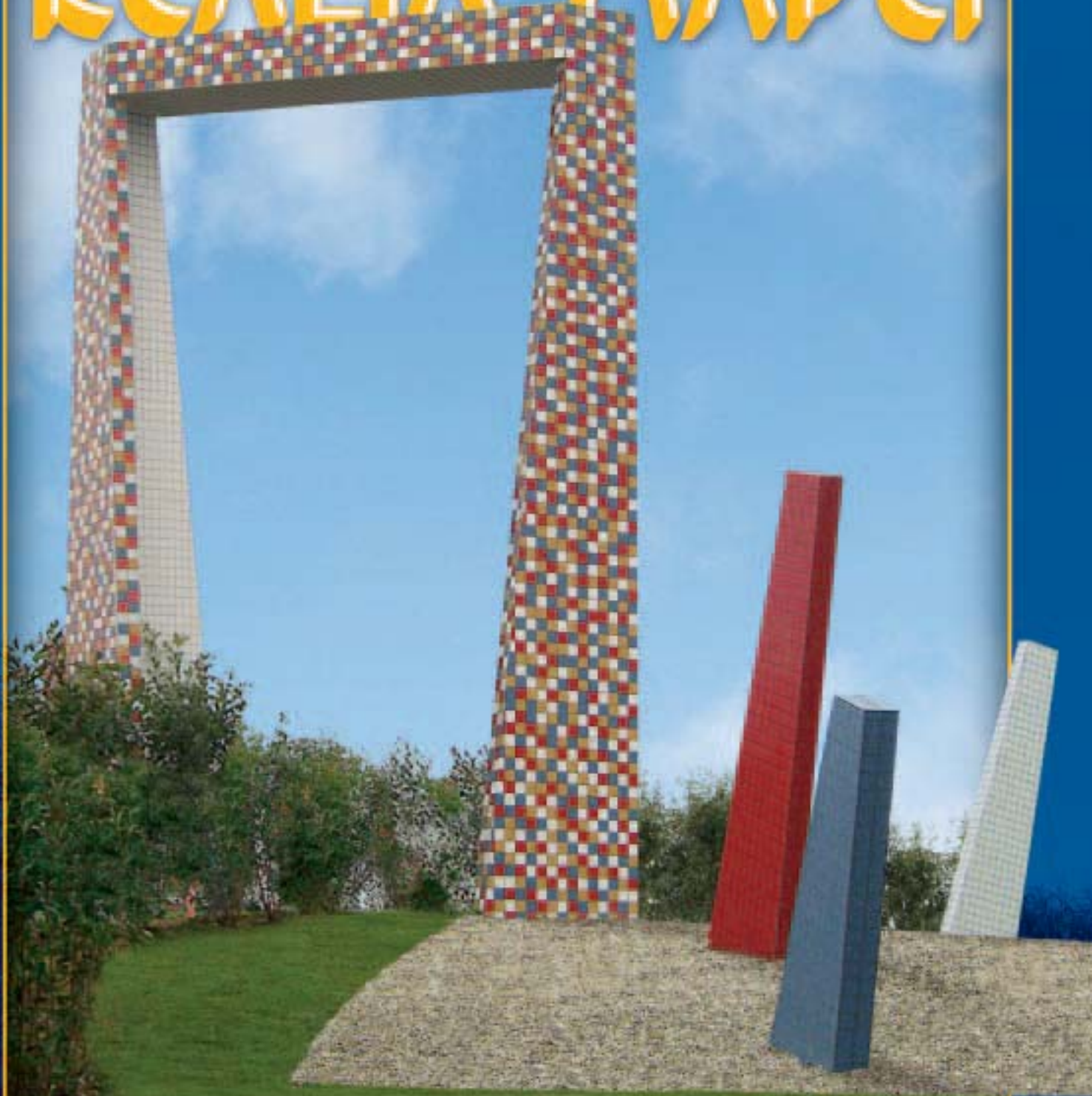


INTERNATIONAL

REALTÁ MAPEI



**GROWING
by INNOVATION**



A "WORLD CUP WINNING" YEAR

2006 was an important year for Mapei. The company grew worldwide both industrially and commercially. It really was a "world cup winning" year.

As the official sponsor of the Italian Football Team, Mapei experienced some thrilling moments as the Team carried off the World Cup. Lots and lots of business customers and friends from all over the world (and not just from Italy) made the trip to Germany to watch Italy's matches. A sports event which really got everybody involved and strengthened corporate and personal ties even further, so that in the end, beside tasting the sweet smell of victory, everybody had the distinctive feeling of really being part of a winning team.

Italian pride, "Mapei pride", is what comes to mind as we take another look at the photographs of all the Italian flags with the Mapei logo on them waving in the stands of the German football stadiums. Once again sport provided Mapei with a great opportunity to bond and, bearing in mind the memorable final result, it also helped spread the company's name and reputation in Italy and all over the world. The return in terms of image projection was also outstanding, thanks partly to the uninterrupted advertising coverage encompassing all the main means of

communication.

Moreover, in addition to the partying and socialising side, the metaphor of sport is always a useful way of pointing out the importance of setting targets and then hitting them.

It is nice to perform well, particularly if the aesthetic side of the technical expertise and perfectly synchronised movements of the team is matched by good results repaying the team for all its hard work in training.

The Mapei Group closed 2006 with a total turnover of 1,400 million Euros corresponding to a 16,5% increase on the previous year.

Mapei has expanded internationally by opening up three new manufacturing plants (two in China and the third in Germany, following the acquisition of the German company Rasco) and continuing to grow.

This year more than ever before we have realised that everybody's help is essential for becoming the team we want to be and already are.

A team and a company projected into the future and ready to celebrate our 70th anniversary in fine style next February. 2007 is beginning... Best wishes to you all!

Adriana Spazzoli and Giorgio Squinzi

EDITOR:

Adriana Spazzoli

ENGLISH EDITING AND TRANSLATION

Martyn Anderson, Nicholas John Bartram

COORDINATION: Metella Iaconello

EDITORIAL ASSISTANT: Carla Fini

GRAPHIC DESIGN AND ART DIRECTION

Magazine - Milan (Italy)

COLOUR SEPARATION AND LAYOUT

Overscan - Milan

PRINTER: Arti Grafiche Beta - Milan

EDITORIAL ADDRESS:

Mapei S.p.A.

Via Cafiero, 22 - 20158 Milan (Italy)

tel. +39/02/376731 - fax +39/02/37673214

Web site: <http://www.mapei.com>

E-mail: mapei@mapei.it

PUBLISHER: Mapei S.p.A.

Realtà Mapei - Bimonthly magazine

Registered by the Tribunal of Milan

n. 363/20.5.1991

Realtà Mapei International is published

4 times per year

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Main cover photo: A New Roundabout for Fiorano Modenese

The 25th of September, on the occasion of Cersaie, saw the inauguration of a new roundabout in Fiorano Modenese, (near Modena, Italy), for which Mapei was one of the materials suppliers. The project intended to erect a monument to exalt the ceramic tiles as the symbol of the social and industrial fabric of the local ceramics district. A convention was formed between the Province of Modena and Assopiastrelle, the Association of Italian Ceramic Tile and Refractory Material Manufacturers, who received a mandate to involve all those companies interested in making the most of this opportunity to communicate.

The monument was designed by Studio Associato Arkè from Modena. The project included the installation of 240 m² of 10x10 cm 4-colour ceramic tiles supplied by the tile manufacturers Florim, Gruppo Ceramiche Ricchetti and Marazzi Group. Tiles were bonded with **ULTRAFLEX S2 MONO** one component, easy-to-apply, highly deformable, high performance cementitious adhesive with no vertical slip, extended open time and extremely high yield for ceramic tiles and stone material (C2TE, S2). Tiles were then grouted with **KERACOLOR GG** mixed with **FUGOLASTIC**. The joints were sealed with **MAPESIL LM** in grey colour.



**Mapei's
growth in
China in step
with China's
growth
worldwide**

STARTLING FACTS AND FIGURES

You cannot help quoting figures when talking about China (and it is increasingly on everybody's lips nowadays), because only actual figures really give us an idea of the sheer size of the country, its enormous resources and incredible economic situation.

So let's begin by quoting some figures, which speak for themselves: a territory covering 9,507,000 km² (more or less equivalent to the area covered by Europe, including Russia as far as the Urals) and a population which reaches 1.315 billion in 2006, approximately a sixth of the entire planet's, and is expected to rise to 1.5 billion by 2030-2040.

The economic figures are even more impressive. The Chinese GNP has kept on growing significantly over recent years, reaching +9.1% in 2003, +9.0% in 2004, and +9.9% in 2005 and increased by as much as +9.5% in 2006. This compares to a worldwide increase of +4.9%. Chinese exports have also boomed: rising from +2.9% in 1995 to +6.5% in 2004, overall exports are worth 1,098 billion dollars in 2006. This makes China the world's third biggest exporter after Germany and the United States.

tiles were installed (which has already increased to almost 2.5 billion m² according to recent estimates).

This boom in the Chinese building industry is due to the fact that China is continuing to invest in infrastructures and plans to notably expand its road networks, railway lines, ports and river systems over coming years. The target is to create a road network of 23 million km by 2010 (650,000 of which being motorways). "Network 7918" is planned to be completed by 2034, a project which is designed to encompass the construction of 7 roads converging on Peking (Beijing), 9 roads connecting the north of the country to the south, and 18 lines linking eastern areas to western areas, making an overall length of 85,000 km. A 100,000 km railway network is also expected to be completed by 2020, with 12,000 km devoted to passenger trains and 11 high-speed lines capable of reaching 400 km/h.

There are also major government plans for port and airport facilities to handle the nation's increasing need for raw materials and its massive exports. For instance, the Chinese government has authorised the launch of a building project aimed at doubling (taking it up to 3.5 billion tons) the amount of goods handled by the three main ports located along the delta of



There are other positive economic indicators too, such as the inflation rate, which has dropped from +4.0% in 2004 to +3.0% in 2005 and settled at +2.9% in 2006. All this makes China the planet's fourth economic power, the leading manufacturer and consumer of steel and coal and the second largest of oil.

The most striking thing of all is the rate of this startling economic growth, which mostly took place over the last 25 years and has resulted in a doubling of the population's average income per capita (about 1,395 dollars in 2006, +8.5% compared to 2005). It took Great Britain a century to achieve these goals and half-a-century for the United States. The driving forces behind this blossoming economy are, first and foremost, mechanical engineering, textiles, footwear, consumer electronics and computer technology. The building industry plays an increasingly significant role in the GNP: accounting for 6.9% in 2004 from only 4.6% in 1990. In 2003 the overall value of investments in the building sector was 270.8 billion dollars and it is expected to rise by +9.1% in years to come. At the moment, approximately 1.2 billion m² of building works are carried out each year and this figure is expected to increase to 2 billion m² in 2020. It is worth noting in particular that China's concrete consumption in 2003 was 939 million tons and the equivalent of 2,216.70 million m² of

River Yangtze, the River of Pearls (Zhujiang) and in Bohai Bay, respectively. As many as 108 new airports will be built between 2004-2009 and the biggest airport in the world is planned to be completed in Beijing by the end of 2007.

Besides, it is impossible not to mention all the building work going on in the energy sector. Lots of plants of various types are being designed to meet the nation's growing energy requirements, including 22 new nuclear power stations to be completed by 2020 and dozens of hydro-electric plants connected to dams to be built by 2017 in various parts of the country. Now that the huge body of the Three Gorges Dam has finally been completed (see the next article), the construction of further 12 hydroelectric plants along the Yangtze River and 12 along the River Nu in the Province of Yunnan (in the south of China) is currently under evaluation. In addition to these major public works, a number of other building projects are planned to be completed by the end of 2007 ready for the Beijing Olympics. The Beijing City Council has actually invested 190 billion dollars in building infrastructures, such as sports facilities, skyscrapers, tourist areas, etc.

Lots more building work is under way (and will continue over coming years) all over the country, in order to "churn out" offices, housing, shopping malls, government buildings, hotels, factories, etc. The message seems to be clear: build, build, build!

STEPS IN MAPEI'S GRADUAL BREAKING INTO ASIA

Year	Opening	Country
1989	Mapei Far East Pte Ltd	Singapore
1994	Mapei Malaysia Sdn Bhd	Rawang, Malaysia
1995	Mapei Far East Pte Ltd plant	Singapore
2001	Mapei Malaysia Sdn Bhd plant	Rawang, Malaysia
2003	Mapei Vietnam representative office	Hanoi, Vietnam
2004	Mapei China Ltd	Hong Kong, China
April 2005	Mapei Vietnam Ltd	Quang Nam, Vietnam
November 2005	Mapei Vietnam commercial office	Danang, Vietnam
December 2005	Mapei Construction Materials (Guangzhou) Co Ltd	Guangzhou, China
January 2006	Mapei Construction Materials (Shanghai) Co Ltd	Shanghai, China
January 2006	Mapei Vietnam commercial office (replacing the representative office)	Hanoi, Vietnam
March 2006	Mapei Vietnam commercial office	Hochiminh City, Vietnam



Above: the building housing Mapei China Ltd offices in Hong Kong.

WE HAD TO BE THERE

An economic framework like that just described is particularly interesting for a company manufacturing chemical products for the building industry. Even more so for Mapei, which set up Mapei Far East back in 1989 in order to broaden its operating base in the entire Far East. This aim underpins the subsequent construction of various operating plants in Singapore (1995), Malaysia (2001) and Vietnam (where a plant is currently been built and is planned to be completed in the first quarter of 2007), as well as the setting up of the subsidiaries Mapei Malaysia Sdn Bhd in 1994 and Mapei Vietnam Ltd. in 2005, and the opening of various commercial offices in Danang (2005), Hanoi (2006) and Hochiminh City (2006) in Vietnam.

The firm first broke into the Chinese market when it began supplying products for important Chinese building projects, first and foremost the Three Gorges Dam, where work began in 1993 and which is planned to be brought into operation in 2009 (see the article on pages 8-11 for details about this project).

Mapei China Ltd. was set up in 2004 in the **Hong Kong** Special Administrative Region, which only came back under the rule of the People's Republic of China in 1997.

This subsidiary was, above all, devoted to exploiting the opportuni-

ties provided by the boom in building in this economic crossroads, where investments and human resources converge from all over the world.

Mapei products have been used, for instance, to lay ceramic coverings both inside and outside the skyscrapers in Sham Mong Road on the island of Kowloon, the tiled facades on the Victoria Towers and the interior and exterior ceramic surfaces in the Cyberport multi-purpose complex.

It is from Hong Kong that Mapei began exploring new Asian markets, such as those of Japan and Korea, where it has already worked on important building projects, such as the construction of the Akaiwa and Tomei tunnels (supplying admixtures for concrete like MAPEQUICK AFK777J and MAPE-FLUID X404) and the installation of an athletics track inside Nishishina Stadium (bonded with ADESILEX G19 adhesive).

From Hong Kong Mapei also began approaching mainland China, well-aware of the benefits (in terms of logistic costs and the competitiveness of

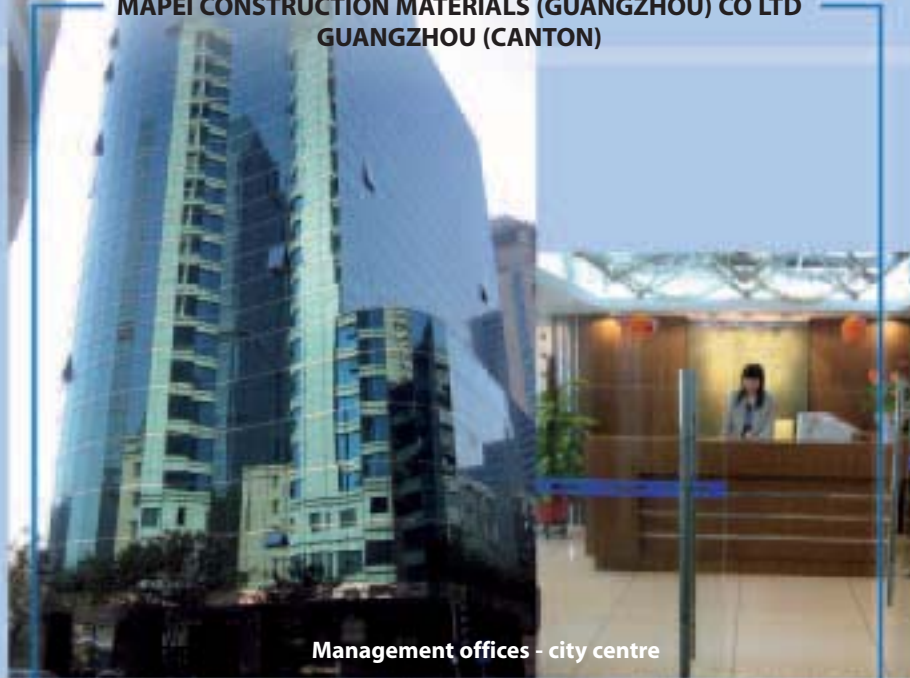
MAPEI CONSTRUCTION MATERIALS (SHANGHAI) CO LTD - SHANGHAI



The Mapei Construction Materials (Shanghai) Co Ltd plant in Shanghai (above: outside view; below: the office's reception, the laboratory and a production area).

final product prices) it would inevitably have gained by manufacturing on-site. **Shanghai** and **Guangzhou** (Canton) were the first areas the firm looked at, since these important big cities (the biggest in central and southern China respectively) have, together with the capital city Beijing, the highest GNP rates in the entire country and the highest concentration of citizens and institutions, both highly attracted by western models of modernisation in all sectors: transport, communications, lifestyle, entertainment and, not least, housing.

