

REALTÁ MAPEI

**MAPEI UK:
A GRAND OPENING**

WINNING TOGETHER

Mapei is an Official Sponsor of the Italian Football Team.

On 10th November 2005 Mapei's official colour, blue, was added to the azure on the Italian National Team's football strip: that was the day when the company became an Official Sponsor of all the Italian National Football Teams (National Football Team, Under-21 Football Team, Youth Football Team, 5-a-side Football Team, Women's Football Team). This is a high-level communication campaign which is bound to be a great success, given that the Italian National Football Team will be taking part in a number of important tournaments from 2005 to 2008: the FIFA World Cup qualifying round, the FIFA World Cup matches hosted by Germany, the UEFA European Championship qualifying round, the UEFA European Championship co-hosted by Austria and Switzerland and the UEFA European Under-21 Championship hosted by Portugal.

Mapei, together with Tim, will follow the Italian National Team as an Official Sponsor.

Mapei's sponsorship programme, which includes various opportunities to display the Mapei brand and all the related Public Relations activities, officially began on Thursday 10th November, 2005 at the Italian Football Coaching Centre in Coverciano (near Florence), with the company's participation in the "Sponsors Day", a special event intended to allow sponsors meet the football players and the FGCI's (Federazione Italiana Giuoco Calcio - Italian Football Game Federation) coaching and management staff. The sponsorship deal will continue until the end of 2006.

Mapei has always showed great interest in sports and been involved in many sports sponsorships: for instance, the company's highly successful Professional Cycling Team made Mapei's a familiar name worldwide.

The company is now embracing the sponsorship of professional football, a highly popular sport that offers enormous opportunities for advertising in the media.

This is a chance for Mapei to enhance its reputation on the international stage and underline the company's pride in its home nation, Italy, where Mapei was founded (in Milan) in 1937 and developed into a leading company in its field by increasing their production plants and expanding their commercial network all over the world.

The partnership between Mapei and the Italian National Football Team is expected to be a highly successful and prestigious enterprise. Indeed, on 12th November, 2005, the Italian National Football Team, which is currently in training for the forthcoming FIFA World Cup, defeated coach Van Basten's highly competitive Dutch National Football Team 3-1 in a friendly match in Amsterdam, and on 16th November, 2005, again in a friendly match, it drew 1-1 with the Ivory Coast.

Further detailed information about this important communication deal and the opportunities it offers the company will follow in the forthcoming issues of Realtà Mapei International.



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Main cover photo:
Mapei ever-growing: on 19th May, 2005, Mapei UK's first manufacturing facility officially opened in Coombswood, near Birmingham (see article on page 2).

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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.

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Mapei UK's new manufacturing facility, located at the Coombswood Industrial Park in Halesowen, near Birmingham, was opened on 19th May, 2005.

The opening marked the concluding stage of Mapei's penetration into the UK market, which started back in the late Eighties. Mapei UK Ltd was founded in 1989 in Middlesbrough, and in 1999 it relocated to the prestigious Waterfront Business Park in Brierley Hill. Since then, Mapei UK has gone from strength to strength, being responsible for sales, marketing and distribution of all Mapei product lines throughout the UK while running a technical assistance and services division providing expert advice, in-house training and on-site technical support.

The decision to open a brand new state-of-the-art manufacturing facility was officially announced in Birmingham at Interbuild 2002 and results from the company's strong growth and high sales following the distribution of all Mapei products throughout the UK.

Great Britain is a market of key importance for the Mapei Group. In 2004 Mapei UK, with sales rates reaching 11 million euros (7.5 million pounds), made up just a small part of the company's sales, totalling 1,070 million euros. However, thanks to the Group's latest investments, at the end of 2005 Mapei UK sales are expected to register a 40% increase.

Mapei set enterprising targets for its UK subsidiary: by 2010 the manufacturing capacity is intended to reach 100,000 tons and the company aims to become the third major player in the national market for the supply of the DIY (do-it-yourself) stores.

The conditions necessary to achieve such goals are all present, as the UK tile market is the most fast-growing in Europe.

Above: a view of Mapei UK's new manufacturing plant in Halesowen.

Below: some pictures portraying the open gala. The ribbon-cutting ceremony was followed by a plant tour.





The new Mapei UK headquarters host marketing offices, technical assistance services and the manufacturing facility (the first production facility for the British subsidiary), which makes a total surface area of 30,000 m², with 6,000 m² of indoor spaces. The new facility has been designed from the ground up by a specialist team of Mapei engineers and includes two plants:

- the first is devoted to the production of paste adhesives, which have been specifically created to meet the needs of the local market. It can produce up to 30,000 tons of adhesives with extended open time, par-

ticularly suitable to the installation of large-size glass tiles which are widely used as wall coverings all over the UK. Adhesives such as MapeGrip D1, MapeGrip D2, Ultramastic III, Super White and Mapestik are now being distributed all over the local market as "made in the UK".

- the latter manufactures up to 100,000 tons of cementitious powder adhesives in a year. Its





product range includes UK formula powder adhesives, screeds, levelling compounds and grouts.

Among the most important cementitious products of this new plant are: Ultracolor Plus fast setting and drying, high-performance, anti-efflorescence, water-repellent grout for joints, with DropEffect® and antimold, with BioBlock® technology, available in 26 colours; and Adesilex P10 white cementitious adhesive for the installation of glass mosaics.

The new facility is also equipped with innovative packaging machines such as:

- a brand new Alu-pack machine, reeling off 2,5 and 10 kg units of product (see photo in the middle, left). This type of package, which is made of aluminium, allows Mapei to guarantee the product's preservation for as long as 2 years. The Mapei manufacturing plant in Germany also makes use of this machinery, also soon to be installed in the Mapei Polska production facility.

- an innovative sacking machine for powdered adhesives, able to seal 800 sacks an hour, without releasing any of the powders into the environment (see photo above, left).

The Open Gala

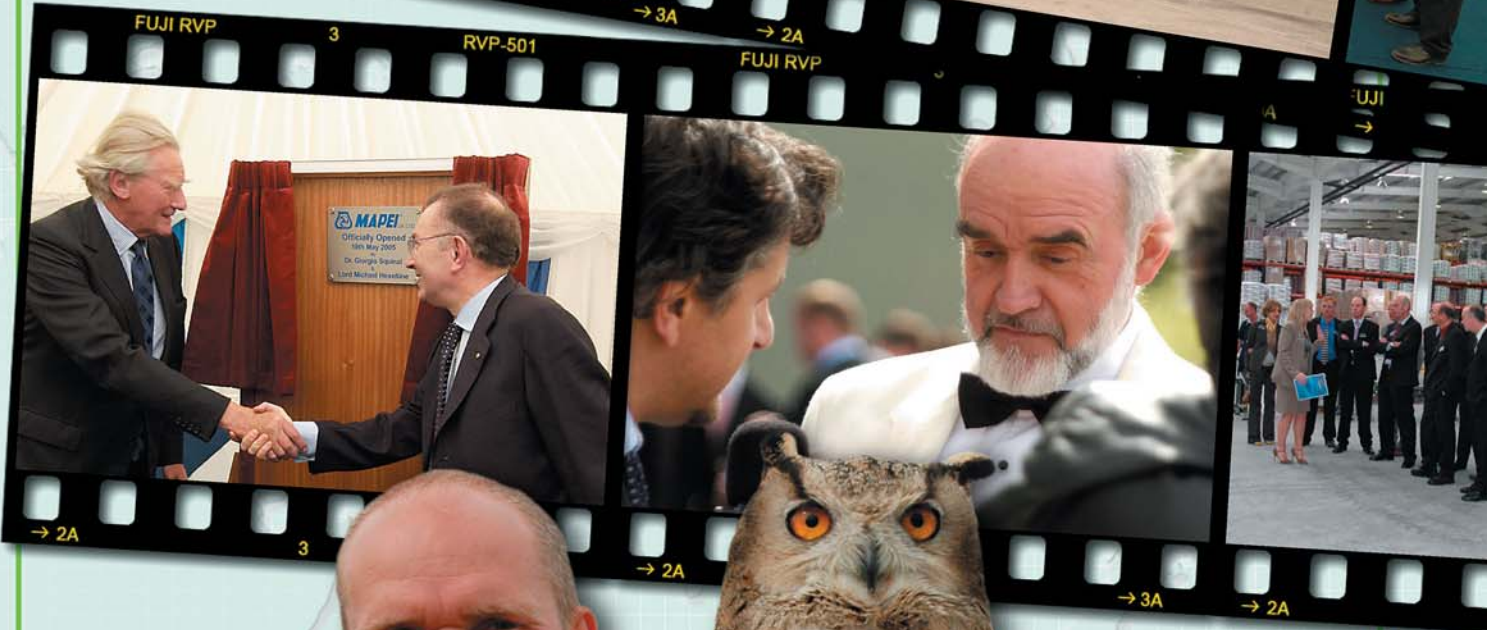
The open ceremony of the new facility in Halesowen took place in a joyful and typically local atmosphere. All the local authorities were present when Giorgio and Laura Squinzi performed the ribbon-cutting ceremony. Following a tour of the plant and the usual official speeches, the day ended with a falconry show: predator birds flew over the outdoor areas of the new facility before finally perching on the hawkers' glove-covered hands to pose for the public.

Beside celebrating the opening of the new plant, the gala was an opportunity to stress the reasons that led Mapei to invest in such an important geographic area.

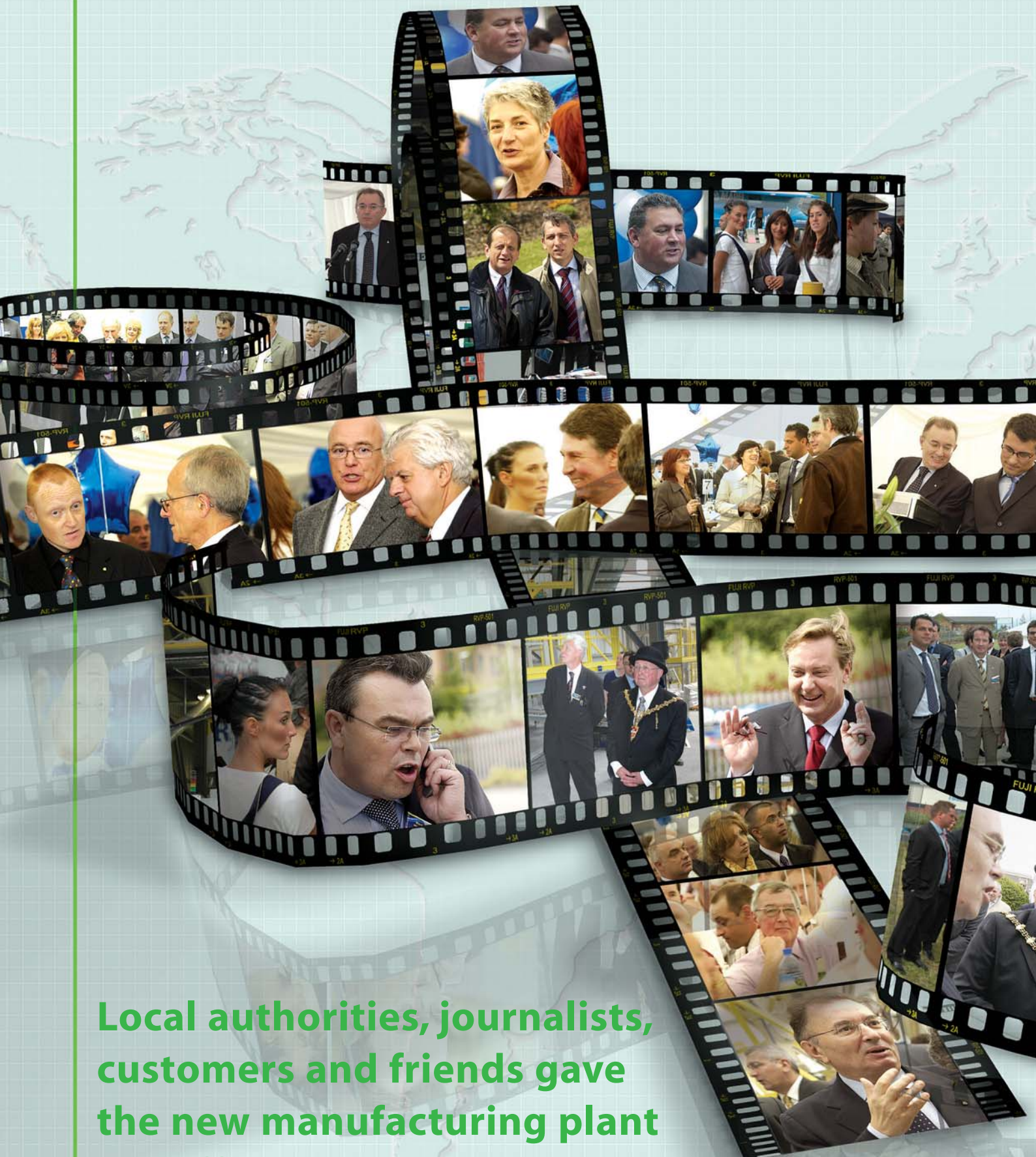
Mark Louch, Mapei UK Managing Director, stated: "this is a significant investment by the Mapei Group and enhances Mapei's commitment to continuous development worldwide. Centrally located, within minutes of the motorway network, the new manufacturing facility enables the whole of the UK construction industry direct access to Mapei's broad product range."

The Right Honorable Lord Michael Heseltine, a worldwide known publisher and important representative of the British Conservative Party, also attended, as a honored guest, and praised Mapei as "a fine example of an Italian internationally-oriented firm".

The machinery in the new plant can also be defined "international": the mixer is made in Italy, the batcher and packaging machine are made in Germany, the pallet-making machine is made in France, while the bag sealing machine comes from a firm in Sassuolo (Italy).



Haloswen, 19 May, 2005



Local authorities, journalists, customers and friends gave the new manufacturing plant the official start up.

The inauguration of Mapei UK's new manufacturing plant took place in a joyful and typically local atmosphere.



Development Strategies: the Next Stages

Mapei, "the pocket-size multinational company" as someone put it, will continue growing and its sales are expected to reach 2 billion euros in 2010. This would mean almost doubling the sales, which in 2004 reached 1.070 billion euros (with a 12% increase in comparison to 2003), mostly thanks to the sale shares achieved in foreign markets.

As for the future, Mapei plans to strengthen their presence especially in some foreign countries. For instance, they lately opened one plant in Spain (near Madrid) and had the building works officially begin in Russia (near Moscow) and in Vietnam (in Danang), which will soon led to the opening of two more manufacturing facilities. One plant was also recently opened near Canton and it will soon be followed by two more plants in China: one in Peking and one in Shanghai.

The Market Situation

Mapei is, today, the world leader in the production of adhesives and complementary products for the installation of all types of floor and wall coverings and the third biggest manufacturer of chemical products for the building industry in the world.

In 2004 the company's sales in the **Italian** tile market reached 330 million euros (+11%), with 50% of the total sales registered by the Mapei brand and the remaining share held by the growing brands of Cercol and Adesital. Mapei also doubled its sale rates in the field of products for the installation of wooden floors. Its first polyurethane one-component hypoallergenic adhesive ULTRABOND P990 1K was particularly appreciated on the market.

The Vinavil brand, with its sales reaching 150 million euros and its continuous growth abroad (especially in Egypt), also performed very well. Good results were also registered in **Germany**, where Mapei, together with Sopro (+10%), holds 20-25 % of the total market share. As for the **North American** market, the company's sales in 2004 totalled 370 million dollars, with 110 million dollars deriving from the Canadian market, where Mapei holds 60% of the total market share by supplying big do-it-yourself chains and important retailers of ceramic tiles and other flooring materials. In the USA 30% of the tile installations are completed using Mapei products. Moreover, a new manufacturing facility in San Bernardino (California) was opened in January 2005, as we reported in the previous issue of our magazine. The new plant is intended to meet the needs of the only geographic area in the USA that was left uncovered by Mapei supply.

As for 2005, the Mapei Group's projected turnover totalled 1.4 billion euros, with 15,000 tons of products manufactured a day in their 46 plants to meet the needs of 40,000 customers worldwide.



Photos by David Peters Photography and Vittorio Riunno, Mapei SpA.



Italian Determination and British Politeness

We interview Giorgio Squinzi:

Mr Squinzi, Mapei's growth goes on. It opened a new manufacturing plant in the UK. Why is this area so important for Mapei?

Mapei reached the British market quite late. The Group is deeply interested in gaining new shares in this market, which has a high and well-proven growth potential. The British customers' tastes are mostly oriented to an ever growing use of ceramic tiles, which push the market growth rates to the highest levels in Europe.

Moreover, we are determined to introduce into this important market all the Mapei product ranges dedicated to the installation of textile, resilient and wooden floors, as well as all our chemical products for building.

Has any other field enjoyed Mapei's investments?

We have many ambitious goals for the UK. That's why we have been investing in it, and will go on investing in it in the future, improving the sales network and the Technical Assistance Services Division. We also devoted much effort to customizing products and making them well appreciated all over the British market.

What are the distribution channels chosen by Mapei?

The majority of our sales are accomplished by large-scale retail trade, which has its own specific requirements. Therefore we paid most attention to packaging and making the product appeal to the final customer. Indeed, the new manufacturing plant uses highly innovative packaging machinery.

Did the well-known "British politeness" contribute to the completion of this new manufacturing facility?

The most noteworthy point is definitely the local authorities' helpfulness. An old nineteenth-century steel manufacturer was located on the 30,000 m² area, now covered by our facility. The local authorities had the old building demolished, the land reclaimed and made available to us in record times. Such times and procedures greatly differ from what we have to see and accept in our country.





Architecture, Tao and Mapei

MCLAREN TECHNOLOGY CENTRE



McLaren Technology Centre
OFFICIAL PARTNER





Paragon, the new McLaren science and technology centre in Sussex, Great Britain, looks like a huge Tao symbol designed against a green background, when viewed from above.

This oriental symbol, now quite familiar to many in the West, features a circle with a winding curved line cutting it exactly in two. The black and white space forming the circle embrace each other and merge together. The symbols evokes the unity achieved by a balance of differences. For Chinese philosophy this is the eternal contrast between yin and yang, the male and female. This dualism underpins the world and operates inside us all and in everything surrounding us.

Paragon seems to have been designed with this Tao symbol in mind, bearing in mind the layout of its constituent elements. Half water, half ground. Set in greenery, it blends into nature taking full advantage of natural light and sunshine, focusing on making savings in energy resources. The five natural elements which, according to Chinese philosophy, form the world are fused together here: water, earth, wood, fire and metal.

The attention paid to these factors (of ecologic, technological and aesthetic nature), the peculiarity of the solutions chosen and the strong visual effect were definitely among the reasons that had MacLaren Technology Centre win the "Building of the Year" award. This successful event caused quite a stir in the British press: both The Guardian and The Times devoted articles to it, praising the McLaren Technology Centre's beauty and the innovative spirit behind it.

Mapei: Motivating Reasons

The new McLaren Technology Centre, designed by the famous architect Norman Foster, is composed of a centre for the experimental research laboratories, a wind tunnel capable of testing models up to 50% real size, manufacturing spaces, plus offices, conference rooms and various other operations that used to be carried out by the approximately 1000 members of staff in eighteen separate plants all over Great Britain. Mapei helped design the McLaren Centre,







because it immediately grasped the technological importance of the project and its background strategies. McLaren was looking for facilities of the highest standard to create a cutting-edge reception place and it wanted suppliers capable of providing proper assistance as well as products. It provided an exceptional testing ground for innovative solutions in a range of different fields: this cutting-edge commission features the most advanced technology and materials in a wonderful setting. The work method adopted inside Paragon is equally innovative, matching productivity and efficiency with staff well-being. Attention to the working environment has always been a strong point of several car manufacturers: Ferrari at Maranello (Italy) and the Volkswagen building in Dresden (Germany) are well-known examples of how staff job opportunities are privileged along with research and development.

Innovation, new technology, team work, eco-friendliness and high quality standards for the work place are the settings around which Mapei likes to manoeuvre. McLaren has copied its winning Formula 1 racing team work formula in this project. A close working relationship between designers, specialists and future users, in which the quest for a perfect synergy between the different players involved is the secret behind obtaining the best possible results.

This approach is geared to a careful preliminary choice of suppliers, who are co-opted based not only on the price of a given tender but also envisaging the kind of long-term partnership McLaren is looking for.

In Formula 1 racing, in which quality needs to be developed into excellence, the delicate phase of setting up what has to be a "winning" team is premised around the idea of the team constantly improving.

Compared, for instance, to the building industry, in which the construction of one single building does not require ongoing relations between different suppliers, this kind of business fidelity is what determines good results and increasing innovation in the car industry.

Team work also provided a good chance to strengthen and tighten relations not just with the client, McLaren, but also the architectural designers, Foster & Partners, and all the prestigious team members: including firms like Faram (internal partitions and furnishing), Targetti (lighting) and Scüco (façades).

The Winning Formula

Mapei, which has always worked closely with the world of sport and the pragmatism surrounding it, was once again seeking to strengthen these bonds, immediately realising its own affinities with this way of operating.



