with quartz sand.*
(e) *Filling the holes for the anchoring system with solvent-free, pure epoxy resin chemical anchor (MAPEFIX EP 470 SEISMIC).*
(f) *Applying by trowel a layer of two-component, thixotropic epoxy putties (MAPEWRAP 11/12) for the anchoring strips.*
(g) *Overview of the strengthened joint showing the anchoring strips wrapped over the MAPEWRAP C QUADRI-AX 380 SYSTEM.*

Fig. 7. Comparison of crack phenomenon at different levels of inter-storey drift.

found in existing buildings with diagonal shear cracks in the joint panel. Cracking appeared at a moderate inter-storey drift demand of around 1.00% (see Fig. 7). This type of cracking precedes flexural yield of the rebar in the beam (Fig 6). According to NTC 2018 construction norms, this type of shear cracking phenomenon (brittle failure mode) indicates that the life-saving state (LSV) has been reached. This significantly reduces the capacity of the entire structural system and would lead to very low estimated LSV safety indexes (ζ_e).

The joint strengthened with FRP applied externally only **demonstrated the effectiveness of the strengthening system**. The overlap in the experimental curves in Fig. 6 shows that initial stiffness is more or less similar to that of the as-built joint, which demonstrates that this type of intervention may be considered to be of the "localised" type.

The effectiveness of the intervention was confirmed by it **fulfilling the main objective: to modify the failure mode from brittle-type (shear failure in the joint panel) to ductile-type (flexural yield of the beam)**. An analysis of the results shows that the amount of energy dissipated increased significantly (+30%), leading to an increase in the performance characteristics and seismic capacity of the building. The strengthening system was able to withstand these types of load until it reaches a drift demand of 2.00% with evident flexural cracking in the beam (Fig. 7).

The experimental tests clearly demonstrated the effectiveness of this new strengthening system, which increases the shear strength of the joint panel and favours the development of ductile yield failure in the beam. This results in **a significant increase in the amount of energy dissipated**, leading to an increase in the performance characteristics and seismic capacity of the building.

Prof. Alberto Balsamo. Department of Structural Engineering and Architecture, Federico II University of Naples.

Petriolo (Province of Macerata, Italy)

THE NEW PLANITOP INTONACO ARMATO TECHNOLOGY

FOLLOWING THE EARTHQUAKE THAT HIT THE AREA, THIS PRIMARY SCHOOL UNDERWENT SEISMIC AND ENERGY EFFICIENCY UPGRADING WORK

The need to improve and upgrade the seismic capacity of our stock of school buildings is becoming more and more pressing. The best way of understanding the effect seismic activity has on structures is also, unfortunately, the powerful earthquakes that have hit our countries in recent decades which have all increased our level of attention regarding the safety of public buildings, particularly schools.
In this general framework, studying the behaviour of structures during an earthquake, evaluating their vulnerability and then designing appropriate end effective measures to improve or upgrade their seismic capacity has now become the most topical and important area of research in the field of structural engineering.

PROJECT OVERVIEW

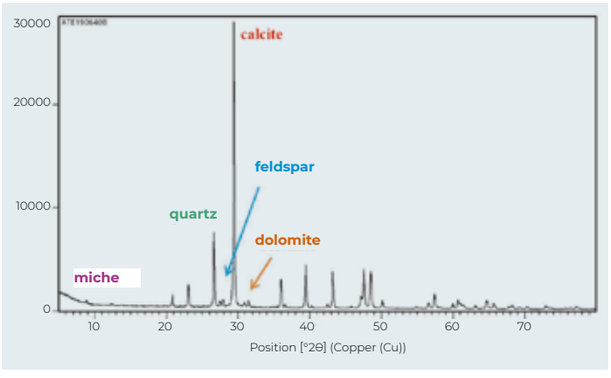
The upgrading work on the primary school in Petriolo (Province of Ma-cerata, Central Italy) is particularly interesting, in that it is an excellent example of how design, project execution and the selection of materials all played a combined and inter-related part in the work to restore the structural, functional, architectonic and energy aspects of the building.
Once work had been completed, the result was a building compliant with NTC (Italian Technical Construction Norms) 2018 regulations, with an energy rating in accordance with environmental sustainability criteria and with completely new classrooms, including multi-media ones.
The project, carried out in conjunction with the company chosen to design and manage the actual work, focused on restoring the structure of the existing masonry with PLANITOP INTONACO ARMATO, a two-component, ready-mixed, high-ductility, fibre-reinforced, natural hydraulic lime (NHL) and Eco-Pozzolan based mortar.
This innovative solution is steering other projects on existing buildings in the Macerata area, one of the provinces most affected by the earthquakes that hit central Italy in 2016, in a similar direction.
Mapei Technical Services had an integral role in this project: it started with a chemical analysis of the masonry in the company's Research & Development laboratories in Milan, followed by consulting various Mapei experts during the design phase, and concluded by working alongside the teams of workers operating on site to help install and apply the product correctly.

TESTING PLANITOP INTONACO ARMATO

Preliminary surveys and testing

In order to gain sufficient knowledge and understanding of the building, a series of preliminary tests were carried out in the laboratory to characterise the mechanical and chemical properties of the materials used for the masonry.
Going into detail, the flexural and compressive strength of the bricks and the chemical/physical composition of the mortar were tested and analysed to verify their soluble salts content, spectroscopic analysis via x-ray diffraction (XRD) was carried out to ascertain the mineralogical composition and, lastly, "thermal analysis" was used to measure the type and amount of hydrated compounds present.
The load-bearing structure of the building is comparable to that of 3-header, 40 cm thick, solid brick masonry with lime-based mortar.

Apart from the structural work, the project also included a completely new look for the classrooms by applying cementitious floorings made with the ULTRATOP LOFT system.

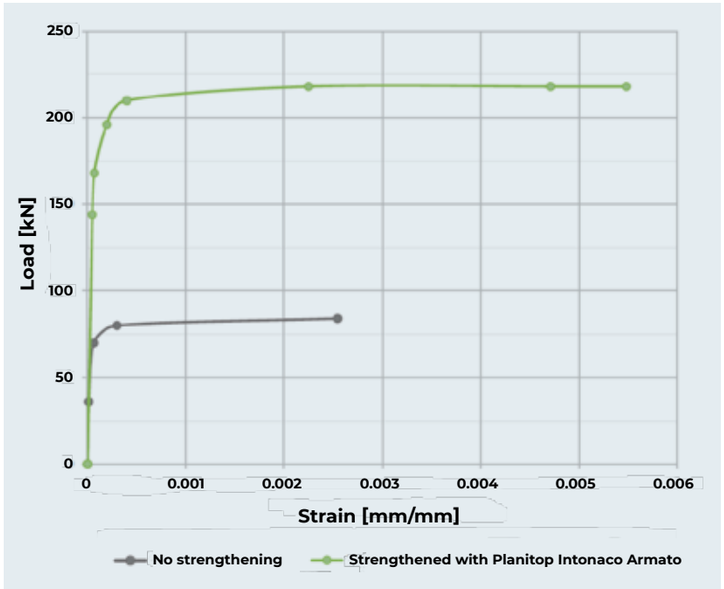


Samples of mortar taken from the existing masonry were analysed in the Mapei R&D Laboratories to examine the grain size, the soluble salts content and the mineralogical composition.

Comparison of the failure mode of a panel without strengthening (left) and strengthened with PLANITOP INTONACO ARMATO (right).

On-site testing

In order to estimate the shear strength and tangential modulus of elasticity of the masonry before and after the intervention, two diagonal compression tests were carried out on-site on the load-bearing masonry.
The test, carried out in accordance with ASTM E519-10 "Standard Test Method for Diagonal Tension (Shear) in Masonry Assemblages", consisted of isolating the masonry panel of one of the walls of the building and exerting a compressive force along its diagonal to provoke crack patterns that would lead to failure.
The diagonal load exerted during the test closely simulated the stresses the element would be subjected to in the event of an earthquake. In fact, the induced stress is the sum of the vertical stress (due to its own weight and the loads acting on the element) and the horizontal stress (seismic load). The standard sample for this type of testing is a 120 cm by 120 cm square panel with the same thickness as the wall façade. The panel is isolated from the wall by making four cuts, affecting the portion of masonry to be tested as little as possible.
The first test was carried out on the masonry in its actual condition. The second test was carried out on a wall bay strengthened on both faces with a 10 mm thick layer of PLANITOP INTONACO ARMATO, with no strengthening mesh and no ties or connections to the substrate.
Once the masonry panel had been isolated, instruments were attached to the masonry and the diagonal compression tests were carried out.



The masonry panel was monitored during testing by placing four deformeters on the masonry (two on each side along the diagonals and one on each face) to measure any deformation in the panel down to a thousandth of a millimetre.
The load exerted by the hydraulic jack used for the tests was monitored with a digital manometer on the pump.
The tests were then carried out by recording load and deformation until the masonry failed.

Analysis of the results

The behaviour of the panel with no strengthening applied showed typically slipping phenomena in mortar joints at the brick/mortar interface.
Placing strengthening material on both faces had a significant effect on the failure mode of the panel, with shear failure characterised by widespread cracking along the axis of the compression load, with small to medium cracks in both the mortar joints and the masonry blocks.
As illustrated in the graph on the left, strengthening the panel by applying PLANITOP INTONACO ARMATO on both faces considerably increased the shear strength and resistance to deformation of the masonry, resulting in an increased capacity to dissipate energy. These characteristics make this product particularly suitable for strengthening the structures of buildings in areas at high risk of seismic activity.
Furthermore, the value of the strength amplification coefficient obtained experimentally is even higher than the value prescribed by the Italian authorities for the application of reinforced plaster on the same type of masonry.

Close-up of the product applied (left) and the masonry panel after completing the strengthening work (right).

WORK PHASES

Before applying the strengthening system, the old render was removed from the areas where the system was to be applied to expose the underlying masonry.
To ensure the system adhered firmly to the masonry, the substrate was thoroughly cleaned so that it was sound and had no crumbling areas or traces of dust, oil or old paint.
Any efflorescence or soluble salts on the surface of the masonry was removed by hydro-blasting and, because the surface of the masonry was particularly absorbent, it was treated with PRIMER 3296, diluted 1:1 with water, which is used to consolidate and improve the characteristics of the surface of weak or dusty substrates. Once it had been mixed, two layers of PLANITOP INTONACO ARMATO strengthening mortar were applied with a rendering machine to form a final layer w--ith a total thickness of around 1-1.5 cm.
Compared with conventional masonry strengthening systems currently available on the market, this innovative technology has the following advantages:
- no mesh needs to be applied thanks to the micro-reinforcement provided by the structural fibres contained in the product;
- no connectors are required thanks to the product's excellent adhesion to substrates;
- chemical stability is guaranteed by the polymer fibres in the product so there is no corrosion phenomenon.