This is why two new Mapei subsidiaries were set up between the end of 2005 and start of 2006.



Management offices - city centre



Plant - Conghua (Canton area)



Production areas - Conghua

Mapei Construction Materials (Shanghai) Co Ltd is initially devoted to manufacturing superplasticizers for concrete but will soon hold additional production lines, such as those of systems for building and installing ceramics and stone materials.

Mapei Construction Materials (Guangzhou) Co Ltd resulted from the acquisition of a leading company on the southern Chinese market, selling adhesives, mortars, skim-coats, levelling compounds and waterproofers. This company is based in Guangzhou with an office in the city centre and a plant about 50 km further north, in Conghua.

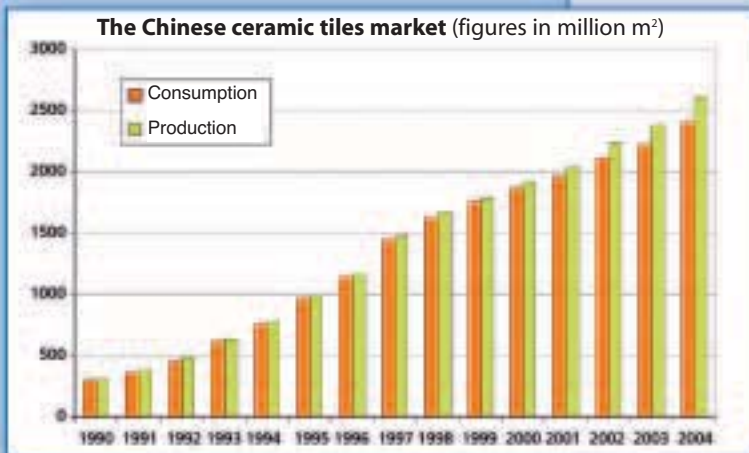
Mapei plans to use these two new units to cater for the rapidly expanding Chinese market. In particular, it ought to be noted that



R&D laboratories - Conghua

Top: the building housing the management offices of Mapei Construction Materials (Guangzhou) Co Ltd (left) and the reception area (right). Centre page: outside and production areas of the plant in Conghua, in the Canton area, with the first bag of Mapefill GP locally manufactured. Left: R&D laboratories in Conghua.

In the March/April 2006 issue, CER, the magazine published by Assopiastrelle (the Association of Italian ceramic tile and refractory material manufacturers), devoted an article to a research on the Chinese ceramic tiles market pursued by Osservatorio Asia (a non-profit Italian institution promoting the spread of knowledge about Asia to key people in Italian business, government and academicians). This research showed there are still many contradictions on this market; it analysed the various types of tiles available and the production and consumption rates for each of these different types; it examined the geographical layout of the Chinese ceramics industry and state of imports and exports, notably referring to the prices and destinations of exports. What emerged was a snapshot of a market growing at an exponential rate (both in terms of production and consumption) compared to a market like Italy's, where production has dropped considerably over recent years (from 620 million in 2001 to approximately 590 million in 2004).



Our thanks go to CER, published by Assopiastrelle, n. 296 (March/April 2006), from which this graph was taken. Source: Assopiastrelle Study Centre.

China is the world's leading manufacturer and consumer of ceramic tiles, with the demand for tiles rising 7-fold over the last 15 years.


Those sections of the market which Mapei will be able to "capture" are destined to grow due, on one hand, to the aforementioned increase in building work (construction and restructuring) planned over coming years and, on the other, to the rapidly growing trend of adding admixtures to concrete mixes and of replacing conventional cement and sand based mortars with increasingly efficient high-tech adhesives when installing ceramic tiles and natural stones.

The two new facilities in Shanghai and Guangzhou cater fittingly for the two lines of products for building and installing ceramics and stone materials, which Mapei plans to first develop on the local market. At the same time they confirm its corporate strategy of strengthening its presence in a number of key areas in the Chinese national economy.

On both fronts, however, this is clearly just a first step along a long and clearly marked path. Mapei also plans to increase its production and sale of other lines, first and foremost its systems for installing resilient and wooden materials, bearing in mind the increasingly extensive use, expected over coming years, of these materials for office interiors, shopping malls, sports facilities and private homes: a trend again explained by the influence of western lifestyles in China.

On the other hand, bearing in mind the number of high-potential areas for growth in China, the Mapei Group also plans to open new factories and offices in equally key sections of the Chinese economy over coming years.

The company's success in this country will also be helped by the growing demand for quality products and the Chinese authorities' determination to set careful guidelines to control industrial production in general and building work in particular. Mapei's ongoing commitment to certified quality and safety is the trump card the company has to play for making its presence rapidly felt in such a promising environment as the Chinese market.

There has already been positive feedback: Mapei products have been chosen for a number of Chinese building projects (for the construction of bridges, railway lines, aqueducts, etc.), some examples of which are illustrated here on the right. Part of the next article will be specially devoted to projects for Chinese hydroelectric plants the company is working (or has worked) on. 



Sutong bridge - Zhejiang Province

This bridge is 32 m wide and 32.4 km long. It is due for completion in 2008 and will connect the two banks of the Yangtze river near Shanghai. The Mapei admixtures DYNAMON SR3, DYNAMON SX T1 and DYNAMON SX T2 (the latter two are tailor-made admixtures) were employed to prepare the concrete for the pillars and beams.

Perfetti Van Melle factory - Shanghai

Perfetti Van Melle, a multi-national company producing famous brand-name sweets, has a production facility located in the Minhang industrial park in Shanghai. During its construction in the period July-August 2004, BIBLOCK and TRIBLOCK were used to overcome problems caused by rising damp; PRIMER G was used to prepare the substrate; NOVOPLAN 21 was used to level off the surfaces and KERAPOXY was used to bond the tiles and grout the joints in the internal floors.



Zhan River bridge - Guangdong Province

With an overall length of 4,024 m, it will be the longest bridge in the Guangdong Province. A total of more than 500 tonnes of DYNAMON SR3 nanostructure admixture have been used to formulate the concrete.

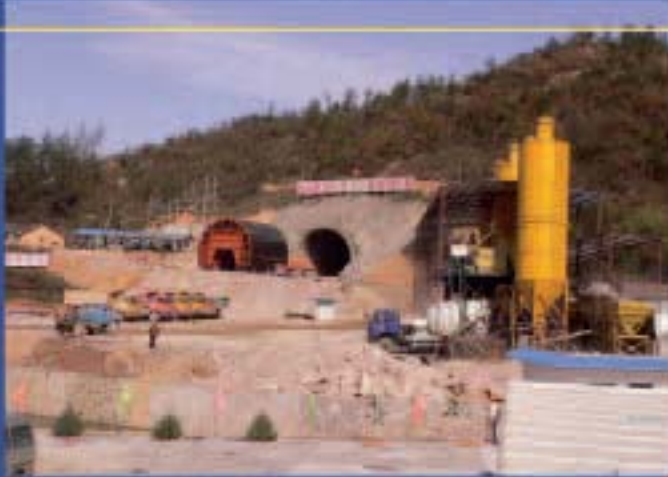




The strong growth in the Chinese building industry is not only measured by the construction of numerous residential areas, offices, hotels, public sector complexes, shopping centres, etc., but also in the construction of new, large-scale infrastructures such as bridges, roads, railway lines, ports, tunnels and aqueducts, some of which are illustrated below.

Hefei-Wuhan high-speed railway line - Provinces of Anhui and Hubei

The construction of China's first high-speed passenger railway line is scheduled for completion within 2020, when it will be possible to travel from Shanghai to Chengdu in only 10 hours. The railway line will also pass through the cities of Nanjing, Hefei, Wuhan and Chongqing at a speed of approximately 200 km/hour. Mapei's DYNAMON SX admixture was employed in the construction of the stretch which runs between the cities of Hefei and Wuhan.



Qimonda factory - Suzhou, Zhejiang Province

The Qimonda factory (called Infineon at the time of its construction) has a production capacity of one billion memory chips per year. Construction work was completed at the end of 2004 thanks also to the use of Mapei products, such as KERABOND, which was used for laying the external flooring systems.

River Cao aqueduct - Baoding, Hebei Province

This imposing aqueduct will be used to supply water to the city of Beijing. Upon completion, it will have an overall length of 2,300 m and an average flow-rate of 9.5 billion m³ of water per year. Completion is scheduled for December 2007 and a total of 15,000 m³ of concrete with DYNAMON SP1 admixture will be used.



Xiang'an Tunnel - Xiamen, Fujian Province

In the middle of 2005, work commenced upon China's first underwater tunnel. It will join the Island of Xiamen to the Xiang'an district on the mainland coast. The tunnel will be 9 km long, 5.9 of which will wind below the water. Construction work will be completed in 2009 and to date has used 365 tonnes of DYNAMON SX for the preparation of the concrete used for the final lining of the tunnel after the shotcrete has been applied.

Ningbo-Taizhou-Wenzhou railway line - Zhejiang Province

The high-speed passenger railway line between Shanghai and Shenzhen will be completed by 2020. Mapei contributed to the construction of the stretch linking the cities of Ningbo, Taizhou and Wenzhou by supplying 482 tons of the superplasticizer DYNAMON SX.





THE GREAT DAM

On the 20th of May 2006 the last concrete was cast on the Three Gorges Dam jobsite, marking the completion of the dam body a whole 4 years ahead of schedule.



Let's go back to the Three Gorges Dam. An in-depth article was dedicated to the project in issue N° 63 of our in-house Italian language magazine "Realtà Mapei", published at the beginning of 2004. Construction of this enormous hydro-electric dam (the largest of its kind in the world) in Yichang on the Yangtze river (in Hubei Province in southern China) commenced in 1993, and up until now has cost 17.5 billion Euros.

When the article was published (in the beginning of 2004), the second work phase had been completed, with the dam being partially opened in June 2003 with the start of the generation of electricity on site. We may now announce completion of the dam body: a structure which is 2,309 metres long along the crest and 185 metres high, inaugurated on the 20th of last May. The dam will allow the reservoir of the Three Gorges to reach a depth of 175 metres (with a total capacity of 40 billion m³ of water) a whole 4 years ahead of schedule.

In fact, it will be in 2009, rather than in 2013 as previously scheduled, that all 26 turbines in the dam will be in full production with an output of 84.7 billion kilowatt-hours per year.

The acceleration of the work, which continued non-stop in a 24-hour and 7-day manner for 13 years and involved a total manpower of 60,000, was obviously motivated by China's enormous hunger for energy. In fact, the Chinese government plans on doubling the production of electricity by 2020 to support the staggering growth in the country's economy, a growth which was widely discussed in the preceding pages.

Apart from the obvious benefits regarding the supply of energy, the Chinese authorities also expect that the opening of the dam will offer an enormous help in the control of flooding (a centuries-old problem which has hit numerous areas in the south of the country) and an overall improvement in the navigability of the Yangtze river.

THE DAM BY NUMBERS

- 1993:** construction work started
- November 1997:** completion of the first work phase
- June 2003:** completion of the second work phase and start of the generation of electricity
- 20 May 2006:** completion and inauguration of the dam body
- 4 years:** number of years the dam body was completed ahead of schedule
- 2009:** all 26 turbines in full production of hydro-electric energy
- 17.5 billion Euros:** total cost of the project
- 2,309 metres:** length of the dam body
- 185 metres:** height of the dam body
- 84.7 billion kw/h:** annual energy production capacity of the dam
- 40 billion m³:** volume of water in the reservoir behind the dam



FROM DAM TO DAM

A TECHNICAL SYMPOSIUM HELD IN YICHANG HIGHLIGHTED THE LEVEL OF MAPEI'S EXPERTISE IN THE HYDRO-ELECTRIC CONSTRUCTIONS SECTOR.

A wide range of factors helped play a part in the rapid completion of the Three Gorges Dam's body, such as the valuable technical support of both Chinese and foreign experts. The precious collaboration and the exchange of useful, specialist knowledge among the experts were exactly the main aims of the technical symposium organised on the 9th of last March in Yichang, in collaboration with the CTGPC (China Yangtze Three Gorges Project Development Corporation). Various members of the Board and experts from within the Mapei Group took part at the event, including Veronica Squinzi, Strategic Planning Manager, Marco Squinzi, Director of the Milan Research & Development Laboratory, Enrico dal Negro, Product Manager of the Underground Technology Team (also known as UTT, the department Mapei devoted to large underground projects), John Almas, UTT Local Manager for China, Richard Andrew Schulkins, UTT Area Manager for the Far East, and Will Guan, General Manager of Mapei companies in mainland China.

Their presence at the event was due to the company's vast experience in the Large Projects sector, sites all around the world which transversally involve a number of departments and production lines. In fact, Mapei has advanced technology which may be applied in a wide range of projects, including hydro-electric power stations and underground construction work.

In particular, large hydro-electric plants, with their associated hydraulic works, are the most technologically advanced in terms of the highly specialised personnel required for their design and the high performances required by the materials used in their construction. Therefore, large hydraulic infrastructures, such as the Three Gorges Dam project, require a synergic approach between the specialists involved in the design phase of the work and, also, the technicians involved in



Veronica Squinzi, Strategic Planning Manager for the Mapei Group, opens the proceedings of the symposium by illustrating the activities carried out by Mapei. Her speech was followed by technical presentations by Marco Squinzi, Enrico dal Negro, John Almas, Richard Andrew Schulkins and Will Guan.

their construction.

On this occasion, experts from the UTT sector supplied valid support, by illustrating the advantages of Mapei product systems specially designed for underground applications, such as alkali-free accelerators for shotcrete, high quality super-plasticisers for concrete and products for concrete repair.

The symposium was intended to satisfy the interest arisen in the Chinese experts by the painstaking research work conducted in 1998 in the Mapei R&D Laboratories. This research, pursued under the guidance of Pasquale Zaffaroni, Product Manager of the Building Speciality Line, individuated the most suitable formula for the concrete for the Three Gorges Dam's spillways. The numerous tests carried out on the composition of the mix under

Since the 1990's Mapei has taken part in the rebuilding and construction of dams all around the world. For further details of these projects please visit our website at www.mapei.it and search the records available in the "References" section by using the word "dam" as the key word.



Kali Gandaki hydro-electric power station Mirmee - Nepal

Mapei contributed to the construction of this power station in Nepal between 1998 and 2001, supplying MAPEPLAST N10 and MAPEFLUID X404 admixtures. The former was used to formulate the concrete used for the body of the dam; the latter was used to prepare the concrete for the spillways, in order to make them highly resistant to mechanical stresses (abrasion, impact, etc).



the lead of Gianluca Bianchin, Head of the Admixtures for Concrete Division, assessed the performance of both the raw materials and the concrete under laboratory conditions, as well as the performance of the concrete in the mixing plants and directly on site. The results demonstrated the suitability of the Mapei superplasticisers, such as MAPEFLUID X404. This product has the capacity of reducing the amount of water used for mixing while guaranteeing the concrete's high mechanical strength and workability retention. In combination with a proper mix design, MAPEFLUID X404 is able to reduce the hydration heat and, consequently, the risk of cracks formation. The precision and reliability of these tests highly impressed many of the Chinese experts from the construction and chemicals sectors: the symposium was just intended to be an ideal opportunity to increase their knowledge.

In particular, if MAPEFLUID X404 belonged to the so-called 1st generation of polycarboxylate-based admixtures, this event drew the participants' attention to the 3rd generation of Mapei nano-structure admixtures, that is, those belonging to the DYNAMON SYSTEM.