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Photo 1.
In the wind tunnel the black porcelain tiles were laid on the floor using Granirapid. Tile joints were grouted with black Kerapoxy.

Photo 2.
Paragon by night: a suggestive combination of water, glass and steel.

Photo 3.
After first smoothing the substrates with Ultraplan, textile coverings were installed in the sitting rooms using either Mapefix (now replaced by Ultrabond Eco Fix) or Ultrabond Eco 185.



Photo 4.
Close-up of an utility area where Ultraplan, treated with Mapecoat I 24, was used for smoothing the substrates.



Photo 5.
Queen Elisabeth at the Paragon's grand opening ceremony. This photo was borrowed from the cover of "Racing Line", McLaren's house organ magazine, to whom we would like to express our thanks.

Photo 6.
Paragon's essence: a harmonious synthesis of lines, materials and natural elements.

Mapei has signed an agreement to work with Tag McLaren Holding Ltd. (this is the full name of this famous car manufacturer) to supply the materials required to build the centre. Thanks to this agreement, the designers could make full use of Mapei products: ranging from admixtures for concrete to waterproofers, adhesives for ceramics and light-weight floors. Lots of products have been used to build Paragon, which is constructed over two levels and is composed of a main building measuring 880 metres round the edge connected by a 150-metre-long tunnel to a complementary round-based building. On the inside there are corridors arranged like the fingers of a hand connected to the work spaces.

A spherical-shaped exhibition centre, connected by corridors to the central unit, is designed to host period cars and temporary displays. The centre is surrounded by a manmade basin used for conveying the waste water used in the manufacturing plant to be recycled inside the building by means of heat pumps.

Such an intricate structure in terms of the interior layout, arrangement of outside surfaces and alternating underground and overground areas was a real challenge as regards the ideal materials for its construction. A challenge Mapei was able to meet with great confidence thanks to its wide range of available solutions. For instance, MAPECEM*, a special fast setting hydraulic binder with controlled shrinkage, solved any problems with screeds; ULTRAPLAN*, ultra-fast hardening self-levelling smoothing compound for thicknesses from 1 to 10 mm per coat, was considered ideal for smoothing the floors in all utilities areas and in the futuristic air-conditioning zone.

ULTRAPLAN* was treated with MAPECOAT I 24*, epoxy paint for acid-resistant non-toxic coating of concrete surfaces; KERACOLOR FF* and KERACOLOR GG*, high performance cementitious grouts for joints, mixed with FUGOLASTIC*, a liquid polymeric additive, were the ideal



solutions for grouting the joints; lots of Paragon's tiles were installed using GRANIRAPID*, a high performance, deformable, fast setting and hydration two-component cementitious adhesive for ceramic tiles and stone material, and grouted with KERAPOXY*, two-component acid-resistant epoxy grout, available in 26 colours, for joints of at least 3 mm. As regards raised settings and the bridge over the road, after first smoothing using ULTRAPLAN*, textile coverings were installed using either MAPEFIX* or ULTRABOND ECO 185*. Both products are adhesives in water dispersion. MAPEFIX*, featuring permanent tack and used for textile floors with self-installing squares, has now been replaced by ULTRABOND ECO FIX*, which combines the aforementioned properties with very low emission of volatile organic compounds. ULTRABOND ECO 185* has high initial tack, as well as very low emission of volatile organic compounds.

Large surfaces, glass sections, structures. Mapei played a key role in all these operations. But Paragon's real strong point is not so obvious: it is actually the 145-metre-long wind tunnel, built out of 400 tons of steel, a platform, which is 115 metres long and 30 metres wide, held up by columns to absorb vibrations. When it is operating, it requires up to 35 megawatts of electricity. The kind of powerful engine needed for Formula 1 motor racing. This extremely high-tech construction was the first to be completed, due to the importance of studying aerodynamics for Formula 1 motor racing. The McLaren team uses the tunnel to test the performance of its new cars. The wind tunnel's floor is made of black porcelain tiles installed using GRANIRAPID* and grouted using black KERAPOXY*. Mapei also contributed to the construction of Paragon's windy hub, thanks to solutions designed to withstand vibrations and strain in the tunnel itself, which, for obvious safety and secrecy reasons, is more hidden away from public view.

A heart, that just like Tao, is both dedicate and powerful.



Some of the photos published in this article were supplied by McLaren, others were borrowed from the "Racing Line" and "I Must della ceramica" magazines, to whom we would like to express our thanks.

TECHNICAL DATA

McLaren Technology Centre, Woking - Surrey (UK)

Work: installation of ceramic tile, stone material and textile floor and wall coverings

Customer: Tag McLaren, Surrey

Project: Foster & Partners

Contractor: Keir Build

Installation Company: Johns of Nottingham

Mapei Co-ordination: Mark Louch, Mapei UK

***Mapei Products:** the products referred to in this article belong to the "Products for Ceramic Tiles and Stone Materials", "Building Speciality Line" and "Products for the Installation of Resilient, Textile and Wood Floor and Wall Coverings" ranges. The technical data are available on the "Mapei Global Infonet" CD/DVD and at the web site: www.mapei.com.

Mapei adhesives and grouts conform to EN 12004 and EN 13888 standards.

Fugolastic: liquid polymeric additive for Keracolor FF and Keracolor GG.

Granirapid (C2FT/S1): high performance, deformable, fast setting and hydration two-component cementitious adhesive for ceramic tiles and stone material.

Keracolor FF (CG2): high performance cementitious grout, polymer modified, water-repellent with Drop-Effect®, for joints up to 6 mm.

Keracolor GG (CG2): high performance cementitious grout, polymer modified, for joints from 4 to 15 mm.

Keralastic (R2): high-performance two-component polyurethane adhesive for ceramic tiles and stone material.

Kerapoxy (RG): two-component acid-resistant epoxy grout, available in 26 colours, for joints of at least 3 mm. It can also be used as an adhesive.

Mapecem: special fast setting hydraulic binder for the preparation of fast-drying screeds (24 h) with controlled shrinkage.

Mapecoat I 24: epoxy paint for acid-resistant non-toxic coating of concrete surfaces.

Mapefix: adhesive in water dispersion with permanent tack for textile floors composed of self-installing squares. The squares can be applied and then removed several times.

N.B. this product is no longer available and has been replaced by **Ultrabond Eco Fix**, which combines the aforementioned properties with very low emission of volatile organic compounds (VOC).

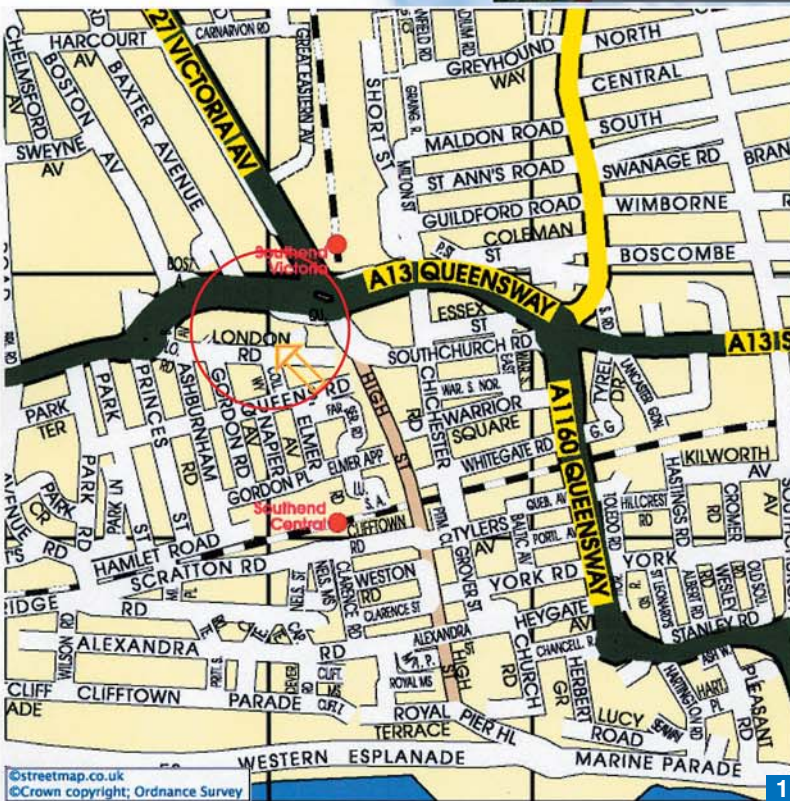
Ultrabond Eco 185: adhesive in water dispersion with high initial tack and very low emission of volatile organic compounds (VOC) for textile floor and wall coverings.

Ultraplan: ultra-fast hardening self-levelling smoothing compound for thicknesses from 1 to 10 mm per coat.



ROYAL BANK OF SCOTLAND

One of the most important banking companies in the world opened a new Credit Card Operations Centre hosting 2,000 employees.



The Royal Bank of Scotland is one of the oldest banks in the UK: it was founded by royal charter in 1727 in Edinburgh. Its first branch was opened in Glasgow in 1783, followed by many additional offices throughout Scotland during the nineteenth century and by a branch office in London in 1874. To date, the Royal Bank of Scotland Group is one of world's leading financial services groups, which, in addition to its strong UK presence, has offices in Europe, the USA and Asia. By the end of 2002, thanks to many acquisitions, it has become the second largest bank in Europe and the fifth largest in the world by market capitalisation.

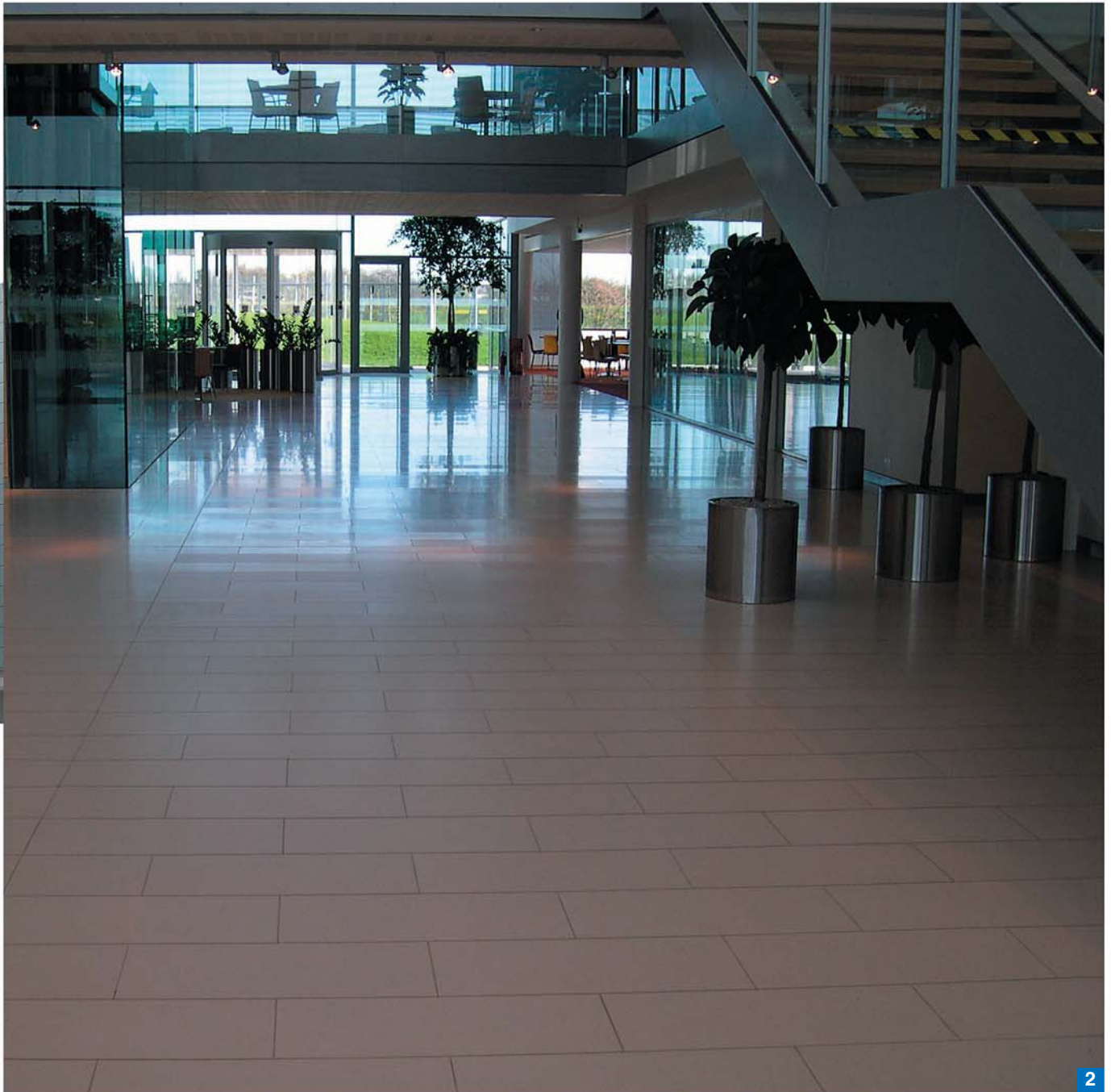
Southend-on-Sea is a town in the county of Essex, South-East England. It is primarily a seaside resort but is also a host of important electrical equipment, pharmaceutical and light engineering firms. This, together with the place's closeness to London, was probably one of the reasons that, in 1972, led the Royal Bank of Scotland to set up a Credit Card Operations office in Southend-on-Sea. Over the years, such operations grew considerably and were performed by about 2000 employees in five different buildings of the town. In 2002 the Royal Bank of Scotland Direction took the decision to bring all the Southend-on-Sea Credit Card Operations staff together under one roof. The Group acquired a 52,000 m² site in September 2001. Planning permission was granted in January 2002. Major works began in April 2002 and the new Credit Card Operations Centre was completed in January 2004. During the Topping Out Ceremony, Ernest Sheavills Director, Property Development and Asset Management said:

Photo 1.

The Royal Bank of Scotland Credit Card Operations Centre located on the town map.

Photo 2.

In the atrium the substrates were prepared with Ultraplan Eco. The large-size quartz and resin composite rectangular tiles were laid on them using Granirapid. Joints were grouted with Ultracolor.



"The Royal Bank of Scotland is a major employer in Southend-on-Sea and this new building underlines our ongoing commitment to the town." In February 2004 two thousand staff relocated to the new building. The new Credit Card Operations Centre comprises a 165,000 m² three storey building, which provides open plan office space, staff restaurant, a leisure facility, 770 car parking spaces and 250 bicycle spaces.

Mapei's Contribution

Mapei products were selected for levelling, bonding, grouting and sealing the 650 m² of flooring in the atrium and food serving areas of the call centre, as well as for fixing the glass tiles to walls in the same areas. The work entailed some problems: it had to be completed within a very short time (only 5 weeks), the materials to be installed (quartz and resin composite tiles) were particularly delicate and the involved

areas were subject to heavy traffic and required deep hygiene.

The use of Mapei products enabled the installation company to overcome these problems and achieve a successful installation, which perfectly matched the customer's requirements.

As for the floorings, ULTRAPLAN ECO* was the chosen ultra-fast hardening self-levelling smoothing compound, which is ideal to make the substrates suitable for receiving all types of flooring where high resistance to loads and traffic is required. GRANIRAPID* was the selected two-component fast-setting adhesive, which allowed the 76x34 cm resin and quartz composite tiles to be laid on the floors of the atrium and food serving area in a very short time. Indeed, GRANIRAPID* is particularly suitable for flooring that has to be in service within a few hours. As for the grouting of the composite tiles in the atrium, the experts of the Mapei Technical Assistance Division recommended the use of



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ULTRACOLOR* fast setting and drying, anti-efflorescence grout, which ensures complete uniformity of colour. KERAPOXY* two-component acid-resistant epoxy grout was, on the other hand, used for the food serving areas tiles, as this product is especially suitable for grouting walls and floors in areas where hygiene and resistance to acid attack are required. In both spaces, expansion joints were sealed with MAPESIL AC* silicone sealant.

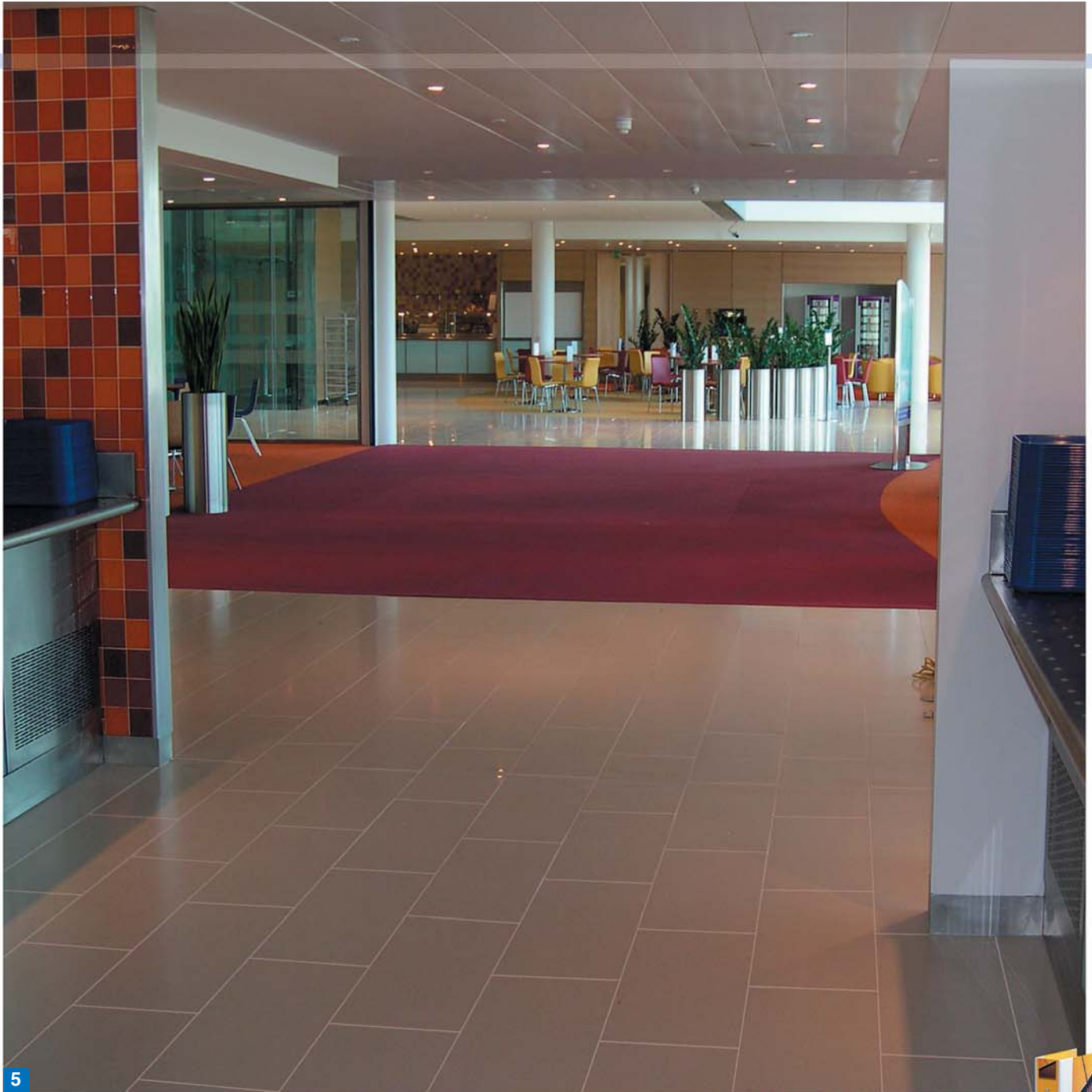
Mapei products were also used for the fixing of 10x10 cm glass mosaic tiles to the walls of the food serving areas.

The white high-performance cementitious adhesive with no vertical slip, ADESILEX P10*, was selected for this purpose and mixed with 50% flexible latex additive ISOLASTIC* to improve the performance characteristics and deformability. The joints were grouted with ULTRACOLOR* and the expansion joints were sealed with MAPESIL AC*.


The flooring programme was originally scheduled to take 10 weeks, however this had to be condensed to 5.

Photos 3, 4 and 5. Tiles were installed on the floors of the food serving areas again using Granirapid. Joints were instead grouted with Kerapoxy. In this area glass mosaics tiles were bonded on the walls using Adesilex P10 mixed with Isolastic. The grouting of the joints was accomplished with Ultracolor.

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The deadline was met through extended working hours and the use of effective, fast-setting Mapei products which ensured a perfect result in very short execution times. 

TECHNICAL DATA

Royal Bank of Scotland's New Credit Card Operations Centre, Southend-on-Sea (UK)

Work: installation of floor and wall coverings in the atrium and food serving areas

Years: April 2002 - January 2004

Customer: Royal Bank of Scotland Group, Southend-on-Sea

Project and Work Management: Building Design Partnership (BDP)

Contractor: Heery International Ltd

Installation Companies: Stone & Ceramic Ltd (for the floors) and Birmingham Tile & Mosaic (for the walls)

Mapei Distributor: Stone & Ceramic Ltd and Birmingham Tile & Mosaic

Mapei Co-ordinator: Simon Pashley, Mapei UK

***Mapei Products:** the products referred to 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" CD/DVD and at the web site: www.mapei.com. Mapei adhesives and grouts conform to EN 12004 and EN 13888 standards.