After applying the strengthening layer to the thickness specified, work was completed by skimming and painting the surface.
Lastly, because of the low thickness of PLANITOP INTONACO ARMATO, apart from having a negligible effect on the total volume in terms of additional mass (weight of product ≈ 28 kg/m² compared with at least 65kg/m²), the available surface area in the classrooms and corridors remained unchanged.

Take a look at the video of this project

An intervention in the name of sustainability

Within the scope of the design work that had to take the subject of environmental sustainability into consideration, when choosing the strengthening system it was also necessary to opt for eco-sustainable solutions. And the use of PLANITOP INTONACO ARMATO integrates perfectly with this objective, in that it contains at least 30% of recycled materials and, starting from the site phase, has less impact on the environment.

Stefano Geminiani. Assistenza Tecnica Edilizia, Mapei SpA

PLANITOP INTONACO ARMATO

Two-component, ready-mixed, high-ductility, fibre-reinforced, natural hydraulic lime (NHL) and Eco-Pozzolan based mortar, particularly recommended for the structural strengthening of facing walls.

FIND OUT MORE

TECHNICAL DATA
"G. Ginobili" primary school, Petriolo (Italy)
Year of construction: 1928
Period of the Mapei intervention: 2019-2020
Intervention by Mapei: supplying products for structural strengthening and seismic upgrading
Design: Massimo Conti, EnAr Conti Srl, Daniele Corbelli, Stefano Paciotti, Marco Tirabassi
Owner: Petriolo City Council
Works direction: Silvano Biancucci
Operation director: Massimo Conti, EnAr Conti Srl
Main contractor: Staffolani Danilo
Mapei coordinators: Stefano Geminiani, Roberto Migliorini, Lorenzo de Carli, Massimiliano Petti, Riccardo Chiodoni, Mapei SpA (Italy)

MAPEI PRODUCTS
Structural strengthening: Planitop Intonaco Armato, Primer 3296
Cementitious floors: Quartz 0.5, Mapecoat I 600 W, Ultratop Loft F, Ultratop Loft W, Ultratop Easycolor, Primer LT, Primer SN

For further information on products see mapei.com.

Understand then intervene

WE SPOKE WITH MASSIMO CONTI, DESIGNER OF THE BUILDING WORKS

Seismic capacity and safety have become increasingly topical issues: what challenges had to be overcome with this project?
Because of the way they are constructed, upgrading the seismic capacity of existing masonry buildings is more of a bureaucratic problem than a technical one due to the seismic risk index.
An important example is all the masonry constructions impacted by the earthquakes and tremors that hit central Italy in August 2016, which put them all through a kind of "seismic test".
For the buildings with only limited damage, or levels of damage compatible with the commonly adopted "Threshold for Safeguarding Lives", if their seismic capacity was to be examined, their index would be much less than one.
This incongruence, which still allows structures to work "in favour of safety", is also closely tied to safety factors applied according to the level of understanding of a building or structure.
The school building in Petriolo, which dates back to the 1930's, had work carried out on it in 2017 to upgrade its seismic capacity. After the work had been completed and tested, the norms were reviewed and the current NTC18 came into force in March 2018. Then, under the post-earthquake reconstruction framework, a new ordinance was issued, which urges local authorities, particularly in the case of schools, to carry out geological surveys and an analysis of the "Local Seismic Reply" (RSL), with a significant increase in seismic data compared with those required by the previous norms and standards. Six months after completing the work to upgrade the building, because of external factors, its seismic risk index was less than one, which means further work needed to be carried out.

What is the most unique or distinctive feature of this project?
To optimise the design and executive phases of the project and to manage the resources wisely so that the school could be reopened on schedule and in compliance with applicable safety standards.
This is why we decided to invest in gaining more knowledge of the building by carrying out tests on-site in order to get to a higher level of understanding, thereby enabling us to carry out targeted work on the building, which actually demonstrated to have a good reaction to seismic activity.
Firstly, this enabled us to create a more efficient structural model of the building's characteristics and, as a result, to adopt methods and techniques that would respect the historic and artistic value of the structure and, at the same time, considerably reduce the amount of time required to carry out the work. The model was perfected for each stage of the work, which allowed us to evaluate pretty accurately the effect of the modifications by taking into consideration factors such as the height and layout of the building, backed up by calculations to demonstrate the benefits at that particular stage of the project compared with its actual condition.
Once work had been completed to upgrade its seismic capacity and energy rating it was classified N.Z.E.B., sufficient to comply with NTC 2018 regulations, and the architecture of the classrooms had a completely new layout. This goes to show that even the restoration of masonry buildings can reach very high standards if all those involved work in synergy, making the most of different know-hows. Getting a better understanding of a masonry structure and carrying out surveys and ana-lyses with more precise structural models undoubtedly help you achieve results affected by fewer errors and make interventions on structures more cost effective.

Why should you choose PLANITOP INTONACO ARMATO?
Right from the very start, the proposal to use PLANITOP INTONACO ARMATO for this project proved to be the only one that could guarantee the best results, from both a technical viewpoint and in terms of impact on the environment. All the other masonry strengthening methods available are able to increase the seismic capacity of a structure, but the use of PLANITOP INTONACO ARMATO has a series of other advantages which were important for the ultimate objective of the project: a higher level of durability, thanks to its total physical/chemical compatibility with the existing masonry, the reduced thickness of the layers applied and the possibility to avoid using mesh or ties on the substrate during site work. A further guarantee came from being able to perform tests with this material in the school before it was actually applied through two diagonal shear tests on wall bays.

A new plant and an anniversary for Mapei India

THE INDIAN SUBSIDIARY CELEBRATES ITS 10TH ANNIVERSARY AND THE CONSTRUCTION OF THIRD PLANT

Mapei India, the Group's Indian subsidiary, performed the traditional "Bhoomi Pooja" ritual on 10th December, 2020, and the ceremony for laying of the first stone of its third manufacturing plant in Kosi, approximately 100 km from Agra and 140 km south of New Delhi, in the state of Uttar Pradesh in northern India. "Bhoomi Pooja" is a traditional Indian ritual performed before beginning major building operations to drive off any negative influences from the ground and ensure building work is successfully completed.
This is the Indian subsidiary's third manufacturing plant alongside those in Bangalore (in operation since 2012) in the state of Karnataka, in the south of the country, and Vadodara (in the state of Gujarat, in north-west India), which was opened in 2016.
The manufacturing plant in Kosi is strategically located to be well connected to major Indian cities like Mathura, Agra and New Delhi by important road and rail links. This new production unit will allow Mapei India to meet the demands of the expanding local market, speeding up the supply of building products to clients in the north of the country.

The first 10 years...
Mapei India already has its own lengthy history: the subsidiary was set up at the beginning of 2011 in Bangalore to supply the Indian market with innovative high-tech products and make the most of all the opportunities offered by this vast country.
So, on 4th March it will be 10 years since Mapei India first began operating on the local market and over this period the company has achieved many notable successes: its income has grown constantly reaching a figure of 16.5 million Euros in 2020; it now employs 246 staff; it has notable facilities (in addition to its manufacturing plant, the subsidiary also has business offices in New Delhi, Bangalore, Mumbai and Pune); and it supplies miscellaneous products for the local building market: cement additives and admixtures for concrete, waterproofing agents, products for repairing concrete and structural strengthening solutions, cementitious and resin systems for floors, products for installing ceramics, stone and resilient materials (including those for sports surfaces), sealants and under-

LEFT. Mapei India performed the traditional "Bhoomi Pooja" ritual on 10th December and a ceremony for laying of the first stone of its third manufacturing plant in Kosi. In the middle, the CEO of the company, Sanjay Bhalla.

MAPEI INDIA

3
MANUFACTURING PLANTS
BANGALORE, VADODARA AND KOSI (UNDER CONSTRUCTION)

4
OFFICES
(NEW DELHI, BANGALORE, MUMBAI AND PUNE)

246
STAFF

16.5
MILLION EUROS TURNOVER
(FORECAST FOR 2020)

BOOSTING BUSINESS ON A GIGANTIC MARKET

GENERAL MANAGER ABHIJIT DUTTA OUTLINES MAPEI INDIA'S EXPANSION PLAN

Mapei is getting ready to open its third manufacturing plant in India: does this confirm the enormous potential of the Indian market?
Definitely. Considering the size of the Indian subcontinent, we need to be able to rely on minimum four manufacturing plants in various regions to cover the entire country effectively.

India, a country that is coming to terms with the hefty economic repercussions of the Covid-19 pandemic, is undertaking an ambitious plan of new infrastructures and major works (NIP). What opportunities does this open up for Mapei?
Mapei India has always operated in the field of infrastructures and strategic works of national importance for different Government ministries, including Defence. Now, partly thanks to the boosting of our production lines and facilities, we are fully prepared to take full advantage of the opportunities offered by the Government's new push for infrastructure.

What are the prospects for Mapei in the building industry for the housing market?
Initially, in order to overcome certain logistical constraints, we focused mostly on the top end of this market.
Then, after opening a plant in Vadodara, we began to making inroads into a much larger slice of the market. Thanks to the third plant, we will be able to gain a much larger market share in the Northern and the Central part of India.

The Mapei plant in Bangalore has been operating since 2012 in Karnataka, in the south of the country.

The Mapei plant in Vadodara (in the state of Gujarat in north-west India) was opened in 2016.

ground building products.
Mapei India also stands out on the local market for its contribution in terms of products and technology to important works carried out in the country (Mumbai International Airport, JW Marriott Hotel in Pune, the Statue of Unity in Kevadia, Ahmedabad Underground Railway Network, and a number of strategic tunnels) and also for its highly qualified sales staff covering the entire country and its Technical Services Department providing support for professionals in the sector.

...and its prospects
Mapei India clearly intends to keep on growing and being successful even under the rather unfavourable circumstances at the moment. Indeed, India is one of the countries that has suffered the most from the Covid-19 pandemic. Measures to control the virus, which have shut down all business operations in March 2020, have resulted in a drop in domestic demand and a decline in both manufacturing and investment. The International Monetary Fund estimates that the GNP dropped by 8% in 2020 but will rise by 11.5% in 2021 and 6.8% in 2022. Last year's drop follows a slowdown recorded in 2019 when the GNP only grew by 4.9%, its lowest increase following six years of sustained growth. Nevertheless, India's economy is still one of the most dynamic in the world. The New Delhi Government is focusing on infrastructures and major works to give it a further boost. Over the last few months work has begun on the NIP (National infrastructure pipeline), a five-year plan for the 2020-2025 period involving an investment of 1798 billion US dollars in roads, railways, energy, and urban projects. A total of 7,438 projects are planned (1742 of which are currently being set under way) in an attempt to boost growth and attract major international investors. According to the Indian Ministry of Finance, 75% of the resources involved will come from central government and federal states with private investors providing the rest.
The Hon'ble Prime Minister Narendra Modi has also launched a "Make in India" campaign intended to facilitate local and foreign investment, promote innovation, develop local talent, speed up bureaucracy and simplify the rules and regulations governing businesses, and, of course, create infrastructure for supporting industrial operations. The commencement of work on building Mapei India's third plant is part of this framework: "We are proud to be part of our Hon'ble Prime Minister Narendra Modi's Make in India plan by building this new production unit", so the General Manager of Mapei India, Abhijit Dutta, stated.