Indeed, after a general presentation of the the company's background history and main activities by Veronica Squinzi and an introduction to the Mapei R&D laboratories by Marco Squinzi, the presentations by Marco Squinzi, Enrico dal Negro and Richard Schulkins mainly focused on acrylic superplasticisers, admixtures for self-compacting concrete and alkali-free accelerators. After a brief presentation of those Mapei products used for repairing concrete, in the final speech of the symposium Enrico dal Negro illustrated numerous examples of hydro-electric projects which have made wide use of the solutions, technology and experience offered by the company. This presentation included plenty of photographs and in-depth explanations which were to only further convince the public of the quality, durability, efficiency and safety of construction works carried out using products supplied by the Mapei Group. The speakers were then able to answer all the questions posed by the local experts during the relaxed, cordial atmosphere of the gala banquet which closed the symposium, an ideal occasion to exchange opinions and further information on the arguments discussed during the various presentations.

In view of the great success of the event, the company expects to develop the cooperation with these Chinese experts and to be involved in other important projects which in the next few years will lead to the construction of other new dams, such as those at Xilodu, Xiangjiaba, Baihetan, Wudongde, etc. To this aim, Mapei may count on a long experience gained over the years by participating in large hydro-electric projects all over the world (see the box on the left).

Besides, the company has already taken part in the construction of numerous hydro-electric projects in China, examples of which are illustrated here on the right.



Shuibuya dam - Hubei Province

The construction work for this hydro-electric facility, which is due to be completed next year, will include approximately 150 tonnes of DYNAMON SR3.

Ziping pu dam - Doujiangyan, Sichuan Province

DYNAMON SR3 admixture was used to formulate the 40,000 m³ of concrete for the feed conduits of the four turbines in the dam and the lower layer of the overflow channel which is continuously subject to impact by debris carried by the water.





THE LIONHEART

Benetti is a very popular brand in the shipyard sector: founded in 1873, it is today a world leading yacht builder and the largest for 80'+ yachts. It manufactures luxury yachts in some of the largest facilities in the world, located in Darsena Italia and Lusben in Viareggio (Italy), and in Fano (Italy).

In the beginning of its long history Benetti specialised in building wooden sailing vessels for local and international trade and fishing. After the Second World War it turned to steel and the more lucrative leisure market and began building yachts in the early 60's. Today Benetti is a mega-yacht builder, specialised in building composite semi - custom yachts from 100 to 145', and

steel and aluminium custom yachts from 50 m to over 70 m, resulting from both traditional building experience and a modern, dynamic, state-of-the-art yacht construction approach.

A fine example of the company's modern technology and long-standing craftsmanship is provided by "Lionheart", a 50 metre yacht able to reach a cruising speed of 16.5 knots and a maximum of 18 knots.

The upper deck and the sundeck feature spacious open air areas, intended to enhance pleasure, relaxation, conversation and outdoor living. The interior features sport furniture and refined design, created by Stefano Natucci, thus offering the maximum comforts to guests.

The yacht was purchased by Sir Philip Green, a British billionaire businessman, who owns some of the United Kingdom's largest retailers, and Britain's fourth richest man. Green closely collaborated to Natucci's designing of the yacht and had some exceptional materials used and highly original details added.

For instance, he decided to enhance the yacht's luxury by having the surfaces of an outdoor swimming pool covered with Indian natural stone pebble mosaics, featuring the image of a brown lion on a white background.

Works were carried out in the Benetti shipyard in Livorno while the 5-7 mm diameter pebbles were manufactured and cut in Jaipur (India) and later sup-



plied by a British retailer. The contractor was British, too: Crescent Tiling, London, was in charge of the installation works and chose to use Mapei products supplied by Boyden Tiles in Croydon (Surrey, UK).

The pool's fibreglass shell was carefully cleaned to remove any dust or contamination that might prevent a good result. The white version of KERAPOXY* (a two-component, acid-resistant epoxy product that can be used both as a grout and, as it was in this case, as an adhesive) was applied to bond the sheets of marble mosaics.

This is an improved reaction slip-resistant resin adhesive, especially suitable for bonding stone materials, ceramic tiles, fibre-cement, concrete, etc. Three days after the completion of the bonding works, the joints of the covering were grouted with ULTRACOLOR*. This fast setting and drying grout perfectly matched the project's needs because it guarantees perfect colour uniformity, does not generate efflorescence on the surfaces and requires a short waiting time before cleaning.

The product is now replaced by ULTRACOLOR PLUS*, which is available in 26 colours and further integrated by the innovative technologies BioBlock® and DropEffect®.

These make ULTRACOLOR PLUS* able to reduce the formation of micro-organisms which cause mould, and the absorption of surface water in damp environments. At the same time it is

highly water repellent and ensures excellent durability. Therefore ULTRACOLOR PLUS* is particularly suitable for grouting floors and walls on swimming-pools, bathrooms, balconies, terraces and kitchens.


The mosaic pebbles were intended to feature the image of a brown lion, so the brown version (n. 142) of ULTRACOLOR* was chosen.

Expansion joints were sealed with MAPESIL AC*, a solvent-free, acetic-crosslinking, mildew-resistant silicone sealant. This product is available in 26 colours and guarantees a perfect sealing of expansion joints of $\pm 25\%$ expansion of the initial size on interior and exterior wall or floor coverings in swimming pools, bathrooms and showers. MAPESIL AC* is especially suitable to these environments since it is waterproofing and permeable to vapour, resistant to chemical agents and to mildew. These characteristics ensure that seals remain unchanged even after many years exposure to climatic agents, sudden temperature changes and immersion in water. In this case the brown version (142) of MAPESIL AC* was used to match the colour of the laid material.

The installation of the mosaic pebbles on the edges, corners, sides and spillways was quite complex: about 2 million pebbles were fitted individually by hand, which took 2 layers and 7 weeks to complete.

Here again the white version of KERA-

POXY* was used to bond the pebbles while grouting was accomplished with the brown version (142) of ULTRACOLOR*. Expansion joints were again sealed with brown (142) MAPESIL AC*.

Three weeks after the completion of the works, the pool was filled with water. Sir Green and his guests could enjoy a pleasant bath in an environment featuring luxury even in its smallest details. 

*Mapei Products:

the products referred to in this article belong to the "Products for Ceramic Tiles and Stone Materials" range.

The technical data sheets are available on the "Mapei Global Infonet" CD/DVD or at the web site: www.mapei.com.

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

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

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

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

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



TECHNICAL DATA

Outdoor pool, Benetti yacht "Lionheart";
Livorno (Italy)

Work: installation of marble mosaics on the pools' surfaces

Year: 2005

Customer: Benetti S.p.A., Viareggio (Italy)

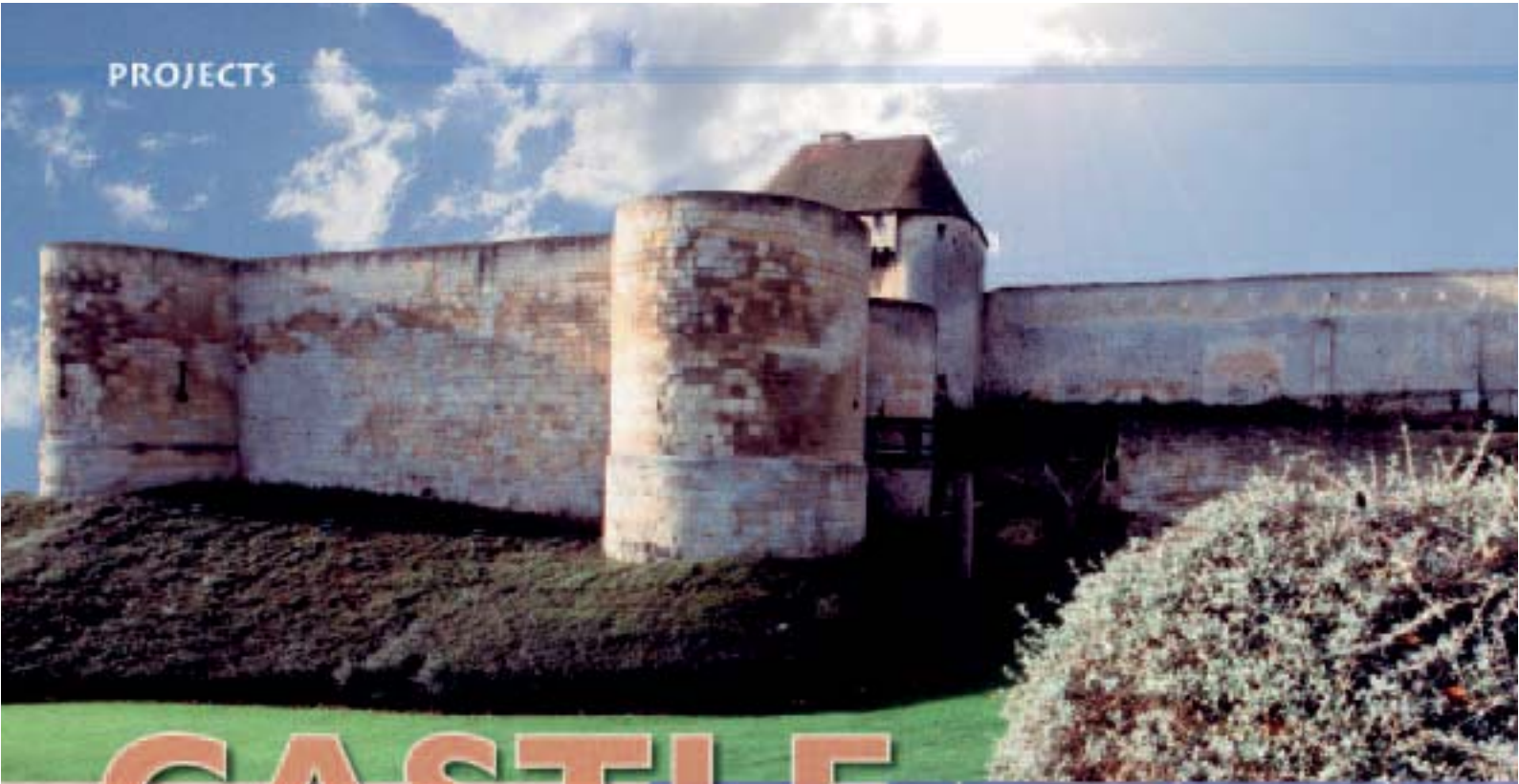
Work Management: Terry Harrow, Crescent Tiling, London (UK)

Installation Company: Crescent Tiling

Materials: Indian marble mosaics

Mapei Distributor: Boyden Tile, Croydon (UK)

Mapei Co-ordinator: Simon Pashley,
Mapei UK



CASTLE REGAINED

A product belonging to the Mape-Antique range was used to reinforce and secure the north-west part of the ramparts of Caen Castle.

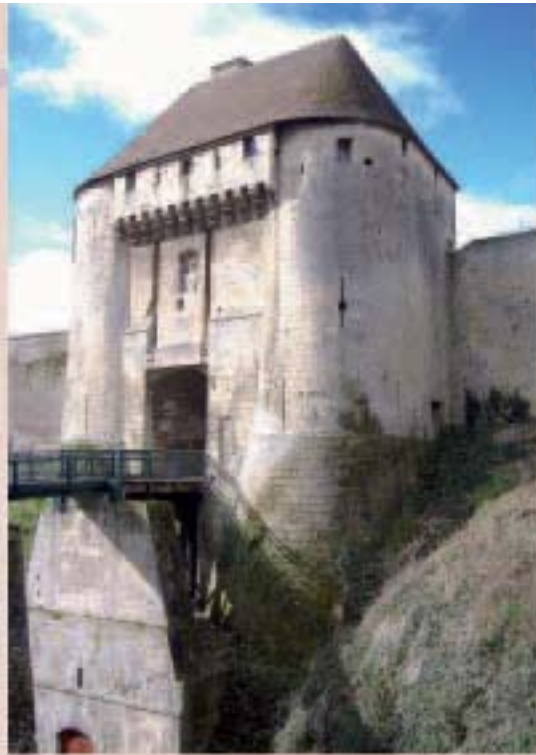
The settlement called Caen already appeared on the maps back in Roman times, but it was in the Middle Ages, under the reign of the Duke of Normandy, William the Conqueror, that the village really expanded and had a fortification wall built around it as well as a castle, two abbeys and a number of churches inside.

Much of Caen was razed to the ground during the 2nd World War due to how close it was to the areas where the American forces first landed in Normandy. Fortunately, most of the main city monuments were spared. Nowadays Caen has a population of over 100,000 people and has become the capital of both the Department of Calvados and the Lower Normandy region.

A few years ago the City Council launched an ambitious project to renovate the castle under the joint patronage of the French Government, European Union, Lower Normandy Regional Council and Calvados General Council, with a view to building a museum and a visitors centre inside.

Daniel Lefèvre, the head architect of the Historical Monuments Department, followed the renovation works and the securing of the north-west section of the walls involved in the





conservation project.

The renovation work began in March 2004 and was completed in 2006: eight million Euros were allocated for the initial work which involved over 230 metres of walls.

Working on the Castle

Before beginning the renovation work on Caen Castle, a survey was carried out on the materials out of which it was originally built and the state of its structures; the work was then divided into various operating phases.

The first phase involved reinforcing the basic structure to ensure the foundations were much firmer and more stable. The castle walls are actually built on a dry limestone conglomerate that had gradually become unstable down the years. 1400 m³ of cement-based mortar were injected to rectify the problem.

The second stage focused on finding and removing any stones, damaged by the passage of time, that had been used in the past to build the wall. The damaged material was replaced by new stones (approximately 220 m³).

The stone used for the repair work came from a quarry located in Cintheaux (France) and was chosen because it has the same properties as those used to build the castle ramparts in the 11th century.

Once the new stones had been set in place, the walls were reinforced by injecting MAPE-ANTIQUÉ I* hydraulic binder directly into the ramparts. Preliminary studies had shown that the city wall's structure featured a reinforced "core" composed of lime-bound stones and that small bubbles had formed in the conglomerate.


The injections of MAPE-ANTIQUÉ I* were designed to stabilise the overall wall structure and to form a link between the ramparts in order to recreate the original monolithic layout.

The day before injecting the binder, the inside of the wall had to be thoroughly soaked in water through the same holes where the

MAPE-ANTIQUÉ I* slurry was injected the following day.

The designers needed a product with compatible physical-mechanical properties to the original materials, good compressive and flexural strength, elasticity and an absence of chemical reactions. Other requirements were: good fluid consistency, high sulphate resistance, colour as close as possible to that of the stone, and quick, safe installation.

Lots of tests carried out in specialist laboratories proved that MAPE-ANTIQUÉ I* hydraulic binder, proposed by Mapei Technical Service Department, perfectly matched the building requirements of this job site.

MAPE-ANTIQUÉ I* is a pre-packed, sulphate-resistant binder used for obtaining injection slurries to consolidate stone cavity walls, refill cavities, cracks and internal porosities in old stone and brick structures. The product is composed of pozzolanic-reaction inorganic materials, special additives and ultra-fine fillers. MAPE-ANTIQUÉ I* belongs to the MAPE-ANTIQUÉ range, which includes plenty of products designed to meet all the requirements related to the repair of damp or damaged structures. 



Our thanks go to "Mapei and Vous", n. 15, published by Mapei France, from which this article was taken.

***Mapei Product:** the product referred to in this article belongs to the "Building Speciality Line". The technical data sheet is available on the "Mapei Global Infonet" CD/DVD or at the web site: www.mapei.com.

Mapei-Antique I: cement-free, fillerized hydraulic binder for consolidating, by injection, stone, brick work and tuff structures.



