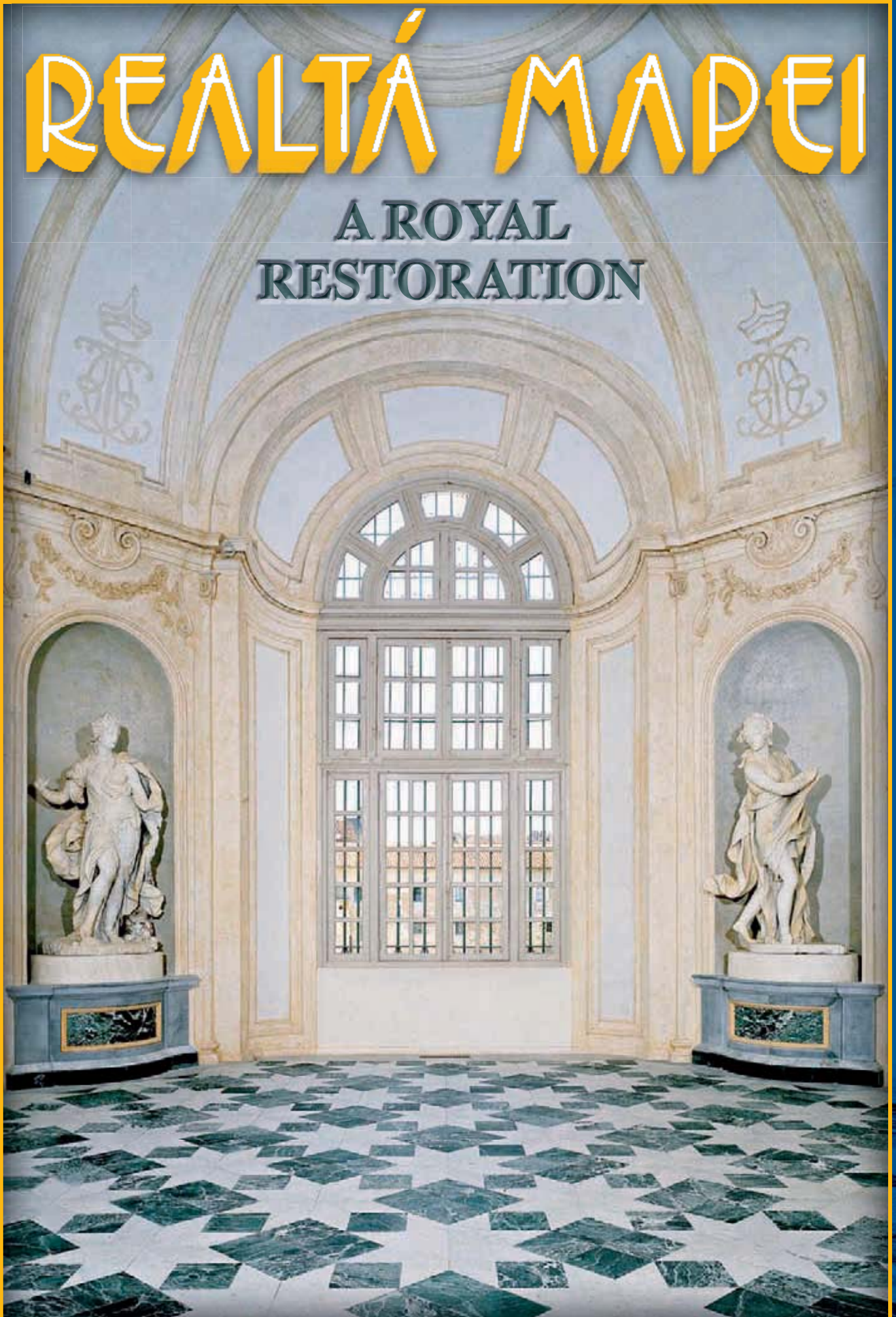


# REALTÁ MAPEI

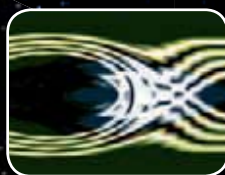
## A ROYAL RESTORATION



## EDITORIAL



Hit the targets of Mapei Vision 2010



Invest in research



Invest in globalisation



Invest in young people



Invest in technology for people and the environment



Make the most of experience

# FULL SPEED AHEAD INTO THE FUTURE



2007 was an unforgettable year for Mapei. Apart from all the exciting celebrations to commemorate the 70<sup>th</sup> anniversary of its founding, it provided the chance to take stock of the results achieved so far and also to think about and plan for the future. Mapei's secret lies in its ability to draw on all the experience it has

gained and, at the same time, to look ahead constantly setting itself new goals.

All the political turmoil, economic crises and volatile market situation since 1937 have not prevented Mapei from growing all the time and imposing itself worldwide. This is because the Company has always managed to hold onto its deeply entrenched roots while looking ahead to the future, focusing on new markets to be broken onto and designing technologically cutting-edge products.

This corporate philosophy, combined with its attention to human relations, allows Mapei to keep in close contact with its customers, very often actually envisaging what their demands and requirements will be. Communication is the driving force behind this growth

and Realtà Mapei is the Company's main means of communication. The key to all this is good communication both inside and outside the Company, working along the lines of maximum transparency in order to voice everything Mapei has to offer.

Transparency means carefully recounting exactly what happens on our building sites, laboratories and market encounters. The wonderful exhibition at Cersaie 2007 emblematically provided a decade-by-decade account of Mapei's history, culminating in an area specially devoted to the future.

A future exemplified by products and solutions which Mapei has already managed to produce thanks to its commitment to Research & Development and which show that for Mapei tomorrow is "already here".

Some of the basic guidelines were given at the aforementioned exhibition, where emphasis was once again focused on the importance of investment in internationalisation, technology for people and the environment, creativity and the latest ideas of young people.

Our magazine is also committed to heading in this direction.

A Company which after seventy years still has this great driving force proves that it knows how to make the most of the fuel provided by its own experience to accelerate into the future. We hope to be able to share this future with our readers.

*Adriana Spazzoli*

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GRAPHIC DESIGNER: Studio Magazine – Milan (Italy)

PRINTED BY: Arti Grafiche Beta - Milan

PUBLISHED BY: Mapei SpA  
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REALTÀ MAPEI - BIMONTHLY MAGAZINE  
Registered by the Tribunal of Milan  
n. 363/20.5.1991  
Realtà Mapei International is published  
4 times per year

**Main cover photo:**

The photo shows an inside hall of the Venaria Reale Palace (near Turin, Italy). The Palace reopened last October after completion of renovation works. The article at pages 44-49 describes this project and Mapei's contribution.

Photos were supplied by the Centro Documentazione del Progetto la Venaria Reale,

which we would like to thank.



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[www.mapei.com](http://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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# THE SUN SHINES ON MAPEI VIETNAM

**A new manufacturing facility was officially opened in Vietnam**



Exactly 26 months after the groundbreaking ceremony on 30 August 2005 (which we reported in an article of *Realtà Mapei International* no. 19), the official opening ceremony of Mapei Vietnam's plant was held on 31 October 2007 in the Chulai Open Economic Zone, Quang Nam Province. This is an important step in the process of Mapei Group's penetration into this Asian country, which began in 2003 with the founding of a representative office in Hanoi and went on with the opening of several commercial offices in Danang, Hanoi and Hochiminh City in the following years.

The decision to open a manufacturing facility was due to the positive results that the local subsidiary, Mapei Vietnam, obtained in the Vietnamese market. The results are related to the relevant investments in the construction sector (for building urban centers, high-rise offices and apartments, shopping centers, commercial complexes, economic zones, airports, seaports, sports stadiums, roads

and bridges, government buildings, conference centers, hotels and tourism facilities, energy projects, hydropower stations and dams, etc.) in a flourishing national economy. Indeed, Vietnam is now evaluated as Southeast Asia's best performing economy expanding at an average yearly rate of around 7% consistently over the last 10 years.

The construction of Mapei Vietnam's plant, which is the Group's 47<sup>th</sup> manufacturing facility and the fifth in Asia, started in the late 2005 and in May 2007 the first bag of KERABOND T adhesive was produced.

The new plant sits on a total land size of 51,802 m<sup>2</sup>, of which 5,780 m<sup>2</sup> is devoted to the production area and the laboratory, 622 m<sup>2</sup> to the offices, 448 m<sup>2</sup> to the canteen and 456 m<sup>2</sup> to the staff's lodgings.

The factory is equipped to produce both powder (such as KERASET, ADESILEX P9, IDROSILEX PRONTO, KERABOND T, MAPEFILL GP, MAPEFILL SP, MAPETOP SP, MAPELASTIC PART A) and liquid

products (PLANICRETE SP, MAPELASTIC PART B, MAPEPLAST R14 SP, MAPEFLUID N100 SP, MAPEFLUID R104).

More products will be manufactured in response to the requirements of local market which showed much interest for the Company's solutions.

Mapei products have been widely used in this country to build various kinds of facilities, such as power plants, manufacturing facilities, housing and commercial complexes, etc. (see the project portfolio following this article).

The choice of the geographical location for this new plant was mostly due to logistical reasons: the industrial area of Chu Lai is situated right in the middle of Vietnam and its strategic position makes it easier to deliver products to both the north and south of the country.

## **A Shining Ceremony**

For the few days before the opening ceremony, it was raining non-stop causing floods in some areas of Quang Nam. There was no forecast of good weather



**Photo 1.** Mapei Vietnam's new plant.

**Photo 2.** The whole premises of the plant were especially decorated for the opening ceremony. On the left: the invitation card sent to all the guests.

**Photo 3.** Guests arriving at the plant in the morning of the opening ceremony.

**Photo 4.** From the left: Pham Thi Thai Mai, Deputy General Director of Mapei Vietnam; Giorgio Squinzi, CEO of the Mapei Group; Adriana Spazzoli, Operational Marketing and Communication Director of the Mapei Group; Vo Thanh Kiet, Senior Trade Analyst of Italian Institute for Foreign Trade (ICE) in Vietnam; Carlo Anzon, Honorary Consul of Italy in Vietnam; Chua Kok Leung, General Director of Mapei Far East.

for 31 October. As a result, the original plan of conducting the ceremony under built-up tents had to be abandoned. The location was changed to the covered loading area.

However, on the morning of the opening-ceremony day, not only had the rain stopped but it was a beautiful day with bright sunshine. Perhaps, the propitiatory pre-official opening ritual at 5.00 a.m., according to Vietnamese tradition, has obtained some divine blessings. This was intended to express thanks for the smooth construction works, especially during various devastating typhoons in 2006 when some neighboring factories had been damaged.

About 250 guests from all three regions (north, south, central) of the country took part at the opening ceremony, including local authorities (such as the Secretary General of the Communist Party of Quang Nam Province Vu Ngoc Hoang, the Vice Chairman of Quang Nam Province Le Phuoc Thanh, the Honorary Consul of Italy in Vietnam Carlo



**Photo 5.** The guests' visit of the plant.

Anzon, the Vice Director of Ministry of Construction's Construction Material Department Vo Quang Diem, the Vice Director of Ministry of Construction's International Relations Department Nguyen Thi Minh Phuong, and the Senior Trade Analyst of Italian Institute for Foreign Trade (ICE) in Vietnam Vo Thanh Kiet; other officials from the Communist Party and Provincial Government), members of local police



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additional press kit containing a press release, copy of Mapei advertisement in "Vietnam News" magazine and a bilingual (English and Vietnamese) corporate leaflet.

At 9:00 a.m. the ceremony started with a welcome performance from Quang Nam singers and traditional Cham dancers.

Official speeches followed. Giorgio Squinzi, CEO of the Mapei Group, welcomed the guests in attendance and briefly outlined the history of Mapei, its situation after 70 years of operation and its principal guidelines. He also introduced Mapei's activities in Vietnam and some important local project references

were cited. Squinzi finally thanked the local authorities for the co-operation and support for the successful completion of the plant. In his speech, the Vice Chairman of Quang Nam Province and Director of the Authority of Chu Lai, Le Phuoc Thanh, committed continuous support for the Company's development in Vietnam. Carlo Anzon, the Honorary Consul of Italy, congratulated Mapei for the brilliant results obtained in Vietnam. Finally, Pham Thi Thai Mai, Deputy General Director of Mapei Vietnam, delivered the message of thanks and shared the history of Mapei Vietnam with the guests.

After the official speeches came the

and security authorities, as well as Mapei Vietnam's business associates, suppliers and customers (distributors, contractors, architects, designers, engineering companies, applicators, building materials dealers, cement plants, etc.).

At 8:30 a.m. guests started coming in. The whole premises were appropriately decorated with Mapei identification logos, slogans, balloons, flags, banners, etc. They were welcome by Mapei Vietnam's female staffs dressed in attractive blue traditional "Ao dai" outfit.

Workers wore Mapei factory uniform and all other staffs with formal dressing stood all the way from the entrance gate to the ceremony area accompanied by the lion dance to welcome guests. Each visitor was presented with a Mapei paper bag containing the Realta Mapei International magazine, a haversack, a carbonite pen, namecard holder and an attractive badge decorated with a red rose. The journalists were given an

Photo 6. Visit of the Quality Control Laboratory.

Photo 7. Visit of the training centre.

Photo 8. The building for the staff's accommodation.

Photo 9. Local traditional dances welcomed the guests before the official speeches.

Photo 10. Giorgio Squinzi's official speech.



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most important moment: the “ribbon cutting” ceremony. This was performed by Giorgio Squinzi together with several representatives of Mapei SpA (Adriana Spazzoli, Operational Marketing and Communication Director; Pasquale Zaffaroni, Product Manager of the Building Line) and of Mapei Far East (Chua Kok Leung, General Director of Mapei Far East), as well as with several above-mentioned authorities (Vu Ngoc Hoang, Le Phuoc Thanh, Carlo Anzon, Vo Quang Diem, Nguyen Thi Minh Phuong and Vo Thanh Kiet).

Following the ribbon cutting, the door of Mapei Vietnam factory was officially opened by Giorgio Squinzi and Vu Ngoc Hoang to the beat of the drums from 12 children specially engaged from a school band for the event. All VIPs signed on the stone plaque in commemoration of this important event. The guests were then led to a tour of the production area, the modern training center (hosting technical training sessions and workshops for professionals), the Quality Control Laboratory (with cutting-edge equipments for testing both raw materials and finished products) and the building for the staff’s accommodation (including the canteen and the lodging area).

The official banquet was held after the tour. The guests were served a delicious lunch and they cheered heartily for the impressive opening ceremony and the plant’s facilities, wishing for the success of Mapei in Vietnam. The master of ceremony was Quang Nam’s TV presenter, Nguyen Huong Giang.

The event was subsequently reported on various national newspapers, e-news

and local television channels. Thanks to this new manufacturing facility (with its cutting-edge equipments and technologies), to the synergy of activities among Mapei Vietnam plant, the headquarters (which are also located in Chu Lai) and the offices in Hanoi, Danang and Hochiminh (each directed by a Branch Manager who manages the office operations, the team of sales and the Technical Service personnel) and to the ongoing development of a capillary network of dealers, Mapei is confident that it will soon increase its market share in such a promising national economy.

Mapei’s growth in Vietnam is part of a wider and more ambitious project that the Group set for its development in the Far East, which also involves other countries such as Singapore, Malaysia, China and Hong Kong. Here the Company has made relevant investments in the last 18 years, opening commercial offices and plants and gaining excellent results as for both the sales volume and its brand awareness in the local building sector.

Photo 11. The ribbon-cutting ceremony was officially performed in front of the plant’s entrance.

Photo 12. The new plant was officially opened by Giorgio Squinzi and the Secretary General of the Communist Party of Quang Nam Province Vu Ngoc Hoang.

Photo 13. Chua Kok Leung, Pasquale Zaffaroni, Vu Ngoc Hoang, Giorgio Squinzi, Adriana Spazzoli and Pham Thi Thai Mai stand next to the stone plaque commemorating this important event.



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# BUILDING PROJECTS IN VIETNAM

In Vietnam Mapei solutions were used for completing buildings for several uses: power plants, manufacturing facilities, commercial and housing complexes, public and private constructions. Some examples are shown in these pages



## Songda Trade Centre – Hanoi

This complex consists of 6 blocks of 100 luxurious apartments each and a supermarket. 20 tons of MAPEFILL GP have been used to fill up rigid joints between the precast concrete elements.



## Stock Exchange - Hanoi

This is an old building built around 1900. During renovation works, the dome and all the toilette floors were waterproofed with MAPELASTIC.

## Kanak Hydropower Plant – An Khe

The shotcrete tunnel lining was formulated with MAPEFLUID N100 SP superplasticizer. When projecting the shotcrete, the alkali-free accelerator MAPEQUICK AF400 was added to the mix in order to ensure the tunnel's self bearing capacity.



## Ruby Plaza Shopping Centre Hanoi

Ceramic tiles were bonded on the facades with ADESILEX P9. The inside ceramic and natural stone floorings were installed with KERASET and ADESILEX P10 +ISOLASTIC 50; joints were grouted with KERACOLOR SF and KERACOLOR FF.





### National Convention Centre - Hanoi

This huge complex, which hosts important conferences, sits on a land area of 640,000 m<sup>2</sup>, reaches a height of 50 m and includes 3 grand conference halls, 20 small meeting rooms, 1 press centre, 1 exhibition space, 1 trade centre, many function areas and a five star hotel. The building's superstructure was concreted with admixtures such as MAPEFLUID N100 SP and MAPEPLAST R14 SP.



### Vincom City Twin Tower - Hanoi

This huge complex includes many offices and 5 floors of shopping mall, which houses the outlets of international brands of fashion and cosmetics. The mall sports porcelain tile floorings bonded with ADESILEX P9 and grouted with KERACOLOR SF.

### Perfetti Van Melle Manufacturing Plant – Hochiminh

The internal ceramic floorings of this plant (on the right: a rendered image of the building and a detail of the inside floors) were laid with GRANIRAPID, PLANICRETE SP and KERAPOXY after waterproofing some surfaces with PLASTIMUL, MAPETHENE T.A. and FIBREGLASS MESH.



### Toyota Centre Vietnam - Hanoi

This 5-storey building houses Toyota Vietnam's showroom and offices. Admixtures such as MAPEFLUID N100 SP and MAPEPLAST R14 SP were used for preparing the concrete used for its construction.

### Vimeco Building - Hanoi

This 25-storey complex houses the Vimeco building company's offices and 140 luxurious apartments. Mapei admixtures such as MAPEFLUID N100 SP and MAPEPLAST R14 SP were used for concreting its superstructure.



For further information on the mentioned products, see the technical data sheets at [www.mapei.com](http://www.mapei.com)



# CHEMICALS Everyday Science

**M**apei is a chemical Company and Giorgio Squinzi, its CEO and currently President of Federchimica, the Italian Federation of Chemical Industry, has always been committed to promoting and publicising (partly through Realtà Mapei) ideas and projects aimed at boosting a sector which, very often, is referred to and talked about in very approximate and inaccurate terms.

About a year ago, a DVD was enclosed with issue 81 of our Italian language in-house magazine Realtà Mapei.

It was produced by Federchimica and entitled "Living Without Chemicals?". It was the story of a dream in which the main character in the film sees everything in his house suddenly disappear: the sofa, PC, television set, and even the tins and jars of food in the fridge and the coloured render on the walls.

A bad dream which, upon happily reawakening, encourages us to reflect on the fact that very often we forget

that the objects we use every day only exist thanks to chemicals.

Chemicals are actually a key part of our everyday lives and well-being, and they play a crucial role in the economic and social development of a nation. The most distinctive feature of the chemical industry, what makes it unique compared to any other sector, is its unbreakable bonds with science.

## Roald Hoffmann: Utility and Beauty

On 15<sup>th</sup> October last year at the "BergamoScienza" event (a festival dedicated to science and held in Bergamo, Northern Italy), Roald Hoffmann - who won the Nobel Prize for Chemistry in 1981 - held a conference emblematically entitled "The vital tension of chemistry: pros and cons". As well as his remarkable speaking skills, what struck us most were the contents of his elaborate speech touching on a number of issues dem-

And it is with a view to continuing along this path and delving even deeper into this grounding principle, that we are now reporting what Roald Hoffmann and Ray Hammond had to say on the matter.