Which are the most important product lines for Mapei in India?
The line of products for installing ceramic tiles and stone material, as well as our waterproofing agents, admixtures for concrete and products for underground works.

India has a rapidly developing economy, but its bureaucracy is often accused of being slow and inefficient. What is your opinion about this based on your own experience?
It is a fair point. The current government is doing its best to simplify procedures, but it is still a slow process. Nevertheless, Mapei India staff know how to overcome these hurdles and, so far, we have managed to handle them satisfactorily.

India excels in school and university education, not just in the fields of high-tech and technology. Is this a key factor that Mapei has experienced in its own business operations?
Yes. The Indian education system generates a reliable flow of highly qualified and professional personnel, which helps make the national economy "resilient", i.e. more flexible and more able to absorb the impact of any negative factors. That is why we are developing a strategic project to allow Mapei India to contact the final year students of some selected universities, so that the Mapei brand becomes well known to these young professionals and motivate them to contact Mapei when they take up their positions in their respective professional lives.

A closer partnership

INTERVIEW WITH VINCENZO DE LUCA, THE ITALIAN AMBASSADOR TO INDIA

In 2019, before the pandemic broke out, trade between Italy and India had grown compared to previous years reaching a total of 9.1 billion Euros. Clear evidence of an increasingly close business partnership. What are the prospects for more extensive cooperation between the two countries?
The partnership between Italy and India has really gathered momentum, particularly since the Summit held on 6th November last year between the two heads of government, Mr Conte and Mr Modi, held on 6th November last year. As well as adopting a Joint Statement, Italy and India agreed on a 2020-2025 Action Plan for the first time (in line with the timespan set at a previous EU-India Summit held last July), which, on one hand, confirms measures already underway to promote economic relations and, on the other, sets new guidelines for an even closer business partnership. The framework is completed by 15 strategic agreements covering various different sectors, most notably energy and infrastructure. This is an important achievement that lays the foundations for greater bilateral cooperation based on concrete projects in all economic fields, ranging from scientific research and protecting the cultural heritage to cooperation in industrial research and defence.

The high degree of compatibility between the two manufacturing systems provide Italian companies with promising opportunities in the Indian market

How many Italian companies are currently operating in India and how much does Italy invest in this nation?
Over 600 Italian businesses already operate in India, employing over 23,000 people. Despite overwhelming attention to the healthcare crisis, there was notable Italian investment in India in 2020 or, in any case, preparatory agreements for investment at a later date. To mention just some of the most recent: FCA (now known as Stellantis), Italferr, Fincantieri, Maire Technimont, SNAM and ENEL Green Power. Investment made by our "national champions" are potentially a great driver for small/medium-sized companies operating in the supply chain and the manufacturing of components. This is promising for the future.

Which are the most interesting and strategic sectors of industry/services for Italian businesses?
The guidelines are those outlined and set out in the Action Plan we are committed to over the next five years, particularly green economy, agrifood industry, infrastructure, digital technology, manufacturing and lifestyle.

Trading between the two countries is becoming increasingly important because India can now count on its rapidly expanding middle classes: is this an opportunity for Italian businesses?
India is a strategic market for Italy, particularly in light of the redefining of global value chains in wake of the pandemic. India's gigantic domestic market, driven by the middle classes, is crucial. The country has a youthful (average age 29) and hyper-connected (696 million Internet accesses) population of 1.3 billion people and a cheap and relatively well-qualified labour force. There is a high degree of compatibility between the two manufacturing systems - based on one side (Italy's) around advanced manufacturing for export and, on the other (India's), around technological innovation, services and consumerism. This makes "Made in Italy" a strong asset for India, that aims at becoming a manufacturing hub capable of meeting its growing domestic demand; an asset that could also be used for re-exporting to neighboring countries.

What means and measures are implemented by government authorities in New Delhi to facilitate foreign investment in India?
Investindia, an agency for promoting foreign investment in India, has been set up for that very purpose. We communicate constantly and very effectively with Investindia and ICE (Italian Trade & Investment Agency) office in Delhi and signed a MoU (Memorandum of Understanding) at the margins of the Summit. Right from the beginning of the healthcare emergency, we set up a Permanent Digital Platform with Investindia to support businesses venturing to operate on this market, facilitating matchmaking between Italian groups and potential Indian partners.
This tool is not just aimed at some of our main 'national champions', such as WeBuild, Generali, Terna, Leonardo, Fincantieri, Saipem, Angelantoni, FS, Maire Technimont and Snam, it is also intended to help small/medium-sized Italian companies.

Alongside big industrial firms, there are plenty of small/medium-sized Italian companies operating in India but they need support. How can this be provided?
The Permanent Digital Platform in partnership with Investindia is proving to be a useful tool in this respect. As regards financial tools specifically designed to support small/medium-sized companies, the agreement arranged between Cassa Depositi e Prestiti (an Italian financial institution) and the National Investment and Infrastructure Fund (its Indian counterpart) to co-finance investment projects, alongside SACE-SIMEST's existing Push Strategy, completes the framework of support for "Made in Italy" in India, also from a financial viewpoint.

Innovation and quality, the trump cards of Made in Italy

INTERVIEW WITH LUCIANO PETTOELLO MANTOVANI, SECRETARY GENERAL OF THE INDIAN CHAMBER OF COMMERCE IN ITALY

COMPANIES
Approximately 650 Italian companies operate directly in India

INVESTMENT
Investment grew to approximately 363 million US dollars in 2019 compared to 279 million US dollars in 2016

EXPORTS
Italian exports to India reached 5155 million Euros in 2018-2019 after peaking in 2017-2018 (5709 million)

What role does the Indian Chamber of Commerce in Italy play in promoting cooperation between the two countries?
The Indian Chamber of Commerce in Italy (ICCI) was inaugurated in 1975 with the firm backing of local Indian institutions and the efforts of Dr. Apa B. Pant, Indian Ambassador to Italy at the time. To this day, the aim of the Chamber is twofold. To develop institutional relations and support the development of business affairs between Italy and India. These social and economic relations, designed to stimulate business opportunities, are the result of the direct interaction between companies and organizations in the two countries. The Indian Chamber of Commerce in Italy plays a key role by promoting various types of interrelations through the direct involvement of Indian and Italian companies in business missions, B2B meetings, workshops, and sector-specific seminars. Our operations are intended to achieve much more than bring the two nations' economies closer together by forming institutional ties. Rather, they are meant to create an authentic "hub" that facilitates concrete business opportunities between Italian and Indian companies through a wide range of services. We are involved in projects focusing on various sectors including education and within the health care space. In addition, the Indian Chamber of Commerce in Italy unites and supports the growing community of Indian companies operating in Italy. Thanks to its continuous efforts focused on assisting Italian and Indian small and medium-sized companies as well as corporations, ICCI gained official recognition as a Chamber of Commerce by the Italian Ministry of Economic Development in 2002.

Infrastructure, food, machinery and the green economy are the most interesting sectors of the Indian market, but e-commerce has also boomed during the pandemic

What services are offered to Italian businesses interested in investing in India? And what kind of support is most widely requested by Italian companies?
ICCI offers Italian companies a complete platform of services to help them approach the Indian market. Our services include market surveys, assessment of business-financial data of potential partners, customs support, partners identification and selection to develop sales channels (importers, distributors, and buyers) and industrial partnerships (joint ventures, licensed manufacturing, contract manufacturing), business plan drafting and strategy development for market entry, services for setting up an entity in India, accounting-audit services, legal support and disputes resolution, the organization of personalized B2B meetings as well as networking events, seminars, and workshops to gather information on the Indian market, support in preparing for trade fairs in India, and many more.
The most distinctive feature of our organizational structure is our partnership with numerous external players. These include both Chambers of Commerce, located in several Indian states, and a network of external professionals in Italy and India that provide legal services, protection of intellectual property, accounting-auditing, marketing and communication, logistics, and customs related services. We have created an efficient network aimed at promoting business opportunities and facilitating the internationalization process. This has allowed us to offer such a wide array of high-quality services for the benefit of large, medium, and small-sized companies. The key to this respect is the coordination led by the Indian Chamber of Commerce in Italy resulting in an excellent integrated service providing companies with the possibility to invest in India through a single, reliable player. Due to the Covid-19 pandemic and the resulting implications on travel, we have witnessed an increase in services focused on identifying and selecting potential Indian partners or industrial players as well as performing background checks on Indian companies. Essentially, we provide Italian companies with the opportunity to continue to develop their business in India securely and reliably despite the effects of the pandemic.

India is a gigantic market providing many opportunities for small and medium-sized companies to internationalize. How do you monitor and support this process?
India surely offers important opportunities for Italian companies. Export and foreign direct investments between Italy and India have reached interesting figures. So far, approximately 650 Italian companies operate directly in India through a subsidiary, branch office, project office, or representation office. Approximately 70% of these investments are made by small or medium-sized companies. In 2019, foreign direct investments amounted to approximately 363 million US dollars as opposed to 2016, when they stood at approximately 279 million US dollars. Italian exports towards India remained substantially stable at around 5155 million Euros in 2018-2019 after peaking at 5709 million Euros in 2017-2018.
Over the recent years, India has notably improved its business relations with Europe and Italy. The government has placed a notable focus on attracting investments by opening the economy, reducing tariffs, and removing many bureaucratic obstacles. This economic policy, which favors foreign companies, is part of a larger government initiative known as the "Make in India" program. This government-sponsored program aims to transform India into a world-class manufacturing hub for domestic and foreign companies. It provides subsidies and benefits to anybody planning to invest in manufacturing in the country. The major disruption in global trade caused by the Covid-19 makes this program increasingly valuable as it promotes India as an important alternative within the global supply chains of Italian companies.
Our role as the India Chamber of Commerce in Italy is to promote and facilitate the internationalization of Italian companies by creating a framework that guides and safeguards them, ensuring that they feel at ease operating in a complex market. By doing so we not only help them break into the Indian market but also take advantage of the various opportunities it offers.