TECHNICAL DATA

Caen Castle, France

Work: reinforcing and securing the castle ramparts

Years: 2004-2006

Client: Caen City Council

Project: architect Daniel Lefèvre, Paris

Works Management: Alain Marie and Vincent Gary, Lefèvre Sa

Contractor: Lefèvre Sa, Giberville (France)

Mapei Co-ordinators: Dominique Niveleau (Mapei France) and Pasquale Zaffaroni (Mapei SpA)

MAPE-ANTIQUE

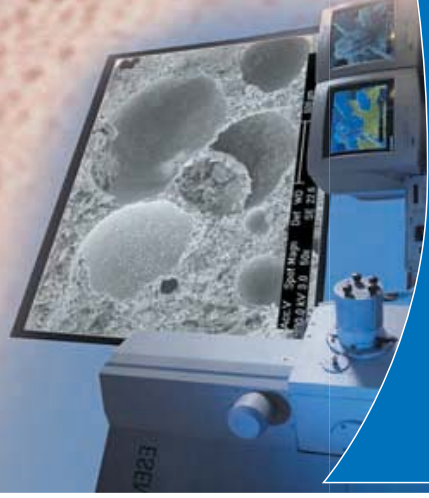
RESTORATION OF OLD MASONRY BUILDINGS: FROM DEHUMIDIFICATION TO PROTECTION AND DECORATION

*Thanks to the use of lime and EcoPozzolan[®],
the Mape-Antique line of products feature*

- Mechanical strength comparable with that of normal, hydraulic lime-based systems
- Workability comparable with the best aerated lime-based systems
- High vapour permeability
- High sulphate resistance, due to the chemical reaction between lime and **Eco-Pozzolan** that rapidly eliminates all free lime
- Efflorescence eliminated due to the absence of free lime
- No alkali-silica reaction
- Ability to colour the products on site by the addition of suitable pigments



*The high water vapour transmission of the
Mape-Antique range of dehumidifying
mortars requires the combined use of the
SILEXCOLOR range of silicate-based
coating systems as the final protective
and decorative treatment.*



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BRAND NEW WALLS FOR AN ANCIENT CITY

THE OLD WALLS SURROUNDING FLORENCE HAVE BEEN RENOVATED AND RESTORED WITH CAREFUL ATTENTION AND METICULOUS CARE.

Repairing the city walls in an art city with such a great history as Florence was a long and elaborate enterprise. After almost a year's work the complex restoration operation on the seventy-five metres of wall dating back to the 14th century and stretching from Torrino di Verzaia to San Frediano Gate was finally completed in 2005. San Frediano Gate was built in 1334, possibly designed by the famous Italian architect and sculptor Andrea Pisano (1270-1349), and it still has some of its old studded battens, iron rings and a lily (the symbol of Florence) at the top of the entrance arch. This marble lily was also restored to its ancient splendour by the renovation work.

The walls, or what was left of them centuries later, were part of the last ring of walls around the city. Historians believe they were built in two separate stages: the first during the siege by Henry VII in 1312 and the second a few years later around 1325.

The restoration work was not easy, bearing in mind the monumental walls' state of deterioration. It mainly involved reinforcing the existing structure, particularly on the merlons where the oldest mortar was crumbling, as was also the

case with the stone rows on the external sides; the stones also had to be carefully cleaned and their surfaces strengthened to prevent flaking.

Working with the same old method used by the architects of the time, the walls were constructed out of a combination of stones, gravel and sandy mortar from the Arno and Mugnone, two rivers in the Florence area, in order to create a sort of dry wall. The containment wall was then made of rows of even-shaped ashlars.

Before carrying out the work, laboratory analyses were performed on samples taken from the old walls, so that plenty of information was available about the original stone walling constructed in the first quarter of the 14th century.

The wall mostly feature a kind of masonry made of solid stone and hewn or squared "alberese" stone set in horizontal and parallel rows, frequently doubled. The stones are generally medium- or large-sized with joints and beds of average thickness with no fillers. The original binder was a whitish, extremely fine, crumbly and quite adhering mortar, mixed with aggregates of less than 3 mm.

There is also a different kind of masonry made of solid stone and "alberese" stone, hewn or squared and placed in horizontal and parallel rows, quite similar to the above-mentioned one but mostly including medium-size stones. It was used to build the old merlons, which had a central slit at the base.

The analyses also involved the system for stitching together the walls' sections. It turned out to be based on blocks connecting double rows or, near the highest rows of blocks, on the binding of an element from one row to the adjacent double row. Vertically, it features a graded pattern.



Photo 1
(previous page).
Two pictures of the old
Florence walls after
renovation, which
restored them to their
ancient beauty. The
work was carried out
on the section of walls
between Porta San
Frediano and the
Torrino di Verzaia.

Photo 2.
During the initial work
phase, the wall joints
to be repaired were
first carefully cleaned
using a high-pressure
water washer.

Photo 3.
The joints between the
stones have been "re-
grouted" using
Mape-Antique MC
mortar.

Photo 4.
Detail of the walls
after completing the
work.





Mapei's Contribution

Nowadays this section of the old Florence city walls forms a sort of boundary round the city centre. The repair work was carried out on the part of the wall located in the San Frediano neighbourhood, named after its main gateway and allegedly the city district where real Florentines are born.

This is the smallest part of the old city centre of Florence, because the surrounding hills and River Arno have naturally compressed this neighbourhood down through the ages.

For visitors to San Frediano it looks like a maze of small, narrow streets lined with simple houses in contrast to the large squares, churches and imposing palaces just a little further down the river.

The entire area, including the walls, is safeguarded by the Florence City Council's Monument and Fine Arts Commission.

The aim of the conservation project, which involved the use of Mapei products on another section of the walls a few years earlier, was to restore the section of wall from Porta San Frediano to Torino di Verzaia to its ancient splendour. The first stage of work involved carefully cleaning and preparing the substrates, followed by repairing the pointing between the mixed stones forming the wall structure, originally built using traditional lime-based systems. Years earlier partial repair work had been carried out using traditional materials, but at the time the client was not satisfied with the results, particularly with the colour of the mortar. So this time the management of the Technical Service Department of the Florence City Council's Fine Arts and Monuments Commission decided to get in touch with the Mapei Technical Service Department, which, as well as analysing the construction, also tested out and sampled some products from the MAPE-ANTIQUÉ range of hydraulic binders and dehumidifying mortars, specially formulated for the restoration of old walls, including those of great historical importance.


These products are cement-free, highly resistant to salts, highly transpirant and feature physical and mechanical properties similar to those of traditional mortars.

At first the colour of the recommended mortar, MAPE-ANTIQUÉ MC* with specially selected oxides added, did not meet the client's requirements. But the great advantages this kind of mortar offers, plus the fact that, as time went by, it would inevitably darken in colour, finally persuaded the client to adopt the solution proposed by Mapei.

MAPE-ANTIQUÉ MC* is a pre-packed cement-free mortar composed of hydraulic binders with pozzolanic action, special additives, natural sand and synthetic fibres. When mixed with water it forms a sulphate-resistant, plastic-thixotropic consistency coat which rain water cannot penetrate much, but which, at the same

time, is extremely permeable to vapour, so that rising damp from the foundations can be gradually disposed of.

Thanks to micro-holes, the coat resulting from the application of MAPE-ANTIQUÉ MC* can counteract any tension caused by the crystallizing of salts carried along by the rising water. Work began by carefully cleaning the joints using mechanical means like a high-pressure water washer; next, all the joints were "re-grouted" using MAPE-ANTIQUÉ MC*. As the mortar hardened, it was brushed so that its largest inert components could be nicely glimpsed, adding a rustic touch to the structure.

After completing the operations, careful high-pressure washing was performed to "hide" the synthetic fibres present in the MAPE-ANTIQUÉ MC* and any remaining mortar residue was also washed off the stones. 

***Mapei Product:** the product referred to in this article belongs to the "Building Speciality Line".

The technical data sheet is available on the "Mapei Global Infonet" CD/DVD or at the web site: www.mapei.com.

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



TECHNICAL DATA

Old City Walls, Florence (Italy)

Work: renovation of the old walls along the section between Porta San Frediano and Torino di Verzaia

Years: 2004-2005

Client: Technical Service Department of the Florence City Council's Monuments and Fine Arts Commission

Project: Claudio Cestelli (architect); assistants: Lucia Mugnaini (architect), Pietro Di Tore (surveyor); Claudio Trimarco (designer)

Co-ordinator of Design and Construction Safety: Maresco Messini (architect)

Site Management: Stefano Sancilio (surveyor)

Works Management for the Technical Service Department of Monuments and Fine Arts

Commission: Claudio Cestelli (architect)

Operating Management: Lucia Mugnaini (architect)

Site Inspector: Pietro Di Tore (surveyor)

Head of the Site: Leonardo Mugelli, Mugelli Costruzioni

Contractor: Mugelli Costruzioni, Florence

Sub-contractors: Colaci Ponteggi, Barberino nel Mugello (Florence); Edildomus Tre, Campi Bisenzio (Florence)

Mapei Distributor: Paolo Bigazzi & C., Florence

Mapei Co-ordinator: Davide Bandera and Massimo Lombardi, Mapei SpA



SANTIAGO CALATRAVA HAS DESIGNED A STRIKING ALL-WHITE BUILDING AS A MODERN SYMBOL OF TENERIFE.

Small coves of black volcanic sand with long white beaches between them, lush woodlands and banana plantations: the contrasting landscapes of the island of Tenerife, the biggest in the Canary Islands (Spain), have always attracted visitors from abroad.

Alongside its natural beauty, climate and old towns and cities – such as San Cristóbal de La Laguna, which UNESCO has classed as part of World Heritage – the island can also boast some spectacular buildings like the Auditorium designed by the architect and engineer Santiago Calatrava and built in Santa Cruz de Tenerife, the island's capital.

This construction is particularly significant because it is the Spanish architect's first building designed for the arts and entertainment, later followed by projects for the new home of the Atlanta Symphony Orchestra (USA) and Valencia Opera House (Spain).

Work on the Auditorium began in February 1997 and the building officially opened in September 2003. The Auditorium stands along the waterfront between the Maritime Park and commercial port of Santa Cruz. It is built

on an area of land covering a total of 23,000 m², 6,471 of which taken up by the structure itself and the rest accommodating urban infrastructures and gardens.

Due to its striking impact on its surroundings – an imposing all-white structure with a roof suspended in the air in contrast with the light-blue ocean – it is likely that the Auditorium will become a real modern symbol of the Canary Islands, rather like the Guggenheim Museum designed by Frank O. Gehry is for Bilbao or the Beaubourg Centre (Pompidou) designed by Renzo Piano for Paris. The first thing striking anybody looking at the Auditorium is its special structural design that looks almost like an ancient warrior's helmet covering the building below.

This sort of "hood" has a bold, light design and hardly surprisingly is also referred to as the Wing. Its approximately 60-metre-wide base is located over on the side of the building facing the city.

As the big Wing rises up and points its tip towards the square facing the sea, it narrows into the tip of a spear at a height of 98 m above the ground.

All white for the Auditorium



The roof rests on the Auditorium building's main body at three points. The Auditorium has a conical shape and is composed of a twin covering of white concrete, ceramic tiles and granite basalt.

The two outside surfaces or "sails" are 30 cm thick and enclose a perimeter area, the foyer, which acts as both a lobby and barrier against outside sounds. The interior surfaces – composed of plaster, wood, white concrete and granite – are 50 cm thick and enclose the main hall. A set of concrete arches made of cylindrical sheets surround the glass entrance windows on both sides of the Auditorium, contrasting with the main building structure.

The latter arches are designed to convey the load from the concrete covering down into the foundations.

There is a smaller, square-shaped structure alongside the main construction facing over towards the sea and holding a terrace bar.

The distinctive curved geometry of the main hall where the concerts are held determined both the final shape and structure of the building. The hall covers an area of 1,311

m² and provides the audience of over 1,600 with a 17 m wide and 16 m deep stage and three separate platforms (two for the orchestra and one for the stage props).

Thanks to the hall's unusual conical form and the absence of a conventional roof, experts consider the Tenerife Auditorium's acoustics to be quite unique. Sound is reflected by a set of convex reflectors and it is possible to alter the acoustic conditions by activating soundproof devices concealed behind a rectangular grille.

A smaller hall is devoted to chamber music and can host an audience of 400. Access to this space is along a corridor leading to the floor below the main foyer.

The hall covers 411 m² and has almost a triangular base with a "palm leaf"-shaped ceiling. In addition to a dedicated foyer, it also has a bar, main cloakroom and press room. This floor of the building also houses the technical structures, storerooms, a workshop and utility areas (dressing rooms, rehearsal room etc.).

The concert halls are complemented by two service buildings separate from the main construction, which respecti-





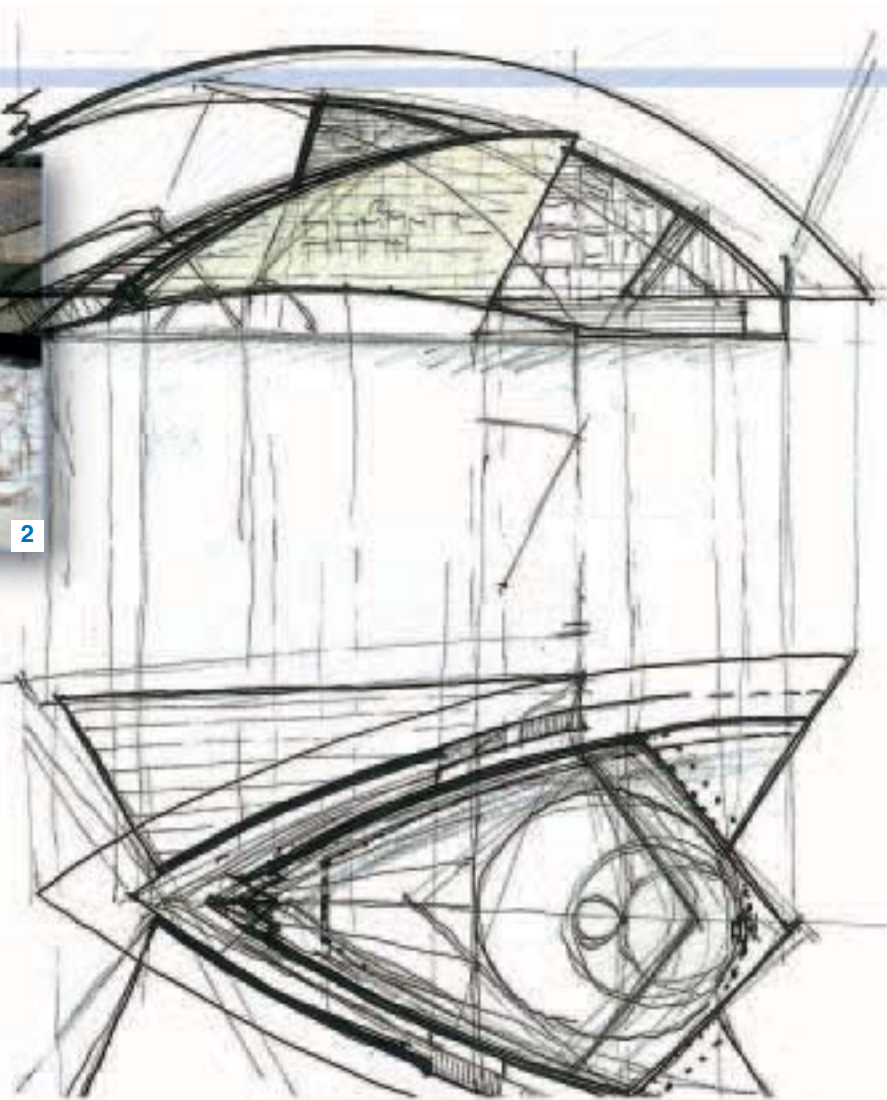
1



2

Photos 1 and 2. Sheets of "trencadis" were used for covering the outside surfaces. These are carefully broken tiles recomposed on fibreglass mesh. This method is used for covering curved or uneven surfaces.

Photo 3. The "sheets" of tiles were laid using Keralastic and Keralastic T adhesives. The joints were grouted using Ultracolor.



vely accommodate a 250-space garage and the offices of the Tenerife Symphony Orchestra.

Mapei's Contribution

Mapei products were chosen for installing the outside layers of white tiles. The kind of ceramics installed, called "trencadis", is something very special: the tiles are carefully broken and then placed on fibreglass mesh. These "sheets" are then used to cover the curved or irregular-shaped areas, such as the curved roof surfaces and the small walls marking the entrance paths leading up to the Auditorium.

The "trencadis" coverings were laid with the polyurethane adhesives KERALASTIC* and KERALASTIC T*. Both these adhesives are extremely suitable for interior and exterior wall and floor bonding of ceramic tiles, natural stones, agglomerates and mosaics on all type of substrates normally used for building. KERALASTIC T* is the thixotropic version of KERALASTIC* and can be applied vertically without slump and without letting even large and heavy tiles, as in this case, slip.

The joints were grouted using ULTRACOLOR* chosen, like the previously mentioned products, in the colour white (the product is available in 26 colours). ULTRACOLOR* produces no efflorescence and dries quickly, thus making the floors ready for pedestrian traffic after a short period of time. It is highly resistant to acids and abrasion, even after freezing-thaw cycles.

***Mapei Products:** the products referred to in this article belong to the "Products for Ceramic Tiles and Stone Materials" range. The technical data sheets are available on the "Mapei Global Infonet" CD/DVD or at the web site: www.mapei.com.