Adesilex P10 (C2TE): white high performance cementitious adhesive with no vertical slip and extended open time for glass, ceramic and marble mosaic coverings.

Granirapid (C2F): high performance, deformable, fast setting and hydration two-component cementitious adhesive for ceramic tiles and stone material.

Isolastic: flexible latex additive to be mixed with Kerabond, Kerafloor and Adesilex P10.

Kerapoxy (RG): two-component acid-resistant epoxy grout, available in 26 colours, for joints of at least 3 mm. It can also be used as an adhesive.

Mapesil AC: solvent-free, acetic-cross-linking mildew resistant silicone sealant, available in 26 colours and transparent.

Ultracolor (CG2): fast setting and drying high performance grout for joints from 2 to 20 mm. **N.B.** The product has now been replaced by Ultracolor Plus.

Ultraplan Eco: ultra-fast hardening self-levelling smoothing compound with very low VOC (volatile organic compounds) content.





The Gift Shop of this historical building, home to one of the most visited monuments in London, was recently renovated and given a new look.


A souvenir from the Tower of London Gift Shop

The history of the monument now known as the "Tower of London" began in 1066, when William the Conqueror built a simple timber and earth enclosure on the north bank of the river Thames in London. Over the centuries the structure, originally intended as a residential palace and as a fortress, has been constantly improved and extended by the addition of towers, extra buildings, walks and walkways and served as an armoury, a prison, a place of execution, a mint, a menagerie, a record office, a jewel house and a museum.

The first addition dates back to 1097, when a 30 m high stone structure, originally called the "Great Tower" and later renamed the "White Tower", was completed and enclosed in the complex. In the following centuries many buildings were added to the Tower of London over the centuries, such as the Tower Green, where "privileged" captives (for instance Mary I) were secretly executed, the Bloody Tower, where the young princes Edward V and Richard are traditionally believed to have been imprisoned and murdered on the order of their uncle Richard III, and the Queen's House, which is home to the Resident Governor of the Tower.

The Tower has been the setting for many cruel and violent events during its 900-year history: a number of prisoners and supposed enemies of the British monarchy were imprisoned and, in most cases, executed in this place. Among them one finds many key figures of English history: Thomas More, Anne Boleyn, Jane Grey, two of Henry VIII's wives, Elizabeth I, etc. Today this building, whose outside resembles an imposing fortress, is home to the Crown Jewels of the English Monarchy: all the gold and glitter used in coronations, including 12 royal crowns, are here on display. The Tower also continues to perform its role as an armoury, housing thousands of weapons.

The Tower of London Gift Shop, which provides visitors with postcards and gadgets, lately underwent a substantial renovation intended to enhance its functionality. The work also involved the interior stairwell, where Mapei products were used. The stairway was covered with 'Strata Technical Stone' slabs, made of a quartz-based material, with non-slip inserts, custom cut to size, approximately 120x25 cm. The slabs were installed onto a steel and concrete substrate using KERALASTIC*, a high performance two-component polyurethane adhesive, which is particularly suitable for bonding ceramic tiles and all kinds of natural stone and agglomerates. The work was completed using ULTRACOLOR* fast setting and

drying, high performance grout, which is suitable for interior and exterior, wall and floor applications. The expansion joints were sealed with MAPESIL AC* mildew-resistant silicone sealant, available in 26 colours and transparent. 

TECHNICAL DATA

The Tower of London Gift Shop, London (UK)
Work: renovation of the interior areas, including the stairwell
Year: 2003
Project: First Partnership
Installation Company: Strata Tiles, Minley (UK)
Mapei Distributor: Strata Tiles
Mapei Co-ordinator: Simon Pashley, Mapei UK

*Mapei Products: the products referred to 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" CD/DVD and at the web site: www.mapei.com. Mapei adhesives and grouts conform to EN 12004 and EN 13888 standards.

Keralastic (R2): high performance two-component polyurethane adhesive for ceramic tiles and stone material.

Mapesil AC: solvent-free, acetic-cross-linking mildew-resistant silicone sealant, available in 26 colours and transparent.

Ultracolor (CG2): fast setting and drying grout for joints from 2 to 20 mm, available in 26 colours.

N.B. The product has now been replaced by Ultracolor Plus.





THE KYOTO PROTOCOL IS NOW IN FORCE

Thermal insulation of buildings might well have a key role to play in keeping down energy consumption as specified in the Kyoto Protocol. Mapei is also making its contribution to safeguarding the environment by providing a system for carrying out this kind of operation as effectively and efficiently as possible.

by Sergio Mammi, President of Anit - Associazione Nazionale per l'Isolamento Termico e Acustico (National Association for Thermal and Acoustic Insulation)

New EU Directive 02/91 about the energy efficiency of buildings has modified and will soon replace Italian law 10/91: the decree ratifying this directive was published in the Official Gazette of the Italian Republic of 23rd September 2005 (Order in Council no. 192 of 19th August 2005).

It was time to get to grips with such an important regulation as Law 10, which in Italy has never been brought fully into force and largely disregarded.

It was high time: indeed the Kyoto treaty, which will force Italy to make substantial reductions in its CO₂ emissions and hence its overall energy consumption levels, came into force on 16th February 2005.

Unfortunately Italy was not ready to meet this deadline and is already well behind the target of reducing the CO₂ emission levels in 1990 by 6.5% by 2012.

Instead of making reductions there has actually been a 9% increase, and it is estimated that Italian CO₂ emissions will have to drop by about 100 million tons to meet the goal. And if things continue as they are, Italian emissions will have to be reduced by 20% in 2012, an extremely unlikely target.

Italy will probably be forced to pay heavy fines, estimated

at 40 Euros per ton, which will increase to 100 Euros as the deadline approaches.

In any case the targets will eventually have to be met, and this will inevitably turn out to be even more costly.

To avoid sanctions, Italy could always resort to the flexible mechanisms allowing emission credits to be gained by making investments abroad (mainly making other people's air more breathable, when Italian cities have turned into gas chambers) or acquiring credits from Russia or the Ukraine, which are willing to sell them at a very high cost (there is already talk of it being 60-80 Euros per ton).

Bearing in mind that every m³ of methane generates 2 kg of CO₂, the best possible scenario is of the price of methane going up by approximately 10%. This extra cost is the price Italians will have to pay for ignoring certain environmental-social issues.

It is too soon to say what impact the new directive will have: theoretically it might help solve most of Italy's problems in the short term at least, because energy consumption in the civil sector accounts for over 40% of overall primary energy consumption in this country. Savings might be substantial, technically feasible without too many difficulties, and with no negative consequences on either the Italian economy or Italians' way of life.

Basically, new and stricter constraints on heat dispersion from structures calculated in terms of the maximum heat transmittance of individual components will be introduced from 2006 and, most significantly, from 2009. This represents a notable step forward in simplifying the problem.

Unfortunately, these new rules will only be enforced on recently constructed or modernised buildings, whereas most of consumption is due to the over 26 million apartments and almost 2 million non-residential buildings, which constitute Italy's rather unenviable collection of inefficient buildings from an energy viewpoint.

For instance, Italian buildings consume on average about 200 kWh/m²-a-year, compared to 60 in Denmark.

One way of dealing with this problem would be to introduce energy certification for buildings (made compulsory by



the new regulations), the details of which will be set down in a later decree.

Buildings on which energy-saving alterations have been made might be labelled (i.e. in the case of thermal insulation), resulting in a rise in their market value.

The resorting to the energy management of buildings by ESCO (Energy Saving Company) would result in carrying out work that would be paid for by special rotary funds and not charged to the occupants, as foreseen in recent law 39 issued in Lombardy (the Italian region with Milan as its chief city). The Lombardy Regional Council has just issued a law setting new constraints on insulation, such as a 25% decrease in Cd, compulsory building surveying to assess what work needs doing, and incentives to use renewable sources.

For example, a condominium interested in making notable energy savings, but with no intention of actually making any investments, will be entitled to consult an ESCO (ESCOs are awarded by the Energy Authority, check the website for further information). An ESCO, in exchange for a long-term management contract, is a pledge to ensure optimum comfort and savings on administration.

ESCO then carries out all the work required to ensure notable energy savings for the entire length of the contract: this includes any operations required to ensure a better costs/benefits ratio, as in the case of wall thermal insulation. Part of the money for making the investment comes from a rotary fund set up by the Regional Council. The resulting energy saving bonds (white certificates) may then be sold on to the electricity and gas suppliers. When the contract expires, all the investments remain in the condominium's hands, which will have redeveloped the property at no expense and will subsequently benefit from energy savings, too.

There will also be incentives for new buildings. These are handled by Italian Town Councils, which in Lombardy can now take advantage of a special town-planning law, as is the case in other Italian regions too. The incentives take the form of reductions in town-planning expenses and prizes

in terms of cubic meters; they depend on hitting set levels for energy and environmental standards for newly designed property, all much more stringent than in the past.

The thermal insulation of private houses is to the forefront in the battle to reduce polluting emissions, so it is surprising that it is given so little attention by both the Italian means of information and the measures (highly improvised, to tell the truth) that Italian Town Councils occasionally implement, such as traffic bans.

In any case, the energy saving measures we are talking about must last long enough. Maintaining efficiency over time was the priority consideration in Mapei's project to develop its own thermal insulation system.

Insulation can actually have beneficial effects for many years, over 50 in fact, but it needs to be carried out using suitable products, which are installed properly, guaranteed by a European standards system (such as ETA, see article on page 24), and provided with proper insurance cover.

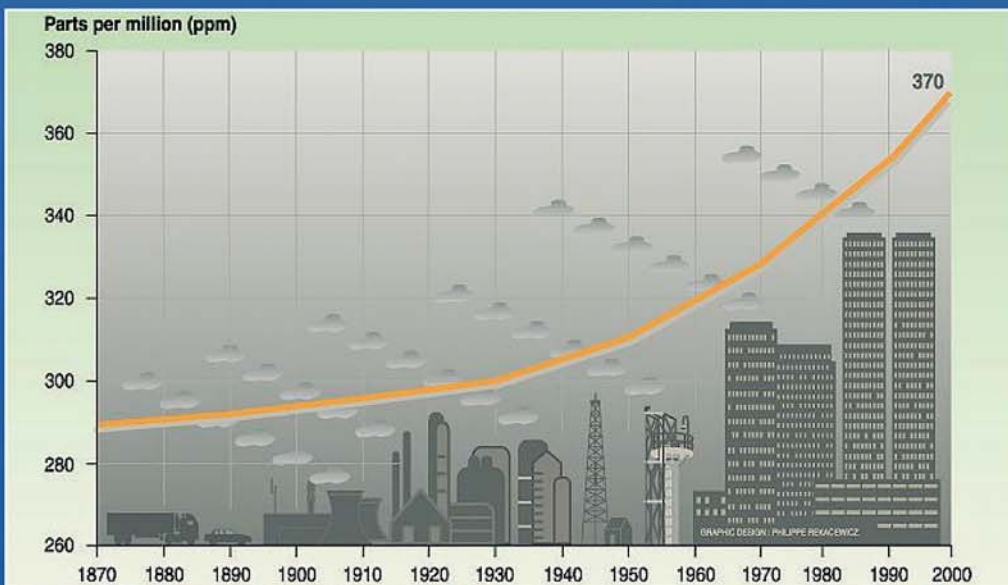
We will have to return to this matter because there have been plenty of new developments calling for notable changes to the regulations currently in force and new skills and expertise for those businesses expected to conform to them.

But it ought to be remembered that no regulations can be enforced unless they are properly understood. This is why meetings need to be organised to provide information on all levels.

Our Association, ANIT, which Mapei has belonged to for many years now, is taking part in the process. It organises refresher courses to make the process easier for all those involved. It provides softwares for assessing condensation, for calculating heat bridges, and calculating summer temperatures and wall performance ratings in non-stationary conditions, as well as "solvers" for assessing the energy efficiency of verandas. In the near future it will also develop a software programme to make building certification easier and facilitate modifications to the new directive.

Further information may be obtained from the web site: www.anit.it

RM



Trend in the overall concentration of CO₂ in the air through to the year 2000, as recorded by the observatory on the island of Mauna Loe and the University of California. This chart was taken from "Il Giornale dell'Ingegnere", no. 2/February 2005; our thanks go to Franco Cianflone, who wrote the related article.

ETA CERTIFICATION FOR THERMAL INSULATION

By Rossella Esposti, *Tep Srl* (Technology and Project Limited Liability Company)

Directive 89/106 issued by the European Community in 1989 set certain basic requisites that a building material must have in order to be marketed.

These requisites notably include:

- mechanical stability
- fire resistance
- safety while in use
- hygiene
- acoustic properties
- energy saving.

The extent to which a product must have these requisites depends on how it is being used.

So how is it possible to know whether a building material or construction system meets these requisites? A reliable way of finding out is to see whether the material or system in question has the CE symbol on it.

These symbol guarantees that the product conforms with specific standards ensuring it has the aforementioned requisites. Of course not all products need to meet the same standards: some products will have certain requisites, while others will be less important or even pointless. This is why the CEN (European Committee for Standardization) has issued special technical standards describing the properties required by each type of product to receive the CE symbol.

But there are also complex products, the so-called "systems", which are not composed

of just one materials but several materials, often all quite different from each other but perfectly compatible. A typical example of this are thermal insulation systems composed of an adhesive, insulating panel, smoothing compound, mesh and set of accessories. In cases like this each material has its own specific properties and serves its own special purpose to ensure the entire system works properly. For cases like this the EOTA (European Organization for Technical Approvals) has set down guidelines called ETAGs outlining the procedures and type of test each element in the system must undergo for the entire system to be certified. This certificate is called an ETA (European Technical Approval).

An ETA guarantees the entire system has passed a series of stringent tests which certify that it is suitable for the use for which it was designed. In addition to the conformity award, the ETA also authorises manufacturers to use the CE symbol on their products.

The ETA has been compulsory for thermal insulation systems since May 2003. This means that anybody selling a complete package for the thermal insulation of buildings must first have carried out the foreseen tests and have been issued an ETA by an Authorised European Body (laboratories authorised and recognised on a European level).

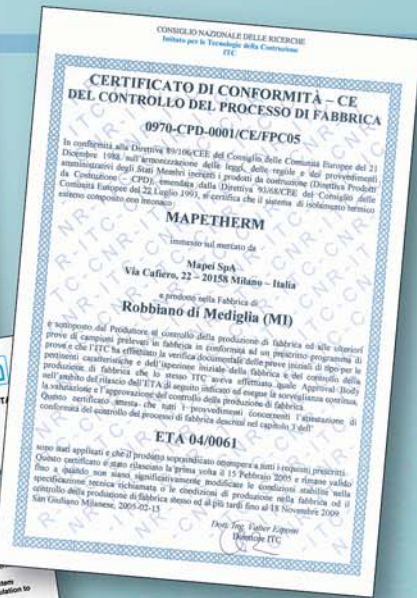
This means that anybody deciding upon a thermal insulation system for their building, either the project manager or owner, has two options available. They can either buy a complete system certified with an ETA or turn to an expert building firm, which will buy the products required from the usual retailer and then install them. It is obvious that the first option will produce more reliable results: the "complete package" being purchased is certified for that particular purpose and meets all the basic requisites. The system is sold with detailed installation instructions, provided by the manufacturer, including how to prepare the

substrate and information about the kind of environmental conditions in which it may be installed. This

leaves very little room for chance or the individual skills of the installer. Of course the second option may also produce a good thermal insulation system; provided the installation firm is experienced, provided the chosen products are up to standard and combined in the right way, provided the installation work is carried out with meticulous care...the outcome may well be excellent. But it is obvious that in this case there are lots of variables in play and just as many factors that may have negative effects on the final result. This is because there is often a tendency to choose the cheapest product or the product easiest to get hold of, and the installers are not always real experts, etc.

For all these reasons, Mapei has decided to take the safest route, applying for and





obtaining ETA certification for its MAPETHERM thermal insulation system.

The ETA for the MAPETHERM system (ETA no. 04/0061) was issued by ITC-CNR (Istituto per le Tecnologie della Costruzione - Consiglio Nazionale delle Ricerche, i.e. Building Technology Institute - National Research Council) on 18 November, 2004.

The certification applies to the following products:
Adhesive and smoothing compound: ADESILEX FIS 13 or MAPETHERM AR1

Insulating agent: Styrofoam IB-A (extruded polystyrene panels manufactured by the Dow Chemical Company in a thickness of 30, 40, 50, 60 and 80 mm)

Reinforcement: MAPETHERM NET fibreglass mesh

Primer: SILEXCOLOR PRIMER

Coating: SILEXCOLOR TONACHINO.

Mapei does not just guarantee the package which has received ETA; thanks to a series of guarantees about the durability of its own products, highly stringent supplementary tests and solid references, it has also obtained ten-year insurance cover for the MAPETHERM system, even when using other types of insulating agents (sintered polystyrene, mineral wools etc.).

This means the guarantee is not confined to just respecting basic requisites but goes even further and leaves plenty of freedom of choice for designers to select the materials to use. This makes MAPETHERM a reliable choice, providing buildings with well-applied and long-lasting insulation and protection systems.



- SILEXCOLOR TONACHINO
- SILEXCOLOR PRIMER
- Smoothing (2nd coat)
- MAPETHERM NET
- Smoothing using ADESILEX FIS 13 or MAPETHERM AR1 (1st coat)
- Thermal insulating panel
- ADESILEX FIS 13 adhesive or MAPETHERM AR1
- Plaster



CERSAIE 2005

From the 27th of September to the 1st of October 2005, Bologna hosted the XXIII edition of Cersaie (for the first time held over a 5-day period), with the international importance of the exhibition dedicated to ceramics for the building industry and bathroom furnishings being yet again confirmed, by registering the highest ever percentage of overseas visitors. 1,030 companies, of which 204 from abroad, representing a total of 32 different nations, displayed their products on a total available floor space of 156,000 m².

The calendar for the fair was particularly rich with high-profile events, ranging from the inaugural convention to the international press conference, from the displays organised by Markitecture, Value in Architecture, to the range of technical seminars. A detailed analysis of the number of visitors present, calculated on a Tuesday to Saturday basis, demonstrated that the total rose from 84,983 at last year's event to 88,522 in 2005, an increase of 4.16%, confirming the interest demonstrated by

the overseas visitors and an increase in the number of Italian visitors present. Particularly noteworthy is the fact that the 24,714 overseas visitors represented 27.92% of the total present, the highest percentage ever recorded at Cersaie. The 2005 edition, however, registered a reduction of approximately 10,000 visitors in the overall total, due to the fact that, for the first time, the fair did not include Sunday in its calendar.

