

INTERNATIONAL

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Mapei KFT

Mapei systems go to the fair

The improvement of Dubai terminal

Le Phare

An Italian restoration for the Kremlin

MAPEI KFT



12



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Mapei on tour with The Rolling Stone page 48



Main cover photo: a new factory belonging to the Mapei Group was officially opened last autumn in Sósokút, Hungary. The opening ceremony featured a spectacular display of flag waving (article on page 4).

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www.mapei.com

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

CONQUERING THE EAST

An interview with Mapei's directing manager, Giorgio Squinzi: "We have already anticipated Brussels' decision of creating a 'Grand Europe' with the broadening of the European Union to the ex communist countries".

Europe is expanding towards the East. In 2004, another 10 Countries (Lithuania, Latvia, Estonia, the Czech Republic, Slovakia, Poland, Hungary, Slovenia, Malta, and Cyprus) will be added to the 15 that currently make up the European Union. With a particularity: the gross domestic product of these 10 Countries is equal to 45% of that of the Fifteen. In 2007 it will be the turn of Bulgaria and Romania, while no deadline has yet been fixed for starting official negotiations with Turkey. Basically, we are moving towards the creation of a "Grand Europe". A historically important event that marks the end of almost fifty years of lacerations between the western and communist areas. It was Romano Prodi, president of the European Commission, who promoted the union of the Twenty-five. To the accusations regarding the costs of the operation, Prodi answered: "Why turn down a similar project which will cost European citizens just three euros each?". The positive aspects underlined by Prodi, and then confirmed

by Mario Monti, responsible of the Competition, are above all of an economic nature. In other words: expanding the market offers the possibility of starting up the European "productive machine" in this moment of difficulty. This allows to increase consumption. On the broadening of Europe towards the east, we spoke with the directing manager of Mapei, the world-leading multi-national company that produces admixtures and chemical products for building, with 39 plants scattered in the five continents, three thousand employees and a planned turnover in 2002 of about 900 million euros.

Mr. Squinzi, first of all, an opinion on this operation wanted by Brussels...

"I believe that it's extremely positive in prospective. This enlargement is one of the few things that Europe can do today if it wants to grow economically. A unique opportunity for restarting a mechanism that at the moment is at a standstill just about everywhere. What's more, Europe can start running without having to wait for the recovery of the American economy. The broadening is therefore a historical opportunity that must be captured gradually



BROADENING THE EUROPEAN UNION TO THE EAST



The European Commission has proposed the inclusion of 10 candidate Countries in 2004: the recommendation of the European Union's executive committee opens towards the broadening of the Union at the meeting in Copenhagen in mid December.

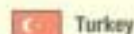
The commission will give way to:



Two other candidate countries



still have to wait: for them the objective of becoming part of the Union has been moved to 2007.



Turkey has the status of candidate, but no date has yet been indicated for the beginning of negotiations.

The picture is taken from the "Corriere della Sera" news paper, October 5, 2002, which we thank.

and intelligently in order to avoid the problems that occurred when West Germany and East Germany were united".

And is Mapei ready to face this new challenge?

"Actually, we have already been in Eastern Europe for almost ten years..."

That much?

"We were there right after the falling of the Berlin Wall, with the opening of a series of commercial subsidiaries. First in Hungary, back in 1991: four people worked there with material that was imported from nearby Austria, where at the time Mapei had its eastern-most production point. We then opened offices in the Czech Republic, and then in Poland and Russia. Now it's time for the plants, so that we can avoid the effect of transportation costs that for our products are rather high. In these countries, our presence follows our usual philosophy, the philosophy based on the global-local model".

Which means?

"We want to be national players in each single country in which we are present. Therefore Italians in Italy, Americans in the United States, Hungarians in Hungary and so on. In accordance with this strategy, in September we inaugurated a plant in Hungary, the country that so far has given us the best performance in terms of sales per capita and profitability. Hungary is basically the backbone of our presence in Eastern Europe, and is the productive platform for covering other markets such as Croatia, Romania, Slovenia and Slovakia. Six million euros have already been invested, but we plan to invest another four in order to double the plant's surface within a couple of years".

And the other plants?

"In Poland. We are building one that should be operative within the first months of 2003. It will be added to the one already present after the acquisition of Sopro GmbH, the German company that from this year will definitely influence the Mapei Group's balance. The modern Polish plant already produces cement adhesives with the Mapei brand, but will continue to operate with the Sopro brand as well. Furthermore, a couple years ago in Poland, we also purchased the Gorka Cement company, which produces alumina (refractory) cements, with about a hundred employees; it is one of the three producers in the world of this raw material which represents a key material for the Mapei Group. I would like to underline how we are particularly proud of this acquisition: we carried out no reduction in personnel, and we brought the plants to their full production capacity while generating interesting profits".

And then?

"Russia. Mapei already has a branch in Moscow but, after the acquisition of the Sopro company, we possess 50% of the Sopro Stern joint-venture. It produces cement products, though it's an activity that we are reflecting on".

Can you please explain?

"The Russian market is extremely difficult..."

Mafia, corruption, undeclared employment...

"I can add more. In Russia there is absolutely no type of legal certainty. How can a company operate in similar conditions? We are deciding on what to do".

Other plants?

"Not for the moment, although it's clear that in time they will be necessary, since Mapei invests abroad not only to decentralize activities and save on work costs, but also to access other market areas. This is why we need to produce on site. In any case, our presence in Eastern Europe is already widespread. In the Baltics, our products are guaranteed by the Norwegian Rescon Mapei company. Ukraine, Byelorussia, Romania and Bulgaria are supplied by the nearby plants. In all of these countries we are already present on the market: in all of Eastern Europe, including ex Yugoslavia, we invoice 50 million euros with a growth rate of 30%. A good result".

This means that Eastern Europe has a certain weight on the Group's turnover ...

"About 6-7%. Let's say that today the Mapei Group's revenues are achieved for one third in Italy, where in the first eight months we have obtained a 12% increase; for one third in North and South America, with a 20% turnover increase in North America; for one third in all of Europe, even though in this period Germany, in particular the Landers of the East, represents a weak point following the building crisis. The rest of the turnover is achieved in Asia, Africa and Oceania, but with a growing trend. In July, we started producing for the first time in Africa, with a Vinavil plant in Egypt".

In short, Mapei is becoming more and more international. And since you are also president of Federchimica, here is a question regarding the entire sector: has internationalization become a characteristic of the new Italian chemical industry?

"There is no precise analysis of the phenomenon. Let's say that, after the disappearing of the colossal companies of some time ago, a group of medium size or pocket-size companies is emerging. In fact, in the last ten years, the export of specialized chemistry has grown sixteen points, allowing to equalize the commercial inter-exchange of the sector, without even considering basic chemistry. Therefore, as a sector, active globalization is already a reality, while from a company's point of view it's still a phenomenon that regards the leading companies".

Alberto Mazzuca



A further step into Eastern Europe. This time into Sósút, a Hungarian town near Budapest, where a new Mapei plant has recently been opened to strengthen the Group's roots in Eastern countries. The opening ceremony officially took place on 13th September last year in the presence of the Italian Ambassador to Hungary, Giovan Battista Verderame. The building covers an area of 4,800 m², including 300 m² serving production purposes and 400 m² for offices, laboratories and other utility areas. The rest of the building is used as a warehouse.

The Group's 39th factory has already started manufacturing the planned annual production of 25 thousand tons of adhesives, levelling compounds and grouts, that will not just serve the Hungarian market but also those of other countries in Eastern Europe, such as Rumania, Slovenia, Slovakia, Croatia etc.

The Opening Ceremony

The morning began with a press conference attended by Italian and Hungarian journalists and then continued with the opening ceremony. After the traditional ribbon-cutting ceremony attended by the Italian Ambassador Giovan Battista Verderame, the Sole Director of the Mapei Group Giorgio Squinzi, and the General Manager of Mapei Kft Béla Markovich, together with the lawyer Laura Squinzi, there was a spectacular flag-waving performance as the Mapei banner was raised with a fanfare playing. After the local parish priest blessed the event, the factory gates opened to welcome over 700 guests: the Mayor of Sósút, János Kummer, together with other local authorities, clients, builders, designers and journalists. As the high-tech lights were gradually turned up on the pitch-black premises, the sophisticated production plant handling everything from mixing to packing was



The Hungarian subsidiary gets stronger thanks to a new plant. It will produce 25 thousand metric tons of product per year.

slowly revealed. The automatic palletisation plant carried on conveying colourful bags of adhesives and grouts manufactured on-the-spot all day long. The guests then took their places at the tables to enjoy a typical local meal and watch the entertainment. The famous local sand-artist, Ferenc Cako, certainly caught the eye as he brought sand to life by creating striking figures. The show was supposed to emphasise the close connection between local production and sand as the key raw material.

A Strategic Choice

Interviewed by the journalists attending the event, Mapei's Sole Director Giorgio Squinzi pointed out that: "Our turnover in this country is about 11 million Euros out of a total of about 50 million for the whole of Eastern Europe.

We have a yearly growth rate of 30%. We have invested six million Euros in our plant in Sósút, in addition to our warehouses and business offices in Budaörs that have been in operation since 1991.

There are also plans to build four more in a couple of years to double the surface area available."

The Group certainly is not alone in investing in a country which the ambassador Verderame described as "the aircraft carrier of the East."

And this must be true since other major groups (Metro, Ikea, Auchan, Benetton, MediaWorld and McDonald's) have all set up shop in a nation which is a candidate to join the European Union in 2004.

Photo 1. The new plant in Sósút on the day of the inauguration.

Photo 2. The opening ceremony of the plant started with the traditional cutting of the ribbon. From the left: Béla Markovich, Laura Squinzi, Giorgio Squinzi and Giovan Battista Verderame.

Photo 3. From powder to the colored packaging: the production plant was operative for the entire day.

Photo 4. The day was full of spectacles and musical entertainment.

Photo 5. The table of presenters at the press conference that gave way to the inauguration. From the left: Béla Markovich, Giorgio Squinzi, Tamas Kopacz and Sereg István.



Ten Years' Growth

"The firm was first established on 1st April 1991 and came into business on 1st September with four members of staff (general manager, salesman, director, warehouse manager) working in rented offices in Budaörs," so Béla Markovich, the General Manager of Mapei Kft, told us. "The first year's turnover was modest: 24 million HUF.

The company started to expand in 1993, reaching sales of 120 million HUF."

"In 1996 we were already in a position to buy a plot of land off the local council - he went on to say - and launch our plans to build an office building and warehouse. We moved into the premises that same year, 1,800 m² of offices and 800 m² of warehouse space. Our staff increased to 17 and our turnover hit 610 million HUF. By 2001 our premises were already too small and had to be extended. Mapei Kft financed this entire investment project with its own money. By the end of 2001 the company turnover had reached over 2 billion HUF and it now employed 41 members of staff, eventually rising to 50 in 2002. Production work was then set up, at the same time boosting sales, financial operations and marketing from the point of view of both staff and equipment."

Customers First

The Production Manger, Tamas Kopacz, and Sales Manager, Sereg István, provided a more detailed outline of Mapei's business policy and its everyday relations with customers.

"Mapei's customer business policy has various targets: to more effectively meet the needs of people using chemical products in the building industry (companies manufacturing and laying materials, concrete manufacturers, building firms) and hold onto its customers (customer fidelity); to back-up design work with constant customer service; and to cover 30% of the ceramics market with two years." "To reach these targets - Kopacz concluded by saying - we need a smooth-running plant, a well defined and documented organisation ensuring the company runs more efficiently all the time."

Mapei Kft was the first of all Hungarian firms in the sector to have its Quality System certified in accordance with ISO 9002 standards in August 1998 and ISO 9001:2000 in June 2002. Mapei Kft supports technical colleges, institutes and universities and is a member of various Hungarian business and commercial associations and organisations, such as the Chemical Materials Division of the Building Materials Association, the Hungarian Concrete Association, the Hungarian Building Insulation Association, and the Hungarian Bathroom Association.



The Mapei Kft Production Plant, Hungary

Location: Söskút
Project set under way in: 1999
Opening ceremony: 13th September 2002
Overall area: 20,000 m², including 4,800 m² of built-on land (warehouse for raw materials and finished products, production plant, offices, quality control laboratory and service areas)
Production capacity of the powders plant: 25,000 tons-a-year during each 8-hour shift
Production: powdered adhesives for ceramics, grouts, smoothing and self-levelling compounds.



Mapei's presence in Eastern Europe



As Giorgio Squinzi underlined in the interview on the previous pages, Eastern Europe covers a fundamental role in the Mapei Group's internationalization strategy.

The map shows Mapei's commercial and productive organization in Hungary, the Czech Republic, Poland, Russia, Slovenia and Slovakia. Also part of the Mapei Group, in Eastern Europe we find the subsidiary Sopro company (Poland and Russia) and the Gorka company, which produces alumina cement in Poland. Thanks to Mapei's capillary presence in these countries, its products for installing ceramic and all types of flooring, and its chemical products for building, are distributed and used in all of the countries of Eastern Europe. On this page we present a brief summary of where Mapei products were used.