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

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

Keralastic T (R2T): high performance, thixotropic, two-component polyurethane adhesive for ceramic tiles and stone material.

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

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



TECHNICAL DATA

Santa Cruz de Tenerife Auditorium, Canary Islands, Spain

Work: laying ceramic tiles on the Auditorium's external surfaces and grouting the tile joints

Year: 2003

Project: arch. Santiago Calatrava

Client: Tenerife City Council

Installation Company: Nesco (formerly called Acciona Infraestructura)


Mapei Co-ordinator: Manuel Ángel López, Ibermapei



3



The 2006 Turin Olympic Winter Games: Mapei also takes to the slopes



Would you like to know what the XX Olympic Winter Games and the IX Paralympic Games held in Turin in 2006 meant in terms of figures? A total of 26 days of races and events (the Olympic Winter Games were held from the 10th to the 26th of February, while the Paralympics were held from the 10th to the 19th of March), 15 different sports (alpine skiing, biathlon, bobsleigh, cross-country skiing, curling, figure skating, freestyle skiing, ice hockey, luge, Nordic combined, short-track speed skating, long-track speed skating, skeleton, ski jumping and snowboard), 7 municipalities hosting the sports events (Turin, Bardonecchia, Cesana, Pinerolo, Pragelato, Sauze d'Oulx and Sestriere), 3 Olympic Villages, 84 Olympic titles, 252 medals awarded, 80 National Olympic Committees, 2,550 athletes, 1,400 technicians and assistants, 2,300 IOC and Federation representatives, 650 judges and referees, 9,600 journalists and media operators and 6,000 guests of the various sponsors. And, last but not least, more than 2,100 million Euros invested in infrastructures for the Olympics (not including the costs for the organisational machine). Pretty impressive numbers which, thanks to the sports infrastructures, transport facilities, new road systems, new buildings and the warm Olympic welcome, helped Turin to be the sporting capital of the World for almost a month, with the total satisfaction of the people of Turin (who, at the beginning of the adventure, were maybe more than just a little sceptical) and the Italian and foreign guests and visitors. Italy had previously hosted the VII Olympic Winter Games in 1956 at Cortina d'Ampezzo, and again in 1960 hosted the XVII Olympic Games held in Rome.

TRANSFORMING AN INDUSTRIAL ZONE INTO A CULTURAL AND TOURISM CENTRE: THIS WAS TURIN'S AMBITIOUS BET WHEN THE CITY PROPOSED ITS CANDIDACY AS AN OLYMPIC HOST. MAPEI ALSO DECIDED TO TAKE PART AND "COMPETE" WITH ITS PRODUCTS.



Olympic Turin

The dream of many medium and large-sized cities in recent decades has been to host international events, such as the Olympic Games, and this dream often provides a kick-start towards drastic urban transformation.

A model for all town and city Mayors is the one set by Barcelona, which hosted the 1992 Olympic Games, which bore witness to the rebirth and growth of the city which has lasted over the years, unlike many other cities where the long-lasting effect is decidedly less impressive. For obvious reasons, this objective is not normally associated with winter sports, which are often held in areas quite distant from large urban centres; at least, not until this edition. Indeed, even though more than half the events of the Turin Games were held in the surrounding towns, a number of events and all of the awards ceremonies were held in the city itself, with all the localities being within easy reach of the city and well-connected to the main hub.

As with the examples of Barcelona and Athens, the city of Turin had prepared a comprehensive strategic plan before being chosen for the Games. This plan included building a new underground railway system with fifteen stops, reclaiming old, unused industrial areas, upgrading the airport, constructing a number of underground car-parks in the most important squares in the city and renovating (and in some cases rebuilding) entire wards of the city.

Turin's Olympic dream dates back to 1997, when local institutions gave the go-ahead for the official candidacy.

The capital city of the Piedmont region was finally awarded the XX Olympic Winter Games on the 19th of June, 1999 in Seoul, with Turin being

preferred to the Swiss town of Sion by just a few votes.

Since that date, local government, institutions, Olympic bodies and a number of volunteers worked incessantly to be ready for the start of the Games on the 10th of February, 2006.

A total of 65 different building projects were completed to stage the Olympic Games, including sports facilities, new roads, villages for the athletes and venues for journalists and media operators. Some of the most significant projects include the renovation of the Olympic Stadium and the surrounding areas; the building of three new sports arenas and the upgrading of two old ones in Turin; the construction of three Olympic villages, in Turin, Bardonecchia and Sestriere; the renovation of the Ice Stadium in Pinerolo and the building of a new one in Torre Pellice; the construction of twelve new ski-lifts, the new ski-jumping ramp in Pragelato and the Olympic archway which connects the Olympic Village to the Lingotto district in Turin. And it was precisely the latter structure which became the symbol of the twentieth edition of the Olympic Games; a large, inclined, bright-red arch reaching a height of 40 metres, which was designed to look like an Olympic gangway. Another project to remember is the completely-automatic Turin underground railway, the works which are still being carried out on the railway link and the widening and upgrading of a number of by-passes which connect Turin to the other Olympic towns.

In order to repeat the success of Barcelona, during the design phase the architects, town planners and local administrators took into consideration how a large part of the sports infrastructures and buildings could be put to good use once the Olympic Games were over.

And now that the curtain has gone down on Turin 2006, the city steps down in favour of Vancouver, capital city of the XXI Olympic Winter Games that will be held in 2010.





TOROC HEADQUARTERS - TURIN

Work: preparing the substrates and laying the carpet

Year: 2005

Contractor: Gilardi

Installation Company: G.R. Pavimenti, Turin

Mapei Distributor: G.R. Pavimenti

The organising committee of the XX Olympic Winter Games, known as Toroc (Turin Organising Committee), was especially founded for this occasion by the city of Turin and by CONI, the Italian National Olympic Committee. Its mandate was to plan all the works required for the Olympic Games.

Toroc was also responsible for the actual organisation of everything related to the Olympics: the sports events, awards ceremonies, hospitality for the athletes, administration of the Olympic villages, transport, public relations with the press and the sponsors, fitting-out the temporary structures, etc.

The operative base of this "war machine" was located in a building owned by the Turin City Council. The building was refurbished using the colour scheme chosen for the Olympics, blue and white, which decorated the outside of the building. The building is nine storeys high and is divided into various offices and open-space areas. A total of almost 500 people worked there during the Games. The substrates for the floor coverings were made using ULTRA-PLAN* self-levelling compound. The 40x40 cm carpet tiles were laid using ULTRABOND ECO FIX* adhesive, which has an extremely low emission of volatile organic compounds.



SKI-JUMPING RAMPS - PRAGELATO

Work: supplying admixtures for concrete and laying and grouting all the ceramic tile floorings

Year: 2004

Architectural, Environmental and Structural Project: Studio Pedrolli, Scandiuzzi and Vanzo, Wolfgang Happle, Sintecna, Giorgio Marè, Marco Zocco and Stefano Seitza

Contractors: Consorzio Ravennate Cooperative Produzione e Lavoro, Consorzio Coop. Costruzioni, Selghis Calcestruzzi

Installation Company: Turco Ceramiche - Turin

Mapei Distributor: Turco Ceramiche

Pragelato played host to the Nordic combined and ski-jumping events. It is situated at an altitude of 1,518 m, where there are two ski-jumping ramps (the K95 and K120), three learner ramps and all auxiliary services required for the events. These included the starting gates, the judges tower, a two-seater ski-lift, workshops, a multi-functional centre with 100 sleeping places and a spectator stand with 2,500 seating places. The track for the cross-country events was also built in Pragelato.

Both structures were supplied with Mapei products, such as DYNAMON SX 14* superplasticiser for concrete and ANTIFREEZE S* for preparing the concrete and the cementitious mortar at temperatures as low as -10 °C. Ceramic tiles were laid on all the floors in the service areas using ADESILEX P9* and grouted with KERACOLOR FF*.



OLYMPIC ICE-HOCKEY RINK 1 - TURIN

Work: supplying admixtures for concrete

Years: 2004-2005

Project: Arata Isozaki & Ass. and architect Pierpaolo Maggiora - Archa

Plant and Structural Project: Giuseppe Gasparro Amaro, Marco Brizio, Arup

Contractors: Vitali, Torino Internazionale, Lorenzon, Carlo Gavazzi and Edoardo Lossa

Works Management: architect Pierpaolo Maggiora

Customer: Agenzia Torino 2006

Mapei Distributor: I.CO.S. - Turin

The design by this renowned Japanese architect features an impressive parallelepiped shape, covered with glass on the ground floor and stainless steel panels with oval pressings on the top floor. It is five storeys high and holds almost 8,500 spectators. During the Olympics, it was the venue for the ice-hockey matches. After the Games, the rink will become a multi-functional centre, thanks to the intelligent use of its retracting spectator stand.

Mapei took part in this project by supplying technical assistance for both the formulation of the most suitable mix of concrete and the cast of the concrete. Mapei Technical Service Department recommended the following admixtures for concrete which were indeed used on site: the superplasticiser DYNAMON SX 14* (50,000 litres), the air-entraining agent MAPEPLAST PT1* (1,000 litres) and the expanding agent EXPANCRETE* (14,000 litres).



OLYMPIC STADIUM – TURIN

Work: supplying admixtures for concrete; renovating and smoothing the internal perimeter surfaces

Year: 2004

Project: Stadium Service, Giovanni Cenna, Luciano Cenna and Artec

Structural Project: Augusto Bianchi

Contractors: Mazz Costruzioni and Kopa Engineering Inc.

Installation Company: Beton Rossi and Tecnoresin

Mapei Distributor: Provera - Turin

Turin Municipal Stadium was built in 1933 and the Olympics was the ideal occasion for renovation, after which it was renamed "Olympic Stadium". This structure was the very heart of the entire event: in fact, this was the venue hosting both the opening and closing ceremonies of the Olympic Games. The renovation work maintained the original structure, while all the plant and fittings were upgraded to conform to the latest safety standards. The number of places available was reduced from 65,000 standing spectators to 27,000 all seated and a new, partially-transparent steel roof was installed.

Mapei was involved in formulating the most suitable mix for the concrete and supplied the following admixtures for concrete: the superplasticiser DYNAMON SX 14* and the expanding agent EXPANCRETE*. The renovation and smoothing of all the perimeter walls inside the stadium was carried out using MAPEGROUT THIXOTROPIC* shrinkage-compensated, fibre-reinforced mortar and PLANITOP 20* one-component cementitious mortar, respectively.



THE PALAVELA STADIUM - TURIN

Work: supplying admixtures for concrete, renovating the stands and installing steel sheets on the roof

Year: 2003

Project: Gae Aulenti and Arnaldo De Bernard

Contractors: Maire Engineering, Impresa Costruzioni Rosso, Edil Rivvek, Quadrifoglio, Unicalcestruzzi, Coipa and Al.FA

Installation Company: Covecom

Mapei Distributors: Ravizza, Coipa and Ce.Pa.

This building, with its characteristic sail-like shape, was built underneath the original reinforced-concrete covering and hosted the figure-skating and short-track speed skating events. Once the Olympics were over, the Palavela Stadium became the venue for concerts, exhibitions and conventions. Mapei supplied DYNAMON SR3* super-plasticiser based on modified acrylic polymer for ready-mix concrete. Renovation work on the reinforced concrete structures was carried out using PLANITOP 400* fast-setting thixotropic mortar and PLANITOP 200* single component cementitious mortar. For the renovation work on the reinforced-concrete spectator stands, on the other hand, MAPE-GROUT BM* two-component, cementitious mortar was used for the restoration work, while MAPEFINISH* two-component, cementitious mortar was used for levelling the concrete surfaces. The roof was waterproofed using steel sheets. However, since the external face of the sail-shaped concrete elements could not be perforated, the framework (on which the waterproofing sheets were then fixed) was bonded using KERALASTIC-T* two-component, high-performance polyurethane adhesive.



OLYMPIC VILLAGE - SESTRIÈRE

Work: preparing the screeds, levelling the substrates, waterproofing the surfaces in the changing rooms and showers, laying and grouting tile coverings in several areas

Years: 2003-2006

Architectural and Environmental Project: Giuliano Spinelli, Paola Tagliabue, Stefano Trucco and Fabrizio Vallero

Plant Project: Giorgio Formia

Structural Project: Roberto Lucchini and Michele Pacielli

Contractors: Iter Cooperativa Ravennate Interventi sul Territorio

Mapei Distributor: Turco Ceramiche - Turin

The screeds inside the Olympic Village in Sestrière were prepared with TOPCEM* rapid-drying hydraulic binder. They were then levelled off using ULTRAPLAN* ultra-fast drying self-levelling compound. MAPELASTIC* cementitious mortar was then used to waterproof all the surfaces in the changing rooms and showers of the various gyms.

All the tiles in the village were laid using ADESILEX P9* cementitious adhesive with no vertical slip. Tile joints were grouted with KERACOLOR FF* cementitious grout which, thanks to the use of special hydrophobe additives (Mapei DropEffect® technology), endows the joints with highly water-repellent properties.



MOI OLYMPIC VILLAGE - TURIN

Work: laying and grouting ceramic tiles, laying linoleum floorings in the sleeping areas

Years: 2003-2006

Architectural and Urban Project: Benedetto Camerana & Ass.

Structural Project: Agibat Ingegnerie, Hugh Dutton Associès and Faber Maunsell Ltd

Contractors: Maire Engineering, Garboli Conicos, Consorzio Cooperative Costruzioni, Semeca, F.lli Falcone, Demonte Ambiente, Massucco Costruzioni and Crastore

Installation Companies: Galmarini, Edilomnina and Fornengo

Mapei Distributors: Fornengo, Edilomnina and Alfa

The Olympic village was built on an area of more than 100,000 m² and the ancient structure of the old market was included in the site. This complex is located in the southern part of Turin opposite the Lingotto district and up until 2001 it was the home of the wholesale fruit and vegetable markets (MOI) which were built in 1932. The tender included the construction of a village covering an area of 90,000 m², which was to be home for 2,500 athletes during the Olympics, and the renovation of the old buildings. The ceramic tiles were laid using ADESILEX P9* adhesive with no vertical slip and KERASET* cementitious adhesive. The tile joints were grouted using KERACOLOR FF*.

The linoleum covering was laid using ADESILEX F57* synthetic resin based adhesive.



GOLDEN PALACE STELLA - TURIN

Work: waterproofing and laying the porcelain tile covering in the bathrooms; laying and grouting the clinker tile covering in the kitchens; laying the parquet in the suites and beauty farm; laying and grouting the external coverings.

Year: 2004

Customer: Toroc 2006

Contractor: Rosso Costruzioni

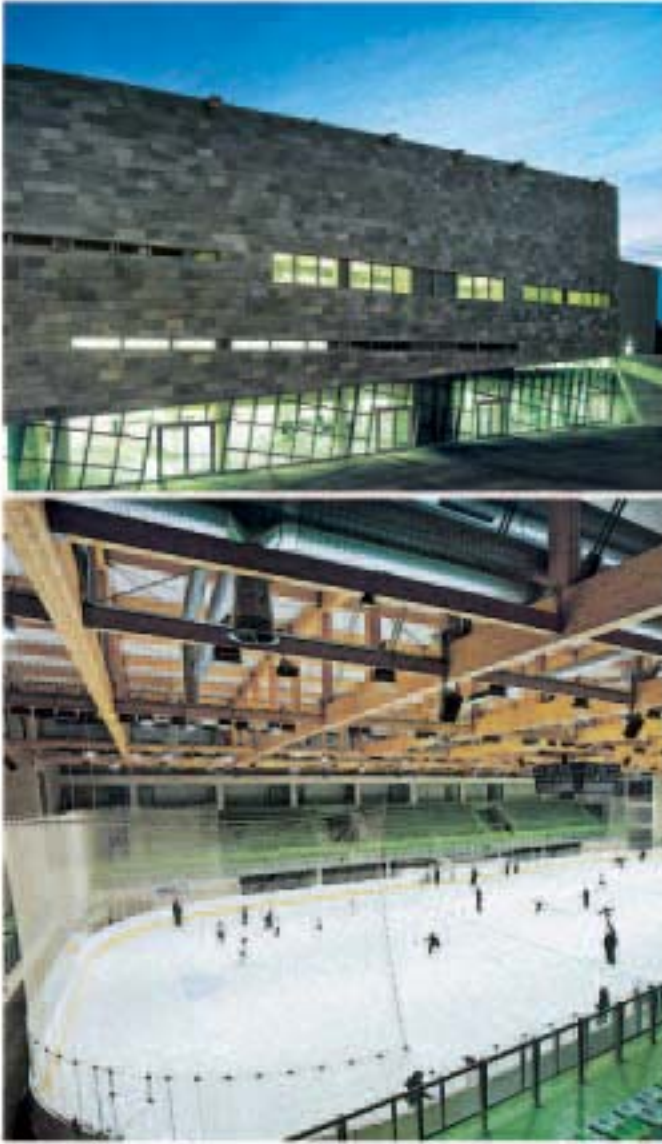
Installation Companies: Ce.Pa., Rech&C. and Ver.Pont

Mapei Distributors: Ce.Pa., Rech&C. and Ver.Pont

The hotel is enclosed in the building that once hosted the headquarters of the Toro Assicurazioni company. It covers a total of 18,000 m² and has approximately 200 rooms and suites equipped with the latest technology.

