

REALTÁ MAPEI

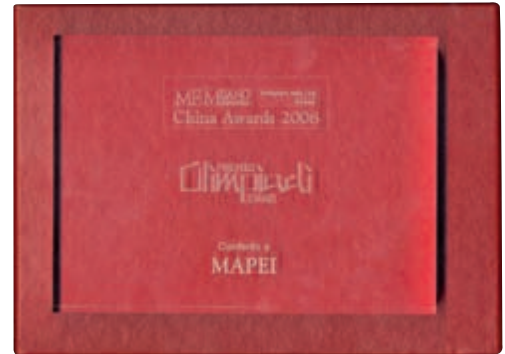


STUDS AND STILETTOS
Parquet protected...
against any attacks

China Awards 2008

The “China Awards - Olympics” prize awarded to Mapei

Sun Yuxi, the People's Republic of China's Ambassador to Italy, awarding Cesare Romiti, President of the Italy-China Foundation, a prize in acknowledgement for the work the Foundation has carried out over the last five years to improve relations between Italy and China.



The third edition of the “China Awards” was held in Milan on 27th November, 2008. The event was organised by the Italy-China Foundation and the newspaper, *Milano Finanza*, under the patronage of the Italian Ministry of Economic Development and CONI (Italian National Olympic Committee).

The Italy-China Foundation is a non-profit organisation, which, for over five years now, has been promoting economic and cultural exchanges between Italy and China through public relations, business, culture and consultancy/training work, helping boost the image of Italy and Italian products in China. The “China Awards” is one of these enterprises, intended, on one hand, to reward those Italian companies which have best taken advantage of the opportunities offered by the Chinese market and, on the other, Chinese companies who have really taken advantage of the opportunities offered by the Italian market.

The award-winning companies were selected from over 1000 candidates and divided into six macro-categories of prizes: Creators of Value, Top Investor in Italy, Top Investor in China, Lombard, Olympics and Golden Lion. Mapei was inevitably among the winners and was awarded the 2008 Olympics Prize in acknowledgement for its contribution (through works and supplies) to the organisation of last year's Olympic Games. As we have already described in detail in issue no. 26 of *Realtà Mapei International*, the Company supplied high-tech products (primers, smoothing and levelling compounds, adhesives and grouts) used for constructing some of the most famous sports facilities at the Games, such as the National Stadium (the “Bird's Nest”) in Beijing and the Shanghai Stadium.

The awarding of this prize is further confirmation of Mapei solid position in China, where it has three subsidiaries (in Hong Kong, Canton and Shanghai), two manufacturing plants, a well-established commercial distribution network (which also includes “do-it-yourself” stores) and a sales team capable of meeting all the demands of a country as big as Europe..... Actions not words! And our actions are continuing (see pg. 64).

Some of the sports facilities which hosted the 2008 Beijing Olympic Games and which were built with the help of Mapei products.



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Main cover photo:

Main cover photo: stiletto worn by a model and studs worn by Alessandro Zampagna, who is playing as a striker in the Sassuolo football team sponsored by Mapei. Studs and stiletto are no problem for a parquet treated with the new Mapei Ultracoat® line made up of easy-to-use and fast systems ensuring a long-lasting protection.
Photo by Miro Zagnoli.



SUMMARY

NEWS

China Awards 2008	inside front cover
Mapei Keeps up with the "Green" Times	page 6
Shanghai Expo 2010	page 64

TEAMWORK

Mapei is Growing..so is Mediglia	page 2
Lusomapei	page 22

TRADE FAIRS

MADE expo	page 7
Domotex	page 14

PRODUCT SPOTLIGHT

Mapesilent	page 18
Products for Laying Parquet	page 20
Practical Advice for Floor-Layers	page 34
Ultrabond Eco 380	page 39
Silwood	page 43
Stabilcem SCC	page 50
Dynamon System	page 57
Keraflex Maxi S1	back cover

PROJECTS

The Church of the Holy Trinity of Fatima	page 24
Archeo-Mapei in Turkey	page 30
Fun and Games with Water	page 36
The Lion's Beer	page 40
In the Deep Blue Yonder	page 44
Cretan Malia Park	page 47
Rio Verde Viaduct	page 52
A Longer Life for Viaducts	page 58

THE EXPERT'S OPINION

Repairs to Bridges and Viaducts	page 51
---------------------------------	---------

MISCELLANEOUS

ManonLisa	page 62
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www.mapei.com

The Mapei web site contains all the information about the Group's products, its organisation in Italy and overseas, its involvement in the sector's main trade fairs and lots more.

MAPEI IS GROWING... SO IS MEDIGLIA

Mapei's industrial estate in Robbiano di Mediglia (near Milan) is being enhanced with new manufacturing areas

The plant in Robbiano di Mediglia, just outside Milan, is the pride of Mapei's manufacturing plants, where everything is organised around automated production lines. Plant's quality, environmental and safety systems are all certified (ISO 9001, ISO 14001, OHSAS and EMAS registered). Built in 1975, it was further extended in 2008 to meet the Company's need to develop and rationalise its manufacturing operations. From this viewpoint it may be said that Mapei's main manufacturing facility in Italy both symbolically and physically represents the kind of constant innovation and growth characterising the Company. So let's take a closer look at how this extension and modernisation work has been carried out in various logistics and manufacturing departments. A new raw materials and package storage warehouse (7,500 m² including 15,000 pallet positions) was completed in January 2008 and then during the second half of the year a new production area was opened (2500 m²). This is devoted to a new plant

for handling protective and coloured coatings for facades. New manufacturing operations will soon be set underway in this covered area. The structure was designed to meet the highest possible standards in terms of logistical efficiency and fire prevention, in close accordance with environmental regulations. The Italian building firm Magnetti Building handed over the building "turnkey" and celebrated the event with its own communication campaign featuring Mr Giorgio Squinzi, the CEO of the Mapei Group, himself as its testimonial.

A production plant for a new polyurethane product for laying synthetic grass carpets (ULTRABOND I 710) was set in operation in spring 2008 and has a production capacity of 15,000 tons-a-year. During the first two months of 2008 a new facility for manufacturing special mortars was also set up with a manufacturing capacity of 100,000 tons-a-year. Finally, a new plant for manufacturing and packing high-viscosity polyurethane sealants from the MAPEFLEX range was opened at the



Photo 1. The start-up of manufacturing at the new plant for protective coatings for facades.

Photo 2. The silos for storing raw materials ready to be dosed automatically.

Photo 3. Packaging operations for a paint from Mapei's Wall Coatings Line.

Photo 4. Mixing: having dosed the right amount of colorant, the packages are automatically fed into a station of six mixers which mix the paint.

Photo 5. A view of the warehouse showing some finished products.

Photo 6. Checking the colour and taking a sample.



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Robbiano di Mediglia (Milan). The photo shows the main production facility out of 54 owned by the Mapei Group. Top left, the new warehouse and new coating department. Right, blue, the tower of the new plant for special mortars.

beginning of 2009. All this extension and innovation work carefully reflects the Company's desire to have the very best in terms of manufacturing and rationalisation in its production facilities.

This is not just intended to increase production output, but also to meet clients' needs as quickly as possible.

The New Production Site for Manufacturing Protective Coatings for Façades

In line with its carefully targeted market policy, Mapei has extended its portfolio for the building industry by introducing a line of protective coatings for façades. The new production site is built over an area of 1,500

m², and contains both productions and warehouse facilities. When fully operational, the plant has an capacity of over 10,000 tons-a-year. This substantial output (over 3.5 million kg-a-year per worker) has been made possible thanks to the high level of automation. Every single production process is monitored by a state of the art software package, which reduces manual labour. The plants modularity and flexibility, combined with the high safety standards, places Mapei's Coating Line at the top of paint manufacturing plants in the industry.

Another major step forward has also been taken, by implementing the cutting-edge industrial tintometric system, which enables to produce an

almost unlimited number of colours. The system is controlled by a spectrophotometer, and can reproduce any colour applied on all kinds of substrates. The automated gyroscopic mixers can simultaneously mix up to six packages at the time, and have a daily output of 45,000-50,000 kg coloured paints per shift.

With this new plant, Mapei is serving the market needs for high quality coatings for façades, and enables the customer to design almost any colour for both existing and new architecture.

Plastic and Aluminium Cartridges

Along with the extensions to manufacturing areas at the plant in Robbiano di Mediglia, it is worth mentioning



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the setting up of a new automatic line for packing polyurethane and sililate sealants from the MAPEFLEX range into aluminium and plastic cartridges. This new facility has a manufacturing capacity of 8 million cartridges-a-year. This is the plant where MAPEFLEX PU 45, the rapid-hardening, thixotropic polyurethane adhesive and sealant with a high modulus of elasticity (currently marketed in boxes of twenty 600 ml soft cartridges), is packed into 310 ml aluminium cartridges.

New Production Facility for Manufacturing Special Mortars

The new production facility for manufacturing special mortars was built using "gravity drop only" technology. The 22 silos for raw materials, placed above the scales, mixer and packaging machine, reach a height of 34 metres. This kind of technology allows maintenance costs and risks of contamination between the various finished products during manufacturing to be notably reduced. The plant is fully automated both during the dosing of raw materials and packaging and pallet-packing operations.

All the dosing and mixing operations take place in a vacuum loop; this procedure allows the working environment to be kept in optimal conditions at all times. The new plant can manufacture and pack mortars containing fibres and granules up to 5 mm in size.

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The finished product can be packed into 25 kg paper bags sealed with a valve or big bags weighing 1000 kg. The product can also be directly loaded into tank trucks in a loose state. By summer 2009 the plant will be further reinforced through the installation of a new packaging line working with 25 kg vacuum bags. The big-bag packing output was also further increased in the beginning of this year through the installation of a second twin line alongside the one already in operation.

The new plant for manufacturing special mortars has been deliberately built alongside the finished products warehouse to make the logistics more rational.

Targets and Prospects

At the end of this virtual tour around the new plants in Mediglia, it is worth quoting the comments made by Andrea Perego, the plant manager, who claims that: "Even though last year there were the first signs of a slowdown in the market, not just in Italy but worldwide, Mapei continued to invest in its production facility in Robbiano di Mediglia and 2008 saw the highest number of manufacturing and structural extensions over the last decade. The new plant for manufacturing mortars, for example - so Mr Perego went on to say - has increased the production capacity by over 15%;



8

the plant devoted to coloured and protective coatings for facades has enormous margins for growth over coming years and all the investments made in the area of high-viscosity sealants will be fully exploited in the short/medium term.

All these structural developments have moved hand-in-hand with a notable strengthening of staff on all levels, in order to ensure more careful and efficient management of all operations.

There are also plans for further investments in 2009 - so Mr Perego concluded. - This confirms Mapei's intention and capacity to constantly invest and update to maintain and strengthen its qualitative/manufacturing advantage over its competition". The Mapei Group's main manufacturing plant is a concrete example of what Mapei is achieving.

Partly, and above all, thanks to Mediglia ... you can build on!



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Photo 5.
The 34 m tall tower belonging to the new plant for manufacturing special mortars.

Photos 6 and 7.
The production line in the plant for manufacturing special mortars already in operation.

Photo 8.
The inside of the new 7500-m² warehouse with 15,000 pallet stations.

Photo 9.
The new automatic line for packing products from the MAPEFLEX range and other products into cartridges.

MAPEI KEEPS UP WITH THE "GREEN" TIMES

Everybody talks about "energy-saving", "eco-sustainability" and "respect to the environment". These are issues which are increasingly at the focus of global attention nowadays, on all levels of society from ordinary people to the highest institutional figures: the European Union recently drew up an environmental strategy with a view to getting all Member States to agree to a 30% cut in carbon dioxide emissions involving an overall investment of 175 million-a-year starting in 2020, so as to keep the rising temperature on a planetary scale to within 2 degrees of what it was in the preindustrial age; the newly elected President of the United States, Barack Obama, announced, as soon as he took over in office, his intention to back the campaign for renewable energy sources and support European policy to reduce emissions; in Italy too it has been decided to encourage energy-saving in the building industry: the Government regulation setting a limit on tax reductions at 55% (valid back to 2008) has been cancelled from the anti-crisis decree approved by Parliament. On the other hand, incentives have been confirmed without any limit on spending for a three-year period from 2008-2010. More generally speaking, architectural designers, business people and consumers all over the world want to know how they can help reduce environmental impact and, more simply, energy expenditure in the construction and management of property.

While for many this is a novelty, that is not the case for Mapei. In actual fact, for some time now the Company has focused particular attention on the environment: its commitment to this realm is not merely a question of mar-

keting, but one of the key principles in its corporate philosophy, since for 30 years now it has been concentrating its Research & Development on creating products which are safe for the environment, installer and final consumer. As early as the 1970s Mapei launched products in water dispersion with low solvent content onto the international market. The Company then set underway a research programme, which led to the creation of the ECO Line, a range of products with low emission level of volatile organic compounds (VOC) marked by a picture of a green flower and initially marketed in America and then internationally, replacing traditional products.

The products in the ECO Line, certified by international institutes (TFI, CRI), can also boast having the EMICODE EC1 label (very low emission level of volatile organic compounds) issued by GEV ("Gemeinschaft emissionskontrollierter Verlegewerkstoffe, Klebstoffe und Bauprodukte e.V."), Association for Controlling Emissions of Installation Materials, Adhesives and Building Products, of which Mapei is an ordinary member.

In addition, the use of innovative technology like BioBlock® and DustFree, used in formulating several Mapei products, instil properties which help improve the standard of the places in which they are incorporated, reducing (respectively) mould and dust released into the air. But Mapei's eco-friendly policy does not just concern final users, it also involves its own facilities and manufacturing processes: reducing waste by using recycled materials, rationalising energy savings on its own manufacturing operations, using effective logistical strategies

aimed at reducing pollution caused by transporting goods by road. An important aspect of Mapei's commitment to the environment is also its partnership with the United States Green Building Council (USGBC), which the Company has been part of for over five years. Mapei actually promotes the widespread use of LEED, a certification system drawn up by the USGBC but now adopted in lots of countries aimed at developing high-performance "green" buildings or, in other words, structures designed, built (or restructured) to operate in an eco-sustainable and energy efficient way.

The system is becoming increasingly popular worldwide, proving that many investors prefer to choose LEED-certified projects, because they guarantee a reduction in the risks associated with managing properties. And Mapei, whose range of products already includes over 150 products designed to help designers and contractors create innovative LEED-certified projects, plans to extend this range in future by investing 70% of its Research & Development resources (i.e. approximately 85 million euros) in creating eco-sustainable products.

Now that there is increasing attention to eco-sustainability and environmental impact in the building industry, Mapei can make full use of the experience it has gained over the last 30 years, so it has decided to underline this strong point by using the "Green Innovation" label.

This label, taking the form of a green tree, marks products from the Mapei range contributing to achieving eco-sustainable building.

The commitment to the environment and eco-sustainable building, as well as "Green Innovation by Mapei", were a distinctive part of Mapei's involvement in this year's early trade fairs (such as Domotex and MADE expo, described in the following articles), in line with the communications strategy the Company set underway last year during the 2008 edition of Cersaie and Saie.



MADE_{expo} 2009

Mapei presents its latest cutting-edge products and systems at the second edition of MADE, Milano Architettura Design Edilizia

The second edition of MADE expo - Milano Architettura Design Edilizia - was much more successful than even the rosier of expectations and boasted 17.1% more visitors than last year. The Mapei Group got enthusiastically involved in the event, using its three separate stands to convey to everybody present all the energy and commitment which has always characterised the Company's operations in every sector of the building industry. Along with the two Mapei stands and right in front of the main stand located in the central area of Pavilion 4, a spacious exhibition area was taken up by its subsidiary Polyglass.

The final figures for the event, which took place from 4th-7th February Trade Fair in Rho (near Milan), referred to 200,126 visitors (19,202 foreign, an increase of 19.8% compared to the 2008 edition, from 118 countries). The organisers' efforts were rewarded by all the Italian high-quality operators, (architects, designers and experts) attending the event, who really appreciated the great variety of goods on display. The fair, organised by MADE eventi srl and promoted by Federlegno-Arredo (the Italian Federation of Wood, Cork, Furniture and Furnishing Manufacturers) e Uncsaal (the Italian Union of Aluminium, Alloy, Steel Doors and Windows Enterprises) has grown in a way which, as well as being a very positive outcome for the architecture and building show, is also a positive sign of confidence in the industry. Satisfaction over the outcome was further enhanced by the enthusiasm and positive general feeling noted over the four days of the event in the various stands of the 1739 exhibitors, covering an area of over 100,000 net m² of display space.

Eco-sustainability, energy-saving, inno-



vation and safety were just some of the sound-bites heard at the exhibition, which featured about a hundred meetings and conferences, all well attended and much appreciated.

MADE expo really stood out for its cultural moments, such as the Toy Building no.1 installation devoted to the Italian architect Italo Rota's futurism, set up in Piazzetta Reale (at the very hearth of Milan city centre), and the Instanthouse Show, aimed at encouraging students to present their own projects in a competition to design temporary housing cells for Expo 2015. The competition tender, with three winners and a special commendation out of the 74 projects entered, focused on individual, modular living units designed to serve the purposes of temporarily accommodating young guests in the city of Milan during Expo 2015. The aim of Instanthouse was to generate "ecological awareness" or, in other words, research and experimentation into innovative materials compatible with the environment.

MADE expo's success once again confirms the central importance of Milan as a benchmark for the Italian building and

architecture industry, officially opening up the way to the great trade fair event, Expo 2015, which is also being backed by Mapei.

Media coverage of the event was also extremely satisfactory. It is worth pointing out that 14.8% more journalists attended this year, corresponding to a total of 1,309. An important figure not just in terms of the number of journalists, but particularly for the quality of the media coverage (both specialist and general), including newspapers and TV channels.

Mapei at MADE expo

Mapei's reason for taking part in this trade fair was, as always, to let the general public know more about the Company, the great energy it gives off, its deep commitment to promoting cutting-edge products, and all the experience it has gained in the various sectors of the building industry. MADE expo provided Mapei with an important chance to present its entire range of building systems and products to architectural designers and other operators in the industry, all carefully designed to



GREEN INNOVATION

Mapei is green* worldwide



**Mapei and LEED
Making green easy**

Mapei is the proud innovator of environmentally responsible solutions and manufacturer of more than 110 LEED-compliant products, the industry's largest selection of eco-friendly products. Mapei has been cooperating with LEED - The Leadership in Energy Environmental Design - since 2001.

LEED, developed by the U.S. Green Building Council, encourages and accelerates global adoption of sustainable green building and development practices. Besides the USA, Canada and now also in Italy, where it has been officially adopted, the LEED system is becoming more and more popular in Australia, New Zealand, United Arab Emirates and in the rest of Europe.

*12 proofs of Mapei's Greenness

- 

1 A history of commitment

Since the 1980s, long before the need for sustainable products was recognized, Mapei introduced a line of advanced, very low solvent based, adhesives and other products for building, which were then recognized in the ISO Laboratories in Canada and then marketed here in the Mapei plants.
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2 Skillful technology

The technology advanced by Mapei ISO Laboratories, has been incorporated into almost all products, both as adhesives, grouts and seal coatings, to help protect them from mould and water.
- 

3 Dust Free Technology

Products, such as adhesives and cementitious grouts, containing this innovation. Mapei technology benefits from a 90% reduction in the amount of dust released during their production, grinding, mixing and use - which contributes significantly to improved air quality, a cleaner environment and a cleaner job site.
- 

4 LEED-compliant products

Mapei boasts 10% of its ISO offers are for development of LEED-compliant products. Mapei manufactures more than 110 LEED-compliant products, the largest selection of products for the building industry.
- 

5 Green Label Plus certification

This voluntary industry-leading program of the Green and Blue Building, for products for home floor and wall coverings and adhesives for cementitious substrates, high standards for ensuring color and quality. Currently, more than 20 Mapei products have been approved for Green Label Plus certification.
- 

6 Environmentally focused R&D

Mapei checks the effects of its ISO Laboratories in formulating materials containing solvents, that maximize environmental and reduce air quality and have the ISO certified as well as a high percentage of recycled components.
- 

7 Energy saving strategies

Optimizing efficiency goals at Mapei plants focus on optimizing the consumption of energy in manufacturing operations. Mapei also offers solutions for constructing energy-saving buildings.
- 

8 "Reduce, reuse, recycle" strategies

Mapei's ISO manufacturing plants use about 4% to 6% of water of recycled post industrial materials, except for Mapei's ISO recycled content of more than 20%. The packaging materials are also 100% sustainable since they mostly use recycled materials (other than new raw material films and also water-soluble packaging, etc.).
- 

9 Shipping strategies

By shipping or venting efficiently using its own trucks and manufacturing products near markets, Mapei reduces fuel use and minimizes food transportation pollution. For instance, a 10 ton truck is able to transport the same amount of goods transported by 30 trucks.
- 

10 New green construction

New Mapei plants are being designed and built to achieve LEED certification and other solutions for saving energy in building.
- 

11 Green education strategies

Mapei's efforts of educational programs for professional visitors and project managers includes specific courses on the use of Mapei eco-sustainable products and training courses for project designers.
- 

12 Global environmental management

Mapei adheres to Responsible Care, the International Chemical Industry's commitment to sustainable development. Mapei has obtained an Environmental Management System according to ISO 14001, ISO 9001 and ISO 45001, which enables to monitor the negative impact of the operations on the environment and using the published environmental declaration concerning the products' packaging.

meet every imaginable building need from foundations to roofs. Eco-sustainable products and systems, innovation, a full range of solutions, reliability and good service. These are those extra trump cards Mapei wanted to present at the trade fair in Milan. Once again at MADE expo, Mapei highlighted its commitment to the environment, showing its awareness of how eco-sustainability (quite apart from marketing trends) is now an absolute must in building. Drawing on over 30 years experience in this field, the Company stressed the concept of "Green Innovation" in the form of a logo depicting a green tree clearly visible on the white walls of its stand. All Mapei products conforming to international regulations govern-

ing eco-sustainability now have this "Green Innovation" logo, and Mapei's range currently includes over 150 products meeting the guidelines specified by this little green tree. Visitors to Mapei's exhibition stands were provided with all kinds of different information about the various products and systems. As they studied everything on display, they were handed all the new technical documentation and technical-commercial staff were available at all times to answer any questions they had.