1. LARGE COVERED MARKET BUDAPEST, HUNGARY

PRODUCTS: PRIMER G, MAPELASTIC, KERABOND+ISOLASTIC, KERACOLOR, MAPEFLEX PU 21, MAPESIL AC
MATERIAL INSTALLED: GRES

2. AQUAPARK SOPOT SOPOT, POLAND

PRODUCTS: MAPEFER, MAPEFILL, GRANIRAPID, MAPELASTIC, KERAFLEX, KERAPOXY, ULTRACOLOR, MAPESIL AC, MAPEFLEX PU 21, MAPEFLEX PU 30, MAPEBAND, KERANET
MATERIAL INSTALLED: VARIOUS TYPES OF CERAMIC

3. OLD CISTERN HOUSE BRATISLAVA, SLOVAKIA

PRODUCTS: MAPELASTIC, PLANO 3, PRIMER G, STABILCEM, TOPCEM, ULTRACOLOR, KERALASTIC, KERAFLEX, MAPEFER
MATERIAL INSTALLED: PORCELAIN TILES

4. ART FACULTIES OF PALACKY UNIVERSITY OLOMUC, CZECH REPUBLIC

PRODUCTS: MAPELASTIC, KERABOND+ISOLASTIC, EPORIP, PRIMER G, MAPEGUM, ULTRACOLOR, MAPESIL AC
MATERIAL INSTALLED: GRES

5. GRAND PALACE OF THE KREMLIN MOSCOW, RUSSIA

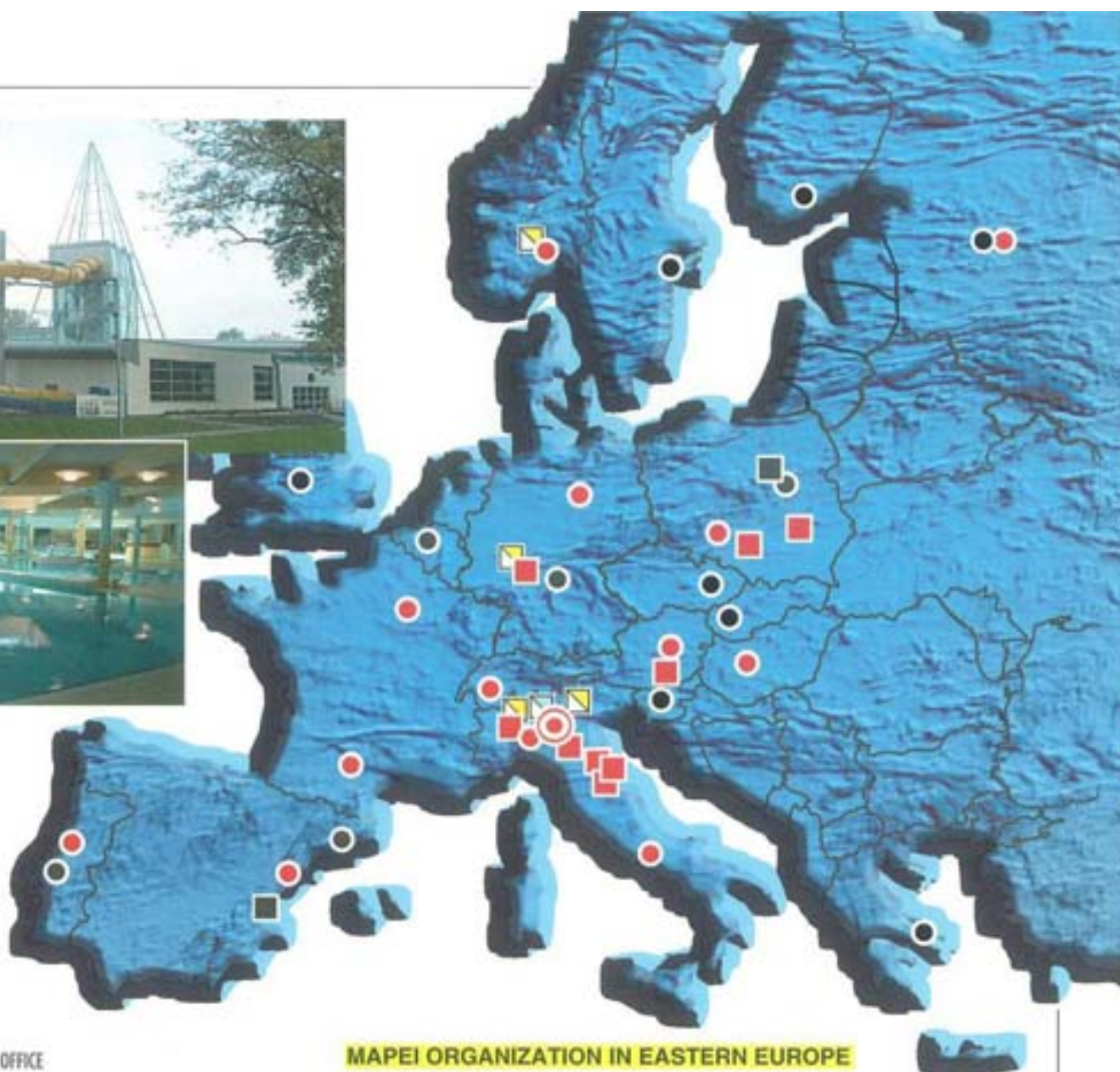
PRODUCTS: LIGNOBOND, NIVORAPID, PRIMER EP
MATERIAL INSTALLED: INLAID WOOD FLOORING



6. IDROCENTRALE DRAVOGRAD - SLOVENIA

PRODUCTS: EPOJET, ADESILEX PG1, MAPEFER, MAPEGROUT T60, IDROSILEX PRONTO, MAPECOAT W, MAPELASTIC, ELASTOCOLOR, ANTIPLUVIOL
INTERVENTION: RESTORATION OF THE CONCRETE FAÇADE





CENTRAL OFFICE

MAPEI MAIN OFFICES WITH FACTORIES

MAPEI COMMERCIAL BRANCH OFFICES

MAIN OFFICES WITH FACTORIES OF OTHER COMPANIES

COMMERCIAL BRANCH OFFICES OF OTHER COMPANIES

RESEARCH AND DEVELOPMENT CENTERS

RESEARCH CENTER FOR SPORT

MAPEI ORGANIZATION IN EASTERN EUROPE

ITALIA - MAPEI S.p.A. - Milan

ITALIA - MAPEI CENTRO SUD S.p.A. - Latina

ITALIA - ADESITAL S.p.A. - Fiorano (Modena)

ITALIA - VA.GA S.r.l. - Costa de' Nobili (Pavia)

ITALIA - VINAVID S.p.A. - Milan

ITALIA - CERCOL S.p.A. - Sassuolo

BENELUX - MAPEI BENELUX S.A./N.V. - Grâce-Hollogne

CESKÁ REPUBLIKA - MAPEI Sro - Olomouc

DEUTSCHLAND - MAPEI GmbH - Erlenbach

DEUTSCHLAND - DICKERHOFF SOPRO GmbH - Wiesbaden

ELADA - MAPEI HELLAS SA - Athena

ESPAÑA - IBERMAPEI S.A. - Barcelona

ESPAÑA - CERCOL IBERIA S.L. - Villarreal Castellón

FRANCE - MAPEI FRANCE S.A. - Saint Alban

GREAT BRITAIN - MAPEI U.K. Ltd. - Birmingham

MAGYARORSZÁG (HUNGARY) - MAPEI Kft - Budaörs

NORGE - RESCON MAPEI AS - Sagstua

ÖSTERREICH - MAPEI G.m.b.H. - Traismauer

ÖSTERREICH - DICKERHOFF AUSBAUPRODUKTE Ges.m.b.H. - Asten

POLSKA - MAPEI POLSKA Sp.z o.o. - Warszawa

POLSKA - GÓRKA CEMENT Sp.z o.o. - Trzebinia

POLSKA - DICKERHOFF SOPRO POLSKA Sp.z o.o. - Warszawa

PORTUGAL - LUSOMAPEI LDA - Torres Vedras

ROSSIA - MAPEI O.O.O. - Moscva

ROSSIA - STERN DICKERHOFF AUSBAUPRODUKTE AG - Moscva

SLOVENIJA - MAPEI d.o.o. - Novo Mesto

SLOVENSKÁ REPUBLIKA - MAPEI SK s.r.o. - Bratislava

SUISSE - MAPEI SUISSE S.A. - Sorens

SUOMI-FINLAND - RESCON MAPEI OY - Espoo

SVERIGE - RESCON MAPEI AB - Stockholm

6





Once again Russia has selected Italian artisan expertise for the restoration of the decorative patrimony of the sumptuous Rooms of Saint Andrew and Saint Alexander in the Grand Palace of the Kremlin.

Photo 1. A suggestive perspective from the entrance towards the throne in the Room of Saint Andrew in the Palace of the Kremlin. The geometrical schemes of the venetian carpet and of the frame, and the articulated floral drawing of the central decoration, occupy a surface of about 1,000 m².

Photo 2. The restoration of the floors required specialized labor coordinated by Italian artisans.

Photo 3. Surfacing of the Room of the Throne, or of Saint Andrew, in its final phase. In the background, the scaffolding necessary for the restoration of the wall decorations.

Photos 4, 5 and 6. In the photos, some phases of the installation, bonding and assembling of the single inlaid elements of the central drawing in the Room of Saint Andrew. NIVORAPID and LIGNOBOND were used for these operations.

An Italian restoration for the Kremlin

In spring of 1998, on occasion of the restoration of two of the most prestigious rooms of the Grand Palace of the Kremlin in Moscow, quarters of the Russian head of state, two cultures of great artistic tradition met once again: Italian and Russian. The two rooms are those of the Throne (or of Saint Andrew) and of Saint Alexander. The Room of Saint Andrew is a gala hall located on the second floor of the Kremlin, and is close to the Rooms of Saint Alexander and Saint George: their names all derive from Russian orders of chivalry. The Room of Saint Andrew was destined to the crowning of the czar, and in 1997 it was subject to an important internal restoration. The arrival of Italian architects in Russia between XV and XVI century gave way to the realization of some of the constructions inside the fortified citadel of the Kremlin, such as the embattled walls similar to those of the Sforzesco Castle of Milan, or the bell tower of Ivan the Great or still, the cathedrals of the Assumption and of the Archangel. To recover the artistic value of the Rooms of Saint Andrew and Saint Alexander, the drawings of the precious stuccowork that decorated the surroundings in the periods of greatest luxury were recovered, while the cloths were inspired by the tapestry of that time. But above all, the precious inlaid wooden floor that was destroyed during Stalin's regime was restored to these rooms. Crucial and indispensable for the project's completion was the role of the Italian

specialists who are still today unsurpassed for their artisan ability and for their knowledge of antique decorative traditions. All the main decorative elements were prepared with care: the clay and wood models of the hand-made stuccowork, representing rosettes and leaves of laurel or oak, which required the approval of an apposite commission; the cloths for covering the walls, which had to recall the same turquoise colour of the ribbon of Saint Andrew's Order, selected among the Italian production of precious moiré silks. But the most delicate and technically complex intervention was the construction of the new wooden floor, which required six months just for preparing the material. The furnishing of all types of wood and the realization of the inlaid work was commissioned to the "I Vassalletti" company of S. Giovanni Valdarno, while installation, smoothing and finishing was assigned to the MPR company of Buccinasco, which for the execution selected grouts and binders, Italian of course, from Mapei. The iconographic collections of the beginning of the century, representing the luxurious surroundings of the Grand Palace of the Kremlin, suggested the starting point for the new design of the flooring. The results were the geometrical ornaments of the fringes in the Room of the Throne, and the floral trimmings of the central area or of the large circular "carpet" of the Room of Saint Alexander, carried out with 46 different varieties of wood.





The restoration

Nothing remained of the antique floor, except for the large original beams. Restoration started from this structure to prepare the substrate fit to receive the new wooden mosaic floor.

The first operation was that of laying and mechanically fixing a new planking on the existing beams, and then proceeding with levelling the union joints between the planks using NIVORAPID*, an ultra fast-drying levelling mortar.



After obtaining substrate levelness, another perfectly regulated multi-layer substrate was positioned, and fixed to the previous one by means of dowels and LIGNOBOND*, a two-component polyurethane adhesive, totally solvent and water-free, and resistant to moulds and bacteria. LIGNOBOND*





Photo 7. The restoration of the large central inlaid work in the Room of Saint Alexander.



Photo 8. The Room of Saint Alexander: view from above of the complex inlaid rosette.

properties guarantee the union between two wooden-based materials without modifying dimensional stability. Furthermore, quick hardening allowed to proceed after just 24 hours, again with LIGNOBOND*, with the successive installation of the last preparatory layer made of 10 mm thick 'lamarquet' oak boards. In some points the 'lamarquet' was directly installed on the cement substrate which, due to its low cohesion, was treated with PRIMER EP*, a waterproofing and consolidating two-component primer.

At this point, on the degreased and smoothed oak substrate, the complex installation of the wooden mosaic began, and it required the labour of 50 Russian workers coordinated by three expert installers of the MPR company.

The first phase of the installation saw the dry positioning of the various inlaid works that arrived expressly from Italy, already partially assembled on a grid. Work proceeded with final bonding carried out with LIGNOBOND* which, thanks to its exceptional characteristics and extreme versatility, allowed the installation of different materials without the need of different adhesives.