ADESILEX P22* adhesive with no vertical slip was chosen for laying the 20x20 cm porcelain tiles on the floors and walls of the en-suite bathrooms. Before laying, the surfaces were waterproofed using MAPEGUM WPS* flexible liquid membrane, while MAPEBAND* rubber-coated polyester tape was applied on the corners.

Approximately 1,300 m² of clinker tiles were also laid and grouted in the kitchens, using KERAPOXY* two-component epoxy adhesive. The parquet in the suites and in the beauty farm was laid using ULTRABOND P990 1K* one-component polyurethane adhesive. KERACOLOR GG* was used to grout all the joints in the external coverings of the hotel.



ICE STADIUM - TORRE PELLICE

Work: supply of admixtures for concrete and laying and grouting of tiles in the restaurant, service areas and entrance hall
Year: 2004
Architectural Project: Claudio Lucchin, Roberto D'Ambrosio, Studio Lee and Studio De Ferrari Architetti
Structural Project: Guglielmo Concer
Contractors: Consorzio Cooperative Costruzioni, Iter and Calcestruzzi Gallo
Installation Company: Turco Ceramiche - Turin
Mapei Distributor: Turco Ceramiche

The Ice Palace in Torre Pellice was built as a training centre for the ice-hockey teams. The covered area totals 5,000 m² and may house up to 2,500 spectators. It will be used as a multi-functional ice rink after the end of the Olympic Games. To reduce the visual impact on the surrounding landscape, the designers decided to build it at 3 m below ground level. Mapei supplied DYNAMON SX 14* superplasticiser for concrete and PLANITOP 400* thixotropic mortar, used to repair the imperfections in the spectator stands. In the restaurant, entrance hall and service areas, the ceramic tiles were laid on the floors using ADESILEX P9* and then grouted with KERACOLOR FF*.



NEW RING-ROAD - PINEROLO

Work: supply of admixtures for concrete
Years: 2004-2006
Project: Sintecna and So.Tec. (Engineer Barra)
Works Management: Engineer Giorgio Mancini
Contractors: Consorzio Ravennate delle Cooperative di Produzione e Lavoro and Torino Scavi Manzone
Ready-mix Concrete Suppliers: Selghis Calcestruzzi (Villanova Solaro, Cuneo), Calcestruzzi Gallo (Turin) and Holcim Calcestruzzi (Milan)

While the construction and renovation work for the Olympics only involved buildings located in some limited areas, the new roads were part of a much larger territorial strategic plan which covered the Chisone Valley and the Susa Valley. The aim of the plan was to finally solve old problems by intervening on certain critical road hubs, making communications between Turin and the valleys much easier. In this case too, some roads were simply upgraded, while others were built completely new. Mapei products were particularly used for upgrading (and make safer) the new by-pass (the old N° 589 Provincial Road), which runs in the Pinerolo area between the Porporata zone and the old N° 23 Regional Road. For this operation, the admixtures DYNAMON SX 14* (approximately 90,000 litres) and DYNAMON SX 18* (approximately 60,000 litres) were used. Mapei technicians were also present to supervise the mixing of the concrete. They pursued a technical study to devise the correct mix and provided technical assistance when the concrete was cast on site.



UNDERGROUND RAILWAY LINE 1 - TURIN

Work: supply of admixtures for concrete and waterproofing of the concrete structures

Years: 2003-2006

Contractors: Metrocentro and Betonrossi

Mapei Distributor: Betonrossi - Turin

After the Second World War, Turin became the most important industrial city in Italy and the capital of the automobile industry. To accommodate the thousands of people who had to travel every day, an overland transport system was built, while an underground rail system had not been considered. This goal was finally reached thanks to the Olympic Games, which witnessed the inauguration of fifteen stops along Line 1 of the Automatic Underground Railway network. Line 1 runs underground from the west towards the east, from Collegno to Porta Nuova station, with no driver on board. Mapei supplied the superplasticiser for concrete DYNAMON SX 14* and the polyurethane resin RESFOAM 1 KM*. The resin was used to waterproof the concrete structures, for both the underground work and the work carried out above ground.

The Turin 2006 building sites were supervised and coordinated by a technical and commercial team from Mapei, which included the following people: Stefano Broggio, Cristian Cavallari, Silvio Cenci, Pietro Lattarulo and Valerio Mandelli.

***Mapei Products:** the products referred to in this article belong to the "Building Speciality Line", "Products for Ceramic Tiles and Stone Materials", "Products for the Installation of Resilient, Textile and Wood Floor and Wall Coverings" and "Admixtures for Concrete" ranges. The technical data sheets are available on the "Mapei Global Infonet" CD/DVD or at the web site: www.mapei.com. Mapei's adhesives and grouts conform to EN 12004 and EN 13888 standards.

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

Adesilex P22 (D1TE): ready-to-use paste adhesive with no vertical slip and extended open time for ceramic tiles.

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

Antifreeze S: chloride-free antifreeze for cementitious mortars and concrete.

Dynamon SX 14: fine aggregate supplementing superplasticizer for ready mix concrete with low loss of workability and high reduction of mixing water.

Dynamon SX 18: superplasticizer and fine aggregate supplementing for concrete with high reduction in mixing water and high early mechanical strength.

Dynamon SR3: superplasticizer based on modified acrylic polymer for ready mix concrete with low water/cement ratio, extremely high mechanical strengths and long slump retention.

Expacrete: expansive agent for concrete.

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

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

Keralastic (RT2): high performance cementitious adhesive, with no vertical slip and extended open time for ceramic tiles and stone material.

Kerapoxy (R2T): two-component acid-resistant epoxy grout, available in 26 colours, for joints of at least 3 mm. Can also be used as an adhesive.

Keraset (C1): cementitious adhesive for ceramic tiles.

Mapeband: polyester rubber tape for the flexible sealing and waterproofing of interior and exterior expansion joints.

Mapefinish: two-component cementitious mortar for finishing concrete surfaces.

Mapegrout BM: two-component thixotropic cementitious mortar with low modulus of elasticity for the repair of concrete.

Mapegrout Thixotropic: controlled-shrinkage fibre-reinforced mortar for the repair of concrete.

Mapegum WPS: fast drying, liquid elastic membrane for interior waterproofing.

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

Mapeplast PT1: air-entraining plasticiser for concrete and mortars.

Planitop 200: normal setting one-component cementitious mortar for smoothing old cementitious renders and textured coatings.

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

Resfoam 1 KM: ultra fluid, one-component polyurethane injection resin for waterproofing concrete or masonry structures, grounds and rocks subject to intense water seepage with adjustable reaction times.

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

Ultrabond Eco Fix: adhesive in water dispersion with permanent tack and very low emission of volatile organic compounds (VOC) for dry-lay floor tiles. Tiles can be removed and replaced several times.

Ultrabond P990 1K: ready-to-use polyurethane one-component, solvent-free, elastic adhesive for all types of wooden and laminate flooring.

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



CERSAIE

A WORLD-CLASS EVENT





Once again this year Mapei had its usual big pavilion displayed in the external area 45 at the 24th edition of Cersaie.

The main image the company was keen on projecting throughout this edition of Cersaie was one of two world champions: the Italian Football Team, which was such a handsome winner at the last World Cup finals, and MAPELASTIC, the flexible cementitious membrane which has been successfully used for waterproofing and protection purposes all over the world for over 15 years. Visitors were really struck by what they saw upon entering the Mapei exhibition area: a big, brightly-lit globe suspended between the clouds with the word MAPELASTIC beneath it and a magnificent giant photograph of Fabio Cannavaro holding the World Cup in the background, which Italy won in Berlin. This was just the right combination of an unbeatable product, MAPELASTIC, unrivalled worldwide, and the Italian National Football Team – sponsored by Mapei – which sent the entire Italian country (and all Italians living abroad) mad with joy this summer. All this enthusiasm was backed up by the brisk business Mapei did at the fair again this year.

So the Cersaie event was a success, confirming, also from Mapei's viewpoint, the notable growth in this important sector of the building industry.

Mapei Products to the Fore

Mapei's world-class stand was intended to display products which, as each year goes by, are making their

presence increasingly felt on the global market. This is due to a winning business policy combined with the outstanding professionalism of Mapei's Research & Development department. The new ULTRAFLEX S2 QUICK exemplifies all this and had its own special section in the Mapei stand. This is a light-weight (C2FT class according to EN 12004) fast-setting, highly deformable, one-component adhesive, which was developed out of the old ULTRAFLEX S2 MONO (C2TE class) but has different properties and ranges of application. Indeed, it features high bonding strength reached in only 2-3 hours and is able to improve acoustic isolation. Therefore this is an excellent adhesive for quick restructuring works.

Plenty of room was given to the MAPELASTIC, MAPELASTIC SMART and MAPEGUM WPS waterproofing systems, renowned for their flexibility, wide range of applications, ease of application and durability.

Combined with FIBREGLASS MESH and also MAPETEX SEL, these products are particularly useful and effective.

Another product to the fore at Cersaie was ELASTORAPID, a two-component adhesive, classified as C2FTE according to EN12004 and S2 according to EN12002.

Plenty of space was allocated for well-known grouts and sealants, such as KERAPOXY, KERACOLOR FF, KERACOLOR GG and MAPESIL AC, now enhanced by KERACOLOR SF, a super-fine, high-per-





formance, polymer-modified cementitious mortar available in the colour white (CG2 class). Special attention was also paid to Mapei BioBlock® and DropEffect® technologies, designed to create healthy and durable environments, guaranteeing active protection against micro-organisms, a wide range of application and notable durability, as well as high transpiration and low water absorption. The anti-mould grout ULTRACOLOR PLUS and the anti-mould and anti-mildew coating system SILANCOLOR PLUS SYSTEM both feature these technologies.

CERSAIE SETS NEW RECORDS

The 24th edition of Cersaie, which opened on Tuesday 26th and closed on Saturday 30th of September, broke three records this year: the number of total visitors (90,949 people, +2.7% compared to the 2005 edition), the number of foreign operators taking part in the event (214 of the exhibitors and 26,411 of the businessmen attending the event were from overseas) and the number of journalists registered at the fair (604 media people were officially present with a 3.46% rise in the number of





Italian journalists and a 4.2% increase of foreign journalists compared to the 2005 edition). This is evidence that Cersaie trade fair has become an even more international affair, particularly bearing in mind that the number of visitors from abroad rose to 29%, the highest of all the trade fairs held in Bologna and one of highest internationally. As usual, after the ribbon-cutting ceremony performed by the Mayor of Bologna Sergio Cofferati and important representatives of the world of Italian industry and economy, the con-

vention "Competition and Knowledge to Encourage New Growth" took place in the Bologna Conference Hall. The President of Assopiastrelle (the Italian Association of Ceramic Tile and Refractory Materials Manufacturers), Alfonso Panzani, and the Italian Minister for Economic Growth, Pierluigi Bersani, discussed the issue of competition in front of an audience of 600. Alfonso Panzani focused on the state of the Italian ceramic tiles sector, pointing out the positive trend over the previous six months: "After a negative trend in sales over the last five years, there has been a 3% increase in exports."

As side events to this year's edition of Cersaie, the Bologna Ceramics Centre, in conjunction with Assopiastrelle, organised seven meetings devoted to new products and trends in the field of ceramic tiles. The schedule also included a seminar co-organised by Mapei. It was entitled "Installing ceramic tiles: guidelines for craftsman-like tiling" and was held on Saturday 30th September. On this occasion, the engineer Paolo Murelli from Mapei SpA's Quality Assurance Department and Secretary of CEN TC 67/WG talked on the topic of: "Installation materials: selection guidelines and regulations".



Mould-free Environments

INTERNATIONAL PRESS CONFERENCE

The usual meeting with the world press was held on the second day of the trade fair, Wednesday 27th September. Open to all journalists – Italian and foreign – registered at the Cersaie event, it was jointly organised by Assopiastrelle in conjunction with the ICE (Italian Institute for Foreign Trade) and Mapei. This year it was held in the Aula Magna of Santa Lucia in Bologna.

The press conference, chaired by the General Director of Assopiastrelle

wrote the best article on ceramic tiles and the Cersaie event in 2005, and the **Assopiastrelle Distributors Award**, devoted to importers and distributors of ceramic tiles who have worked most effectively with Italian industry. This year's winning distributors, selected by the Assopiastrelle panel of judges, come from four old European nations (France, Germany, Italy and Greece) and are all Mapei customers.

The award-winning French company



was **Frazzi** from **Bonnières-sur-Seine** and the prize was accepted on its behalf by Jean Michel Frazzi. The firm, which was set up in 1977, employs 130 staff and had an overall turnover of almost 34 million Euros in 2005 (70% coming from sales of ceramic tiles). Frazzi, a client of Mapei France SA, has a distribution network of 9 showrooms (photo 1) covering a total area of 4,300 m².

Germany's winning firm was **Kemmler Baustoff GmbH** from **Tübingen** (a customer of Mapei's German subsidiary Sopro Bauchemie GmbH) and the prize was accepted by Mark Kemmler.

Set up in 1908, the company currently employs 1,004 staff and has an annual turnover of over 250 million Euros. The company also has a network of showrooms located in 20 different cities (photo 2).

Mario Rizzo accepted the award for the winning Italian firm: **Ceramiche Appia Nuova** from **Rome**.

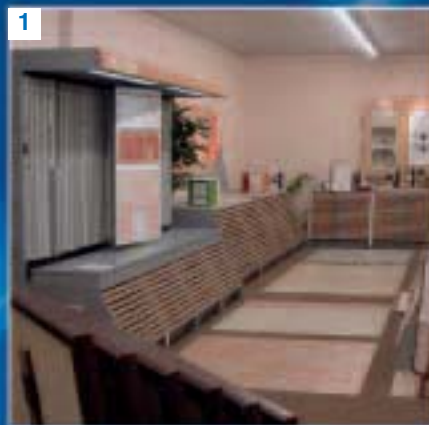
Set up in 1985, the company has an



Franco Vantaggi, included speeches by the President of Assopiastrelle Alfonso Panzani and the Vice Chairman of Assopiastrelle's Promotional Activities and Trade Fairs, Enzo Mularoni.

There were also speeches by the President of Federchimica and CEO of Mapei, Giorgio Squinzi (whose speech is reported on pages 38 - 39) and the Councillor for Production Operations in the Emilia Romagna Region, Duccio Campagnoli.

The aim of this special meeting with the media from all over the world was to provide an accurate picture of the current situation of the ceramics sector and overall business situation, while giving a detailed account of all the operations promoted by Assopiastrelle in conjunction with the Ministry for Production Activities and the ICE, so as to reinforce the image of Italian ceramics worldwide. The meeting drew to a close with the awarding of two prizes: the **Ceramic Tiles of Italy Journalism Award**, which went to the journalist who



The winners of Assopiastrelle Distributor Award and Ceramic Tiles of Italy Journalism Award. From left: Giorgio Squinzi, Enzo Mularoni, Paul Makovsky, Duccio Campagnoli, George Kyriotis, Alfonso Panzani, Mario Rizzo, Jean Michel Frazzi and Mark Kemmler.



4

ceramic tiles. The company has a staff of 65 and two showrooms near Athens, namely in Piraeus and Anthoussa (photo 4).

Finally, the 2006 Ceramic Tiles of Italy Award was won by Paul Makovsky, the editor in chief of *Metropolis*, an American monthly magazine read by architects, interior designers and students of architecture.

The panel of judges explained its decisions as follows: "All the various, more modern aesthetic trends in ceramic tiles, backed up by plenty of photographs and explanatory captions, are displayed at Cersaie, which has been described as the most important showcase for ceramic tiles and bathroom furnishing".

Waiting for the Next Edition

This was a very positive and successful edition of Cersaie, as we already start to look forward to the next edition planned to be held in Bologna from 2nd to 6th October 2007.