Two leading scientists, who explain how chemicals are actually one of the vital factors in ensuring future life on our planet develops properly.

onstrating both what drives people to carry out research and also just what a vital part of our life chemicals now are. Working on the assumption that chemistry has revolutionised the world over the last 150 years, Hoffmann started from the most obvious fact that almost all the pharmaceutical products now found on the face of the earth were invented by the chemical industry during this period of time. From morphine (and all those anaes-



Picture by Tiziano Perotto for Vinavil SpA.

to understand all the myriad consequences and implications of the transformations brought about by this science. And having taken stock, we will realise just how much chemistry and chemicals have to offer.

Take, for example, such a vital issue in modern-day society as managing the environment. Fertilizers of chemical origin provide food for 6 billion people (in case you didn't know, approximately half of the atoms of nitrogen forming your body have been through machinery used in the chemical industry). If they did not exist, 3 billion people all over the world would have nothing to eat. Well, nitrogen-based fertilizers are made from hydrogen in the air and are, therefore, a means of controlling the environment".

### The World of Building and Music

Hoffman startled us with an example from his own life, when he spoke about the great benefits chemistry has brought to the building industry. Referring to a recent visit to the medieval city of Cortona, in Tuscany, Italy. "In the middle ages - so Hoffman pointed out - the smell in a city like this certainly was not pleasant: human organic waste, food and other smelly waste substances, damp walls.... nowadays, Cortona is beautiful and does not smell at all. And this is mainly thanks to chemical control of waste and chemical products for the building industry (but other reasons as well, of course: credit also goes to waste disposal management and repair work on houses)".

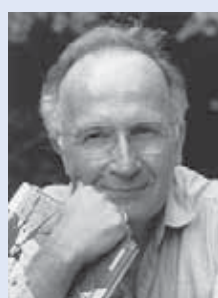
thetics without which lots of surgical operations would quite simply not be possible) to antibiotics and agents for treating and fighting tumours.

Hoffman then went on to claim that, even though we never think about this, "thanks to the chemical industry the number of colours people can now use at home, at work or for leisure purposes, is much greater than it was in the 19<sup>th</sup> century. Moreover, for the first time ever, mankind can now control its own fertility thanks to contraceptives. At the same time, twice as many people live on earth than could do if there were no chemical fertilizers available".

### There is a Price to Pay for Everything

Getting to the crux of the issue being discussed at the conference, Hoffmann underlined that: "the benefits compared to the risks of direct and indirect harm or damage is an inescapable consequence of the vital

tension of chemistry. Of course, sooner or later, we will have to take stock of this incredible revolution, so we need



**Roald Hoffmann** was born in a town in Poland (now in the Ukraine) in 1937.

After Poland was invaded by the Germans, his family was first locked away in a ghetto and then a concentration camp, from which he managed to escape with his mother in 1939.

At the end of the 2<sup>nd</sup> World War he fled from communist Poland to the United States in 1949. In the United States Hoffman graduated in chemistry from Columbia University and then got a Ph.D. from Harvard University in 1962.

Later, together with Robert Burns Woodward, he worked out the rules explaining certain reaction mechanisms (the so-called Woodward-

Hoffman rules) for which he was awarded the Nobel Prize for Chemistry in 1981 and Priestley medal in 1990.

He then began studying the properties and behaviour of organic and inorganic substances and materials, developing the extended Huckel method (1963).

He currently teaches at Cornell University at Ithaca, New York, combining research and teaching with work on popularising science. A firm believer that the spread of scientific knowledge among the general public is just as important as research, Hoffmann has published lots of articles both in specialist journals and magazines aimed at the general public. He has also published some books on popular science, also directed at non-expert readers, plus two collections of poems.

He has even written a play together with Carl Djerassi (*Oxygen*) about what it means to be a scientist and the importance of the discovery process in science.

Hoffman continued by talking about the most immaterial consumer product of all: music. "CDs – he underlined – play the music we like and want. Well, compact discs are directly tied to the petrochemical industry.

Why should manmade necessarily mean evil? In the end, we always get back to the idea of chemistry as transformation.

Obviously it begins with something natural (after all, what else could we begin with?) and end up with something artificial, specially created by man. The same process happens in music, arts, literature and all those activities which have nothing natural about them, except for the fact they are the product of people".

Without playing down the complexity of the reciprocal tension and relations between the benefits and harmful effects, Hoffmann went on to say "in the 19<sup>th</sup> century, when lots of new manmade chemicals began to reveal their fascinating properties (aniline dyes, medicines, etc.), it was only natural of course to assume that science would be able to solve every problem and cure every illness known to mankind. After all, production at the time was not on the kind of scale that might jeopardise the great natural cycles of our planet".

### Constant Transformation

Using concrete examples, Hoffmann then went on to explain that there have always been pros and cons when transforming nature, and there always will be: "anybody who has undergone surgery – so Hoffmann said – knows how useful morphine is for handling pain and recovering more quickly, but also how dangerous it is because it is a substance to which you can get addicted. Ozone at sea level kills plants and harms our lungs, it is an air pollutant. But the same substance also protects us and the atmosphere against solar radiation. In the end it is up to us to weigh up the pros and cons".

Chemistry takes into account change and individual people want change but, at the same time, they resist it. The same process that occurs in our modern-day societies.

For Hoffmann this ambivalence is not surprising, neither is this mixture of hope and fear in the face of science whose nucleus is change. "However much they frighten us – Hoffman went on to say – we are all fascinated by

processes of chemical-based change: from burning fire to the latest tune we dance to or children as they grow. Perhaps to improve the public image of science we chemists should focus more on these forms of fascination. In some respects, we have a desperate need to strike the public's imagination through magic and alchemy".

### Nanotechnology and Aesthetic Science

According to Hoffman, these artifices might also serve what many people see as the way ahead, nanotechnology. "Although the prefix "nano" seems to make people look at things differently in terms of value and novelty, in actual fact – according to Hoffmann – all molecules are nano-objects; just take molecules of haemoglobin, which measure more or less 8 nanometers in diameter, or molecules of indigo, a dye, which are even smaller than a nanometer. In my unbiased opinion there is nothing special about nanotechnology: the fact remains that financial investments should first focus on improving molecular chemistry, hence on increasing expertise in assembling molecules and only later search for new properties".

As a final reflection on the chemist's work and his ability/desire to think more than just ethically about what he does, Hoffmann went on to say that "generally speaking, anybody who

## Plastics to the Fore

From preserving food to energy-saving, from diagnostics to protecting the climate, plastics will be a key part of our lives. An invaluable technological resource which needs to be managed intelligently.

Plastics will guarantee us a more serene future, not just from a technological viewpoint but also in terms of health, energy and the environment. That is what Ray Hammond had to say, a world-famous futurologist, as he presented his vision of the years to come in relation to the role of plastics at the Politecnico di Milano (Milan's Science and Technology University) on the 13<sup>th</sup> November last year.

Over the next 20 years, thanks to plastic materials, we will be able to preserve food better due to special sensors which will inform us about any alterations to the food; plastics will even allow us to move water to places

wants to do something new, to create something, does not hesitate over the problems associated with everything he or she is doing or will do. Instead they superimpose one module of knowledge over another. And then allow these modules to arrange themselves on their own, continuing with their work without complaining about there being a lack of a priori logic to it. This does not mean aesthetic blindness. Chemists make compounds and objects the primary subject of study, and that draws them closer to art and artists. Not to mention engineers.

Perhaps philosophers would have applied theories of aesthetics to science, if they had acknowledged the degree of creativity involved in chemistry – as well as science and art. It would most certainly have reassured us about the obvious influence of aesthetic factors like symmetry and order, and also have been a nice story to tell about the acceptance of theories based on more than just their predictive powers. And perhaps aesthetics too would have been changed and understood as a branch of philosophy. Classical philosophy excludes utility, which plays such a vital role in chemistry, from its aesthetic criteria. The beauty of sulphuric acid, for instance, lies in the fact that 180 million tons of it were manufactured and sold last year.

I will leave the tricky task of passing judgement to those who come after us".

where it is in short supply and also make seed growing more productive. We will drive plastic cars, which are extremely light but highly durable, allowing notable energy savings. Our homes will also be resistant to sudden, devastating climate changes (such as cyclones). Plastics will also be used for diagnostics, surgical operations and increasingly sophisticated prostheses (even artificial muscles!).

We would not even be able to enjoy the standard of living and quality of life we have at the moment without plastics, which in future will improve many other aspects of our well-being, from the world of telecommunications (holograms will replace mobile phones and video calls) to sports. So it is a truly invaluable material, a precious resource, which needs to be exploited to the full by learning how to handle it properly.



Inside view of one of the Mapei Group R&D Laboratories.

“The future prospects for plastics as they have been presented here today – so Giorgio Squinzi commented, the President of Federchimica, who attended the meeting - mean that we can look to the future of the entire chemical industry (of which plastics are a key part) with optimism. The Italian chemical industry is working hard and changing despite the constraints and restrictions imposed by the way it is run in this country. Relations between industry and higher education institutes are crucial: both ought to be stimulated by today’s event and work closer together, because only thanks to the presence of dynamic, young chemists will companies be able to succeed

on today’s competitive market”. This was further underlined in the speech given by Professor Giulio Ballio, the Rector of the Politecnico, who stated that: “the invention of plastics has substantially altered the objects we use and which surround us in our everyday lives. I think there are a lot more changes to come and that they will be brought about by the impact of chemicals, which will provide us with increasingly light, increasingly durable and increasingly biodegradable materials. Like all great inventions, they will become a vital asset for mankind provide we use them in an intelligent and erudite manner with due respect for the environment”.

## THE PROSPECTS ACCORDING TO SQUINZI

As a conclusion to this overview of the chemical industry, Mr. Squinzi clarified the issues in play: “I think it is no exaggeration to say that there could be no Sustainable Development without the Chemical Industry – so Giorgio Squinzi claimed when presenting the 13<sup>th</sup> Report of Responsible Care programme, the international chemical industry’s commitment to sustainable development. “We have always done our part and will continue to do so, but the whole of society must be equally committed. With reference to the Kyoto Protocol and phenomenon of climate change, there are certain realms which have only just started to commit and have as yet done very little: take, for instance, transport and home heating. From 1990-2005 they have increased their emissions of carbon dioxide by, respectively, 17.0 and 27.5 million tons or, in other words, over 70% of the overall rise in greenhouse gas emissions over the same period. Unfortunately, stereotyping has it the other way, blaming chemicals as the greatest threat to the environment. Let’s overcome the ghosts of the past and look forward to today and tomorrow”.



**Ray Hammond** is the most expert and widely published futurologist in Europe. For over 25 years he has carried out research, written and held conferences about future trends impacting on society and business. Global warming and threats to the environment are still major priorities on the global agenda, and Hammond is one of the best prepared commentators to outline how these mass challenges will impact on our future and describe how we will tackle business and long-term implications on a social, economic and political level. Before becoming a futurologist, Hammond set up and ran a highly successful magazine and advertising company in UK, Europe and USA. He is now a successful novelist and his latest book *The Cloud*

is a startling vision of life as it will be in 2065. Beside, he is a visiting lecturer at the London Business School of Economics.



# 2008 DOMOTEX HANNOVER

In view of the current market situation (see box on the right), it is no coincidence that the most recent edition of Domotex was a record breaker. The number of companies and the surface area they occupied from the 12<sup>th</sup> to the 15<sup>th</sup> of January 2008 in the Deutsche Messe expo centre in Hanover beat all previous records. There were a total of 1,441 companies (compared with 1,336 the previous year) which took part at this important international meeting for carpets and textile, resilient and wooden floor coverings, which showed off their goods over a total floor area of 97,083 m<sup>2</sup> (compared with 91,757 m<sup>2</sup> in 2007).

The international flavour of this event was once again confirmed: the companies on show were from more than 60 different countries, and the visitors (more than 47,000 compared with 43,538 at the previous edition) of around 80 different nationalities. Around 50% of those who passed through the entrance gates at the Hanover expo (mainly distributors, retailers, interior designers, installers, architects, etc.) to see the latest fashions and trends in this sector were, in fact, from abroad. In particular, the number of American visitors increased (a total of approximately 2,500 people), and also those from Africa and Eastern Europe. The importance of Domotex on the international scene was further confirmed by the success in terms of participants, interest areas and quality on offer, which the younger "sister" expos have already achieved: Domotex Asia/China Floor, which is at its tenth edition in March this year, and Domotex Middle East, which will be held for the third time in May in Dubai. The strong interest for the German expo by professionals who operate in this sector (a fifth of the total visitors) and by decision makers (89% of those present said they play an important role in decision making within their company) was also reconfirmed.

These figures, the optimism which you could "breathe" during the show and the satisfaction expressed by the laminate, parquet, resilient and carpet producers' associations, enabled Ph. Kühne, a member of the board of Deutsche Messe AG, to rightly state the following: "Domotex's role as leader in the international exhibition panorama for the floor covering sector is once again confirmed".

The rich programme of side events dedicated to professional operators in this sector obviously contributed to the success of the event. Conferences, technical seminars and meetings, exhibitions, award ceremonies and competitions in laying and interior decoration were a pleasant way of livening up the atmosphere at the German expo.

## THE RESILIENT, TEXTILE AND WOODEN FLOORING MARKET

The world demand for resilient, textile and wooden floors is increasing. This is what appears quite clear according to the statistics which show that, in 2006, the world consumption was approximately 13 billion m<sup>2</sup> of floor coverings, and is forecasted to reach 15.5 billion m<sup>2</sup> in 2011. Going into detail, in 2006 28% were in textile, 11% in resilient materials, 5.8% in laminate and 3.4% in wood. The geographical area with the largest consumption is, without a doubt, Asia, with 44% of the world total, and which is destined to increase their consumption of floors by 5.5%. Asia is then followed by the United States/Canada and Western Europe. And especially in Europe, parquet is without a doubt one of the types of floor covering whose consumption is continually increasing: + 5.5% in 2006 compared with the previous year. Germany in particular has been one of the main markets in Europe for wooden floors, with a consumption of 19% of the total in 2006.

The two tables below illustrate market results, which were first shown in issue 6/January 2008 of "Floor" magazine ([www.floor.com.tr](http://www.floor.com.tr)) whom we kindly thank.

### WORLD FLOOR COVERINGS MARKET BY MATERIALS, 2006 (IN BILLIONS)

Material	m <sup>2</sup>	percentage
Ceramics/natural stone	6.6	50.8
Textiles	3.8	28.9
Resilient materials	1.4	11.0
Laminate	0.8	5.8
Wood	0.4	3.4
Total	13.0	100.0

Source: Company financial reports, CATHALINA RESEARCH, INC.

### FLOOR COVERINGS MARKET AND GROWTH POTENTIAL BY WORLD AREA, 2006-2011

World area	Wood Flooring	Laminated Flooring	Total growth 2006-2011
United States/Canada	30.8	22.1	1.0
Western Europe	25.8	18.5	2.0
Eastern Europe	7.0	5.0	4.0
Asia/Pacific	62.1	44.5	5.5
Latin America and Africa	13.9	10.0	3.5
World total	139.6	100.0%	3.7

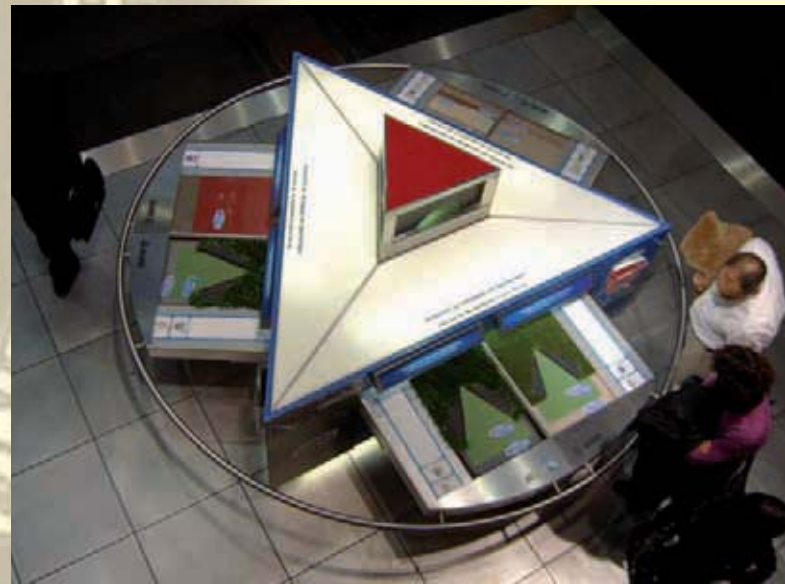
Source: Company financial reports, CATHALINA RESEARCH, INC.



### MAPEI: an ECO World, Sporty and Quick

"One Company - One World": this was the slogan which marked out Mapei's participation at Domotex, an appointment which has been a must for the Company for a number of years, present as always at this year's event in pavilion 7, with a stand shaped like a ship on two floors and a total surface area of 393 m<sup>2</sup>. With this motto, the Company wished to highlight the Group's worldwide leadership in adhesives, grouts and chemical products for the building industry, and its capacity to supply solutions to local problems thanks to its research activity carried out at an international level. And in fact, a large panel inside the stand was a reminder that research is part of the Mapei DNA, and in this field the Company invests 5% of total turnover and employs 12% of its workforce.

Amongst the numerous results obtained in the 7 Mapei Research & Development laboratories, there is the ECO range: a complete line of products which are safe for the



environment and for those who use them, with an extremely low emission level of volatile organic compounds (VOC), launched initially on the American market in the 1990's before being launched on the European market.

And right here in Germany, the home of ecology, Mapei strongly desired to highlight its solutions on offer, tested and certified by highly-qualified institutions (TFI, CRI) and which, since 2005, are certified as "EMICODE EC 1 – extremely low emission level of volatile organic compounds" – awarded by GEV (Gemeinschaft Emissionskontrollierter Verlegewerkstoffe, Klebstoffe und Bauprodukte e.V.), the association for the control of emissions from materials for laying, adhesives and building



products, of which Mapei is an ordinary member.

Amongst the novelties from the ECO range presented at Domotex 2008, for example, there was ECO PRIM PU 1K TURBO, the rapid version of ECO PRIM PU 1K polyurethane primer, which has already been widely used for consolidating and waterproofing cementitious screeds. The new formula, specially developed for the German market, allows drying time to be reduced: the substrates can be set to foot traffic after only 30-40 minutes. This product also improves bonding of epoxy resin and polyurethane adhesives, such as ULTRABOND P990 1K and ULTRABOND ECO P991 1K.

Another product from the ECO range presented this year at the

German exhibition, and created specially for the German market, is ULTRABOND ECO S955 1K one-component, sililated polymer-based adhesive, suitable for bonding all types of wooden floors. When used on site, considerable savings in laying times may be achieved. This product has an open time of approximately 45 minutes and adjustment time of around 1-2 hours, and floors laid using this adhesive may be set to foot traffic after only 12 hours.

Amongst the new products for **laying wood**, at Domotex 2008 Mapei also presented the following: ULTRABOND P997 1K T one-component thixotropic adhesive, specially developed for laying wooden steps; ULTRABOND SUPER GRIP acrylic adhesive, suitable for bonding profiles, skirting boards, covering materials and decorative elements in wood, metal, chipboard, rubber, wood, polystyrene, PVC and foam polyurethane; ULTRABOND ECO P992 1K one-component polyurethane adhesive for all types of parquet and laminates; CLEANER H damp wipes for cleaning hands after laying operations. One of the three exhibition islands located on the right hand side of the ground floor of the stand was dedicated to these kinds of products.

The three islands displayed systems perfected by the Company for laying wood, for laying textile and resilient materials and for laying coverings within sports facilities.