For the Rooms of Saint Andrew and Saint Alexander, respectively of 1000 and 650 m², about 5,000 kg of product were used. The final surfacing of the flooring was meticulously done with mixtures of resins and sawdust obtained from the same wooden species of the mosaics, so that it would be consistent with the various colours of the inlaid wood.

The last finishing and protective operation was that of applying a first hand of primer, and then five layers of protective paint.

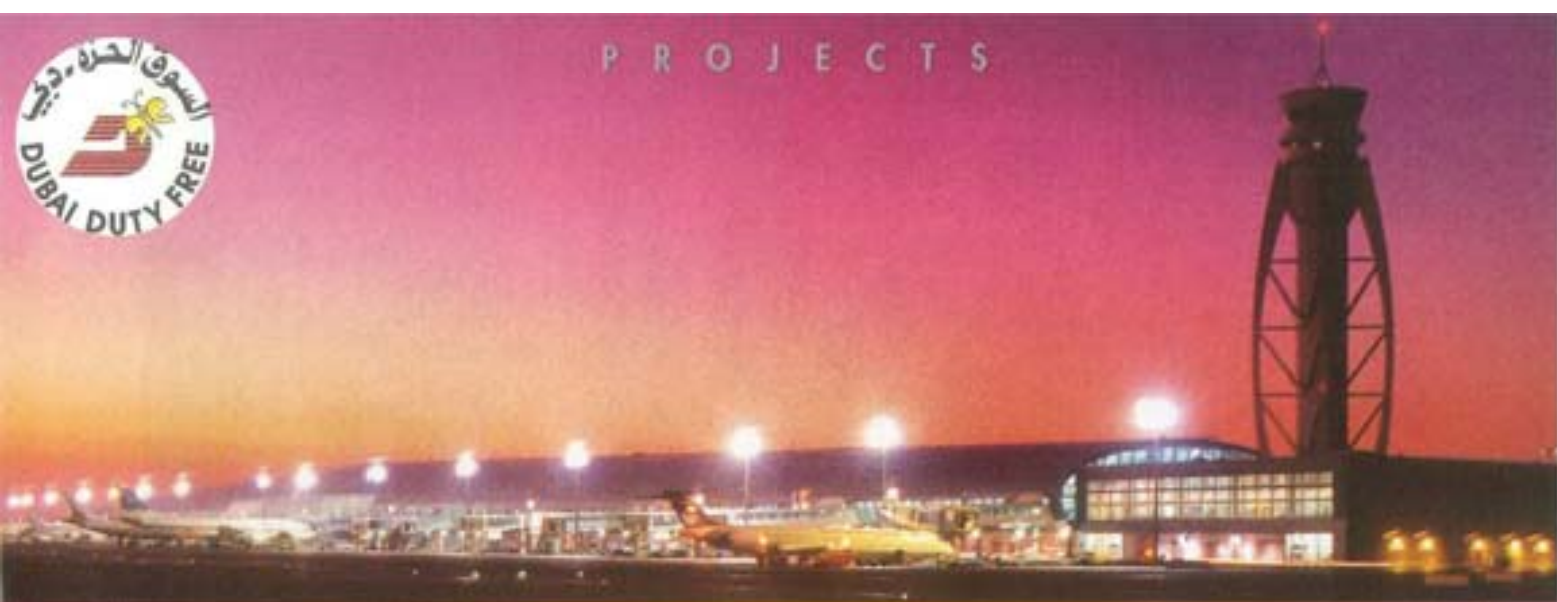
TECHNICAL DATA

Grand Palace of the Kremlin: Ex Room of the Throne, or of Saint Andrew, and the Room of Saint Alexander - Moscow (Russia)
Year of construction: 1998
Project: installation of new inlaid wooden floor
Material installed: inlaid wooden floor
Wood supplier and inlaid wood composition: "I Vassalletti di Righi Elisabetta" - S. Giovanni Valdarno (Arezzo - Italy)
Parquet installer: MPR - Buccinasco (Milan - Italy)
Mapei products: LIGNOBOND, NIVORAPID, PRIMER EP
Mapei reseller: MPR
Mapei coordinator: Davide Ottolini

"The products mentioned in this article belong to the "Products for resilient, wood and textile floor and wall coverings" line. The technical data sheets are contained in the "Mapei Global Infonet" CD and at the "www.mapei.com" website.

Lignobond: two-component polyurethane adhesive totally water and solvent-free for wooden floors
Nivorapid: ultra-fast drying (4-6 hours) thixotropic cement based levelling mortar for vertical surfaces, and thicknesses of 1 to 20 mm
Primer EP: waterproofing and consolidating two-component solvent-based epoxy primer for industrial floors.





A "Terminal" improvement in Dubai

The considerable sum of 450 million dollars was employed in the investment program for the improvement of Dubai International Airport. The construction of the new terminal, the second one, now enables the southern terminal to receive up to 22 million passengers a year, thus positioning the structure within the twenty biggest airports in the world. And, meanwhile, a third terminal is being conceived...

It is not everyday to be the first to use a new airport! This privilege was given, on April 15, 2000, to the 170 passengers of flight EK 3001 for London, of the United Arab Emirates national airline. These passengers were, as a matter of fact, the first to use the new structure of Dubai International Airport.

The second terminal – the "Sheikh Rashid Terminal" of Dubai International Airport is a masterpiece built on a total surface of 148,000 square meters. The new structure, about 800 meters long and 65 meters wide, is on five levels. More than 14,000 tons of steel were employed to build it.

It is made up of 27 gates, a huge "Duty Free" shop of 5,400 square meters (four times bigger than the existing one), 34 "VIP areas" for passengers in transit, a five star hotel with one hundred rooms, a swimming pool, an Internet Cafe, restaurants, parking spaces and many other spaces for different functions.

The connection between the two terminals is possible thanks to the construction of a long pedestrian tunnel, which permits you to comfortably walk about 300 meters which separates the two structures. The dimensions at play were exceptional, just as was the work schedule: as a matter of fact the whole construction was carried out in eighteen months only.

Sheik Ahmed Bin Rashid Al Maktoum – an authority in the United Arab Emirates and, at the same time, the President of the Civil Aviation Department - took part in the airport inauguration and was present at the take-off of the first flight. He was thus able to evaluate, with extreme satisfaction, the quality of the structure of the second Dubai International Airport building. Everything makes you think that the quality of the project and of

the work is prestigious, the result of a demanding selection of both the professional roles involved (designers, consultants and companies) as well as the materials and finishing.

This selection permitted the choosing of a reduced range of partners, among which Mapei, which all around the world, offers a wide range of building solutions, both for the small works and for the large infrastructure work like in this case.

Mapei's intervention in the construction of Sheikh Rashid Terminal involved products for the application of stone coverings, mainly natural and agglomerate marbles, and of ceramic tiles.

This was a considerable commitment because of the 148,000 square meters that make up the entire surface of the new structure.

The stone coverings

Consequently we concentrated on planning the installation of the stone covering, which was extremely rich and diversified, as one naturally expects from a building commissioned by the "oil



lords". As many as twenty-five types of natural stones were used for the new terminal. These were all of precious quality. Due to the quality and quantity of stones taken into account during the designing phase, a lot of effort was put into the installation specifications: the method described by the Tile Council of America was required (paragraph F112-98 and F113-98 with the relating references to the ANSI norms).

Because of the clear colour of the stone materials, the specifications required to prepare the mortar bed with sands that must also be clear and with white cement. The installation method required by the Tile Council of America is as follows: on the cement slab apply a uniform layer of cement grout admixed with suitable latex additives; on this still fresh layer, add a thick layer of mortar mixed with the same type of latex as mentioned above. To facilitate the perfect adhesion of stone materials, apply another layer of grout on the mortar and, on these, immediately lay the marble slabs.

Alternatively to the above mentioned procedure, the prescriptions left the companies the option of choosing to install the stone materials directly on the cured screeds using adhesives, in compliance with what is described in the ANSI A108.1B and ANSI A118.4 standards.

After many samplings, we decided to carry out the installation using both these methods, in compliance with the above mentioned specifications. The choice of using the two different methods

according to the type of material to be installed and the functional destination of the areas, enabled the optimisation of their specific qualities and - thanks to targeted and complementary choices - it contributed to reaching the ambitious goals of the project. The installation involved the entire new structure, and can be divided into six main areas: terminal connecting tunnel; ground floor (for the "Duty Free" area); ground floor (various other areas); first floor (departures); second floor (arrivals); third and fourth floor (hotel).

The installation methods

The first method was used in the tunnel, on the ground floor (apart from the "Duty-Free" area), on the first and second floor and on the levels occupied by the Hotel.

The floors of these areas were mainly made of Silver White granite size 60x60 to 100x100 cm, apart from the Guest and Hotel Area. Different types of natural stones were installed. The procedure was as follows: apply over the concrete slab an even layer of grout obtained by mixing white cement with a water solution and PLANICRETE*. In order to obtain a good adhesion between the concrete slab and the mortar bed, the latter was applied on the still fresh grout. The mortar bed was prepared with sand and cement mixed with a solution of water and PLANICRETE* in the amount necessary to obtain a mixture with the same consistency as wet ground. After the mortar was applied the slabs were laid on it (one at a time) and then beaten. These same slabs were then lifted and the above mentioned grout was applied on the mortar layer. The slabs were then again laid and beaten with a rubber hammer. The installation was carried out with three mm thick joints which were then grouted with KERACOLOR FF* mixed with FUGOLASTIC*. The expansion joints of the floors were sealed with MAPEFLEX PU21*, a polyurethane sealant which is sufficiently elastic to allow the thermal expansion movements of the floor and, at the same time, hard enough to resist wear and tear caused by the intense traffic on the airport floor.

The second system that was used for the ground floor (in the "Duty Fee" area), consisted of different types of agglomerate marbles that were installed using adhesive. These floor coverings



Photo 1. Granite floor in the departure and arrival areas.

Photo 2. Examples of the use of agglomerate marbles in the Duty-Free area. The lively colours of the coverings are distinctly highlighted.

Photo 3 and 4. The granite was installed using PLANICRETE cementitious mortar.

distinguish themselves for the lively colours (yellow, green, red, etc.) which is typical of this material. As a matter of fact agglomerate marble is a particular product obtained from marble powders mixed with resins and manufactured in shapes which are easy to install. For their installation KERACRETE* was chosen, basically because: it complies with the ANSI A118.4 standard and has a long "open time", which makes installation easier at high temperatures, as was the case here, where the works were carried out during summer months with external



temperatures reaching more than +40°C. A cementitious grout was required for grouting these floors in compliance with ANSI 118.6 standard, which set strict limits for water absorption and physical and mechanical characteristics of the hardened product. ULTRACOLOR* was chosen among the cementitious grouts of the Mapei range also to meet these requirements.

The procedure established to carry out the covering and tiling of the many and luxurious bathrooms of the hotel was specifically designed for this purpose. The supports used in these rooms were plasterboard panels. After priming the support with PRIMER G*, the 30x30 cm marble slabs were installed using ADESILEX P9*. The installation was carried out with 3 mm thick joints grouted with KERACOLOR FF* mixed with FUGOLASTIC*.

The ceramic tiles

Now that we have described the methods used for natural and agglomerate marbles, we must analyse the other



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Photo 5. Ceramic tiles were used for the airport bathrooms floor and wall coverings.

Photo 6. One moment of the installation of ceramic tiles using ADESILEX P9 and KERAPOXY.

Photo 7. A detail of the hotel rooms, walls and floor coverings were laid with marble installed on gypsum.



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operations which, apart from the wide surfaces involved (as already said, 14,000 square meters of tiles were installed), can be defined as finishing operations. This installation program involved all the levels of the new terminal for the following areas: toilets, kitchens, terminal bathrooms, checking and surveillance posts. All the ceramic tiles were 20x20 cm and installed according to the classic method which involves the use of a cementitious adhesive. In this case ADESILEX P9* was chosen, in grey and white. For the grouting KERAPOXY* was used, a two-component epoxy acid-proof mortar available in twenty-six colours and particularly suitable for this type of environment where a waterproof, easy to clean grout, that cannot be attacked by acids is needed. For the expansion joints MAPESIL AC* was used, a fungus resistant solvent-free silicon sealant with acetic cross-linking, available in twenty-six colours and in the transparent version. Ceramic tiles were also used for the hotel access corridors, where large-sized tiles (60x60 cm) were installed using KERACRETE* mixed with sand and cement. The joints were then grouted with KERACOLOR FF*.

The connecting stairs

The last work cycle involved the installation of the coverings of the many connecting stairs positioned in the new tunnel over a total surface of 2,000 square meters. The structure of these stairs is

made of metal and, in order to satisfy the need to lift the installation surface by 2 cm, Plywood panels were mechanically applied on the plate. The Silver White granite covering was directly bonded on top of them. For the installation KERALASTIC* was chosen, a two-component polyurethane adhesive designed for ceramic tiles and stone materials particularly suitable for bonding on rubber, PVC, linoleum supports and as in this case on wood panels (which were bonded on the metal structure).

The installation program

In total about 42,000 square meters of natural stone material coverings (mainly granite) were installed in the terminal, plus approximately 6,000 square meters of the "Duty Free Shop" where coloured agglomerate marbles were installed. Another 14,000 square meters were instead involved in the installation of the tiles all around the terminal: in the bathrooms, in some areas of the hotel and in checking and surveillance posts. Total involved surfaces? A program of



Photo 8. The connecting stairs were covered with granite using KERALASTIC.