The big Mapei Stand in Pavilion 4

The main stand in Pavilion 4, covering an area of over 400 m² over two levels, presented Mapei's entire line of differ-

ent products. Lots of interesting new products were on display. Starting with MAPESILENT®, the new soundproofing system for reducing noise from foot traffic. This is actually a modular system of special panels, membranes and complementary products made of insulating material to be installed in contact with the floor before laying the screed. MAPESILENT® meets the legal requisites in terms of sound installation for constructing screeds which are perfectly insulated from the substrate. After installing the MAPESILENT® system, the chosen floor made of either ceramic tile or natural stone, parquet, etc., can then be laid. The various Mapei systems designed for the construction of sports facilities



and laying synthetic grass are extremely interesting. For this latter application, two new products were presented at MADE expo: ULTRABOND TURF PU 1K and ULTRABOND TURF PU 2K. Plenty of attention was focused on the range of resin and cementitious floors. In this particular sector, Mapei has come up with some specific systems for industrial and commercial environments. These include MAPEFLOOR PARKING SYSTEM solvent-free, single-spread, multi-layered, flexible, non-slip, polyurethane system for floors and elastomeric waterproofing layers in car-parks subject to intense traffic; the fast-setting and hardening, self-leveling cementitious ULTRATOP SYSTEM for existing and new industrial and civil

floors, and, lastly, MAPEFLOOR SYSTEM for resin floors with low emission of VOC (volatile organic compounds), in accordance with specific regulations and standards. As regards walls too, Mapei took the chance to present a truly complete range of smoothing and levelling compounds for concrete surfaces and renders. PLANITOP 430, a fibre-reinforced, thixotropic mortar for carrying out repair operations, certainly caught the eye. Attention at the trade fair also focused on the complete line of screeds, like for example TOPCEM PRONTO, and self-levelling compounds like ULTRAPLAN. As well as allocating plenty of space for cutting-edge systems for installing all kinds of floors (ceramic tile, natural

stone, resilient materials and wood), the spotlight was also on a range of new eco-sustainable adhesives for installing resilient and textile materials: ULTRABOND ECO 170 for textile floors, ULTRABOND ECO 380 for PVC and ULTRABOND ECO 520 for linoleum. As regards the installation of tiles, attention focused on light and cementitious adhesives, such as the recently developed ULTRALITE S1 and the range of KERAFLEX high-performance adhesives. Not to mention KERAPOXY DESIGN, a two-component, acid-resistant epoxy mortar for decorative grouting of joints, and the well-established product ULTRACOLOR PLUS. A sector in which Mapei has been at the very cutting-edge of the market for a

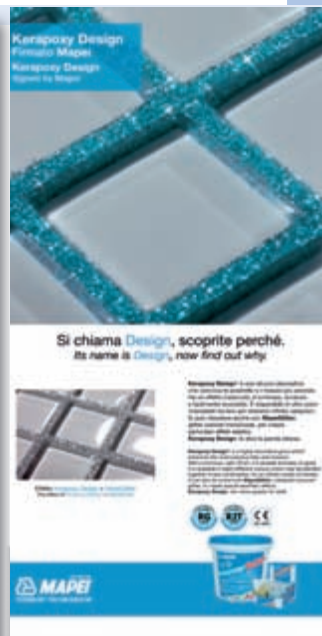
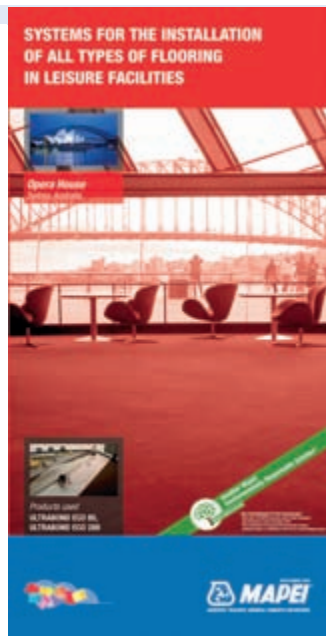
TRADE FAIRS

long time is waterproofing. So it was only logical that MADE expo provided the chance to present, alongside the very familiar MAPELASTIC, MAPELASTIC SMART and MAPEGUM WPS - for waterproofing terraces, balconies, bathrooms, swimming pools etc. - other specific waterproofing products and systems serving every imaginable building need.

As regards the waterproofing of underground structures, attention focused on the range of bentonitic waterproofing products (such as MAPEPROOF SWELL), the PLASTIMUL range of bituminous emulsions, and MAPELASTIC FOUNDATION, a two-component elastic cementitious membrane for waterproofing concrete surfaces subject to both positive and negative water pressure.

The big Mapei stand in Pavilion 4 also displayed other products covering every aspect of building, allowing the Company to focus on its other important specific systems.

So, for structural reinforcement operations, Mapei highlighted its FRP SYSTEM for structures made of concrete, masonry, wood and steel, and the FRG SYSTEM for reinforcing elements made of stone, brick and tuff. Other products presented included different systems designed for repairing and protecting concrete (with products like MAPEFER, STABILCEM SCC, MAPEGROUT EASY FLOW and MAPEGROUT EASY FLOW GF, MAPELASTIC and ELASTOCOLOR PAINT), as well as systems for repair-



ing and dehumidifying masonry work (including products from the POROMAP and MAPE-ANTIQUE lines, ideal for the maintenance of historical buildings).

Road maintenance also had its own dedicated exhibition space displaying a range of specific high-tech products belonging to the MAPEGROUT range: MAPEGROUT SV, MAPEGROUT SV T, MAPEGROUT FV FIBER.

Regarding coatings, the Company focused on a wide range of systems and products, combining high-quality with excellent durability for protecting and decorating a wide range of substrates. The line recently has been extended with BASE COAT, which is a range of water-based undercoats, especially developed to improve filling

properties and optimize hiding power. All products can be colored with the ColorMap tinting system.

In perfect line with the event's "green" themes, special focus at MADE expo was inevitably reserved for the MAPETHERM system, ensuring a reduction of energy consumption both in summer and winter and carrying the "Green Innovation by Mapei" logo.

MAPETHERM is Mapei's now extremely famous thermal insulation system of blanket heat insulation, whose distinctive feature is the high technological content of the special MAPETHERM AR1 adhesive, guaranteeing perfect adhesion to any kind of wall and any kind of insulating substrate (made of extruded and foam polystyrene, cork, rock wool).



THE POLYGLASS STAND

After taking over the international group Polyglass (which we informed you about in issue no. 27 of *Realtà Mapei International*), a company specialising in waterproofing membranes and insulating systems, there is now a complete range of products on offer for waterproofing roofs and covers.

Now that Polyglass is part of the Group, Mapei can offer a significant range of products to its clients in the waterproofing sector of the building industry. Polyglass had its own stand at MADE expo, right opposite Mapei's in Pavilion 4. This provided the chance to present a full range of technologically cutting-edge products for the sector.

Polyglass used its exhibition space to focus on its latest generation of self-adhesive membranes based on ADESO® technology, the most innovative bituminous waterproofing product in the industry.

Self-adhesive waterproofing membranes based on ADESO® technology provide the kind of safety, speed of construction and versatility of usage typical of modern building technologies. Self-adhesive bituminous membranes with ADESO® technology are made with the help of innovative types of technology, allowing the layering of several bituminous mixes and hence the creation of membranes of various thicknesses with self-adhesive properties.

Last on the list, but no less important, was the presentation of the Mapei range of admixtures at the Milan exhibition: integrated solutions for cement-concrete plants designed to reduce the consumption of non-renewable raw materials, decrease CO₂ emissions, prolong the useful life of structures, and reclaim contaminated land. As regards this latter issue, Mapei has developed (and presented at the exhibition) the HPSS SYSTEM: an innovative integrated process based on hydraulic binders for treating contaminated soil and sediments.

All the products and systems were, as usual, presented by means of demonstration slabs, film clips, key references and graphic panels.





A STAND FOR INSTALLING PARQUET

Mapei's expertise and technological development in the realm of installing wood in particular were clearly on show at MADE expo. Alongside its adhesives, Mapei also presented hydraulic binders, admixtures, primers, consolidating primers and waterproofers, as well as smoothing compounds and complimentary products for making long-lasting floors and coatings. There were plenty of novelties on display at the stand in Pavilion 3 devoted to products and systems for installing parquets.

They included the new ULTRACOAT® Line, water-based products for giving protective finishes to parquet floors. This line is currently only available on the Italian market. The ULTRACOAT® products feature extremely low emissions of VOCs, but are also easy to use and guarantee long-lasting protection even on floors subject to heavy foot traffic.

The characteristics of this new range of products (which are studied in greater detail in this issue of magazine) were highlighted at the trade fair by means of demonstrative slabs, graphic panels

and technical documentation. On every day of the event there were even practical demonstrations of how to apply the products, specially carried out by Mapei technicians. A further opportunity for visitors to personally assess the qualitative traits of the new products and see directly from themselves how good they are. Another new product for this sector on display at MADE expo was SILWOOD, an EMICODE EC1-certified acrylic sealant in water dispersion specifically for wooden floors. There was also a new line of products for finishing and maintaining parquet:

abrasive discs, detergents and waxes. An important product highlighted at the exhibition was ULTRABOND P990 1K, featuring a new and even more effective formula and now coming with EC1 R certification. ULTRABOND P-R9 was also on show, a one-component hygro-setting expansive polyurethane adhesive, used by injection, for fastening and repairing parquet elements which are not perfectly bonded to the substrate. Special demonstration slabs clearly illustrated the new system for applying the MAPESILENT® sound-proofing system to wooden floors.



Made In Posa... Europe

Mapei sponsored an event entitled "Made In Posa... Europe" during MADE expo, an international competition in installing wooden floors organised by AIPPL (Italian Association of Wooden Floor Installers). The championships provided visitors at MADE expo to enjoy a "live" demonstration of the great professionalism of installers, sending out a very important message to the whole of the building industry about the relevance of wooden floors as an important investment for enhancing any building design.

The second edition of the installation competition saw teams of young installers from Germany, Poland, Romania and Italy do battle.

The competition involved constructing a piece of flooring measuring 9 m² using five different types of wood: doussié, beech, iroko, oak and wengé.

On 7th February, 2009 the jury, composed of a representative from each nation and an exponent from the world of design, assessed the work of the four teams and announced the winners as being from Romania.



CONFERENCE ON "NATURAL STONE FLOOR AND WALL COVERINGS - COMPARING DIFFERENT TECHNIQUES"

As part of the numerous technical conferences livening up the various days' proceedings of MADE expo, Mapei sponsored a conference entitled "Floors and walls clad with natural stone tiles - comparing different techniques", organised by Assomarmisti Lombardia (the Association of Marble Producers for the Lombardy region) on 6th February, 2009. The meeting gave associations, bodies and associated companies the opportunity to update themselves regarding state of the art techniques most suited for the correct installation of floor and wall finishes as well as the choice and maintenance of natural and artificial stones, including the presentation of the latest UNI (Italian Organization for Standardization) standards for laying stone materials.

Enrico Geronimi from the Mapei Technical Service Department team gave a speech at the conference focusing on factors influencing the choice of adhesives and sealants for installing stone materials.

According to Mr Geronimi, the choice has to be made taking into account the distinctive features of these materials, particularly their dimensional stability to heat and water and their stability to humidity, which may cause stains and/or efflorescence to form.

The choice of sealing agents for sealing expansion joints is a different matter, since the choice of product is influenced by the possible presence of substances inside the sealants which may cause marks and stains to form near these seals. He also emphasised that the choice of installation products must take into account all those factors normally affecting this kind of decision, such as: the type of substrate, the type of installation (interior/exterior, wall/floor), the kind of traffic the surfaces will have to deal with while they are in use, environmental conditions, etc. His speech concluded with an analysis of the standards UNI EN 12004 (adhesives for tiles - requirements, evaluation of conformity, classification and designation) and UNI EN 13888 (grouts for tiles - definitions and specifications), a handy aid for filling in the various specifications for installing stone material, in order to define the minimum requirements necessary.

Another lovely artistic slab showed how to use the decorative epoxy mortar KERAPOXY DESIGN for grouting wooden mosaics: a decidedly unusual and pleasant aesthetic result thanks to its pearlescent finish and the possibility of mixing KERAPOXY DESIGN with MAPEGLITTER metalized coloured glitter, giving grouts a shiny and luminous look. It is also worth pointing out that the systems for installing wood are solvent free with a very low content of volatile organic compounds, which means they are safe for both the installers and people living with them.

MADE expo confirmed the Mapei Group's efforts to show the building market how reliable and innovative its numerous systems of products are. The extremely well-qualified people attending the exhibition were able to appreciate not just all the new products on display for the first time at its three very busy stands, but also a corporate image which turned out to be extremely modern and fresh in its basic lines. This is the result of the Company continuing growth even within the extremely important realm of corporate communication.



2009 DOMOTEX H A N N O V E R

Domotex is resisting just as well as resilient and wooden floors. Despite the fact that the organisers' expectations were not exactly rosy this year, due to the tricky worldwide economic situation, the main international exhibition in the industry for textile, resilient and wooden floor coverings turned out to be a success again this year: over four days (from 17th-20th January) 1394 exhibitors from 70 different countries showed off the latest innovations in the industry through a profusion of materials, styles, technologies and colours. Although there were only approximately 38,000 visitors (less than last year), there were, however, more professional visitors (retailers, distributors, installers, decorators, designers, architects, etc.) and more of those people who have key

decision-making roles in businesses. The tricky state of the market at the moment actually provided an added stimulus for exploiting the opportunities offered by this important show: a chance to set up new professional contacts, strengthen those already in place, promote innovation and grasp future developments in the industry and the challenges awaiting people involved in it.

The international status of the event was reinforced by the high number of exhibitors and visitors from outside Germany, 82% and 64% respectively. It was interesting to note that this time there were plenty of representatives from eastern European countries and continental American countries.

After all, only a truly "international" exhibition could have resulted in the creation of "sister" events in

other nations, such as Domotex asia/Chinafloor in Shanghai and Domotex Middle East in Dubai, which have been growing in popularity and prestige for various years now.

Attention to innovation and sustainability was more obvious than ever at Domotex 2009, remaining a distinctive feature of all the products and technology on display for exhibitors and visitors and at the focus of attention during all the more or less formal discussions and debates. For example, these issues were discussed during numerous forums, meetings and technical seminars included on this year's schedule, which was full of specially organised side events for this edition of the German trade fair.

For instance, it is worth mentioning *contractworld*, a platform to exchanging





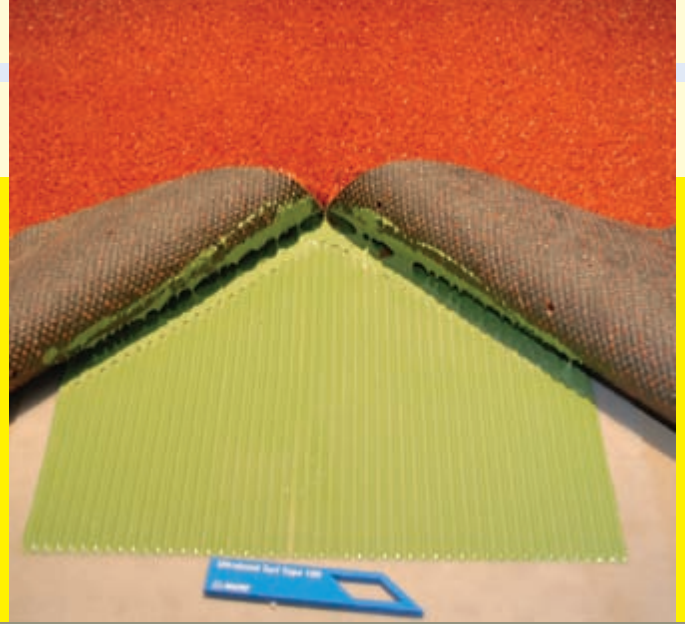
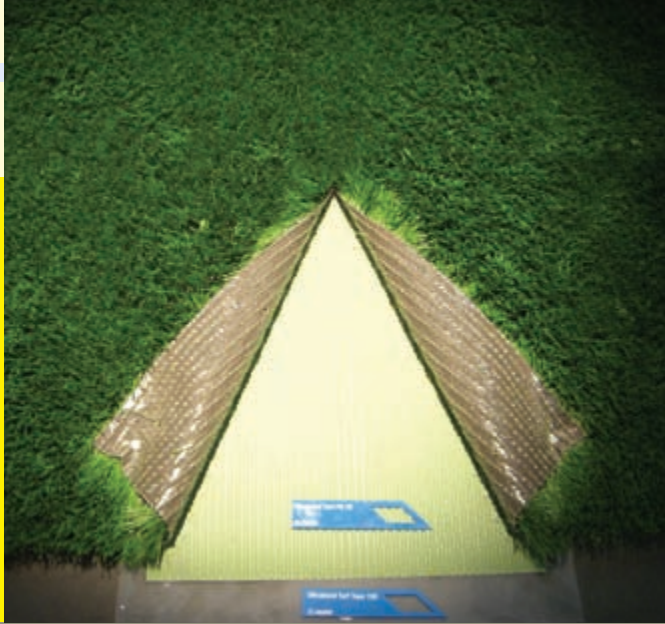

Our environmental commitment
 More than 150 Mapei products help project designers and contractors building innovative projects, which are LEED (Leadership in Energy and Environmental Design) certified by the U.S. Green Building Council

knowledge and views on architecture and interior design, which included an exhibition, a congress (*contractworld.congress*), which was attended by such famous architects as David Chipperfield, Mario Botta and Matteo Thun) and the prize-giving ceremony for the *contractworld.award* prizes for particularly innovative architectural and interior design projects from various different countries; the *floorforum*, showcasing the latest trends in carpets and flooring design; the highly acclaimed *Carpet Design Awards* for creativity and innovation in the field of handmade carpets; the *Forum Handwerk*, a series of technical seminars and conferences on practical issues and everyday problems affecting workers in the sector and suggesting how they might be handled; the presentation of *Aktion Sicheres Handwerk*, devoted to safety and protecting floor



installers; and the *Europäischer Team-Verlegewettbewerb*, the European floor installation championships involving 7 teams of professional installers representing Germany, Great Britain, Italy, the Netherlands, Austria, Switzerland and Romania, who installed floors made of textiles, vinyl, linoleum and laminate. Most significantly, the two teams from

Great Britain and Romania were sponsored by local subsidiaries of the Mapei Group, Mapei UK and Mapei Romania. We can, therefore, expect the next edition of Domotex, being held in Hanover again from 16th-19th January 2010, to once again have its finger on the pulse of the international market for textile, resilient and wooden floors.



Mapei: Up with the "Green" Times

Mapei, which has been taking part in Domotex for years now, once again proved it could meet the new demands and interests of people attending the German exhibition. "Technology you can build on" was the slogan the Company used at the exhibition, and it was also on display inside the stand, which, located in Pavilion 7, took up 380 m² over two levels.

The stand, which featured an innovative design, focused (on the ground floor) on Mapei's wide range of products for installing wood, resilient and textile materials, smoothing and levelling compounds and systems for laying synthetic grass, stressing the fact they can be used inside various different settings, such as sports, health, commercial and industrial facilities, etc.

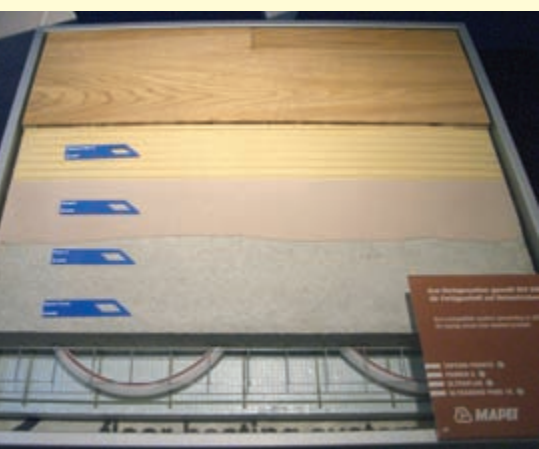
On the other hand, the top floor was equipped with tables and chairs for accommodating Mapei guests and facilitating new business relations and the exchanging of information about the Company's products and solutions. As has already been mentioned, plenty of attention was focused on Mapei's commitment to the environment and the contribution its products can make to fostering eco-sustainable building.

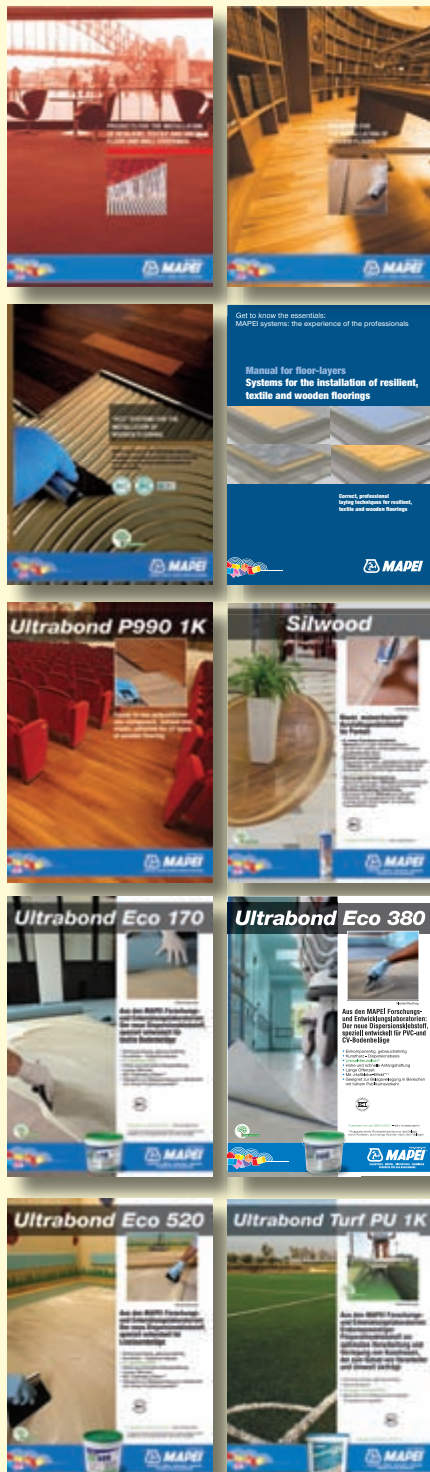
Now that these issues are at the very focus of attention, Mapei can really take advantage of the experience it has gained in over 30 years, and it has decided to underline its strength in this field by applying the "Green Innovation" label to eco-sustainable products in its own range. This "green" commitment was clearly visible in the various exhibition spaces forming the Mapei stand at Domotex 2008, where demonstration slabs, panels showing photographs of prestigious international building sites, film clips broadcast on screens on the walls, and a wide range of technical documentation, brought out the benefits of its numerous eco-sustainable products.