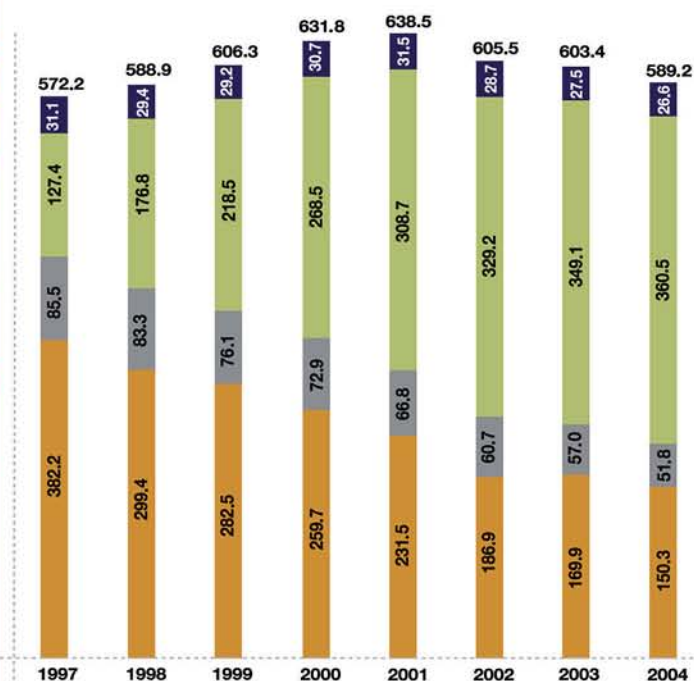
Inaugural Convention

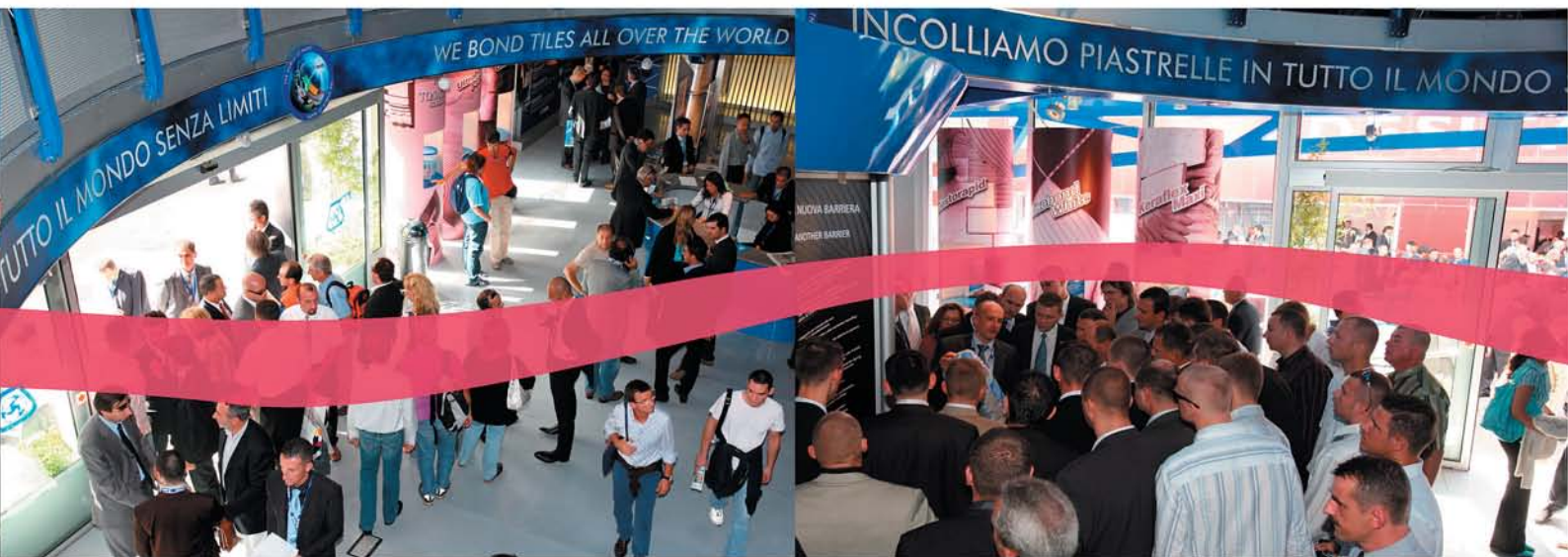
On the inaugural day of Cersaie 2005, following the traditional ribbon-cutting ceremony performed in the presence of the Mayor of Bologna Sergio Cofferati and the President of the Province of Bologna Beatrice Traghetti, more than 700 people took part at the inaugural convention "What kind of Italy in the new international context?". The convention was chaired by Ferruccio de Bortoli, the editor of Italy's leading financial newspaper "Il Sole 24 Ore", and the participants included a number



Production by main product types

Million sq. mt.





The New Challenges...Not Just Adhesives

of leading authorities, such as the Honourable Mario Baldassari, Vice Minister of Economy and Finance, the Honourable Enrico Letta, economic spokesman for the Italian political party "La Margherita", Luca di Montezemolo, President of Confindustria (Confederation of Italian Industry) and Bolognafiere (Bologna Exhibition Centre) and Alfonso Panzani, President of Assopiastrelle (Italian Association of Ceramic Tile Manufacturers). During his speech, Alfonso Panzani pointed out that, in spite of the particularly unfavourable situation on the international markets in recent years, the companies in this sector have faced up well to the challenges of the evolving markets and that they are competitive on the world stage by demonstrating a high degree of far-sightedness.

Side Events

The programme presented by Markitecture was particularly intense, representing the cultural side of Cersaie. Three displays

were staged in the Cersaie Exhibition Area: Cumulus, devoted to the ceramic prototypes developed by students from several European schools of design and art, the design contest "Ceramica e Riqualficazione Urbana" (Ceramics and Urban Reclaiming) focusing on five different Italian squares and the "Remote Future" display about the history of ceramic tiles in the Sassuolo and Imola districts. The technical conventions were also particularly numerous and, to round up, particular interest was shown for the meeting with the Austrian architect Wolf D. Prox entitled "Beyond the blue".

Mapei on Show: Innovation and Services...Not Just Adhesives

For Mapei, Cersaie represents the traditional occasion to present their new products to the international public and to indicate the guidelines on which the company's future activities will be based. While not forgetting how important it is for the

The Italian Ceramic Tiles Industry: the Current Situation

Cersaie is the traditional occasion where operators in this sector review the activities carried out and, on the basis of results currently available, lay the foundations for future programmes. Italy's role as a reference point for the tiles industry at an international level has been confirmed.

Italy's leadership is demonstrated by the highest turnover (both the ever total turnover and the turnover per product unit), thanks to constant innovation in both tiles and technology, the development of trend-setting patterns and designs, intelligent use of colours and hues, quality service offered to distributors and the capacity of interfacing with the world of architecture and major design.

In 2004, the total turnover of the Italian ceramic tiles industry was 5,334 million euros (+ 2.98%), a growth which was due to an increase in average prices rather than an increase in sales volumes (stable at a total of 583.7 million m²), which only confirms how the Italian materials are appreciated all over the world.

An important result is the constant growth in the production of porcelain tiles in recent years, at the expense of more traditional products such as single-fired and double-fired tiles.

If Italy is considered to be the hub of the modern production of ceramics on an industrial scale, the world markets are its best witness. Along with approximately 170 million m² sold in Italy (90% of the total domestic consumption level), more than 410 million m² sold around all five continents must be added, for a value last year of 3,850 million euros, 72% of the Italian total. These are figures which go to confirm how Italy is a leading country in international commerce, with almost 30% of the total volumes.

- Single firing
- Double firing
- Porcelain stoneware
- Other products

Source: Assopiastrelle





company the fact that it is more and more an international set-up ("The World of Mapei" was the headline banner on this year's Mapei stand), with the slogan "Not Just Adhesives..." the company launched a clear message at Cersaie aimed at all retailers of tiles and building materials. By choosing Mapei, these retailers have more opportunities of growth because, apart from adhesives for tiles, they can offer a great deal of other product ranges: high performance and fast-setting grouts, de-humidifying mortars and waterproofers, certified systems to reduce energy consumption and flooring systems, admixtures for concrete and coatings for all kinds of masonry walls. What is more, Mapei offers a wide range of special services: continuous training for sales personnel in the distribution chain, for designers and installation technicians, sale support through both telephone assistance and direct visit to the building site, a co-ordinated marketing strategy, advertising campaigns using numerous media channels and a clear, transparent commercial policy. Mapei offers ceramic tiles retailers the chance of increasing the product range displayed in their own showrooms, with the coloured finishing products SILEXCOLOR, SILANCOLOR, ELASTOCOLOR, QUARZOLITE and COLORITE,

which allows the customer to be offered a wider and more detailed choice for completing every job. Another product highlighted in this field was SILEXCOLOR MARMORINO, used on internal and external surfaces when an antique finishing typical of marbles along with high permeability is required. "We bond tiles all over the world" was one of the slogans used on Mapei's technological stand, which was intended to portray two main aspects of the company's activities: to be present in all the corners of the globe with production facilities and a commercial network and to be able to satisfy all our clients' requirements. And it is through the research and development of new products, which anticipate the needs and trends of the market, that Mapei continues growing all over the world. There were numerous new products presented during this edition of Cersaie. Above all, the launch of a revolutionary new product which features all the highest characteristics of products for installing ceramics and stone materials. The new member of the family is ULTRAFLEX S2 MONO: a single component, easy to apply by trowel, high deformability and high performance cementitious adhesive with no vertical slip, extended open time and extremely high yield (C2TE, S2). The highlight of this





product's innovative characteristics is that it is the first single component, high-flexibility S2 class adhesive (according to EN 12002 classification) to be introduced on the world market. It is also lightened to increase its yield and to ease transport and handling. In fact, its yield is 30% higher than an average powder adhesive, it improves acoustic and thermal insulation and guarantees perfect adherence for all kinds of tiles: porcelain, single-fired, double-fired, klinker, cotto, etc. It is also suitable for internal and external applications on both horizontal and vertical surfaces. Thanks to its deformability and light weight there are savings in transport costs and a considerable reduction in the amount of product required for the same surface area, while its versatility allows the same adhesive to be used for different types of material. More detailed information regarding this

product may be found on page 33. One of novelties displayed regards the KERACOLOR FF and KERACOLOR GG grout ranges, with its colours increased from 10 to 18. The grouts ULTRACOLOR PLUS (high-performance, anti-mould, anti-efflorescence, water-repellent grout with BioBlock® technology) and KERACOLOR have been modified with polymer to make them more flexible.





Also, the formula for KERACOLOR FF cementitious grout has been modified thanks to DropEffect® technology, which makes this product smoother and water repellent. Further news in the tile joints sector is the introduction of a new, complementary product: FUGA FRESCA. This is a polymer paint for bringing back the colour of cementitious grouts on internal floor and wall coverings, available in 10 different colours. It eliminates irregularities in the colour of grouts and unsightly stains, reduces the absorption of water and is easy to clean. Among the complementary products highlighted at Cersaie, KERANET is also worth a mention. It is an acid-based cleaner for ceramic tiles, particularly suitable for eliminating efflorescence of lime and for the final cleaning of cotto toscano. The range of sealants for tiles has also been increased with MAPEFLEX PU 50 SL, a single component, fluid, polyurethane sealant with low modulus of elasticity, for sealing flooring joints subject to movements of up to 25%. A large area was reserved for waterproofers such as MAPELASTIC, which has become well known to the general public through a highly successful advertising campaign broadcast nationwide last August and September on the Italian pri-

vate TV Channel "Canale 5", during the television shows "Paperissima Sprint" and "Passaparola". The Mapei stand was a hive of activity for 5 days and it also became the place where new commercial agreements were reached and where the "Mapei family" united all their own, wide experience. Apart from the marketing and communications goals achieved, at Cersaie 2005, as with the previous editions, the "World of Mapei" illustrated its human side, made up of hard work and sacrifice, but also of joy and satisfaction. Trade fairs are also made of this!

The International Press Conference Held at Cà la Ghironda

On the 28th of September, during the second day of Cersaie, Mapei demonstrated their close interest and presence on the international markets by contributing to the International Press Conference, organised by Assopiastrelle in collaboration with the ICE (Italian Institute for Foreign Trade). More than 280 people were present at this event, held in the charming Museum of Contemporary Art of the Cà la Ghironda Foundation, located at Ponte di Ronca di Zola Predosa, just a few kilometres from Bologna. An awards ceremony was also





held, which included prizes for the Assopiastrelle Distributors Awards, the Ceramic Tiles of Italy Journalism Award and for the Cumulus Design Competition.

The conference was chaired by the General Manager of Assopiastrelle, **Franco Vantaggi**, and the speakers included the President of Assopiastrelle, Alfonso Panzani, the Vice President, Enzo Mularoni, the President of Federchimica (Italian Federation of the Chemical Industry) and CEO of Mapei, Giorgio Squinzi, the General Manager of ICE, Ugo Calzoni, the Scientific Director of Markitecture, Aldo Colonetti, and the architects Michele Capuani and Dante Donegani, organisers of the Cumulus project. During his speech, the President of Assopiastrelle, **Alfonso Panzani**, illustrated the most significant achievements of the Italian ceramic tiles industry and its position in an international context. Panzani did not hide the fact that 2005 had been a difficult year for the Italian ceramic tiles industry, as shown by a drop in sales which, by the end of the year, had a total value of between 560 and 570 million m². This drop was due to a contraction in exports which, in the first six-month period in 2005, reached a level of -6%, while on the Italian market, for the same six-

month period, the forecasts tend to confirm previous sales volumes. On a more positive note, however, the resources dedicated to investments were confirmed at a level of 4.5% of total turnover, for a value of 245 million euros.

The Vice President of Assopiastrelle, **Enzo Mularoni**, was keen to point out how the Italian ceramic tile industry has been the front runner in introducing new application solutions. Some of the most innovative uses, which are quite different from traditional residential applications, are to be found in urban architecture, above all in town squares. The next speaker was the General Manager of ICE, **Ugo Calzoni**, who reasserted the ICE's presence in working alongside the Italian ceramic tile industry, in promoting what is considered one of the leading sectors of "Made in Italy" at a worldwide level. The characteristic levels of excellence of Italian ceramic products are further enhanced by highly significant long-term initiatives conducted by the ICE, working in partnership with Assopiastrelle through their various offices located all around the world.

Giorgio Squinzi then stressed how Mapei's world leadership is tightly correlated to the world leadership of the Italian ceramic tile industry. He chose this occasion to present ULTRAFLEX

Current Trends



After years of minimalism, 2005 has seen an explosion of colour in the ceramics world and, at Cersaie, the best in research and technology has joined the game; as ever, Mapei is one of the stars in this field.

Elegance and refined colour schemes have led to new stylistic interpretations, to face up to the most innovative architectonic challenges. Black and white, which are still two market favourites, are now challenged by a surprising array of chromatic variations, ranging from bold, warm colour schemes to pastel shades, or a thousand shades of grey and metallic effects such as bronze and copper.

Special attention is paid to fantasy and nature, observed by simply touring the stands on show, where large-sized wooden slats in a vast array of raw materials were presented, along with natural stone in a multitude of finishes and patterns. Cutting techniques have also moved ahead with the times and new style trends, giving life to a multitude of variations, especially where laying is concerned. One finds ever larger shapes, transformed in an infinity of sub-multiples, to create more and more creative laying patterns on both horizontal and vertical surfaces. Yet they are always products with high performance, characterised by special surface effects and new textures; satin finishes with luminescent chips, resin cements, sifted vitreous quartzite, brushed wood.

A return to mosaic patterns was also present and is in line with the above-mentioned "craze" for colour and new splendours. Mosaics is an antique method in furnishing to enrich surfaces currently making a comeback and which, combined with the use of precious inserts completely free from the context of ceramic floor and wall coverings, may elegantly ornate bathrooms, dining rooms and kitchens.



S2 MONO, highlighting its unique technical characteristics and its advantages for users. At the end of the conference, there was a particularly dense prize-giving ceremony. The 10th edition of the **Assopiastrelle Distributors Awards** were presented to those commercial distributors who had particularly distinguished themselves in their relationship with the Italian ceramic tile industry, with 2005's honours going to Fliesen Huening (Germany), VM Materiaux (France), Advan (Japan) and Centro Ceramico Gelsomino (Manfredonia, Italy). Two of the awards winners are important distributors of Mapei products: VM Materiaux from France and Centro Ceramico Gelsomino Srl from Italy. Materiaux, whose headquarters are in L'Herrgement, was founded in 1941. They currently employ 2000 people and have an annual turnover of more than 400 million euros. Their distribution network includes 70 showrooms and 78 warehouses, located all over western France and French districts overseas. The Centro Ceramico Gelsomino, founded in 1987, had a turnover in 2004 of 5.8 million euros, with 40% through sales of ceramic tiles. The company has

19 employees, with commercial offices and showrooms for a total display area of 31,000 m². The **Ceramic Tiles of Italy Journalism Award**, for the best article regarding Cersaie and the Italian ceramic tiles industry written by a foreign journalist, went to the French journalist Jean Pierre Cousin, an article which was chosen from 126 entries by 57 journalists from 16 different countries. In the **Cumulus** competition, the jury awarded the first prize to Pancharapong Suntanaphan from the Central Saint Martins College of Arts and Design, London, for his work on the "Glow" project. The appointment for the next edition of Cersaie, to be held, as always, in Bologna, has been fixed for Tuesday, 26th September to Saturday, 30th September 2006. DM



Ultraflex S2 Mono

MAPEI RESEARCH HAS BROKEN DOWN YET ANOTHER BARRIER



Single component, high performance, easy to apply, high deformability, cementitious adhesive with no vertical slip, extended open time and extremely high yield for ceramic tiles and stone material (C2TE, S2).



ULTRAFLEX S2 MONO is the first ever single component, C2TE class, cementitious (C), improved (2), slip-resistant (T), highly deformable, S2 class (according to EN 12002 classification) adhesive, with extended open time (E), to be introduced on the world market: it is the height that any adhesive for ceramics can ever reach.



ULTRAFLEX S2 MONO is a grey-coloured powder made of cement, graded sand, a high quantity of synthetic resins and micronised elastomers according to a formula developed in Mapei's own Research & Development Laboratories.

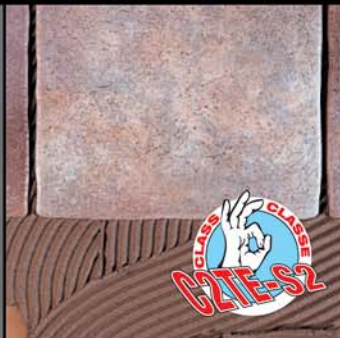


When mixed with water, it exhibits many relevant characteristics. For instance, this product's low volume mass leads to two main advantages: with the same volume of product, sacks weigh less (15 kg) compared to traditional cementitious adhesives.



This in turn leads to easier handling and lower transport costs. Beside low volume mass, ULTRAFLEX S2 MONO mixed with water features increased yield: consumption is approximately 30% less compared to traditional cementitious adhesives.

This product is particularly suitable for bonding all types and sizes of ceramic tiles (double-fired, single-fired, porcelain, klinker, etc.) and stone material on internal and external surfaces and may be applied on horizontal and vertical surfaces. It also allows laying the tiles downwards and diagonally. ULTRAFLEX S2 MONO may help in achieving thermal insulation and



may be successfully used in environments (such as hospitals, school corridors, public buildings, etc.) where the impact noise footsteps needs to be reduced, especially if used in conjunction with MAPEFONIC SYSTEM, the minimal thickness sound control system designed to isolate noise when installed under ceramic tiles and stone material.



Its extended open time and long adjustment time, its excellent ability to cope with deformation in the substrate and tiles and to perfectly bond all materials normally used in the building industry, all this makes ULTRAFLEX S2 MONO an ideal product to facilitate the installation operations while ensuring excellent



performances. Thanks to its high flexibility, this product may be used for bonding ceramic tiles and stone material on screeds which are not completely cured as well as on flexible substrates and substrates subjected to vibration.

SEALANTS FOR JOINTS AND CRACKS

ACRYLIC SEALANTS

Mapeflex AC4: one-component sealant based on acrylic resins in water dispersion with movements up to 10% which can be painted over

SILICONE SEALANTS

Mapesil Z: acetic cross-linking silicone sealant, for general use, for movements up to 20% of the initial size

Mapesil AC: solvent-free, acetic-crosslinking mildew-resistant silicone sealant, available in 26 colours and transparent, with movements up to 20%

Mapesil BM: odourless neutral cross-linking silicone sealant with low modulus of elasticity for expansion joints, metal based water draining systems and for general use, with movements up to 25%

Mapesil LM: odourless one-component neutral cross-linking silicone sealant for natural stone and ceramic tiles façades, with movements up to 25%

ONE-COMPONENT POLYURETHANE SEALANTS

Mapeflex PU50 SL: one-component, fluid, polyurethane sealant, with a low modulus of elasticity, for flooring joints with movements up to 25%

Mapeflex PU55 SL: one-component, fluid, polyurethane sealant, with a high modulus of elasticity, for flooring joints with movements up to 7.5%

TWO-COMPONENT POLYURETHANE SEALANTS

Mapeflex PU20: self-levelling, two-component polyurethane sealant for flooring joints with movements up to 10%

Mapeflex PU21: self-levelling, two-component polyurethane sealant for flooring joints with movements up to 5%

Mapeflex PB25: two-component, thixotropic, flexible sealant, with movements up to 25%, based on polyurethane polymers modified with hydrocarbon resins

Mapeflex PB27: two-component, self-levelling flexible sealant, with movements up to 25%, based on polyurethane polymers modified with hydrocarbon resins

Mapeflex PU30: two-component thixotropic polyurethane sealant with movements up to 10%

At Cersaie 2005 Mapei presented the international public a rich technical documentation, which also included a brochure completely devoted to Sealants for Joints and Cracks.

This new publication was intended to present in one single handy little book products and ranges that are usually portrayed in different catalogues, although they all belong to the ever-growing line of sealants.

Indeed, Mapei's range of sealants covers a wide spectrum and is made up of special products dedicated to the building industry. Four major families of products differentiate the products according to their composition in order to satisfy the growing demands from the clients, demands which are often imposed by the continuous technological development of the floor covering and dressing materials.

The range is made up of single and two-component acrylic, silicone and polyurethane sealants which are the fruit of the company's constant research, aimed at presenting high quality products on the market which are easy, quick and safe to apply.

The new brochure, after first introducing the families of products, provides a detailed one-by-one description of all sealants, enclosing the product's picture and the information regarding the fields of application, the colours available and the packaging.

The four families of Mapei's Sealants for Joints and Cracks are: Acrylic Sealants, Silicone

Sealants, One-component Polyurethane Sealants and Two-component Polyurethane Sealants (see the box above).

Among all these products, MAPEFLEX PU50 SL, MAPEFLEX PU55 SL are especially worth a mention: they are two of the most recently developed Mapei products.

The new "Sealants for Joints and Cracks" brochure may be ordered at Mapei's Marketing Office (fax number: +39-02-37673.214, e-mail: marketing@mapei.it).