What are the most interesting sectors of the Indian market for Italian companies?
Bearing in mind the strengths of Italian companies, the most interesting industries are the food, food processing, cold chain, packaging, machinery and mechanical instruments, medical devices, infrastructure, green economy, and the pharmaceutical industries. It is however worth keeping an eye on the growth of the B2B and B2C e-commerce industry, spurred by the effects of the pandemic.

Is "Made in Italy" a decisive factor in overcoming foreign competition?
Alongside the Indian government's role in attracting foreign investment, I believe it is important to underline the strong demand by Indian companies for both new technologies and innovative products. This is certainly a very inviting opportunity for the "Made in Italy" tag. Italian companies are admired all over the world for their cutting-edge technologies and high-quality, innovative products. The opportunity for "Made in Italy" products is further enhanced by the increase in household spending led by a constant growth in the income levels, especially in the middle-upper income brackets.

Is the pandemic changing strategies for promoting business operations between the two nations?
The Covid-19 pandemic has certainly changed how business is carried out between the two countries. Travel limitations resulting from the pandemic, for example, have had an important impact on how trade and business are conducted globally, including transactions between Italy and India. This and other effects of the pandemic have triggered changes in the interactions between companies as well as in the economic policies of both countries. These changes will most probably become structural. Thus, there is an urgent need to be ready to grasp those opportunities identified 10 years ago during the financial crisis in 2009 by Mrs. Christine Lagarde, president of the ECB, as being typical of backlashes to socio-economic crises. The way business is conducted is changing at a global level, and it will continue to be vital to network with institutions like the Indian Chamber of Commerce in Italy, professionally equipped to handle this kind of situation and opportunity.
Due to the intricate nature of the Indian market, the presence of an institution like ICCI, capable of assisting Italian companies with effective market entry solutions was already a significant asset before the pandemic. With the current global situation and travel limitations, it has now become of crucial importance for Italian businesses interested in investing in India. Our work as a reliable partner for Italian companies has become pivotal for safely developing business opportunities in the Indian market, even from afar. This is all thanks to our solid network of Chambers of Commerce, industry associations, and reliable firms operating across India, which has made it possible to meet the miscellaneous demands of Italian businesses looking to develop or further expand their interests and business operations in India.

1. Internal view of one of the tunnels excavated using Mapei underground tunnelling solutions, such as POLYFOAMER FP, POLYFOAMER FLS, MAPEDISP FLS, and MAPEBLOX T.
2. An image of the TBM-EPBM tunnelling machine used to excavate the twin-bore tunnels.

MAPEPLAN TU S

PVC-P single-layer, synthetic waterproofing membrane with signal layer; it can be applied as a fluid barrier in tunnel and underground structures waterproofing works. It is manufactured by Polyglass, a subsidiary of the Mapei Group.

FIND OUT MORE

TECHNICAL DATA
Ahmedabad metro, Phase 1, Ahmedabad, Gujarat (India)
Period of construction: 2018-ongoing
Period of the Mapei intervention: 2018-2020
Owner: State of Gujarat
Project developer: Gujarat Metro Rail Corporation (GMRC) Limited
Contractors: Larsen & Toubro, Afcons Infrastructure Limited
Project manager: YVN Sharma (Larsen & Toubro) and Arvindan Anand (Afcons)
Mapei coordinators: Bhavesh Jethava, Mapei India

MAPEI PRODUCTS
Excavating tunnels
Polyfoamer FP, Polyfoamer FLS, Mapedisp FLS, Mapeblox T
Building diafram walls:
Dynamon SX 404*
Waterproofing tunnels:
Mapeplan TU S
Waterproofing ramps and stations: Purtop 1000, Primer SN

*This product is manufactured and distributed on the Indian market by Mapei India.

For further information on products see mapei.com and mapei.com.in

Ahmedabad (Gujarat)

AHMEDABAD METRO RAIL NETWORK

THE FIRST STRETCHES HAVE BEEN COMPLETED OF THIS NEW TRANSPORT SYSTEM WHICH WILL RUN FOR 69 KM

The city of Ahmedabad goes way back in time: founded in the XV century by Sultan Ahmed Shah, it became the capital city of the State of Gujarat and is still the most populated city in the state. The last few decades have also seen the city develop into an important economic, industrial and educational hub. As a result, the population has grown steadily, and is about to reach a total of 6 million. This growth meant the capacity of the road and rail networks needed to be increased, which led the Gujarat authorities to taking the decision to invest heavily in an infrastructure project for a metropolitan transport system to connect the city to nearby Gandhinagar, the capital of the district of the same name.
Construction of the network is being developed by Gujarat Metro Rail Corporation (GMRC) Limited and will be carried out in two phases: phase 1, which is already underway and is scheduled to be completed in 2023, and phase 2, for which the tender process is currently ongoing.
Phase 1 includes the construction of two metropolitan railway lines: the north-south line and the east-west line. The lines will have a combined total length of 40 km (6 of which running underground) and will connect the four cardinal points of the city, including outlying residential and industrial zones. There will be 32 stations (15 along the north-south line and 17 on the east-west line), 13 of which will be located underground.
Phase 2 will lead to the construction of a further 28 km of track and 24 stations.
Once the Ahmedabad Metro network is completed, it will have 69 km of track and a daily capacity of 1.5 million passengers.

Products and technologies in Phase 1

Even though the first phase of the work has yet to be completed, several sections of the network have been finished, including a 6 km section of the east-west line which was inaugurated on 4th March, 2019 by the Hon'ble Prime Minister Narendra Modi and then opened to the public two days later. Part of the work was carried out using innovative technology and construction methods to excavate underground sections using EPBM-type (Earth Pressure Balancing Method) TBM (Tunnel Boring Machine) equipment.
Right from the very start Mapei India, which has worked for a number of years with several of the construction companies taking part in the project, was also involved through the supply of concrete admixtures, waterproofing products and other solutions for underground work. Going into detail, the Indian subsidiary supplied products used in the excavation of a twin-bore tunnel, such as POLYFOAMER FP and POLYFOAMER FLS high-performance, liquid foaming agents for ground conditioning, MAPEDISP FLS, liquid dispersing agent for mechanised tunnelling and drilling, and MAPEBLOX T tail sealant, which is used in the excavation of tunnels with shielded TBMs.
To construct a diaphragm wall, the modified acrylic-based super-plasticising admixture DYMANON SX404 (which is manufactured and distributed on the Indian market by Mapei India) was used to manufacture concrete with high mechanical properties, excellent workability and durability. The same admixture was used to formulate the concrete used to build several structures in the metro stations.
The product chosen to waterproof the tunnels excavated using NATM (North Austrian tunnelling method) technology was MAPEPLAN TU S, a single-layer, synthetic membrane with an in-built signal layer. The same product was used for waterproofing operations at the intersection between the two lines of the metro.
The access ramps to the stations and various areas of the station buildings were waterproofed with PURTOP 1000, a two-component, solvent-free, polyurea membrane applied by spray using a high-pressure, bi-mixer type pump, after treating the substrates with PRIMER SN.

PROJECT FIGURES

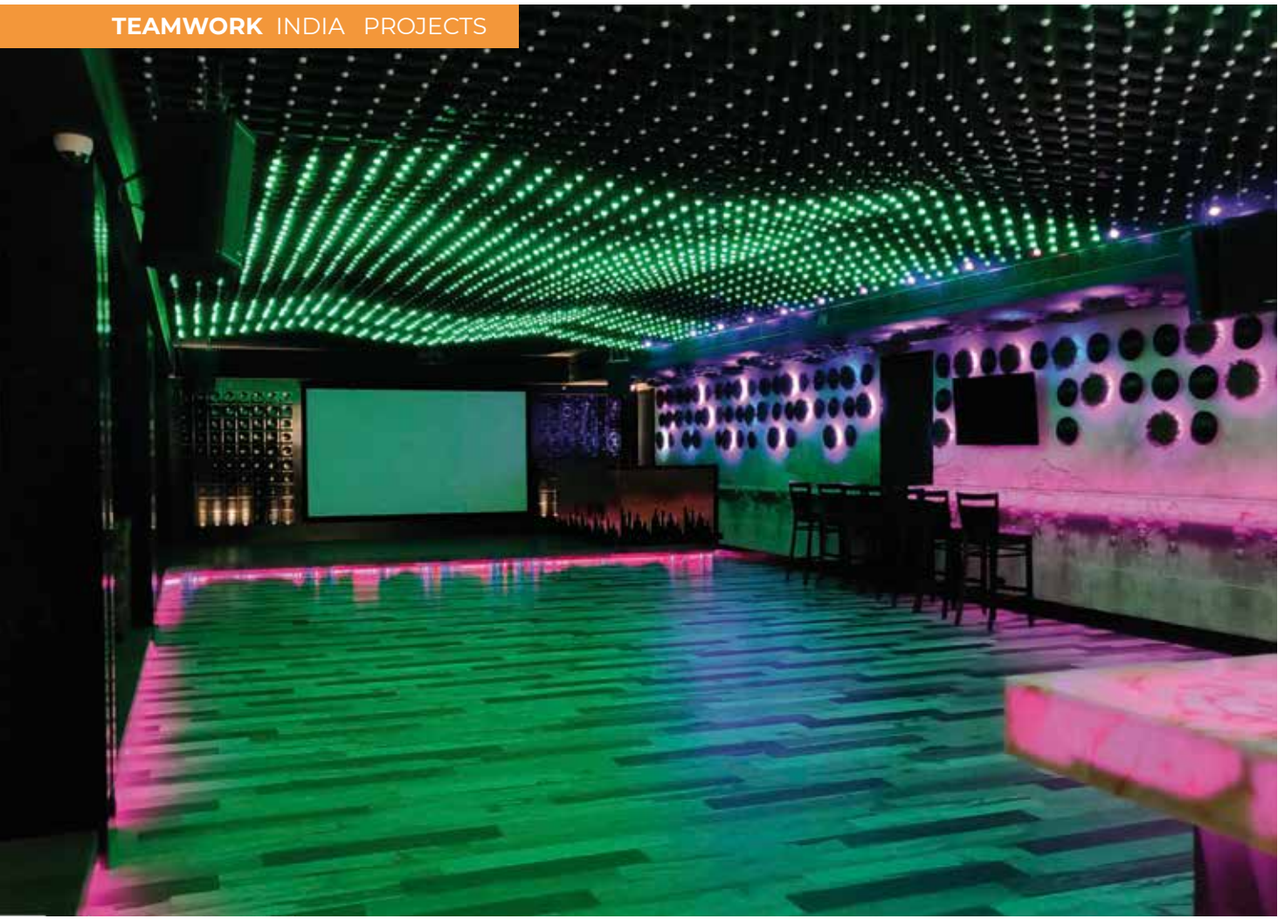
69 Km
total length of the metro system

1,5 million
passengers forecast

2 construction phases

Phase 1: 2 lines for a total of 41 km and 32 stations

Phase 2: 28 km
e 24 stations



The Club

MUMBAI

The facilities at this resort in Mumbai include a hotel, banquet hall, restaurant, bar, swimming pool, gymnasium and cinema and the owners' aspiration is to obtain a 7-star rating. Mapei products were chosen to bond and grout stone and ceramic coverings in various internal and external surroundings to guarantee that installation of the materials and elegant features would be sound and safe.
The product chosen to bond the ceramic wall tiles was KERAFLEX MAXI S1 deformable, cementitious adhesive with extended open time, no vertical slip and Low Dust technology.
KERABOND PLUS, an improved, cementitious adhesive with extended open time, admixed with ISOLASTIC elasticising latex, was used for the remaining ceramic tiles and stone.
The joints were grouted with KERAPOXY DESIGN two-component, acid-resistant, epoxy grout.