Its **products for installing wooden floors** included the brand new EC1-certified (with very low emission level of volatile organic compounds) ultra-fast hardening, self-levelling, smooth-

ing compound ULTRAPLAN MAXI; the one-component, hygro-hardening expansive polyurethane adhesive, ULTRABOND P-R9, applied by injection, for fastening and repairing parquet elements, which are not perfectly bonded to the substrate; the new formula, which has received EC1R certification, of the one-component polyurethane adhesive, ULTRABOND P990 1K; the new sealant, SILWOOD, available in 10 colours, for quickly repairing parquets and sealing the joints between parquet and other types of flooring; the two-component decorative epoxy mortar, KERAPOXY DESIGN, which may be used for both glass and wood mosaics, enhancing them aesthetically thanks to a striking pearlescent effect, and can also be mixed with MAPEGLITTER, metalized coloured glitters making grouts look shiny and metallic.

Among the **products for installing**





resilient floors, Mapei presented its new adhesives in water dispersion with very low emissions of volatile organic compounds, ULTRABOND ECO 520, ULTRABOND ECO 170 and ULTRABOND ECO 380, respectively recommended for installing linoleum, textile materials and PVC, all EC1-certified.

The Mapei **products for vertical installation** featured one of the oldest and best-known adhesives from the Mapei range, which is still extremely popular with professional installers due to its distinctive properties: the adhesive in water dispersion, ADESILEX MT 32, recommended for bonding wall coverings such as textile, vinyl textiles, non-woven materials on foam or film, glass cloth textiles, PVC foam or PVC foam on polyester wall coverings.

As regards **installation in sports facilities**, the Mapei products under the spotlight at Domotex were the two-component adhesives ADESILEX G19 and ADESILEX UP71, ideal for PVC and rubber floors; the universal adhesive in water dispersion, ULTRABOND ECO V4 SP, which is EC1-certified, with extended open time, ideal for vinyl, polyolefin, PVC, natural coconut, natural cork, rubber and linoleum floors; the two polyurethane adhesives, ULTRABOND TURF PU 1K and ULTRABOND TURF PU 2K, respectively one-component and two-component, both EC1R-certified and recommended for bonding synthetic grass, even at low temperatures. There was even a special corner inside the Mapei stand devoted to this field of applications, whose floor was actually covered with synthetic grass and had demonstrative slabs illustrating the Company's installation systems for this kind of material.

This space also drew attention to Mapei's long-standing joint-venture with Limonta, one of Italy's leading companies in the design and manufac-

ture of floors for sports facilities: a large panel showed how the two companies can jointly offer a complete system for building football pitches certified to the international standards set by FIFA 2 Stars. Of course Mapei solutions for applications like this were extremely popular with visitors at Domotex.

People attending the Domotex exhibition were shown how to use the various aforementioned products properly by means of demonstrations carried out three times-a-day at the Mapei stand by professional installers, with the help of technicians from Mapei GmbH, the Mapei Group's German subsidiary, and the brilliant description by the television presenter Michaela Mann.

Once again this year visitors to the stand were given detailed information by Mapei technicians and in the form of a vast array of up-to-date technical documentation handed out to the general public.

Specially for the occasion, the Company prepared a new catalogue in English and German of products for installing parquets and another for products for installing textile, resilient and wooden floor and wall coverings, plus a brochure on smoothing and levelling compounds, a handbook on systems for installing resilient materials, textiles and wood (whose contents were also shown in a video clip on a special screen), a brochure on eco-sustainable systems for installing resilient materials and textiles, another on eco-sustainable systems for installing parquets, and numerous flyers on individual products, such as ULTRABOND ECO 380, ULTRABOND ECO 170, ULTRABOND ECO 520, SILWOOD, ULTRABOND TURF 1K, etc.

So farewell until the next edition of Domotex for new systems, new products, new promotions and productive new encounters!

MAPESILENT®

From Mapei research the soundproofing system to reduce noise caused by footsteps

Over the years, the interest in the concept of living comfort has become more and more widespread. Clients and final users expect concrete performance levels and characteristics from buildings and expect designers to guarantee solidity, a long service life, environmental sustainability, energy efficiency and living comfort, which is most clearly achieved with efficient soundproofing.

Whether considering a residential building or a hotel, or a newly designed condominium or office block, designers, building companies and suppliers of building materials have to respect strict design criteria defined by national regulations, which determine the minimum level of soundproofing in buildings according to their final use. In order to meet the requirements of current legislation, the best solution is to lay an insulating material below the screed, which completely "isolates" it from the side structures and the substrates.

This solution forms a "floating" screed which reduces vibrations generated by footsteps and increases its soundproofing properties against airborne noise from the load-bearing floor. The insulating material also helps to improve thermal insulation of the floor.

MAPESILENT® is Mapei's answer to the increasing request of efficient and guaranteed soundproofing systems for reducing noise transmitted by footsteps.

MAPESILENT®: THE COMPONENTS IN THE SYSTEM

The MAPESILENT® system allows floating screeds which are perfectly isolated from the substrate to be created simply and efficiently and, thanks to the characteristics of the materials which make up the system, to meet the requirements of current legislation regarding both soundproofing and thermal insulation.

Mapesilent® Roll

Elasto-plastomeric polymer bitumen membrane, joined to blue-coloured non-woven fabric and a layer of polyester fibre, available in 10 m by 1 m rolls in a thickness of 8 mm.

Mapesilent® Panel

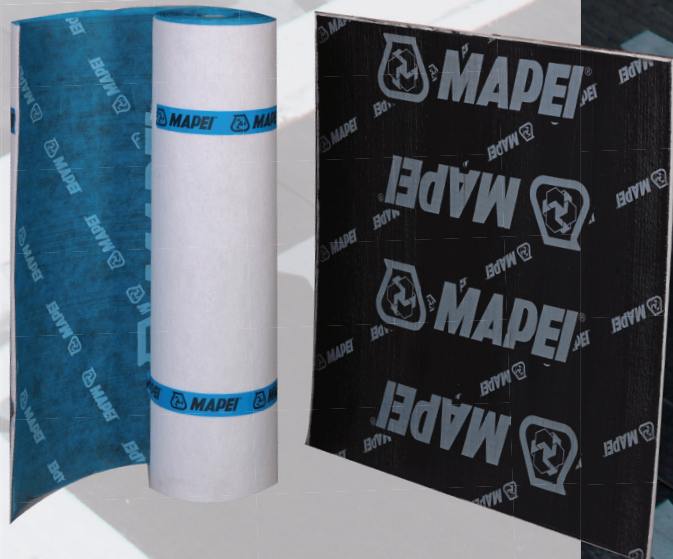
Tiles formed by an elasto-plastomeric polymer bitumen membrane, joined to non-woven fabric and a layer of polyester fibre, available in handy 1 m x 1 m tiles in a thickness of 13 mm.

Mapesilent® Band

L-shaped adhesive, closed-cell, expanded polyethylene membrane applied to perimeter walls and around the edges of elements which pass through screeds to avoid the formation of acoustic bridges. MAPESILENT® BAND is applied to all the walls around the perimeter of the screed, to form a soundproofing system with MAPESILENT PANEL® and MAPESILENT ROLL®, and around all the edges of elements which pass through the screed to avoid the formation of acoustic bridges.

Mapesilent® Door

U-shaped adhesive, closed-cell, expanded polyethylene membrane applied in correspondence with openings in perimeter walls to avoid the



THE "MAPESILENT® DATA" PROGRAMME

Mapei has developed the "MAPESILENT® DATA" programme, which may be applied to carry out a simple, quick calculation of how much noise may be reduced in a given environment using the MAPESILENT® soundproofing system.

The programme is stored on a handy USB memory stick, and is available for designers directly from the Mapei Technical-Commercial department.



formation of acoustic bridges. MAPESILENT DOOR® is applied to all the openings in perimeter walls around the screed, to form a soundproofing system with MAPESILENT PANEL® and MAPESILENT ROLL®.

Mapesilent® Tape

Adhesive butyl rubber sealing tape with a silver-coloured surface, used to seal all the overlaps between various pieces of MAPESILENT BAND® and to cover and join overlaps between MAPESILENT BAND® and MAPESILENT PANEL® (or MAPESILENT ROLL®) and all the joints between MAPESILENT PANEL® tiles and overlaps between rolls of MAPESILENT ROLL®.

THE ADVANTAGES OF THE MAPESILENT® SYSTEM

Easy to install

It allows for the quick and extremely simple installation of a continuous insulating layer without acoustic bridges.

Its special conformation makes it easy to check that tiles are aligned correctly and, with MAPESILENT® ROLL, installation can be carried out by overlapping a few centimetres: this is the recommended application technique, to form a continuous insulating layer.

Excellent resistance to foot traffic and impact on site

During the phase before laying the screed, the product's high resistance protects the continuous layer and, therefore, its insulating capacity, from being damaged by foot traffic and/or accidental impact due, for example, to dropped tools.

Waterproofing capacity

The membranes of the MAPESILENT® system are waterproof and, therefore, also form a waterproof safety layer for the screed against flooding or leaks.

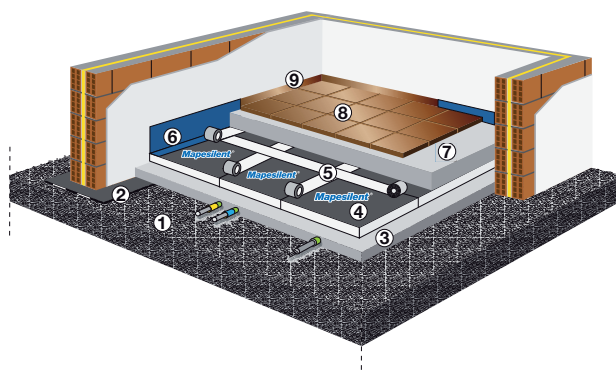
Complete system

MAPESILENT® is a complete system with all the necessary accessories to form an efficient thermal insulation/soundproofing system.

ADVANTAGES OF MAPESILENT® PANEL

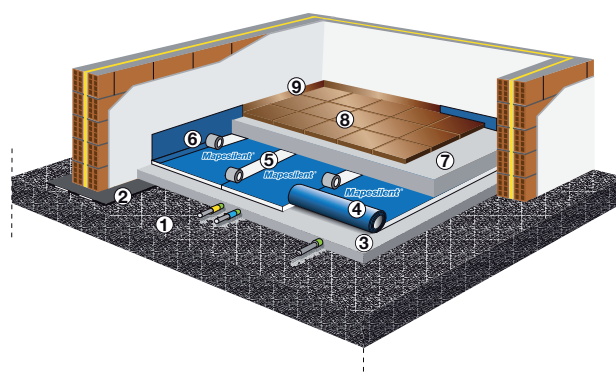
Apart from the characteristics in common with other products in the MAPESILENT® system, its superior insulating capacity and availability in 1x1 m panels make MAPESILENT®

An example of how to lay Mapesilent® Panel



- | | |
|---|--|
| 1 FLOOR | 6 Mapesilent® Band |
| 2 DIVIDING WALL | 7 SCREEDS MADE USING MAPECEM PRONTO OR TOPCEM PRONTO |
| 3 LEVELLING LAYER ON LIGHTWEIGHT CONCRETE | 8 FLOOR LAID WITH ADHESIVE |
| 4 Mapesilent® Panel | 9 PERIMETER SKIRTING BOARDS |
| 5 Mapesilent® Tape | |

An example of how to lay Mapesilent® Roll



- | | |
|---|--|
| 1 FLOOR | 6 Mapesilent® Band |
| 2 DIVIDING WALL | 7 SCREEDS MADE USING MAPECEM PRONTO OR TOPCEM PRONTO |
| 3 LEVELLING LAYER ON LIGHTWEIGHT CONCRETE | 8 FLOOR LAID WITH ADHESIVE |
| 4 Mapesilent® Roll | 9 PERIMETER SKIRTING BOARDS |
| 5 Mapesilent® Tape | |

PANEL an efficient solution in environments such as:

- **Small rooms**, where it is difficult to unroll and cut the membrane, thus increasing the time required to install the soundproofing system.
- **Floors with a low soundproofing capacity**. MAPESILENT® PANEL has a thicker layer of polyester fibre (10 mm) which means it has a lower level of dynamic stiffness ($S' = 21 \text{ MN/m}^3$), and, therefore, a higher soundproofing capacity ($\Delta L_w = 27.7 \text{ dB}$).
- **Floors with a low thermal insulation capacity**. Thanks to the higher thickness of the polyester fibre (10 mm), MAPESILENT® PANEL also has

the capacity of modifying the transmittance level (U) of a floor/screed, such as the example illustrated with a value of $0.97 \text{ W/m}^2\text{K}$, which therefore does not comply with the limits according to the Italian regulation D.LGS. 311 of 29.12.06, to a value of $\text{W/m}^2\text{K}$ 0.75, which complies with the requirements required by current Italian legislation.

The technical data sheets of the mentioned products are available on the www.mapei.com website.

A brochure called "Soundproofing system to reduce noise transmitted by footsteps" is also available and can be requested at the email address realtamapei@mapei.it.



The range of products for laying parquet has been increased and renewed



LAYING PARQUET: evolution is unstoppable

In 2008, 35% of the parquet laid in Italy was laid using products manufactured by Mapei. A figure which shows that Mapei is now the leading company in Italy for the supply of products in this specific sector.

And to further highlight the results achieved, let the numbers do the talking: 1,000,000 m² of screeds were treated with Mapei primers, and over half of them alone with ECO PRIM PU 1K; 1,000,000 m² of parquet were laid using ULTRABOND P990 1K one component adhesive and, to finish off, a further 2,500,000 m² of parquet were bonded with ULTRABOND P902 2K, ULTRABOND P913 2K and LIGNOBOND epoxy-polyurethane adhesives.

And all this in a period which, after a number of years of continuous growth, recorded 2008 as a year in which there was a drop in the sales of parquet on the European market. These were the estimates made by FEP, the European Parquet industry Federation, which in a recent communication released the news that – according to preliminary information collected from companies in the member countries – sales of

parquet in 2008 went down by 7% compared with 2007.

In spite of this drop being proportional to the downward trend of the overall flooring market, Mapei has had a vertical growth trend in Europe and considerable growth in Italy.

And research and development of products with even better performance levels and which respect the environment and the health of floor installers are, once again, the winning strong points which determined this success. An important growth in a sector in which Mapei stands out as the leader in Italy, in a sector which is important in terms of both turnover and potential for future development. And it is exactly to further increase this positive trend and offer its clients more and more innovative and integral solutions that, today, the wide range of Mapei products dedicated to parquet has been increased with new products and completed with specific new solutions for protection cycles.

The ULTRACOAT® Range

The new products from the

ULTRACOAT® range are quick, simple systems offering the best protection for parquet, easy to use and which also guarantee long-lasting protection to floors subject to high volumes of traffic. As with the laying systems, these water-based systems are the result of research carried out in Mapei's own laboratories. They are all solvent-free, with an extremely low emission level of volatile organic compounds (VOC) and are free of NMP (N-2-methylpyrrolidone).

There are four new products with these characteristics which enrich the ULTRACOAT® range: ULTRACOAT ACQUA PLUS water-based binder, ULTRACOAT P920 2K two-component water-based product, ULTRACOAT P915 one-component polyurethane varnish and ULTRACOAT P925 two-component polyurethane varnish.

The ULTRACOAT® range is completed by two other new products: ULTRACOAT LS (nitro-cellulose based binder in solvents, mixed with sawdust for grouting wooden floors) and ULTRACOAT PF1 (two-component fire-proof polyurethane varnish to comply



with class 1 fire-reaction certification for wooden floors).

And lastly, the new range of products for finishing and for the maintenance of parquet: abrasive mesh disks (ULTRACOAT SR), abrasive pads (ULTRACOAT PAD), degreasing detergents (MAPEFLOOR CLEANER ED) and metallic waxes (MAPELUX LUCIDA and MAPELUX OPACA).

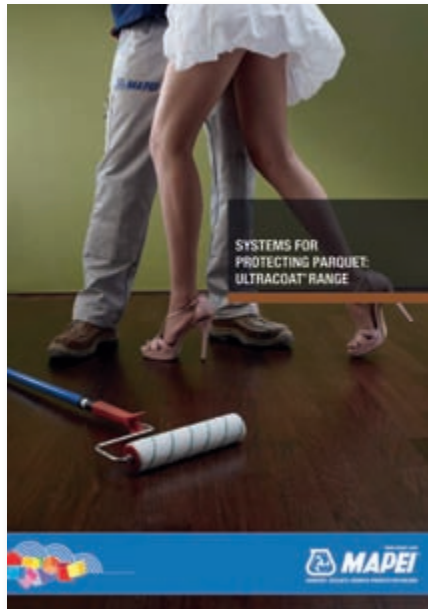
The ULTRABOND Range

The ULTRABOND range has also been implemented with 2 new products. The first one, with the "Green Innovation" symbol, is ULTRABOND ECO S955 1K, a one-component, isocyanate and solvent-free, silitated polymer-based adhesive, for all types of parquet, with an extremely low emission level of volatile organic compounds. The second product is ULTRABOND P-R9, a one component, hygro-setting, expansive polyurethane adhesive used by injection, for fastening and repairing parquet elements.

New Eco Products

And another new "eco" product for the Italian market and for other European markets is ECO PRIM PU 1K TURBO, a one component, solvent-free, hygro-setting, rapid-drying polyurethane primer with very low emissions of volatile organic compounds (VOC) for consolidating and waterproofing cementitious screeds.

For the range of Eco adhesives, another product is worth a mention, which stands out for the development which made it a recent star: this product is ULTRABOND P990 1K, with a new formulation for better performance. It is



now also an EC1 product, to enrich the range of Mapei products which carry this symbol.

The New SILWOOD Sealant

Another newly-conceived product in water dispersion is SILWOOD, an acrylic sealant developed specifically for wooden floors. SILWOOD is the first sealant to be certified EC1 and is available in various colours (oak, iroko, doussié, wengè, teak, walnut, cherry, beech, maple and birch), a faithful reproduction of the various types of wood most widely used.

A Dedicated Team

To finish off, we must not forget the physical presence on the territory and the constant contact with all those who are involved in this market. In the Mapei organisation, there is an opera-

tions team made up of many specialists, headed by Angelo Giangiulio - Product Manager for Mapei's, Parquet Range - which is involved full time in promotional activities and technical and commercial assistance exclusively for the parquet sector.

The President of FEP, Dieter Betz, asked to comment on the all but positive recent data from the European parquet sector, declared that: "the return of a positive season depends largely on the creativity, attention to innovation and the business spirit of all of us".

Mapei, as we have seen, is really doing everything possible.

The New Documentation Range

The numerous novelties which have enriched the Mapei range of products for parquet are widely covered in the new documentation which, together with the new general catalogue of "Products for laying parquet", includes dedicated brochures offering a technical and visual illustration of the products.

Amongst these documents, there is also a new guide to the Mapei Eco systems for laying parquet in which, apart from a technical description of the products, five different systems specially developed to solve the most common problems in this field are presented.

These new technical documentation may be requested by fax at + 39 02 37673214 or by e-mail at: realtapei@mapei.it.



OUR AIM IS TO BE OUR CUSTOMERS' BEST SUPPLIERS

Interview with Mario Jordão, the General Manager of Lusomapei S.A., the Portuguese subsidiary of the Mapei Group



2008 was a year of full of novelties, changes and fresh challenges for Lusomapei S.A., the Portuguese subsidiary of the Mapei Group, which closed its books with extremely positive results. We interviewed Mario Jordão, the General Manager of Lusomapei S.A., who took stock of the year just gone by, pointed out the peculiarities of the Portuguese market, and also illustrated Lusomapei S.A.'s goals for the future.

How did the Company do in 2008?

Despite all the uncertainty surrounding the Portuguese building market, thanks to the hard work and motivation of our business partners and collaborators, it is with great joy and satisfaction that we managed to close last year with double-figure results in terms of growth, while working sustainably and without abandoning our underlying commercial strategy.

What are Lusomapei's goals and targets?

And what are your priorities in setting about achieving them?

We aim to be our customers' best supplier, a target we are striving to achieve every day, making every effort to turn Lusomapei S.A. into the leading Company on the Portuguese market for chemical products for building. In order to achieve this goal, numerous factors must come together, such as ongoing confidence in the quality of our systems and products, a wide range of marketed solutions, close working relations with our customers to whom we intend



The two photos at the top: Lusomapei's new headquarters in Castanheira do Ribatejo.

Opposite: Lusomapei staff.

to guarantee our constant support and availability, a technical assistance service of the highest standard and promptness, and investments in communication and marketing to promote not just solutions but, generally speaking, the "Mapei World" as a hallmark of quality. Another key aspect in achieving our goals is certainly the quality of the people we work with. At Mapei we pay very careful attention to human resources. As regards our main goal, we plan to create a highly qualified and responsible group, which is extremely motivated in replying to our customers' needs and in conquering the Portuguese market for chemical products for building. We are making heavy investments in this area and will continue to do so, in order to guarantee a high-quality service enabling us to stand out even more from our competitors.