The attention which Mapei pays to these applications could also be found on the display panels (which illustrated prestigious building sites from all around the world where Mapei solutions have been employed), and in the new technical documentation available for visitors to the Mapei stand at Domotex 2008. In particular, a special leaflet was dedicated to the ECO products for







laying wood, while another leaflet illustrated solutions from the ECO range which are suitable for laying resilient materials and textiles.

There was also a folder for solvent-free solutions with a low emission level of volatile organic compounds (VOC) which

the Company developed

for laying resilient floor and wall coverings for **hospital facilities**, where special attention must be paid to the effects of the materials employed on the health of patients and on the medical and paramedical personnel. Also, valuable technical advice was available in the new applicator brochure for laying textile, resilient and wooden floor and wall coverings. All the documentation mentioned above was available in both English and German.

Particular attention was paid to Mapei **smoothing compounds** and **self-levelling compounds** in the communication which the Company chose for Domotex 2008. On this occasion, for example, the new ULTRAPLAN TURBO was presented, which is the quick version of ULTRAPLAN self-levelling compound, already widely used in a number of countries. The new formula has been specially developed for the German market, and is suitable for preparing cementitious substrates to make them smooth and even and is suitable for laying all kinds of covering materials.

The use of this product makes the surface ready to be stepped on after only 30-40 minutes of application, and ready for laying after only 3-4 hours, which makes it particularly recommended, therefore, on sites where hand-over time is extremely short. Other versions of ULTRAPLAN, such as ULTRAPLAN ECO, ULTRAPLAN MAXI and ULTRAPLAN TURBO, were under the Mapei stand spotlights at Domotex 2008, together with FIBERPLAN smoothing compound and NIVORAPID thixotropic smoothing compound. A complete view of what Mapei has to offer in the field of self-levelling and smoothing compounds was guaranteed to the visitors by a special folder, again published in both English and German especially for this event. The contents of the folder are summarised in the article about this kind of product in this issue of the magazine (pages 26-27).

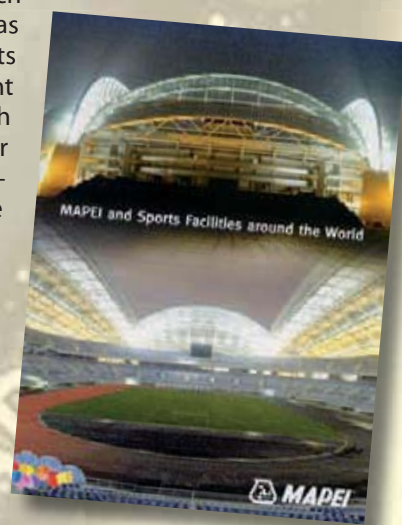
There was also a complete, updated version of the Mapei products catalogue for laying resilient, textile and wood covering materials, again available in English and German.



### Demonstrations of Excellence

The technical demonstrations were a worthy attachment to this rich collection of technical documentation available at the exhibition, and they were held four times a day in a special area in the right-hand corner of the stand. Here, expert layers and technicians from the Technical Service Department of Mapei GmbH (the German subsidiary of the Group), accompanied by a lively commentary by the presenter Michaela Mann (see photo above), demonstrated the procedures for using Mapei products to an enthusiastic crowd. The demonstrations were followed by a prize draw, with the lucky winners receiving various prizes in the competition organised for the occasion. For the next edition of Domotex (from 17<sup>th</sup> to 20<sup>th</sup> January, 2009), Mapei will certainly know how to whip up enthusiasm for the visitors, with new, successful promotional activities. This will be another splendid occasion to run through the excitement of the **Beijing Olympic Games**, for which the Company has supplied products to build important sports arenas, such as adhesives for bonding the athletics track in the Olympic Stadium and waterproofing products and adhesives for the swimming pools and tennis courts in the Shooting Centre.

And it is exactly to the sports facilities which hosted the Olympic Games from 1976 in Montreal to Beijing in 2008 which a special folder has been dedicated, also available at the Mapei stand during the latest edition of Domotex. The Company's contribution to the Olympic Games in China will be discussed in more detail in one of the next editions of *Realtà Mapei*.



# Racing and winn



**M**apei has also had a hand in the Italian athletes' victory at the Milan Arena.

At the end of June 2007 the city's historical stadium hosted an international athletics meeting, in which both the Italian men's and ladies' teams were victorious, and promoted back to Division A.

The brilliant results were obtained on a brand new track, which had been installed thanks to the use of Mapei products for laying resilient floor and wall coverings: in particular, ADESILEX G19\* and ADESILEX G20\*.

Importance and interest in the operation carried out during last year's spring were twofold.

From a historical-artistic point of view,

the Milan Arena is not to be considered a simple sports arena. It was inaugurated exactly 201 years ago in 1807, constructed according to a design by the neo-classic architect Luigi Canonica, and represents one of the most ambitious urban reorganisation works of the city during the Napoleonic era. The structure is a large elliptical amphitheatre (the longer axis is 238 m long and the secondary axis is 116 m long) and was originally created to host horse racing events, military parades and the simulation of naval battles, that is all the public ceremonies held in the city. The Arena was made entirely from stone (using materials from the demolition of ancient buildings) and had specta-

tor terraces which held up to 30,000 people. This was an enormous amount if we consider the number of inhabitants in Milan during that period, which was little more than 100,000. And it is for this reason, and for the quality and monumentality of the construction itself, that the Arena is considered a reference point on the Milan skyline for the entire population and all the visitors to the city. All this, in spite of its complex history. It has been used for a wide range of events over the years, including the famous Buffalo Bill Wild West Circus on two different occasions. At the beginning of the 20<sup>th</sup> century, it became the heart of Milanese soccer, hosting matches played by both A.C. Milan and

# ing in the ARENA

After laying the new track, Milan's historical athletics stadium is back in action



**Photo 1.** Mechanical grinding of the old surface with a close up of the deterioration of the old covering.

**Photo 2.** Reclaiming the ground-off material.



**Photo 3.**  
Mixing Adesilex G20 with ground rubber removed from the old track.

**Photo 4.**  
Filling with Adesilex G20 a zone where the rubber covering had been removed.

**Photo 5.**  
Smoothing over the track with Adesilex G20 to level off the hollows.

**Photo 6.**  
Laying rubber sheets using Adesilex G19.

**Photo 7.**  
Adesilex G19 is the Mapei adhesive traditionally used for laying PVC and rubber and the most suitable for laying surfaces in sports facilities, such as athletics tracks.

**Photo 8.**  
One of the phases of laying the new athletics track. Approximately 8,000 m<sup>2</sup> of sports-grade rubber sheets supplied by Mondo were employed.



Inter Milan. It was then damaged during the Anglo-American bombings and at the end of the second world war it was no longer fit to host soccer matches. The last match was played in December 1958, when Inter Milan decided to follow A.C. Milan's lead and transferred their matches to San Siro.

The Arena was pretty much abandoned from then on up to the 1970's, when it was used to host athletics events, minor league soccer matches and American football games, along with other open air shows and events.

The grand return of athletics to the Arena was in 1996, with the final of the IAAF (International Association of Athletics Federation) Grand Prix event. The track was rebuilt for the event, along with renovation work to the spectator terraces. Mapei took part in the works on that occasion with a number

of the Company's products, especially for the repair, waterproofing and sealing of the terraces and other masonry work (please see our in-house Italian-language magazine Realtà Mapei, issue n° 28, November 1996). In the light of the rich, gripping history of the Arena, which in 2002 was given the name of Gianni Brera after the famous Milanese journalist, the works carried out recently to the athletics track represent an even more significant step, since they further guarantee the use of a monument.

From a purely technological point of view, the operation was characterised by at least three elements which were potentially critical, and resolved brilliantly and efficiently thanks to the professionalism employed. First of all, the considerable size of the surface involved: a total of approximately 8,000 m<sup>2</sup>; secondly, the need to lay the rub-

ber surface perfectly, to guarantee the performance of the athletes during the events; and lastly, the very short time available to design and carry out the work, which was all carried out in record time: a good omen for the athletics races.

**Laying the New Track**

*Re-topping* is the technical term used to indicate the laying of a track on top of an old surface. This was the first problem which the Mapei technicians who were working on the site had to overcome. The old track had been laid in 1996 for the IAAF Grand Prix final. Time and atmospheric agents (rain and sunshine) had badly deteriorated the surface. It was dirty and "baked" and was no longer suitable for other races. Which is why it was necessary to carry out a replacement operation. However,

due to economic and time restraints, rather than remove the old surface and bond the new one on top of an asphalt or cementitious screed (which would have certainly been the easiest solution), it was decided to install the new layer on top of the old one. The technical specification underwritten by the contractor prescribed the smoothing of the entire surface with a primer, followed by a layer of adhesive. Mapei products were not originally included in the supply. Strategy was changed following a series of tests which were carried out partly directly on site and partly in the Mapei R&D laboratories. These tests highlighted how the surfaces reaction to stresses was more or less the same whether a primer was employed or not. Therefore, the solution offered by Mapei was eventually chosen, which offered the same performance levels without the use of a primer.

Works with ADESILEX G20\*. It was at this point in the design stage that ADESILEX G20\* two-component, low viscosity, epoxy-polyurethane adhesive for lay-

ing resilient floors came onto the scene. This product was chosen because of its specific characteristics: in fact, it is particularly fluid and, therefore, easy to spread. This enabled ADESILEX G20\* to be used successfully to smooth the surface of the track where hollows had formed over the years. The product was also used to fill in those areas where the old rubber which was too damaged to be left in position had been removed. The operation started by mechanically grinding the old surface. It was particularly difficult to decide the precise thickness that needed to be eliminated: basically, approximately 3 mm for the dirtiest and most deteriorated part. The track was then flooded a number of times to highlight hollows or the uneven areas. Those zones were smoothed over to get a perfectly flat surface, as required by current norms and checked constantly by technicians from the Italian Athletics Federation (Fidal – Federazione Italiana di Atletica Leggera), the same technicians who would later test the track. It is worth pointing out that, to carry out this operation and to guarantee maximum flexibility to the substrate, ADESILEX G20\* was mixed with granules of rubber from the layer removed from the old track, which had been specially stored and ground.

Works with ADESILEX G19\*. Once a perfectly flat, regular substrate had been achieved, the next phase was carried out by bonding on the new running track (12 mm-thick Sportflex Super X Performance high performance sport rubber flooring produced by the world-

wide leader Italian manufacturer Mondo Spa).

For this phase, ADESILEX G19\* two-component epoxy-polyurethane adhesive was used. This is the traditional Mapei product used for bonding PVC and rubber, which had already been employed in numerous sports arenas, amongst which the Sydney 2000 Olympic Stadium. This product is available in beige, red, green and black. For the Milan Arena, the chosen colour was red. Because of time restrictions, the fast-drying version was used. This meant that, as a result, the choice of materials and installation of the track was achieved in a very short time, little more than a month. The technicians from the Italian Athletics Federation carried out all the required tests to certify the new race track and they were all passed with flying colours. The rest is all history: the excellent performances achieved by the Italian athletics teams were the best way to say thank you to Mapei for all the high-quality work, and to offer high moral support for the future of athletics in the Milan Arena.



#### \*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" DVD or at the web site: [www.mapei.com](http://www.mapei.com).

**Adesilex G19:** two-component epoxy-polyurethane adhesive for bonding indoor and outdoor resilient floorings, on absorbent and not absorbent substrates.

**Adesilex G20:** low viscosity, two-component, epoxy-polyurethane adhesive for bonding indoor and outdoor resilient floorings, on absorbent and not absorbent substrates.



#### TECHNICAL DATA

**City Arena, Milan (Italy)**

**Work:** retopping the athletic track

**Customer:** Milan City Council

**Year:** 2007

**Installation Company:** Biffi from Villa d'Adda (Italy)

**Installed Material:** rubber track supplied by Mondo (which also supplies Mapei products)

**Mapei Co-ordinators:** Stefania Boselli, Angelo Nobili and Roberto Orlando, Mapei SpA

# CONDUCTIVE FLOORS

**The correct method to lay a conductive floor in environments where protection against electrostatic discharges is required**

by Adelmo Bovio, Mapei SpA Technical Service Department



ments (for example, the workers or furniture, such as seats, etc.) that come in contact with it.

The floor, therefore, apart from its conventional characteristics, such as resistance against wear caused by traffic, comfort, ease of cleaning, etc., has also to be able to discharge the ESD potential to the ground through its own conductive properties and through the conductive adhesive.

were made conductive according to requirements by using carbon black filler and by inserting metallic meshes in the mix.

They are still used nowadays but conductivity degradation in time, in conjunction with discontinuous surface resistance values, reduced the use of this technique.

The above-mentioned floorings were laid using empirical site methods, which in most cases were not appropriate; for this reason, to meet some users' requirements, final floor "adjustments", like wetting or dampening, were necessary but this caused the risk to have a too high or too low floor conductivity.

The floors which currently offer the best performance for their calibrated and constant capacity to dissipate charges are mostly those in the "resilient" category.

They are subject to very accurate controls during the production phase, and when they are applied and maintained correctly, they guarantee extremely precise, constant conductivity.

This kind of floor, which is often quite thin (just a few millimetres), is classified as such because its base characteristic is its "resilience", that is, its capacity to "return", coupled with its "deformability" capacity, when subject to "dynamic loads".

## Guarantee of Functionality

The duration of resilient floors is a further relevant aspect. There are numerous examples of resilient floors laid more than twenty or thirty years ago in hospitals, airports, schools, underground railway stations, etc.

They have been subject to heavy, frequent traffic and wear and yet are still in perfect working order, which is a guarantee for anybody regarding their durability and functionality.

In those few examples where the floors did not perform as expected, the problems which emerged were rarely due to the wrong choice of

High technology continuous improvement, like in the electronics industry, has become so dynamic that products and systems need continuous improvement too.

I have witnessed the first steps in modern conductive floors and I have also followed the evolution and problems related to their installation. I believe that, apart from solving current problems generated by electrostatic events in electronic environments, they will also be able to guarantee proper protection on the new technology requirements that are going to be much stricter in the future.

It is now evident that in the electronic industry process, electrostatic events must be properly managed to avoid damages to the electronic components.

There is a real risk that electrostatic discharges (ESD) may cause faults to products. For this reason main ESD standards fix requirements for protection systems inside EPA (ESD Protected Area), including flooring used as a primary means of personnel grounding. They are used to drain and minimize electrostatic charges that could be present on the surface and/or on ele-

## Historical Background

In the past, the so-called "conventional" floors, such as the cementitious ones or those in stone materials,



Photo 1.  
Preparation of a cementitious screed with Mapecem binder.

Photo 2.  
Smoothing off the laying surface with Ultraplán.

Photo 3.  
Using a bubble-breaker roll on the smoothing compound while still fresh.

floor, and never due to the floor's poor physical-mechanical characteristics.

For almost 50 years, for example, this type of floor in the "conductive" version has been used in operating environments which had very stringent technical specifications (according to the 64-4 norm set by the Italian Electrotechnical Committee or CEI – Comitato Elettrotecnico Italiano) due to the high risk of explosion caused by gases used for anaesthetising.

There are many records available for this type of application (and their related problems), and I remember that at the beginning of the 1950's there were a number of cases of accidents in operating environments in England (where they were adopted in that period). I can guarantee that knowledge of these cases would convince anybody to take the problem into serious consideration.

In the past, even the recent past, pretty intense electrostatic discharges have caused various problems, from irritating electric shocks to the surgeon (even during a delicate operation, for example) to the possibility of an explosion, or fire, of the inflammable gas mixes used in anaesthetics.

By abandoning this technique, these dangers have been considerably reduced, and only super-oxygenised environments are now at risk (that is, in those environments where oxygen

### Selection Criteria and Fundamental Requirements

Material or product evaluation is requested before any installation. Regarding the evaluation of insulation resistance, the last issued standard (ref. CEI EN 61340-4-1-2003) establishes different voltage levels based on the expected resistance range, for both floor material and the finished floor.

A voltage test of 500 volts was specified by the previous edition of the standard for any resistance. This voltage can be now applied for materials featuring a resistance level higher than  $1 \times 10^{11}$  Ohm or in those cases where the insulation resistance has to be verified (wet test according to local national safety regulations). Resistances between  $1 \times 10^6$  and  $1 \times 10^{11}$  Ohm must be measured using a lower voltage (100 Volts), while those lower than  $1 \times 10^6$  Ohm (1 MΩ) must be tested using a voltage of only 10 volts.

Therefore, the choice of floor according to its attitude to minimise and dissipate electrostatic charges should consider the sensitivity threshold of the "ESD-sensitive" components handled. We must remember that tribo-electric charges generated by a walking human body (HBV – Human Body Voltage) can easily reach a level of thousands of volts and can be discharged through the floor only by using conductive footwear. For electronics applications shoes must be class 1 (as prescribed

means of conductive adhesive with the lowest ohmic resistance possible, and connected stably to the ground.

### Design Criteria and Installation of the Floor

The guarantee of a floor's functionality and durability over time, its capability to eliminate even low electrostatic charges (which may be harmful for "0", 1A and 1B class electronic components) and having sufficient conductivity (often higher than the ESD footwear in use which, for safety reasons, must normally be higher than 50 Kohm) requires the respect of certain installation "rules", as follows:

1. the use of an efficient, durable insulation barrier for the substrate from the underlying layer;
2. installation of a substrate with a thickness and consistency sufficient for both the static and dynamic loads to which it will be subject;
3. the use of an adhesive with high, durable mechanical and conductivity performance levels;
4. connection efficiency to main ground.

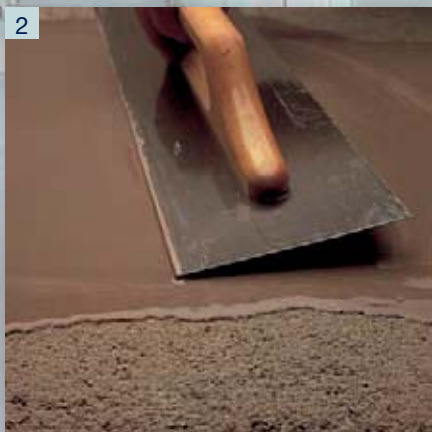
We will now look more deeply into the points indicated above:

#### 1. Insulation and/or separation layer.

This layer is fundamental when the load-bearing screed is installed on a substrate which is not insulated from the ground, on a poorly-ventilated beehive-type substrate, on open porches or on damp or lightened substrates, because it must block the passage of damp from the underlying layers. When the screed is placed on a load-bearing structure, the latter's movements will not influence the floor.

2. Substrate. It is normally made from a concrete screed with a constant thickness (not less than 4-5 cm), and of a sufficient strength class ( $R_{ck}$  25). It must be dry (residual humidity  $\leq 2\%$ ) with a smooth, solid and compact surface.

Successive operations to correct flatness must be carried out using cementitious products with the same mechanical strength. Large surface areas (more than 60 m<sup>2</sup>) must be reduced with "shrinkage-check" joints with a pitch of no more than 8 m, which are pre-set during the formation of the cast. The market offers pre-blended, fast-setting and drying, cementitious products, such as MAPECEM PRONTO and TOPCEM PRONTO, which may be used to form screeds for floors in EPA zones, and which are ready for use after only 24 hours and 4 days, respectively, after



is administered).

Regarding the duration and efficiency of the entire system to dissipate discharges, experience shows that, in those rare cases where an unacceptable level of resistance has been measured, this was due almost exclusively to poor or insufficient maintenance and cleaning of the floor and, even more rarely, due to an interruption in the floor's ground contact.



in the standards under a condition of 12% Relative Humidity "RH").

Therefore, we may state that:

a suitable resilient floor for an EPA zone subject to intense traffic must have sufficient mechanical strength and well defined electrical conductivity. The material must be laid on a flat, consistent, solid, dry substrate, which is resistant to the foreseen loads, by



pouring.  
**3. Adhesive with excellent conductivity and mechanical strength.**

Continuity in the connection of a conductive floor towards ground must be guaranteed by conductive adhesives. Their low electrical resistance (in the order of  $5 \times 10^4 \div 1.5 \times 10^5 \Omega$ ) must remain constant over time, without having a negative influence on their bonding capacity, which must be high ( $\geq 1 \text{ N/mm}$ ).