Photo 9. A detail of the access corridors to the lounges and hotel: large-sized ceramic tiles (60x60) were used and installed with KERACRETE.



Photo 10. Global vision of the airport terminal.

62,000 square meters to be installed exclusively using Mapei products!

The third terminal

As mentioned in the introduction, the Sheikh Rashid Terminal is only one part

of the Dubai Airport improvement program. As a matter of fact Sheik Rashid was particularly pleased with the final quality of the new structure and, during the inauguration, he announced that, with the help of the local government, the Civil



Aviation Department intends to start a project for the third terminal which according to plans, should explicitly recall shapes and contents of the second terminal, but bigger (approximately 36-37 gates).

The Sheik said: "We intend to start the building of the third terminal within two years. The new structure will be built on the right side of the airport and we think it will be able to receive from 18 to 20 million passengers a year. We anticipate that, once the third terminal will be finished in 2018, Dubai Airport will be able to globally receive from 40 to 45 million passengers a year, becoming a reference point for the Middle East operators". Surely this is not a good period for positive forecasting on the future of airport terminals. The tragic events of September 11th actually made it difficult for the whole world system of airports and air companies.

Waiting for times of more clarity and serenity, we appreciate the effort made by the United Arab Emirates to obtain a modern, safe and comfortable airport. We also applaud those who – at the end of an ambitious project which has been put into practice – have the will and the enthusiasm to start a new challenge. The excellent results obtained for the second terminal will surely make the Customer follow a successful road again, a road followed with Mapei.

We have no doubts that in a few years, we will describe the third terminal as another "Realtà Mapei".



"The products mentioned in this article belong to the "Products for ceramic tiles and stone materials" and "Building Speciality" lines. The technical data sheets are contained in the "Mapei Global Infonet" CD, and at the "www.mapei.com" website. Mapei adhesives and grouts are compliant to EN 12004 and EN 13888 standards.

Adesilex P9 (C2TE): cement-based adhesive with high bonding strength and no vertical slip for ceramic tiles.

Fugolastic: liquid polymeric additive for Keracolor FF and GG.

Keracolor FF (CG2): cementitious grout for joints up to 6 mm.

Keracrete (C2T): synthetic rubber latex to be mixed with Keracrete powder (white or grey) or with sand and cement (up to 5 mm thick).

Keralastic (R2): two-component acid-resistant epoxy grout for joints over 3 mm. Available in 26 colours.

Mapeflex PU21: two-component self-levelling, polyurethane sealant for horizontal movement joints with maximum 5% expansion of the initial size.

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

Planicrete: synthetic rubber latex to improve the adhesion of cementitious mortars.

Primer G: synthetic resin-based water dispersion primer with low VOC content.

Ultracolor (CG2ArW): fast-setting and drying grout for 2 to 20 mm joints, available in 26 colours; does not produce efflorescenc.



TECHNICAL DATA

Dubai International Airport (Terminal 2) Dubai, United Arab Emirates

Project year: 1999

Customer: United Supplies Est

Designer: Al Habtoor

Building Company: Al Habtoor – Murray & Roberts Joint Venture (terminal), Six Construction Co. (control towers)

Marble installation company: Carrara Mid-East LLC (Duty-Free), Al Habtoor Marble LLC (all the other areas)

Ceraming laying company: Al Habtoor Murray & Roberts (bathrooms and toilets), Ceramic Tile Co. - H&R Johnson U.K. (kitchens), Summitville - U.S.A. (all the other areas).

Mapei reseller: United Supplies Est

Mapei coordinator: Anselmo Marchi and Francesco Stronati.

Materials installed	Operational area	Mapei Products
42,000 square meters of natural stone materials (marbles sizes 60x60 and 100x100 cm – mainly Silver White Granite)	• TUNNEL	PLANICRETE, KERACOLOR FF + FUGOLASTIC, MAPEFLEX PU21
	• GROUND FLOOR (apart from Duty-Free)	PLANICRETE, KERACOLOR FF + FUGOLASTIC, MAPEFLEX PU21
	• FIRST FLOOR (departures)	PLANICRETE, KERACOLOR FF + FUGOLASTIC, MAPEFLEX PU21, ADESILEX P9, PRIMER G
	• SECOND FLOOR (arrivals)	PLANICRETE, KERACOLOR FF + FUGOLASTIC, MAPEFLEX PU21
	• THIRD AND FOURTH FLOOR (hotel)	PLANICRETE, KERACOLOR FF + FUGOLASTIC, MAPEFLEX PU21, ADESILEX P9, PRIMER G
	• STAIRS	KERALASTIC
6,000 square meters of coloured agglomerate marbles (size 60x60 cm in 19 different colour tones)	• DUTY FREE (ground floor)	KERACRETE, ULTRACOLOR
14,000 square meters of ceramics (tiles size 20x20 in different colours)	• KITCHENS AND BATHROOMS (all floors)	ADESILEX P9, KERAPOXY, MAPEFIL AC
Total: 62,000 square meters of coverings installed with Mapei products		

Burj Al Arab Hotel

Seeing Dubai Airport is without doubt an important welcome for those who land in the Arab Emirates but wait until you see one of the places where you can eat and sleep for an unforgettable experience.

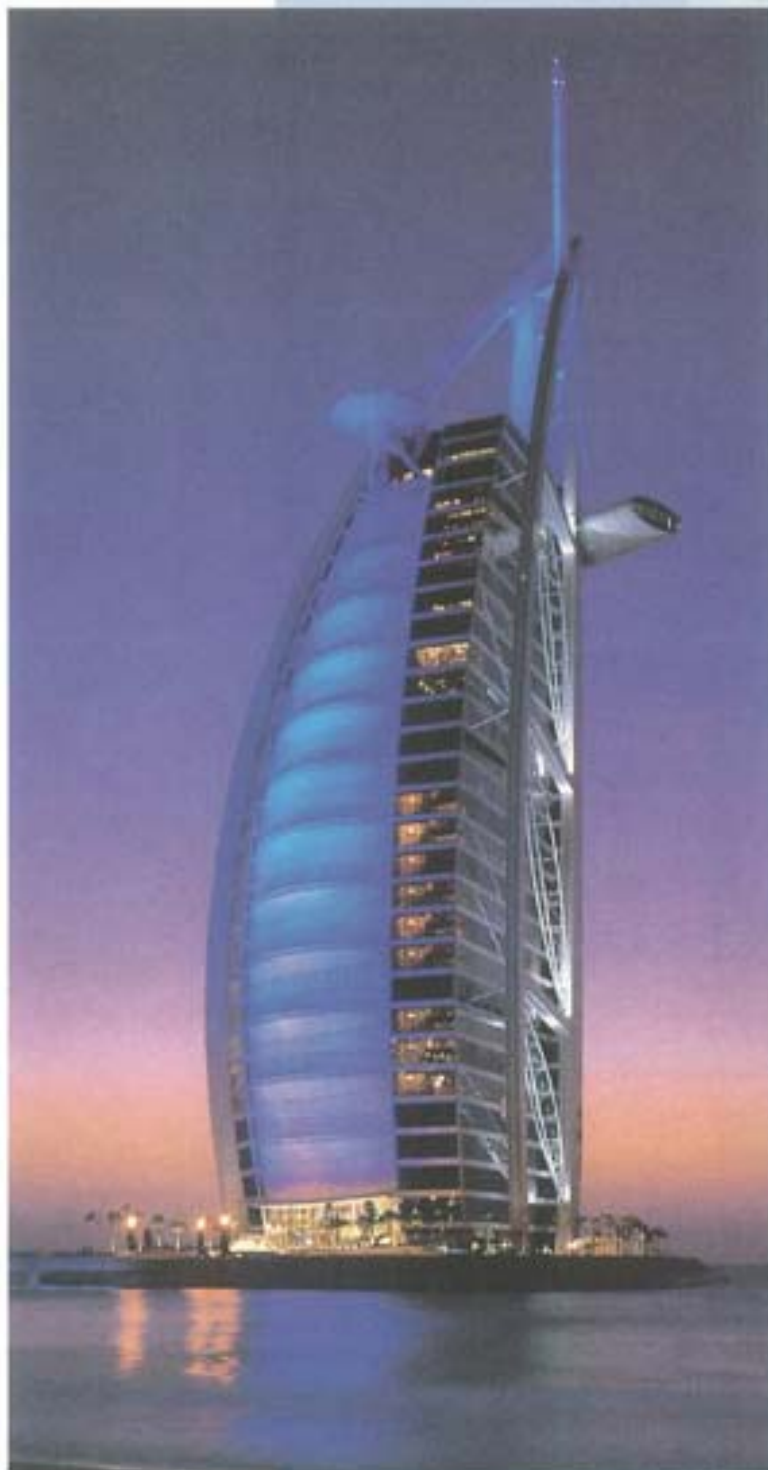
We are talking about Burj Al Arab (the "Tower of the Arabs"), one of the most spectacular hotels in the world, with its sail shape structure (made in teflon and fibre glass) and its 320 meter height.

This architectural wonder rises from the sea on a small artificial island in the Persian Gulf, which communicates with the mainland by an especially built bridge.

Inaugurated in 1999, it amazes its guests with a waterfall of gold, Carrara white marble and Azul Brazilian granite. Magnificence is everywhere: terraced waterfalls, fairytale carpets, mosaic columns, marble seats ...

You will be able to admire all this by immersing yourself in an atmosphere exalted by sounds, colours and intense eastern perfumes. And if, after a long trip, you want to relax or dine in this corner of paradise, do not

get lost in the huge suites (790 square meters each) positioned on the top of the hotel with the restaurant which is on the last floor and which comes out from the structure like a small wing (thus projecting directly on the sea). Here also the most intimate rooms (bathrooms) are perfect in the smallest detail. Also here the contribution of Mapei could not be missed. As a matter of fact the marbles were installed with KERACRETE*, a synthetic rubber latex mixed with sand and cement. ULTRACOLOR*, fast-setting and drying mortar was used for grouting 2 to 20 mm joints.



Officially inaugurated in February 2002, the old "château d'eau" of Palavas - Les - Flots, in France, known as Le Phare (the Light House) nowadays hosts a conference building and on its top, a rotating restaurant. Mapei cooperated in this complex restoration operation. This is how ...

LE PHARE

The words "château d'eau" (literally - "water castle", but in reality water tank) is used by French people to define those monolithic structures which are used in the water system. These are often characterized by an impressive architecture which is provided with halls, openings and connections and once they are no longer used for their main purpose, they can easily be transformed for other purposes.

This is exactly the case of the "château d'eau" of Palavas-Les-Flots, a small town situated in the south of France near Montpellier, in the Camargue region. This imposing structure had been left in a condition of considerable deterioration, and required a radical architectural operation and functional restoration.

The shaft, in reinforced concrete, was covered by three layers of traditional coating, applied with a trowel, having a very irregular superficial consistency. The company in charge of restoration consequently used mechanical means to remove all the layers from the structure until its level of cleanliness was judged suitable for installing the new coating.

Photo 1. Le Phare of Palavas-Les-Flots.

Photo 2. Processing one of the new openings carried out on the building shaft.

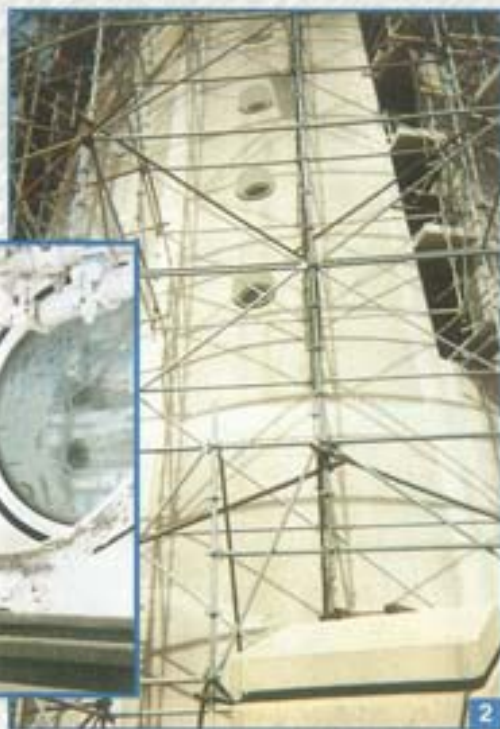


Photo 3. Application of the coating layer on the deteriorated areas with NIVOPLAN F*.

Photo 4. Application of the smoothing compound.

Photo 5. An image of the structure during works, for the execution of which an imposing scaffolding was built.

Photo 6. A detail of the building surface after the application of the final coating.

Photo 7. Le Phare renewed.