Lusomapei S.A. has moved offices. What are the benefits of this for the Company and its customers?

Moving to our new headquarters in Castanheira do Ribatejo was a key step for the Company, which will allow us to improve the logistical service we offer our clients and working conditions for our business partners. This operation has finally allowed us to bring together our commercial and administration offices and warehouses under one roof; this is an extremely important factor in strengthening team spirit and creating synergies, which translate into better customer service. Of course, the manufacturing plant is still in Anadia.



From the wide range of marketed products, are there any you really want to focus on?

Two new products were launched on the Portuguese market during Tektónica 2008, which are the result of the Mapei Group's constant dedication to research and development, which translates into solutions which respect the environment and offer great benefits for their end users. It also creates products which satisfy every imaginable aesthetic and decorative requirement. KERAFLEX MAXI S1 is a fine example. This is a high performance, C2TE-class (according to EN 12004 standards) cementitious adhesive, with no vertical slip and an extended open time; it also has an S1-class deformability rating in accordance with EN 12002 standards. This adhesive features "Dust Free" technology, which drastically reduces the amount of dust given off while the product is being used, thereby improving the working conditions for the installer and also

the working environment. Thanks to these properties, the product received an honourable mention at the "Premio Inovação", a competition for all the new products and solutions presented during the fair featuring special technical, functional or aesthetic innovations. Our market was particularly interested in and curious about KERAPOXY DESIGN, a two-component epoxy mortar for decoratively grouting ceramics and stone materials of high aesthetic value, both indoors and outdoors. KERAPOXY DESIGN, with the addition of MAPEGLITTER metalized coloured glitter, creates a grouting mortar with a shiny metallic look, ideal for grouting tiles and mosaics in settings requiring highly characteristic and elaborate customisation. In addition to these new solutions, I would also like to emphasise the fact that a very familiar product on the Portuguese market, MAPELASTIC, now comes with an important extra feature. This flexible two-component cementitious mortar is commonly used

for waterproofing concrete and balconies, terraces, bathrooms and swimming pools. EPAL (Empresa Portuguesa das Águas Livres, S.A. the Portuguese public body managing public waters) has certified MAPELASTIC as conforming to the guidelines set down in the Portuguese BS 6920 regulation and Legal Degree no.243 of 5th September, 2008, so that it can be used in contact with drinking water. Thanks to this novelty, in addition to the applications mentioned above, Mapelastik can also be used for waterproofing tanks holding drinking water. At Tektónica 2009 the following products were on the spotlight: SILWOOD acrylic sealant, ULTRABOND ECO 520 adhesive for linoleum, FLEXCOLOR grout, products from the ULTRACOAT line, the new formulation of ULTRABOND P990 1K, and ULTRALITE S1 lightweight adhesive for ceramics and stone materials, which won this year the "Premio Inovação".

Are any of the projects recently carried out in Portugal particularly important?

Among those projects most important for both Lusomapei S.A. and our community, I would like to mention the work carried out at Fatima: the Church of the Holy Trinity (see article on following pages - editor's note). All the extremely complex building work involved the use of numerous Mapei products, such as adhesives, coloured grouts for installing stone material on floors and walls, products for waterproofing outside environments and, above all, products used for making the 500 m² panel placed behind the altar, which was constructed using a system developed by Mapei SpA's Technical Service Department, already used for constructing a similar panel in the Vatican.



**High technology
for a place of worship
with a capacity
of 10,000 pilgrims**

THE CHURCH OF THE HOLY TRINITY OF FATIMA

More than ninety years have gone by since the events of that miraculous morning. On the 13th of May, 1917, three young children Lucia de Jesus dos Santos (aged 10), Francisco Marto (aged 9) and Jacinta Marto (aged 7) claimed that they had seen the Madonna in Cova da Iria, a neighbourhood of Fatima, in Estremadura, Portugal. They described her as being "...a lady brighter than the sun itself", above a small ledge (which is now the site of the Chapel of the Apparitions). This mysterious figure appeared several times during that distant summer, and on the 13th of October, around 50,000 pilgrims were present in Cova da Iria, with many of them claiming to have seen the so-called "miracle of the sun", a promise made by the Madonna to the three children in July and September.

The flow of pilgrims has never ceased since that summer, and quickly became too much for the small Basilica and the area of land around the Basilica which soon became a favourite assembly point to celebrate and worship together.

Thanks to the increasing importance of Fatima in the life of the Church at both a national and international level, the

number of worshippers who carry out a pilgrimage to Fatima is around 4 to 5 million every year.

The Project for a New Church

Over the years, therefore, the need for a new, larger place of worship opposite the old Basilica built in the 1930's became more and more pressing, to offer the thousands of pilgrims shelter from the freezing cold during the winter and the scorching heat during the summer.

In the middle of the 1990's, an international design contest was launched to define a project suitable for the new Church of Fatima. The choice was very precise, but also very difficult. To create a commemorative place of worship which can hold 10,000 people is not a simple task, and it is certainly no easier to insert such a monument with full respect for the context and harmony of the surroundings. The winner of the contest was the Greek architect Alexandros Tombazis, with a design which was very innovative for a church, yet in perfect harmony with the atmosphere of the sanctuary.

The basic idea behind the design was that it should not dominate the area and, in spite of the new church's

monumental proportions, it should be present without being overwhelming. The square, which had been trodden for decades by pilgrims from all around the world, had to maintain its characteristic and central role.

Tombazis chose to locate the new building on the area of land which spreads out after the churchyard of the existing Basilica, in Pio XII Square.

The new building is circular, with a diameter of 125 metres. It is held up by two horizontal pillars which support the entire roof, a solution chosen to avoid using columns inside the temple. With a volume of almost 130,000 m³ and an average height of 15 metres, the new Church of the Holy Trinity of Fatima (the name of the new church) is characterised by its central nave with seating for approximately 8,500 people.

The building has 13 doors: 12 bronze side doors dedicated to the Apostles, and a central door covering an area of 64 m², dedicated to Christ. The lower floor of the building is decorated with a panel of tiles created by Alvaro Siza Viera, with a theme of Galilee and the apostles Saint Peter and Saint Paul.

The atrium has two water basins, one depicting the Baptism (with water

In the two photos to the side:
The new Church of the Holy Trinity of Fatima. The new building, which is opposite the old Basilica built in the 1930's, is an imposing, circular construction which can hold up to 10,000 worshippers.

Photo 1.
The floors inside the church were made using slabs of stone laid with ADESILEX P9 grouted with KERACOLOR FF.

Photo 2.
After the waterproofing treatment with MAPELASTIC, the external flights of steps were covered with stone material. ELASTORAPID was used to lay the stone and KERACOLOR FF was used to grout the tile joints.



flowing from above) and the other which depicts the Creation (with water rising from below), and gives access to various chapels, the confessionals and the vestry. Tombazis clearly wished to create a bond between the existing Sanctuary and the Church of the Holy Trinity, while creating a physical boundary to the walkway, with two walls of white cement on which the two pillars which support the structure are located.

Construction of the Church of the Holy Trinity started at the end of 2003 with

the laying of the first stone, a fragment of the tomb of the apostle Saint Peter, which the Rector of the Sanctuary of Fatima personally received from the hands of the Pope at the time, John Paul II. The new church was inaugurated on the 13th of October 2007, as part of the celebrations to commemorate the 90th anniversary of the first apparition of the Madonna. The cost of the project, which had been originally estimated at 40 million Euro, was more than 60 million Euro upon completion.

Mapei's Contribution

Mapei started working on this grandiose project following a specific request by the engineers responsible for the site. The suppliers of the stone used for the floor and wall coverings expressed their doubts regarding the compatibility of their products with the adhesives which had been proposed to lay them. And this is why Mapei was contacted, to offer an alternative solution for laying, grouting and sealing the stone wall

and floor coverings and for the internal and external flights of steps for the new Church of Fatima.

Various types of stone were used from local quarries, and they all had a limestone origin. The types of stone used were as follows:

- light-blue Vidraço de Ataija: grey and bluish-grey limestone, particularly suitable for *cantarias* (decorative cornices around the windows), external floor and wall coverings
- cream-coloured Vidraço de Ataija: pale, greyish-cream limestone, particularly suitable for *cantarias*, internal and external floor and wall coverings
- Branco do Mar (also known as Semi-Rijo do Arrimal): white limestone which, because of its lower degree of hardness, is particularly recommended for *cantarias* and internal coverings.

To fully satisfy all the requirements of the client, the Mapei Technical Service Department decided to carry out a precautionary analysis of the material in the Company's Research





Photo 3.
 A close-up view of the mosaic in terracotta and gold, which covers the wall behind the altar. Worthy of mention is the original approach used to lay the terracotta tesseras, and the trowelled stucco finish using white NIVOPLAN and PLANICRETE.

Photo 4.
 The metallic substrate on which the mosaic was laid was levelled off with NIVOPLAN with added PLANICRETE, then smoothed over with NIVOPLAN with added ISOLASTIC.

Photos 5, 6 and 7.
 Phases of the creation of the impressive mosaic, and a partial view of the finished work of art.



& Development Laboratories in Milan, in order to scientifically define their dimensional behaviour and their compatibility with the adhesives, grouts and sealants which were to be used to install the materials. This process proved to be fundamental, both for the correct definition of the characteristics of the materials and the choice of the most suitable laying systems, and also in the final decision to use Mapei as the sole supplier of these products.

The systems indicated by Mapei were the following. To lay all the floor areas in the central nave of the church (more than 8,600 m²), in the "Chapels of Reconciliation", the refectory, the corridors and the internal flights of steps, cream and blue Vidraço de Atafaja limestone were used. According to the results of the analysis carried out in Mapei's laboratories, the most suitable adhesive was ADESILEX P9 cementitious adhesive with no vertical slip and extended open time. To grout the joints in these floors, the choice fell on KERACOLOR FF high-performance, polymer-modified cementitious mortar, water-repellent with DropEffect® technology (which makes products smoother and water-resistant). MAPEFLEX PU30 two-component, thixotropic, polyurethane sealant was selected to seal the expansion joints, in a colour specially created for the occasion, to make it the same colour as the tile joints.

The large-format skirtings around the perimeters of all the areas mentioned above were again made using light-blue and cream Vidraço de Atafaja. They were laid using ELASTORAPID high-

IN THE SPOTLIGHT

KERABOND+ISOLASTIC

When mixing KERABOND with ISOLASTIC as a substitute for water, the performance characteristics improve, satisfying class **C2E** (improved cementitious adhesive with extended open time) according to **EN 12004** and class **S2** (highly deformable adhesive) according to **EN 12002**.



Important:

Use KERABOND mixed with ISOLASTIC in the following cases:

- on foamed concrete walls;
- on precast or cast-concrete structures;
- on underfloor heating installations;
- with large-size tiles;
- for the installation of glass mosaics;
- for the installation of stone materials as long as they are stable and moisture proof.

ELASTORAPID was chosen for all the compositions made using Branco do Mar limestone. Finally, light-blue and cream Vidraço de Ataija limestone was also used to cover the external flights of steps. Before laying, a waterproofing treatment was carried out using MAPELASTIC two-component, waterproofing cementitious mortar. ELASTORAPID was again used to bond the stone, while KERACOLOR FF was chosen to grout the joints.

An Unforgettable Mosaic

A decision taken at the last minute helped make Mapei's contribution to this project unforgettable and unmistakable.

When the site was almost ready to start decommissioning, the designers realised that the great central nave did not have a reference point with a high visual and emotive impact.

The Church's central nave after completion of the works and open to the worshippers.

performance two-component, fast-setting and hydration cementitious adhesive with extended open time and no vertical slip. Also, because of its very high stability,




Father Marko Ivan Rupnik set to in designing a large terracotta and gold panel covering an area of 500 m² for the wall behind the altar, representing the message received from Fatima, inspired by Chapter 22 of Saint John's Apocalypse.

The panel was created on a structure similar to the one already made for the ceiling of the private chapel of Pope John Paul II in the Vatican (the "Redemptoris Mater" presented in issue no. 11 of *Realtà Mapei International*). To get the best results, apart from the excellent teamwork of the Atelier dell'Arte Spirituale from the Centro Aletti in Rome, the collaboration between the Technical Service Departments from Lusomapei S.A. and Mapei SpA, which opted for the solutions already successfully applied in the Vatican Chapel, proved to be decisive. To smoothen and level off the

substrate, which was made of metallic mesh fixed mechanically to a tubular steel structure, NIVOPLAN levelling mortar made from cement, selected aggregates and special synthetic resin was mixed with PLANICRETE synthetic rubber latex for cementitious mortar, and water to improve its bond and mechanical characteristics. The surface was then levelled off using NIVOPLAN, this time mixed with ISOLASTIC flexible latex to improve its bond to the substrate, its deformability and waterproofing properties – and water, incorporating 5x5 millimetre mesh and 160 g/m² of anti-alkali treatment.

The combination of all these products allowed for a continuous wall only 5 cm thick to be created, without having to insert fraction joints.

The solution chosen to lay the terracotta tesseras used to create the mosaic was KERABOND + ISOLASTIC, a mixture which forms an improved adhesive with an extended open time and which is classified as C2E according to EN 12002 standards. Because this type of mosaic was not grouted, it was also fundamental that the colour which appeared through the joints was as "neutral" as possible. This requirement was perfectly met, to the enormous satisfaction of the client, due to the fact that white KERABOND + ISOLASTIC had been used. Lastly, a particularly interesting touch for its creativity and efficient application was the use of white NIVOPLAN mixed with PLANICRETE in the areas in which the mosaic tesseras had not been applied. A trowelled,

stucco effect was obtained using this product, which was then finished off with a coat of paint. It was the final artist's touch in the creation of an original work of art and showed, once again, how Mapei products excel thanks to their versatility of use. 

This article was taken from issue no. 3 of "Realtà Mapei Portugal"; the in-house magazine published by Lusomapei S.A., the Portuguese subsidiary of the Mapei Group, whom we kindly thank.

TECHNICAL DATA

The Church of the Holy Trinity of Fatima (Igreja Santíssima Trindade de Fatima), Fatima (Portugal)

Designer: arch. Alexandro Tombazis

Period of construction: 2003-2007

Intervention by Mapei: laying and grouting natural stone walls and floors in inside and outside areas; waterproofing the substrates of the external stairs; preparing the substrates and laying mosaics on the wall behind the high altar.

Client: Fatima Sanctuary

Design and Completion of the Mosaic: Centro Ezio Aletti (Pontificio Istituto Orientale) with the supervision of Father Marko Ivan Rupnik

Contractor: Somague Engenharia S.A.

Laying Company: Somague Engenharia S.A.

Mapei Coordinators: Roger Moita (Lusomapei S.A.), Andrea Aliverti and Pino Mancini (Mapei SpA)

Mapei Products: the products mentioned in this article belong to the "Products for Ceramic Tiles and Stone Materials" range. The technical data sheets are available at the web site: www.mapei.com. Mapei products for interior and exterior renders have been awarded the CE mark in compliance with Standard EN 998-1. Mapei's adhesives and grouts conform to EN 12004 and EN 13888 standards. Almost all the Mapei products for laying floors and walls are also GEV-certified.

Adesilex P9 (C2TE, EC1R): high performance cementitious adhesive with no vertical slip and extended open time for ceramic tiles.

Elastorapid (C2FTES2, EC1R): two-component, highly flexible, high performance, quick setting and quick hydration cementitious adhesive with extended open time and no vertical slip, for ceramic tiles and stone material.

Isolastic: flexible latex additive to be mixed

with Kerabond, Kerabond T, Kerafloor and Adesilex P10.

Kerabond (C1, EC1R, becomes C2ES2 if mixed with Isolastic): cementitious adhesive for ceramic tiles (thickness of adhesive up to 5 mm).

Keracolor FF (CG2, EC1R): high performance, polymer-modified, water-repellent, cement-based grout with DropEffect® technology for joints up to 6 mm.

Mapeiflex PU30: two-component thixotropic polyurethane sealant for joints with maximum 10% expansion of the initial size.

Mapelastix: two-component flexible cementitious mortar for waterproofing balconies, terraces and bathrooms.

Nivoplan (CE EN 998-1): levelling mortar for interior and exterior walls and ceilings.

Planicrete: synthetic-rubber latex for cementitious mortars for improving bonding and mechanical strength.





ARCHEO-MAPEI IN TURKEY

Consolidation and conservation works at the archeological site of Tilmen Höyük in Turkey

by Nicolò Marchetti (University of Bologna, Department of Archaeology) and Stefano Musso (University of Genoa, Department of Sciences for Architecture)



Tilmen Höyük is located in south-eastern Turkey in the Islahiye valley, which is bound to the north and to the west by the Anti-Taurus and the Amanus mountain ranges respectively, while to the south it looks over the plains of northern Syria. It represents one of the most important archaeological sites to study the links between Anatolia and Syria, and to investigate an ancient capital city of the 2nd millennium BC, a contemporary of the splendours of Ebla and Ugarit. In the 1960's, a Turkish team led by B. Alkim initiated a number of archaeological digs in the area including Tilmen. The more recent discoveries were made thanks to a joint research excavation project promoted by the Department of Archaeology of the University of Bologna (Italy) together with Istanbul University and Gaziantep Museum.





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Under the direction of Prof. Nicolò Marchetti, what had originally started as an ambitious excavation project in the region of Gaziantep, evolved into a large scale Euro-Mediterranean cooperation project, with the aim of safeguarding and enhancing the landscape, not only from an archaeological point of view, but also from an environmental one.

In fact, the project availed itself of the collaboration with the University of Bologna Faculty of Agrarian Studies, Genoa University Faculty of Architecture, Adana University Faculty of Science, Marmara University Faculty of Fine Arts and Istanbul University Faculty of Arts. The collaboration between Italian and Turkish faculties marked the go-ahead of a multi-disciplinary, far-reaching project: the creation of an archaeological and environmental park to preserve and manage the site, officially inaugurated in October, 2007.

Between 1997 and 2000, Nicolò Marchetti was involved with another similarly important and prestigious dig along the walls of Jericho in Palestine (Mapei was also involved in this dig with its products – see the article published in issue no. 9 of *Realtà Mapei International*), but the precarious political situation caused a halt to the research project.

Since 2003, Marchetti has been directing the dig at Tilmen Höyük, and in just five excavation campaigns a number of important monuments and remains from 1700 BC have been unearthed, including temples, fortresses and the Royal Palace, in addition to splendid works of art such as a votive stele with a relief of the Storm God or a seal impression mentioning the king of Babylon.

An Analysis of the Archaeological Site

The monuments which have been unearthed at the site of Tilmen date back to various periods of the Bronze Age, that is, from the 3rd and 2nd millennia BC. The site covers an area of more than five hectares, and includes an acropolis and a lower city fortified with a continuous system of casemates pierced by two posterns, and a monumental gate decorated with two carved lions on each side of the entrance. From here, along a monumental stairway, you can climb the fortified acropolis, and at the top there is an ancient road which leads to the south towards the public sector.

This area is made up of four large buildings: a temple, a royal palace with nearby living quarters and a fortress which protected the south-east corner of the acropolis, and which was originally at least 11 metres high (nowadays it is still 4.5 metres high).

All the monuments unearthed have foundations built using large basalt blocks, a stone which is very easily found in this area. The main period of development of the city took place between 1800 and 1600 BC, a particularly turbulent period in history which witnessed the city becoming first an independent capital, and then a vassal state of the king of Aleppo. Tilmen finally fell into the hands of the Hittite army which, after ransacking the city, set fire to the acropolis.

After the excellent collaboration implemented at the time of the Jericho excavations, Mapei decided once again to get involved in a technical research partnership involving the restoration of Tilmen Höyük. All the works on the



Photo 1. The monuments from 1700 BC on the acropolis at Tilmen Höyük site as in 2006.

Photo 2. One of the excavation areas where restoration work was carried out using Mapei products.

Photo 3. An aerial view of the southern side of the acropolis and the eastern lower town (the throne room in the royal palace is highlighted).

Photo 4. Cleaning and consolidation operations of the 1700 BC mudbricks by means of ethyl silicate.

Photo 5. Grouting the cracks in the orthostats (i.e. uprights) and fixing the loose parts in place with resin.



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Field Problems and Their Solutions

The remains at the site had a series of problems due to the spread of infesting vegetation, and the lack both of protection against the rain and of an efficient system to channel off rainwater (water was free to flow over the surface, eroding the ground and ancient masonry as well).

The structures most at risk were in the area designated K-5 where the archaeological dig had unearthed mudbrick masonry work, which was crumbly and powdery. The operation recommended for this problem was to clean the surfaces of the walls manually with simple brushes and sponges, a disinfection treatment followed using a special biocide product made up of quaternary ammonium to eliminate fungi and algae, and consolidation using ethyl silicate. This treatment is recommended on absorbent silica-based materials (sandstone, tuff, peperino, etc.).

Some portions of the walls, including the posterns (K-3 and K-2) were partially rebuilt after they had collapsed, probably after the first excavations carried out in the 1960's. Rebuilding was carried out using a "re-composition" technique of the more dangerous elements, by inserting a sheet of lead between the original part and the newly rebuilt one, in order to mark the latter.

To fix on the spot the portions in danger of detachment (the edges of the corner stones in the K-3 postern, and grouting of some of the stones in the same area) the Mapei Technical Service Department recommended the use of ADESILEX PG2 thixotropic adhesive, a two-component, epoxy resin based product with selected, fine aggregates and special additives. ADESILEX PG2 has

site were carried out with the highest respect for the ancient structures, with small-scale interventions being preferred so as not to alter the aspect of the site, while guaranteeing its conservation over the years.

After a preliminary phase for identifying the main problems of the archaeological remains, the most efficient, and at the same time least invasive, intervention techniques to solve the problems were singled out: weed control, cleaning and consolidation using materials which were extremely compatible with the original substrates, and a limited number of integrative interventions just to guarantee the stability of the structures, carefully avoiding any significant rebuilding operation.



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Photos 6 and 7. Consolidation of the mud plaster binder in the masonry work and protection of the tops of the walls in the K-3 postern (photo 7 shows a lead sheet inserted in order to indicate the renovation work).