TECHNICAL DATA
Period of construction: 2017-2019
Period of the Mapei intervention: 2018-2019
Owner: Seven Eleven Hospitality
Main contractor: Ramesh Suthar
Mapei distributor: Uttam Power Tools
Project manager: Hasmukh Mewada
Mapei Coordinator: Sanjay Singh, Mapei India

MAPEI PRODUCTS
Keraflex Maxi S1, Kerabond Plus, Isolastic, Kerapoxy Design

Marigold Banquets & Conventions

PUNE

This luxurious facility was designed to cater for the kind of lavish celebrations and long banquets associated with Indian weddings. It is fitted out with 5 banquet rooms and 3 outdoor gardens, 17 bedrooms and a bungalow (with 4 more bedrooms) and it can accommodate celebrations for up to 6000 people. Its elegant features include high-quality ceramic tiles and natural stone slabs that had been installed using Mapei products.
The ceramic tiles in the interiors were bonded with KERABOND PLUS, improved adhesion cementitious adhesive with extended open time, and KERAFLEX MAXI S1, a deformable, cementitious white adhesive with extended open time and no vertical slip. The stone coverings on the outside were attached to the walls using KERALASTIC T, a high-performance, two-component, polyurethane adhesive.

TECHNICAL DATA
Period of construction: 2019
Owner: Shantanu Despande
Main contractor: Surendra Verma
Installation company: SV Corps
Project manager: Ganesh Wagh
Mapei distributor: Shiv Shailam
Mapei coordinator: Geet Kashyap, Mapei India
Photos: Red Moments

MAPEI PRODUCTS
Kerabond Plus, Keraflex Maxi S1, Keralastic T

Atal tunnel

ROHTANG PASS, MANALI-LEH

The strategic Rohtang Tunnel is also called Atal Tunnel, which has been named after the late former Prime Minister Atal Bihari Vajpayee. The world's longest highway tunnel, the Atal Tunnel, at 9.02 km is an engineering marvel connecting Manali and Leh throughout the year and is expected to reduce the distance between the two by 46 km. It was built under the Rohtang Pass in the Eastern Pir Panjal Range of the Himalayas on the Leh-Manali Highway. It was inaugurated by Hon'ble Prime Minister Narendra Modi on 3rd October 2020. This tunnel will be fully operational year-round and Leh could be accessed throughout the year from mainland India. Currently, the area remains cut off for about 6 months each year due to heavy snowfall and inclement weather.
Mapei contributed to this project, one of the most strategic for India in recent times, by supplying solutions for underground works such as MAPEPLAN TU, a single layer membrane with signal layer that can be applied as a fluid barrier in tunnel and underground waterproofing works, and RESFOAM 1K-M, ultra-fluid, one-component polyurethane injection resin with adjustable reaction times, for waterproofing structures, grounds and rocks subject to intense water seepage.

TECHNICAL DATA
Period of construction: 2010-2020
Period of the Mapei intervention: 2020
Owner: Border Roads Organisation

Main contractor:
AFCONS Infrastructure Limited and STRABAG AG
Mapei coordinator:
Divik Batra, Mapei India

MAPEI PRODUCTS
Mapeplan TU, Resfoam 1K-M

Velodrome at Lakshmibai Institute

GUWAHATI

Lakshmibai Physical National Institute of Physical Education (LNPIE) is a university centre supported by the Indian Government through the Ministry of Youth Affairs and Sports. In addition to various sports facilities, it also has a velodrome that has recently been renovated using Mapei products. The substrates of the cycling track were first properly prepared, cleaned and levelled. A bonding slurry, prepared with PLANICRETE latex, water and slurry, was then applied. Concrete repair on the track was carried out with MAPEGROUT EASY FLOW one-component, fibre-reinforced, thixotropic mortar. Expansion joints were sealed with MAPEFLEX PU 45 FT, applied after treating them with PRIMER P.
The track was then completed with the MAPECOAT TNS line solutions for sport floorings.

TECHNICAL DATA
Period of the Mapei intervention: 2020
Owner: LNPIE
Main contractor:
Precast Architectural & Structural design Pvt Ltd/Precast India Infrastructure

Project manager: P.U Gavangave
Mapei distributor:
Dhanshree Constro Solutions.
Mapei coordinators:
Amit Kotiyal and Ashutosh Gaur Mapei India

MAPEI PRODUCTS
Mapecoat TNS Primer I 600 W, Mapecoat TNS White Base Coat, Mapecoat TNS Finish, Mapecoat TNS Color

Infosys training centre

PUNE

Infosys Limited is an Indian company providing business consultancy, IT and outsourcing services and has the second-highest turnover on the Indian market.
The company's training centre is in one of the most iconic buildings in Pune. The building has a 5,500 m² metal roof which was damaged in various places with water leaking through.

The PURTOP system was used to solve the problem of the leaks, which included the application of a coat of PRIMER EP RUSTOP two-component epoxy primer for metallic surfaces, PURTOP 400 M, two-component, solvent-free, hybrid polyurea membrane, and MAPECOAT TC, wear-resistant, coloured, aliphatic, polyurethane finish for membranes from the PURTOP line.

TECHNICAL DATA
Period of construction: 2005-2006
Period of the Mapei intervention: 2018
Design: Architect Hafeez Contractor
Owner: Infosys LTD

Waterproofing applicator: Tech on Services
Project manager: Rupesh Shah
Mapei coordinators: Vishal Nalgirakr and Dinesh Deore, Mapei India

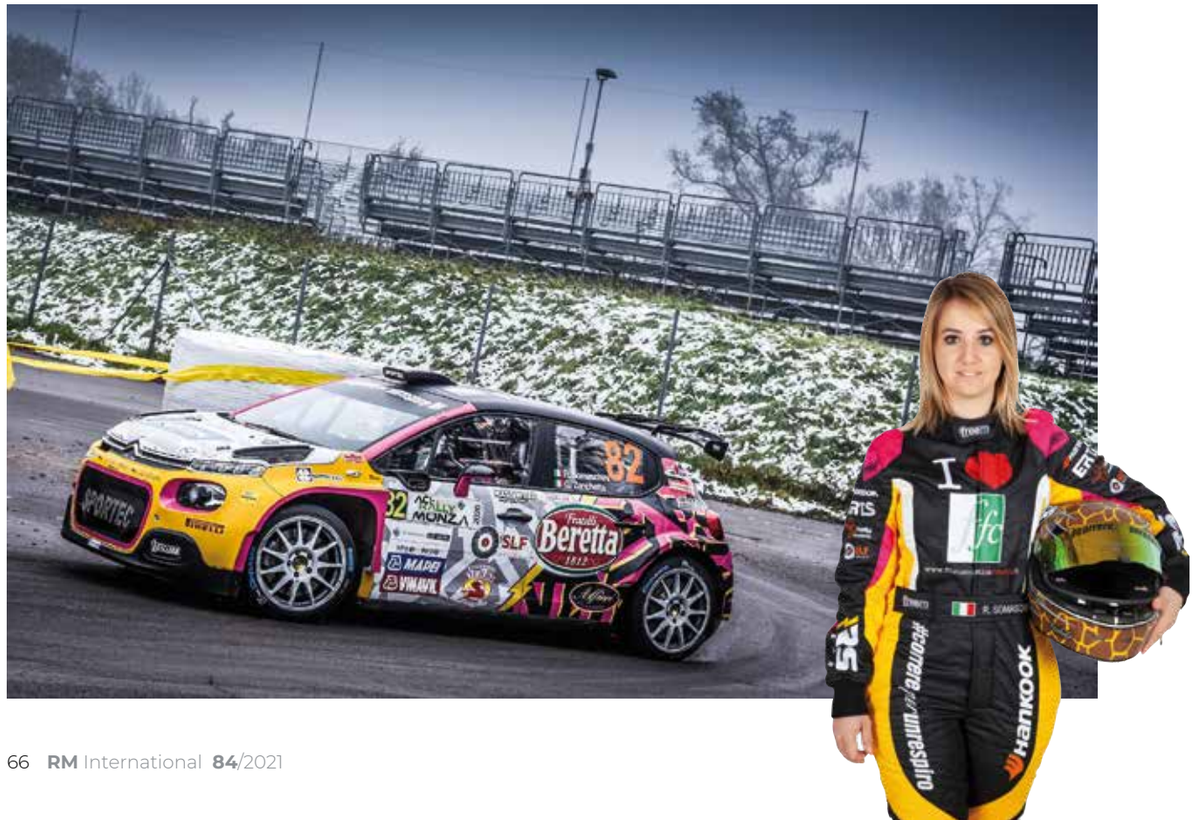
MAPEI PRODUCTS
Primer EP Rustop, Purtop 400 M, Mapecoat TC

For further information on products see mapei.com and mapei.com.in

Helping Rachele support research into cystic fibrosis

Mapei sponsors Rachele Somaschini, a tough 26-year-old rally driver from the outskirts of Milan, who races competitively both nationally and internationally.
Mapei supported her during the Italian Championship and, together with its subsidiary Vinavil, during the ACI Monza Rally.
Rachele competes to support research into cystic fibrosis, a disease she herself suffers from: "Ever since 2010 I have been a front-line volunteer for the Italian Foundation for Research into Cystic Fibrosis - so Rachele told us - and I am proud of it. Research must keep ahead of cystic fibrosis".
Despite a reduced racing season in 2020 due to the pandemic, Rachele took part in 15 rallies: "I am the Italian driver who raced most". She also competed in Latvia, Hungary and the Monte Carlo Rally.
She is used to winning women's races and finishes ahead of lots of men in the overall classification: "At first they found it hard to take; I could see it in their eyes. But now they are more philosophical about it". In the 2021 season Rachele will be driving alongside her co-pilots Giulia Zanchetta and Nicola Arena. The "RS" team will be taking part in the Italian Off-Road Championships: "I am at my best racing on dirt tracks", so Rachele told us.
She also hopes to perform well in the European Championship and some World Championship events.