The low insulation resistance of such floors, which were recently indicated as ECF (electrostatic conductive) or DIF (static dissipative), guarantees higher passive protection for all the EPA zones, due to their high precision in size and their integration with complementary information, such as the charges Decay Time and the measurement of human body voltage generated by people simply walking on the surface.

This latter test, made by means of a "HBV Walking test" system, highlights the need for the use of conductive footwear in the EPA zones.

**4. Connection to ground.** The entire system must be stably and efficiently connected to main ground at least every 30 – 40 m<sup>2</sup> of the surface.

The connection, carried out using copper elements, will give the best guarantee if it is widespread and incorporated in the conductive adhesive, even



better with strips with a low thickness (1/10 mm) and 10-15 mm wide, set transversally to the sheets or under every row of tiles (in the case of tiled floors).

**Operational Aspects and Useful Advice to Lay a Fine Floor**

To obtain good, long-lasting results, it is important that the floor is laid correctly and accurately, and that certain basic rules are taken into account, as follows. Firstly, before preparing the screed, we recommend inserting a separation layer. If this layer is made using a polyethylene sheet at least 3/10 mm thick, and finished off with a compressible layer (e.g. 1 cm thick expanded polystyrene) against all the vertical elements (retaining walls, columns, etc.), it frees the floor from all structural and dynamic movements of the building (see fig. 1). The separation layer, in this case with the polyethylene sheet folded upwards against the walls for the thickness of the screed, also takes on a function of waterproofing against rising damp.

When the concrete screed is finally dry, if there are cracks, they must be repaired by pouring solvent-free, two-component, medium viscosity (Brookfield viscosity: 4500 mPa·S, 5 shaft – 20 rev) epoxy resin (such as EPORIP) into the open, clean cracks. The flat surface



must be levelled off with a fast-hardening, self-levelling smoothing compound such as ULTRAPLAN for thicknesses of from 1 to 10 mm. In this case, the smoothed surface may be stepped on after 3 hours, and has a compressive strength of 30 N/mm after 28 days (photos 2 and 3).

To lay the copper strips in rubber and PVC conductive floors, the conductive version of the relative adhesives must be used. The choice of which adhesive to use will depend on application requirements: mechanical strengths, setting time, etc. Typical adhesives are ADESILEX VZ CONDUCTIVE for the copper strips, ADESILEX G19 CONDUCTIVE for rubber and vinyl floors subject to heavy traffic, ULTRABOND ECO V4 CONDUCTIVE for resilient floors subject to heavy traffic.

For special applications, apart from the conventional conductive adhesives mentioned above, there are also conductive "admixtures" such as MAPELECTRIC CP1, which offers excellent ESD conductivity, even on products without such characteristics.


The addition (in a recommended amount/ratio) of the admixture to the adhesives, primers and cementitious products, if these are compatible with the water contained in the admixtures, reduces their resistance to as low as 100,000/200,000  $\Omega$  ( $1 \div 2 \cdot 10^5 \text{ ohm}$ ). 

Photo 4. Laying copper strips using Adesilex VZ Conductive conductive contact adhesive.

Photo 5. Applying Ultrabond V4 Conductive on the substrate.

Photo 6. Laying a conductive floor.

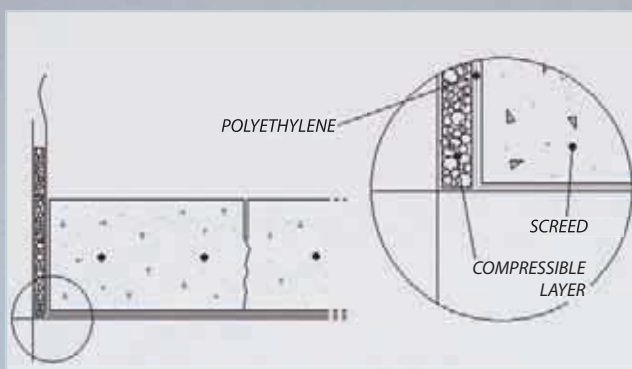


Fig. 1. Unbonded screed

For further information on the above-mentioned products, see the technical data sheets at [www.mapei.com](http://www.mapei.com).



# ESD: No Problem with Mapei

## How conductive floors can solve the problem of Electrostatic Discharges

All the more often on the market, the relationship created between client and supplier implies the expectation of excellent quality from the goods being offered. This is a concept which starts during the design phase, and continues right up to the manufacturing and storage of the product in question.

Especially with electronic products, the "manufacturing" factor is vitally important to obtain a high quality product. Therefore, right from the design phase of the production area, it is important that the presence of machinery, people, the production processes themselves and the components used are all taken into consideration. In particular, all aspects of the environment where the work is actually carried out must be controlled in order to guarantee reliability and quality of the goods manufactured.

### The Problems at the Elemaster Building Site

Amongst the various elements which go to make up a working environment, the floor covering materials must also be taken into account. There is a specific norm which unites



all these items, and defines how to behave to avoid "invisible" phenomena - that is, electrostatic discharges (ESD) - causing electrical damaging to machinery and the products.

ESD is a very serious problem in the electronics industry, because the integrated circuits are made using insulating materials such as silicon, which may be damaged if subject to high voltages. Manufacturers and users of integrated circuits must take the right measures to avoid this problem. One such measure is the use of suitable (anti-static) materials to avoid the build up of static electricity in the human body and the adoption of anti-static countermeasures to discharge accumulated charges towards the ground.

The analysis and study of solutions to electrostatic discharges have demonstrated how a conductive or

static dissipative floor, together with other elements such as tables, people and storage equipment correctly equipped with ESD countermeasures, may absorb these discharges without damaging loose and assembled com-

Photo 1.

*Topcem special hydraulic binder was used to make the screed, which allows a residual humidity level of less than 2% to be reached after only a few days curing.*

*The screed was reinforced with electro-welded mesh to improve distribution of the loads.*

Photo 2.

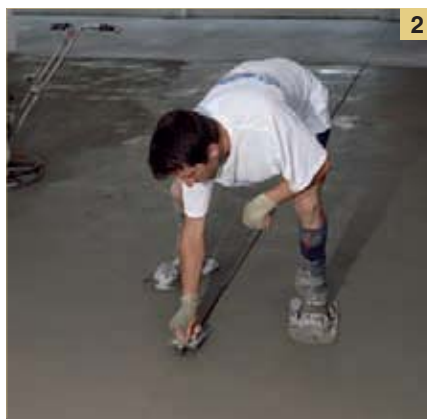
*Control joints were made in the layer of Topcem while it was still fresh.*

Photo 3.

*Before the smoothing operation, Primer G was sprayed on the surface.*



1



2



3

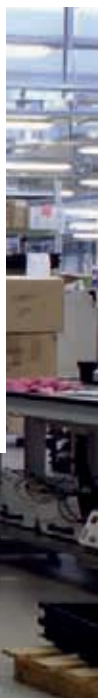
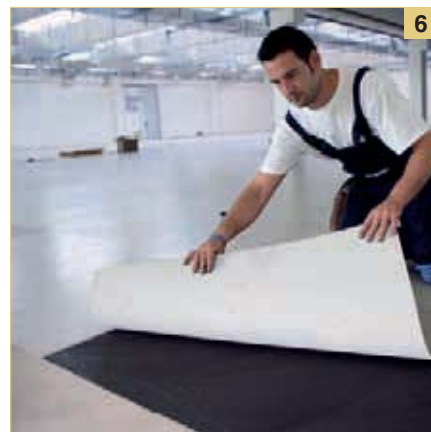
ponents on electronic circuit boards. And it is exactly because of the problems mentioned above that the customer Elemaster, a company which produces electronic circuit boards for railways and transport, electro-medical, power control, domestic appliances, UPS and automotive sectors, wanted to cover the floors of their new production facilities in Lomagna (in the province of Lecco, in northern Italy) with conductive rubber tiles (norament 928 al grano, by Nora) to achieve the required ESD protection for the plant.

### The Answer to the Problem Starts from the Screed

The type of floor designed for the Elemaster plant initially required a cementitious substrate with well defined characteristics: less than 2% residual moisture when laying the floor. Also, considering their resilient characteristic and low thickness, the rubber floors are not able to distribute concentrated loads. To guarantee that the floor is long lasting, therefore, the substrate on which the floor was applied had to have adequate mechanical strengths.

Finally, it was fundamentally important that the substrates had no cracks. Because of the floors' reduced thickness, such cracks would have then been visible on the surface.

Taking into account the above considerations, the technicians from the Mapei Technical Service Department who were contacted to carry out this project, suggested starting off by placing compressible material, such as 1 cm thick polystyrene, around the perimeter of the laying surface and around the pillars which run through it.



Sheets of polyethylene with a thickness of 4-10 mm were laid on the concrete layer, and folded up against the perimeter walls and the pillars.

The polyethylene sheets, which were overlapped by about 20 cm, were held in place using adhesive tape. To guarantee a more efficient vapour barrier, they recommended using two layers of sheets, with the second layer applied perpendicularly to the first layer. This operation was particularly important, and it was also essential that the sheets were not moved or torn during the successive operations: damage or tears could cause rising damp in the overlying layers, and compromise the durability of the floor. In order to meet the client's requirement of installing the floor in a short space of time, the technicians proposed the use of TOPCEM\* to make the screeds.

TOPCEM\* is a special hydraulic binder for normal-setting, rapid-drying, controlled-shrinkage screeds. When mixed with graded aggregates of 0-8 mm, it is possible to make screeds with a residual humidity level of less than 2% after only 4 days of curing.

The screed was reinforced with electro-welded mesh net (mesh size: 5x5 cm, with 2 mm diameter). Apart from offering better load distribution, the mesh also reduces the risk of cracking in correspondence with construction joints and levelling strips.

While the layer of TOPCEM\* was still fresh, control joints were made

Photo 4.

Ultraplan self-levelling smoothing compound was used to perfect the evenness of the surface.

Photo 5.

The equipotential ground contact (grounding) was made using a network of copper strips bonded to the substrate with Adesilex VZ Conductive.

Photo 6.

After completing the conductivity tests, the rubber tiles were then laid using Adesilex G19 Conductive.

Photo 7.

The tiles were "massaged" using a roller from the centre to the edges to improve bonding and to eliminate the air bubbles.

Photo 8.

A view of the floor. Two colours were chosen for the rubber tiles of the floor covering: blue and beige.

(approximately every 5x5 metres), by cutting the screed to a depth of one third of its thickness. Particular care was taken during this phase to avoid cutting the electro-welded mesh.

The use of TOPCEM\* on this particular site helped to considerably reduce the time required to install the floor. Not only, screeds were made only a very short time before laying the floor covering, thus avoiding the screeds being damaged while other essential site activities were being carried out.

### Laying the Rubber Floor

To perfect the flatness of the laying surface for the rubber floor, the unevenness on the surface of the screed was eliminated by applying a layer of ULTRAPLAN\* ultra-fast hardening, self-levelling smoothing compound for thicknesses from 1 to 10 mm. ULTRAPLAN\* was spread on at a thickness of at least 3 mm. Before applying the compound, PRIMER G\* synthetic resin-based primer in water dispersion with very low emission of volatile organic compounds, diluted with water at a ratio of 1:1, was sprayed on the surface.

After levelling off the surface, the equipotential ground contacts were made, according to the methods described in current norms and regulations.

The conductive network of copper strips (0.08-0.10 mm thick and 10-25 mm wide) was bonded to the substrate using ADESILEX VZ CONDUCTIVE\* polychloroprene contact adhesive.

Once this operation had been completed, the conductivity was tested before laying the rubber floor. Homogenous pressed rubber tiles (tile size: 1002 x 1002 mm, 3.5 mm thick) were chosen as floor covering, as they feature proper electrical conductivity for those areas where good protection against electrostatic discharges was required.

The covering material was chosen in two colours by the client: blue for the paths which connect the production areas and the warehouse, and beige for all the open space areas.

The rubber was laid using ADESILEX G19 CONDUCTIVE\*, a two-component epoxy-polyurethane adhesive for conductive floors.

The rubber tiles were applied on the adhesive and carefully "massaged" with a special roller from the centre to the edges, to make sure there was perfect contact between the covering material and the surface of the screed,

and to eliminate all the air bubbles. During the laying operation, the structural joints were followed while, as far as the control joints in the screed were concerned, they were sealed beforehand with EPORIP\* adhesive in order to create a continuous surface without interruptions.

The entire operation was completed by applying skirtings in a colour which matched that of the floor. They were also bonded using ADESILEX VZ CONDUCTIVE.

#### \*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" DVD or at the web site: [www.mapei.com](http://www.mapei.com).

**Adesilex G19 Conductive:** two-component epoxy-polyurethane adhesive for conductive rubber and PVC floorings.

**Adesilex VZ Conductive:** double coat polychloroprene adhesive for conductive flooring.

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

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

**Topcem:** normal-setting, rapid-drying (4 days), special hydraulic binder for screeds.

**Ultraplan:** ultra-fast hardening (12 hours), self-levelling smoothing compound for thicknesses from 1 to 10 mm.



## TECHNICAL DATA

**Elemaster,** Lomagna (Lecco, Italy)

**Work:** preparation of screeds and installation of conductive rubber floorings

**Year:** 2006

**Customer:** Elefin

**Work Management:** arch. Ing. Luca Ceppi

**Contractor:** Emmezeta snc from Gardone Valrompia (Brescia, Italy) for preparing the screeds

**Contractor:** Carrara Andrea sas from Cologno al Serio (Bergamo, Italy)

**Mapei Co-ordinators:** Enrico Geronimi and Angelo Nobili, Mapei SpA

# SELF-LEVELLING AND THIXOTROPIC SMOOTHING COMPOUNDS



**From Mapei Research & Development Laboratories a complete, updated range of high-performance smoothing compounds for laying resilient and wooden floors**

Mapei is at the forefront in research and, as for the development of self-levelling and thixotropic smoothing compounds,

its Research & Development Laboratories use the most innovative and analytical methods. In particular, the application of new experimental techniques allows Mapei to optimise the characteristics of their own self-levelling compounds according to requirements, which with on-site applications may often lead to critical problems and situations. Mapei Laboratories use different kinds of tests and analyses, which are described in detail in the new folder. The characteristics of smoothing compounds are tested using rheology tests, such as the Flow Test. Careful attention is paid to the analysis of the variations in shrinkage and expansion provoked by the reaction of cement to hydration. Mechanical strength and abrasion resistance are also checked. Furthermore, a special piece of equipment (an environmentally simulation

chamber) has been developed to measure the emissions of volatile organic compounds (VOC). Analytical methods are, on the other side, used to study raw materials and to identify their potential for developing new products and optimising the existing ones. These pages show the 5 self-levelling and thixotropic smoothing compounds belonging to the Mapei range, mentioning each product's main features, application methods and use.

For further information on these products see the technical data sheets at [www.mapei.com](http://www.mapei.com).

## SELF-LEVELLING SMOOTHING COMPOUNDS

### Ultraplan

#### THE MOST VERSATILE...

Quick-hardening, self-levelling smoothing compound for internal use

- ✓ For thicknesses from 1 to 10 mm
- ✓ For smoothing new substrates and existing substrates which are solid, dry, clean and not subject to rising damp
- ✓ May also be applied on old ceramic, terrazzo and stone floors
- ✓ Suitable for heated substrates
- ✓ Recommended for laying all types of floors (resilient, textile, parquet, ceramic and stone)
- ✓ High mechanical strength
- ✓ Particularly smooth surface finish
- ✓ May be stepped on after only 3 hours
- ✓ Resilient and parquet floors may be laid after only 12 hours



### Ultraplan Eco

#### WHEN ECO-COMPATIBILITY IS IMPORTANT...

Self-levelling, quick-hardening smoothing compound with an extremely low emission level of volatile organic compounds

- ✓ Classified as EMICODE-EC1 by GEV
- ✓ Used together with Mapei "Eco" adhesives, forms an EC1-certified system
- ✓ For thicknesses from 1 to 10 mm
- ✓ For smoothing new substrates and existing substrates which are solid, dry, clean and not subject to rising damp
- ✓ May also be applied on old ceramic, terrazzo and stone floors
- ✓ Particularly recommended for heated substrates
- ✓ Recommended for laying all types of floors (resilient, textile, parquet, ceramic and stone)
- ✓ Particularly smooth surface finish
- ✓ May be stepped on after only 3 hours
- ✓ Resilient and parquet floors may be laid after only 12 hours



# OPIC SMOOTHING COMPOUNDS

## Ultraplan Maxi



### FOR HIGHER THICKNESSES...

Self-levelling, quick-hardening smoothing compound for internal use

- ✓ For thicknesses from 3 to 30 mm
- ✓ Particularly recommended for uneven, disjointed substrates
- ✓ For smoothing new substrates and existing substrates which are solid, dry, clean and not subject to rising damp
- ✓ May also be applied on old ceramic, terrazzo and stone floors
- ✓ Recommended for laying all types of floors (resilient, textile, parquet, ceramic and stone)
- ✓ Suitable for heated substrates
- ✓ High mechanical strength
- ✓ May be stepped on after only 3 hours
- ✓ Resilient and parquet floors may be laid after 24-72 hours, according to the thickness



## Fiberplan



### WHEN HIGHER FLEXIBILITY IS REQUIRED...

Extremely quick-hardening, self-levelling, fibre-strengthened smoothing compound for internal use

- ✓ For thicknesses from 3 to 10 mm
- ✓ For smoothing new substrates and existing substrates which are solid, dry, clean and not subject to rising damp
- ✓ May also be applied on old ceramic, terrazzo and stone floors
- ✓ Particularly recommended for smoothing wooden substrates (floor beams, chipboard, plywood, parquet) which are well fixed
- ✓ Suitable for heated substrates
- ✓ Recommended for laying all types of floors (resilient, textile, parquet, ceramic and stone)
- ✓ High mechanical strength
- ✓ May be stepped on after only 3 hours
- ✓ Resilient and parquet floors may be laid after only 12-24 hours



## THIXOTROPIC SMOOTHING COMPOUNDS

## Nivorapid



### FOR SPOT AND VERTICAL REPAIRS...

Quick-hardening, thixotropic smoothing compound for internal use

- ✓ May be applied on walls and floors
- ✓ For thicknesses from 1 to 20 mm
- ✓ For smoothing new substrates and existing substrates which are solid, dry, clean and not subject to rising damp
- ✓ May also be applied on old ceramic, terrazzo and stone floors
- ✓ Suitable for heated substrates
- ✓ Particularly recommended for repairing and smoothing steps, edges of pillars, depressions and holes in floors, walls and supports
- ✓ If mixed with LATEX PLUS may be applied on highly flexible substrates, such as metal, wood, PVC and rubber
- ✓ Recommended for laying all types of floors (resilient, textile, parquet, ceramic and stone)
- ✓ High mechanical strength
- ✓ May be stepped on after only 2 hours
- ✓ Resilient and parquet floors may be laid after only 24 hours



TEMI PER RISANARE E DEUMIDIFICARE LE MURATURE

TRADE FAIRS

ANTIQUE

MAPE-ANTIQUE STRUTTURALI

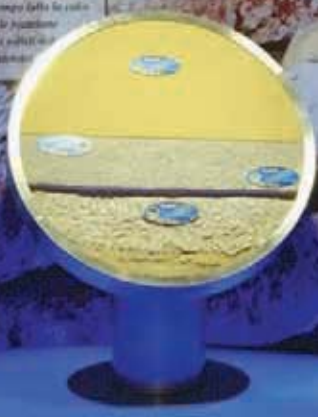
### L'Eco-Pozzolana

LINEA DI PRODOTTI A BASE DI CALCE ED ECO-POZZOLANA, ESENTI DA CEMENTO, PER IL RISANAMENTO DEGLI EDIFICI IN MURATURA

- Controllando l'umidità e l'aria all'interno si evita che i materiali impregnati, in particolare il mattone, si deteriorino.
- Elevata permeabilità al vapore che è in grado di consentire l'aerazione dell'isolamento sulle murature.
- Elevata resistenza ai salti termici che evita il rischio di crepe e lacerazioni.
- Elevata elasticità che evita il rischio di lacerazioni e crepe.
- Elevata resistenza ai sali solforici.
- Elevata resistenza ai sali cloridrici.
- Elevata resistenza ai sali nitratici.
- Elevata resistenza ai sali solforici.
- Elevata resistenza ai sali cloridrici.
- Elevata resistenza ai sali nitratici.