Preliminary operations

First of all a new cortex layer was applied in order to give the building back a uniform look. To reach this objective a highly specialized Mapei product was chosen: NIVOPLAN F* (special formula

produced by Mapei France in the plants of Montgru and Toulouse). The product was applied on the whole structure, with a thickness varying from 3 to 12 mm. NIVOPLAN F* is a wall levelling mortar, specifically used to solve "out of plumb" situations, to level disconnected or damaged renders, both inside and outside. This is a powder material made of cement, selected aggregate and special synthetic resins. When mixed with water, it produces a mixture that is easy to apply on vertical surfaces using a flat trowel or a screed board. After setting, it becomes a compact render, water and frost resistant and, consequently, is particularly suitable for these types of operations. Because of the nature of the building, the status of the substrate, the static and mechanical conditions and the environmental temperature, the additive considered most suitable was a synthetic rubber latex for cementitious mixtures. A very valuable Mapei product was also chosen this time: PLANICRETE*. This was added to NIVOPLAN F* at a quantity of one litre per bag (25 litres). As a matter of fact PLANICRETE* improved the mechanical characteristics of NIVOPLAN F*, its adhesion to the substrate and mainly it generally improved its plasticity and workability. PLANICRETE* also improves the mixture performances, increases the level of resistance to abrasion, impermeability and reactions to freeze/thaw cycles. All these factors must not be underestimated, since it was used in a structure which is particularly exposed to environmental factors. On those parts requiring a thicker and more consistent intervention, the company added sand to NIVOPLAN F*, up to 30%, in order to carry out layers up to 35 mm thick. All the surfaces involved were carried out in the traditional way, by manual application. Special and continuous care was put into these operations during the executive phase by Cabantous: a wrong application could have annulled all the efforts made during the designing phase to find highly technological solutions. The designing efforts were entrusted to Cabinet Barnéoud, which found the most convincing answers to the highlighted problems in Mapei products. This choice was mainly conditioned by two factors. First of all the necessity to solve the problems relating to environmental conditions: strong temperature variations and permanent wind cause the water to



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evaporate from the cement. If the mixture shrinks too quickly, this could form micro leakages. Furthermore, due to the structural movements of the reinforced concrete shaft caused by its considerable dimensions, it was necessary to absorb the deriving mechanical deformations.

A "quick" intervention.

In order to reduce the costs caused by the scaffolding of considerable dimension and volume, the company carried out the works from the top to the bottom of the building. The smoothing and the following finishing painting were carried out according to the drying times, from 10 to 12 days, before applying the final coating.

Furthermore, in some points it was necessary to carry out also a deeper intervention on the structure. In those parts where the cement was damaged, it was systematically removed. The reintegration phase involved two different tasks: the preventive treatment of the re-bars and the following application of repair mortar. The passivating treatment of the re-bars was carried out using MAPEFER*, a cementitious mortar that is able to prevent steel corrosion and to improve its performances over time.

On the other hand, for the mass integration, the company used MAPEGROUT FAST-SET*, which was applied on the deteriorated parts in order to give the structure back its original mechanical characteristics. MAPEGROUT FAST-SET* is a shrinkage-compensated,



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fibre-reinforced mortar, especially designed for the repair of concrete. It was chosen for its excellent physical and mechanical characteristics. The product proved itself suitable for this particular type of use since the MAPEGROUT FAST-SET* mixture is an easily workable mortar and its thixotropic characteristics make it possible to apply it vertically, with a thickness from 2 to 2.5 cm, without sagging.

The twenty-five "holes"

To restore the building it was necessary to create some halls inside the shaft and, consequently, to make 25 new openings. These were made using a device





equipped with a diamond disc. This technology gave very good results, enabling the achievement of very precise holes without chipping and consequently without requiring further work.

A light granulation gave the cement the level of porosity necessary for the following processing with finishing products.

The insertion of new re-bars in the frame of the openings gave a higher level of cohesion to the whole structure.

Nowadays Le Phare of Palavas-Les-Flots is a modern and original building, to whom Mapei supplied added value through reliable and economically convenient solutions.

The photos published on these pages were kindly given by OC COM (France), which we thank.

"The technical sheets of the products mentioned in his article can be found in Mapei binder n. 3 "Building Products".

The technical data sheets are contained in the "Mapei Global Infonet" CD,

and at the "www.mapei.com" website.

Mapefer: anti-rust cementitious mortar for reinforcing rods.

Mapegrout Fast-Set: controlled-shrinkage, fibre-reinforced mortar, with rapid setting and hardening for the repair of concrete.

Nivoplan F: leveling mortar for walls for smoothing concrete and cementitious renders on interiors and exteriors.

Planicrete: synthetic rubber latex for improving adhesion and mechanical strength of cementitious mortars.



TECHNICAL DATA

Le Phare, Palavas-Les-Flots (France)

Year of construction: 1942-43

Type of intervention: structural repair

Year of construction: 1997-99

Customer: Palavas-Les-Flots Town Hall

Project: Cabinet Barnéoud Pédoussaud of Montpellier

Works supervision: Véritas of Montpellier

Building company: Cabantous of Rodez

Mapei products: NIVOPLAN F, PLANICRETE,

MAPEFER, MAPEGROUT FAST-SET

Mapei reseller: Le Décor, Montpellier

Mapei coordinator: Renaud Canuyt

The "Settefonti" VIADUCT

The Milan-Rome-Naples motorway connection is one of the most important Italian public works. The maintenance interventions on the infrastructures of the Autostrada del Sole are continuous. One of these regarded the Settefonti Viaduct, located on the Bologna-Florence segment in the Apennines.

The construction of the Autostrada del Sole began in 1956. It was completed (a total length of about 800 kilometers) in only a few years, and allowed the great economical and industrial development after the second world war. The rapid intervention times, the magnitude of the operation, and the technical difficulties is encountered in the crossing of the Apennines in the Florence-Bologna segment, still today represent a boast of Italian Engineering. But through its forty years of history, the Florence-Bologna segment, about 100 kilometers long, saw its traffic grow exponentially, and far beyond the expectations of the designers of that period. This caused the early aging of the numerous structures that compose it. In fact, according to the estimates made in the fifties, motorway traffic on this segment should have grown from the initial 1,000 vehicles a day to 20,000 in the year 2000. Instead, real values are of about 43,700 vehicles a day (in the Bologna-Florence North segment), with peaks of over 80,000 vehicles near the urban area of Florence. While awaiting the completion of alternative passages for the impressive traffic in the North-South direction of

Italy (the high speed Florence-Bologna railway, as well as the "Variante di Valico" motorway), the maintenance interventions on the infrastructures of the Autostrada del Sole are being carried out according to particularly strict programs.

Structure description

The Settefonti Viaduct is located in proximity of the Apennine pass, at an altitude of about 700 meters above sea level, in a II category seismic area. It's composed of two separate roadways, with seven bays on the south lane and six on the north one, with a distance between them that varies between 13.8, 20.8, and 85 meters.

The main bays (85 meters) are composed of 3 meter high beams in pre-stressed reinforced concrete, placed at a distance of 2.8 meters from each other, and stiffened by cross beams and a 15 centimeter slab. The bays - of 25.8 meters - have beams with height reduced to 1.3 meters. The piers of the main bays are made of shafts with eight 1.1 x 1.1 meter columns, strengthened about every 9 meters with connecting cross beams.

The lower piers, of the 20.8 meter bays, have 80x60 centimeter columns. At the top of the piers of the main bays there are 13.5 meters overhangs, made of four ribs in pre-stressed reinforced concrete, with a height that varies from 3 to 5.5 meters, connected by a slab. The supports, built according to the cinematic scheme of Gerber, are equipped with neoprene devices. Though a partial restoration intervention was carried out in the seventies, the Settefonti Viaduct recently underwent an anti-seismic intervention on the elevated structures. On the occasion, some supports were replaced as well, and the deteriorated concrete near the saddles was recovered.

Photo 1. Panoramic view of the Settefonti Viaduct in the green Apennines of the Tosco-Emiliano area.

Photo 2. The picture underlines the size of one of the piers, formed by four double-pilasters joined by curbs of the viaduct, but it also shows the advanced state of the previous deterioration.

Photo 3. The particular base of the piers is evident.

Photo 4. Even the supports, the dosserets and the scaffolding, as well as the vertical load-bearing elements, underwent recovery interventions

Work details

First of all, in order not to penalize traffic flow, almost all work was carried out without occupying the roadways. This was possible thanks to the recovery of the worksite road used for the original construction. Work was carried out according to the following program:

1) preparation of the supports:

- terrain excavation until the foundations were reached;

- hydro-demolition of the deteriorated concrete of the piers, for a thickness of about 5 centimeters;

- positioning of the new Fe B 44 K steel reinforcement rods, inserted in the foundations and connected to the existing ones that emerged during the hydro-demolition.

2) Re-construction and reinforcement:

- re-covering of the piers with a 15 centimeter layer of concrete with compensated shrinkage and a value of R_{ck} resistance of 50 MPa, prepared with STABILCEM® and selected aggregates;
- MAPECURE E® was then applied to the concrete surface to protect the casting from rapid water evaporation and therefore to allow correct humid





Photo 5. Detail of the deterioration of the viaducts structures. In particular, the emerging of the rods and their corrosion are evident.



Photo 6. Where necessary, high pressure hydro-demolition interventions were carried out on the concrete for a thickness of a few centimeters.

maturing:

- protection of existing reinforcement rods, where necessary, with MAPEFER*, and successive recovery of the deteriorated concrete in proximity of the brackets, the dossierets and the saddles with MAPEGROUT T60*, a thixotropic prepacked mortar with compensated shrinkage, reinforced with an electro-welded steel grid with improved adherence (Fe B 44 K).

During the work on the brackets and the supports of the longest bay, the beams were lifted with apposite hydraulic jacks, and held in position until the completion

of the restoration operation of the dossierets and the replacement of the supports, without interrupting traffic on the lane above. A lane restriction was needed only during the interventions on some portions of the slab, which required an actual reconstruction. To minimize the effects of this intervention on the public, work went on "non-stop", even overnight, using a mixture of concrete with compensated shrinkage prepared with STABILCEM* and an appropriate addition of ANTIFREEZE S* (an accelerating chloride-free admixture for concretes prepared in cold climates). This technique allowed, in spite of the low temperatures of the Apennines, to limit the maturing cycle of the concrete within 36 hours and quickly reopen to traffic.

Tailored concrete

The most frequently used product was with no doubt



Photo 7. Detail of the consolidation and integration intervention (a new layer of concrete was applied) of the base of the viaduct piers using concrete with compensated shrinkage, carried out according to the above described procedures



Photo 8. The picture shows the detail of a portion of a structural element re-covered with a new layer of concrete; this increased the cross-section of the reinforcement rods thanks to the positioning of new elements.

Concretes prepared with STABILCEM in various proportions (350-450 kg/m³)

Aggregate		STABILCEM Dosage (kg/m ³)	Water / STABILCEM ratio	Specific Volume (kg/m ³)	Initial Slump (cm)	Rcm (20°C) MPa			
(mm)	Dosage (kg/m ³)					1 day	4 days	7 days	28 days
0 - 22	1837	456	0.36	2455	26	35.8	59.9	62.3	81.0
0 - 22	1897	405	0.38	2454	24	34	53.8	58.5	73.6
0 - 22	1957	352	0.43	2460	23	25.1	50.1	54.5	69.2


STABILCEM*, a super-fluid expanding cement binder used to obtain injection slurries, mortars and concrete; the nearly 3,000 cubic meters of concrete with compensated shrinkage used on this work site were prepared with this solution. For defining the final mixture, some preliminary studies were carried out in collaboration with the company and in accordance with the indications from the director of works. In fact, tests were carried out on various concretes prepared with different proportions of STABILCEM*, from 350 to 450 kg/m³.

Photo 9 and 10. Works on the scaffolding for locally reconstructing the slab. The concrete prepared with STABILCEM was accelerated with ANTIFREEZE S to anticipate reopening to traffic.





Photo 11. The viaduct at the completion of the recovery intervention.

The table shows the results of the research, and underlines the selected formula. It was therefore possible to determine the correct "mix design" for the concrete that would guarantee both design resistance as well as the workability and pumpability required on a work site of this importance. 

TECHNICAL DATA

Settefonti Viaduct - AI Motorway, segment FI-BO (Km. 248+383) - Italy

Project: structural restoration of the piers

Year of construction: 1956

Year of intervention: 1999/2001

Client: Società Autostrade SpA, Concessionari e Costruzione - Rome - Italy

Design: Giovanni Reggiani - S.P.E.A. Ingegneria Europea SpA, Milan

Directors of works: Lanfranco Bernardini and Giovanni Calusi - S.P.E.A. Ingegneria Europea SpA - IVth Section of Florence

Contractor: Baldassini & Tognozzi General Constructions S.p.A. - Florence; Technical director: Franco Carbone; Responsible of the worksite: Marco Baroncelli

Mapei products: STABILCEM, MAPEFER, MAPEGROUT T60, MAPECURE E, ANTIFREEZE S

Mapei coordinators: Fulvio Bianchi, Carlo Campinoti and Massimo Lombardi

* The products mentioned in this article belong to the "Building specialty" line and the "Admixtures for Concrete" line. The technical data sheets are contained in the "Mapei Global Infonet" CD and at the internet "www.mapei.com" website.

Antifreeze S: chloride-free antifreeze for cement mortar and concrete

Mapecure E: curing compound in water emulsion

Mapefer: two-component anti-rust mortar for reinforcement rods

Mapegrout T60: fiber-reinforced sulphate-resistant thixotropic mortar for the repair of concrete

Stabilcem: super-fluid expanding cement binder for injection slurries, mortars and concretes



The Birmingham Mailbox is a large complex situated in the homonymous British city. Recently, it was subject to an important restoration and functional conversion intervention, and particular attention was paid to the finishing of the bathrooms and the service rooms.