One-component Polyurethane Fluid Sealants for Flooring Joints

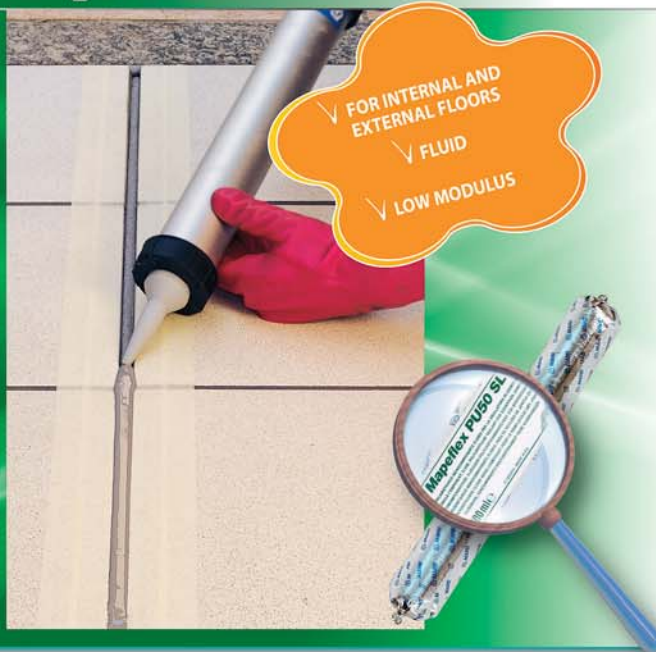
Thanks to their characteristics, MAPEFLEX PU50 SL and MAPEFLEX PU55 SL can ensure long-lasting durability; they can be only used on horizontal surfaces or surfaces with a maximum slope of 2%.

These products are applied with a special extrusion gun and, once applied, they harden in reaction to the air's moisture.

They are easy to apply, ready to use and long-lasting. They adhere well to concrete, ceramic and natural stone substrates with no need of using a primer.

They are resistant to intense traffic and to contact with hydrocarbons.

Mapeflex PU50 SL



One-component, fluid, polyurethane sealant, with **a low** modulus of elasticity, for flooring joints with **movements up to 25%**.

Mapeflex PU50 SL can be used on both **internal and external floors** and is especially suitable for sealing cracks, fraction and expansion joints, subject to **great movements** in:

- indoor and outdoor car-parks;
- floorings in service areas, car-washes, large squares and airport runways;
- terraces made of ceramic tiles and stone material;
- floorings treated with MAPEFLOOR SYSTEM;
- floorings treated with ULTRATOP SYSTEM.

Mapeflex PU50 SL is available in grey colour and in 600 ml soft-cartridge packages.

Mapeflex PU55 SL

One-component, fluid, polyurethane sealant, with **a high** modulus of elasticity, for flooring joints **with movements up to 7.5%**.

Mapeflex PU55 SL can be used on **internal floors** and is especially suitable for sealing cracks and fraction joints subject to **limited movements** in:

- industrial floorings, even in areas subject to heavy traffic;
- indoor car parks, supermarkets, arcades;
- old concrete floorings which must be treated with MAPEFLOOR SYSTEM.

Mapeflex PU55 SL is available in grey colour and in 600 ml soft-cartridge packages.



Coloured Grouts



Thanks to all the effort put into research work, Mapei has perfected a range of technically-advanced coloured products for tile joints which also include sealants and supplementary items. This is a complete range of products for indoor and outdoor grouting applications, for floor and wall coverings in all types of ceramic, terracotta, stone material and glass mosaic coverings. Thanks to their technical characteristics, they are particularly suitable for grouting tile joints in swimming pools, bathrooms, kitchens and external façades, balconies and terraces, as well as in supermarkets, restaurants, airports, public areas and floors in industrial environments. Mapei cementitious grouting mortars, which are modified by adding special polymers, are particularly flexible and suitable for floor and wall coverings. The range includes Ultracolor Plus, Kerapoxy, Mapesil AC, all available in 26 colours, Keracolor FF and Keracolor GG, both available in 18 colours. 

Our thanks go to "Interni - La rivista dell'Arredamento (Interiors - The Design Magazine)", no. 32, from which this article was taken.

Planitop 400

Fast-setting shrinkage-compensated thixotropic mortar for cortical restoration and the finishing of reinforced concrete.



PLANITOP 400 is a pre-packed powder made up of special hydraulic binders, selected fine graded aggregate and special additives prepared according to a formula developed in the Mapei Research & Development laboratories.

Mixed with water, PLANITOP 400 becomes an easily workable and thixotropic mortar that can be applied on vertical surfaces in a thickness up to 4 cm per coat.

- PLANITOP 400 can be subjected to loads after 4-5 hours after its application and, thanks to its very fine graded aggregate and high content of synthetic resins, it can be applied with a trowel, as a repair mortar, or with a float as a very thin smoothing finishing.
- PLANITOP 400 is used for either deep cortical restoration of vertical and horizontal concrete surfaces or very thin smooth finishing of concrete surfaces.

This multifunctional product has many applications: from the rapid restoration of corners and front sides of the concrete slabs of balconies which have been damaged by the oxidation of the re-bars to the fast reparation of damaged corners, concrete beams, pillars and concrete panels.

- PLANITOP 400 is also used for the rapid patch-work of concrete industrial floorings and the reparation of precast concrete elements damaged during their installation and transport.
- PLANITOP 400 is also used for the rapid repair of superficial defects present in concrete castings such as honeycombs, holes, cold joints, etc.
- PLANITOP 400 is prepared by mixing one 25 kg bag with 3.5-4 l of clean water and must be applied within 10-15 minutes, with a trowel or a float on a sound clean substrate that has been previously saturated with water.

Once PLANITOP 400 has completely hardened, it features high mechanical strength, good resistant to wear, smooth surface and strong adhesion to the concrete.



For further information on this product, see its technical data sheet available at the web site www.mapei.com.



Microsoft

Mapei technology keeps Microsoft platform dry.

Text by Diane Choate, photos by Carolyn Anne Ryan, Dave Hamilton and Mike Piazza, Mapei Corp.

Building 20 on the Microsoft campus in Redmond, Washington, currently houses hardware platforms. Lately, its foundation was causing a problem and needed a restoration work able to provide the whole of the structure with a solid base. The one-storey construction is built into a hillside and rainwater seeps into the foundation's concrete slab. The parking lot also has a slight grade, which causes water to drain toward the building. These circumstances led to high moisture-emission levels from the slab, which had been covered

with carpet tile and vinyl composition tile (VCT). Levels reached 2.72 to 3.63 kg per 92.9 m² per 24 hours in some areas, and over 5.44 kg in one particularly "wet" area, as shown by the calcium chloride tests. DeWalt Commercial, the general contractor in charge of remodelling Building 20, selected Division 9 Inc. of Redmond to solve the floor-covering problem. Division 9's Chuck Young took up the challenge and consulted with Dave Egge of the Systematic Company in Tukwila (Washington), which distributes Mapei products. Egge discus-



Photo 1. This one-storey structure was built into a hillside, which caused its floorings to be deeply damaged by humidity.

Photos 2 and 3. Once the old floorings were removed, Planiseal MRB was applied on the substrates to create a moisture-reduction barrier.



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Photo 4. Planipatch Plus System was applied on the substrates, which had been previously treated with Planiseal MRB.

Photos 5 and 6. Carpet tiles and vinyl composition tiles (VCT) were laid on the moisture-reduced substrates.

sed the use of PLANISEAL MRB* with Young, encouraging him to attend a Mapei seminar to learn more on this topic. After hearing Mapei representative Tom Lundgren speak on the subject at the seminar, Young approached him with his concerns about Building 20. The solution proposed by Mapei for this project proved to be the most suitable one. Dave Hamilton, Mapei regional manager, was present to oversee the work done with Mapei products. First, the workers covered all the surfaces in the offices and workspace with PLANISEAL MRB* moisture-reduction barrier. They even opened cracked spaces in the substrate and coated them with PLANISEAL MRB*.

Next, they patched voids and uneven areas with the PLANIPATCH PLUS SYSTEM*.

The second set of moisture level tests conducted in 3 different areas presenting the greatest problem showed encouraging values of 0.38 kg per 92.9 m² per 24 hours.

With the moisture levels well within the proper range (1,36 kg per 92,9 m² per 24 hours), Chuck Young's crew laid down the new floors: they used ULTRABOND ECO 711* to install the Mannington Essentials and Armstrong Imperial Textures VCT floorings in the computer offices and in the kitchens; the Flooring Systems Interface carpet tile was, on the other hand, laid down in the remaining areas with ULTRABOND ECO 800* pressure-sensitive flooring adhesive.

Young commented, "Everything is staying down well after the remodelling. This was our first time to use Mapei products and we were pleasantly surprised with the ease of application of the PLANISEAL MRB* and the greatly reduced moisture levels we achieved." Dave

Edge of Systematic was so pleased with the results attained at Microsoft Building 20 that he has recommended the use of PLANISEAL MRB* to other customers in the area who have similar problems. He hopes to report more successes soon.

The Microsoft platforms have been moved into Building 20 and at the last report were performing very well.

DM

TECHNICAL DATA

Building 20, Microsoft Campus, Redmond, Washington (USA)

Work: moisture-reduction treatment of the substrates and installation of carpet tile and vinyl composition tile (VCT) floorings

Year: 2004

Contractor: DeWalt Commercial

Installation Company: Division 9 Inc., Redmond

Materials: VCT tiles by Mannington Essentials and Armstrong Imperial Textures, carpet tiles by Flooring Systems Interface

Mapei Distributor: Systematic Company, Tukwila (Washington)

Mapei Co-ordinators: Tom Lundgren and Dave Hamilton, Mapei Corp.

*Mapei Products: Planiseal MRB, Planipatch Plus System, Ultrabond Eco 800, Ultrabond Eco 711.

The products referred to in this article are manufactured and distributed in America by Mapei Corp. (USA) and Mapei Inc. (CDN). For further information, see the web site: www.mapei.com.





Serving the Health Service

New Coverings Installed in Montluçon Hospital Using Mapei Products.

by Jean Pierre Ferrer, Mapei France

The inhabitants of Montluçon witnessed their new hospital being built in 2003. An exceptional construction in terms of both its size and the standard of the final result. Mapei was involved in the building work, supplying the materials for smoothing and installing the flexible floor and wall coverings. After carefully studying the concrete substrates, the building contractor, Batistoni, immediately set to work on getting them ready: smoothing, cleaning and removing any dust before applying PRIMER G*. This synthetic resin based primer in water dispersion is ideal for treating absorbent substrates like cementitious screeds. The floors were then levelled using PLANO 3*, a class P3 smoothing compound. The product's fast-hardening and self-levelling properties simplified the building operations.

The architect and works manager used PVC materials from the Gerflor range for the coating operations: Taralay's special "Shower System" product for the bathrooms and Taralay's standard "Matière" and "Imprimé" products in the corridors and rooms (on both the floors and walls).

Taking Jean Claude Bertholet's advice (the Mapei France technician who followed the building work), it was opted to use ULTRABOND ECO 350* adhesive for the installation work. The product's specific properties and the demonstra-

tion performed by Marc Bonoron, the Mapei installation expert, persuaded the firm to use this adhesive.

Apart from ULTRABOND ECO 350*'s technical features, the product was highly appreciated for its flexibility and ease-of-use. Installers are particularly fond of it for its extended open time, which made it much easier to carry out the installation operations.

Photos 1 and 2.
The Gerflor coatings on the floors and walls of the rooms and corridors.

Photo 3.
Preparing the concrete substrates before applying Primer G.

Photo 4.
Smoothing with Plano 3.

Photo 5.
Applying Ultrabond Eco 350 adhesive.





2




3

A fine-toothed trowel was used to apply the adhesive to the floor. This ensures the grooves are evenly distributed over the PVC surface after installation, forming a smooth film preventing any trowel lines from appearing on the coating.

The thickness of the product makes it easy to apply the adhesive to walls with a roller: no splashes, drips....

ULTRABOND ECO 350* is also 100% solvent-free and only contains very few volatile organic compounds (VOC). All this helps improve the quality of the environment and safeguards the health of the installation workers.

pletion of the project. All these services are key factors in the successful business partnership with Mapei that is destined to last. 

This article was taken from issue no.11 of "Mapei & Vous", to whom we would like to express our thanks.

TECHNICAL DATA

Montluçon Hospital, Montluçon (France)

Work: installation of PVC wall and floor coverings

Year: 2003

Project: Séchaud e Bossuyt and Berim

Contractor and installation firm: Revêt Décor Battistoni and Sogeb Mazet

Works Management: SCIC Développement

Testing carried out by: Copibat

Mapei Co-ordinator: Jean Claude Bertholet, Mapei France



4

***Mapei Products:** the products referred to 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 "Mapei Global Infonet" CD/DVD or at the web site: www.mapei.com.

Plano 3: fast hardening (24-48 hours) self-levelling smoothing compound for thicknesses from 3 to 10 mm.

especially suitable for pump applications.

Primer G: synthetic resin based primer in water dispersion with very low emission of volatile organic compounds (VOC).

Ultrabond Eco 350: adhesive in water dispersion with very high bonding strength even after an extended open time and with very low emission of volatile organic compounds (VOC) for resilient floor coverings.



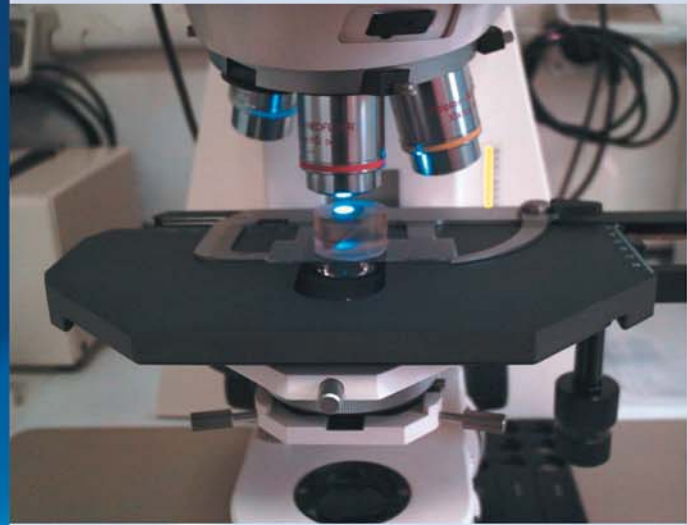
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This adhesive performed to the highest standards in this 28,000-m² project, showing all its distinctive properties despite the varying air conditions (building works actually went on for eight months).

According to the installation firm, the quality of the Mapei products, the advice provided and constant help in carrying out the work, all contributed to the successful com-

Mapei Analysis Laboratory in Milan

Its Work, Aims and Key Instrument: the Microscope.



Research and Development

The Mapei Group's constant growth in terms of turnover and market shares has always coincided with constant development of its products. Progress has focused on both developing new products to meet the demands of the international market and constantly improving existing products.

In a modern company, the task of studying, developing and testing the effectiveness of materials and new products is the job of scientists and technicians and the part of the company usually referred to as Research and Development (R&D).

Mapei devotes more than 5% of its turnover to research and development and 480 of its 4,000 members of staff work in seven specialised R&D centres worldwide.

Any company planning to compete and succeed on an international level has to invest in this sector. For Mapei, which manufactures high-tech building products, research and development are corner stones of its business operations.

The Research and Development Centre in Milan and the Analysis Laboratory

The Research and Development Centre in Via Cafiero, no.22, Milan, is the Group's main research facility.

Entering this Centre is a bit like entering the pulsing heart of Mapei. This is composed of extre-





Images portraying the Philips XL 30 ESEM-FEG "environmental" scanning electron microscope.

rations of Rodolfo Squinzi, the company's founder. The Milan Research Centre, that was implemented by his son Giorgio and is now run by his grandson Marco, currently employs about 120 staff, divided into various groups for the different kinds of products.

These groups are called "formulators" because they have the task of developing chemical formulations combining together various raw materials to create new products.

The processes and methodologies used to "validate" the new products differ from group to group and depend on the specific and distinctive features of the various types of products under development.

mely modern high-tech equipment revealing the values and aspirations of the people working there.

It is no coincidence that this is the very place where the Mapei company was created almost seventy years ago. So it really is the heart of the enterprise beating away to the rhythm of the ideas and aspirations

So, for instance, the "formulator team" working on cementitious adhesives operates along different lines to the polymer development team. Even though the various teams specialise and experiment in different ways, they still work closely together. Indeed, the right expression is "team play".

This is one of the key concepts inspiring Mapei's successful growth over the years.

A fundamental contribution comes from the Analysis Laboratory that provides support to the various formulator groups.

This lab works along various lines:

- diagnosis of materials;
- non-routine control of products and raw materials (namely, the more complex and general analysis which are not carried out by the formulator teams);
- physical-chemical studies of materials for developing new products;
- support to the Technical Assistance Department in analysing materials, in order to indicate the best product for the job at hand;
- consultation and solutions for problems submitted by Mapei Research Centres worldwide;
- applied research on existing and new products.

Constant progress into new technology and equipment for carrying out in-depth studies into materials now allow researchers to really probe inside materials and discover their most hidden secrets.

MAPEI DIAGNOSTICS FOR STUDYING MATERIALS

The Analysis Laboratory is equipped with the latest, sophisticated, cutting-edge instrumentation ideal for studying on a day-to-day basis the action mechanism of products both on a macroscopic and microscopic level down to a nano-scale. But although it is important to be equipped with the best technology available, it is even more crucial to employ people with the right expertise based on years of experience.

If the latest machinery was enough to achieve the results Mapei has obtained and maintained down the years, anybody would be able to match and, in no time, even surpass its outstanding achievements. But people have always been, and still are, that something extra at Mapei. And by people we mean experience, well-established methods of research and investigation, patience in achieving results, know-how combined with the use of different techniques and technology, and real dedication to constant daily improvement.

Microscopy: One of the Techniques Used in the Analysis Laboratory

Although the laboratory generally draws on several different analytical techniques, we would here like to focus our attention on study under the microscope.

The Analysis Laboratory is equipped with two microscopes: an optical microscope with polarised light (OM) and a scanning electron micro-

scope (SEM). They exploit the high resolution ratings of optics or electron-optics of microscopes, combined with the use of two types of source (visible light for an OM and an electron beam for an SEM).

Although they are used in different fields, they are particularly useful for diagnostic surveys for renovating old and modern works of architecture. Indeed, by studying the spatial relations among the various components of the material being analysed (minerals, aggregates, cement...), the microstructure and stratigraphy may be analysed, which are so important for surveying a material, assessing its state of repair and planning any repair operations required. It is also possible to combine morphological analysis with scanning electron microscopy and chemical distribution analysis (SEM-EDS) to provide a detailed picture of the nature of the sample's components.

Another application of electron microscopy is the so-called environmental scanning electron microscope with field emission gun (ESEM-FEG), which, since it can analyse samples even when water is present, is particularly useful for studying the hydration processes of existing cementitious products and for developing new products designed to meet market demands.

Let us now take a look at an example of how these two microscopes may be used.

The Teatro alla Scala: a Striking Example of Diagnostic Analysis Using an Optical Microscope

The Mapei laboratory has carried out a number of diagnostic analyses of materials from sites requiring building or renovating work.

Mapei has recently been involved in an extremely important project calling for effective use of microscopy, namely the renovation of the "Teatro alla Scala" Opera House in Milan (we spoke about it at length in issue no.16 of the magazine).

The Analysis Laboratory played a key part: amongst other things, it was



Photo 1. Interior of the Teatro alla Scala in Milan: the insert in the bottom right corner shows a detail of the Piermarini marmorino, the original wall coating, which has been covered with several coats of paint.



Picture 1. Stratigraphic section of the surface layers and marmorino seen in 2N: from the top down we can see some coats of paint measuring approximately 1 mm in overall thickness, beneath which we have the marmorino, a layer whose crystals are carbonatic (calcitic) in nature.

Picture 2. Stratigraphic section of the marmorino and plaster underneath it seen in 2N: the boundary between the marmorino and plaster

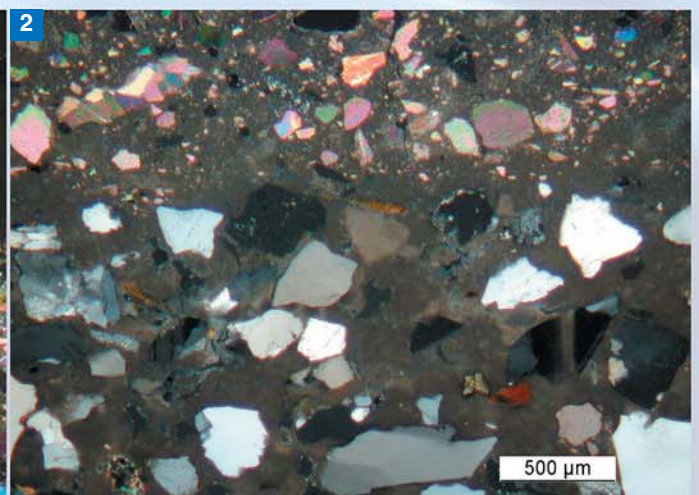
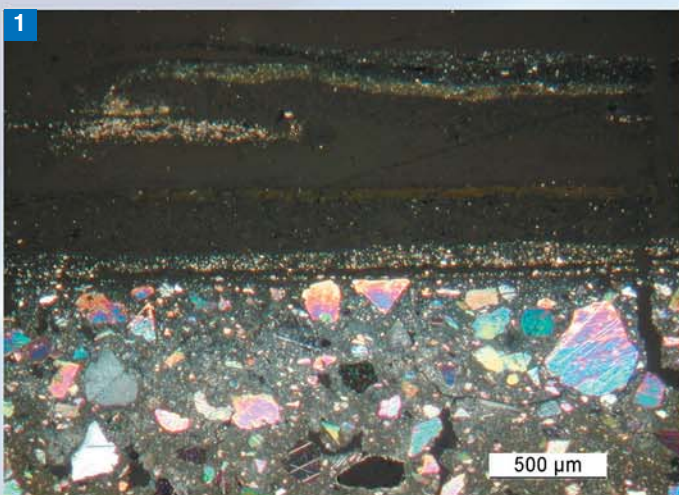
commissioned to analyse the Piermarini marmorino used as wall coating (photo 1) and the levelling compound on the original brick floors. Bearing in mind that the client was looking to bring the original marmorino back to the surface, at the time hidden beneath more recent coats of paint, the analyses carried out were aimed at finding a system for removing the painting without damaging the underlying marmorino.