MALTA DI CALCE ED ECO-POZZOLANA, DI COLORE CHIARO, ESENTE DA CEMENTO, PER LA REALIZZAZIONE DI INTONACI ED ALLETTAMENTI "ARMATI"

- Facile da applicare.
- Applicabile a strati e a cordoli.
- Alta resistenza meccanica e compressiva.



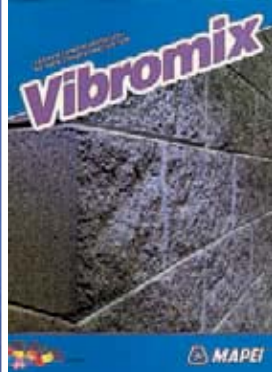
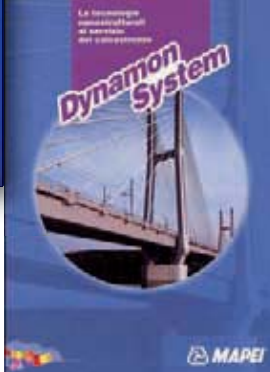
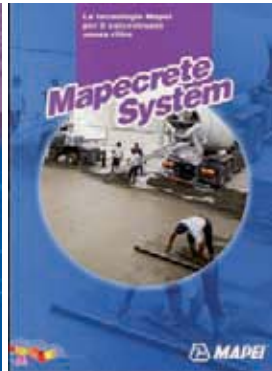
# SAIE 2007

## MAPEI'S FULL BUILDING RANGE

Mapei's full range of cutting-edge solutions on display: new products and solutions for 14 market niches



## ADDITIVI PER CALCESTRUZZO



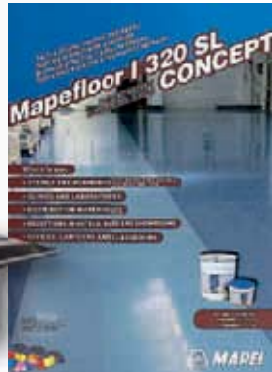
Once again last year Mapei's presence at the SAIE International Building Exhibition - held, as usual, at the Bologna Trade Fair from 24<sup>th</sup> to 28<sup>th</sup> October - certainly did not go unnoticed. This was due to both the great care taken over installing the exhibition spaces and also the wealth of new products on display and the improvement in their technological properties. This proves that Mapei, which in 2007 was celebrating its 70<sup>th</sup> anniversary, certainly is not standing still and, in line with its corporate philosophy, is truly underlining that research and development is one of the real linchpins of its international success. The showcase provided by the Bologna event was certainly up to expectations.

Professionals, designers, architects and business enterprises were the key players at SAIE 2007, which again turned out to be a great success in terms of visitors - 178,250 professional operators, 7,530 of whom were foreigners from all over the world - and thanks to the popularity of the side-events devoted to "great architecture" organised as part of the show.

SAIE provided the chance to renew and extend Mapei's technical documentation on the various product lines. Alongside the pictures of the thematic islands characterising Mapei's exhibition space, these pages show the covers of the latest catalogues, depliants, flyers and folders presented in this occasion.



## SISTEMI PER PAVIMENTI INDUSTRIALI





buildings throughout Italy. There were also lots of foreign delegations attending SAIE 2007 - with a special focus on Eastern European markets - which, at the end of the show, emphasised the strategic importance of this event for developing international scale business opportunities.

SAIE again proved its vocation to being an "incubator" for projects, technology, materials and innovation for the building sector: the ideal stage for allowing Mapei to demonstrate its ability to innovate technologically.

### **Mapei, 70 Years of Building Solutions**

For Mapei, in fact, SAIE has always provided an important chance to present its full range of cutting-edge products specially designed for the building industry.

Last year's edition of SAIE was even more significant for Mapei: in actual fact, to celebrate its 70<sup>th</sup> anniversary, the world's leading manufacturer of adhesives for the building industry presented a considerable number of new products and solutions for 14 different sectors of the market. The stand, which stood out through the special Mapei logo designed for its 70<sup>th</sup> anniversary, also featured a historical exhibition to celebrate this great landmark, which had been such a success at last October's Cersaie trade fair, which is dedicated to ceramics and bathroom furnishing.

The high-tech technological impact of the exhibition space also served to emphasise, thanks to special devoted panels and images, that research is in Mapei's DNA. Research is the real driving force behind the Company's studies into designing increasingly eco-compatible products meeting the specific requirements of the building sector.

The lower section of the stand, on the other hand, was entirely devoted to displaying numerous new products underlining that Mapei is the ideal business partner for anybody at SAIE looking for ideal solutions for their own



This year's SAIE could boast some really big figures, such as 1,700 exhibitors, including 350 from abroad; 260,000 m<sup>2</sup> of overall exhibition space and sell-out meetings featuring some exceptional testimonials.

The conference organised by Mapei entitled "Renovating buildings: truth and lies", which was held on the 26<sup>th</sup> October at the Bologna Trade Fair Conference Centre, was extremely well attended by the general public.

This meeting, involving experts in conservation and restoration, university professors and representatives from the Italian Ministry of Culture, set out to shed some light on the chaotic present situation of the Italian building sector, with no clear regulations allowing clients and designers to make scientifically-based choices of the products available on the market to be used for architecturally renovating historical





specific building needs.

The stylistic simplicity of the installation allowed visitors to the stand to focus their attention on the sector of particular interest to them and find out plenty of information about all the new products on display.

### Mapei in 14 Specific Sectors of the Building Industry

Plenty of products on show from the **admixtures for concrete** range. The DYNAMON NRG and DYNAMON SP lines for pre-cast industry; CHRONOS CHR for ready-mix industry; VIBROMIX C1, VIBROMIX C2, VIBROMIX E and VIBROMIX L1, VIBROMIX L2, VIBROMIX L3, VIBROMIX P and VIBROMIX S for light pre-cast industry, completing the DYNAMON range. In addition,



MAPECRETE SYSTEM admixtures for making joint-free floors were also on display.

The area reserved for **industrial floors systems** featured ULTRATOP SYSTEM and MAPE-FLOOR SYSTEM, systems for constructing joint-free resin and cementitious floors for all purposes.

The **systems for repairing and dehumidifying masonry** featured the MAPE-ANTIQUE range: a full collection of lime- and Eco-Pozzolan-based eco-sustainable products.

The **systems for repairing concrete** feature three key products: MAPE-GROUTEASYFLOW, MAPEGROUT T40 and STABILCEM SCC and, as regards **seismic consolidation of concrete and masonry elements**, FRP SYSTEM and MAPEGRID G220.



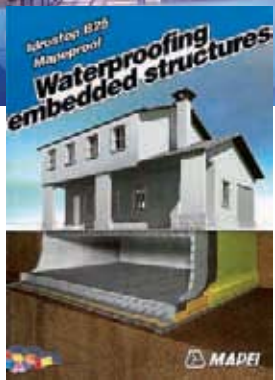
The range of products for **smoothing and levelling concrete elements and renders** has been enhanced by two new smoothing products: PLANITOP 530 and PLANITOP 200.

The full range of wall finishing products was also presented as **systems for wall coatings**, notably focusing on the latest arrival, SILAN-COLOR PLUS, and the COLORMAP automatic colour system, as well as MAPETHERM certified thermal insulation system.

The **systems for waterproofing embedded structures** have also been extended through a complete new range of underground waterproofing products: the bentonitic products IDROSTOP B25 and MAPEPROOF, and the bituminous products PLASTIMUL and MAPETHENE.

The **systems for waterproofing** bathrooms, terraces, swimming pools, canals, viaducts, etc.





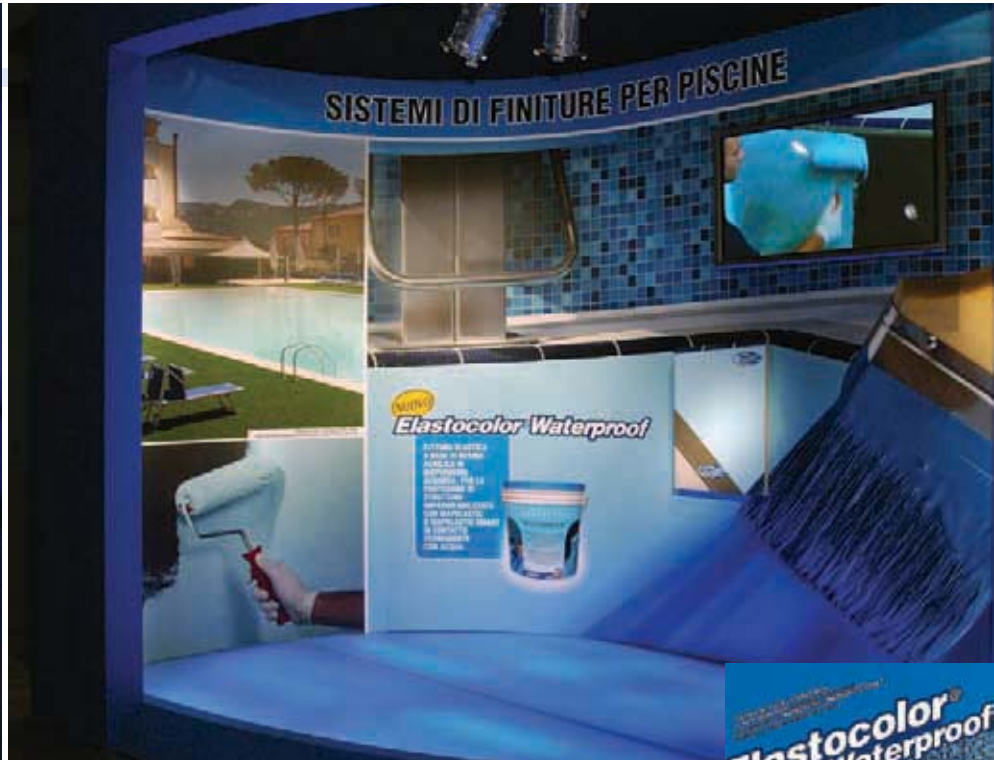
were represented by Mapei's three best-known leading products MAPELASTIC, MAPELASTIC SMART and MAPEGUM WPS. The **finishing systems for swimming pools** have also

been extended with an innovative new product, namely ELASTOCOLOR WATERPROOF, the latest waterproofing paint for pools, which can be directly applied to MAPELASTIC. The extensive range for **roads** (linked with the more general environmental sector) saw Mapei produce specific products for constructing "white" roads using the innovative STABILSOIL 200 SYSTEM and specific systems



for cold-recycling of spent bituminous conglomerates and recycling inert materials deriving from demolition works. It is also worth mentioning that the range of fast setting mortars used for road and industrial maintenance have been enhanced by a new product: MAPEGROUT SV FIBER, a controlled-shrinkage fast-setting and hardening mortar with a high ductility rating to be mixed with FIBRES R38, ideal for applications at up to -5°. Let's remember that the en-





tire range of this fast-setting mortars at the technological cutting-edge carry CE label from last year, in other words they comply with the principles set down by the European regulation ENV 1504-9 (*"Products and systems for protection and repair of concrete structures. Definitions, requirements, quality control and evaluation of conformity. General principles for the use of products and systems"*) and the minimum requisites set down in EN 1504-3 (*"Structural and non-structural repairs"*) for class R4 structural mortars.

The systems **for underground works** once again hinged around the UTT (Underground Technology Team), the Mapei department devoted to underground works.

There was a newcomer in the **road maintenance and urban refurbishing sector** too, in the form of MAPEDRAIN: the complete new range of drainage mortars for laying outdoor floors; these solutions were brought out at the beginning of October 2007 for the first time at Marmomacc trade fair.

Demonstrative panels, big references pictures and new explanatory video clips about how to use the products caught the attention of many visitors, both through the spectacular nature of the images and the ease with which they could grasp the efficiency of each product system presented.

Lastly, a special corner was devoted to new ideas presented at the last edition of Cersaie exhibition.

More specifically, the section of the corner concerning **grouts and epoxy adhesives** highlighted the KERAPOXY range, extended and completed for installing ceramics in any kind of setting, such as the food manufacturing industries and shopping malls, and decorative solutions featuring the highly requested MAPEGLITTER.

New DUST FREE technology, reducing the amount of dust released during pouring, mixing and applying, applied to KERAFLEX MAXI S1 DUST FREE adhesive, was also presented at SAIE.

Confirming Mapei's force and reliability by displaying all the latest innovations available on the market; presenting lots of new projects admired by highly qualified visitors; upgrading the Company's basic image: this was the target Mapei achieved at SAIE, proving that it is still a youthful enterprise after 70 years of extremely healthy growth.



# BENTONITIC WATERPROOFING PRODUCTS FOR EMBEDDED STRUCTURES



Micronised natural sodium bentonite uses the damp from the ground to transform it into a gel with high waterproofing properties.

Mapeproof and Idrostop B25 are the ideal Mapei products for protecting all embedded structures against underground water, whether it is from the groundwater or through percolation

## ***Mapeproof***

### Bentonitic fabric

- ✓ For waterproofing and protection applications
- ✓ For horizontal and vertical surfaces
- ✓ Easy handling and laying



## ***Idrostop B25***

### Hydro-expansive bentonite joint

- ✓ For sealing construction joints
- ✓ Easy to apply
- ✓ May be laid without strengthening mesh



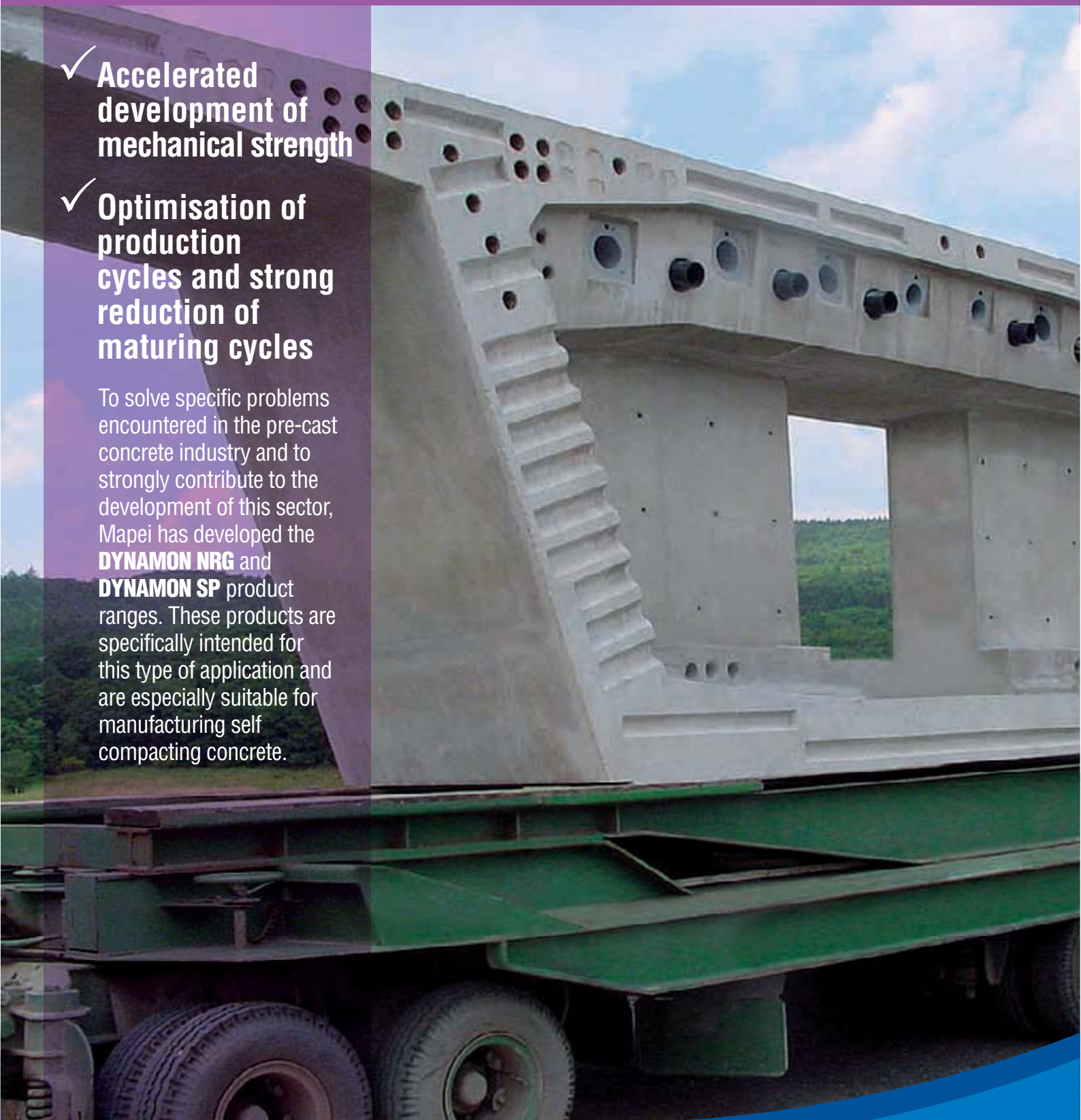
PRODUCT SPOTLIGHT

# ***Dynamon NRG & Dynamon SP***

Solutions specially designed for the pre-cast concrete industry

- ✓ Accelerated development of mechanical strength
- ✓ Optimisation of production cycles and strong reduction of maturing cycles

To solve specific problems encountered in the pre-cast concrete industry and to strongly contribute to the development of this sector, Mapei has developed the **DYNAMON NRG** and **DYNAMON SP** product ranges. These products are specifically intended for this type of application and are especially suitable for manufacturing self compacting concrete.



[www.mapei.com](http://www.mapei.com)  
**MAPEI**<sup>®</sup>

ADHESIVES • SEALANTS • CHEMICAL PRODUCTS FOR BUILDING



# MARMOMACC

## MARBLES, STONE, DESIGN & TECHNOLOGY

Once again last autumn Mapei could not miss the world's most important event in the field of marble and stone. And it did it in great style, showing yet again that it is the technologically most advanced Company as regards systems of installation products.

This was a truly international Marmomacc last year, a wonderful showcase event that Mapei took full advantage of. The 42<sup>nd</sup> edition of the International Marble, Stone, Design & Technology Exhibition, held at Veronafiere from 4<sup>th</sup> to 7<sup>th</sup> October last year, recorded an increase of 6% in foreign visitors compared to the previous year, corresponding to a total of over 26,000 from 110 countries, a record number for the event.

Approximately 65,000 (+4%) professional operators attended, 43% of whom were foreigners.

The rest of the figures for the event were also positive: 1,510 exhibitors from 50 countries (+ 4% compared to 2006), half of whom were foreign, occupying a net exhibition area of over 76,000 m<sup>2</sup> (+ 5.5%).

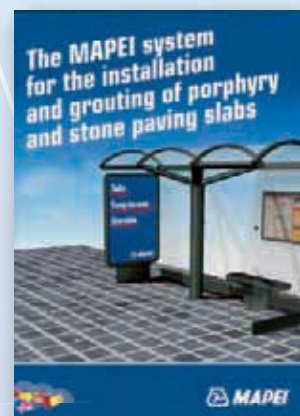
The large number of foreigners involved shows that Marmomacc now plays a very important role in promoting an industry which, in Italy, can boast over 11,000 companies (and 60,000 employees), corresponding to a turnover of more than 4 billion Euros.

The event also hosted about thirty foreign delegations – notably from Brazil and Russia – and architects and designers from all over the world.