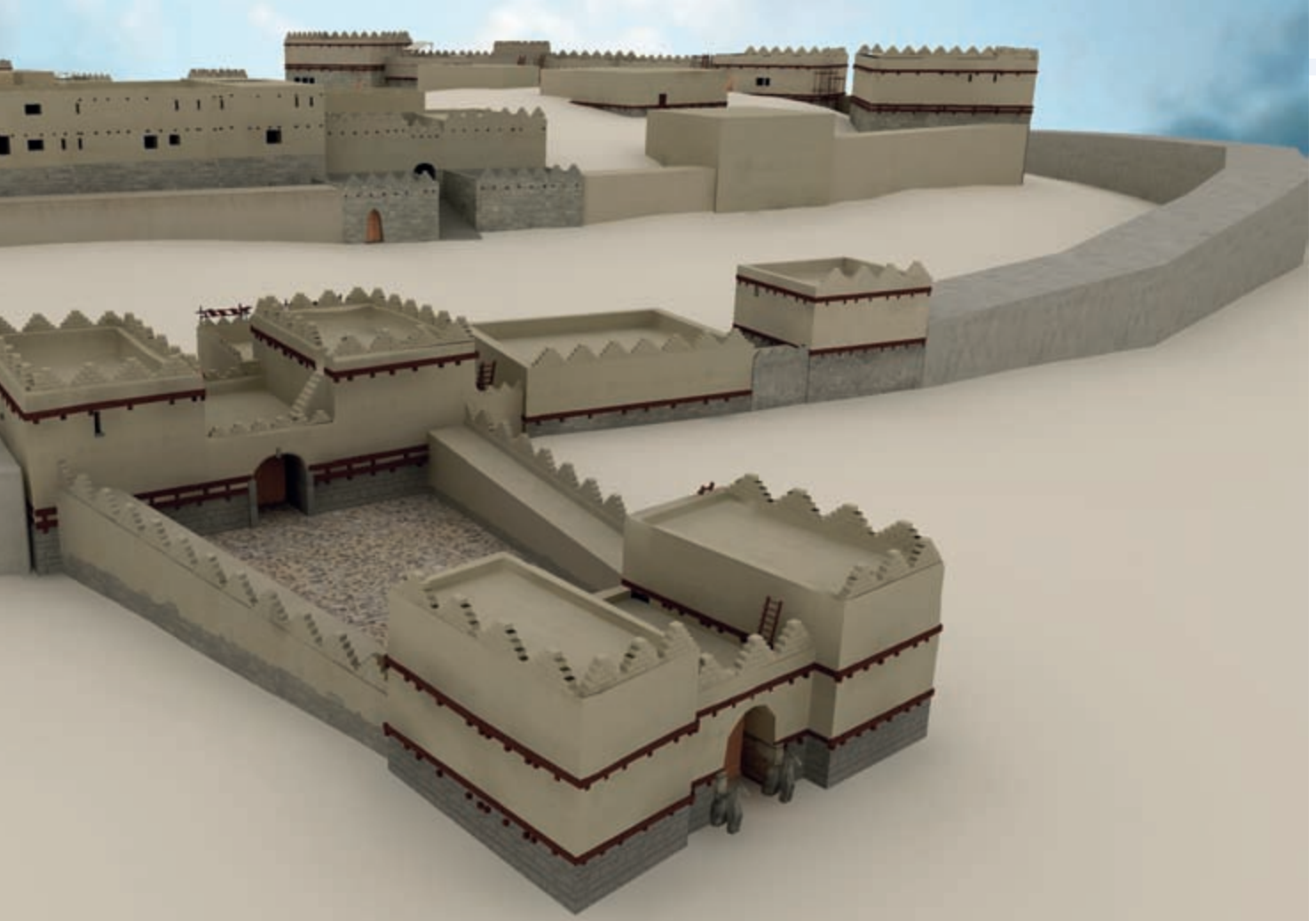
Photo 8. Consolidation of the floors from 1700 BC with PRIMER 3296, applied with a manual spray gun.

Photo 9. The archaeological and restoration team in 2006.

Photo 10. A virtual reconstruction of the ancient city as in 1700 BC.



9



an extended workability, which makes it particularly suitable at temperatures above 20°C, a characteristic which was important for operations carried out on this archaeological site.

Further, also the orthostats – large squared stone uprights placed at the base of walls for construction and decoration purposes – of the walls of the residency in K-5 and of the royal palace were in a poor state of preservation, being full of cracks and missing pieces in various places. Their restoration and conservation project included grouting irregularities and fixing detached fragments or those in danger of becoming so. Composite products with an epoxy resin base were used, and where required, stainless steel dolly-rods were also inserted to provide even more reinforcement in the connections.

It was noted that the surfaces of the ancient floors made with crushed limestone in the K-5 residency had a poor degree of residual cohesion. They were consolidated using PRIMER 3296 consolidating primer mixed with water at a ratio of 1:2. PRIMER 3296 is an acrylic polymer-based water-dispersion primer, made up of very fine particles of acrylic polymers which have a good capacity of penetrating into the building materials on which it is applied, including those with low porosity. This property makes it the ideal primer for consoli-

dating weak, crumbly substrates, such as plasters, masonry work made from solid bricks or tuff. To consolidate the edges of the floors in the same area, a layer of MAPE-ANTIQUE RINZAFFO salt-resistant mortar was initially applied, a

product specially tested for renovating old stone, tuff and brickwork buildings. After this operation, a layer of MAPE-ANTIQUE MC light-coloured dehumidifying mortar was applied on the area concerned.

Mapei Products: *the products mentioned in this article belong to the “Products for Ceramic Tiles and Stone Materials” range. The technical data sheets are available on the “Mapei Global Infonet” DVD or at the web site: www.mapei.com. Mapei products and systems for the renovation of old buildings have been awarded the CE mark in compliance with European standards.*

Adesilex PG2: *thixotropic epoxy adhesive with extended workability.*

Mape-Antique MC (CE EN 998-1): *pre-*

packed, cement-free, light coloured dehumidifying mortar for the restoration of damp stone, brick and tuff masonry.

Mape-Antique Rinzafo: *cement-free, pre-packed, light-coloured “salt-resistant” mortar to be used before applying Mape-Antique MC, Mape-Antique CC and Mape-Antique MC dehumidifying mortars on stone, tuff and brick substrates.*

Primer 3296: *acrylic primer in water dispersion with strong penetrating action, consolidating surfaces of unsound screeds.*

TECHNICAL DATA

Archaeological Site of Tilmen Höyük, Islahiye Valley, region of Gaziantep (Turkey) – 2nd millennium BC.

Excavation Campaigns: 2003-2007

Conservation Campaigns: 2006-2007

Conservation Works: restoration and consolidation of the ancient structures at the site

Direction of the Excavations: Prof. Nicolò Marchetti (University of Bologna Alma Mater Studiorum – Department of Archaeology)

Project of the Conservation Works: Prof. Stefano Francesco Musso (University of Genoa – Faculty of Architecture), Chiara Davite (Archiéo srl)

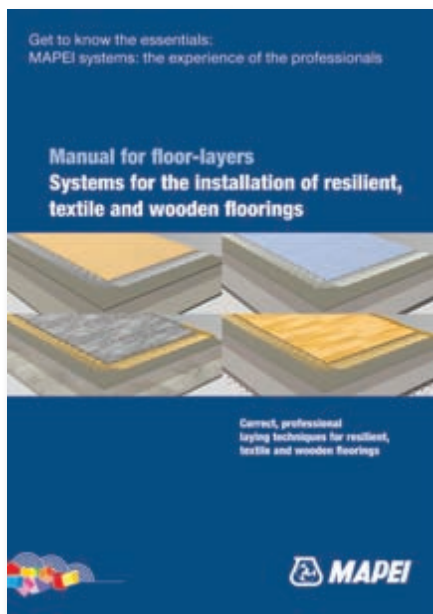
Executive Field Coordinators: Elena Rosa, Luciano Cuccui and Pietro Baldassarri

Project and Design for the Archaeological Park: Prof. M. Benedetta Spadolini, Prof. Giovanna Franco, Prof. Niccolò Casiddu (University of Genoa – Faculty of Architecture), Elena Rosa

Mapei Coordinators: Davide Bandera and Pasquale Zaffaroni, Mapei SpA (Italy)

PRACTICAL ADVICE FOR EXPERT FLOOR-LAYERS

A new manual for installing resilient, textile and wooden floors



In a new manual for professional floor-layers, Mapei has outlined its systems for installing resilient, textile and wooden floors, providing practical advice and seven concrete examples. This new guide is a handy tool containing practical advice for experts and providing both installers and retailers with in-depth knowledge about the most common types of installation for floors like this.




For each of the seven concrete examples of installation operations (two of which presented in this article), all the relative problems and optimal solutions offered by Mapei are also described, including representations

shown in graphics of how they are carried out.

These are complete systems of products tested internationally and ready to be used during every stage in the installation process: from preparing and treating substrates to bonding various types of coating and installing skirtings.

The technical data sheets of the products mentioned in this article are available on the website www.mapei.com. The manual called "Systems for the Installation of Resilient, Textile and Wooden Floorings" can be requested at realtamapei@mapei.it or by fax at +39 02 37673.214.

Installation of PVC tiles in hospital environments

Primer	Levelling Compound	Adhesive	Floor Covering
<p>Water-dispersed primer</p> <p>Primer G Synthetic non-solvent water-dispersed primer with very low volatile organic compound (VOC).</p> 	<p>Self-levelling compound</p> <p>Ultraplan Eco Ultra-fast hardening self-levelling compound with very low VOC, suitable organic compound for thicknesses from 1 to 10 mm per coat.</p> 	<p>Adhesive in dispersion</p> <p>Ultrabond Eco 300 Multi-purpose, acrylic adhesive in water dispersion with a very low emission level of volatile organic compounds (VOC), for bonding vinyl, WSP, very long open time. PVC tiles may be installed within 2 hours after the application.</p> 	<p>PVC tiles (Thickness 2.8 mm)</p>

7 MAPEI SYSTEMS DEVELOPED FOR LAYING RESILIENT, TEXTILE AND WOODEN FLOORINGS AND DESCRIBED IN THE NEW MANUAL FOR FLOOR-LAYERS

1. Quick installation of wooden floorings

Mapei products allow parquet to be laid in total safety. Floors may be even laid in inhabited areas and in the rooms where the new floor must be put back into use after an extremely short period of time.

2. Installation of wooden floorings on existing ceramics and natural stone

If the old floor is well bonded, it is not necessary to remove it, with the advantage of a reduction of noise, dust, time and costs. Mapei offers a solution to this specific problem, including primer, self-levelling compound and adhesive.

3. Installation of wood on existing cementitious substrate with eco-compatible systems

Mapei's ECO range of products includes products (from primers to adhesives for parquet) with very low emission of volatile organic compounds (VOC). Most of these products are EC1 certified by GEV (the Association for controlling emission levels of products for floorings, adhesives and materials for building), of which Mapei is an ordinary member.

4. Installation of wooden floorings on heated floorings

Laying on heated floors requires specific installation techniques, as heating systems are generally incorporated in cementitious levelling layers. Mapei offers a specific system including products for building the screed (with a

moisture level of less than 2%) and adhesives for bonding the floor.

5. Installation of linoleum floorings

Mapei offers a wide range of products to guarantee high bonding strength, ease of application and, therefore, high durability, whether linoleum flooring is laid on natural or synthetic jute or on cork.

6. Installation of rubber floorings in sports environments

Laying this kind of flooring surfaces requires the use of tried and tested products: special binders, quick-drying mortars for the substrates, self-levelling compounds with high mechanical strengths and abrasion resistance, specific adhesives for laying rubber and PVC. A special know-how, which Mapei is able to offer, is also needed for ensuring durability despite the vibrations, impact and general stresses which this kind of floorings have to endure.

7. Installation of PVC tiles in hospital environments

For environments used for medical purposes, Mapei has formulated a series of polymer-based products in water dispersion (used as an alternative to those products containing organic solvents), which have contributed in considerably reducing the emission level of volatile organic compounds and do not pose a threat for the health and comfort of patients and medical and paramedical personnel.

Challenge:

Usually, sports grounds are not only used for professional sports events. In recent years, they have become an integral part of modern life for the city, and apart from being a common sight in hotels and sports centres, they are now also quite common in public buildings and private centres which are normally used for other purposes.

Resilient flooring surfaces in sports areas are normally installed using materials which are sensitive to humidity, such as rubber, PVC and wood.

In order to qualify for such demanding materials, Mapei has developed special binders and mortar for rapid and ultra-rapid drying substrates, and self-levelling smoothing compounds characterised by their extremely high mechanical strength and resistance to abrasion.

The range of Mapei products is completed by a series of special adhesives for laying rubber and PVC.

In fact, sports pitches and surfaces must be durable under all conditions, in spite of the vibrations, impact and general stresses they have to support.

Laying this kind of flooring surface, therefore, requires the use of tried and tested products and the special know-how which Mapei are able to offer, both for private and public sports grounds and for medium and large-sized sports areas and their related structures.

For the installation of rubber flooring in sports environments Mapei recommends:

Installation of rubber floorings in sports environments

Substrate: Cementitious screed

UltraRapid EPO V4 SP

UltraRapid Mix

Epo Primer F

Primer	Levelling Compound	Adhesive	Floor Covering
<p>Hydrochlorinated primer</p> <p>Epo Primer F Lowest free acetone primer in water dispersion with very low emission of volatile organic compounds (VOC).</p>	<p>Self-levelling compound</p> <p>UltraRapid Mix Ultra-fast drying self-levelling compound for substrates from 1 to 30 mm per coat.</p>	<p>Adhesives in dispersion</p> <p>UltraRapid EPO V4 SP Rapid adhesive in water dispersion with low emission of volatile organic compounds (VOC) for rubber floor coverings with reduced open time.</p>	<p>Sports rubber (Thickness 3.2 mm)</p>



FUN AND GAMES WITH WATER

The Montluçon aquatic theme park in France offers a wide range of activities for both young and old sports fans, from water games to wellness

Since the Summer of 2006, the more than 75,000 inhabitants of Montluçon, a city located in the Department of Allier in the central-southern region of Auvergne in France, have been able to dedicate their spare time to water-based fun and games, thanks to the opening of a new aquatic theme park. The structure, called Centre Aqualudique de La Loue and covering an area of 57 hectares, is entirely dedicated to a wide variety of water sports

and will be finally completed in 2010. This aquatic theme park offers its clients of all ages high quality structures for both fun and relaxation, and to carry out various sporting activities. In fact, in the centre, there is a 500 m² pool dedicated to relaxation and water sports, including an area with hydro-massages, water cannons, swimming against the current and a 60 metre water chute. More expert swimmers, on the other hand, have an Olympic-sized swimming

pool available (50 metres long with 8 lanes), where activities are also organised for small children and beginners. There is also a 200 m² wellness sector on the first floor, equipped with a wide range of sports equipment, cardio-training and group and individual courses, and a 150 m² relaxation area with a sauna, a hammam pool and a Jacuzzi. During the summer, there is a 25 metre swimming pool available for the visi-



tors, with a water chute, a long-track slide, a swimming pool for children, ping-pong tables, beach-volley courts and a large wooded area. And to round up, for those with a passion for scuba diving, there are two pools available. One of them is 6 metres deep, while the other is 20 metres deep. They are joined together at the surface over an area of 28 m² and to a depth of up to 1.40 metres, and again by a tunnel at the bottom of the 6 metre-deep pool.

A Well Thought Out Choice for Laying PVC

PVC was chosen by the designers for the floors in the centre, and the owners chose the Roland Batistoni Revet Décor floor-laying company to apply the covering material, a company specialised in laying PVC floors in sports complexes and in industrial and technical structures.

The company was appointed to lay PVC on a total surface area of 1,800 m² (the access corridors, changing rooms and the showers and bathroom areas). The designers chose this material because, apart from satisfying specific design criteria – high resistance to stresses on the substrate due to the continuous pedestrian use – it also has good anti-slip properties.

This particular kind of non-slip PVC covering material is ideal for use in areas which often have damp surfaces. The anti-slip property of the product chosen (PVC covering made by the company Altro was recommended) was extremely important, because surfaces in changing rooms and bathrooms in public sports centres are often damp, and are a potential hazard for visitors

who often walk around barefoot.

Before laying the PVC covering material, the surfaces were smoothed over to make them perfectly flat with MAPESOL 3, a high-performance, self-levelling and smoothing compound which is applied at a thickness of between 3 and 10 mm (this product is only available in France).

After smoothing the surfaces with MAPESOL 3 (the product is ready to be laid on after 4 to 6 hours), the PVC sheets were bonded using ADESILEX G20 two-component polyurethane adhesive. This product has been developed for laying internal and external floors in rubber, PVC, textile, linoleum, polystyrene and polyurethane panels, plastic laminates, wood and metal sheets. The adhesive was applied on the substrate with a notched trowel, and the covering

material, applied on the ADESILEX G20 while it was still fresh, was then pressed from the centre towards the borders to remove all air bubbles and to guarantee better contact between the sheets and the substrate.

Once hardened (after approximately 24 hours), which takes place without shrinkage, ADESILEX G20 becomes

1,800 m² PVC floorings were laid with ADESILEX G20 in the corridors, the changing rooms, the showers and the bathrooms.

elastic and resistant to humidity, water, heat and aggressive agents in the surrounding atmosphere.

It also has good bonding strength on almost all materials normally used in the building industry.

It was its resistance to humidity and water which helped the laying company choose a polyurethane adhesive such as ADESILEX G20, because the floors in the complex are cleaned every

PRODUCT SPOTLIGHT

ADESILEX G20


Is a highly flexible and strong adhesive for general purpose and is particularly suitable for non-absorbent substrates or substrates sensitive to humidity.



After hardening (around 24 hours), which takes place solely by chemical reaction and without shrinkage, this low-viscosity, two-component polyurethane adhesive becomes elastic, resistant to humidity, water, heat and atmospheric agents. It also has high characteristic of adhesion on almost all materials normally used in the building industry.





day using powerful water jets, and it was imperative that adhesive which is particularly resistant to water was used. All the PVC coverings for the floors and the overlaps of the sheets in the same material used as skirting around the walls were laid using ADESILEX G20. The strips were then hot-welded to guarantee a complete, waterproof bond and perfect hygiene. The Centre Aqualudique de la Loue in Montluçon is a centre for water sports which offers everybody the chance to carry out their favourite sport in a high quality environment which is both comfortable and safe, thanks to the materials and finishing products employed. 

This article was taken from issue n. 22 of "Mapei & Vous", the in-house magazine published by Mapei France, the French subsidiary of the Mapei Group, whom we would like to thank.

Mapei Products: the products mentioned in this article belong to the "Products for the installation of resilient, textile and wood floor and wall coverings" range. The technical data sheets are available on the website www.mapei.com.

Adesilex G20: low viscosity, two-component polyurethane adhesive for rubber, PVC and linoleum.

Mapesol 3: high-performance, self-levelling and smoothing compound.

N.B. the product is only distributed on the French market.