A sample was taken from the walls leading through to the second-floor boxes. A thin section was then removed from the sample by cutting a wafer-thin strip (0.2 mm thick) through the paint work and underlying marmorino. The thin section was then studied under an optical microscope to highlight its stratigraphy. Picture 1 clearly shows that the sample has two areas with different characteristics: the top part is dark, while the area below is light and coloured. The top part is actually a number of superimposed coats of paint (which look grey-brown in the image) covering an overall thickness of approximately 1 mm.

sky-blue, we know they are made of calcite. Picture 2 shows the transition from marmorino to the underlying plaster, which is marked by the different nature of the aggregates (the marmorino coloured granules are carbonatic, the grey-white granules of the underlying plaster are silicatic) and their larger granule size. Furthermore, chemical and mineralogical analyses were carried out on each separate layer. The results of these analyses were combined with the results of the optical microscopy, making it possible to determine the right method for removing the paint based on a mix of suitable solvents which are total inert in relation to the marmorino.

Morphological Study by Means of Electron Microscopy

Electron microscopy is used when work needs to be carried out with higher magnification. Scanning a beam of electrons over any surface makes it possible to study details in the order of a μm (a thousandth of a millimetre) or even smaller.



is also marked by the varying nature of the aggregates, which are mainly carbonatic (calcitic) in the marmorino and silicatic (containing quartz and feldspars) in the plaster.

The underneath part is the famous Piermarini marmorino and has a totally different structure, since it is composed of granules buried in the underlying paste.

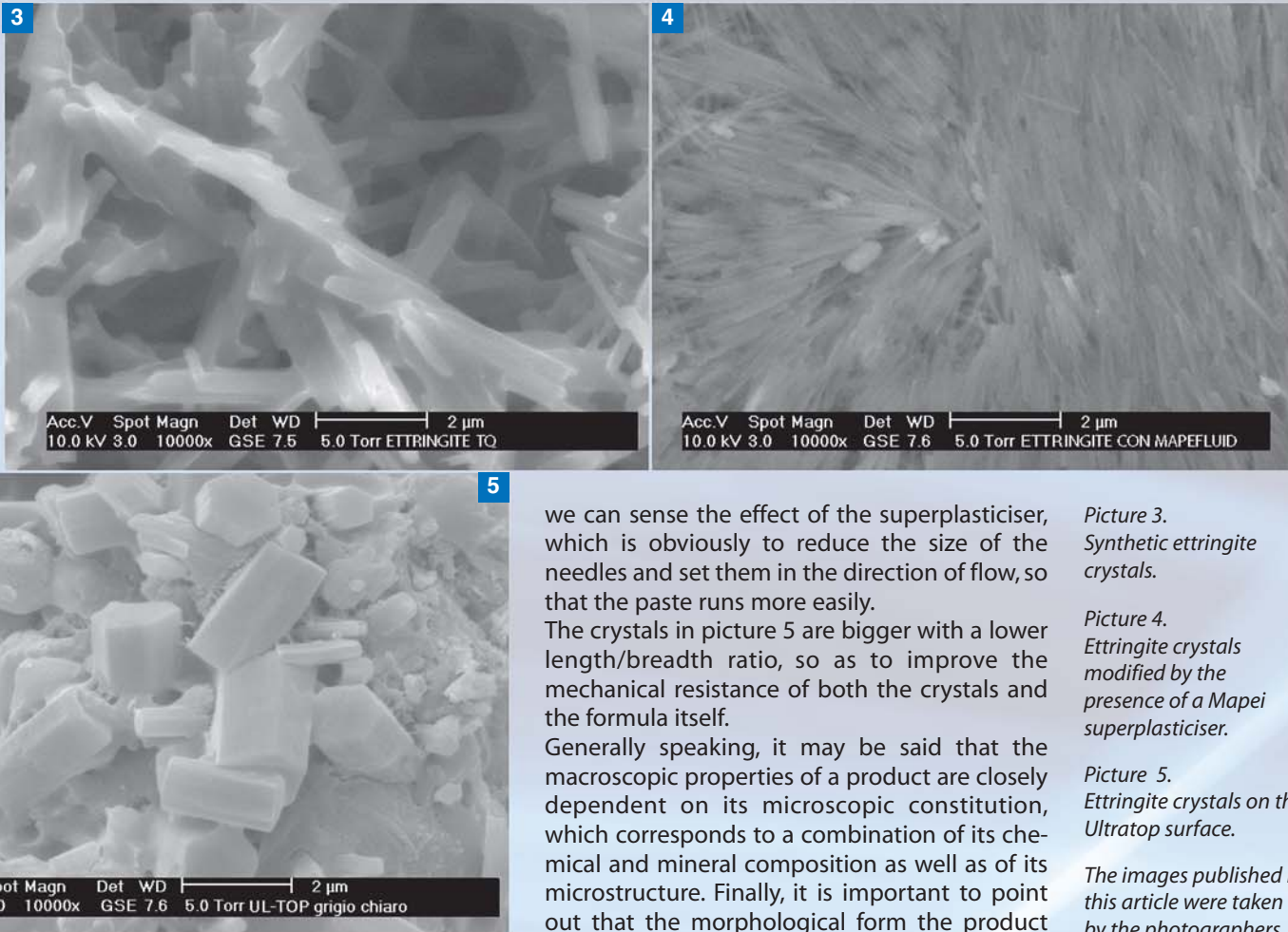
It is thanks to the bright colours observed when, as in this case, microscopic analysis is carried out by crossing two Nicol lenses that we can discover the nature of the constitutive minerals.

Since the marmorino granules have bright interference colours, ranging from yellow to red and

Since 2000 Mapei has been equipped with a Philips XL 30 ESEM-FEG microscope.

Compared to an ordinary SEM, an ESEM does not require the surfaces of samples to be treated, which can even be observed even when water is present.

This characteristic means that the first period of hydration of cementitious products can be analysed, which is vital for determining the final mechanical properties.



This new tool has provided fresh input for research aimed at gaining an understanding of the “workings” of existing products and formulating new products.

Let us now take a look at a few examples of what ESEM analysis can achieve (pictures 3, 4 and 5).

Firstly, it can be seen that each image shows a reference boundary of 2 µm. This makes it possible to study much smaller micro-structural details than with an optical microscope.

Let us also take a look at the morphology of the samples: all three figures show ettringite crystals, a hydrated sulphur aluminate with chemical formula $C_3A \cdot 3CaSO_4 \cdot 32H_2O$. Everybody can see that the ettringite does not have the same form: it is actually present in crystals measuring approximately 3 µm in length in picture 3; in picture 4, on the other hand, tiny ettringite needles a maximum of 1 µm in length stand alongside each other forming a sort of carpet; finally, in picture 5 the ettringite has the typical prismatic hexagonal-based “habitus” that characterises it.

The reason why it is so interesting to study the various aspects of ettringites is because they are the main product of hydration processes in fast-setting formulae and the first crystalline phase formed in Portland cementitious products.

A key to understanding why ettringite changes form lies in the various conditions in which it is produced.

Comparing picture 3 to picture 4, for instance,

we can sense the effect of the superplasticiser, which is obviously to reduce the size of the needles and set them in the direction of flow, so that the paste runs more easily.

The crystals in picture 5 are bigger with a lower length/breadth ratio, so as to improve the mechanical resistance of both the crystals and the formula itself.

Generally speaking, it may be said that the macroscopic properties of a product are closely dependent on its microscopic constitution, which corresponds to a combination of its chemical and mineral composition as well as of its microstructure. Finally, it is important to point out that the morphological form the product takes on following hydration is closely tied to the rheological properties of the paste and the physical properties the product will develop due to ageing.

Picture 3.
Synthetic ettringite crystals.

Picture 4.
Ettringite crystals modified by the presence of a Mapei superplasticiser.

Picture 5.
Ettringite crystals on the Ultratop surface.

The images published in this article were taken by the photographers Gianni Dal Magro, Gianni Baggi and the Mapei Analysis Laboratory in Milan.

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RESTORING THE

Diagnosics, Materials Preservation and Restoration Strategies.

by Luigi Coppola, Paolo Banfo, Tiziano Cerulli, Paola Di Silvestro and Paolo Giglio, Mapei S.p.A.

The Pirelli Building was erected between 1956 and 1960 under the leadership of architect Gio Ponti, who relied on Pierluigi Nervi, Arturo Danusso and Piero Locatelli to design the structures. Mapei participated actively in the construction of the building, which immediately became the symbol of modern Milan. Eighty thousand square metres of linoleum and Pirelli rubber floors were laid on masonite panels with ADESILEX 3.

Designed by Gio Ponti, it was the first example of floating floor in Italy. Now, as then, Mapei is a leader in the restoration work of the Pirelli Building, started in 2002 after the well known accident (a light aircraft crashed against the 26th floor of the building). This work was based on the awareness that the Pirelli Building is a monument of contemporary architecture; from this initial assumption stemmed the intention of preserving, as far as possible, the architectural and technical value of the building. The preservation work included the repair of the façade, the installation of new floors (both inside and outside the building) and the static consolidation of the concrete structures damaged as a result of the aircraft impact. The building was reopened on 18 April 2004. In the same time frame, two conferences were held on the subject: one at the Restoration Exhibition of Ferrara, on 27 March ("Modern Technologies and Restoration: the Pirelli Case") and the other at Milan Polytechnic on June 1st ("Restoring the Pirelli Building").

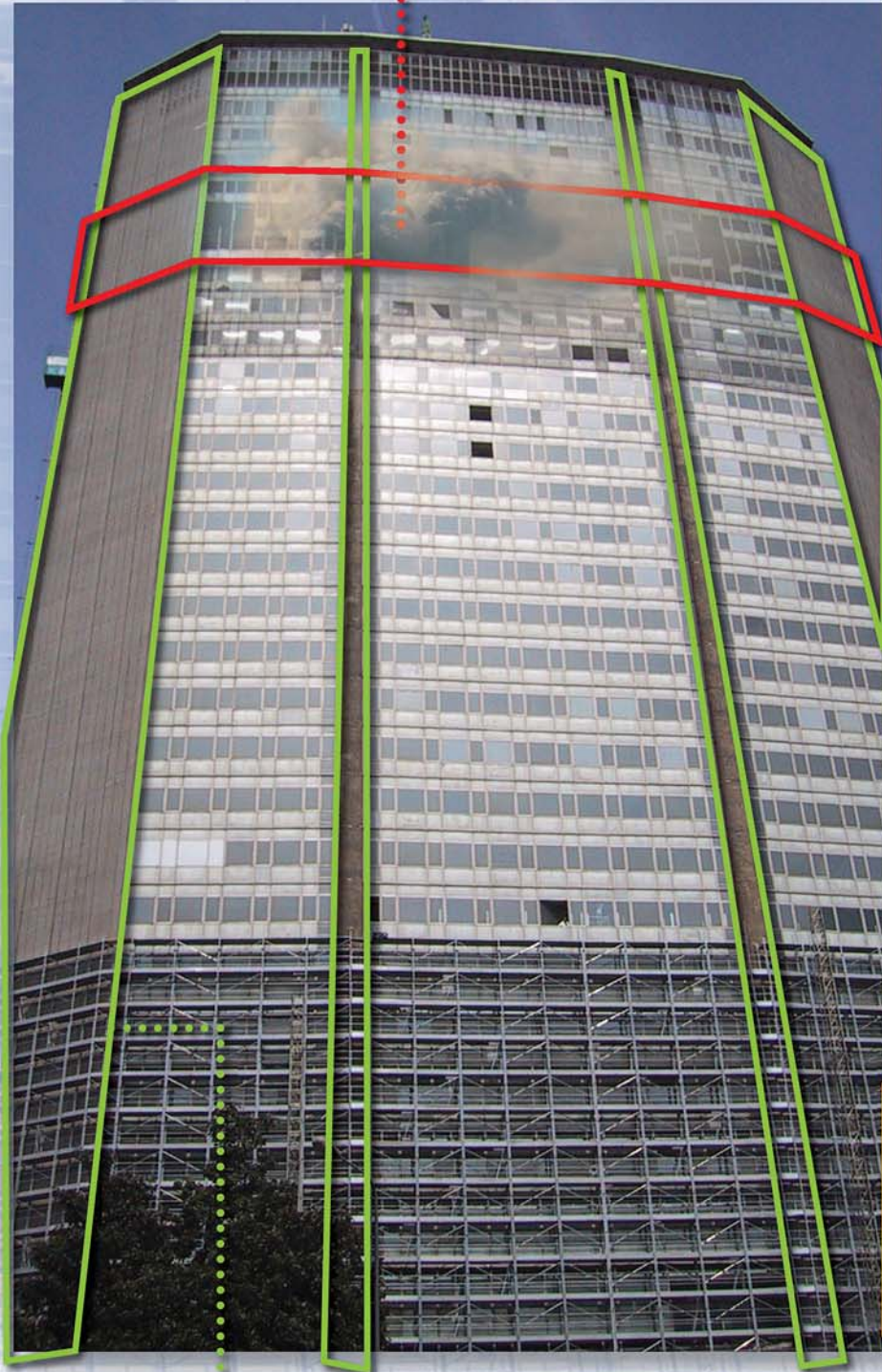
The Works

Within the Pirelli Building restoration project, two essential activities can be distinguished:

- 1) preserving the façades, with the definition of the scopes and procedures for the work aimed at preserving the existing authentic parts;
- 2) the functional restoration, with the definition of the work aimed at restoring deficient parts and to return the building to its full formal aspect and functionality.

With respect to façade preservation, restoration work was preceded by a diagnostic phase comprising tests conducted on site and laboratory analyses, which enabled the stratigraphy of the covering to be determined. The survey thus highlighted that the weak point of the system was represented, in nearly all cases, by the interface between mortar and concrete used for levelling off.

STATIC CONSOLIDATION OF CONCRETE STRUCTURES



FAÇADE PRESERVATION

The Pirelli building façade after the crash on 18 April 2002.

PIRELLI BUILDING



May 2004

REMAKE OF THE EXTERNAL PAVEMENTS

To determine the restoration technique to eliminate this pathology, on site tests were performed, which established that the best solution was injection of an epoxy system with very low viscosity into the irregularities between the mortar and the concrete.

In some points of the façade, where the mosaic tiles were completely detached, a new glass mosaic, which was a perfect reproduction of the original, was laid using high performance cementitious adhesives.

The building restoration project also included the reconstruction of the pavement: of the square in front of the building with porcelain tiles and "cement bonding" rubber; at the ground floor, of the conference hall and the lobby (made of Carrara marble, a material that is easily prone to staining, which required specific care); in all remaining stories of the building, with rubber, linoleum and wood.

Lastly, the structural restoration of the building as a result of the accident in April 2002, consisted of re-aligning the frames of the 26th and 27th floors and restoring the original load-bearing capacity for permanent and accidental loads by strengthening with post-tensioned cables - external to the girders - as well as static strengthening of the girders and the bottom face of the impacted beams by plating with carbon fibre reinforced plastic (CFRP).

1. Preserving the Façade

The "Pirellone", as the Milanese call the building, is a unique image and an unmistakable icon on the skyline of the city.

Situated in a strategic area in Milan, facing the Central Railway Station, it is about 125 m tall, and features two fully glazed main façades marked by the presence of two transverse "divides" in Piazza Duca D'Aosta, by the divides and by spaces for machinery in via Fabio Filzi, and joined at the ends by the two reinforced concrete "tips". All reinforced concrete structures on the façades, and the two end tips, are covered with glass mosaic tiles. In 2000, the Lombardy Region had already ordered a "monitoring" of the state of preservation of the façade and a general report on degradation pathologies, as a result of which a bold decision was made: to preserve the aluminium sections of the continuous façades and the glass tile mosaic, abandoning the more rough-and-ready replacement solutions, originally put forward.

1.1 The Glass Mosaic Covering.

1.1.1 Existing Mosaic.

For the purposes of the chemical-physical characterisation of the covering, X-ray diffraction (XRD) tests and X-ray fluorescence (XRF) tests were conducted on the existing mosaic, and many thin sections of the drawn samples were obtained (photo 1).

These investigations confirmed that the tiles, sized 2x2 cm and 4 mm thick, are fundamentally constituted of two layers (photo 2): both are made of silica (SiO₂), alumina and some alkaline oxides (Na₂, K₂O, MgO, CaO, PbO) which confirm the mainly vitreous nature of the covering. In addition to the above elements, the surface layer also includes zinc oxide (ZnO) and zirconium oxide (ZrO₂) and other oxides which cause the colouring (variable from off-white to gray-blue)

and the superficial hardness of the tile.

These analyses were also useful during the second phase of the works, when it became necessary to replace some of the tiles in the covering and integrate them with new ones that exactly reproduced the original ones.

1.1.2 New Mosaic.

The size and colour of the newly produced tiles were found to be similar to the original ones of the Pirelli Building, described in the previous paragraph. From a chemical point of view, the main elements which make up their composition (silico-aluminate) are very similar but they differ in the concentration of some minor elements. As shown in photo 3, the new tiles have a higher zirconium (Zr) content than the original ones and they do not contain any lead (Pb). Both types of tile (the original and the new ones) comprise of two main parts: the surface layer and the body. The surface layer of the new tiles is totally vitreous, whereas the body, for both sets of tiles, is characterised by the vitreous fraction and by the crystalline fraction.

1.2 Stratigraphy of the Façade Covering.

With respect to façade preservation, the restoration work on existing glass mosaic coverings was preceded by a first diagnostic phase, comprising tests conducted on site and laboratory analyses, which enabled the stratigraphy of the covering to be determined, schematically described as follows:

- load bearing structure of reinforced concrete;

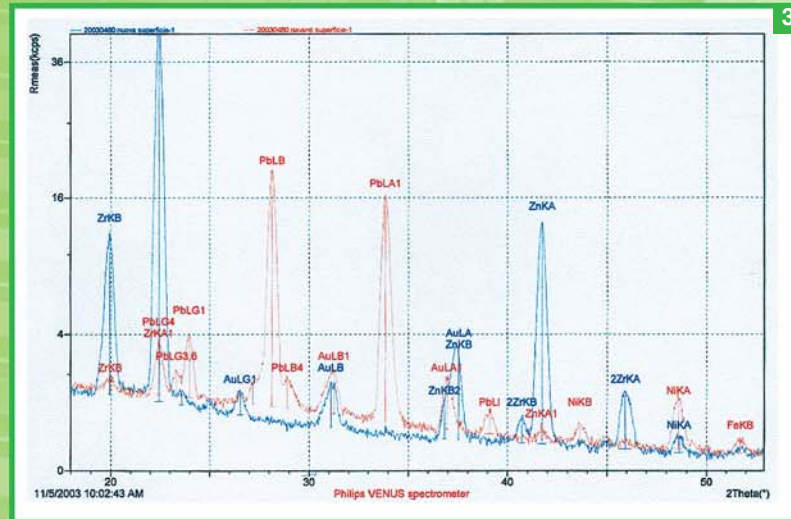
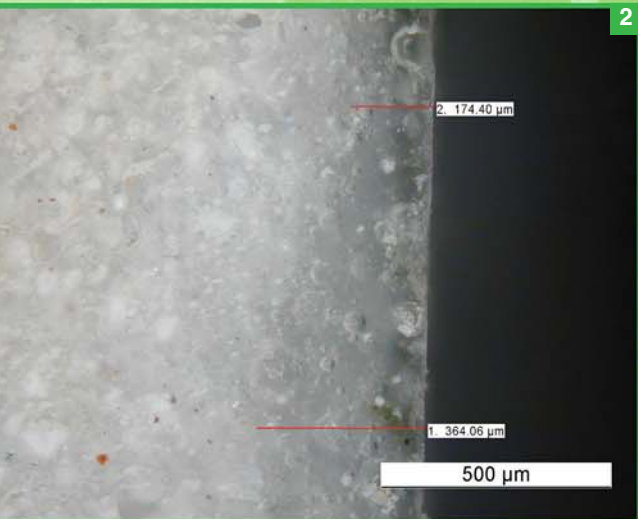


Table 1. Mechanical compression strength, volume mass (vm), ultrasound wave propagation velocity (v) and dynamic modulus of elasticity coefficient (E) of the concrete in the reinforced concrete structure.