The Verona event provided the chance to take stock of the general trend in this important economic sector,

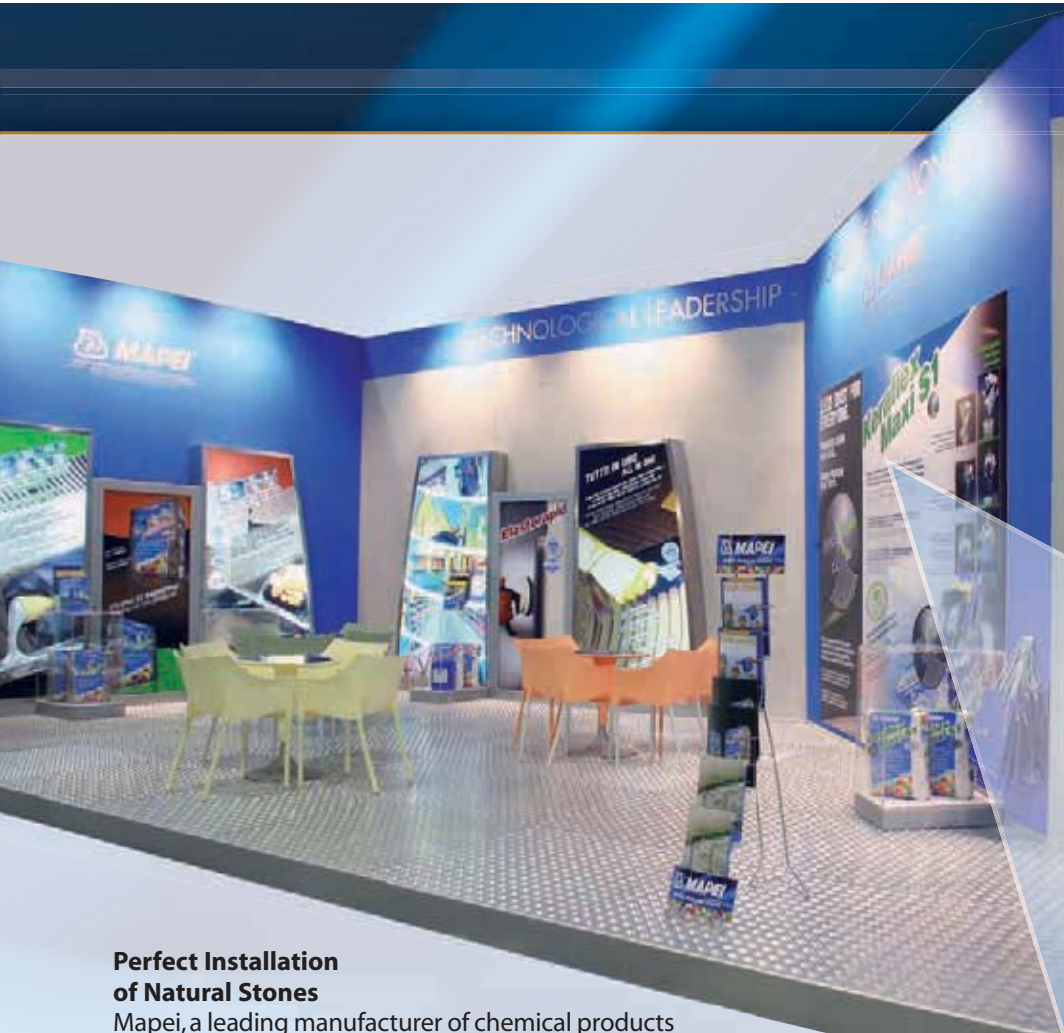
which, looking at the facts and figures, seems to be enjoying a real revival.

After a settling down period over the last few years, due to increasing competition from emerging nations (China, Turkey, etc.), the industry is showing notable signs of life: over the first semester of 2007, Italian exports of marbles and granites, rough stones (blocks and slabs) and processed stones (finished products) amounted to 903,136,000 Euros compared to 878,535,000 Euros during the first semester of 2006 (+2.8%) and imports were 309,964,000 Euros compared to 302,628,000 Euros over the same period of 2006 (+2.4%).



**NEW**





### Perfect Installation of Natural Stones

Mapei, a leading manufacturer of chemical products for the building industry, can also boast plenty of expertise and experience in installing natural stones.

At the 42<sup>nd</sup> edition of Marmomacc, it presented the fruits of its own research in this sector: reliable, high-performance systems and innovative ideas which are bound to be of great interest to operators in this industry.

Installing natural stones calls for specific expertise. Indeed, laying stones, marbles and granites sometimes involves real risks and unexpected reactions from the materials themselves, particularly in the presence of moisture or sudden changes in temperature. All this results in the formation of efflorescence, staining or even detachment. It is also worth mentioning that, in the modern-day "global village", blocks of all kinds of material come from all four corners of the earth (deserts, steppes, forests, etc.)

After first being presented at Cersaie 2007, the Marmomacc exhibition also displayed the latest DUST FREE technology devised by the Mapei Research & Development Laboratories to improve building site conditions, avoiding annoying problems, particularly during renovation work.

Tests have shown that Mapei's DUST FREE products can reduce the amount of dust usually created during pouring, mixing and applying powder products by 90%.

The new DUST FREE technology presented at Marmomacc will be applied to the entire line of powder products for installing ceramics and marble, starting with KERAFLEX MAXI S1. Visitors also got the chance to admire MAPEDRAIN, a complete system for installing and grouting drainage paved floors for outdoors, presented for the first time at the exhibition in Verona.

The MAPEDRAIN provides architects, designers and installers with paved floor that never loses the beauty, durability and solidity it had the day it was first laid, whether it be in a private home or a space open to the public, avoiding the risks, inconveniences and troubles typically found when laying natural

stone, such as the colour changes and deformations caused by a lack of drainage.

A installation system composed of drainage mortars and binders has been specially devised for floors subject to low or medium stresses (MAPEDRAIN MORTAR, MAPEDRAIN BINDER) for creating highly permeable laying beds and screeds with no capillary rising damp.

The system also includes grouts and binders (MAPEDRAIN 1K GROUT, MAPEDRAIN 3K GROUT, MAPEDRAIN BINDER), featuring good mechanical strengths, excellent drainage properties, anti-freeze levels and resistance to adverse weather conditions, and the characteristic of not being subject to the formation of surface moss or weeds.

A grouting mortar with practically no water absorption (KERACOLOR PPN), featuring high resistance to wear and the effects of street-cleaning operations or de-icing salts, has been developed for floors subject to heavy and intensive traffic. It is also worth remembering that, in addition to being eco-compatible, all the products from the MAPEDRAIN range feature high-performance and maintain their properties and performance ratings over time.

A wide range of technology designed to solve even the most tricky problems involved in laying and installation operations, catering for both functional and aesthetic needs.

This is what visitors to Marmomacc were able to admire when visiting the Mapei exhibition space, where there was a real feel of all the Company's experience in this sector and its desire to carry on developing increasingly innovative products.

The next edition of Marmomacc will again be held in Verona from 2<sup>nd</sup>-5<sup>th</sup> October 2008.





# STÖRTEBEKER-HAUS HAMBURG

**Stylish architecture and materials inspired  
by tradition for a prestigious building in Hamburg**



Photo 1.  
The staircases sport  
precious natural stones  
as floor and stair  
coverings.

Photo 2.  
In the elevators natural  
stones were bonded on  
the floors with Keralastic,  
while wall coverings were  
laid with Granirapid.



The "Störtebeker-Haus" is situated in the Süderstraße, close to Hamburg downtown. This is an office and commercial building, which was opened in 2006 and due to its remarkable architecture looks more like a building of the early nineteenth century than a contemporary construction.

The owner, a very successful Hamburg businessman, wished to erect a building fitting in the history and traditional architecture of the Free Hanseatic City (so is Hamburg commonly called in Germany) and appealing to the population. The result is very attractive: a high-level building with different architectural styles, constructed with precious building materials. It impressively shows the various scopes for design which are made possible by natural stone, as well as the beauty and variety of this natural building material and the excellence of local stonemason tradition.

This is evident both outside, in the façade combining sandstone with fired clinker, and inside, where various kinds of natural stones, together with high-quality stucco works, lend their character especially to the four staircases and lobbies.

### Reminding the City's Historical Past

Besides the architecture, the name "Das Störtebeker-Haus" also demonstrates the close relation between the building and the city of Hamburg. Klaus Störtebeker was a buccaneer who, together with the pirate Goedeke Michels and his followers, ambushed the merchant ships by the end of the 14<sup>th</sup> century in the North Sea, thus inflicting serious losses to the traders of the Hanseatic League. Hamburg seamen put a stop to these illegal actions in the year 1400 (or 1401, according to some historians), when Störtebeker

and his followers were overpowered in the North Sea, nearby the island of Helgoland, and executed by beheading on the 21<sup>st</sup> October of the same year. The tales describing the boldness of his struggle in the course of his arrest in the North Sea are probably the reason why many anecdotes and legends have grown up around the person of Klaus Störtebeker. Among others, a legend had he run past eleven of his followers after his beheading, until the hangman tripped him up. In the tower of the new building there is a carillon with a musical clock, which at 12.00 a.m. every day reminds of the execution of the pirate captain and his followers.

### Elegance in Stone

The interior decoration is essentially characterized by a design artfully combining different types of natural stones which give the staircases, the corridors, the halls and the floors a special touch of elegance. A fine demonstration of the excellent use of natural stone as a building and decoration material is the star in the main entrance hall, completed with masterly handicraft. The stone types Azul Cielo (blue marble), Nero Belga (black limestone), Estremoz (light-coloured marble) and Rojo Alicante (red limestone) came into use here. The star faces north and features an integrated wind rose. It is made up of 8 large-format elements, which were separately prepared and, after calibration by laser technology, installed on the floor.

For the remaining sections of the floorings on the ground floor and for the stairs the following stones were chosen: Mugla White (light-coloured marble), Verde Guatemala (green serpentinite), Crema Valencia (yellow marble).



Slabs of Verde Guatemala serpentinite, Mugla White and Crema Valencia marble were instead laid on the step treads.

In the elevators natural stones of the Juparana Colombo (red migmatite), Verde Guatemala and Crema Valencia types were installed on the floors. The above-mentioned green serpentinite and yellow marble, together with Port Laurent black limestone, were chosen for the elevators' external walls and the remaining walls on the first floor.

### A Perfect Installation

Natural stones (sandstone and fired clinker) were mechanically anchored to the facades of the Störtebeker-Haus and Shanxi black (black granite) slabs were similarly fixed on the outside pillars.

As for the laying of stone materials inside the building, the most important requirements on the installation products were the securing of excellent and durable adhesion of the covering, a good resistance to the loads which the surfaces would have to bear, and the prevention of changes of the

stone colours after the installation. Thanks to very intensive Research & Development activities guaranteeing a specialised knowledge of materials, Mapei was able to offer a complete product system which has proved successful for more than 15 years in a lot of challenging building projects involving stone material sensible to deformation and stain formation. As for laying the star on the floors, after intensive cleaning of the support, the screed was prepared with the fast setting hydraulic binder MAPECEM\*. It perfectly bonded to the substrate thanks to the bonding slurry made of

PLANICRETE\*, water and MAPECEM\*, previously applied on the surface. After application of the white version of the two-component cementitious adhesive GRANIRAPID\* on the whole laying surface and back-buttering of the element slabs, the natural stone elements were installed under pressure and utmost care. GRANIRAPID\* was also used to lay the natural stone slabs on the other sections of the floors and on the walls of the ground floor, after properly cleaning the substrate. The adhesive's white shade was chosen for the light-coloured slabs, while the grey version was used in all

the remaining cases. On the elevators' external walls the natural stone slabs were bonded with MAPESTONE 1\* fast hardening and drying mortar (a product distributed in the German, Austrian and Swiss markets by Mapei's local subsidiaries) or else with GRANIRAPID\*. In the elevators, the floor slabs, which reproduce the Hamburg blazon, were bonded with KERALASTIC\* high performance two-component polyurethane adhesive, while the inside wall covering was installed with grey GRANIRAPID\*. On the step treads, screeds were formed with MAPECEM\* before laying the Mugla White marble slabs with GRANIRAPID\*. Serpentine and yellow marble were instead bonded with MAPESTONE 1\*. As the stair construction is embedded in the shear walls, the installation of a high-quality sound insulating system was necessary to avoid the propagation of the subsonic noise to the adjoining offices and the neighbouring business building. This was ensured by using Mapei's MAPEFONIC SYSTEM\* featuring the necessary insu-



Photo 3. Before laying the star-shaped floor design, a screed was prepared with Mapecem on a substrate treated with a Planicrete-based bonding slurry.

Photos 4, 5 and 6. The natural stone slabs forming the star were installed with the white version of Granirapid. This adhesive was applied on both the substrate and the slabs back.

Photo 7. View of the star pattern on the floors after completion of the works.

Photo 8. Applying the sound isolating Mapefonic System on the stairs.

Photos 9 and 10. Laying natural stone slabs on the stairs rises and treads with Mapestone 1.

Photo 11. On the step treads white marble was bonded with Granirapid, green serpentine and yellow marble with Mapestone 1.

Photo 12. View of the stairs and step treads after completion of the works.



lating characteristics and rigidity. It includes bitumen filled acoustic tiles (with a thickness of only 10 mm) with fibreglass reinforcing and a backing consisting of a composite cushion. The use of MAPEFONIC SYSTEM\* guarantees a noise reduction of 17.6 dB in line with current standards. MAPESTONE 1\* was used to lay stone material slabs on the stairs risers and treads, as well as on the skirtings of the stair walls.

For grouting the joints of all the mentioned surfaces ULTRACOLOR fast setting and drying grout was first chosen. This product was then replaced by

ULTRACOLOR PLUS\*, a further developed version which has been available for many years in several countries and was launched on the German market just during those times. The new formula allowed the perfect completion of the grouting operations, since it is anti-efflorescence, water-repellent and antimold thanks to the DropEffect® and Bioblock® technologies.

*This article was taken from issue n. 5 of "Realta Mapei", the in-house magazine published by Mapei's Austrian, German and Swiss subsidiaries which we would like to thank.*

**\*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" DVD or at the web site: [www.mapei.com](http://www.mapei.com).*

*Mapei's adhesives and grouts conform to EN 12004, EN 12002 and EN 13888 standards.*

**Granirapid (C2F, S1):** high performance, deformable, fast setting and hydration two-component cementitious adhesive for ceramic tiles and stone material.

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

**Mapefonic System:** minimal thickness sound control system designed to isolate impact noise when installed under ceramic tiles and stone material.

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

**Mapestone 1 (C2F):** fast hardening and drying mortar for small and medium laying beds.

*N.B. This product is distributed on the German, Austrian and Swiss markets by Mapei's local subsidiaries.*

**Planicrete:** synthetic-rubber latex for cementitious mixes.

**Ultracolor Plus (CG2):** fast setting and drying, high performance, anti-efflorescence, polymer modified grout, for joints from 2 to 20 mm. Water-repellent with DropEffect® and antimold with Bioblock® technology.



**TECHNICAL DATA**

**Störtebeker-Haus, Hamburg, Germany**  
**Work:** preparing screeds for the inside floors; laying natural stone covering on the walls and floors of several halls, in the elevators and on the stairs; applying a sound isolating system on the stairs  
**Years:** 2004-2006  
**Customer:** Achim Becker, Hamburg  
**Project:** Architektenteam Tipke, Buchholz  
**Works Management:** Hans Joachim Mehmcke  
**Installation Company:** Granit Sp. z.o.o., Hamburg  
**Mapei Distributor:** Hansa Keramik, Hamburg  
**Mapei Co-ordinator:** Walter Mauer, Mapei GmbH (Germany)



# GOLDEN

# TERRACES

**Innovative products for a golden building site**

After two-year works, in February 2007 Warsaw city centre was completely transformed by the opening of a new gigantic architectural complex. This is the Złote Tarasy, or Golden Terraces, the biggest business/office/entertainment centre of Poland and one of the largest in Europe, located in the very center of the country's capital, between the Central Railway

Station and Złota street, opposite the Palace of Culture and Science. The project covers a total area of 225,000 m<sup>2</sup> and includes a three-storey central area, the so called "platform", housing shops, restaurants and a multiplex cinema with 800 seats. Below the street level, there are two further storeys, housing shopping and service units and a two-level underground car

park for nearly 1,700 cars. Three office buildings also belong to the complex: a 100 m high tower block and two twelve-storey buildings with inclined facades. The heart of the project is a multi-level terrace-like courtyard, covered with a wavy glass roof, with surface area of 10,250 m<sup>2</sup>. It is the most characteristic element of the complex: it is not



1



2



3

flat, but folded in an irregular way. Particularly innovative is the unique structure of the roof: the undulating shape is supported on eleven pillars in the form of trees. The structure of the roof is composed of approximately 5 thousands glass panels and hundreds tons of steel. The design work of the dome took the architectural design office Jerde almost two years and six months. The restaurants, bars and shops located under the roof are integrated into green areas with water cascades. The result is an ideal meeting place, encouraging evening walks, suitable for cultural and entertainment events. Indeed, the whole complex well embodies Warsaw's lively, vogue and smart spirit.

### **Kerapoxy F: the Ace up on the Sleeve**

Mapei contributed to the building of this multifunctional complex, which is not second to any big American "mall", by supplying products able to solve even the most difficult problems arising on the site. The competitors' solutions proved to be no match for Mapei grouts.

Under the glass roof, in the central point of the complex, the several levels of the shopping gallery sport floorings of 30x30x2 cm polished granite slabs, arranged according a geometric pattern. The joints thickness was inferior or equal to 2 mm and no manufacturer seemed able to offer a grout suitable for so narrow joints.

Mapei proposed KERAPOXY F\*, an innovative fine-grained epoxy mortar especially designed for joints of up to 3 mm. To meet the customer's need, Mapei SpA's Research & Development Laboratories developed the anthracite shade (No 114) of this grout, which successfully passed the tests at the building site.

About 7 tons of KERAPOXY F\* were

used to grout the joints of 20,000 m<sup>2</sup> floorings.

Instead, the traditional formulation of KERAPOXY\* was used for the joints of wall and floor covering in several toilettes', for a total surface of about 12,000 m<sup>2</sup>, as in this case the joints featured standard thickness.

Other Mapei products also came into use in this building project. For instance, in some places the substrates were smoothed with NOVOPLAN 21\*. This is a product commonly used for preparing the substrate before the installation of resilient materials but is also suitable to level the substrates before laying ceramics. In this case, NOVOPLAN 21\* endowed the surfaces with the mechanical strengths requested by the customer.

In the toilettes MAPELASTIC\* cementitious mortar was used for waterproofing floors and MAPEGUM WPS\* liquid membrane for waterproofing walls. On the damp insulated surfaces ceramic tiles were laid with the high-performance cementitious adhesive ADESILEX P9\*. KERABOND\* was instead used for the installation of tiles onto not insulated substrates, which had been previously treated with PRIMER G\*.

In the toilettes expansion joints were sealed with MAPESIL AC\* silicone sealant, while mirrors were installed with MAPESIL LM\*.

*Photo 1, 2 and 3.*

*Kerapoxy F was used to grout the very narrow joints of the granite floorings in the shops, corridors and galleries under the glass dome.*

*Photo 4.*

*Several Mapei products (such as Novoplan 21, Mapelastic and Mapegum WPS) were used for treating the floor and wall surfaces in the toilettes, before laying ceramic tiles with Adesilex P9 or Kerabond.*

**\*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" and "Products for Ceramic Tiles and Stone Materials" ranges. The technical data sheets are available on the "Mapei Global Infonet" DVD or at the web site: [www.mapei.com](http://www.mapei.com).

Mapei's adhesives and grouts conform to EN 12004, EN 12002 and EN 13888 standards.

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

**Kerabond (C1, becomes C2E and S2 class when Isolastic is added):** cementitious adhesive for ceramic tiles.

**Kerapoxy (RG):** two-component, acid-resistant epoxy mortar for grouting joints wider than 3 mm, available in 26 different colours. May also be used as an adhesive.

**Kerapoxy F (RG):** two-component, acid-resistant epoxy mortar for grouting joints up to 3 mm. N.B. This is a product especially developed for particular applications.

**Mapegum WPS:** fast drying flexible liquid membrane for interior waterproofing.

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

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

**Mapesil LM:** solvent-free, odourless neutral cross-linking silicone sealant for natural stone and ceramic tiles on façades.