BOTTOM OF THE PAGE. Rachele Somaschini, a 26-year-old rally driver. Below, the car she drove during the ACI Monza Rally.



Mapei with Triennale Milano

Once again, this year Mapei will be supporting the Triennale Milano Foundation as a Platinum Corporate sponsor of the "Associazione Amici della Triennale Milano (Friends of the Triennale Milano Foundation)" Association. The Foundation is an international cultural institute that organises exhibitions, conferences and events about art, design, architecture, fashion, film, communication, and society.
The Triennale Milano Foundation reopened to the public on 2nd February: you can now visit the Italian Design Museum and the exhibitions "Enzo Mari curated by Hans Ulrich Obrist with Francesca Giacomelli" and "Mirabilia". The Triennial Cafè and Store are also open again. Visit the website triennale.org for further information about the opening hours and tickets.

Help for the sick

The AGO (Guida Oncologica Onlus) Association is based in San Gerardo Hospital in Monza (Northern Italy) and provides aid to cancer patients, the elderly and patients suffering from chronic-degenerative diseases and their families. It has been working free of charge in the region for over 20 years, providing transport and accompanying patients going for treatment or operations.
Mapei has been supporting the Association for a number of years.

Coloured wool for people in need

Gomitolorosa onlus is an association that promotes knitting in support of miscellaneous health and charity campaigns for people in need. For eight years now, 1500 volunteers from the association have been working on a sustainable therapeutic project: to retrieve wool that would otherwise be discarded so that cancer patients in hospitals can learn how to knit. It gets them to knit scarfs and blankets for other people in need, such as the homeless.
"All this is part of a circular economy that helps everybody, both the environment and people", so Alberto Costa pointed out, a textiles entrepreneur from Biella (Northern Italy) and one of the founders of the association.
Knitting is, apparently, a great way of combating stress and anxiety: it improves your mood and self-confidence and reduces muscular tension. It would also seem that focusing on knitting needles can be as relaxing as meditation: that is why knitting has been compared to mindfulness.
Mapei has been supporting Gomitolorosa for a number of years: this year it will be making a donation towards the "Wool Therapy" project designed for the waiting rooms of Oncology Hospitals. Volunteers from the association will hand out knitting kits and needles to oncology patients waiting for visits or diagnoses, who are extremely anxious about everything they are going through. All the knitting will then be collected and sewn together to make multicoloured blankets to be donated to elderly people, the homeless and people in need, as part of a virtuous cycle of care and social responsibility.

gomitolorosa
SOLIDARITY, WELL-BEING, ENVIRONMENTAL FRIENDLINESS

Sassuolo, keep on fighting!

CARNEVALI: "THE IMPORTANT THING IS TO GIVE EVERYTHING. OUR YOUNGSTERS ARE PLAYING THEIR PART."

ABOVE. Giacomo Raspadori taking on Genoa's defence.

Sassuolo is continuing to battle valiantly in the Italian league championship. "Let's not forget that we are a sporting miracle - so Giovanni Carnevali pointed out, the CEO and General Manager of the football club owned by Mapei - our main goal is to remain in the Italian Serie A: that is now getting harder and harder. First and foremost, we aim to keep on improving and show the strength of will it takes by always giving our best. Obviously, our thoughts are still focused on qualifying for the Europa League".
Sassuolo battled hard over long periods during the first half of the season, but then the team started dropping a few points along the way but managed to hold onto a healthy league position. "Every team has a drop in form at certain stages in the season, possibly due to a few too many injuries or sheer fatigue" so Mr Carnevali noted. "It is bound to happen. Here at Sassuolo we knew that a slight drop in form was only to be expected".
Sassuolo can draw plenty of positives as it moves into the second half of the season. "You can always draw benefits and learn from difficult times. In any case, Sassuolo has never abandoned its style of play, never lost its identity and, along the way, there have been plenty of positives for us".

RASPADORI AND TRAORÈ ARE BREAKING THROUGH

During the winter months, two players born in the new millennium, the striker Giacomo Raspadori and the attacking midfielder Junior Traorè, have been among the most in-form players. On certain occasions, both Traorè and Raspadori have been decisive. "Even though they are the same age, they come from completely different backgrounds. – so Carnevali noted - Raspadori came from our youth team programme and was ready to play in the big time when De Zerbi picked him for the first team; Traorè had already gained experience playing a full season for Empoli in the Italian second division, so he was used to pressure and knew how to focus. Both these players are great prospects. Raspadori is now in the Italian Under 21 squad: something our staff can take real pride in".
Raspadori also scored a decisive goal in the 2-1 win against Genoa: "Matches won with great determination like the game against Genoa show we have come a long way, but we still have a lot to learn. We have plenty of young players in our squad, who need time to gain experience".

THE DEFENCE HAS IMPROVED

Last season Sassuolo received plenty of praise for its attacking football but was occasionally criticised for its defending. "This season - so Mr Carnevali told us - we have definitely improved at the back. We have a well-organised defence. Bearing in mind that De Zerbi's style of football is extremely attack-minded, the defence is bound to come under pressure when you play predominantly attacking football. We are convinced we have some key players in our defensive line-up".
Sassuolo lost against Lazio, one of its main rivals in qualifying for European competition. The match finished 2-1 at the Olympic Stadium after Caputo initially gave Sassuolo the lead. "We certainly did not deserve to lose considering how we played. It's hard to explain why we lost: of course, Lazio did well, and we lost concentration at times, perhaps we were a little tired. Nevertheless, despite the result, we are pleased with how the team played" said Carnevali.
The win against Napoli was Sassuolo's best performance in the first five months of the season. "It was pleasing to beat another rival for European qualification. It is also worth remembering our win against Verona. Of course, it is not just results that count. Sometimes even drawing can be satisfying if the team really plays its best".

BERARDI IS THE POSTER-BOY

The striker Domenico Berardi is not just the team's poster-boy, he also hits the headlines for his goals and team play. "Despite an injury he has become a really important player for the squad".
Although Sassuolo has not been in the Italian Serie A very long, it qualified for the 2016-17 Europa League and might do so again. In contrast, the team never performs well in the Italy Cup.
This year it was knocked out by the second-division team Spal. "When you play against a team from a lower division, they always give absolutely everything and that makes the difference. Now-adays, in any game against any team, you need to be completely focused if you want to win and we have not always done that in the Italy Cup over the last few years." concluded Mr Carnevali.

500 APPEARANCES FOR MAGNANELLI

Sassuolo's President and CEO Carlo Rossi, Giovanni Carnevali and Sassuolo's Supporter Liaison Officer Remo Morini presented a trophy and a number "500" shirt to the Sassuolo captain Francesco Magnanelli before the match against Genoa. He actually made his 500th appearance for the club in a previous match Sassuolo played against Sampdoria. Francesco was born in 1984 and joined Sassuolo in summer 2005. He has now played one season for the club in the Italian C2, two in C1, and 5 in the Serie B. He is currently playing his eighth season for the team in the Italian Serie A. Magnanelli is the only person to have played in four different divisions for Sassuolo, always playing with great skill and determination. The trophy was also a reward for his loyalty to Sassuolo. Over the years a number of top clubs have made inquiries about his availability, but Francesco has always chosen to stay at Sassuolo.

Martina Lenzini: “Aiming high with Sassuolo”

SHE IS A LOCAL GIRL FROM MODENA: “THAT MAKES ME FEEL RIGHT AT HOME IN THIS TEAM”

Martina Lenzini, aged 22, is one of the best players in the Sassuolo and Italian national football team. She plays in defence and is fast and effective when she pushes forward; Martina, who also has a great shot, can also fire in accurate and very dangerous crosses. And she has plenty of dreams. “First and foremost, to win trophies with Sassuolo - so she told us - and then to play really well for Italy in the European Championships and World Cup”.

Martina tells us: “I began playing football with boys at the age of eight. None of my opponents wanted to lose against a team with a girl playing for it. Every weekend I was the target of lots of snide remarks, but I just let my football do the talking out on the pitch. Luckily, my teammates always looked after me, telling me to show my opponents how well I could play”.

Martina could have competed in lots of other sports. “Ice skating and skiing, particularly when I was at school, but in the end, I always ended up kicking a ball, I could not help myself”.

Playing for youth teams, Martina Lenzini showed she could play anywhere. “I played in all kinds of positions in midfield, up front, out wide and even in defence; the only position I did not play was goal-keeper”.

FEELING AT HOME

Martina comes from Pavullo del Frignano town in the Modena area. Many people claim she believes she is Sassuolo’s star player: “I do not feel I am the star of the team, although coming from Modena definitely makes me feel Sassuolo is my home team”. There is one player this girl really looks up to: “I have been lucky enough to train with lots of wonderful players and I have always tried to learn as much as I could from all of them. The player I admire most is Sara Gama, who plays for Juventus; she is a real leader, a true professional and a great person on and off the pitch. There are plenty of players in men’s football who inspire me and technically speaking I try to copy their great skills as best I can”.

A GREAT FIRST HALF OF THE SEASON

The Sassuolo players managed by Gianpiero Piovani finished the first half of the season in third place, having only lost against Juventus and AC Milan. “The defeat against AC Milan – so Martina noted - could have been avoided: they scored two goals from our mistakes. Even though we lost against AC Milan, we played our best game of the season. Of all the matches we won, the best was against Fiorentina. We have tried to do our best in every match, playing together like a real team”. Marty has already played for Brescia in the Champions League: “The atmosphere in the Champions League is magical: it gives you goosebumps. This Sassuolo team has surprised everybody, but we will have to play even better to be competitive in the Champions League”.

Italy Super Cup final at Mapei Stadium

Mapei Stadium in Reggio Emilia (central Italy) was once the stage for another major football event. The stadium hosted the final of the Italian Super Cup with Juventus beating Napoli 2-0 on January, the 20th.
The match was played behind closed doors with no fans due to anti-Covid regulations, but it was broadcast on TV in 150 countries. It was watched by a record TV audience: an average of 7,860,000 viewers, corresponding to a share of 29%.
The ceremony to award the Super Cup was attended by Gabriele Gravina, Chairman of the Italian football Federation, Paolo Dal Pino, Chairman of the Italian Football League, and Stefano Bonaccini, the President of Emilia Romagna region.