Core n°	vm (kg/m ³)	R _{cil} (h/d=1) (N/mm ²)	R _{cil} (h/d=2)* (N/mm ²)	R _{cub} ** (N/mm ²)	v (m/s)	E (N/mm ²)
03-SE-06 75-01	2325	58.3	52.8	66.0	4160	38150
03-SE-07 75-01	2295	35.7	32.3	40.4	4130	37050
10-SS-08 75-01	2210	42.5	38.5	48.0	4240	37530
10-00-12 75-01	2255	33.8	30.6	38.2	4210	37850

*: R_{cil} (h/d=2) = R_{cil} (h/d=1) • 0.905

** : R_{cub} = R_{cil} (h/d = 2) / 0.80

Table 2. Volume mass (vm), water absorption (a), ultrasound wave propagation velocity (v), dynamic modulus of elasticity coefficient (E) and main constituents of the concrete used for levelling off.

Core n°	vm (kg/m ³)	a (%)	v (m/s)	E (N/mm ²)	Constituents
03-SE-06 75-01	2200	3.8	4000	33375	—
03-SE-07 75-01	2165	4.3	4210	36357	—
03-NO-13 75-01	2202	4.0	4220	37127	—
03-SE-15 75-01	2179	4.1	4120	35053	Quartz, Biotite, Chlorite, Lime
10-SE-06 75-01	2152	4.2	4100	34000	Quartz, Biotite, Chlorite, Lime

Photo 1. Macro photo of the covering tiles drawn from the Pirelli Building.

Photo 2. Section of a tile with measurements of the surface layer thickness: the thickness varies from about 100 to about 400 µm.

Photo 3. Comparison between the XRF spectra of the surface of an original tile of the Pirelli building (red) and of a Malaysian manufactured one (blue).

The elementary chemical analysis of the specimens was conducted by means of electronic microscopy acquiring the corresponding EDS in the Mapei R&D laboratories.

- layer of concrete with a thickness of a few centimetres, provided to eliminate "out of plumb", defined hereafter as "levelling concrete";
- 1-2 cm thick plaster, provided to enable laying the glass mosaic, hereafter called "installation mortar";
- "surface paste", a few millimetre thick, where the tiles of the glass mosaic were incorporated;
- glass mosaic tiles of the covering.

1.2.1 Elasto-mechanical Characterisation of the Layers.

To determine the elasto-mechanical characterisation of the layers, that is the physical-mechanical characteristics of the concrete and mortar in the façade, samples were drawn by coring.

Load bearing structure of reinforced concrete

Because of the low thickness of the various layers, the crush test to determine mechanical compression strength could only be conducted on 4 cores and only for the concrete of the load-bearing reinforced concrete structure. The results in terms of mechanical compression strength and volume mass, along with ultrasound wave propagation velocity and the estimated value for the dynamic modulus of elasticity coefficient are shown in Table 1.

Compression strength (R_{cub}) data indicate a high quality for the conglomerate of the reinforced concrete structure, taking into account that the lowest value was found to be 38.2 N/mm² and in one case an R_{cub} of 66 N/mm² was recorded. The excellent quality of the concrete in the structure was also confirmed by the values of the ultrasound wave propagation velocity, all higher than 4000 m/s, limit beyond which the conglomerate is generally assumed to be free of cracks, macro-voids and generally of compacting flaws. Lastly, the dynamic modulus of elasticity coefficient, about 37650 N/mm² on average, was consistent with the R_{cub} data.

Levelling concrete layer

No crush test could be instead performed on the layers of levelling concrete because of its low thickness. Therefore, to characterise the conglomerate, X-ray diffraction tests, water absorption tests to evaluate the open porosity of the material, and ultrasound wave propagation velocity tests were conducted (Table 2).

The ultrasound wave propagation velocity data, all higher than 4000 m/s, indicate that the levelling cement, in terms of compactness, absence of cracks and macro-voids due to compacting flaws, can be considered substantially equivalent to the conglomerate of the reinforced concrete structure. The excellent quality in physical and elasto-mechanical terms, and in particular the absence of macro-voids and significant porosities, was indirectly confirmed by the water absorption values. They were all found to be lower than 4.3%, thus indicating that the cement matrix is constituted by a reduced open porosity, considering that water absorption can exceed even 8-10% for poor-quality concrete. Moreover, these excellent properties were confirmed by the absence of on-going chemical degradation phenomena, as supported by the X-ray diffraction tests which excluded the presence of substances deriving from chemical reactions harming the conglomerate.

Installation mortar

X-ray diffraction tests highlighted also in the installation mortar the absence of degrading substances and the presence of physiological constituents only, i.e. quartz, feldspars, biotite and chlorite. The tests also pointed out the presence of calcium carbonate in a proportion of over 30% and the absence of hydrated lime, confirming that the installation mortar is cement lime mortar and is completely carbonated.

Surface paste

This paste was found to be constituted prevalently of cement and lime. Moreover, X-ray diffraction tests demonstrated the absence of gypsum, probably due to a partial "sulphatisation" of the cement material as a result of contact with the atmosphere and in particular with sulphur dioxide.

1.2.2 The Prevalent Damages.

On site surveys showed too that the damages present on the façade covering were in different forms. Among these forms the most widely recurring pertained to:

- 1) the complete detachment of the installation mortar and, therefore, of the glass covering leaving the levelling concrete visible (photo 4);
- 2) the detachment of only the mosaic tiles from the surface paste;
- 3) the partial detachment of the installation mortar from the underlying levelling concrete without the collapse of the glass mosaic covering (photo 5).

In some areas, this last type of damage was found to have gaps in the order of one tenth of a millimetre, while in other situations, instead, the detachment was so accentuated that, even without exhibiting the collapse of the mosaic covering, it had centimetre-thick gaps between the installation mortar and the levelling concrete. With the exception of some local situations, in no case was the following found:

- the detachment of the levelling concrete from the load-bearing structure;
- the detachment of the paste from the installation mortar. The survey thus highlighted that the



Photo 4. Complete detachment of the installation mortar and, therefore, of the glass covering leaving the levelling concrete visible.



Photo 5. Partial detachment of the installation mortar from the underlying levelling concrete without the collapse of the glass mosaic.

weak point of the system was represented, in nearly all cases, by the interface between mortar and levelling concrete.

1.3 Work Techniques.

1.3.1 Injections: Trials and Tests.

To determine the restoration technique to eliminate the most common type of damage (partial detachment of the installation mortar without the collapse of the glass mosaic covering), on site tests were conducted, entailing the injection of EPOJET LV*, an epoxy system with very low viscosity (140 mPa·s), in two zones called ZONE A and ZONE B.



Photo 6. Injection of Epojet LV epoxy resin. Drilling the injection holes (diameter of the holes: 10 mm; depth: 30 mm) in order to intercept the gap between the installation mortar and the levelling concrete. Cleaning the holes with compressed air. Positioning the injection tube and the monitor tube into the holes. Injecting epoxy resin.

Photo 7. Adhesion tests performed with torque meter.

The injection work was performed with double membrane pneumatic motor pump, with a maximum pressure of 8 bar and a capacity of 5 litres/min (in small detached areas, injections were made with a syringe), and it comprised the following steps (photo 6):

1. drilling two 10 mm diameter holes to a depth of more than 3 cm, in order to intercept the gap between *installation mortar and levelling concrete*;
2. cleaning the holes with compressed air at the pressure of 7-8 bar;
3. inserting the injection tube and the monitor tube into the holes to a depth of about 1 cm, sealing with EPORIB TURBO*, fast-hardening two-component polyester resin;
4. injection of compressed air at a pressure of 4-5 bar to ascertain whether the injection circuit was fully open between the two holes;
5. mixing the two components of the EPOJET LV*, a low-viscosity epoxy resin and injecting it into the bottom tube until it flowed out of the monitor tube in the top part, at a pressure of 0.5 - 2.5 bar.

After 7 days, with a manual torque meter adhesion tests were performed (photo 7).

Tables 3 and 4 show the results of the rip tests. The tests showed that the "crisis" takes place almost exclusively either in the adhesive layer that binds the covering to the installation mortar or in the levelling concrete, confirming the effectiveness of the selected epoxy system (EPOJET LV*), which in addition to sealing the gaps, was also able to penetrate into the cement matrix for about 3 mm, contributing to a better restoration of the monolithic nature of the façade elements (photo 8); EPOJET LV* is characterised by the fol-

lowing properties:

- Brookfield viscosity: 140 mPa·s
- adhesion to concrete: >3.5 N/mm²
- flexural strength: 20 N/mm²
- elasticity coefficient: 1100-1800 N/mm²

It is an epoxy system without either charges or solvents, characterised by a markedly lower viscosity than traditional epoxy systems used in the construction industry and, what is more, with fluidity characteristics that are absolutely incomparable with those of cement suspensions. Moreover, another factor providing more assurance in the degree of adhesion between the layers is the tensile strength by flexure of the system (20 N/mm²), far greater than the value (3-10 N/mm² max) that can be guaranteed by any cement system (even a



Table 3. Results of the adhesion tests performed in ZONE A.

Test n°	Max force (KN)	Adhesion (N/mm ²)	Type of failure
2A	5,1	2,0	Mosaic "paste" failure
2B	>9	>3,6	Levelling concrete failure
2C	>9	>3,6	Mosaic "paste" failure
2D	7,6	3,0	Levelling concrete failure

Table 4. Results of the adhesion tests performed in ZONE B.

Test n°	Max force (KN)	Adhesion (N/mm ²)	Type of failure
3B	>9	>3,6	Levelling concrete failure
3C	7,7	3,1	Mosaic "paste" failure

high performance one).

As a result of these preliminary test, the epoxy resin injection system was selected to restore the entire façade of the building, in those areas where the problem of the detachment of the installation mortar from the levelling concrete was prevalent.

1.3.2 Partial Bonding.

Partial bonding has been made where only the mosaic tiles were detached from the “surface paste” used for laying them. The restoration work consisted of bonding new tiles with ADESILEX P10* mixed with ISOLASTIC* diluted at a ratio of 1:1 with water, a high performance, deformable cementitious slip-resistant adhesive with extended open time, classified as C2TE according to EN 12004 and as S1 according to EN 12002.

1.3.3 Reconstructing the Render and Laying the New Mosaic.

To solve, on the other hand, the type of façade damage characterised by the complete detachment of the installation mortar from the levelling concrete, the decision was made to obtain a cement coat, using NIVOPLAN* mixed with water and 2 kg of PLANICRETE* per bag, levelling mortar for walls with high adhesion to supports (adhesion values > 2.5 N/mm after 28 days) and high flexural strength (8 N/mm²), to reduce the risk of cracking and modulus of elasticity coefficient approaching that of the coatings normally used in façades.

The new mosaic tiles were then laid using KERAQUICK* mixed with LATEX PLUS* diluted 1:1 with water, high performance slip-resistant improved fast setting, highly deformable, cementitious adhesive, classified as C2FT according to EN 12004 and S2 according to EN 12002.

Photo 8.
Section of a consolidated specimen.
From right to left: the tiles, the “paste”, the plaster and the levelling concrete.

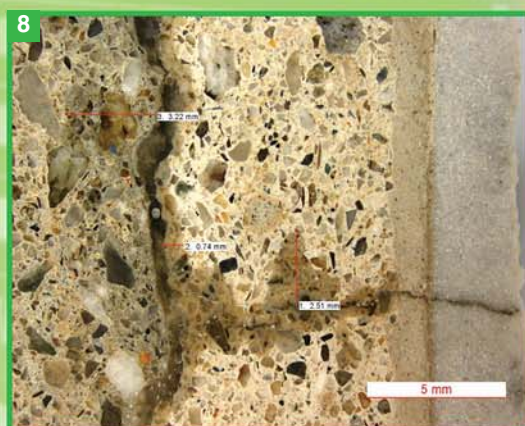


Photo 9.
Smoothing the concrete casting with Adesilex P4.

The selection of a different adhesive from the one used to install the individual tiles detached from the surface paste was necessary because this work was performed in winter, when night time temperatures dropped below freezing and there was the risk that, using a normal setting adhesive, the mixture water would freeze at night, thereby compromising the correct hydration of the adhesive.

Consequently, a fast-setting and hydrating adhesive was selected, which is also characterised by high deformability, essential for laying on very tall façades. To overcome the problems described above and to facilitate installation work, moreover, the floors of the scaffolding where work was being performed were hermetically closed by positioning plates of insulating material, and heated by injecting warm air from below, in order to maintain a constant temperature of about 5°C.

Both in the case described in this paragraph and in the one of the previous paragraph, the grouting of the joints between the tiles was done with ULTRACOLOR*, a high performance grout, classified as CG2 according to EN 13888, now substituted by Ultracolor Plus.

2. Installation of External Floors.

Within the scope of the restoration work on the Pirelli Building, the pavement of the square in front of the building was rebuilt.

The new pavement, made of porcelain tile and cement bonding squares, was laid on a concrete support.

After completing local repairs of the base layer using PLANITOP 400*, fast-setting shrinkage compensated thixotropic mortar (compressive strength $R_c > 45 \text{ N/mm}^2$, flexural strength $R_f > 7 \text{ N/mm}^2$, dynamic elasticity coefficient $E > 24000\text{--}28000 \text{ N/mm}^2$), the casting was smoothed (photo 9) with ADESILEX P4*, fast-setting adhesive ($R_c = 14 \text{ N/mm}^2$, $R_f > 5 \text{ N/mm}^2$). The porcelain tiles were laid with KERAFLEX*, high performance, slip-resistant cementitious adhesive with extended open time, class C2TE according to EN 12004. The laying of the cement bonding rubber, on the other hand, was performed with GRANIRAPID*, two-component, high performance fast-setting cementitious adhesive, classified as C2F according to EN 12004, by laying the adhesive both on the support and on the rear of the squares.

3. Installation of Internal Floor and Wall Coverings.

With regard to the floors inside the building, the laying began with the installation of Carrara marble plates in the lobby in front of the conference hall, using KERAQUICK*, a high performance fast-setting slip-resistant cementitious adhesive, classified as C2FT according to EN 12004.

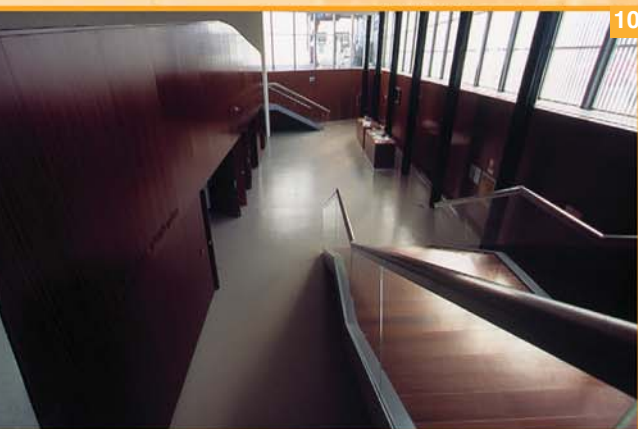
The selection of a fast-setting adhesive was dictated by the awareness that natural and artificial stone materials can undergo considerable warping and/or expansion in the presence of moisture or due to the effect of temperature gradients; moreover, in the presence of water originating from the substrate, they may spot and/or exhibit unsightly efflorescences.

In the specific case of Carrara marble, this material is in fact dimensionally stable, but it has the problem of staining, caused by the presence in the material of substances (mainly ferrous materials) which may be dissolved by the aqueous solution originating from the adhesive or from the sand and cementitious mortar used for laying according to traditional techniques; these substances, carried to the surface of the material, oxidise due to the effect of the action of oxygen and light, thereby causing the disfigurement of the covering.

To solve this problem, the Carrara marble in the



Pirelli building was laid only after verifying the absence of moisture rising from the substrate and determining that the residual moisture of the base is below values where there might be risk of the formation of the unsightly spots and efflorescences. Moreover, the material was laid using a rapid setting adhesive (KERAQUICK*), because



10



11



12

Photo 10.
Laying Carrara marble
with white Keraquick.

Photo 11.
Installation of linoleum
floors with Ultrabond
ECO V4SP

Photo 12.
Detail of the post-tension
cables and of the
reinforcement of the floor
slab with Carboplate
E170/50.

Photo 13.
Reinforcing the floor slab.



13

the high rate of hydration of the binder which it contains allows the moisture content in the adhesive to be limited to a value which avoids promoting the formation of spots on the plates of the stone material laid (photo 10).

The floor surface intended to be covered with DLW linoleum and Freudenberg rubber was first carefully analysed. This analysis helped to assess the most suitable technical solutions in order to prepare the laying surfaces correctly, a condition which is indispensable to guarantee functionality, mechanical strength and the absence of cracks.

In the areas which required complete dismantling and rebuilding of the existing substrates, TOPCEM PRONTO* ready-to-use, pre-packed, normal-setting mortar was used to prepare the screeds, which allowed a resilient floor to be obtained after only 4 days with a maximum residual moisture content level of 2%. The surface was then finished off with a layer of ULTRAPLAN* ultra-fast hardening, self-levelling compound to optimise the laying surface. On the surfaces which were still in good condition, the cracks were sealed with EPORIP* two-component epoxy based adhesive for cold joints and monolithic sealing of cracks in screeds. Once prepared, the screeds were then treated with PRIMER G* synthetic resin based primer in water dispersion and, where required, consolidated with PRIMER MF* two-component, solvent-free epoxy primer. These surfaces were also finished off with ULTRAPLAN*. The cork was laid on the ULTRAPLAN* layer using ULTRABOND ECO V4SP* universal adhesive in water dispersion for resilient floor coverings, while the linoleum was laid on the cork using ULTRABOND ECO 540* adhesive in water dispersion with low emission in volatile organic compounds (photo 11). The rubber floor covering, on the other hand, was laid on the ULTRAPLAN* using ULTRABOND ECO V4SP*. Once this phase was completed, a vinyl textile covering, produced by Liuni, was also laid. This operation was carried out using ADESILEX MT32* adhesive in water dispersion for the installation of wall coverings.

4. Static Consolidation of Concrete Structures.

On 18 April 2002, at 5.47 p.m., a single-engine Commander 112 Tc aircraft hit the façade of the Pirelli building in Piazza Duca D'Aosta, between the 26th and the 27th floor, practically on the centreline of the building, penetrating it.

As a result of the impact, the engine of the aircraft detached from the fuselage, exiting from the facade of via Fabio Filzi, and the two fuel tanks, located near the wings, exploded. Consequently, a breach opened in the facade and a fire started, with a highly visible column of smoke billowing from the building. After penetrating the façade of the building in Piazza Duca D'Aosta, the aircraft, which had already slowed down due to the impact against the façade, stopped its motion with the impact of the wings against the machinery spaces. On the floor of the 26th storey, there were no substantial damages. However, the shock wave caused by the overpressure generated inside the building, initiated by the fuel tank explosion, caused highly visible downward deformations in the 26th floor frames and upward deformation in the 27th floor frames.

The restoration project therefore entailed the static repair of the beams of the central area of the 26th and 27th floor frames, damaged as a result of the aircraft impact. Given the sizable deformation, the first step was to realign the frame by "forcing" it, in a controlled manner. Subsequently, after rebuilding the damaged sections and sealing the gaps, the damaged structures were returned to their original load-bearing capacity, by a combined action produced by post-tensioned external cables and plating the bottom face of the girders and of parts of the floor with carbon fibre reinforced plastic CFRP (photo 12).

4.1 Preparing the Substrate.

Plating operations were preceded by repairs to the damaged concrete: cracks were sealed with EPOJET* epoxy resin (Brookfield viscosity 380 mPa·s, adhesion to concrete > 3 N/mm²) injected at low pressure through small tubes located at the sides of the lesions.

The exposed reinforcements were then subjected to passivation treating the previously sand blasted and cleaned reinforcement rods with MAPE-FER*, two-component anti-rust mortar for the protection of reinforcing rods (adhesion to concrete > 2.5 N/mm², adhesion to sandblasted steel >

TECHNICAL DATA

2.5 N/mm², excellent resistance to saline fog after 120 h in accordance with DIN 50021).

The degraded concrete sections were reconstructed by casting into formwork, using self-compacting cement with volumetric stability and high mechanical strength, prepared with STABILCEM SCC* and GRAVEL 0-8* (slump flow 71 cm, compressive strength after 28 days $R_c > 49$, flexural strength after 28 days $R_f > 6$ N/mm², dynamic modulus of elasticity coefficient $E=25000$ N/mm²).

4.2 Applying Carbon Fibre Laminas.

After completing repairs on the degraded concrete, the structural strengthening of the girders and of the bottom face of the floor slabs was performed by applying pultruded carbon fibre laminas.