**Novoplan 21:** fast hardening, self levelling smoothing compound for thicknesses from 1 to 5 mm.

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

## **TECHNICAL DATA**

**Złote Tarasy Multifunctional Center,**  
Warsaw (Poland)

**Work:** grouting joints on the granite floorings in the corridors and in the galleries housing the shops; treating and waterproofing the floors substrates in the toilettes; laying and grouting the ceramic floor and wall coverings in the toilettes.

**Years:** 2005-2007

**Customer:** ING Real Estate (arch. David Rogers), Warsaw

**Project:** Jerde Partnership, Los Angeles (USA)

**Work Management:** Mike Sulivan

**Contractor:** Skanska SA, Warsaw

**Installation Company:** Italian Polish Stone Works, Warsaw

**Mapei Distributor:** Phwiu Olimp (currently called Oktaw)

**Mapei Co-ordinators:** Andrea Aliverti (Mapei SpA), Roman Owczarek (Mapei Polska)





# A ROYAL RESTORATION

**After 8 years of hard work, the antique Savoys' residence Venaria Reale, the "paradise of Piedmont Baroque", and today under the protection of Unesco, has been brought back to its antique splendour**

**F**rom Paradise to Hell, and back again. An enormous amount of restoration work was required (8 years, almost 1,000 people involved in the project and an investment of approximately 200 million Euro of public funds) to bring the Venaria Reale Palace back to its original 17<sup>th</sup> century splendour, which was reopened last year on the 13<sup>th</sup> of October. Mapei was also present, and made an important contribution with a number of its products used in the restoration work.

The story of Venaria Reale, a splendid Savoys' (the ancient dynasty that reigned over the Piedmont region in Italy for almost a thousand year) residence and a triumph of Piedmont baroque architecture, was started in 1660, when Duke Carlo Emanuele II of Savoy decided to build a complex just a few kilometres from Turin, dedicated to his hobby of deer hunting, the favourite

pastime for that period.

The project was ambitious, with the aim of creating a model palace to be imitated and admired, even abroad. Because of the grandeur of the architecture and splendid spaces, Venaria was considered the Italian version of Versailles, and a calling card with which the Savoy family could present itself at the same level as the most prestigious European royal families.

Carlo Emanuele II spared no cost, and a large part of the Savoys reign's annual budget (more than 4 million Italian lire used in those times, out of a total income of 7 million lire) was invested in the project. The result was an extraordinary complex covering an area of approximately 80,000 m<sup>2</sup>, with buildings of inestimable value richly decorated with precious marble, stucco, paintings and fine furnishings, with the most notable architects of the time work-

ing on the project in various periods, including Amedeo di Castellamonte, Michelangelo Garove, Benedetto Alfieri and Filippo Juvarra. When Piedmont was occupied by the Napoleonic forces in 1798, this signalled the beginning of a very dark period for Venaria Reale, with looting, vandalism and stripping down of its splendid artefacts. When the Savoy family came back from their exile in Sardinia in 1814, the manor house had been transformed into a military barracks. It was finally abandoned during the second world war and was bombed by the Nazis. The final nail in the coffin was driven home by the local population; exhausted and desperate after the war, they completed the devastation of the manor house by stripping out all the furnishings, doors and fittings to provide firewood for their homes. The pearl of the Savoys' residences was still laying in this sorry state in the 1990's, when the art historian Federico Zeri, after paying a visit in 1996 declared "it is serious, incomprehensible and unacceptable that a masterpiece of architecture, such as the Venaria Reale Palace, should be left to go to ruin. We must immediately, and without hesitation, start restoration work".

And 1996 proved to be exactly the turning point for the Palace, and the start of its new life. The bi-partisan alliance between Walter Veltroni, who was the left-wing Minister for Cultural Works at that time, and the centre-right regional government, defined the programme for what was to become the largest site ever opened for a cultural building in Europe.

In 1997, the manor house was declared a "World Heritage Site" by Unesco, and in 1999 the most important part of the restoration work was started. The philosophy behind the restoration work, coordinated by the superintendent



*Venaria Reale in an etching of the Theatrum Sabaudiae, dated 1682.*

Francesco Pernice, was the precise, sensitive rebuilding of the “missing materials”, with the same materials as those originally used for the renders, marble cutters and false bricks, and integration of the damaged affrescoes.

High quality restoration work was carried out, which brought the manor house back to its original splendour (the 2006 Nobel prize winner for literature Orhan Pamuk, defined it as “a paradise of Baroque architecture” in a recent interview), so it may be gazed upon with awe by all its visitors, up to a million people a year. It also hosted “The Reggia di Venaria and the Savoys; History and Magnificence of a European Court” inauguration exhibition until the 30<sup>th</sup> of March, 2008.

To stroll through the different parts of this monumental complex, to step on the more than 25,000 m<sup>2</sup> of internal floors, is nowadays an extraordinarily intense experience. Let’s try to do this by using Mapei products as a guide.

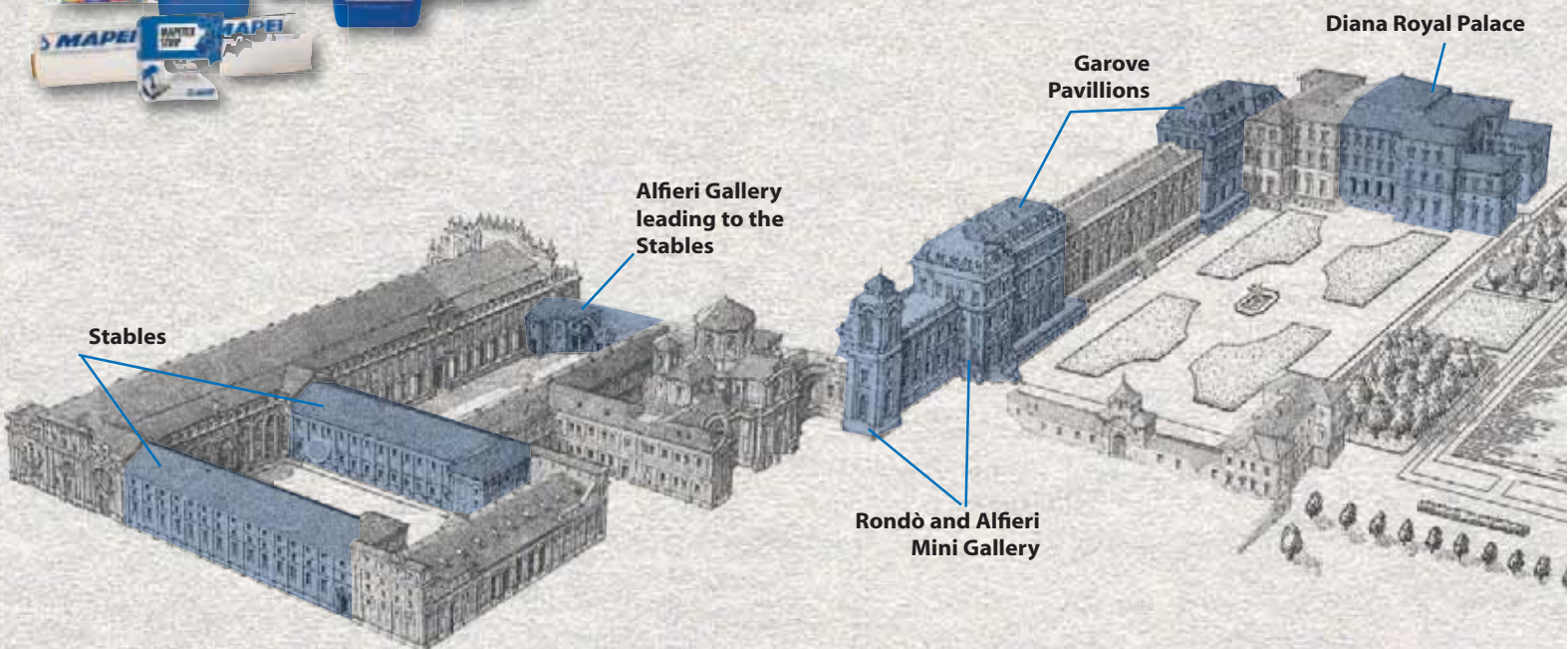
### The Diana Royal Palace

The so-called Diana Royal Palace is the wing in the complex which separates

*In the main hall in the Diana Royal Palace, the terracotta tiles were laid on a heating floor made of radiating metal elements. The terracotta was laid with Granirapid on a substrate made using the Mapetex System. Mapetex had been previously bonded on the metal elements using Keraquick+Latex Plus. In some areas, the screed was made using Topcem.*



The main hall in the Diana Royal Palace



Stables

Alfieri Gallery leading to the Stables

Garove Pavillions

Diana Royal Palace

Rondò and Alfieri Mini Gallery

the Great Courtyard from the magnificent gardens of the Savoy complex. This is the heart of the Piedmont Palace, and was built between 1660 and 1663 following a project by Amedeo di Castellamonte. It was largely restored in a series of later operations, and has a symmetrical feature with a great hall dedicated to Diana at the centre. From 2000 to 2004 in various halls in the Diana Royal Palace, Mapei played a fundamental role when laying approximately 700 m<sup>2</sup> of 25x25 cm hand-made terracotta tile floors. The complexity of the work was not in the extremely high quality of the covering materials, but in the substrate. The design choice was to use a heating floor made of metal radiating elements, rather than cement. From a certain viewpoint this was an extremely complex operation because of bonding problems between the substrate and the terracotta tiles, and because the thickness also had to be contained within certain limits.

The works director chose the MAPETEX\* system, which is completely removable, to lay the ceramic and terracotta tiles and stone material slabs. The system is made up of MAPETEX\* non-woven fabric and MAPETEX STRIP\* adhesive strip. MAPETEX\* may be used in combination with MAPETEX STRIP\* as a removable membrane for laying new floor and wall coverings on chipboard, wood, PVC, linoleum, ceramic and stone material substrates, on cementitious and heated screeds, and for quickly replacing tiles on exhibition panels without damaging them. On the Diana Royal Palace site, MAPETEX\* was bonded using KERAQUICK\*+LATEX PLUS\*. KERAQUICK\* is a rapid-setting, deformable, cementitious adhesive for ceramic tiles. If mixed in suitable proportions with LATEX PLUS\* (an admixture improving elasticity and adhesion on problematic surfaces), it becomes more deformable (S2 class according to EN 12002 standards), without compromising the fundamental characteristics of the product, to produce a good bond between the covering material and metal substrate. The terracotta tiles were bonded on the MAPETEX\* fabric with GRANIRAPID\* (fast-setting and hydration, two-component, cementitious adhesive). In those areas without a heated floor, the terracotta tiles were bonded directly to the screed using GRANIRAPID\*. The terracotta tile floor was then grouted using mortar prepared directly on site.

In a few areas, the screeds were made using TOPCEM\* normal-setting, rapid-



**Rondò**



*In the Rondò and the Alfieri Mini Gallery, the screeds were made from Topcem, and then covered with Bianco Carrara and Verde Alpi marble bonded with Granirapid.*

drying (4 days), special hydraulic binder for screeds.

### **The Rondò and Alfieri Mini Gallery**

The Alfieri Mini Gallery runs through a sleeve-shaped corridor which Benedetto Alfieri built between 1751 and 1752, to join the Garove Pavilion on the south-east side and Saint Umberto Chapel, to connect the area dedicated to religious activities to the new royal apartments. This occasion also offered the chance to redesign the façade on the church, which was to be located between two

Belvedere Towers, but of which only one was built. This rises up from the main body of the building, and forms a right angle. The inside is characterised by a Rondò, which hosts statues representing the four seasons, and carries the Royal Palace towards the Stables and the Citrus Greenhouse. The Mini Gallery and the Rondò were created and beautifully adorned with fine stucco finishes and a marble mosaic floor with a star-shaped pattern.

The high quality Bianco Carrara and Verde Alpi marbles used for the floor





**Alfieri Gallery leading to the Stables**

These areas are part of the renewed exhibition and museum area of the Venaria Reale Palace. The recently completed work also includes a bookshop. In this case too, Mapei was asked to supply solutions to lay the floors. Small areas were laid in marble, while the larger part of the surface was covered with "Ballatore mattonata" terracotta boards, which look like bricks. The screeds were made using TOPCEM\* (special hydraulic binder with normal setting, rapid-drying and controlled-shrinkage properties). In the smaller areas paved in marble, the covering was bonded using GRANIRAPID\* (two-component cementitious adhesive system with fast setting and hydration properties). The terracotta, on the other hand, was laid using traditional methods with mortar.

**Garove Pavilions**

Another important area in the Venaria Reale complex, where Mapei products were also used with highly efficient results, were the so-called Garove Pavilions, which take their name from Michelangelo Garove, one of the architects who worked on the project. These are two separate buildings, which were constructed from 1700 on the southern side of the Great Courtyard, with the idea of creating more space and comfort in the Palace.

In particular, these are the areas where work was carried out: in the service areas (bathrooms and kitchens with a ceramic floor), the substrate was first treated with MAPELASTIC\*, two-component flexible mortar which offers a waterproofing layer for concrete, swim-



*In the Alfieri Gallery which leads to the Stables, Topcem was used to form the screeds. Terracotta was then bonded on the screeds using traditional techniques, while the marble was laid with Granirapid.*

were laid using Mapei products. The involved floored area covers approximately 500 m<sup>2</sup>.

The floors, which have a high artistic quality and value, were laid on a screed made using TOPCEM\* (normal-setting and rapid drying special hydraulic binder for screeds) and GRANIRAPID\* (high performance, deformable, fast setting and hydration two-component cementitious adhesive for ceramic tiles and stone material).

**Alfieri Gallery leading to the Stables**

In the part of the complex behind the Saint Umberto Chapel towards the gardens, the so-called Alfieri Gallery may be found, which leads to the Stables. This route was created by Benedetto Alfieri to join the Saint Umberto Chapel to the Citrus Greenhouse and the Main Stables.



*In the Garove Pavilions, ceramic was laid in the service areas, after waterproofing the substrate with Mapelastico. In the dining rooms located on the top floor, on the other hand, the choice was for marble bonded to a heated floor using Keraquick+Latex Plus, after preparing the substrates with Ultraplano Maxi and Eporip.*

*Left: view of the Venaria Reale Palace from the Rose Garden.  
On the following page: view of the Palace from the Fishbond.*

ming pools and balconies. More recently, again inside the Garove Pavilions and completed in the summer of 2007, work was carried out on approximately 300 m<sup>2</sup> of floor space in the dining rooms located on the top floor.

The special aspect of this operation was that it too had a heated floor (not using conventional systems, but through electrical resistance), and included a Verde Piemontese marble covering with a mesh bonded with resin on the back. After a number of bonding tests to find the most suitable solution, these conditions led the Mapei technicians to propose KERAQUICK\*+LATEX PLUS\* (a solution already adopted successfully in the Diana Royal Palace). To level off the surface, ULTRAPLAN MAXI\* ultra-fast hardening self-levelling smoothing



compound for thicknesses from 3 to 30 mm was used. To improve the bonding of ULTRAPLAN MAXI\* to the old substrate, a layer of EPORIP\* two-component epoxy adhesive was applied, which was sandblasted with quartz to obtain a very rough, solid surface.

**The Stables**

Much further back in time was the operation carried out in the two Stables, located opposite the Alfieri Gallery, towards the village of Venaria. The stables were built between 1758 and 1760, at right angles to the Great Stables.

The two wings were restored between 2000 and 2001, and today host the Conservation and Restoration Centre for the Cultural Heritage of Venaria Reale, a highly important institution on a national level.

Unlike the areas previously described, the floor covering chosen was a resilient type in linoleum. Once the level of humidity had been measured, an anti-dust primer was applied using LIVIGUM\* (an additive in water dispersion for cementitious smoothing compounds and mortars). A first smoothing was accomplished with NIVORAPID\* (ultra-fast setting, thixotropic, cementitious smoothing compound for horizontal or vertical surfaces, for thicknesses of from 1 to 20 mm) was then applied, followed by a final layer of ULTRAPLAN\* ultra-fast hardening (12 hours), self-levelling smoothing compound for thicknesses of from 1 to 10 mm. Bonding of the

*In the Conservation and Restoration Centre located in the former Stables, linoleum was chosen as floor covering bonded with Adesilex F57.*

*The preparation of the substrate was carried out with Livigum, Nivorapid and Ultraplan.*



**Conservation and Restoration Centre in the Former Stables**





covering material was then carried out using ADESILEX F57\* synthetic resin-based adhesive in alcohol for textile and linoleum floors.

### The Palace Looks to the Future

As Francesco Rutelli, the Italian Minister for Cultural Activities, declared: "restoration of the Venaria Reale Palace is a very important success story for our nation, and without doubt represents the most important conservation and valorisation programme for a cultural monument in the whole of Europe".

Today, thanks also to Mapei, this historical place shines with a new light and is accessible to the general public, which may enjoy its special atmosphere by taking part at the events and shows which are held here. Starting with the inaugural exhibition which lasted until the 30<sup>th</sup> of March 2008. In fact, on occasion of the reopening of the Palace, through the presentation of 450 works of art from the most prestigious international museums, twenty different Italian museums and the most important Savoys' residences, the art, magnificence and history of the Savoys' dynasty between the 16<sup>th</sup> and 18<sup>th</sup> centuries are perfectly evoked.

At the end of the exhibition, and with the addition of other works of art from the main Savoys' residences, the Venaria Reale Palace and its permanent décor became a kind of doorway to the history, art and architecture of the entire system of Savoys' residences.

*A special thank you goes to the Centro Documentazione del Progetto Venaria Reale (Archives Centre of the Venaria Reale Project), which supplied the photos published in this article ([www.lavenaria.it](http://www.lavenaria.it)).*

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

Mapei's adhesives and grouts conform to EN 12004, EN 12002 and EN 13888 standards.

**Adesilex F57:** adhesive based on synthetic resins in alcohol for textile and linoleum floor and wall coverings.

**Eporip:** two-component epoxy adhesive for cold joints and monolithic sealing of cracks in screeds. Solvent-free.

**Granirapid (C2F, S1):** high performance, deformable, fast setting and hydration two-component cementitious adhesive for ceramic tiles and stone material.

**Keraquick (C2FT, S1; S2 if 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. **Livigum:** additive in water dispersion for cementitious smoothing compounds and mortars.

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

**Mapetex System:** completely removable installation system for ceramic tiles and stone material.

It consists of Mapetex, a non-woven fabric and Mapetex Strip, an adhesive strip. Can also be used as an anti-fracture and removable membrane.

**Nivorapid:** ultra-fast setting thixotropic cementitious levelling mortar for horizontal and vertical surfaces for thicknesses from 1 to 20 mm.

**Topcem:** normal-setting, rapid-drying (4 days), special hydraulic binder for screeds.

**Ultraplan:** ultra-fast hardening self-levelling smoothing compound.

**Ultraplan Maxi:** ultra-fast hardening self-levelling smoothing compound for thicknesses from 3 to 10 mm.



### TECHNICAL DATA

**Venaria Reale Palace,** Venaria (Turin, Italy)  
**Work:** renovation of the floors of several areas (preparation of the floors and installation of several kinds of materials: marble, terracotta tiles, ceramics, linoleum); waterproofing the floors in the service areas  
**Built:** 1660 - 1760  
**Restored:** 1998 - 2007  
**Customer:** Turin City Council's Architecture and Environment Commission  
**Project:** eng. Francesco Pernice (Chairman of the Architecture and Environment

Commission)  
**Contractors:** Schiavina Adanti (Bologna), Guerrini (Turin), de.ga. (Turin)  
**Installation Companies:** for linoleum: Roggero (Turin); for terracotta tiles and marble: Sanicer (Alba, Italy); application of the self-levelling compound: Ver-pont (San Gillio, Italy)  
**Mapei Distributor:** for resilient floorings: Roggero (Turin, Italy); for natural stone, terracotta and ceramic tiles: Sanicer  
**Mapei Coordinators:** Valerio Mandelli and Francesco Stronati, Mapei SpA (Italy)

# UCI CYCLO-CROSS WORLD CHAMPIONSHIPS



**Mapei: Top Sponsor for the World Cyclo-cross Championship races held around “Le Bandie Lake” in Spresiano (Treviso, Italy) on the 26<sup>th</sup> and 27<sup>th</sup> of January**

A marvellous weekend of sport and sun, with die-hard spectators in a festive mood from all around the world, in an extraordinary setting to enjoy sport, well-being and leisure time. This complex has been developed over an area of 90 hectares, and has been awarded with a prestigious acknowledgement award by the European Community. It is the result of an enormous environmental reclaiming project of an area which had been previously used to quarry inert materials.