ABOVE.
José Sand, who plays for Lanús as a striker

Lanús reaches Copa Sudamericana final

Congratulations to Club Atletico Lanús, the Argentinean football team sponsored by Mapei Argentina this year, which qualified for the final of the Copa Sudamericana on January 23rd. Lanus lost 3-0 against Defensa y Justicia, another Argentinian team, in the match played in Cordoba.
The Copa Sudamericana is comparable in terms of its importance and how it is organised to the Europa League in Europe. The goal scorers for Defensa y Justicia, managed by Hernan Crespo were Adonis Frias, Braian Romero and Washington Camacho. The final of the Copa Sudamericana was broadcast on TV worldwide.
Lanús reached the final by knocking out Universidad Catolica (Ecuador) and San Paolo (Brazil) in the preliminary rounds, followed by Bolívar (Bolivia) in the round of the last 16, Independiente in the quarter-final, and Velez Sarsfield in the semi-final (both Argentinean clubs).
This sponsorship deal with Lanús strengthens the Mapei Group’s ties with international sport, reasserting those values that have always been part of its DNA: hard graft, teamwork and the determination to constantly take on new challenges.

© Pentaphoto/FISI

1

© Pentaphoto/FISI

2

NOT JUST TOP SKIERS: 60 YOUNGSTERS FROM THE ITALIAN NATIONAL SQUAD ARE ALSO ASSISTED BY THE CENTRE'S EXPERTS

RESEARCH CENTRE MAPEI SPORT

1. Mapei Sport has watched youngsters rise to the top of the world ski circuit, such as the highly talented Marta Bassino.
2. Federica Brignone, one of Italy's top Alpine skiers from 2010-2020.
3. Dominik Paris, back amongst the world's top downhill skiers

© Pentaphoto/FISI

3

Mapei Sport at the service of ski champions

The Alpine Skiing World Championships in Cortina d'Ampezzo (Northern Italy) will bring to a close an extremely successful season for the Italian team that has been drawing on the services of Mapei Sport Research Centre since 2001. Italy's "home" world Championships, unfortunately without any spectators due to the restrictions imposed by the pandemic, will mark the end of a tricky winter during which the best men and women skiers from the Italian national team proved they could even overcome bad luck.

"Leaving aside all the medals that have been won, we are proud to partner the Italian Winter Sports Federation (FISI) under the Presidency of Flavio Roda. We will continue to provide the Italian National Alpine skiing team with our expertise and help them achieve their goals at least until the forthcoming 2022 Olympic Games in Beijing, continuing a partnership that has been going on for years now", so the Director of the Mapei Sport Research centre, Claudio Pecci, told us.

Over the years Mapei Sport has gradually developed special systems for training athletes of the Italian national skiing team

Constant monitoring and cutting-edge equipment

From some of the most successful champions we admire taking part in the World Cup to up-and-coming young skiers taking part in the Europa Cup, approximately 60 men and women from the Italian national squad can rely on the support of experts from Mapei Sport, who test them two or three times a year, focusing specifically on their physical fitness.

Over the years, the facility has developed special systems for monitoring athletes from this sport.

The centre's equipment includes the so-called "eccentric leg press", a prototype unique of its kind in the world that was designed and developed by the physiologist Piero Mognoni and Professor Aldo Sassi. "The press simulates with a high degree approximation some of the specific physical demands skiers must handle on the slopes. Skiers are subjected to reiterated eccentric-concentric contractions replicating what happens during turns", so Ermanno Rampini explained, the Director of Mapei Sport's Human Performance Lab (HPL).

Athletes undergo specific lab testing for their own specialities. Eccentric strength is an important physical determinant for alpine skiing performance: at every turn, skiers must resist the centrifugal force resulting from their high speed. They must also have good capacity and sensibility to modulate force on the snow. The ability to modulate force is crucial to keeping your speed as high as possible during turns. Alongside these neuromuscular measurements, tests are also carried out to determine lower limbs power and the efficiency of their anaerobic system, i.e. their stamina.

Determination and patience to get back racing following an injury

Mapei Sport has followed the number of athletes as they have gradually risen to the top of the World Cup circuit, such as the highly talented Marta Bassino, who has been a regular at the Mapei Sport Centre since 2004 (she underwent her first test when she was 18 years old). The support of the staff at Mapei Sport can be extremely useful for identifying and enhancing the potential of young athletes, as well as compensating for their weaknesses or limits. Developing both mentally and technically is also a crucial part in the training of a top-class athlete like Marta Bassino.

Laboratory data can be invaluable during a busy competitive season involving lots of training, travelling, practice sessions and races. It can also be useful for dealing with any hurdles or disappointments encountered along the way, such as the ordeal the Olympic downhill champion Sofia Goggia is facing after fracturing the lateral tibial plateau of her right knee after a fall in Garmisch (Germany). "We are certain that Sofia will make a comeback as she has already done in the past, thanks to her physical abilities and determination, the true hallmark of a champion. She will undergo rehabilitation and then follow a post-injury recovery program with our help to regain full fitness – so Mr Rampinini assured us, the centre's consultant for team sports like football, basketball, and winter sports. - The testing we carry out over the years not only serves to optimise an athlete's training; it is also useful for determining how far they are from their usual fitness levels. Knowing an athlete's background means you can gauge more accurately how far they are from being fully fit".

Sofia has already been through all this and Dominik Paris recently had to go through something similar before successfully returning to the top of downhill racing after tearing the front cruciate ligament of his right knee after crashing in Kitzbühel (Austria) in January 2020. "In his case, we focused on testing to assess how well his knee that had been operated on had recovered. A leg that suffers an injury like Dominik's can lose 30-50% of its strength, so you need plenty of patience to wait for it to fully recover and not rush back into competition too soon. That also means paying very careful attention to balancing training loads", so Mr. Rampinini added.

Science can help in this respect, as can an athlete's determination. A recent example of this concerns Guglielmo Bosca, who, despite injuring the cruciate ligament of his right knee in the first World Cup race in Bormio, did everything he possibly could at the Mapei Sport Lab to postpone surgery and hold onto his dream of being picked for the World Championships. Sometimes there should be more than three medals up for grabs..... Some people are winners without making the podium.

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

NEWS FROM THE MAPEI WORLD

EVENTS, SPONSORSHIPS AND PROJECTS BY THE GROUP'S SUBSIDIARIES

NORWAY - MAPEI AS RECEIVES THE "GREAT PLACE TO WORK" CERTIFICATE

Mapei AS has been awarded the 2020 "Great Place to Work" certificate by the Great Place to Work organization, which analyses the business environment in workplaces, assessing parameters such as pride in belonging to a company, the feeling of being part of a community and reciprocal trust among workmates. Mapei AS has received this award two years running. Its strategy for managing human resources conforms with the 2030 UN Agenda for sustainable economic growth and dignified working conditions. The subsidiary is now aiming to be one of the best workplaces in Norway by 2022.

FRANCE - VIRTUAL TOURS AND INFLUENCER FOR MAPEI WORLD PARIS

Even in such difficult times as these Mapei France is continuing to organize events at Mapei World Paris, a centre focused on the world of design in the capital of France. The French subsidiary has worked with Jessica Venancio, an interior designer and influencer on Instagram with whom it has made a set of videos (IGTV, Live) shot inside Mapei World Paris and broadcasted on the Instagram @mapei_world_paris channel and are mainly aimed at architects and designers. The subsidiary is also working on virtual tours around the facility and "escape games" for customers and business partners, so they can enjoy a unique experience of the place and of Mapei products.

CHINA - TENNIS TOUR PLAYED ON MAPECOAT TNS CUSHION SURFACES

On 7th-14th November 2020, Mapei Guangzhou co-operated with Guangdong Uphos Sports Co., Ltd to sponsor the 2020 China Tennis Tour which took place in Guangzhou. This is nationwide competition organized by the China Tennis Association and other local sport associations and authorities. The main tennis court for competition was renovated with MAPECOAT TNS CUSHION resin-based acrylic system. Mapei supported a tennis court for kid's training and one mobile coffee station. Several local media (CCTV Channel 5, International Media Port Shanghai Cultural Development Co.) supported the event and drew great attention for Mapei in the sports facility construction market.

AUSTRALIA - MAPEI SUPPORTS ARTS AND MUSIC DESPITE THE PANDEMIC

Mapei Australia believes that culture is a key pillar of society, which is why it continued to support the Queensland Performing Arts Centre and Queensland Symphony Orchestra throughout the Covid-19 period. They created a wide range of online content from musicians' homes, backyards, parks, and playgrounds and committed to a few brand-new projects: *Sharing the Joy*, a give-back program for the community, and the *Orchestra Over the Fence* series, where musicians perform together, literally over a fence, to socially distance. To overcome border challenges, the Queensland Performing Arts Centre chose to promote talented Australian artists and young talent.

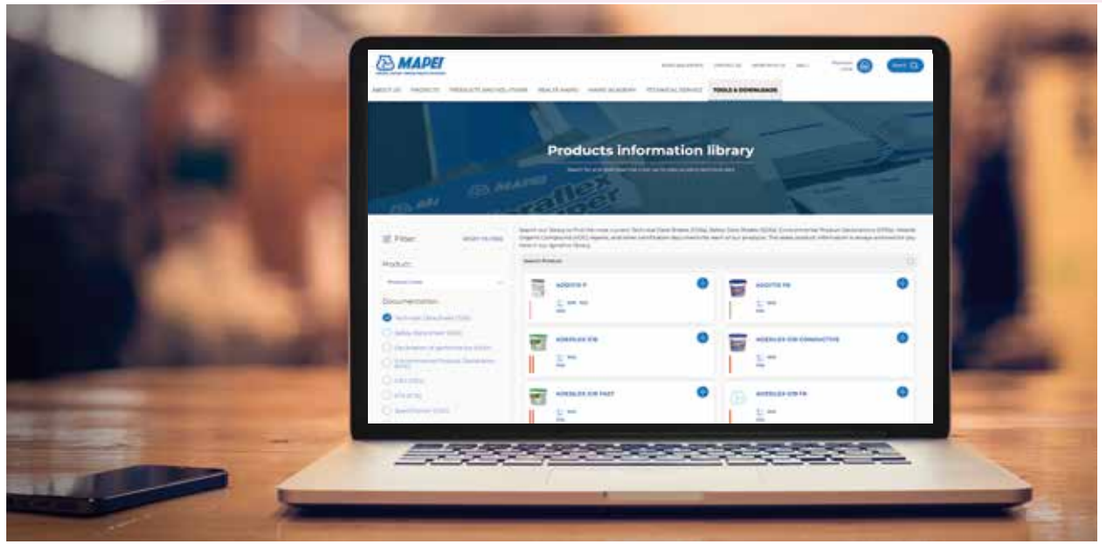
SUISSE - WORKPLACE, MAPEI SUISSE IS A #TOPCOMPANY

Mapei Suisse has been included on the #TopCompany list of the kununu.com website that specialises in surveying employers. Only 6% of companies surveyed by the website are included on this list. Staff satisfaction with the atmosphere at their workplace was certainly one of the contributing factors to its inclusion on this list. Staff particularly enjoyed the "family" feel of the company with no strict hierarchy of roles, the working conditions for employees, and the person-friendly approach to management.