This will be the 25th in the history of Cersaie and a full schedule of events will celebrate the occasion. *RM*

annual turnover of 45 million Euros, 35% of which due to sales of ceramic tiles. The firm, one of Mapei SpA's customers, has 150 staff and two showrooms (photo 3) for an overall exhibition area of 20,000 m².

Finally, the winning company for Greece was **Kypriotis Bros S.A** from **Piraeus** (a customer of Cercol SpA, Mapei's subsidiary in Sassuolo) and the award was accepted by George Kypriotis.

The company, set up in 1862, had a turnover of 13 million Euros in 2005, 55% of which coming from sales of

THE LATEST TRENDS IN ITALIAN CERAMICS

New opulence, soft elegance, warm innovations and lots of technological novelties. This sums up the latest trends in ceramics seen at Cersaie 2006.

Mapei's decision to enter the world of colour with specially devoted ranges of products and tools has turned out to be a winning choice. Colour will be a key player in the ceramic field, even daring to create bold combinations but without resorting to aggressive clashes. Metals, which are now such an important part of ceramic decoration, will become softer, clearer and warmer. Wide sweeps of colour will be matched with seductive little patches to capture the light and catch the eye. Full-wall decoration reminiscent of old-fashioned brocades and drapery will also become more and more fashionable. A decisive desire to "dress up" the home, even drawing on all kinds of fabrics from timeless "Chanel" to more modern denim. Ceramics will also become more and more velvety to touch or else resemble warm leather and startling threads and yarns. Changes and developments in living have been taken as input for "Ceramic Springs", the main side exhibition at Cersaie 2006. Drawing on Mapei's help, for the supply of the installation materials, the exhibition expressed the views of the two curators, the architects Dante Donegani and Giovanni Lauda, on appreciating the environmental value and respecting the nature. There was also a very interesting interpretation of "wellness" and, in particular, how the bathroom has developed from being an essentially functional space into a "complex" space devoted to psycho-physical well-being. The installation drew on water and sound and made extensive use of made in Italy ceramics and furnishing. The exhibition was divided into five theme areas: Land and Territories, Nature as a Model, Patterns, Surfaces in Motion and New Modularities, which correspond, as the architects have themselves underlined, to "aesthetic and also strategic concepts regarding innovations in ceramic products and bathroom furnishing. The layout was designed along a very clean-cut modernist line, deliberately avoiding hierarchies".

5° MAPEI REFERENCE GRAND PRIX

The Prize-giving Evening

Once again this year the prize-giving ceremony for the 5th edition of the **Mapei Reference Grand Prix** was held in conjunction with Cersaie.

For the second year in a row the gala evening – attended by all the Mapei Group's technical-commercial workforce – was held in the striking setting of Re Enzo's medieval castle in Bologna city centre.

To underline the importance of the event and attract attention to the important award-winning works, Realtà Mapei International produced a special supplement (the poster enclosed in this issue), listing the main jobs and figures and providing photos of the prize winners in each category.

We would like to point out that the **Mapei Reference Grand Prix** is a competition open to all the Group's subsidiaries intended to award prizes to best projects using Mapei products or products of other companies belonging to the Group.

There is still time to apply for the 6th edition of **Mapei Reference Grand Prix**: the documentation must be sent to the Mapei Marketing Department by 31st August 2007.





GROWING BY INNOVATION

A Summary of the Speech by Giorgio Squinzi at the Cersaie International Press Conferences

As already mentioned in the previous pages, the traditional Cersaie International Press Conference was held on Wednesday 27th of September in the Sala Absidale of the Santa Lucia Conference Hall in Bologna. Journalists from all over the world took part at the event during the second day of the 24th edition of the International Exhibition of Ceramic Tile and Bathroom Furnishing.

Giorgio Squinzi, CEO of Mapei Group, was one of the speakers. He chose this occasion to introduce Mapei and to highlight the strong points determining its growing success all around the world.

"Growing by Innovation": a particularly significant title for the speech given by Giorgio Squinzi, which immediately sums up and spells out quite clearly what is behind the impressive performance of the entire Group.

According to Squinzi, "Mapei's secret is that we never stand still, but we keep on innovating". A kind of perpetual motion, aimed at continuous product improvement which, as a direct result, drives a mechanism of positive tension felt through the multitude of components in the entire company structure.

By underlining what an important role the ceramic tiles sector plays in Mapei, Squinzi highlighted another characteristic which is typical of Mapei. He pointed out that Company is not so much committed to manufacture simple products, but rather aims to develop and perfect Systems able to solve the most varied range of problems encountered when laying ceramic tiles.

Squinzi then went immediately into depth regarding this concept, by introducing the first range of solutions Mapei developed to meet specific requirements: that is, **Waterproofing Systems**.

One of the leading products in this range is MAPELASTIC, the well-known two-component cementitious mortar for protecting and waterproofing concrete surfaces, swimming

pools, bathrooms and balconies.

Equally well known, and just as widely used, are MAPEGUM WPS (fast-drying, flexible liquid membrane for interior waterproofing applications) and MAPEBAND (rubber-coated polyester tape for waterproofing expansion joints in critical areas in both interiors and exteriors).

This is a complete, integrated system which is complemented by special adhesives, such as KERAFLEX (high-performance cementitious adhesive, with no vertical slip and extended open time, for ceramic tiles and stone material) and ELASTORAPID (two-component, highly deformable, high performance cementitious adhesive, with no vertical slip and extended open time); grouts for joints, such as ULTRACOLOR PLUS (high performance, anti-efflorescence, polymer-modified, fast setting and drying grout for joints from 2 to 20 mm, with DropEffect® and anti-mould with BioBlock® technology); sealants, such as MAPESIL AC (solvent-free, acetic-crosslinking mildew-resistant silicone sealant, available in 26 different colours and transparent).

The second group of Mapei Systems illustrated by Giorgio Squinzi during his speech were the **Systems for Reducing Noise Impact**.

Mapei also has a technologically advanced solution for this problem: MAPEFONIC SYSTEM, a complete minimal thickness sound control system with compact dimensions. It is used to isolate noise caused by foot traffic and impact and may be applied on existing ceramic tile, stone material, PVC and wooden floors as well as on reinforced concrete slabs, concrete block and timber substrates.

This system includes five products:

- MAPEFONIC STRIP – self-adhesive tape to be placed around the sides of the floor and, where present, around columns to prevent sound transmission;
- MAPEFONIC PAD – bitumen filled acoustic tiles (500x500x11.5 mm) with fibreglass reinforcing and a backing consisting of a composite cushion;



Waterproofing Systems



Systems for Reducing Noise Impact



Rapid Systems

- MAPEFONIC GLUE – acrylic adhesive in water dispersion for installing MAPEFONIC PAD;
- MAPEFONIC MORTAR – grey fast-setting, deformable cementitious adhesive for laying ceramic tiles and moisture-stable stone materials;
- MAPEFONIC GROUT – fast-setting and drying, high performance, anti-efflorescence grout for joints from 2 to 20 mm wide.

Mapei adhesives ULTRAFLEX S2 MONO and ULTRAFLEX S2 QUICK can be used in combination with MAPEFONIC SYSTEM.

Mapei has also developed and perfected **Crack-suppression Systems**. This is the so-called MAPETEX SYSTEM, a completely removable system for laying ceramic tiles and stone material, made up of MAPETEX non-woven fabric and MAPETEX STRIP adhesive strip.

MAPETEX may be used in combination with MAPETEX STRIP as a removable base for the installation of new floor and wall coverings on chipboard, wood, PVC, linoleum, ceramic tiles and stone material substrates, on cementitious and underfloor heating installations, as well as for quickly replacing tiles on exhibition panels without damaging them.

When MAPETEX is bonded with KERAQUICK+LATEX PLUS, it may also be used as an anti-fracture and removable membrane for bonding floors on uncured cementitious screeds and for installing ceramic tiles and stone material, also diagonally, without the need of respecting fraction joints.

Squinzi also illustrated Mapei's **Rapid Systems** for laying ceramic tiles. These are intended to meet special requirements, for example the need to quickly put floors into service in areas such as airports, supermarkets or refrigeration units. In these cases, Mapei products guarantees that this requirement is completely fulfilled, from the preparation of the substrate right up to the final grouting of the tile joints. For instance, MAPECEM PRONTO is a pre-blended, ready-to-use quick-setting and drying (24 hours) controlled-shrinkage mortar for screeds, while ULTRAPLAN is proposed as an ultra-fast hardening, self-levelling smoothing compound for thicknesses of 1-10 mm per layer. There is also NIVORAPID ultra-fast drying (4-6 hours), thixotropic cementitious levelling mortar, which may also be applied on vertical surfaces in thicknesses of 3-20 mm. For bonding purposes, Mapei offers products such as ELASTORAPID or GRANIRAPID fast-setting and hydration, two-component cementitious adhesives for ceramics and natural and artificial stone (thicknesses of up to 10 mm). For grouting the tile joints, Mapei proposes the aforementioned ULTRACOLOR PLUS, one of the Company's most advanced products.

The **Deformable Systems** for laying ceramic tiles was the fifth group of Mapei Systems which Squinzi illustrated.

This includes a series of products which guarantees correct, efficient laying, even in particularly difficult areas. Façades of buildings or slab floors are typical examples. They are subject to particularly high thermal gradients, and so require the use of special highly deformable products. Apart from the high-performance, highly-deformable adhesives, such as the technologically advanced ULTRAFLEX S2 MONO and the more recently developed ULTRAFLEX S2 QUICK (they both are single component cementitious adhesives with an extremely high yield and very easy to apply by trowel), Mapei also proposes flexible silicone and polyurethane sealants for expansion joints, such as MAPESIL LM (one-component, neutral crosslinking silicone sealant with a low modulus of elasticity, for joints subject to movements of up to 25% of their initial size) and MAPEFLEX PU45, the new one-component, fast-hardening, thixotropic polyurethane sealant with a high modulus of elasticity.

The final point mentioned by Mapei's CEO in his speech was another problem area, for which Mapei has found a valid solution: **Systems for Floors Subject to Heavy, Intense Traffic**.

This problem refers to environments such as airports, department stores, hospitals, factories and all those areas where simply guaranteeing high performance levels of just the adhesives and tiles is not enough; the package must include all that is required to complete the flooring system. For the preparation of substrates, the products available within this system are either MAPECEM PRONTO or TOPCEM PRONTO, both guaranteeing high mechanical strength and short waiting times before laying the floor covering. Amongst the high performance adhesives available (all ensuring excellent bonding strength and deformability), there is the aforementioned ELASTORAPID and KERAFLEX MAXI, a cementitious adhesive with no vertical slip, for thicknesses of 3-15 mm.

In these kinds of applications careful attention must also be paid to the tile joints which have to meet stringent requirements regarding hygiene and ease of cleaning. For example, KERAPOXY two-component, acid-resistant epoxy grout is an excellent solution when grouting tile joints of at least 3 mm, especially in foodstuff industries, thermal swimming pools, tanks containing aggressive chemicals, kitchen worktops, hospitals, supermarkets and in all those environments where total hygiene is a must, combined with high resistance to the most aggressive chemical agents.

In concluding his speech, Giorgio Squinzi let the numbers do the talking; in the ceramic tile-laying sector alone, as far as Mapei are concerned, the figures are pretty impressive: more than 500,000,000 m² of tiles laid using 2,000,000 tonnes of Mapei products.

DM



Deformable Systems



Crack-suppression Systems



Systems for Floors Subject to Heavy, Intense Traffic.

MAPEI

41st
MARMOMACC

extended open time and very high yield) and its "fast" counterpart, ULTRAFLEX S2 QUICK. The latter is a new product developed by the

Mapei Research & Development Laboratories, designed to cater for even the most stringent fast-setting requirements, so that ceramic tiles and stone material (provided it is stable and non-absorbent) can be installed immediately. The product can also help to reduce the noise caused by

appears to be showing significant signs of recovery.

The stated goals include upgrading the image of marble-stone products: no longer cold and static but light and dynamic objects, capable of entering homes on a consumer basis. The aim is to develop a new culture around stone, so as to involve firms, designers and especially the final consumers who, with their purchases, back the industry's manufacturing operations.

Mapei: Two Sides of Innovation

Pavilion 6 in the middle of the trade fair district hosted the 116 m² Mapei stand. Set on a corner and open on the two long sides, the exhibition space was one of the most popular over the four days of trade fair.

Once again in Verona (just like in Cersaie), the striking image associated with the Company was that of the Italian National Football Team's (sponsored by Mapei) great victory at the recent World Cup finals. Behind the reception area there were huge video screens showing pictures of the goals, football-related TV adverts and programmes in which the Mapei logo and products appeared and continue to appear. This was an effective high-tech stage displaying the best of Mapei's innovative products aimed at this important part of the building industry.

Two of Mapei's cutting-edge technological adhesives really caught the eye at Marmomacc: ULTRAFLEX S2 MONO (the first one-component, highly deformable, adhesive of S2 class, with no vertical slip,

foot traffic.

Pride of place from the range of products for installing stone materials went to ELASTORAPID, a highly deformable, high-performance, fast-setting and hydration, two-component cementitious adhesive with extended open time and no vertical slip for ceramic tiles and stone material.

Attention focused on SILEXCOLOR MARMORINO, a trowelable, highly decorative, fine finished silicate mineral paste coating. It is used on indoor and outdoor surfaces when, in addition to high permeability to vapour, a highly attractive finishing (resembling old marbles) is required.

Due to the fact it is made of silicates, the product forms a single body with the substrate without altering its permeability to vapour. It is also resistant to aggressive environmental elements, such as acid rain.

Confirming Mapei's commitment to technological innovation, the key product for grouting on display was again ULTRACOLOR PLUS, a high-performance, fast setting and drying, anti-efflorescence grouts for joints from 2 to 20 mm. This product is water-repellent with DropEffect® and anti-mould with BioBlock® technology.

Marmomacc was, therefore, a successful event which Mapei took full advantage of in terms of both image and profitable contacts with all the business operators who visited the stand.

The next edition of Marmomacc will once again be held at Veronafiere from 4th to 7th October 2007.

DM

The 2006 Marmomacc event was more international than ever, confirming its status as the world's leading exhibition on marble and stone. The 41st edition of this International Exhibition of Marble, Stone and Technology, held at Veronafiere from 5th to 8th October, had 12% more foreign visitors than last year, a record overall figure of 25,000 from 112 different countries. The total number of professional operators present was 65,000 (40% foreigners), 4% more than in 2005. The rest of the facts and figures were positive too: over 1,500 exhibitors from 52 countries (+4%) over a net area of 70,000 m² (+10%). The figures highlight the exhibition's role in promoting this important industry, which in Italy can boast over 11,000 companies (and 60,000 employees) with a turnover of more than 3 billion Euros. The event also attracted 25 foreign delegations, including an official delegation from Pakistan headed by the Minister of Industry, Mr Jahangir Khan Tareen, as well as thousands of designers and architects and 15 official associations, such as the German Association of Marble and Stone Manufacturers, which attended Marmomacc for the first time bringing along a total of 180 companies. After the slowing down of business over recent years, the sector

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Installation on flooring subjected to heavy mechanical stress (warehouses, supermarkets, industrial flooring)

Installation on deformable substrates (chipboard wood, plywood, old wooden beam floors, concrete façades, roofs and floor slabs exposed to direct sunlight)

Installation on walls, also diagonally, from top to bottom without the use of spacer pegs

Extended open time with respect to other fast setting adhesives, also during summer weather

Installation of stone material that is moderately sensitive to moisture and subject to stains and efflorescence and require a fast drying adhesive

- Cementitious **C**
- High performances **2**
- Fast setting **F**
- No vertical slip **T**
- Extended open time **E**
- Highly deformable **S2**



The new two-component adhesive for ceramic tiles and stone material, classified according to EN 12004 and EN 12002 norms and CE marked

Installation in restructuring works where the flooring needs to be put in service quickly (airports, supermarkets, cold stores)



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MAPEI PRODUCTS FOR GRANITE FLOORS IN THE NEW TERMINAL 1 OF HAMBURG AIRPORT

10 million passengers a year make the international Hamburg Airport the 5th biggest among the German airports and first in Northern Germany. The airport was built in 1911 on an area of about 44 hectares. Since then, this area has grown tenfold, with 53 aircrafts taking off or landing at the same time.

The city of Hamburg expects that there will be a considerable increase in the number of passengers in the future. That is why they launched a project, called HAM 21, aimed at extending and modernising the airport. Works, which are still going on, also included the construction of a new terminal which was completed in May 2005. 42,000 m² of concrete and 6,800 tons of steel were used for a construction which can now host 8 million passengers a year.