This a brief round-up of the UCI (Union Cycliste Internationale) Cyclo-cross World Championships which were held this year on the 26<sup>th</sup> and 27<sup>th</sup> of January around Le Bandie Lake in Spresiano, near Treviso, Italy.

It was an important event, and Mapei one of the stars of the weekend, the Top Sponsor for this race meet of one of the most duelling sporting events. Cyclo-cross is fast and intense, a concentration of extreme effort in a very short space of time, which is impossible to leave any spectator indifferent. It was also an important media event, which Mapei used to the full, well aware that the races were to be followed by millions of TV viewers all around the world (the races were transmitted to 15 different countries, with around 8 hours of live coverage by RAI Italian Television by means of 25 camera positions).

Sport, and especially cycling, is part of the Mapei DNA, and the Italian and international successes of the Professional Cycling Team, sponsored by Mapei from 1993 to 2002, are legendary in the cycling world.

But it was not only for communication and company image reasons that Mapei wanted to take part in this event, which will remain for years in the annals of cycling history.

The values to be found in sport are the very same that have always inspired the entire Company, and just to prove that cycling and sports are not only a convenient metaphor, it is surprising

just how many Mapei employees, with CEO Giorgio Squinzi as a leading example, keep in form with cycling in their spare time. Amongst the almost 50,000 spectators who thronged the complex for the two-day event, which acted as a perfect testimonial to the success of the UCI Cyclo-cross World Championships, approximately 200 were guests of Mapei who were welcomed in a special reserved area inside the circuit.

It was an organisational success, which confirmed the growing popularity of cyclocross in Italy, but also the strong efforts carried out by the local organisers, headed by the Italian entrepreneur and sports fan Remo Mosole. The entire event was a success from the beginning to the end, with thousands of enthusiastic fans from all over Europe (in particular from Belgium and Holland), and which also involved those who had the chance of witnessing and appreciating such a spectacle for the very first time.

The main race, the Elite Men class, rounded up Sunday's day of racing, and was an extraordinary concentration of emotions, which crowned the Dutch rider Lars Boom as the rising star in this sport. A right royal podium (silver medal to the Czech rider Zdenek Stybar, and bronze medal for the Belgian rider Sven Nys) to crown a breathtaking race which, right up to the very last lap, had around a dozen riders battling for victory. Amongst this group, there was Marco Aurelio Fontana, the author of an exceptional performance which earned him sixth place. A special mention must also go to Enrico Franzoi who, in spite of injury problems, fought like a lion, and finished in a well-satisfying thirteenth place.

The four titles in contention went to four different countries. Apart from the gold medal won by the Dutch rider in the Elite class (to break a monopoly of seven years of Belgian domination), the top step of the podium also saw Germany (Hanka Kupfernagel won her fourth title in the Ladies class), France (with Arnaud Jouffroy who took the Junior title) and



*The podium for the Elite Men category: the winner, Lars Boom from Holland, is pictured in the centre, with the Czech rider Zdenek Stybar on the left who arrived second, and the Belgian rider Sven Nys who won the bronze medal on the right.*



Belgium (thanks to Niels Albert, the new champion in the Under-23 category). Italy also had a number of satisfying results, with the bronze medal going to Cristian Cominelli (Under-23) and fourth place going to Elia Silvestri (Juniors). Praise and thanks from the President of the UCI Pat McQuaid for the success of the organisation of the Cyclo-cross World Championships held in Treviso were unanimous, as were those expressed by all local authorities present at the event (including the Governor of the Veneto Region Giancarlo Galan and the Vice-Governor Luca Zaia, the President of the Province of Treviso Leonardo Muraro and the President of CONI - Italian Olympic Committee - Gianni Petrucci). The final day was made even more important when the Gold Merit Star for sporting achievement was awarded to Remo Mosole (with whom Mapei is tied by a long-standing relationship) and by a spectacular parade of approximately 120 champions from the cycling world of yesterday and today, which both moved and enthused the thousands of sporting fanatics who had

gathered at Le Bandie Lake. For Mapei, 2008 will be a year of great cycling. Apart from the world championships held in Treviso, the Company will also be the main sponsor at the Road Cycling World Championships to be held in Varese from the 22<sup>nd</sup> to the 28<sup>th</sup> of September later this year. This marks a return of the name of Mapei to the most important international cycling race events, to demonstrate that the passion for this sport is a value which the Squinzi family passes on from generation to generation. And after ten years of sponsoring the victorious Professional Cycling Team, the Company continues to carry out important activities, with the creation of a scientific and technical centre and the sponsoring of amateur teams. The Cyclo-cross World Championships which were held recently, and the Road Cycling World Championships which will be held in Varese, are a demonstration of the Company's full return to the championships, in a scenario which coincides perfectly with the international success of Mapei.



# A GREAT YEAR FOR ITALIAN SKIING



**Mapei was also behind the successes of Italian skiers this season. Since 2003, our Sports Research Centre has proved an invaluable ally for the Italian National Alpine Skiing Team**

*by Ermanno Rampinini, Mapei Sport*

The 2007-2008 championship season has certainly signalled a return to the competitiveness of the Italian National Alpine Skiing Team, and in particular in the Ladies class. These results are not only mere coincidence. They rather represent a committed effort in reorganising the activities of FIS (Federazione Italiana Sport Invernali - Italian Federation of Winter Sports), which received another impulse through the nomination of Giovanni Morzenti as the new President.

Mapei Sport, the Company's research centre for sport based in Castellanza (near Varese, Northern Italy), has been aiding the men's and ladies FIS Italian National Alpine Skiing Teams since 2003. It has supplied assistance in providing functional assessment of the athletes, above all to monitor the effects of the pre-race physical preparation, and to individuate ever more efficient training methods for the athletes in the Italian national teams. This year too, the athletic preparation of the 20 leading Italian men's skiers (including Peter Fill, Manfred Moelgg and Max Blardone) and the 20 leading ladies skiers (including Denise Karbon, Chiara Costazza and Elena Fanchini) was based on the results of tests carried out in May 2007 at the Mapei Sport Centre. Then, to complete preparation, a session of control tests was carried out in September, followed by a final session to optimise the final phase in the season in view of the finals held in Bormio in the middle of March.

The modern skier must have good aerobic capacity (endurance), good anaerobic capacity (power), excellent strength levels and good muscular balance. Alpine skiing, therefore, is a complex sport, in which technical qualities and various athletic qualities contribute in a synergic way, and are of paramount



*Denise Karbon*

importance to achieve good performance. The battery of assessment tests to which the athletes from the Italian national teams is exposed at Mapei Sport are made up of various tests to allow all the physical components mentioned above to be measured.

### **Specific Tests and Training Programmes**

It all starts by measuring the body fat mass, using the skinfold measurement and the bioelectrical impedance method. These are basically the same preliminary tests which anybody has

to undergo when they ask Mapei Sport to assess their nutritional habits and, if necessary, before going on a diet. After these tests, the skiers undergo incremental tests using a cycloergometer to determine their maximum oxygen consumption rate, in other words, to assess the "size of their engine" from a cardio-circulatory viewpoint. The same test is also used to have an accurate indication regarding cardiac frequency, which is used in endurance training. Force and muscular balance are analysed using two different tests: the vertical jump test and the maximum eccen-



Chiara Costazza

800 kg with just one leg! And lastly, the athletes then undergo a high intensity test (HT). This test lasts 60 seconds, and is carried out on a cycloergometer, pedalling with a force which corresponds to 120% of the force developed during the maximum oxygen consumption test. This test was developed to assess an athlete's capacity of supporting a very intense force, even if it is not their maximal: a situation, for certain aspects, which is very similar to that of a skiing race. In this test, the parameters referred to in order to deter-




Manfred Moelgg



tric strength test on a leg-press. The first test assesses the quality of explosive force in the lower limbs, and thanks to the use of a special force platform (Kistler®), it is also possible to measure leg balance when carrying out bipodalic jumps. While skiing, and in particular when carrying out a curve, a large part of the force developed by a skier is eccentric (a special contracture mode, whereby muscle fibres contract, while joint ends are forced apart, similar to the damping effect when jumping down from a step). To carry out this specific assessment, a

special motorised leg press has been developed, which is able to measure the eccentric force of lower limbs. This special device, completed and perfected by Mapei Sport, had been created by Prof. Piero Mogroni from the CNR (Consiglio Nazionale delle Ricerche – Italian National Research Centre), important representative of the well-known Italian physiology school of Rodolfo Margaria and consultant for most of the Italian national sport Federations. Prof. Mogroni had been a genial co-operator and scientific reference figure for Mapei Sport, apart from being a dear friend, right up to the final days of his life in February 2008. Thanks to the development of this special leg-press, it was made possible to assess whether skiers possess excellent eccentric force characteristics. As an example, the male athletes in the Italian national team are capable of developing a force of more than 600 kg.....with just one leg! ....and there are also those who develop as much as

mine an athlete's physical conditions are oxygen consumption during the one minute work period, and certain blood parameters which, apart from the lactic acid accumulated, include an evaluation of the blood pH, and the circulating bicarbonates. Regarding these latter measurements, apart from in the case of strictly research purposes, Mapei Sport centre is the only one in Italy which uses them as routine assessment parameters while testing athletes. Important steps forward have been made when programming training sessions and in the structure of assessment tests. And on a number of occasions, the President of FISU has underlined the importance of Mapei's commitment to working alongside the Italian National Alpine Skiing Teams. A recognition of which we are proud, and which pushes Mapei to do even better for the Italian national teams. 

*The photographs have been kindly donated by FISU, the Italian Federation of Winter Sports.*

# SYMPHONICA TOSCANINI ORCHESTRA AND MAPEI: a crescendo of endless emotions

*Verdi's "Requiem Mass" was performed in Basilica di San Marco in Venice on **16<sup>th</sup> November** (photo on the right). The "Concert for Europe" was held in the Hemicycle hall of the European Parliament in Brussels on **5<sup>th</sup> December** (photo below).*







## Celebrating European Unity in Brussels

The Symphonica Toscanini Orchestra closed the 2007's celebrations devoted to the great Maestro it is named after in Sant'Ambrogio Basilica in Milan. The orchestra conducted by Maazel commemorated the 50<sup>th</sup> anniversary of the founding of the European Economic Community (which later became the European Union) at the home of the the European Parliament in Brussels. Two important events in two key places for Milan, Europe and Mapei. It is no coincidence that Mapei has helped to carry out restoration and renovation work on certain parts of both these locations, providing products and expert workmanship. All this was accomplished in the name of the Company's Milanese and internationality. Maestro Lorin Maazel conducted a "Concert for Europe" in the European Parliament building on Wednesday, 5<sup>th</sup> December. The event concluded celebrations to commemorate the 50<sup>th</sup> anniversary of the signing of the Treaties of Rome, which paved the way to the birth of the European Union.

The Symphonica Toscanini Orchestra, the Maggio Musicale Fiorentino Choir (conductor: Piero Monti) and soloists Michela Sbrulati (soprano), Elena Zidkova (mezzo soprano), Vale Rideout (tenor) and Rafal Siwek (bass)

performed Ludwig Van Beethoven's 9<sup>th</sup> *Symphony* conducted by Maazel in the Hemicycle hall of the European Parliament in Brussels. This was also an important event on a moral and political level, as music was a means of embodying shared aspirations. As the President of the European Parliament, Hans-Gert Poettering, pointed out: "Every form of art expresses the kind of freedom in defence of which our institutions were originally founded".

This striking combination of music and politics (in the name of a real will to give voice to all the citizens of Europe) reached its apex in the performance of the final movement of Beethoven's 9<sup>th</sup> *Symphony* containing that "Ode To Joy", which the Council of Europe has adopted as its musical anthem and which, here in this institutional setting, took on even greater symbolic meaning than it is already universally acknowledged as having.

This was another truly international and high-level artistic event which Mapei proudly supported. The spirit in which Mapei and the Toscanini Orchestra joined forces in 2007 is summed up in the words of the Company's CEO, Giorgio Squinzi: "Mapei is the official sponsor of the Symphonica Toscanini Orchestra and has always shared its goals and values: a determination to achieve excellent results, expertise and professionalism, careful management of human resources and an international spirit".

## A Requiem "On the Wings of Angels" in Venice

In addition to "Symphony of the Air", a musical voyage to commemorate the anniversary of the death of Arturo Toscanini, 2007 was a year full of prestigious concerts for the Symphonica Toscanini Orchestra with the backing of Mapei. Among the concerts held during the latter part of the year, it is certainly worth remembering the concert held in San Marco Basilica in Venice. The first high-level cultural event (organised by the Venice Foundation) was designed to collect funds as part of the "On the Wings of Angels" project to restore the Creation mosaic in San Marco Basilica in Venice.

The Symphonica Toscanini Orchestra and its life-long musical conductor Lorin Maazel performed Giuseppe Verdi's *Requiem Mass* on 16<sup>th</sup> November, 2007 in San Marco Basilica. An emotional sell-out concert also involving the Maggio Musicale Fiorentino Choir conducted by Maestro Piero Monti and the soloists Norma Fantini (soprano), Anna Smirnova (mezzo soprano), Francesco Meli (tenor) and Rafal Siwek (bass). This Venetian event perfectly embodied the inspiring principles behind the Orchestra conducted by Maazel: a desire to widen the scope of cultural enterprises in line with that international philosophy of music which characterised the life and work of Maestro



An emotional performance of Giuseppe Verdi's "Requiem Mass" was given at Sant'Ambrogio Basilica, Milan, on 16<sup>th</sup> December (left and bottom).

This is how on the 31<sup>st</sup> May, 1874, an Italian newspaper of the day, *La frusta teatrale*, reported on the evening's performance of Giuseppe Verdi's *Requiem Mass* on 25<sup>th</sup> May at the Teatro alla Scala. The Mass was also previously performed three days earlier at San Marco Church to commemorate the anniversary of the Italian famous writer Alessandro Manzoni's death.

We would like to use those very same words to now commemorate the same piece of music, which, last December in Sant'Ambrogio Basilica in Milan, once again warmed and invigorated the hearts of the people of Milan, who applauded for a full 15 minutes at the end of the performance.

The final step in the "Symphony of the Air" tour came to a triumphant close. This was a musical journey which the Symphonica Toscanini Orchestra devoted to celebrations to commemorate the 50<sup>th</sup> anniversary of Arturo Toscanini's death.

In the city loved by Verdi and Toscanini, which also saw the emergence and rise of... Mapei. "Symphony of the Air" is the story of an adventure, a challenge,

Arturo Toscanini.

This was part of a synergy between the Symphonica Toscanini Orchestra and its main partner, Mapei, a Company

which has always been committed to the most prestigious artistic and cultural enterprises in Italy and the rest of the world.

## "Symphony of the Air" drew to a triumphant close in Milan

The Symphonica Toscanini Orchestra and the Maggio Musicale Fiorentino Choir performed Giuseppe Verdi's *Requiem Mass* conducted by Maazel in Sant'Ambrogio Basilica, the most important Basilica in Milan, on 16<sup>th</sup> December, 2007.

This important event saw the involvement - alongside artists of the calibre of the soloists Latonia Moore (sopra-

no), Anna Smirnova (mezzo soprano), Vittorio Gigolo (tenor), and Rafal Siwek (bass) - once again of Mapei, the official sponsor of the Orchestra conducted by Lorin Maazel.

"We have no words to describe these incredible artists. The choir and Orchestra astounded us with their perfect intonation, brightness and faultless fusion of sounds and voices".



a musical journey around the world visiting the most important places in Maestro Toscanini's life: a journey which began back in January 2007 with a 14-concert tour around the United States. The tour was worthy of the triumphant North American tours which Toscanini went on in 1920 at the head of his orchestra and in 1950 along with the NBC Symphony Orchestra. A journey which ended here in Milan, a city which played an extraordinary role in the Maestro from Parma's career.

Milan, due to the incredible importance it played in Toscanini's career, was the ideal final stop in this long musical journey which began back on the 16<sup>th</sup> January 2007 in another Toscaninian city par excellence, New York. From there the Symphonica Toscanini Orchestra, a very youthful orchestra in terms of its average age, background and energy but experienced in terms of its professionalism and virtuoso talents, went on to tour the world winning everybody's approval and applause. For Mapei it was significant that this final concert was held in the city which saw it founded 71 years ago. And it is nice to note that this very Milanese performance, which will certainly be remembered for a long time, marked the end of the Company's anniversary celebrations.

In some ways, it is as if Mapei's business operations in 2007 were accompanied by the most beautiful music in the world. And retracing the various steps in this exciting musical "marathon", starring the Orchestra conducted by Maazel, is also a way of underlining just how famous the name Mapei is internationally and of confirming the very tight bonds it has always enjoyed with music and art.

On 16<sup>th</sup> January 2007, exactly 50 years after Arturo Toscanini's death (Parma, 25<sup>th</sup> March 1867 - Riverdale, NY, 16<sup>th</sup> January 1957), the Symphonica Toscanini Orchestra joined forces with the New York Philharmonic Orchestra, also conducted by Maazel, to give a highly acclaimed performance at Avery Fisher Hall in the Lincoln Centre in New York. The success and ovations obtained in the United States were the prelude to an event held in April in Rome when a lucky audience enjoyed a full performance of Ludwig van Beethoven's nine symphonies at the Auditorium della Conciliazione. Toscanini's absolutely faithful rendition of Beethoven's work is still the benchmark for any conductor and orchestra.

"Symphony of the Air" was next played in Busseto in July, where Toscanini stayed for four months in 1913, the

year of Verdi's centenary. It is also where he conducted performances of *Falstaff* and *La Traviata*. The next stop was the little island of Isolino San Giovanni on Lake Maggiore, the holiday resort which the great Maestro was so fond of, and where a small artificial island was created especially for the occasion to allow the orchestra to perform Giuseppe Verdi's *Aida* and *Requiem Mass* for an enthusiastic audience seated comfortably along the nearby Lakeside.

Having crossed the ocean again, Maazel's orchestra completed a number of highly applauded performances in Brazil and Argentina, warmly greeted by the continent of South America where Toscanini made his unexpected debut on the podium as a 19-year-old in 1886. Once again, just as back then, it was the notes of *Aida* that enchanted Rio de Janeiro.

The next stop, Jerusalem, was the emotional apex of this tour in the Maestro's memory. The gala evening in Israel was designed to give voice to those values of life and the dignity of life which Arturo Toscanini pursued with such great fervour during his artistic stay in the Holy Land, where he was the first to conduct the Israel Philharmonic Orchestra (then known as the Palestine Orchestra).

This long "Symphony of the Air" culminated in a concert held at Sant'Ambrogio Basilica in Milan with a performance of Giuseppe Verdi's *Requiem*, which Toscanini conducted for the first time (like here) in this city in 1902, exactly one year after the death of the great Maestro from Busseto. Toscanini conducted it without even reading the score, relying solely on his own hands to direct the orchestra with that style and passion which Maestro Maazel and the Symphonica Toscanini Orchestra evoked again specially for us; and once again the conductor did not use the score.

Showing the same energy and passion demonstrated by Lorin Maazel and the Symphonica Toscanini Orchestra during their "Symphony of the Air" tour, Mapei is continuing to strengthen its bonds with Art and the world of Culture. These are the prestigious and truly international realms which Mapei prefers. The most important stages of all, where Mapei, in its own specific realm, is also used to competing and winning.

Great music, great passion, great Mapei.



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