TECHNICAL DATA

Centre Aqualudique de la Loue,
Montluçon (France)

Designer: JP Maret – Axyz Illustrateur

Year of construction: 2006

Intervention by Mapei: laying PVC floorings in the corridors, the changing rooms, the bathrooms and showers of this aquatic centre

Year of the intervention: 2006

Client: Dumez Lagorsse Tabard

Works Director: Chabanne et Partners

Contractor: Baudin-Châteauneuf

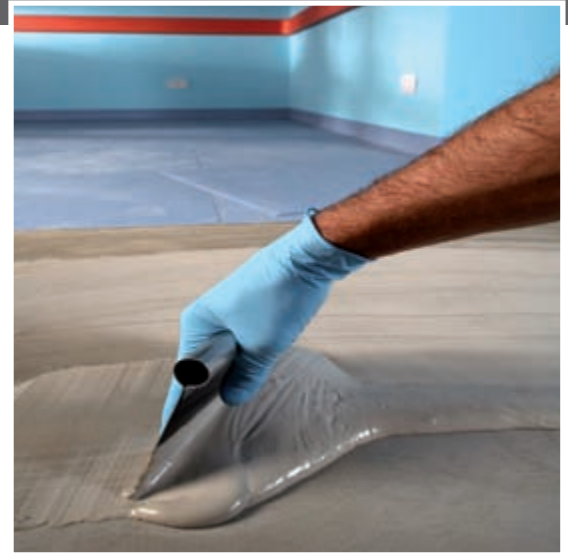
Site Management: Communauté d'agglomération de Montluçon

Laying Company: Revet Decor Sarl Roland Batistoni, Montluçon

Mapei Coordinator: Jean-Claude Bertholet (Mapei France)

PRODUCT SPOTLIGHT

Ultrabond Eco 380



Application

From Mapei's research and development laboratories a new adhesive in water dispersion specially developed for vinyl floors

- One component, ready-to-use
- Synthetic polymer base in water dispersion
- **Low environmental impact^(*)**
- High grab with fast initial set
- Long open time
- "Pressure sensitive"^(**)
- Suitable for laying in environments subject to intense traffic



^(*)Certified by the GEV Institut as ECI, extremely low emission level of volatile organic compounds

^(**)Rolling guarantees excellent transfer to the back of the floor covering, even several hours after laying



Our environmental commitment
More than 150 Mapei products help project designers and contractors building innovative projects, which are LEED (Leadership in Energy and Environmental Design) certified by the U.S. Green Building Council

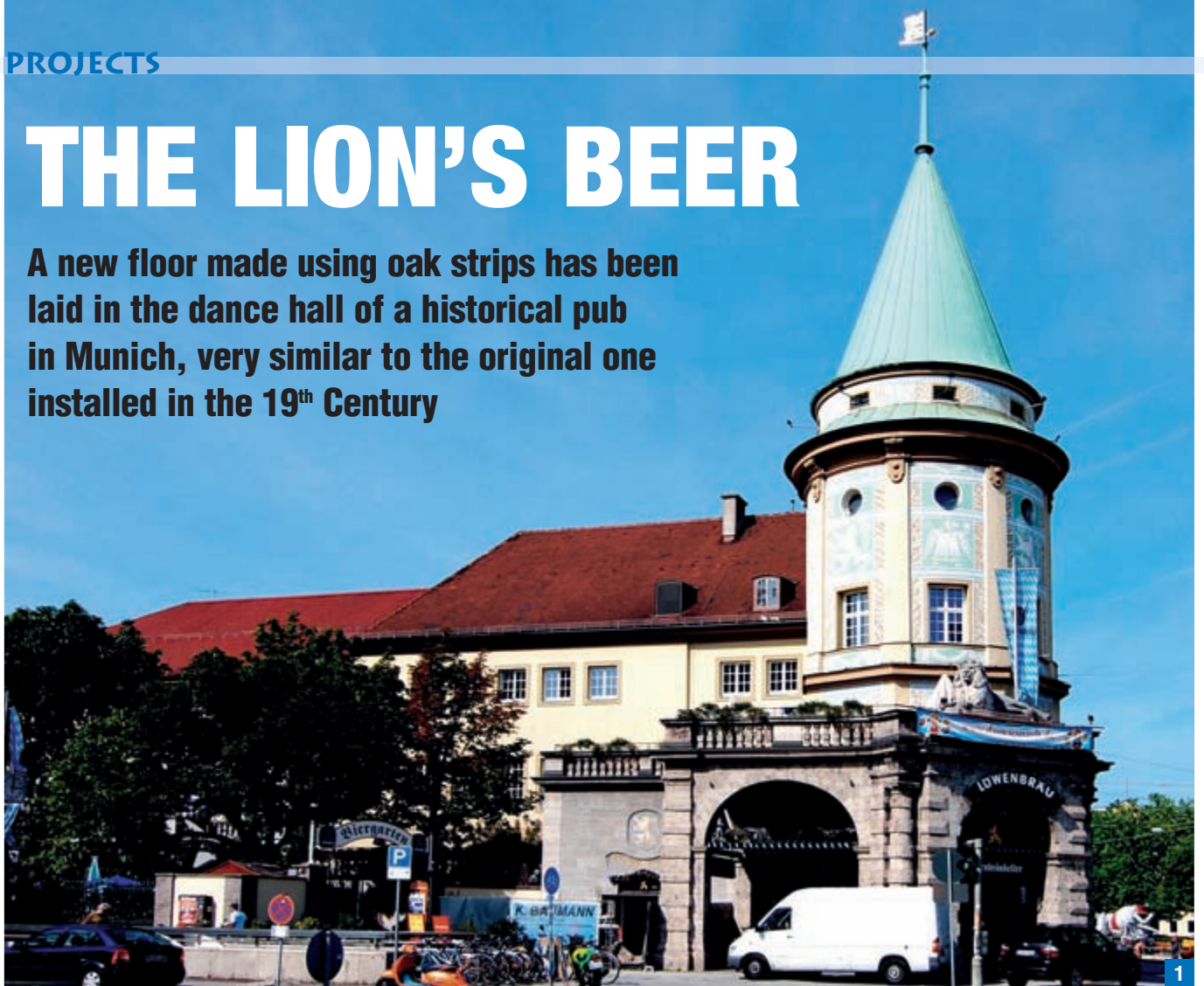


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THE LION'S BEER

A new floor made using oak strips has been laid in the dance hall of a historical pub in Munich, very similar to the original one installed in the 19th Century



1

In 1861, the master brewer and owner of the Löwenbräu trademark, Ludwig Brey, purchased a plot of land opposite the brewery in the Maxvorstadt district of Munich. A number of years later, he decided to construct a large building where people could go to drink his beer and eat, dance and listen to music.

The pub was also open in the summer, in the beer-garden typical of Bavarian pubs. Brey entrusted the project to professor Albert Schmidt, who proposed an imposing structure along the lines of the classical architecture typical of the district. The inauguration ceremony was held on the 14th of June 1883, with the huge pub with traditional decor also offering its clientele something new for that period: for the first time, table-cloths and napkins were used to dress the tables.

Thanks to its large open spaces, dances and festivals were held from 1890, and the Löwenbräu pub became the home of the Munich Carnival.

The total cost to build the first ever Löwenbräu pub was more than 400,000 Marks, an enormous sum of money for the time.

The pub was renovated around 10 years after its inauguration, and was

then extended six years later in 1898. The owner was so impressed with the original project, that the extension work was entrusted again to Albert Schmidt. The architect wanted to characterise the main existing body of the pub with a corner tower, placed on a polygonal base decorated with arches, which today still marks the entrance to the main pub area.

And ever since then, Stiglmaier

Photo 1.

A view of the outside of the Löwenbräu pub.

Photos 2 and 3.

The parquet was bonded using ULTRABOND P902 2K adhesive.

Oak was chosen for the floor, which was laid in a herringbone pattern as a reminder of the original floor.



2



3

Square has been dominated by the Löwenbräu tower, decorated with lively affrescos, in colours which recall the blue of the Bavarian flag, and with a statue which represent the company symbol – a lion at rest (in German, Löwe means lion) – created by the sculptor Wilhelm von Ruemann. The pub was renovated again between 1910 and 1911.

The district was heavily bombed during the second world war, and the Löwenbräu building was razed to the ground on the 17th of December 1944. The pub was rebuilt in 1950, and eight years later the banquet room was again open to the public for what it was originally intended for, fun and parties. The façade and tower were rebuilt the same year.

From 1984 to 1985, the main restaurant and the largest meeting room were also rebuilt. During the night of the 23rd of July 1986, a fire developed which destroyed the banquet hall, the gallery and the theatre, although they were rebuilt within a year.

A New Lease of Life for the Floor

At the beginning of 2008, the current owners of the Löwenbräu trademark decided to modify the entire structure

yet again.

After taking this decision, the large dance hall, which also doubles as a banquet hall, was the first area to be renovated, and a number of modifications were carried out. In fact, apart from replacing the fittings and the stairways which lead to the gallery overlooking the hall, some of the dividing screens were removed to create an even larger area.

The floor in the hall (approximately 600 m²) was originally laid with parquet in a herring-bone pattern, but after years of service, scraps of food, spilled drinks, wear and renovation work, it was damaged beyond repair. The designers and owners of the building agreed, therefore, to replace it with a similar floor in the same colour and with the same kind of wood. The entire floor in the hall was re-laid using natural oak parquet, with strips measuring 560 mm by 90 mm, with a thickness of 22 mm. The parquet was supplied by Parkett Hinterseer, and was laid by the Tom Phelan Parquet floor-laying company, who decided that only a Mapei product would suffice: ULTRABOND P902 2K.

ULTRABOND P902 2K two-component epoxy-polyurethane adhesive is made

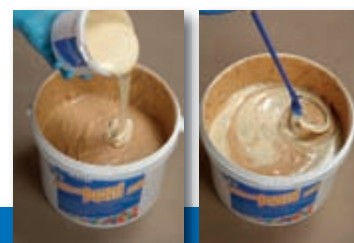
using an epoxy-polyurethane polymer and a hardener in paste form.

When the two components are mixed well together, they form an adhesive with an even colour which is easy to apply with a notched trowel, characterised by its excellent straight line hold.

IN THE SPOTLIGHT

ULTRABOND P902 2K

It is a two-component adhesive for bonding all types and sizes of wooden flooring. By mixing the two components together, an epoxy-polyurethane polymer and a hardener in paste form, a uniform colored product is obtained that can be easily applied with a notched trowel. After hardening in approximately 24 hours, this adhesive becomes a strong film with high bonding strength to all types of substrates, including those that are not porous (ceramic).





The open time of the product when mixed is approximately 70 minutes. It may be used to bond lamparquet, small strips, planks and other kinds of parquet on cementitious screeds, preferably made using MAPECEM, MAPECEM PRONTO, TOPCEM or TOPCEM PRONTO. It may also be used for bonding on old wooden, ceramic, marble and terrazzo tile coverings, or on anhydrite screeds and metal sheet. This adhesive is also recommended for use on heated substrates.

ULTRABOND P902 2K hardens after approximately 24 hours at normal temperatures, and forms a strong film with high bonding strength on any kind of substrate. The adhesive is available in two colours – beige and brown – and the darker colour was chosen to lay the floor in the Löwenbräu pub so that the joints between the strips would be less visible.

The floor-laying company started by removing the old wooden parquet strips, to expose the original substrate. The substrate was made using asphalt adhesive mixed with aggregate in various grain sizes. After a thorough cleaning, a layer of ULTRABOND P902 2K was applied, and the strips were positioned on the adhesive following

the old herring-bone pattern.

It is very important that the correct amount of adhesive is applied: if the layer is too thin, the strips will not set well enough into the adhesive, whereas if the layer of adhesive is too thick, swelling may take place on the surface of the parquet.

ULTRABOND P902 2K proved to be a winning choice to lay this kind of floor quickly on an asphalt substrate and the floor was ready to be stepped just 24 hours after laying.

Apart from the floor in the main hall of the pub, another important job was to lay a new floor on the 5.90 metre wide stairways, which lead up to the gallery overlooking the hall.

The oak-wood strips were laid on the concrete structure, again using ULTRABOND P902 2K.

Once the entire surface had been installed, the floor-layers carried out the next phase by sanding the floor.

The laying operation was completed and the floor was prepared for normal service by applying two coats of protective oil on the parquet.

After a long, intense life – tormented yet adventurous – the Löwenbräu pub is finally returning to its former splendour.

Mapei Products: *the products mentioned in this article belong to the "Products for the Installation of Resilient, Textile and Wood Floor and Wall Coverings" range. The technical data sheets are available on the web site: www.mapei.com.*

Ultrabond P902 2K: *two-component epoxy-polyurethane adhesive for wooden flooring.*

TECHNICAL DATA

Löwenbräu pub, Munich (Germany)

Designer: Prof. Albert Schmidt

Period of Construction: late 19th century (opened in 1883), rebuilt in the 50s after having been destroyed during the war.

Intervention by Mapei: laying a wooden floor in the banquet hall and on the stairs leading to the gallery

Year of the Intervention: 2008

Client: Nymphenburg Immobilien, Munich

Laying Company: Tom Phelan Parkett, Munich

Material Laid: wooden floor by Parkett Hinterseer, Munich

Mapei Coordinator: Günther Hermann (Mapei GmbH, Germany)

Silwood



Application

The new acrylic sealant in water dispersion for wooden floors

- **Available in a wide range of colours**
Silwood is available in a wide range of colours, which realistically reproduce the tints of the types of wood most commonly used
- **Easy to apply**
Thanks to its special rheology, Silwood is easy to apply with very little waste, and joints may be completely filled
- **Low environmental impact⁽¹⁾**
- **Excellent workability**
Once dry, Silwood may be sanded down and varnished without altering its colour
- **Perfect, long-lasting seals**
Silwood is characterised by good flexibility and excellent bond strength and filling capacity, to form long-lasting seals



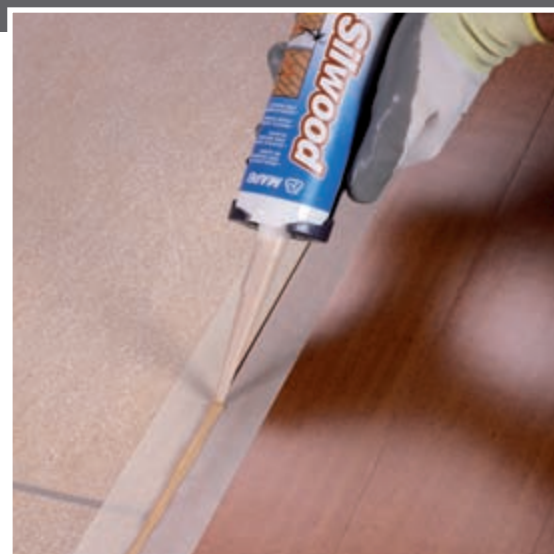
Our environmental commitment
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⁽¹⁾Certified by the GEV Institut as EC1, extremely low emission level of volatile organic compounds.



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IN THE DEEP BLUE YONDER

In the sparkling, blue Mediterranean sea, and in perfect keeping with the Grecian landscape, two hotels were built using only high quality construction materials and finishes



Photo 1.
IDROSILEX PRONTO was applied to waterproof the external vertical surfaces.

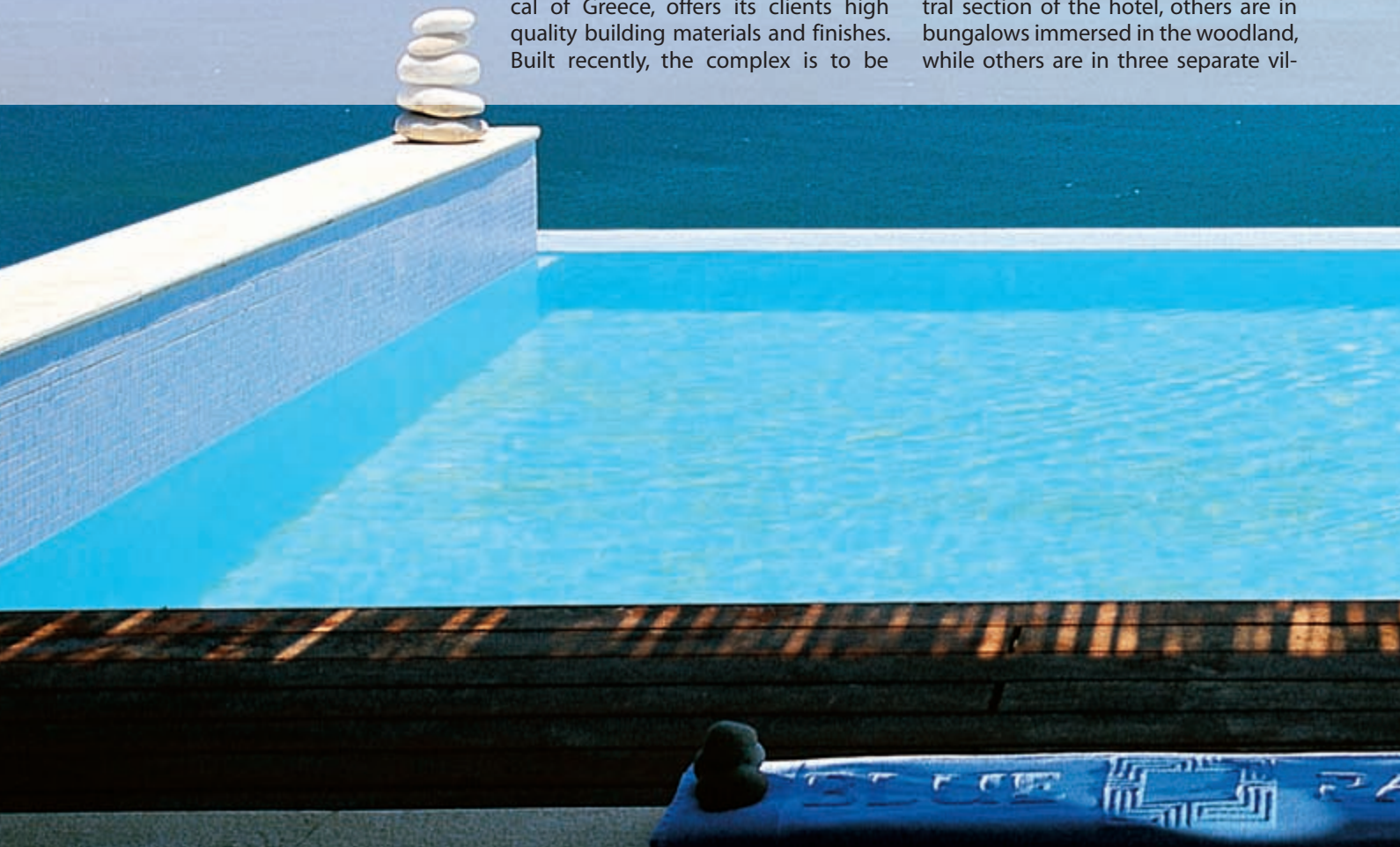
Apart from being the largest island in Greece, Crete is also the most southerly island in Europe, with the fifth largest surface area in the entire Mediterranean sea. The most important city, Iraklion, is situated at the centre of the northern end of the island, where tourism has developed the most, while the southern and western parts of the island remain completely unspoiled. Two operations in the hotel sector are described in this article; a completely new hotel complex and renovation of an existing hotel.

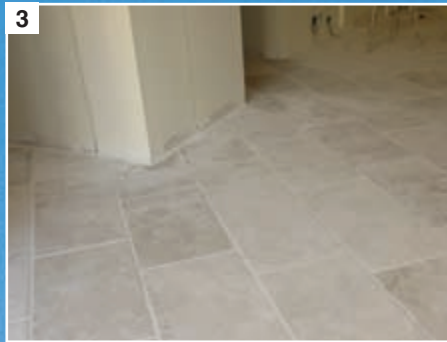
Blue Palace Resort&Spa

The terracotta-coloured stone walls, palm trees, olive groves and the bright blue of the 142 private swimming pools and of the Mediterranean sea are distinguishing features of the Blue Palace Resort & Spa.

The hotel is situated on the island of Crete, and apart from the beauty typical of Greece, offers its clients high quality building materials and finishes. Built recently, the complex is to be

found perched in a dominating position on the side of a hill with a breathtaking view of the charming island of Spinalonga with its Venetian fortress, and is approximately 500 metres from the village of Plaka. The Blue Palace has various types of accommodation available: some of them are in the central section of the hotel, others are in bungalows immersed in the woodland, while others are in three separate vil-





las in a secluded spot in the grounds of the hotel. All the rooms – each one has its own exclusive style and specially-created décor inspired by the surrounding nature – are characterised by prestigious furnishings and finishes, with large terraces which directly overlook the bay and, above all, except for a few of the bungalows, all the rooms have their own private swimming pool whose borders seem to blend into the sea on the horizon.

And to finish, the hotel also has a spa and a thalassotherapy centre.

Created for the Most Demanding Client

A further wing was added to the bungalows last year, and Mapei took part in this project by supplying a wide range of products through their local retailer. IDROSILEX PRONTO cementitious mor-

tar was recommended to waterproof the external vertical surfaces. It is composed of cement binders and special waterproofing additives, and is applied on perfectly clean, solid walls which must be thoroughly soaked with water beforehand. For the inside of the bungalows, PLANICRETE synthetic rubber latex diluted with water was added to the mix made of sand and cement for the screeds. Adding this latex to the mix improves its bond to the substrate and its mechanical strength. The work continued by smoothing over the internal substrate to make the floor perfectly flat and level before laying the final covering material, and ULTRAPLAN ultra-fast hardening, self-levelling, smoothing compound was chosen for this operation.

The living area was then laid with Italian granite slabs measuring 60x60 cm.

Photos 2, 3 and 4.

Before laying the various covering materials, the substrates in the bungalows were smoothed over with ULTRAPLAN to make them perfectly flat. Granite slabs were laid in the living areas with ULTRAFLEX S2 MONO adhesive and the joints were grouted with KERACOLOR FF.

ULTRAFLEX S2 MONO one-component cementitious adhesive was used to bond the granite.

This product is ideal for bonding stone slabs and ceramic tiles on internal and external surfaces, is highly deformable (class S2 according to EN 12002 standards), has no vertical slip, an extended open time, is easy to apply with a trowel and has a high yield.

ULTRAFLEX S2 MONO also helps to reduce the noise caused by footsteps, a



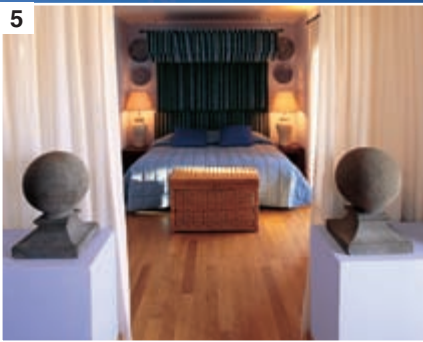


Photo 5. Parquet was laid in place in the sleeping area using ADESILEX PA synthetic resin-based adhesive.

Photos 6, 7 and in the background. Each bungalow has its own private swimming pool. KERACOLOR FF

+FUGOLASTIC was used to grout the joints for higher resistance to abrasion and lower water absorption.



characteristic which is quite important in hotel rooms.

KERACOLOR FF high performance cementitious mortar was then used to grout the tile joints. The use of special hydrophobic additives (DropEffect® technology) allows for tile joints which are highly water repellent, making them less prone to dirtiness and with excellent durability.

The same products – ULTRAFLEX S2 MONO and KERACOLOR FF – were also used to lay the floors in the external areas.

Parquet was instead chosen for the floors in the sleeping area of the bungalows, and the wooden strips were bonded in place using ADESILEX PA synthetic resin-based adhesive.

Each bungalow has its own private swimming pool.

KERACOLOR FF cementitious mortar was also used in this case to grout the tile joints on the pools' surfaces. In this case, however, KERACOLOR FF was mixed with the additive FUGOLASTIC instead of with water, to improve its resistance to abrasion and to reduce its porosity and water absorption.

Mapei Products: the products mentioned in this article belong to the "Products for Ceramic Tiles and Stone Materials", "Building Speciality Line", "Products for the Installation of Resilient, Textile and Wood Floor and Wall Coverings" ranges.

The technical data sheets are available at the web site: www.mapei.com. Mapei's adhesives and grouts conform to EN 12004 and EN 13888 standards. Almost all the Mapei products for laying floors and walls are also GEV-certified. Mapei pre-blended mortars for screeds and smoothing and leveling compounds conform to standard EN 13813 and have been awarded the CE mark in compliance with Annex ZA, standard EN 13813.

Adesilex PA: adhesive based on synthetic resins in alcohol for bonding wooden flooring.

Fugolastic: liquid polymeric additive for

Keracolor FF, Keracolor GG and Keracolor SF.

Idrosilex Pronto: cementitious mortar for waterproofing underground masonry and for structures containing also drinking water.

Keracolor FF (CG2, EC1R): high performance, polymer-modified, water-repellent, cement-based grout with DropEffect® technology for joints up to 6 mm.