The procedures followed to apply the laminas are as follows:

1. thorough cleaning of the substrate by sandblasting, hydro-blasting or simple brushing, to eliminate every crumbly and incoherent part from the concrete;
2. applying, with brush or roller, MAPEWRAP PRIMER 1*, two-component superfluid solvent-free primer based on epoxy resins (viscosity: 300 mPa·s, adhesion to concrete >3 N/mm²), with the property of consolidating concrete surfaces before the carbon fibre laminas are applied;
3. applying a uniform, 1-1.5 mm thick, layer of ADESILEX PG1* epoxy adhesive on one side of the pultruded lamina after removing the protective film;
4. laying a further layer of ADESILEX PG1* also on the substrate where the lamina is to be bonded;
5. laying the pultruded carbon fibre laminas CARBOPLATE E170/50* (photo 13) exerting a constant pressure on its whole length with a rigid rubber roller and eliminating excess resin with a spatula;
6. applying medium viscosity epoxy adhesive in uniform thickness on the laminas, to enable sandblasting the surface if it is to be plaster coated.

5. Conclusions.

The restoration of the Pirelli Building involved mainly repairing the facade covering, remaking external pavements and internal floors, and the static strengthening of the girders and floor slabs of the 26th and 27th stories, impacted as a result of the aircraft accident on 18 April, 2002.

This article has described the preliminary diagnostic work aimed at defining the restoration techniques and the materials to be used to preserve and restore the existing authentic parts of the mosaic covering of the facade. For the remake of the pavements and floors, and in particular when laying new coverings, particular attention was paid to adhesive selection. Lastly, the functional repair of the impacted structures of the Building was achieved by reinforcement with post-tensioned cables, to restore permanent and accidental load-bearing capacity, and plating with pultruded carbon fibre laminas, to restore load-bearing capacity for exceptional loads.



Pirelli Building, Milan (Italy)

Work: repairing the facade's glass mosaic coverings, remaking the external pavements laying the internal floors and consolidating the concrete structures

Years of construction: 1956 - 1960

Years of the preservation works: 2002 - 2004

Contractor: Grassi & Crespi Srl. and Marcora Srl.

Mapei Co-ordination: Andrea Aliverti, Tiziano Cerulli, Luigi Coppola, Fulvio Bianchi, Paolo Giglio, Massimiliano Nicastro and Matteo Venturini, Mapei S.p.A.

***Mapei Products:** the products referred to in this article belong to the "Products for Ceramic Tiles and Stone Materials," "Building Speciality Line" and "Products for the Installation of Resilient, Textile and Wood Floor and Wall Coverings" ranges. The technical data sheets are available on the "Mapei Global Infonet" CD/DVD or at the web site: www.mapei.com.

Mapei adhesives and grouts conform to EN 12004 and EN 13888 standards.

Adesilex MT32: adhesive in water dispersion for the installation of wall coverings.

Adesilex P4 (C2F): high performance rapid setting full contact cementitious adhesive for ceramic tiles and stone material.

Adesilex P10 (C2TE): white high performance cementitious adhesive with no vertical slip and extended open time for glass, ceramic and marble coverings.

Adesilex PG1: thixotropic epoxy adhesive for structural bonding.

Carboplate: pultruded carbon fibre plates pre-impregnated in epoxy based resin, protected by a double film of plastic.

Epojet: two-component superfluid epoxy resin for injection.

Epojet LV: two-component very low viscosity epoxy resin for injection in micro cracks.

Eporip: two-component epoxy based adhesive, for cold joints and monolithic sealing of cracks in screeds.

Eporip Turbo: very fast hardening two-component polyester resin.

Granirapid (C2F): high-performance, deformable, fast setting and hydration two component cementitious adhesive for ceramic tiles and stone material.

Gravel 0-8: cementitious binders to be used, mixed with Stabilcem or Stabilcem SCC, in place of cement to manufacture pumpable controlled shrinkage concrete or self-compacting concrete for the repair of damaged concrete structures.

Isolastic: flexible latex additive to be mixed with Kerabond, Kerafloor and Adesilex P10.

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

Keraquick (C2F; class S2 according to EN 12002 when mixed with Latex Plus): high performance, deformable, rapid setting cementitious adhesive with no vertical slip for ceramic tiles and stone material.

Latex Plus: latex admixture inducing elasticity to be mixed with Keraquick.

Mapefer: two-component anti-rust mortar for the protection of reinforcing rods.

Mapewrap Primer 1: epoxy primer specific for the Mapewrap system.

Nivoplan: levelling mortar for interior and exterior walls and ceilings.

Planicrete: synthetic-rubber latex for cementitious mixes.

Planitop 400: fast setting shrinkage compensated thixotropic mortar for cortical restoration and the finishing of reinforced concrete by applying in a single coat a thickness of mortar variable between 1 and 40 mm.

Primer G: synthetic resin based primer in water dispersion.

Primer MF: two component solvent free epoxy primer to be used as a adhesion promoter for the Mapefloor product range and to consolidate and waterproof cement substrates.

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

Topcem Pronto: pre-blended ready to use mortar with normal setting for fast-drying screeds (4 days).

Ultrabond Eco 540: adhesive in water dispersion with low emission of volatile organic compounds (VOC) specifically formulated for installing linoleum flooring.

Ultrabond Eco V45P: universal adhesive in water dispersion with low emission of volatile organic compounds (VOC) for resilient floor coverings with extended open time.

Ultracolor (CG2): fast setting and drying grout for 2 to 20 mm joints, available in 26 colours; does not produce efflorescence. **N.B.** The product has been replaced by Ultracolor Plus.

Ultraplant: ultra-fast hardening (12 hours) self-levelling compound for thicknesses from 1 to 10 mm per coat.



NEW YORK CITY MARATHON 2005:

"I WAS THERE"

When you think of a big marathon, it is New York that immediately comes to mind: it is the dream of many marathon runners to get the chance some day to run the 42 km through the Big Apple and be able to say "That year I was one of the 40,000 who set off across Verrazzano Bridge...I made it to Manhattan and the finish in Central Park, after crossing Staten Island, Brooklyn, Queens, the Bronx...". The 2005 race, which tenacious Paul Tergat won ahead of Hendrick Ramaala after just beating him at the line, included about a dozen keen amateurs wearing Mapei vests, who can proudly say "I was there...". They are athletes who managed to make their mark twice, because they achieved their ambitious goal twice. As some of Mapei's most outstandingly dynamic and hard-working customers, they won the right "out in the field" to be invited to be part of the "cube-patterned" team for the New York race. And not just anybody can claim that: on one hand, it is getting harder and harder these days to keep competitive in the building industry; on the other hand, it is easy to see how determined you need to be to reconcile work and business commitments with the training required to run a marathon, really demanding not just for the physical effort it requires, but also due to the fact it takes hours and hours of training: and, as we all know, nowadays time is often the most precious commodity of all...

And then after you have "earned your team place" and you have done all the training (for at least four months..), that is not the end of it, because the New York race is not just "a" marathon: it is "the" marathon. You run through a unique setting for this kind of event, on a tough course which seems to be all up and down without a yard on the flat...

A Dozen Mapei Customers, Helped Along By Sport Service Mapei, Ran The Big Apple Marathon.

Text by Sport Service Mapei



There is something adventurous about even trying to run a marathon and finishing still has an aura of healthy sporting heroism about it, regardless of how long it takes to complete the race: after all - if you think about it - the winner takes just under two hours ten minutes, but the rest of the field..... runs for three, four hours or, in some cases, even longer (remember that a top-class marathon runner hardly ever runs for over two hours forty minutes out on a long training run!).

To plan or finishing their preparations after being "selected", a number of runners turned to our centre (Sport Service Mapei) in Castellanza (near Milan), which provided them with detailed training schedules after they underwent an assessment test and careful medical checks.

And it is worth pointing out that our athletes/customers stood out for their friendliness and team spirit. An incredible team spirit was built up over the days leading up to the race. Daily trips to this extraordinary city's main attractions were fitted in between group training sessions. And in the evening, everybody met for dinner in different restaurants. It is worth remembering the meal at San Domenico's (an Italian

restaurant overlooking Central Park) together with some very special sports stars - but, most significantly, good friends - who told everybody about the best moments in their sports careers: Giuliano Battocletti was there from our CoVer-Mapei running team, the reigning Italian 10,000 metres champion, on the eve of his first ever appearance in a marathon (he paid the price though, eventually pulling up after 26 kilometres, but learning a lot from the experience: so much so that just four weeks later, on 4th December, he actually made the podium in Milan, beating a whole bunch of Kenyan runners!).

And then there was Giacomo Leone, the last Italian to win in New York in 1996; it was he who warned our runners that "There is not a yard of flat ground..." and, glassy-eyed, he recalled the race that changed his life: "I flew over to New York by economy class and returned in a limousine and first-class flight..."

But there were not only star runners at the meal: Michael Rogers was there, a former Mapei cyclist (he will be riding for Telekom in 2006), who is the reigning world champion for the individual time trial (he can actually boast

three world titles) and came to see us at San Domenico's while he was.... on his honeymoon with Alessia (who once worked for the Sport Service Mapei, which is where she actually met Michael).

And then there was the "human fish" (which was the nickname we gave him): Gianluca Genoni, the world recorder holder for deep-water diving in variable buoyancy control. To tell truth, his record for holding his breath in a swimming pool is actually even more startling than his diving record: over 12 minutes...without breathing! "Yes, but after taking a deep breath of pure oxygen", so he pointed out "without hyperventilating oxygen before going under, I can only hold my breath for just under nine minutes..." (...in other words, no big deal?!). It was his first marathon, too - after training all the way under the watchful eye of Sport Service Mapei in Castellanza - a few days later he reached the finish in Central Park in 3 hours 32 minutes; not satisfied with his own performance, he ran again in Milan - again in the Mapei vest - improving on his personal best by over 10 minutes. So what times did the rest of our "special athletes" do in New York? They ranged from 2 hours 49 minutes to 4 hours 41 minutes. And only two failed to finish: in the Bronx; but as we know life is tough out there, however you look at it.

"Let loose the marathon runner inside you", so said the slogan for the 2005 marathon in Milan (which Mapei did not just sponsor, but actually took part in on a competitive level). There are places available for the 2006 marathon in New York (no mean achievement, considering that there are 30,000 people around the world who want to take part but cannot get a number!). The race to win a cube-patterned vest and set off an adventure unique of its kind is already under way. So if you are a good customer or good retailer, you might also be a good marathon runner! DM

Photo. 1

The finish in Central Park. The athlete wearing the Mapei vest is Alessandro Cerbai, who works for Focardi & Cerbai from Sesto Fiorentino (near Florence), one of Mapei's customer.

Photo 2.

During the days leading up to the race, the athletes got the chance to go sightseeing and admire New York city's main attractions. A team of Mapei amateur marathon runners posing for a souvenir photograph with a friendly New Yorker.



A GREAT PARTY IN THE CASTLE

On Friday night, 30 September, 2005 (the second-last day of the Cersaie trade fair), the 4th edition of the "Mapei Reference Grand Prix" prize-giving ceremony took place in the marvellous Re Enzo Castle, located in the heart of Bologna, in the charming setting of the magnificent and sumptuous Podestà Hall overlooking the city's main square, Piazza Maggiore. The Mapei Reference Grand Prix is a competition open to all the Group's subsidiaries, with the aim of awarding the best projects that made use of products supplied by either Mapei or the companies belonging to the Group. Entries for the references competition came from all around the world and were collected with the subsidiaries' help between October 2004 and September 2005.

The jury used the following valuation criteria in judging the entries:

- 1) visibility
- 2) suitability of the products for the projects
- 3) quality and amount of the Mapei products used
- 4) importance of the customer
- 5) enclosed documentation (report and photos).

The following pages portray the winning projects (those ranking first, second and third in each category), reporting their main features and the reasons why they were awarded. For lack of space, we could only publish the photos of the winners of the 1st prize.

The next issues of Realtà Mapei International will carry more detailed reports of a number of the prize-winning projects.

It is already possible to submit applications for the 5th edition of the Mapei Reference Grand Prix: please send documentation of the projects to Mapei's Marketing Department by 31, August 2006.

4th REFERENCE GRAND PRIX

1st prize) GARDEN OF THE GIANT - FERRARA - ITALY

Awarded for the originality and the aesthetic and artistic value of the work.

Mapei S.p.A. - Italy

Distributor: Silla - Ferrara

1st prize) NATIONAL MUSEUM OF THE AMERICAN INDIAN - WASHINGTON - USA

Excellent example of ceramic installation on exterior surfaces and on the surfaces of a fountain.

Mapei Corp. - USA

Distributor: Morris Tile - Alexandria (Virginia) - USA



2nd prize) PORTA VITTORIA SUBWAY LINK - MILAN - ITALY

Awarded for the detailed photographic report of the various stages of the work.

Mapei S.p.A. - Italy

Distributor: Galmarini - Milan

3rd prize) BMW MOTORCYCLES SHOWROOM - ESSEN - GERMANY

Awarded for the suitability of the products for the job site (laying an anti-fracture, waterproofing membrane) and the complete solutions proposed (including primer, levelling compound, adhesives, grouts, etc.).

Mapei GmbH - Germany

Distributor: Raab Karcher Baustoffe GmbH - Essen

3rd prize) THE MET OFFICE - EXETER - UK

Awarded for the detailed presentation of the job site and the large amount of products supplied.

Mapei UK Ltd - UK

Distributor: Stone & Ceramic Ltd - London



2nd prize) MULTIFUNCTIONAL TIPSPORT ARENA - LIBEREC - CZECH REPUBLIC

Awarded for the large amount and variety of products supplied and for the several product lines involved. Highly suitable and complete use of the ceramic product range.

Mapei spol. s.r.o. - Czech Republic



RANGE: PRODUCTS FOR CERAMIC TILES AND STONE MATERIALS

1st prize) PIRELLI BUILDING (2nd phase) - MILAN - ITALY

Awarded for the variety and large amount of products used to repair and build the substrates and install rubber floorings, in addition to the importance and visual impact of the project itself. Also awarded for the commitment, time and devotion of Mapei's expert technicians to this job.

Mapei S.p.A. - Italy

Distributor: Biesse - Milan

2nd prize) BYALISTOK UNIVERSITY - POLAND

Awarded for the special and original presentation of the project: the poster will also be used to advertise NOVOPLAN 21.

Mapei Polka Spzoo - Poland

3rd prize) FRANCISCO SA CARNEIRO AIRPORT - PORTO - PORTUGAL

Awarded for the importance and visual impact of the works, which involved the installation of 17000 m² of rubber with ADESILEX G12.

Lusomapei Lda - Portugal

3rd prize) PARK HYATT HOTEL - ZURICH - SWITZERLAND

Awarded for the variety and large amount of products from the Mapei resilient range used on this job site.

Mapei Suisse SA - Switzerland



RANGE: PRODUCTS FOR THE INSTALLATION OF RESILIENT, TEXTILE AND WOOD FLOOR AND WALL COVERINGS



1st prize) BOVISA TOWERS - MILAN - ITALY

Awarded for the large amount of ULTRABOND P902 2K supplied and the detailed photographic documentation of the different phases of the wood installation.

Mapei S.p.A. - Italy

2nd prize) PARK VILLAGE CONFERENCE CENTRE - MUNICH - GERMANY

Awarded for the attention paid to the safety of the installer and the final user.

The system proposed included PRIMER G, ULTRAPLAN ECO (both with very low emission of VOC) and ULTRABOND P990 1K (hypoallergenic adhesive).

Mapei GmbH - Germany

3rd prize) MONTE LAA APARTMENTS - VIENNA - AUSTRIA

Awarded for the suitability of the proposed technical solution for the work: 7000 m² of parquet were installed with PRIMER MF + ULTRABOND P902 2K.

Mapei GmbH - Austria

RANGE: PRODUCTS FOR THE INSTALLATION OF PARQUET



1

1st prize) TEATRO ALLA SCALA - MILAN - ITALY

This worldwide prestigious restoration project involved the use of many Mapei products. Awarded for the detailed photographic documentation enclosed and its high potential in communication campaigns.
Mapei S.p.A. - Italy

2nd prize) BRIDGE OVER THE ADIGE RIVER - MASI (PADOVA) - ITALY

Awarded for the constant presence of Mapei expert technicians on site during all the working phases. This work can be used as an excellent example when reinforcing and repairing a bridge.
Mapei S.p.A. - Italy

2nd prize) SAN PANCRAZIO CHURCH - VEDANO OLONA (VARESE) - ITALY

Awarded for the special structural reinforcement system proposed to restore an historical building (structural reinforcement of masonry with FRP, which was among the main themes discussed at the SAIE 2005 conference).
Mapei S.p.A. - Italy

3rd prize) No 3 CHURCH STREET BUILDING - SINGAPORE CITY - SINGAPORE

Awarded for the large amount and completeness of the systems supplied (repair and finishing of concrete surfaces and structural consolidation with FRP). It is one of the largest applications of FRP worldwide.
Mapei Far East Pte Ltd - Singapore

3rd prize) OTTOMAN BATHS - PAPHOS - CYPRUS

Awarded for the suitability of the products in the restoration of a seventeenth-century monument.
Mapei Hellas SA - Greece
Distributor: Gevo Ltd - Nicosia (Greece)

RANGE: CEMENTITIOUS AND RESIN FLOOR COVERINGS



1

1st prize) HIGH-SPEED RAILWAY LINE NOVARA-TURIN - ITALY

Awarded for the importance of the project: the Mapei systems involved were tested by major contractors and were also supplied for building further Italian high-speed railway lines.
Mapei S.p.A. - Italy

2nd prize) ROCCA DI FRASSINELLO WINE CELLAR - GAVORRANO (GROSSETO) - ITALY

Awarded for the importance of the project from an architectural and design point of view (a Renzo Piano project). Excellent example of the use of MAPECRETE SYSTEM.
Mapei S.p.A. - Italy

2nd prize) EGNATIA ODOS MOTORWAY - KOZANI - GREECE

Awarded for the suitability of the product for the project, that led to the building of a viaduct which is part of the biggest and oldest Greek motorway network.
Mapei Hellas SA - Greece
Distributor: Fibran SA - Salonicco (Greece)

3rd prize) COLACEM CEMENT WORKS - RAGUSA - ITALY

Excellent example of building a concrete structure using innovative systems.
Mapei S.p.A. - Italy



1st prize) CAVALLI SHOWROOM - SESTO FIORENTINO (FLORENCE) - ITALY

Awarded for the technical complexity of the works' implementation, involving a non-stop application of about 3500 m² of white ULTRATOP.
Mapei S.p.A. - Italy

2nd prize) SAN BERNARDO CHURCH - CASSINANOVA DI BOLLATE (MILAN) - ITALY

Awarded for the suitability of the product for the project, which involved the first ever application of polished ULTRATOP.
Mapei S.p.A. - Italy

3rd prize) SPORT TOWN - MILAN - ITALY

One of the first applications of MAPEFLOOR SYSTEM.
Mapei S.p.A. - Italy
Distributor: Pavibeton - Sant'Angelo Lodigiano (Lodi) - Italy

3rd prize) SACCARIA STOCKHOUSE - SENIGALLIA (ANCONA) - ITALY

One of the first applications of MAPEFLOOR SYSTEM on large surfaces in industrial environments.
Mapei S.p.A. - Italy
Distributor: Saccarina Idrotermosanitari - Senigallia (Ancona)

RANGE: ADMIXTURES FOR CONCRETE



1



1st prize) EXCELSIOR HOTEL - PALERMO - ITALY

Awarded for the large amount of products supplied and the completeness of the systems proposed for the repair of the façades of one of the most ancient hotels in Palermo. This was a very prestigious project for the most important city in Sicily.
Mapei S.p.A. - Italy
Distributor: Zucchero Giuseppe;
Ceramica Edilizia - Palermo

2nd prize) EXCELSIOR VITTORIA HOTEL - SORRENTO (NAPLES) - ITALY

Awarded for the originality of the solution proposed: SILEXCOLOR PAINT was used to paint dummy wooden beams on the façade of this important seaside hotel in Sorrento.
Mapei S.p.A. - Italy
Distributor: Tommaso Fiorentino - Sorrento (Naples)

3rd prize) MOLDE CATHEDRAL - NORWAY

One of the first complete and well-documented reports on a project involving products from the coatings range, provided by Rescon Mapei - Norway.
Rescon Mapei AS - Norway

3rd prize) ASNAGHI VILLA - PADERNO DUGNANO (MILAN) - ITALY

Awarded for the care and attention in documenting the restoration phases carried out by using products from the MAPE-ANTIQUE and SILEXCOLOR lines.
Mapei S.p.A. - Italy



The following large underground projects were all awarded for their worldwide importance and notoriety.

1st prize) NORTH-WEST SUBWAY LINK - ROME - ITALY
Mapei S.p.A - Italy

1st prize) TUNNEL DE SOUMAGNE - BELGIUM
Mapei Benelux SA/NV - Benelux

2nd prize) SÖDRA LANKEN TUNNEL - STOCKHOLM - SWEDEN
Rescon Mapei AB - Sweden

3rd prize) SINGAPORE SUBWAY - SINGAPORE
Mapei Far East Pte Ltd - Singapore

3rd prize) OPORTO SUBWAY - PORTUGAL
Lusomapei Lda - Portugal