Available at mapei.it

DOWNLOAD UP-TO-DATE TECHNICAL DOCUMENTATION IN ENGLISH FROM MAPEI WEBSITE

Products Information Library



To make it easier to find the latest technical documentation, the website mapei.it now has a section called "Products Information Library", **where you can easily and quickly download** Technical Data Sheets (TDS), Safety Data Sheets (SDS), Environmental Product Declarations (EPDs), reports on volatile organic compounds (VOC) and other certification documents for Mapei products, all available in English language.
A useful tool for anybody interested in drawing up specifications for numerous products and, generally speaking, for anybody who needs quick access to the company's technical documentation.

VISIT MAPEI PRODUCTS INFORMATION LIBRARY

Selecting products is very easy: you can use the filter to enter a set of parameters, such as the **Product Line**, and the type of document required (Technical or Safety Data Sheets, EPDs, Declarations of Performance, specifications etc.). You can also search for all available "coloured" products by selecting the **colour chart** and products belonging to the Grouts and Sealants calculators.

The search will provide you with a collection of technical documentation for the products you are looking for. You can download PDFs of the documents you are interested in one-by-one or click on "+" to add the product to the "selected products" basket and then, after completing your search, make one single **download**. The system will generate a .zip file containing all the documents you have selected.

Visit the library

Waterproofing systems for roofs

MAPEI OFFERS A WIDE RANGE OF SOLUTIONS FOR WATERPROOFING OPERATIONS

What is a roof and what is its function?
In the building industry, a roof is the part of a building that covers and protects the construction underneath it and, in turn, protects the rooms from atmospheric conditions such as rain, snow and cold weather. At the same time, a roof also has to withstand the design stresses and loads acting on it, which depend on what the roof is actually designed for.
A roof may be exploited to serve a number of different purposes: as a simple terrace or balcony, for example, or for more technical applications (such as a place to house a building's plant and service equipment), to allow the passage of vehicles (such as a roof-top carpark on a shopping centre), or else a rooftop garden (such as the one on the Vertical Forest building in Piazza Garibaldi in Milan), to greenify densely populated metropolitan areas, etc.
Whatever the specific function and purpose of a roof, it is important to study its stratographic layout very carefully in order to define the most suitable waterproofing system to ensure the roof is able to protect the building and maintains its resistance over the years, thereby ensuring the durability of the entire structure.

Why do we call them "waterproofing systems"?
In order for it carry out its primary function of protecting a building, not only do the best waterproofing products available need to be employed, but also any other accessory items and relative products required; this is why we need to refer to it as a "waterproofing system".
The Mapei range of waterproofing solutions includes various waterproofing systems. For balconies and terraces, for example, there is the Mapelastic line and relative accessory items such as special sealing tapes (MAPEBAND EASY, MAPEBAND SA and MAPEBAND TPE) and drainage items from the DRAIN line.
For roofs, on the other hand, the products available can vary from the AQUAFLEX ROOF range of liquid acrylic membranes to the PURTOP EASY line of polyurethane membranes, or lastly the PURTOP range of polyurea membranes.
Choosing the most appropriate product range depends on the function of a roof.

Is it more effective to apply a waterproofing solution over or underneath the layer that forms a slope?
In order for a waterproofing solution to last over the years and, as a result, enable a roof to also last over the years, it is important that it is applied on a sloping substrate.
With a balcony or terrace, for example, applying the waterproofing layer on a sloping substrate protects the screed and the other underlying layers from water, which in turn prevents water seeping into joints and affecting the functionality of the entire structure. This also allows the water to run off correctly towards drainage points so that it doesn't remain under the ceramic tiles, which would then lead to the onset of various problems.
In the case of a flat roof with a bituminous membrane, for example, water may collect in any depressions or hollows that have formed in the membrane and provoke the so-called "lens-effect". In such conditions, heat from the sun causes a dark roof to warm up, which leads to premature deterioration of the waterproof membrane and, as a result, a reduction of the roof's service life. If a waterproof membrane is installed on a sloping surface, on the other hand, this phenomenon does not occur.
In both cases, and in all similar situations, it is very important to carry out the correct, routine maintenance on guttering, downpipes and runoff channels.

What is the minimum thickness required in order to waterproof a surface correctly?
The minimum thickness for a waterproofing system varies and depends on the type of material applied, the characteristics of the material, such as its thixotropy, and the area of use of the structure.
As far as cementitious waterproofing systems are concerned, such as products from the MAPELASTIC line, the total recommended thickness of the layer to be applied is 2 mm. This thickness is easy to achieve by using a notched trowel to apply the product, thanks also to the reinforcement which is sometimes used to improve the product's performance properties.
In the case of polyurea systems, on the other hand, we suggest applying a 2 mm thick layer. In such cases, the correct thickness can be achieved by using specific tools as thickness guides, especially if skilled, specialised workmen are employed to apply the product.
In the case of polyurethane systems, we suggest applying a single layer (1.2-1.5 mm thick) in order to form a waterproof membrane with excellent mechanical properties, thanks also to the use of specific additives.
And lastly, the final thickness for water-based liquid membranes (such as those belonging the AQUAFLEX ROOF line) is 1 mm, which may be increased according to the area of use of the roof.

Can ceramic tiles be installed directly over a waterproofing system?
They certainly can. If a client wants a terrace, balcony or roof covered with material suitable for external applications, Mapei can offer an extensive range of adhesives available for bonding it to waterproofing systems.
For example, for a cementitious waterproofing system from the MAPELASTIC line, we suggest a class C2 cementitious adhesive according to EN 12004, while for a polyurea waterproofing system, we suggest using an epoxy or epoxy-polyurethane adhesive.
Also, we mustn't forget that liquid membranes for external applications, such as balconies, terraces and roofs, are covered by EN 14891. This European standard is used to evaluate the conformity, classification and area of use of liquid waterproofing products applied underneath external covering materials. The standard specifies the test methods to be used and the performance levels required for liquid waterproofing products applied underneath a covering material, such as ceramic tiles bonded with adhesives.

Is it possible to intervene on an existing bituminous membrane? And if so, how?
Absolutely. In this case, too, it is important to clarify various aspects before starting, such as the area of use or the final finish required by the client. So, we should ask ourselves: is the flat roof with the bituminous waterproofing system used to house plant or service equipment? Will vehicles need to pass over the roof? Or is it for a terrace that needs to be renovated?
Whatever the situation, Mapei has just the right solution to give any roof a new waterproofing system without having to remove the old bituminous membrane.
Mapei can offer liquid acrylic membranes from the AQUAFLEX ROOF line, polyurethane membranes from the PURTOP EASY line or polyurea membranes from the PURTOP line. In such cases, once the substrate has been prepared correctly with special primers, the waterproofing product may be applied. These solutions should be adopted in the case of exposed roofs used for technical purposes.
If, on the other hand, we need to work on a roof with a bituminous membrane and turn it into a terrace with ceramic flooring, we suggest creating a sloping screed with just the right amount of slope, applying a cementitious waterproofing system from the MAPELASTIC line over the screed and then install the ceramic tiles over the membrane.
The indications above are just a general guide, because with building work there are a multitude of variables and variations that need to be carefully considered for which there is always the right solution.

What does routine maintenance consist of and how important is it?
Maintaining and maintenance are synonyms for "conserving a good level of efficiency". Maintenance work on a roof is essential for the durability of the structure itself. Mapei products, which are certified according to European standard EN 1504-2, already play an important part in protecting structures and, as a result, they maintain their durability over the years. If, however, these products are not used correctly, or if they are not stored in the right conditions, it will be the roof that suffers by gradually losing its overall efficiency.

Dino Vasquez. Product Manager for Waterproofing Products Line, Mapei SpA (Italy)

3 Products in the spotlight

WATERPROOFING UNDERGROUND STRUCTURES, SEALING LONG-LASTING JOINTS, SKIMMING WITH A LIGHTWEIGHT PRODUCT

MAPEPROOF FBT

Waterproofing membrane composed of a synthetic FPO membrane firmly coupled to a non-woven fabric which, once in contact with the concrete casting, guarantees strong adhesion to the casting itself. It is ideal for pre-cast horizontal and vertical waterproofing of underground structures (car parks, swimming pools, basins, tanks, underpasses). It is resistant and constitutes an effective barrier to groundwater, soil moisture, radon and methane gas, in addition to the natural agents and aggressive substances normally present in the soil. It guarantees high durability and resistance to aging by UV rays during the construction phases. It meets the requirements of EN 13967 standard.

PROTECTION AGAINST WATER, MOISTURE, RADON AND METHANE

MAPEFLEX MS 40

Silane polymer-based hybrid sealant with low modulus of elasticity, specifically developed for sealing expansion and distribution joints on horizontal and vertical surfaces. It is ideal for sealing joints, even temporarily damp or wet, subject to movements up to 25% in façades on civil and industrial buildings; pre-cast concrete panels; concrete walls and, in general, internal and external vertical structures where a thixotropic product is required. It complies with EN 15651-1 standard, contains no solvents, and has a very low emission level of volatile organic compounds (EC1 Plus according to GEV). It offers a guarantee of a long service life and allows for rapid application and, once set, it may be painted over.

FOR TEMPORARILY WET JOINTS

MAPETHERM AR1 LIGHT

One-component, lightweight cementitious mortar for bonding and reinforcing insulating panels and thermal insulation systems. It features low weight (-20% compared to traditional skimming mortars), high impact strength, high compression strength, and excellent workability.
It is classified A1 for its behavior in the event of fire. It allows thick layers to be applied in one go, so surfaces can be adjusted before installing covering using the same product for three different phases.
It is highly eco-sustainable, contains recycled materials as mentioned in its P.A.S.S (Profile and Aspects of Sustainability in Synthesis) and has its own EPD (Environmental Product Declaration).

ONE PRODUCT FOR THREE PHASES

MAPEI
FOR YOUR HOME

Choose reliability, durability and respect for the environment.

Restoring masonry, strengthening structures, waterproofing your terrace, installing flooring and paving, refurbishing your bathroom, painting and protecting your façades. Put your trust in **more than 80 years of experience** gained by Mapei on sites **all around the world**.

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

Learn more on **mapei.com**

MAPEI®
ADHESIVES · SEALANTS · CHEMICAL PRODUCTS FOR BUILDING