English style coverings



Situated in the centrally located Royal Mail Street, the Birmingham Mailbox was previously used as a post office. Today it has been transformed into a building with a strong architectural connotation, destined to commercial purposes in the lower levels and residential in the upper levels, with apartments characterized by luxurious finishings. The design of the apartments was particularly accurate, especially as far as bathrooms and service areas are concerned. In this article we present one of the most prestigious apartments, where the coverings of the bathrooms, different in colours and tiles, required the use of Mapei products for installation and for the coloured grouts. An important intervention, both for the strategic value of the urban re-qualification project of the Birmingham center as well as for the formal content of each single creation. The complex is situated near the Chinese district of Birmingham, and is surrounded by commercial streets that are well served by all means of transportation; it's connected to the center of the city thanks to the new street for pedestrians that starts right from the plaza built in front of the Mailbox.

The choice of the coverings

Mapei products were chosen for the installation and grouting, in the bathrooms and in the cloak-rooms, of medium and large size porcelain tiles



(330x440 mm and 350x440 mm). This type of covering was selected because of its high aesthetic content along with the performance that was required for the buyers of the apartments. The installation of wall tiles, applied on water-resistant gypsumboard panels, was done with ADESILEX P25*, a ready-to-use paste adhesive specially designed for ceramic tiles. ADESILEX P25*, ideal for elastic bonding of tile interiors of all types and on all types of traditional substrates, has the form of a viscous paste and can be easily applied vertically by trowel. The tiles, once installed, adhere immediately thanks to its excellent initial setting. In particular, the designers planned a prestigious colour scheme for the coverings (composed of high chromatic quality ceramic elements), studied case by case depending on the rooms. This required a solution for grouting the joints that was in line with the various chromatic tones designed for each single space, without interruptions due to white or dark joints. This is why ULTRACOLOR* was chosen. This grout for sealing joints, with its range of twenty-six colours, is the most complete on the market. Composed of a mixture of special hydraulic binders, graded aggregates, special polymers, additives and



Photo 1. Picture of the external façade characterized by extensive glass surfaces underlined by frames in red masonry

Photo 2. The service bathroom is characterized by the warm tones of orange tiles, installed with ADESILEX P25, and of the joints, grouted with Terracotta ULTRACOLOR.

Photos 3 and 4. For finishing the main bathroom, neutral colors were chosen, and Manhattan ULTRACOLOR and Bahama Beige MAPESIL AC were used. ADESILEX P25 was used for installation.

Photos 5 and 6. A detail and an overall picture of the bathroom, accessible from the bedroom, characterized by blue tiles. Midnight Blue ULTRACOLOR was used for the joints.



pigments, ULTRACOLOR* is a valid response to design needs not only for its wide range of colours, but also for the technical characteristics of the joints grouted with this product, which allow to effectively combine aesthetics and performance. Mixed and installed carefully following the instructions, with ULTRACOLOR* it is possible to obtain joints with uniform colours and without stains (does not produce efflorescence). Characteristics regarding installation time are also important: ULTRACOLOR* requires short waiting times both for cleaning and traffic, as well as for installing the covering. A solvent-free, acetic-crosslinking mildew-resistant silicone sealant was used for finishing. In fact, expansion and splitting joints present on walls and floors must never be sealed with ULTRACOLOR*, but with



appropriate elastic sealants, such as MAPESIL AC* used here. Available transparent or in the same range of colors as ULTRACOLOR*, MAPESIL AC* therefore represented the natural completion of the above described job.

TECHNICAL DATA

Birmingham Mailbox, Birmingham (UK)
 Project: functional re-conversion ex Post Office
 Year of construction: 2000/2001
 Main contractor: Carillion
 Contractor: Birmingham Tile & Mosaic
 Material installed: porcelain tiles Porcelanosa (330x440 mm, 350x440 mm)
 Mapei products: ADESILEX P25, MAPESIL AC, ULTRACOLOR
 Mapei coordinator: Mark Louch

* The products mentioned in this article belong to the "Products for ceramic tiles and stone materials" line. The technical data sheets are contained in the "Mapei Global Infonet" CD, and at the "www.mapei.com" website. Mapei adhesives and grouts are compliant to EN 12004 and EN 13888 standards.



Adesilex P25 (D1E): a ready-to-use paste adhesive for ceramic tiles, particularly indicated for installation on gypsum boards
Mapesil AC: solvent-free, acetic-crosslinking mildew-resistant silicone sealant available in 26 colours and transparent
Ultracolor (CG2): fast setting and drying grout for 2 to 20 mm joints, available in 26 colours; does not produce efflorescence.

INSTALLATION OF

by Luigi Coppola
Mapei Technical Assistance Manager



In the last few years the porcelain tile has become the leading product in the ceramic floor and covering field. The always common use of porcelain tiles in the building sector is due to its specific aesthetic, physical and mechanical characteristics which fully satisfy the needs of the modern building industry. Its high level of compressive strength, its considerable resistance to abrasion, the next to nothing water absorption and the consequent perfect resistance to chemical agents make this type of tiles particularly suitable for industrial building. If to these characteristics we add the wide range of colours and sizes available, it is easy to understand why porcelain tiles are particularly appreciated for floor and wall coverings

in residential buildings, where the aesthetic and architectonic aspects are fundamental for the final result of the work. Nevertheless the high ductibility of this material under different circumstances makes it necessary, when you choose the adhesive for installation, to evaluate the size of the tiles, the loads, the waiting time before first use and the type of support, whether vertical or horizontal and internal or external. Installing in external environments is, for instance, a particularly difficult situation since, besides the external loads which the floor must undergo, the adhesive and the support must bear tensions caused by the strengthening of the tiles (which is bigger for large sizes) caused by daily and seasonal thermic excursions. Also the

Figure n. 1 - Installation of 40x40 marmorized porcelain tile on an internal wall.
Adhesive: KERAFLEX MAXI.
Grout: ULTRACOLOR.

Figure n. 2 - Installation of 20x20 very heavy duty porcelain tiles on external and internal floor.
Screed: MAPECEM.
Adhesive: GRANIRAPID.
Grout: KERAPOXY.
Sealant: MAPEFLEX PU20.

Figure n. 3 - Installation of 30x60 porcelain tiles with a polished "graniglia" effect on an internal floor.

PORCELAIN TILES



PORCELAIN
TILES
ULTRACOLOR
PLANOBOND
ADESILEX P4

3

PORCELAIN
TILES
ULTRACOLOR
MAPESIL LM
KERABOND+
ISOLASTIC
POURED
CONCRETE

4

GLAZED
PORCELAIN
TILES
ULTRACOLOR
GRANIRAPID
MAPECEM

West Satellite of the International Airport
Leonardo da Vinci - Fiumicino (Rome) - Italy.
The installation of porcelain tile floor and wall
coverings (approximately 16,000 square
meters) was carried out using:
TOPCEM, MAPEFLUID PZ500,
PLANICRETE, KERABOND + ISOLASTIC,
KERAFLOOR + ISOLASTIC, GRANIRAPID,
ULTRACOLOR, EPORIP,
MAPEGROUT THIXOTROPIC.

Adhesive: ADESILEX P4,
PLANOBOND.
Grout: ULTRACOLOR.

Figure n. 4 - Installation
of 30x30 porcelain tiles
with a "trowel" effect on
an external wall on a
concrete structure.

Adhesive: KERABOND +
ISOLASTIC.
Grout: ULTRACOLOR.
Sealant: MAPESIL LM.

Figure n. 5 - Quick
systems. Installation of
30x30 glazed porcelain
tiles.

Screed: MAPECEM.
Adhesive: GRANIRAPID.
Grout: ULTRACOLOR.

colour has an important role in this phenomenon. As a matter of fact, the darker the colour the higher the amount of heat that it absorbs and, consequently, the higher the tile deformation. The absorption of water, which is next to nothing and the extreme hardness which characterize porcelain tiles make it very similar to a glass sheet. As a consequence the installation must be carried out using an adhesive which offers good performances as far as adhesion is concerned and able to resist the stresses which the tile and the adhesive will have to bear.

The choice of the adhesive becomes even more important if the porcelain tiles must be bonded on top of existing tiles. In this case it is necessary to mechanically abrade the glass surface and to clean it

perfectly before the new floor is installed. It is also necessary to use the highest quality adhesives, with a high content of binders, resins and additives.

In the range of products offered by Mapei for the installation of porcelain tiles we highlight the following adhesives, which are all compliant with the EN 12004 and EN 12002 European standards for deformability: KERAFLEX (C2TE), KERAFLEX MAXI (C2TE, S1), KERABOND + ISOLASTIC (C2, S2), ADESILEX P4 (C2F), PLANOBOND (C2E), KERAQUICK + LATEX PLUS (C2FT, S2).

Because of their specific technical characteristics, all these products are able to satisfy the requirements for the installation of porcelain tiles in any job-site and for every type of use.



@eatons center

Speed guaranteed

by Diana Chiodi - Mapei Corp.

The objective was to create, in the least time possible, a shopping center that represented a fusion of old and new, and that was to the liking of all its future visitors. In October of 2000, the new Eaton's Center of Toronto was inaugurated as planned. Mission complete, thanks to Mapei installation systems and to its ten year guarantee. The project was the result of a joint venture between Queen Quay Architects International Inc. and Murphy Hilger Architects Inc. The scope was simply to create a shopping center where the new project was harmonically integrated with the existing one, explains Elton Matthews of Murphy Hilger. We needed to combine the new structures of the center with the northern and southern zones. The secondary objective, certainly more complicated for designers and installers, was that of solving the problems due to different thicknesses of the structural slabs. As a consequence, the study and the preparation of the most appropriate products for tile installation was essential: Mapei's line met all project requirements.

We spent months before deciding the best possible solution for this dilemma. The vacation period was closing in, so time could not be wasted in order to avoid staying behind on schedule, explained Matthews.

Starting from the preparation of the sub-layer, the use of Mapei products such as NOVO TOP*, EPO PRIMER*, MAPELASTIC SM* and MAPECEM* allowed to avoid delays in this extremely urgent project. Mapei ULTRA/FLEX* and GRANI/RAPID* systems were used for the installation of tiles for floors and coverings, while the final touch was given by KERAPOXY*, an epoxy grout resistant to stain, and ULTRA/COLOR*, a cement grout that assures an absolute uniformity of colour and avoids efflorescence. Since for project execution only Mapei installation products were utilized, the Company was able to offer a 10 year guarantee for each of the products used.

Glen Pestrin - owner of York, Marble, Tile and Terrazzo Inc., and director of works in this project - is convinced that the





Mapei products for the preparation of sub-layers and for the installation of floors were determining for staying on schedule. "We have obtained excellent results with Mapei systems. Furthermore, the technical assistance provided by the Company was extremely proficient, allowing us to overcome those initial difficulties often encountered; not only are the products better, but our project even received a ten year guarantee, which is certainly uncommon among other suppliers of installation products".

TECHNICAL DATA

Eatons Center Shopping Center, Ontario (Canada)

Year of construction: 2000

Project: Queen Quay Architects International Inc. and Murphy Hilger Architects Inc.

Director of works: Glen Pestrin - York, Marble, Tile and Terrazzo Inc.

Tile contractor: York, Marble, Tile and Terrazzo Inc.

Material installed: Corella tiles

Mapei products: NOVO TOP, EPO PRIMER, MAPELASTIC SM, MAPECEM, ULTRA/FLEX, GRANI/RAPID, KERAPOXY and ULTRA/COLOR

Mapei distributor: York, Marble, Tile and Terrazzo Inc.

Mapei coordinator: Bill Sommers



** These products are realized and distributed only on the American market by Mapei Corp. (USA) and Mapei Inc. (CDN). For more information, please visit the "www.mapei.com" website.*



Resisting earthquakes

by Diana Chiodi - Mapei Corp.