Planicrete: synthetic-rubber latex for cementitious mortars for improving bonding and mechanical strength.

Ultraflex S2 Mono (C2TES2): one component, easy to apply, high flexibility, high performance cementitious adhesive with no vertical slip, extended open time and extremely high yield for ceramic tiles and stone material.

Ultraplan (EC1, CE): ultra-fast hardening self-leveling smoothing compound for thicknesses from 1 to 10 mm.

TECHNICAL DATA

Blue Palace Resort&Spa, Plaka, Crete (Greece)
Designer: Stylianiades Engineering
Period of Construction: 2006-2007

Intervention by Mapei: waterproofing the bungalows' vertical external surfaces, applying screeds on internal surfaces, smoothing substrates, laying and grouting granite slabs in

the living area, laying parquet in the bedrooms, grouting tiles in the pools' surfaces

Period of Intervention: 2006-2007

Client: Plaka A.t.

Mapei Distributor: Kafousis

Mapei Coordinators: Ioannis Koropoulos (Mapei Hellas) and Fabio Fenech (Mapei SpA)



Cretan Malia Park Hotel

The Cretan Malia Park Hotel is formed by an elegant hotel and a bungalow complex, located in a peaceful area in a bay with a sandy beach, surrounded by dense, tropical vegetation – palm trees and cacti – to create an exotic environment. The hotel is located within walking distance of Malia, a small village close to Iraklion. A large swimming pool covering an area of 800 m², surrounded by an artificial beach, complete the area where the bungalows are located. Thanks to the numerous services available and the comfortable surroundings offered to the clients, the hotel is considered one of the leading beach resorts in the world. The main building, which contains the

reception area, restaurants, 14 single suites and 37 double suites, was recently renovated, and reopened to guests in the summer of 2007.

The company which carried out the renovation work chose to operate with Mapei products. PLANICRETE synthetic rubber latex was mixed with the cementitious mix to form screeds with improved mechanical and adhesive strength.

ULTRAPLAN ultra-fast hardening, self-levelling smoothing compound was used to reach the required level on the floors in the resort before laying the tiles. The use of this smoothing and levelling compound makes substrates suitable for laying all types of flooring

Photo 1.
A view of the outside of the hotel.

Photo 2.
ULTRAPLAN self-levelling smoothing compound was applied on the internal surfaces to obtain a perfectly flat floor before laying the covering material.

Photos 3 and 4.
All the floors in the communal areas were laid with large-sized porcelain tiles using ULTRAFLEX S2 MONO.



*Photos 5, 6 and 7.
The floors and walls
in the bedrooms and
bathrooms were also
covered with smaller
porcelain tiles.*

*KERAFLEX adhesive
was used to bond the
tiles and ULTRACOLOR
PLUS was used to
grout the joints.*

*Photo 8.
In the large central swimming
pool, the tiles were bonded
using KERAFLEX and the
joints were grouted with
ULTRACOLOR PLUS.*





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materials where high resistance to traffic and loads is required, typical operating conditions in hotels.

All the internal and external floors in the communal areas, such as the reception, the lobby and the restaurants, were laid with porcelain tiles (60x60 cm) using ULTRAFLEX S2 MONO one-component, high-performance cementitious adhesive.

The floors and walls in the suites and bathrooms were also covered with porcelain tiles (30x30 cm), laid using KERAFLEX cementitious adhesive.

Apart from having no vertical slip and an extended open time, this product is recommended when laying floors subject to strong stresses. The tile joints were grouted with ULTRACOLOR PLUS, which guarantees an absolutely uniform colour over the years, does not produce surface efflorescence or mould (thanks to BioBlock® technology), is water-repellent (DropEffect® technology) and dries quickly, so that floors may be put into service only 24 hours after laying the covering material.

In the large central swimming pool, the

tiles were laid using KERAFLEX, and the joints were also grouted in this case with ULTRACOLOR PLUS (swimming pools may be put back into service after 48 hours).

TECHNICAL DATA

Cretan Malia Park Hotel, Malia, Crete (Greece)

Year of Construction: 1989

Designer: Mr Stylianides

Intervention by Mapei: renovating the internal areas by applying new screeds, smoothing substrates; laying and grouting porcelain tiles in inside and outside areas; laying and grouting tiles on the pools' surfaces

Designer: Stylianides

Period of intervention: 2006-2007

Client: Asimenia Akti A.E.

Mapei Distributor: Kafousis

Mapei Coordinators: Ioannis Koropoulos (Mapei Hellas) and Fabio Fenech (Mapei SpA)

Mapei Products: the products mentioned in this article belong to the "Products for Ceramic Tiles and Stone Materials," and "Products for the Installation of Resilient, Textile and Wood Floor and Wall Coverings" ranges.

The technical data sheets are available on the web site: www.mapei.com. Mapei's adhesives and grouts conform to EN 12004 and EN 13888 standards. Almost all the Mapei products for laying floors and walls are also GEV-certified. Mapei pre-blended mortars for screeds and smoothing and leveling compounds conform to standard EN 13813 and have been awarded the CE mark in compliance with Annex ZA, standard EN 13813.

Keraflex (C2TE, EC1R): high performance cementitious adhesive, with no vertical slip and with extended open time for ceramic tiles

and stone material.

Planicrete: synthetic-rubber latex for cementitious mortars for improving bonding and mechanical strength.

Ultracolor Plus (CG2, EC1): fast-setting and drying, high performance, anti-efflorescence, water-repellent mortar grout for joints from 2 to 20 mm. With DropEffect® and anti-mould with BioBlock® technology.

Ultraflex S2 Mono (C2TES2): one component, easy to apply, high flexibility, high performance cementitious adhesive with no vertical slip, extended open time and extremely high yield for ceramic tiles and stone material.

Ultraplan (EC1, CE): ultra-fast hardening self-levelling smoothing compound for thicknesses from 1 to 10 mm.

Stabilcem SCC

Cementitious binder for manufacturing dimensionally stable self-compacting concrete mixtures to repair concrete structures.

Used for manufacturing shrinkage-compensated, self-compacting concrete with different aggregate sizes, featuring high mechanical strength and high durability. It is used for repairing:

- Beams, kerbs and viaduct pillars
- Bridge superstructures
- Hydraulic works
- Dry docks

Structure: **Rio Verde Viaduct**
Contractor: **ABC Costruzioni Generali S.p.A.**
Designer: **Prof. Giuseppe Mancini**
Product: **Stabilcem SCC**



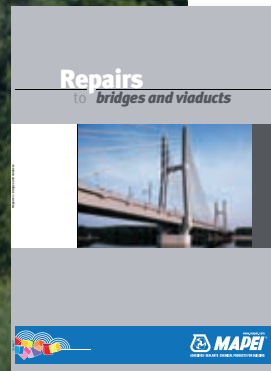
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MAPEI

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for repair operations
on infrastructures**

REPAIRS TO BRIDGES AND VIADUCTS



One of the most important sectors in the building industry in which Mapei's resources and products are committed is the repair of bridges and viaducts. The experience acquired over the years, and the excellent results obtained with the use of more and more technologically-advanced product systems, has brought Mapei to a level of excellence in this particular sector. The sites involved are usually extremely demanding and require specific interventions, which more often than not must be supported by a preliminary technical-scientific analysis of the deteriorated concrete structures. This aspect of the intervention is usually carried out by the Company's Research & Development laboratories.

The subject matter is of particularly high interest. In fact, each year the authorities which manage the road networks have to invest a considerable amount of money into maintenance and repair work for the existing network which is currently in use. A large number of these interventions are carried out on structures such as bridges and viaducts.

The durability of such structures is severely tested by the enormous load cycles from the traffic in circulation, flooding conditions, aggressive atmospheric agents and the gases which are present in the air. This means that their

state of conservation, and in the worst cases their static safety, are put in serious danger. Amongst all the possible causes of deterioration, road joints suffer most from the effects of atmospheric agents and the presence of water in general. Water due to atmospheric phenomena, with a certain level of pollution and, very often, the presence of de-icing salts, is extremely aggressive for concrete, as are thermal cycles both during the day and night, and during the different seasons of the year. The deterioration of concrete shows up in a number of ways, with the progressive erosion and crumbling of the surface, corrosion of the metal reinforcement rods and the formation of rust, detachment of the cortex area of the concrete, etc.

Below is a list of methods proposed by Mapei for the repair of bridges and viaducts:

- Preparation of the substrate;
- Protection of reinforcement rods;
- Positioning new reinforcement;
- Repairing concrete using thixotropic mortars;
- Repairing concrete using castable mortars;
- Repairing concrete using cementitious binders;
- Smoothing off concrete surfaces;
- Protecting and decorating concrete structures.

Each of these items includes different types of products, which are all suitable for achieving the required scope, and the choice of which one of these to use depends on the client, the thicknesses to be repaired, on-site organisation, etc.

The complex nature of these structures, and the need to supply secure data which have been tested under working conditions, have led to the production of a publication which offers an exhaustive summary of the sector.

This is a new technical manual produced by Mapei, entitled "Repairs to bridges and viaducts" (those interested in receiving a copy may make a request to realtamapei@mapei.it or at fax: +39-02-37673.214). This publication is part of a collection of manuals dedicated to the repair of concrete, a subject to which the Company is continuously dedicating more attention and resources, through the research and development of products with higher and higher performance characteristics.

In the following pages, which as usual offer a concrete illustration of the subject matter after its theoretical outline, we will present three sites where the advanced Mapei product systems have been employed.



Rio Verde

An example of reinforced concrete

by Pasquale Zaffaroni, Product Manager for the Building Speciality Line, Mapei SpA

A Great Viaduct but Slightly Aged

The Rio Verde viaduct, which is located along the Cisa A15 Motorway in Pontremoli, (in the Province of Massa Carrara, Italy), is an imposing structure made up of two decks which rest on pillars and with supporting abutments in common.

This viaduct has the second highest pillars in Europe, with two of them reaching

up more than 140 metres.

Because of the level of deterioration of the concrete surfaces of the pillars, in 2005 the Autocisa motorway society laid down plans for a structural strengthening of the viaduct. This was part of a wider programme regarding the modernisation and upgrading of the entire Italian motorway network. As in most cases, the deterioration of the surface of the pillars was due to a combination of factors, including carbonation and erosion by chlorides in de-icing salts used during the winter. These factors usually provoke oxidation of the reinforcement rods in the concrete, which leads to cracking and then detachment of the concrete around the rods. The restoration project of the two central pillars, the highest ones on the viaduct, included

removal of 8-12 cm of the deteriorated concrete by hydro-scarifying, laying a reinforcement mesh and then repairing the damaged sections using self-compacting concrete poured into formwork around the pillars. Restoration of the other pillars used different materials and techniques, such as the use of MAPEGROUT EASY FLOW one-component, thixotropic, low viscosity mortar. This product is particularly suitable for repair operations requiring that the concrete feature easy pumping over long distance and constant high head. For further information regarding this product, please see the technical data sheet, which is also available on the web site www.mapei.com.

Innovative Products and Technology for a Special Project

The restoration of the two central pillars has been a complex operation, because special rheologic properties



*Photo 1.
Close-up of the deteriorated concrete surface of one of the pillars on the viaduct before the restoration operation.*

*Photo 2.
The two central pillars of the viaduct which were the subject of the restoration work with self-compacting concrete. On the right, the repaired pillar. On the left, the pillar which was still to be restored.*

Viaduct

and long workability times of the self-compacting concrete must be guaranteed, under all types of climatic conditions. To make all the operations automatic and to help the workforce operate in complete safety, particularly innovative products and technology were chosen.

In fact, this is a “unique” site, where the application of special solutions are required.

There were two trump cards:

- the use of a special platform erected specially for this project, and which has been used during all the phases of the work;

- the use of dimensionally-stable self-compacting concrete for the deteriorated surfaces.

As far as the platform is concerned, ABC Costruzioni, the firm which carried out the work, was unable to find suitable equipment on the home and international markets which allowed all the operations to be carried out automatically, and which guaranteed safety and speedy work, with significant economic advantages.



Therefore, ABC Costruzioni designed a special platform called “Albert”. This platform meets all operational requirements, such as moving form-work, reinforcement rods, scarifying equipment, perforation materials, etc., to high levels. It also had to be capable of guaranteeing different operations to be carried out simultaneously or in sequence, even in poor weather conditions. It also made it possible to carry out operations automatically,

ensuring constant quality and optimising operational times and costs, while also reducing waste.

The platform consists of a suspended mobile steel frame structure, which can move along the pillar. It is made up of rectangular tubular steel, with four sliding walkways positioned around it. The platform is suspended using a system of cables which are anchored to the top of the viaduct, and is connected to the foot of the pillar by four



Photo 3. Close-up of the pillar after laying the reinforcement mesh.

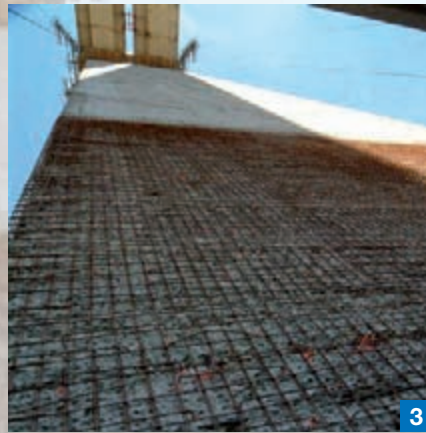


Photo 4. The self-compacting concrete used to repair the central pillars was made using STABILCEM SCC cementitious binder, EXPANCRETE special expansive agent, MAPECURE SRA shrinkage reducing admix and DYNAMON SP3 acrylic-based superplasticiser.



synchronised, electric pulleys. The system also has an elevator which is used to transport the workers. Once the platform had passed all the tests required by the European Union Standards, it was delivered to the site. Another determining factor to guarantee successful operations on site was the use of innovative products which ensured that the concrete had excellent performance levels over long periods of time. In fact, good restoration operations are highly dependent on both the level of specialisation of the company which carries out the work, and the correct choice of materials to be applied. Mapei products were chosen for this project, which were developed specially for large site operations and for the restoration of deteriorated concrete structures. Within the large range of products available, the following products were chosen: EXPANCRETE expansive agent, MAPECURE SRA curing admix and DYNAMON SP3 superplasticiser to make the self-compacting concrete. The use of these materials allowed all the special requirements of this particular project to be fully met, while optimising the operational times and productivity. Working and environ-

mental conditions for the workforce were also improved, which reduced the influence of workforce.

The Operational Phases

The following phases were planned:

- hydro-scarifying
- preparation of the anchoring holes
- laying the reinforcement mesh
- positioning the form-work
- pouring the concrete
- final sand-blasting
- application of a protective layer.

Hydro-scarifying was carried out using a battery of scarifying machines, applied and moved by carriages on the main platform.

Automatic boring machines were used to make the holes, which were mounted on carriages located on the upper platform.

Laying of the additional reinforcement mesh was carried out by workers who were positioned on the walkways.

The form-work was then positioned around the perimeter of the pillars, and the self-compacting concrete was poured in. The concrete was pumped from the bottom of the pillars towards the top along steel pipes fastened to the pillar. It was poured into the form-work by means of a distribution tube with a series of manually operated

valves every 1.50 metres.

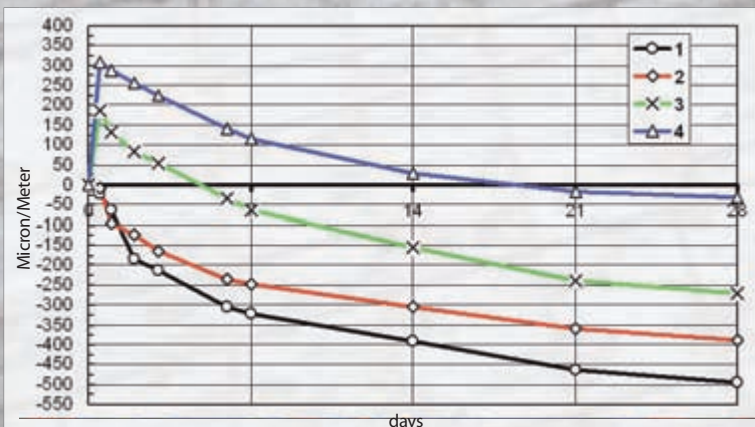
The self-compacting concrete was mixed using STABILCEM SCC cementitious binder, which is particularly suitable to make concrete mixes with no shrinkage, for beams, kerbs and viaduct pillars, and also bridges superstructures, hydraulic works and dry docks. Concrete made using this Mapei product offers numerous advantages both during pumping operations and once the work has been completed. In fact, it is easy to pump or pour into form-work, even if there is a dense network of reinforcement rods. It also guarantees a crack-free bind in the cementitious conglomerate, both during plastic shrinkage and once hardened. The concrete mix also ensures perfect compacting, and eliminates the risk of the formation of gravel clusters. It has low porosity and high mechanical strength, even after short curing periods.

Thanks to these properties, it guar-

Mix	1	2	3	4
STABILCEM SCC	578	558	550	548
0-15 mm aggregates	1624	1662	1644	1641
EXPANCRETE	0	0	30	24,9
MAPECURE SRA	0	5,1	0	5

(Values expressed in kg)

CONTROLLED EXPANSION VALUES OF THE CONCRETE DURING AIR CURING



The graph shows the synergic effect deriving from the combined use of EXPANCRETE and MAPECURE SRA, which guarantees that the mix has high expansion during air curing while, at the same time, extremely low hygrometric shrinkage, to avoid the risk of cracking.

Mix 1: the self-compacting concrete does not contain either EXPANCRETE expanding agent or MAPECURE SRA shrinkage reducing admix. Notice the high shrinkage rate.

Mix 2: MAPECURE SRA was added to the self-compacting concrete. With this admix, shrinkage was only slightly reduced.

Mix 3: Only EXPANCRETE was added to the self-compacting concrete. The reduction in shrinkage was more pronounced, but the final amount was still high.

Mix 4: Both MAPECURE SRA and EXPANCRETE were added to the self-compacting concrete. The amount of expansion during air curing was high, while the level of shrinkage was extremely low.

Source: Mapei R&D Laboratory



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*Photo 5.
A steel piping was laid along the pillar and used to distribute the concrete.*

*Photo 6.
Self-compacting concrete made using STABILCEM SCC, after pouring into the form-work.*

*Photo 7.
The pillar during the restoration operation, carried out using the special platform Albert. Notice the difference between the repaired surface of the lower section and the deteriorated section above the platform.*

performance levels after brief curing periods. The water/cement ratio has a high influence on the porosity, shrinkage rate and waterproofing of the concrete. These factors have a high effect on the durability of the material.

Mapei acrylic-based superplasticiser DYNAMON SP3 was chosen in this case. When added to the mix, it guarantees a reduced water/cement ratio and, as a result, high mechanical strength after brief curing times, even if the temperature is very low. MAPECURE SRA chloride-free, special liquid curing admix

ucts creates a synergic effect, so that the concrete acquires properties which are normally impossible with traditional cementitious systems.

The concrete used for this job was made using the aforementioned Mapei products in a mobile concrete mixing station with a production capacity of 12-14 m³/hour, with silos and a special feeding system for the aggregates stored on site.

All the operations described above were repeated for each section of the pillar until the entire height was com-



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antees higher durability for repaired structures, which are also waterproofing and resistant to aggressive agents and freezing.

In general, the use of self-compacting concrete (with high fluidity and no segregation) allows application times to be reduced and, since there is no need to vibrate the concrete, the workers may operate more safely.

Self-compacting concrete has to have a special super-plasticising admix, which reduces the water/cement ratio and maintains workability over long periods, without compromising its

was also added to the concrete. This product has been specially developed to drastically reduce final hydrometric shrinkage in repair mortar, standard and self-compacting concrete, repair concrete mixed using STABILCEM SCC to eliminate cracks. The advantages of using MAPECURE SRA are further enhanced if used in combination with EXPANCRETE expansive agent, which allows the concrete to expand, even if air-cured, during the first days of hardening, and to have an extremely low level of shrinkage.

The combination of these two prod-

pletely covered.

Once the concrete had been poured, a final sand-blasting operation was carried out, followed by the application of a protective layer of MAPELASTIC flexible cementitious mortar.

The repaired pillars now have a perfect concrete surface with no air bubbles, cavities or gravel clusters.

It has excellent mechanical properties, and is destined to last for a very long time.

Thanks to the materials used, carbon dioxide and chlorides are no longer able to penetrate into the pillar.

CLOSE COLLABORATION FOR THE RIGHT MIX

As already explained in this article, apart from correct execution of the restoration work, the accurate tuning to develop a formula for self-compacting concrete capable of meeting all the specific requirements of the project was a determining factor.

To develop the precise formulation, Mapei technicians and employees of ABC Costruzioni worked closely together to check the various phases of mixing the concrete.

First, mixer trucks transported the inert materials right up to the foot of the pillars. STABILCEM SCC was then added to the inert materials, together with water, EXPANCRETE expansive agent and, in two successive steps, DYNAMON SP3 super-plasticiser

and MAPECURE SRA admix. Once the mixing phase was completed, a sample of the concrete was taken from each mixer and was tested for spreading by a slump-flow test, to make sure that the mix had the required fluidity characteristics, and that it could completely fill the form-work without bleeding or segregation phenomenon. The final result was a concrete which was easy to pump even up to extreme heights, which maintained its workability for long periods and which had high mechanical characteristics.

This meant that the form-work was removed after only 14 hours, which helped in speeding up the operations.



Sequence of the various phases of the slump-flow test, which indicates the consistency of the concrete.

Mapei Products: the products referred to in this article belong to the "Building Speciality Line" and "Admixtures for Concrete" ranges.

The technical data sheets are available at the web site: www.mapei.com.

Dynamon SP3 (CE 934-2): superplasticiser based on modified acrylic polymer for pre-cast concrete with low water/cement ratio and very high mechanical strengths at early age in winter time without steam curing treatment.

Expanscrete: expansive agent for concrete.

Mapecure SRA: curing admix with the property of reducing hydraulic shrinkage and the formation of micro-cracking.

Mapelastic: two-component, flexible cementitious mortar for waterproofing concrete, balconies, terraces, bathrooms and swimming pools.