Inside terminal 1 natural stone floorings were laid on about 15,000 m² of screeds, 6,000 m² of which are heated using hot water panels. When choosing the covering materials, the performances of the concrete flooring in the existing terminal (n. 2) were taken into account. Since the latter shows clear signs of wear, cracks and flaking, particular attention was paid to the covering's high resistance to abrasion and high compressive and bending strength, in order to guarantee the flooring's durability.

Thanks to their mineral composition (mainly very hard quartz and feldspar) and their pleasant aesthetic appearance, natural stones are especially suitable for applications in highly frequented environments subject to intense traffic.

Therefore, pink granite slabs from the



1

USA (North Carolina), sized 60x60x3 cm and distributed as "Salisbury Pink", were chosen for the interior floorings of terminal 1.

The stone was laser-treated prior to the installation to ensure it met the R9 minimum anti-slip requirements prescribed by the German regulation BGR 181.

As for the floor on the terminal's terrace, 60x60x4 cm slabs of Chinese yellow "Padang" granite were installed on an area of 1,000 m².

The screeds' preparation and the installation of the granite floor coverings in both areas were carried out by the consortium ARGE Naturwerkstein, which includes Naturstein Billen GmbH from Wolfsburg and Zeidler & Wimmel Natursteinindustrie from Hannover, who decided to use several Mapei solutions.

Photo 1.

The floors of the check-in area in the new terminal 1 sport Salisbury Pink granite slabs.

Photo 2.

Installing 60x60x3 cm granite slabs in the check-in area with Mapestone 1.



2

Photo 3. Padang yellow granite slabs were laid on the terrace's floor with a drainage mortar formulated with the hydraulic binder Mapecem. On the back of the slabs, Granirapid two-component cementitious adhesive was also applied.



The Preparation of Substrates in the Check-in Area

The substrates in the check-in area were made of calcium sulphate (in both the unheated and the heated areas) to take advantage of these materials' low-stress shrinkage. So it was possible to increase the bay sizes of the screed to 100 m², (whereas the maximum bay size of a cementitious screed is usually 40 m²) and to reduce the cost for the systems for sealing the expansion joints. However, the thickness of the screed had to be increased to 12 cm, in order to ensure good resistance to the final loads and mechanical stress. For a proper installation of floor coverings, the residual humidity of a calcium sulphate screed must be <0.3 % for heated screeds and <0.5 % for unheated substrates. If these residual humidity values are exceeded when the installation of the covering material is carried out, humidity might accumulate below the covering. This might compromise the screed's stability and jeopardize the covering's final performances.

In this case, proper drying of the screed was ensured by the heating system enclosed in the floors. The drying of the unheated screed, on the other hand, required intense ventilation of the areas, combined with proper heating.

Even after several months, some of the screed sections still featured an inadequate rate of residual humidity. This required a special solution: waterproofing polyethylene membranes were applied on these sections of the substrates to ensure safe installation of the natural stone coverings. Before laying the coverings, the level of residual humidity in the screed was also measured with a carbide hygrometer.

As the screed's surface featured a

clearly visible sinter layer, devoid of the required mechanical strengths, this had to be removed by shot-blasting. Since after this operation the screed's surfaces featured an insufficient rate of resistance to abrasion, they were treated with PRIMER MF*, a solvent-free two-component product based on epoxy resin with low viscosity. Moreover, the screeds were completely sanded with 0.6-1.2 mm grain-sized quartz sand, in order to guarantee good bonding.

While stone material is only installed on almost completely dry calcium sulphate screeds, humidity can penetrate into the substrates from the upper surface through the joints of the covering, especially during the daily cleaning of the floors. This might cause loss of stability of the screeds and detachments of the covering material. Therefore special attention had to be paid to the protection of the screed's surface from humidity. The aforementioned PRIMER MF* epoxy resin primer was again applied, this time as an additional protective treatment against humidity.

Installing the Floor Covering in the Check-in Area

As well as selecting the correct kind of natural stone, the choice of which adhesive to use also played a crucial

role in ensuring the floor covering's durability. This choice mostly took into account the adhesive's compressive strength, bonding strength, resistance to the staining of the slab, fast-hardening and short waiting times before the flooring can be put into use.

As for the installation of the Salisbury Pink slabs in the check-in area, the use of the high performance mortar MAPESTONE 1* (which Mapei's local subsidiaries distribute on the German, Austrian and Swiss markets) allowed the irregularities of the natural stone slabs and the substrates' unevenness to be well compensated for.

Beside guaranteeing fast hardening and drying times (so that the floors could be set to light-foot traffic after only 4-5 hours), MAPESTONE 1* also gives the professional installer the possibility to adjust the stone slab by "tapping" after bedding it into the mortar.

The expansion joints in the covering were set according to the joints of the screed. In the heated areas additional expansion joints were arranged at 5 m intervals in order to reduce the deformations caused by temperature.

When grouting the floor joints, the installation company chose the traditional method with quartz sand and



3

cement to make "silent" joints. Since there was no gap between the slabs and the joints, the noise caused by the traffic on the floor could be minimized.

The Preparation of the Terrace's Substrates

The installation of the natural stone slabs on the terraces was carried out after the preparation of a 10 cm thick substrate. Taking into account how the weather affects the final surface, the project designers decided to make a drainage screed allowing for quick drainage of stagnant water, thus reducing the risks of damages due to freeze-thaw cycles, as well as of stains in the natural stone covering. In order to reduce the load, they also decided that the screed had to be lightweight and made of expanded clay featuring a 4-8 mm diameter. Mapei technicians suggested the use of MAPECEM* special fast-setting and drying hydraulic binder which guarantees the mortar's good workability and the screed's proper hardening even in unfavourable weather conditions. The mortar prepared with MAPECEM* and expanded clay was tested by the Institute for Materials Analysis of the Darmstadt University and the Technical Institute for Building and Environment in Greven (Germany).

The test results were consistently positive regarding the mortar's mechanical strength and drainage properties.

Therefore, the substrates' preparation included laying a special drainage membrane and mixing a drainage mortar made of expanded clay and MAPECEM* (250 kg/m²).

Thanks to both the screed's low shrinkage rate and the open joints in the covering, there was no need for expansion joints in the screed.

Installing the Floor Covering on the Terrace

Regarding the terrace's floorings, the project designers decided to lay the Padang yellow granite slabs in the drainage mortar using the "fresh-on-fresh" installation method. After installing a waterproofing membrane on the surfaces, the mortar was mixed with expanded clay and MAPECEM*, as described above.

Due to the limited contents of cementitious matrix, drainage mortars feature low adhesion values. In this case, proper adhesion of the floor covering was ensured by applying GRANIRAPID* two-component cementitious adhesive on the back of the slabs before laying them on the fresh drainage mortar.

The 6 mm wide joints of the floor covering were not sealed to guarantee proper water drainage and avoid the need of further expansion joints.

Ready to Leave

The co-operation among the installation company, the Mapei Technical Service Department and the project designers helped to successfully deal with and solve the problems met during the work carried out on this project. The perfect installation of the floorings was completed in time, which allowed the new terminal of the Hamburg airport to be completed before the beginning of the summer season.



Our thanks go to "Realta Mapei" (n. 4), the in-house magazine published by Mapei's German, Austrian and Swiss subsidiaries, from which this article was taken.



*Mapei Products:

the products referred to in this article belong to the "Products for Ceramic Tiles and Stone Materials" range. The technical data sheets are available on the "Mapei Global Infonet" CD/DVD or at the web site: www.mapei.com.



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

Granirapid (C2F): two-component high performance, fast-setting and hydrating cementitious adhesive.

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

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

Mapecem: special fast-setting and drying (24 hours) hydraulic binder for shrinkage-compensated screeds.

Primer MF: solvent free, two-component epoxy primer to be used as an adhesion promoter for products from the Mapeifloor range and to consolidate and waterproof cementitious substrates.

TECHNICAL DATA

Hamburg Airport, Terminal 1, Germany

Work: installing natural stone floorings in the check-in area and on the terrace

Years: 2001-2005

Customer: Flughafen Hamburg GmbH

Project: Gerkan Marg & Partner, Hamburg

Works Management: Bernd Wienert, Zeidler & Wimmel Natursteinindustrie GmbH & Co. KG, Hannover (Germany)

Installation Companies: ARGE Naturwerkstein (Hamburg) including Naturstein Billen GmbH (Wolfsburg) and Zeidler & Wimmel Natursteinindustrie GmbH & Co.

Installation Materials: Salisbury Pink granite in the check-in areas and Padang yellow granite on the terrace

Mapei Co-ordination: Walter Mauer, Detlev Krüger and Andreas Braun, Mapei GmbH (Germany).



CELEBRATIONS FOR THE "C"

What a great success! The second edition of Mapei Day held on 15th-16th July 2006 attracted twice as many people as in 2005. This was a truly remarkable event and an unforgettable experience for everybody who was there. This clearly comes out in the warm and emotional tone of the first press release issued by Co-Ver Mapei just a few hours after it ended, which reads as follows: "Yesterday 3,000 sportsmen and sportswomen enjoyed a day they will long remember and cherish; a long coloured procession of runners and cyclists climbed the Stelvio on a gorgeous Sunday, as the great fatigue and effort was made more bearable by the wonderful views and emotions that only high mountains can offer. Mapei Day really was a wonderful festival of sport and all those who reached the top of this legendary pass, either on foot or bike, were left with the feeling they had experienced something truly unique.

"An experience of yesteryear" just about sums up the intensity of what was experienced over the two days. Climbing the Stelvio, on foot or by bike, really is a challenge reminiscent of times gone by, as is the enchanting atmosphere of the Upper Valtellina, which over two spectacular sunny days showed everybody just what a heart-warming place the mountains are. And finally Bormio, or rather the County of Bormio, is also something from days gone by. What Glicerio Longa wrote in "Usi e Costumi del Bormiese" (Customs and Traditions of the Bormio Area) in 1912 is just as pertinent today as it was then: "An old and extremely important place for its topographical location, Bormio has kept its old character and appearance, crystallising the forms, uses and feelings of the past. We still have traces of old customs, remnants of pre-Christian cults and habits dating back centuries".

The peculiar atmosphere over the two days, with the dazzling sunlight, wind rustling through the trees and mountains casting their shadows over the town in the evening, reminded us of another fabulous land. The land inhabited by the Hobbits described by Tolkien in the "Lord of the Rings": a place where nature talks to people and where the simplicity of everyday life makes even the smallest things important. A place that is inside us, where we feel at home. This is where the story of Tolkien's Ring begins (and ends), and the group of nine key characters in the tale was called the "Company of the Ring". The County of Bormio was both the starting point and the place for "returning home" for everybody involved in this



MAPEI day 2006



COMPANY OF THE "CUBES"



edition of Mapei Day. Pushing the comparison even further and bearing in mind the striking number of old Mapei jerseys people wore, we cannot help calling them the "Company of Cubes".

This was inevitably the place Mapei chose to celebrate its corporate values and spirit as effectively as possible. A very old place of ancient origins where simplicity melds with a certain international vocation and where the joy of struggling along with your friends is, as mountain tradition teaches us, a ritual strengthening of the bonds between people and giving them something to talk about around the winter fire.

Tough Sporting Days

The 2006 edition of Mapei Day was jointly devised by Mapei and the local bank Banca Popolare di Sondrio to provide the chance to enjoy some really tough sporting moments together with customers and lots of friends. In the space of just a couple of years it has become an extremely popular event attracting almost 3,000 sportsmen and women from every part of Europe, thanks partly to the resounding appeal of the famous cycling climb "Re Stelvio" stretching from Bormio to the Stelvio Pass. All week-end long Bormio was literally invaded by a colourful hoard of festive sportsmen and enthusiasts, who tried their hand at the various sports on this edition's two-day agenda.

Lots of firms and associations contributed to the great success of Mapei Day, notably the Banca Popolare di Sondrio, the Pirovano Ski University (which is located up on the Stelvio), the Unione Sportiva Bormiese (Bormio Sports Association), the Mapei Sport Service and the Bormio City Council, as well of course as Mapei. There were also plenty of technical sponsors: Bormio Terme (Bormio Thermal Baths), Colnago, Enervit, Giussani Enrico & Figli, Kia Motors, Limonta, Mic-Shimano, Santini, Winning Time.



The cyclist's jerseys and running vests for Mapei Day 2006 featured a lammergeyer, the animal symbolising Stelvio Park.



SATURDAY 15TH JULY

The programme of events of this edition was fuller than ever and even included something new: golf. Bormio Golf Club's nine-hole course, certainly one of the best mountain courses in Italy, was the setting for a fine tournament with over 40 people taking part.

Five-a-side football competition was also introduced for the first time. Starting in the morning an exciting tournament was played on the synthetic five-a-side pitch prepared by Limonta and Bormio sports ground. The skiing competition was held on the Geister slope, setting off at a height of 3,370 metres and descending 200 metres on a bright and sunny morning.

The day drew to a close with a big meal serving typical local dishes, which saw almost 1,200 people sit down and celebrate in the spacious premises of Palazzo Pentagono in Bormio.



Farewell until July 2007!

SUNDAY 16TH JULY

This was the main day of the whole event, when the running and cycling races took place against the backdrop of the famous "Strada Imperiale", the road leading to the highest mountain pass in Europe and one of the "classic" summits in the history of cycling. The athletes had to cover 21.097 km, corresponding to a

height difference of 1,533 metres and an average gradient of 7.6%, actually reaching 14% at its steepest. The day was divided into four events:

1. the "Re Stelvio" competitive cycling race: the Valtellina's classic competition that has now reached its 22nd edition;

2. the Bormio-Stelvio cycling expedition: for all those interested in tackling the 21.097 km climb at their own pace, alongside cycling champions and athletes who made the Mapei Professional Cycling Team great in the past;

3. the Bormio-Stelvio competitive running race: a half marathon unique of its kind, whose incredibly tough uphill course is made even harder by the rarefied air;

4. running race open to all: a new event for 2006, which saw lots of keen athletes running up this famous asphalt road.

Mapei Day drew to a close at 4.30 p.m. in the old city centre of Bormio. In its busy and picturesque town centre square,



Piazza Kuerc, the prize-giving ceremony took place in an extremely cheerful and merry atmosphere.

The secret to the event's triumphant success was the perfect synergy between everybody involved in its organisation, working together with great determination and creativity, embodying values like friendship and solidarity, as can be seen from the money collected for charitable institutions just before awarding the prizes.

RM



Breathe easy...

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We spend 90% of our lives indoors so Indoor Air Quality should be a primary concern for all.

At Mapei, concern for the environmental impact of our products is more than a trend; it is a fundamental part of our philosophy, corporate commitment and industrial responsibility.

Mapei leads the industry with the largest selection of ecologically friendly products available. You can be confident that the ECO™ product you choose is solvent-free, non flammable, extremely low-TVOC and low odour.

BioBlock™ technology is present in many of our premium adhesives to inhibit the growth of bacteria and mould.

Mapei's ECO range of products are approved by the following International Environmental Agencies:

- Green Label Plus from the Carpet and Rug Institute (CRI)
- LEED through the U.S. Green Building Council
- Emission EC 1 endorsed by GEV (Association for the Control of Emissions in Products for Flooring Installation)
- Green Star endorsed by Ecospecifier



Breathe easy with Mapei... leading the way in environmental excellence



Mapei Waterproofers

Mapelastic®



Application
by trowel



Application
by spraying

Two-component flexible cementitious mortar for waterproofing concrete, balconies, terraces, bathrooms and swimming pools

- It is water-resistant
- It is a barrier against aggressive substances
- It is elastic
- It has long-term durability
- It may be used for a wide range of applications
- It may be tiled onto
- It may be painted with products from the Elastocolor system



Mapelastic® Smart



Application
by brush



Application
by roller

Two component, high flexibility cementitious membrane for waterproofing foundations, retaining walls, balconies, terraces, bathrooms and swimming pools

- It dries more quickly
- It may easily be sponged finished
- It is more elastic
- It may be painted with products from the Elastocolor system
- It is suitable for waterproofing irregular shapes
- It may be tiled onto



Mapegum® WPS



Quick-drying, flexible liquid membrane for waterproofing internal walls and floors in bathrooms, showers, kitchens and worktops before laying ceramic tiles, natural stone and mosaic

- It is quicker
- It is more elastic
- It is more resistant to alkaline water
- It is certified by various European Institutes
- It may be applied on all common substrates used in the building industry



Application
by brush



Application
by roller



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