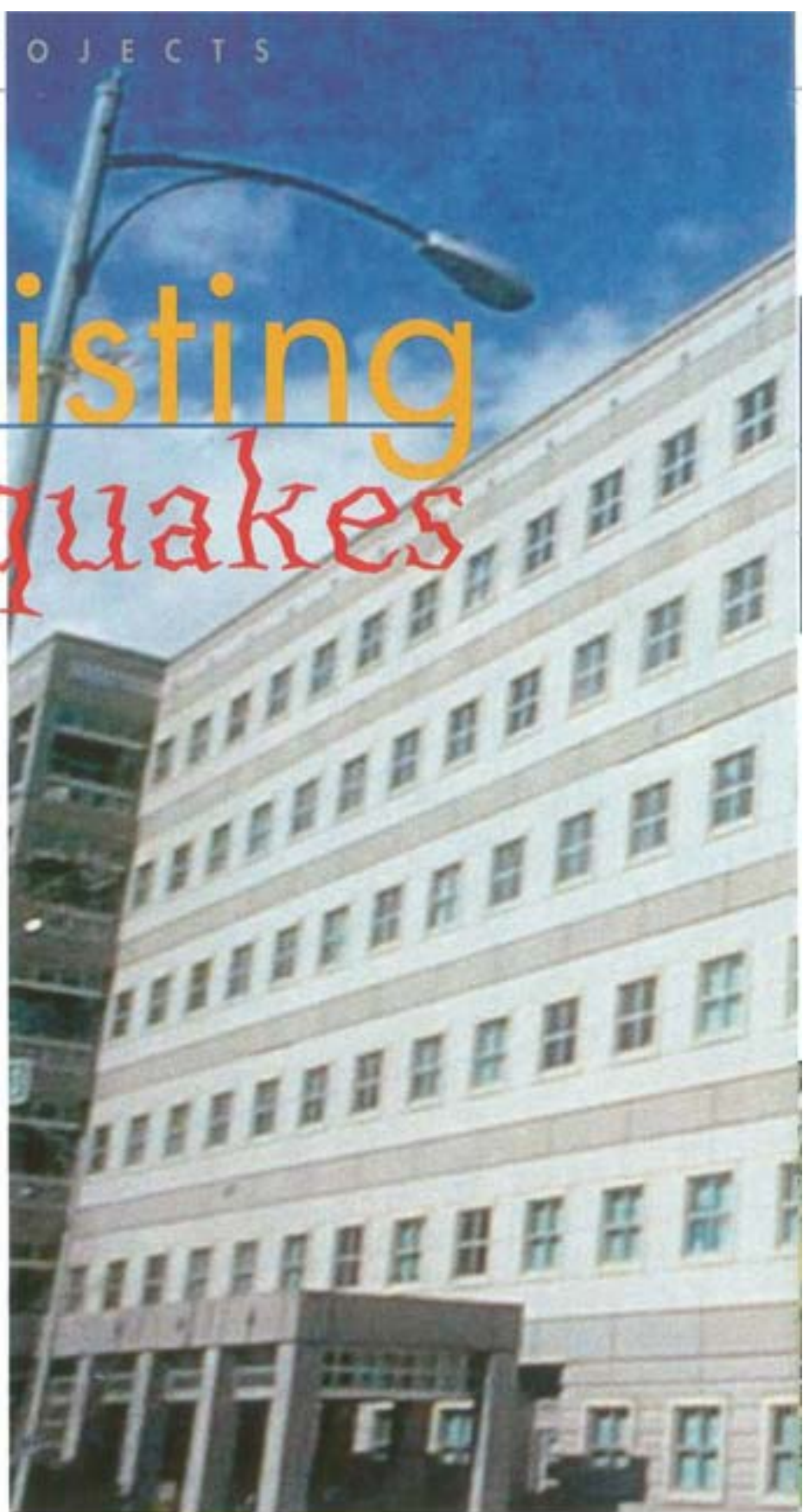
Washington University chose well in 1992 when it selected the Mapei KERALASTIC* System (KERABOND+ISOLASTIC in Europe) for covering the external walls of the H wing in porcelain tiles.

In fact, jobsite tests demonstrated that, although bonding strength was important, even more significant would have been deformability, a vital factor for long term resistance against the thermal variations that the structure would have faced in the future. After almost nine years of impeccable performance, the covering of the fronts was forced to face a test decided by Mother Nature, or more precisely an earthquake of magnitude six on the Richter scale that hit Seattle on February 28, 2001. After the event, a thorough inspection of the front did not reveal any cracks or breaking of the tiles: the exam was passed!

This was the second occasion in which a wall covering or a floor installed with the American KERALASTIC* System (KERABOND+ISOLASTIC in Europe) remained undamaged after an earthquake.

In 1989, the Sky West Airlines building in St. George, Utah, resisted to a 5.9 magnitude earthquake without any damage to its 40,000 square feet of porcelain tile front installed with the KERALASTIC* System.

According to Dave Hamilton, Mapei Corp. Product Manager, responsible for the products used in the installation of tiles and stone materials, the great advantage of a two-component deformable grout is its capability of



following the movements of tiles and their support caused by shocks or vibrations. Today, most builders promote the use of single-component, low-cost and less deformable products, even for exterior installations.

We produce our own polyurethane systems, both in powder and liquid, and the KERALASTIC* System has no rivals as far as deformability and external performance regarding ceramic and stone tiles are concerned. The KERALASTIC* System can boast over twenty years of track record, and such installation performance is positive for our industry and infuses great confidence in our customers.





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TECHNICAL DATA

Washington University (USA)
Project: external wall covering
Year of construction: 1992
Material installed: porcelain tiles
Mapei product: KERALASTIC
(KERABOND+ISOLASTIC in Europe)

DEFORMABILITY TEST

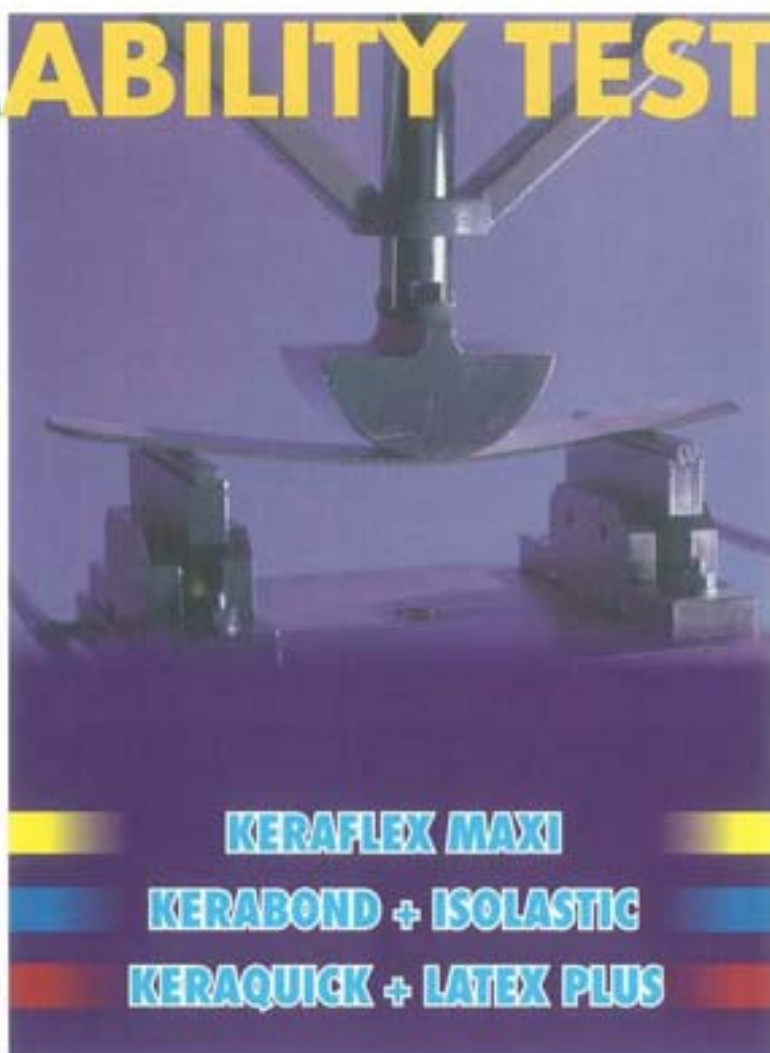
The deformability of a cement adhesive is evaluated by means of a flexural test which determines the deflection of a sample of adhesive under the effect of an applied load. The greater the deflection, the higher the deformability of the adhesive. In particular, the EN 12002 standard defines three deformability classes depending on the deflection value: if deflection is lower than 2.5 mm, the adhesive is classified as non deformable; instead, if the deflection value is between 2.5 and 5 mm or is greater than 5 mm, the adhesive is classified respectively as deformable (S1) or highly deformable (S2).

A highly deformable adhesive is required for the installation of floors and coverings that are subject, for example, to considerable contraction/expansion movements due to the effect of night-day and/or seasonal thermal gradients.

In fact, in these conditions a highly deformable adhesive allows to follow the natural movements of the covering, easing-off the stress generated on the underlying support; this would not be possible using a stiff adhesive. Basically, a highly deformable adhesive produces a stress relaxation that avoids the separation of the covering from the support.

Therefore, deformable and highly deformable adhesives are particularly indicated for outdoor installation of ceramic and stone material floors and coverings, even of large dimensions. Mapei supplies its customers with a deformable adhesive (KERAFLEX MAXI) and two latexes (ISOLASTIC and LATEX PLUS) which, mixed with different types of cement adhesives, allow to obtain highly deformable adhesives for the outdoor installation of floors and coverings.

Furthermore, in view of offering its customers a continuously improving service, for each cement adhesive Mapei supplies the data necessary for its classification, in compliance with the EN 12004 standard, as well as its deformability values, which allow designers, purchasers and contractors to choose the adhesive with the best performance for each specific use.

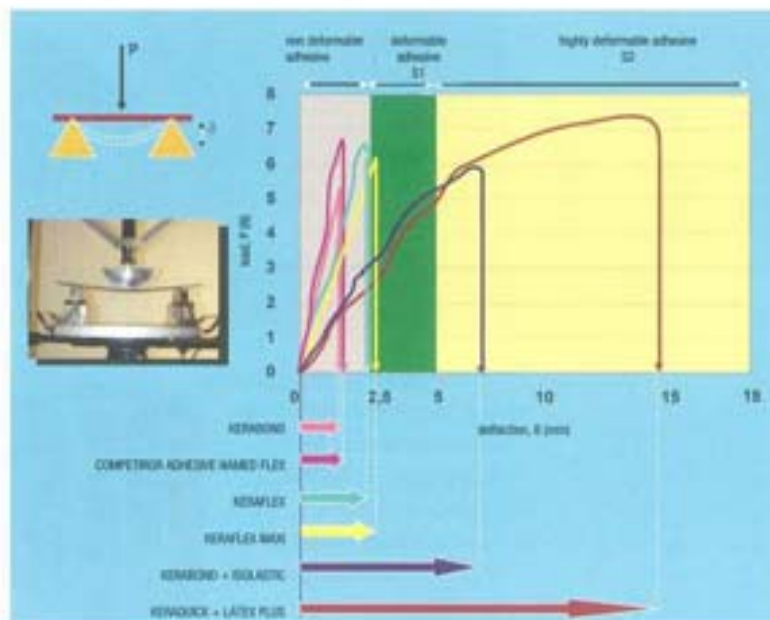


The deformability of a cement adhesive is evaluated by means of a flexural test which determines the deflection of a sample of adhesive under the effect of an applied load.

The greater the deflection, the higher the deformability of the adhesive.

According to the EN 12002 standard, adhesives can be:

1. non deformable (deflection lower than 2.5 mm)
2. S1 deformable (deflection between 2.5 and 5 mm)
3. S2 highly deformable (deflection greater than 5 mm).





Keraflex Maxi



KERAFLEX MAXI is a cement-based adhesive for thicknesses from 3 to 15 mm, with high bonding strength, good deformability and no vertical slip, indicated for ceramic tiles and stone material.

According to the EN 12004 standard, KERAFLEX MAXI belongs to the C2TE class, considering that it's a cementitious adhesive (C), with improved adhesion strength (2), resistant to slip (T), and with extended open time (E).

Furthermore, KERAFLEX MAXI is a class S1 deformable adhesive in accordance with the EN 12002 standard.

Thanks to the particularly long open time (about 40 minutes), KERAFLEX MAXI allows to complete installation operations with the required tranquility. The high adjustability time allows

to carry out any necessary corrections to the installed tiles' position, even several minutes after installation. Particular characteristics of KERAFLEX MAXI are its rheological properties. In fact, it can be easily applied to walls with a thickness of up to 15 mm, avoiding installed tiles from slipping.

The possibility of applying high thicknesses of adhesive means that it's possible to install even large tiles on irregular substrates without the need for preliminary levelling; this guarantees a good wetting of the reverse side of the tiles. This characteristic makes it particularly fit for the installation of tiles produced by drawing (for example: clinker) or with a non perfectly flat reverse side (for example: baked tiles), where an adequate thickness of adhesive is required.

Furthermore, KERAFLEX MAXI is indicated for overlaying on existing flooring and coverings, and for bonding isolating material such as polystyrene foam, polyurethane foam, stone or glass wool, Eraclit noise-absorbing panels, etc.

Technical Data

Mixing ratio: (at 23 °C and 50% R.H.) 27-29 parts of water in weight for 100 parts of KERAFLEX MAXI

Pot life: over 8 hours

Open time: about 40 minutes

Adjustability time: about 60 minutes

Grouting joints after installation: on walls 4-8 hours; on floors 24 hours

Set to light foot traffic: about 24 hours

Ready for use: 14 days

Deformability: S1 according to the EN 12002 standard

Color available: gray

Application: notched trowel n. 4, 5, 6 or 10 depending on tile dimension

Storage: 12 months

Consumption: 1.2 kg/m² for bonding ceramic

Packaging: KERAFLEX MAXI is supplied in 25 kg paper bags.

KERAFLEX MAXI belongs to the "Products for ceramic and stone material" line. The technical data sheet of this product is contained in the "Mapei Global Infonet" CD and at the "www.mapei.com" website.



Baked tile installation done by hand on an irregular screed.



Installation of tiles with external middlings.