Stabilcem SCC: cementitious binder for manufacturing dimensionally stable self-compacting concrete mixtures to repair concrete structures.

TECHNICAL DATA

Rio Verde Viaduct, Cisa A15 motorway, Pontremoli (Massa Carrara, Italy)

Intervention by Mapei: repairing the pillars' deteriorated concrete surfaces

Year of the Intervention: 2005-2007

Designer: Prof. Giuseppe Mancini

Client: Società Autocamionale della Cisa (Cisa Motorway Society)

Contractor: ABC Costruzioni Generali

Mapei Coordinator: Pasquale Zaffaroni, Mapei SpA

*Photo 8.
Close-up of the central pillar of the viaduct, completely restored using self-compacting concrete. The remaining pillars that can be seen were instead repaired with MAPEGROUT EASY FLOW, using different methods.*

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For concrete with rapid development of mechanical strength.

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For concrete with good workability and controlled times for float finishing.

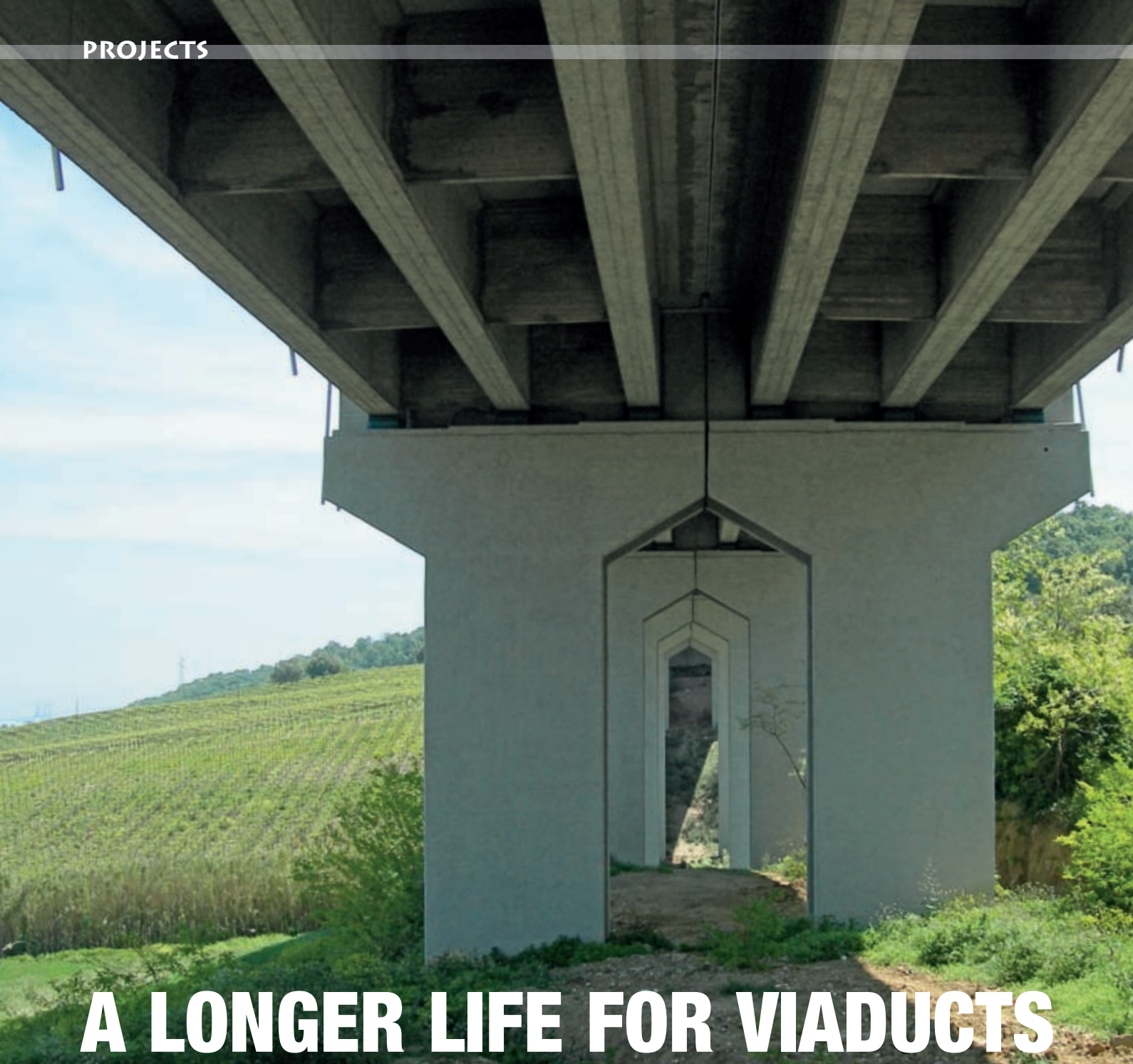
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A LONGER LIFE FOR VIADUCTS

As part of the rebuilding plan for a number of viaducts along the A14 Bologna-Bari-Taranto motorway, (which runs from central to southern Italy and is managed by Autostrade per Italia), work was also carried out on the San Savino and Ilde viaducts. The following article describes the work carried out.

THE SAN SAVINO VIADUCT

The viaduct is located at km 429+617 along the A14 Bologna-Bari-Taranto motorway, in the stretch between the Italian cities of Pescara and Vasto, and was built at the end of the 1960's by the C.M.C construction company from Ravenna. It is in the territory administered by the Casalbordino City Council in the province of Chieti, which in the

seismic classification table is considered to be a N° 3 zone.

The overall length of the structure is 313 metres, it is 19.1 metres wide and includes the north and south-bound carriageways (8.7 metres wide), two lateral kerbs (0.5 metres wide) and a New-Jersey single-row concrete central strip.

The viaduct is made from pre-compressed reinforced concrete in seven spans. The single scaffold frame is made of three pre-compressed reinforced concrete beams at a pitch of 3.25 metres which are joined together with five cross-beams, with one at each end, which supports a 21 cm-thick floor slab.

The supports, which sit on continuous concrete bearing elements, are of the

swivel and/or pendulum steel type.

The piles on which the beams of the support frame sit are made from two double H boxed trunks, with a shelf-type pulvino for each trunk, and are 3.6 metres wide and 9.5 metres long. There is also a load-bearing boxed structure in reinforced concrete which is positioned above the pulvino. All the foundations (piles and shoulders) sit on piles with a diameter of 1.2 metres. Drainage channels for run-off water are positioned along the external overhangs of the support structure.

Deterioration Found on the Viaduct and Recommended Solutions

When a technical survey of the San Savino viaduct was carried out, capillary cracks were found on the edge



Photo 1.
An image of the San Savino viaduct before repair work.

Photos 2 and 3.
The bearing elements of the viaduct had problems of localised detached concrete, with the reinforcement rods exposed in some areas.

Photo 4.
MAPEGROUT EASY FLOW GF mortar was used to rebuild areas where the concrete had been removed.

Photo 5.
ELASTOCOLOR PRIMER and ELASTOCOLOR PAINT were used for the final protective coating.

beams, and the internal beams of bay N° 6 of the south-bound carriageway showed signs of deterioration of the concrete.

The concrete used to make the piles had signs of localised scouring and was partially deteriorated.

The concrete cover was worn away by the rusty steel reinforcement, especially all around the corners and the bearing elements. After analysing the problems highlighted on the San Savino viaduct, repair operations were then carried out.

The first phase was to demolish the deteriorated surfaces by hydro-blasting, until all the deteriorated and carbonated concrete had been removed, including concrete in danger of becoming detached.

This operation completely exposed the reinforcement rods. Those which were particularly eroded or corroded were replaced.

The concrete was then rebuilt using MAPEGROUT EASY FLOW GF one-component sulphate-resistant, thixotropic, inorganic fibre-reinforced mortar.

This product has been developed and perfected in Mapei's own Research & Development laboratories to repair the deteriorated concrete structures of viaducts, hydraulic works, facing walls on dams and depuration tanks.

Thanks to its special thixotropic consistency, MAPEGROUT EASY FLOW GF may be applied on vertical surfaces by hand or with a rendering machine, including in thick layers without the use of formwork.

The product was mainly sprayed onto the structures of the viaduct, while in certain areas it was applied by hand, in layers of from 2 to 8 cm, according to the level of deterioration.

The final protective layer was made using ELASTOCOLOR PRIMER, a fixing primer with high-penetration properties used particularly for impregnating concrete surfaces repaired with products from the MAPEGROUT range. The primer penetrates deep down into absorbent surfaces, to guarantee excellent insulation and a good bond for successive painting cycles. ELASTOCOLOR PAINT protective and decorative elastic paint based on acrylic resins was applied on the surface, which once dry forms a waterproof film which remains permeable to vapour.



Photo 1.
An image of the Ilde viaduct before repair work.

Photos 2 and 3.
Beams, piles and bearing elements of the viaduct had problems of localised detached concrete, with the reinforcement rods exposed in some areas. MAPEGROUT EASY FLOW GF mortar was used to rebuild areas where the concrete had been removed.

THE ILDE VIADUCT

The Ilde viaduct, which is located at km 447+469 along the A14 Bologna-Bari-Taranto motorway on the stretch between the Italian cities of Pescara and Termoli, was also in need of repair.

The viaduct in question was inaugurated in 1972. It is in the area administered by the Vasto City Council in the province of Chieti, and is classified as a N° 3 seismic zone.

The viaduct has a straight part and a part which curves to the right, and has two lanes for each carriageway.

Its total length is 473 metres distributed over 14 bays at a span which varies from 33.18 to 34 metres, and is 19.1 metres wide overall.

Each support frame is formed by three beams in precompressed reinforced concrete at a pitch of 3.14 metres with running cables which are simply laid in place, and by four cross beams. The beams have an "I" section with an upper and lower root, and an increased section in the support areas. The piles vary in height (the highest one is 24.5 metres), and have a rectangular box section strengthened on the longest side.

Deterioration Found on the Viaduct and Recommended Solutions

A number of areas in danger of concrete becoming detached from the root of some of the beams were found during the survey, which in some cases exposed the reinforcement rods.

The ends of the beams were dete-

riorated, and the reinforcement rods were exposed and oxidised.

The concrete used to make the piles had signs of localised scouring and was partially deteriorated, with parts of the concrete on the corners worn away exposing rusty steel reinforcement rods on the surfaces of the piles. With the repair work to the Ilde viaduct and to the San Savino viaduct carried out to the piles, edges abutments, pulvinoes, floor slabs and the head-pieces of the beams risen at a certain height, tubular scaffolding fixed at ground level was used.

The internal transversal members were repaired using a suspended scaffolding system.

As with the San Savino viaduct, the first operation was to demolish the deteriorated areas by hydro-blasting in order to remove all the concrete which was deteriorated, carbonated or in danger of detachment from the areas highlighted during the survey. Missing or particularly corroded reinforcement rods were replaced.

The deteriorated concrete was then rebuilt using MAPEGROUT EASY FLOW GF pre-packed, sulphate-resistant, mortar for repairing concrete structures. As before, the product was applied by spray and by hand in smaller areas, in various layers at a thickness of from 2 to 8 cm.

Final protection was carried out by applying ELASTOCOLOR PRIMER high penetration primer followed by a coat of ELASTOCOLOR PAINT protective elastic paint.



Photo 4.
ELASTOCOLOR PRIMER and ELASTOCOLOR PAINT were used for the final protective coat.

Photo 5.
An image of the Ilde viaduct upon completion of the repair work.



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Mapei Products: the products referred to in this article belong to the "Building Speciality Line" range. The technical data sheets are available at the web site: www.mapei.com. Mapei mortars for the repair of concrete structures have been awarded the CE mark in compliance with Standard EN 1504-3. Mapei products for protecting concrete surfaces have been awarded the CE mark in compliance with Standard EN 1504-2.

Elastocolor Paint (CE EN 1504-2): protective and decorative elastic paint for concrete and renders based on acrylic resins in water dispersion.

Elastocolor Primer: solvent-based fixing primer with high penetration properties for porous substrates and curing agent for repair mortars.

Mapegrout Easy Flow GF (CE EN 1504-3, R4): one-component, shrinkage-compensated, sulphate-resistant, thixotropic, inorganic fibre-reinforced mortar, for repairing concrete structures where high ductility is required.



5

TECHNICAL DATA

San Savino viaduct km 429+617 along the A14 Bologna-Bari-Taranto motorway, in Casalbordino (Province of Chieti, Italy) and

Ilde viaduct km 447+469 along the same A14 Bologna-Bari-Taranto motorway, in Vasto (Province of Chieti, Italy)

Intervention by Mapei: protection of reinforcement rods, rebuilding deteriorated concrete and final protective coat on the beams and piles

Period of intervention: 2006-2007

Client: Autostrade per l'Italia (concessionaire for all Italian toll motorways construction and management)

The San Savino Viaduct

Designer: eng. Fulvio Di Taddeo

Works Director: Enrico Strani - SPEA

Operations Management and Works

Coordination: Fernando Pansera - SPEA

Main Contractor: SAES srl, Turin (Italy)

Sub-contractor: Martin srl, Trezzano sul Naviglio (Province of Milan, Italy)

Mapei Coordinators: Alessandro Barnabè and Vito Pedretti, Mapei SpA (Italy)

The Ilde Viaduct

Designer: eng. Fulvio Di Taddeo

Works Director: Enrico Strani - SPEA

Operations Management and Works

Coordination: Fernando Pansera - SPEA

Main Contractor: Cedis srl, Isernia (Italy) – Domenico Zullo

Sub-contractor: Salvatore D'Aniello

Mapei Coordinators: Alessandro Barnabè and Vito Pedretti, Mapei SpA (Italy)

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who designs ceramic furniture

ManonLisa®



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Using ULTRACOLOR PLUS grout for joints (photos 1 and 2) has enabled the artist ManonLisa to create original pieces of furniture (photos 3, 4, 5 and 6) with extremely brightly-coloured ceramic tiles bonded with KERAFLEX S1 adhesive (replaced by KERAFLEX MAXI S1 on the other European markets).

Meeting ManonLisa means getting to know an artist who is passionate about her work. What a delight! This mosaic artist was originally from Quebec but has been living in France for 18 years. She moved to northern Savoy where she works as a mosaic artist. ManonLisa trained as a graphic designer but creativity is her real passion, and she is fond of saying that mosaics are the forerunners of pixels. In love with all kinds of different materials, ManonLisa plays around with them endlessly, creating one-off designs like armchairs, mirrors, tables, guéridons etc.... all examples of furniture covered with ceramic tiles in the most diverse styles (antique, Gothic, Chinese, etc.). ManonLisa places the customer at the focus of her creative process, making them the key player partly responsible for choosing the colour scheme. The artist explores the customer's own world to find just the right solution for their requirements, which adapts nicely to their style. A mix of materials, decorations made of jewellery and logos.....with ManonLisa anything is possible! The outcome is quite astonishing. ManonLisa's creations, entirely handmade, are simultaneously works of art and everyday objects: always beautiful and extremely comfortable. ManonLisa's products include a large armchair geared to contemporary fashion. Thanks to its structure and the ultra-light materials it is made of (a proudly kept secret by the artist), this piece of "artistic" furniture can be transported and moved around at will. Brightly coloured, comfortable and surprisingly smooth to touch, the armchair is ideal for both indoors and outdoors.

It is partly thanks to Mapei products like KERAFLEX S1 (N.B. this product has now been replaced on other European markets by KERAFLEX MAXI S1) and ULTRACOLOR PLUS that ManonLisa has been able to complete a truly original creation. The first product is a one-

component, deformable adhesive with extended open time and no vertical slip, ideal for bonding ceramic tiles on walls and floors both indoors and outdoors. On the other hand, ULTRACOLOR PLUS is a high-performance mortar with no efflorescence, ideal for grouting joints measuring between 2-20 mm. In addition to guaranteeing fast setting and drying, this product also incorporates DropEffect® and BioBlock® technologies, which, on one hand, allow grouting operations to be highly water-resistant and hence less inclined to get dirty, and, on the other, reduces the amount of mould forming and spreading on grouted surfaces. Thanks to the use of these Mapei solutions, ManonLisa has been able to install and grout joints on the armchair's ceramic coating, guaranteeing both a striking aesthetic appearance and excellent physiochemical properties.

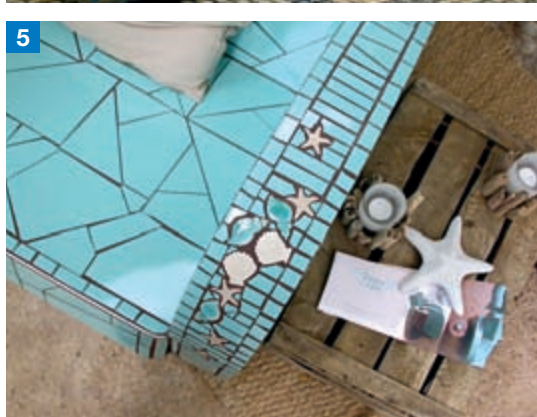
This article is taken from Mapei & Vous, issue n. 24, the in-house magazine published by Mapei France, whom we would like to thank.



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EXPO 2010 ALL EYES FOCUSED ON THE ITALIAN PAVILION

The innovative Italian Pavilion at Shanghai Expo will be built using Mapei products

The press conference about the Italian Pavilion, a symbol of Italy's involvement in the 2010 Expo in Shanghai, was held at the headquarters of Confindustria (the Confederation of Italian Industry) in Rome on 2nd April. The event saw speeches - coordinated by the General Commissioner of the Italian Government for the Shanghai Expo, Beniamino Quintieri - by the Chinese Ambassador to Italy, Sun Yuxi, the Vice President for Internationalisation of Confindustria, Paolo Zegna, the

President of the Milan Trade Fair, Michele Perini, and the President of the Milan Triennale Design Museum, Davide Rampello.

Proceedings drew to a close with speeches by the President of Confindustria, Emma Marcegaglia, and the Italian Minister of Foreign Affairs, Franco Frattini, who underlined the importance of China as a strategic partner for Italy. This also provided the chance to outline a structure which will represent Italy at the World Expo being held in Shanghai

from 1st May-31st October 2010, which will be attended by approximately 80 million visitors and over 230 exhibitors in the form of countries, international organisations and individuals cities.

The Pavilion, which will accommodate 6000 m² of exhibition space and be 18 m tall, will be located in the Shanghai neighbourhood of Pudong.

The idea is to demonstrate the excellence and creativity of Italy inside a structure designed by the architect Giampaolo Imbrighi, capable of rec-

ITALIAN PAVILION

"Better City, Better Life". The basic theme of the 2010 Shanghai Expo was the main source of inspiration in creating the Italian Pavilion. The idea underpinning it actually fits in neatly with the very Italian ability to bring to life and optimise traditional spaces through the innovative force of eco-sustainable materials with an eye for the environment and one for the great challenges of the future.

STRONG POINTS

EXTREME FUNCTIONALITY: for months the Pavilion will be capable of attracting, welcoming and surprising a vast number of visitors

ELABORATE ARCHITECTURAL QUALITY: it will combine tradition and innovation in line with the principle of bioclimatic and sustainable functioning

RETURN ON IMAGE: it will be a major showcase for Italian businesses selected based on their ability to raise the quality of life in urban areas

THE REASONS FOR AN INSPIRED CHOICE

The theme of the 2010 Shanghai World Fair, "Better City, Better Life", seems to have been deliberately chosen to bring out the distinctive technical, historical and artistic traits of the Italian country. Italy has taken up the challenge by designing a Pavilion which is

reminiscent of a **"City of the Future"**, in which people will once again be the main players and the concept of liveability will play a dominant role, thanks to decisions aimed at creating a new kind of harmony between city folk, urban spaces and the environment in which we live.

The inspiring idea behind the Italian Pavilion, designed by the **architect Giampaolo Imbrighi**, is a perfect combination of the form and essence of traditional Italian and Chinese materials, only revisited in order to clearly highlight the kind of innovation which Italian scientific research and industry have developed over recent years.

THE EXCELLENCE OF TECHNOLOGY THE TRIUMPH OF CREATIVITY

18 m tall, a total of 6000 m² of exhibition space: Italy will be one of the countries most dominantly present at Expo 2010. Its Pavilion will be an authentic miniature city with a very definite reference to the city hosting the Expo and, above all, to the composite nature of the Italian country: it talks about Italians, their culture, their creativity and the extraordinary quality and innovation of those businesses helping to make this impressive exhibition space so unique.

The world expects the very best in terms of originality from Italy. But it will also manage to stand out for the technical and scientific excellence of the Italian companies. What more strategic stage could there be at a time of economic and financial crisis like this than Shanghai and a booming country like China?



onciling innovative materials with the traditional spirit of Italian cities.

The Pavilion's theme is actually "The City of Man" and the project is a perfect embodiment of the Expo's slogan "Better City, Better Life". This is intended to emphasise Italy's interest in safeguarding its cultural heritage, on one hand, and the environment, on the other, simultaneously reconciling them with a modern core of technology. In actual fact, Italian technology is already widely esteemed in China (for exam-

ple, in the field of eco-sustainability), a country with which Italy shares both technological innovation and a prestigious cultural tradition.

Due to its ability to combine technological excellence, a love of culture and respect for the environment, Mapei has been chosen, along with other Italian companies, to provide a fundamental contribution to the construction of this Pavilion. As the official supplier to the General Commission of the Italian Government to the Shanghai Expo,

the Company is providing products for screeds, wall coatings, adhesives and grouts for installing ceramic floors, sealants and complementary products. Beside this "Italian" supply, Mapei also boasts a well-established presence in China, where it has various offices and two manufacturing plants.

The 2010 Shanghai Expo and Mapei's involvement in the construction of the Italian Pavilion in particular will be outlined in the autumn 2010 issue of *Realtà Mapei International*.



Keraflex Maxi S1



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**- 90%
DUST**

From the Mapei Laboratory experience innovative technology: "DUST FREE". Incredible dust reduction (-90%) and excellent performance:

- Especially suitable for laying large-format tiles
- Highly deformable
- No vertical slip
- Extended open time
- New formula with **Dust Free** technology