ADHESIVES AND GROUTS FOR TILE INSTALLATION

Updating of the European and ISO standards regarding products for tile installation.

by *Giorgio Roncan*

In the article published in the issue n. 46 of *Realtà Mapei*, in November 2000, we summed up the work carried out till that point by the European Commission CEN TC 67/WG3, responsible for writing the standards on adhesives and grouts for ceramic, and underlined the most important results. We also summed up the situation of the ISO 189/WG3 Commission, responsible for writing the same standards at a world-wide level. With this article, we want to give an update on the advancement of the two commissions' work, and on the practical meaning of the standards and their effect on the market of ceramic installation products.

European norms

The EN 12004 standard, which defines the adhesive performance required, since May 2001 is officially homologated as an EN standard: as a consequence, it was automatically accepted by all the countries of the European Community (with the addition of Switzerland, the Czech Republic and Iceland). In addition, there are all the other EN standards for calculating adhesion strength, open time, etc. What's more, last summer the CEN TC 67/WG3 terminated the verification of the standards for grouts as well. All test methods are now official EN standards, and the EN 13888, which defines the minimum performance required for grouts, has been officially approved. Therefore there is now only one method in Europe for defining the characteristics and the respective classes of adhesives and grouts. We think that it's useful to provide further details on this subject since today it represents an indispensable work tool for allowing

designers and installers to ensure exceptional installation of ceramic tiles. According to the EN 12004 and the EN 13888, adhesives and grouts have been divided respectively into three and two types, with an abbreviation assigned to each one (see table 1). A second classification has been determined considering the fundamental and optional characteristics of these products (see table 2). In this article we will analyze only the cementitious adhesives that represent the most part of the Italian and European market, presenting them in function of their specific use and showing how to choose the product most fit for each application, in compliance with the prescriptions of the EN 12004 standard. The designer or the installer can decide for the use of a C1 class adhesive when he believes that a value of adhesion greater than 0.5 N/mm^2 is sufficient; for example, for installing ceramic tiles in a bathroom or kitchen. Or can decide for a C2 class adhesive, when a product with superior characteristics is needed, which means an adhesion strength value greater than 1 N/mm^2 ; for example, for the installation of ceramic on surfaces with intensive traffic such as shopping centers, airports, industries, etc. Please note that adhesives with adhesion strength values lower than 0.5 N/mm^2 cannot be considered compliant to the EN 12004 standard; in other words, the value of 0.5 N/mm^2 must be exceeded after all the required conditioning for the tests on adhesion strength and open time. There are other additional classes that allow to further classify adhesive characteristics that are essential for correct installation: F: defines fast setting adhesives; therefore, when short walkover times are needed C1F or C2F adhesives will be required; E: defines adhesives with particularly long open times, which are therefore indicated, for example, for hot climates (in this case C1E or C2E adhesives are required); T: defines adhesives that avoid tiles from slipping on walls (C1T

Table 1

CLASSIFICATION BASED ON CHEMICAL COMPOSITION	
Type	Description
C	Cementitious adhesive
D	Dispersion adhesive
R	Reaction resin-adhesive
CG	Cementitious grout
RG	Reaction resin-grout

Source: *Mapei Technical Assistance*



Table 2

CLASSIFICATION BASED ON FUNDAMENTAL AND OPTIONAL CHARACTERISTICS

Class	Description
1	Normal Adhesive
2	Adhesive with improved characteristics (satisfies the requirements of the additional characteristics)
F	Fast setting adhesive
T	Low slip adhesive
E	Adhesive with extended open time
S1	Deformable adhesive (EN 12002)
S2	Highly deformable adhesive (EN 12002)
1	Normal grout (only for cementitious grouts)
2 (W, Az)	Grout with improved characteristics: low water absorption, high resistance to abrasion (only for cementitious grouts)

Source: Mapei Technical Assistance

and C2T adhesives). Of course, all other combinations are possible, for example C1TE, C2TE, etc.

Particularly important are the classes that define adhesive deformability (elasticity) and that therefore allow safe installation in non-traditional conditions. Today, though, they represent an ever growing percentage of installation situations (on walls with large formats, on heated floors, on deformable substrates, etc.). As far as this last characteristic is concerned, the EN 12002 standard defines the following classes:

S1: for adhesives with a value of deformability between 2.5 and 5 mm, and that therefore are essential for the installation, for example, on plasterboard walls and on heated floors. In these cases, C2TS1 or C2TES1 adhesives are required;

S2: for adhesives with a value of deformability greater than 5 mm; think of how many million square meters of ceramic tiles, including porcelain tiles, can be installed in total safety on front walls thanks to these adhesives. In these cases, the choice of C2TS2 or C2TES2 adhesives is mandatory.

The compliance with the EN 12004 standard gives the designer and the installer still further guaranties regarding adhesive quality besides the ones listed above:

a) in fact, it is mandatory for the producer to indicate on the product's packaging and its relative documentation a complete series of information regarding characteristics and the fields and methods of use;

b) in addition, the producer must organize and carry out a severe production inspection by verifying the quality of the raw materials, of the production process and of the finished product;

c) laboratory and the equipment necessary for quality control must be systematically verified and recalibrated.

Everything must be documented and verifiable in apposite registers.

The EN 12004 standard, which as mentioned defines adhesive characteristics, is an optional standard; when a producer, though, declares that the product is compliant, it must be proved through internal tests and through verification done by an independent laboratory.

In the near future, significant changes are planned, with the scope of further guarantying the user (designer, installer, owner) on the quality of the products used. The EC has already issued the European Directive 89/106 CEE regarding construction products, with the intent of allowing the free circulation in

Europe only to the products compliant with some essential characteristics; only these products may be labeled with the EC mark.

More precisely, once installed, the construction material must satisfy the following requirements:

- mechanical strength and stability;
- safety in case of fire;
- hygiene, health and environmental protection;
- safety during use;
- protection against noise;
- energy savings and thermal insulation.

In the specific case of adhesives for ceramic tiles, the respect of the essential characteristics will be mandatory from mid 2004.

From that moment on, only the products that satisfy the requirements of the EN 12004 may label their packaging with the EC mark, and use it as a passport for the free circulation in the European market.

A one-year transition period (therefore starting in mid 2003) was also established during which it's possible to mark EC products optionally. Of course, the compliance with the requirements will be verified with tests carried out internally and by independent laboratories.

Finally, the CEN TC 67/WG3 proceeded with the preparation of a standard that determines the characteristics and defines the minimum performance of the liquid coverings used for waterproofing the substrates where ceramic tiles are installed: just think of its importance for the installation in pools, on balconies and terraces, etc. The writing of the standards was concluded during the meeting held on October 22, 2002.

International standards

The ISO 189/WG3 Commission, responsible for the standards regarding adhesives and sealants, also continued with its meetings. They are held once a year, and are leading to the elaboration of standards which, with appropriate changes due to particular needs, mostly American, reconfirm almost in full the EN standards that we previously treated. We believe that the work of the ISO 189/WG3 may terminate in about 2 years.

For whoever is interested, the EN standards can be purchased at UNI, Settore Diffusione, Milan (Italy), fax: ++39-02-770105992, e-mail: diffusione@uni.com



Tiles on the camping ground

Recently, this camping ground in Gavin was inaugurated in the suggestive Valle di Tena in the Aragonese Pyrenees, characterized by natural areas which invite to fascinating excursions in the surrounding oak woods.

The Gavin camping ground offers its visitors maximum comfort thanks to modern and top-quality facilities. In order to guarantee the high level of this structure, the best construction and finishing materials on the market were chosen for the construction of the buildings destined to the reception area, the bar, the supermarket, the apartments for rent, the bathrooms and the pools. In fact, it was necessary that they not only guarantee a pleasant aesthetic impact, but most of all a long duration, a significant resistance to wear and easy cleaning. For wall and floor coverings, different types of ceramic tiles were chosen depending on the rooms in which they were to be installed, in various colours and decorations; instead, for installation, the choice fell upon Mapei products, which, besides quality, possess the specific characteristics required by the new international classification according to the EN 12004 standards for adhesives and EN 13888 for grouts. The tiles were supplied by the Pavimentos y Revestimientos Julve company from Huesca, who also supplied products and carried out installation.

Bonding and grouting

Bonding tiles and grouting joints required the use of products able to face particular situations: significant and continuous traffic in service areas, external areas subject to extreme thermal variations between summer and winter, constant and daily cleaning with the use of detergents. The choice fell upon





KERAFLEX*, a deformable, cement-based adhesive, with good bonding strength and no vertical slip, ideal for bonding all types of ceramic tiles and natural stone on floors, walls and ceilings for interiors and outdoors. Joints were grouted with Bahama Beige ULTRACOLOR*, a quick-drying cement grout available in twenty-six colours (the most complete on the market), that doesn't produce efflorescence and that requires short waiting times for cleaning and for the installation of the selected covering. Instead, for the installation of the glass mosaic on the wooden counter of the bar, it was recommended to use products that would guarantee sufficient bonding strength and deformability when applied to a substrate with a coefficient of thermal expansion significantly different from the one of the covering. Furthermore, the mosaic covering had to "support" accidental falling of food and even hot drinks, besides continuous cleaning. The natural choice was KERALASTIC*, a two-component polyurethane adhesive studied for the waterproofing and installation of all types of ceramic, stone or mosaic tiles on all the substrates used in building, and in particular on those considered critical (metal, wood, rubber, PVC, linoleum), both for outdoors and interiors. Joints were grouted with KERAPOXY*, a two-component acid-resistant epoxy grout available in twenty-six colours.

The use of Mapei products in a structure dedicated to free time allow to make use of a vacation resort with the same comfort and quality offered by our own home!

* The products mentioned in this article belong to the "Products for ceramic tiles and stone materials" line. The technical data sheets are contained in the "Mapei Global Infonet" CD

and at the www.mapei.com website. Mapei adhesives and grouts are compliant to EN 12004 and EN 13888 standards.

Keraflex (C2TE): cement-based adhesive with fair deformability, good bonding strength and no vertical slip, ideal for ceramic tiles and stone materials

Ultracolor (CG2): fast-setting and drying grout for 2 to 20 mm joints, available in 26 colours; does not produce efflorescence

Keralastic (R2): two-component polyurethane adhesive, for ceramic tiles and stone materials

Kerapoxy (RG): two-component acid-resistant epoxy grout for joints, available in 26 colours.



TECHNICAL DATA

Gavin Camping, Gavin (Huesca), Spain

Project: installation of ceramic coverings

Year of construction: 2001

Design and director of works: Patricia Martín Montaner

Installation contractors: Pavimentos y Revestimientos Julve

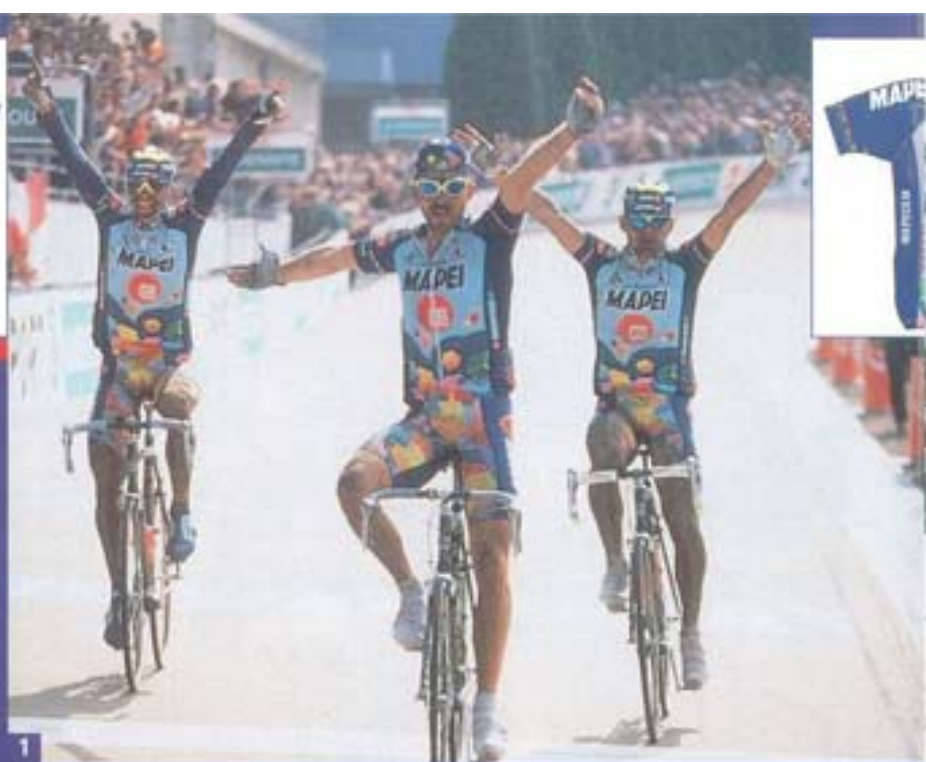
Materials installed: Edimax, Marazzi, Rosa Gres ceramic tiles; Bisazza glass mosaics

Mapei products: KERAFLEX, ULTRACOLOR, KERALASTIC, KERAPOXY

Mapei reseller: Pavimentos y Revestimientos Julve

Mapei coordinator: Jesus Melles





The Mapei Group is no longer sponsoring a professional cycling team. At the end of the 2002 season, Mapei-Quick Step brought its sponsorship deal to a close. The sporting year ended with Mapei-Quick Step at the very top of international competition. Saying goodbye has been very painful for sponsors, managers and riders alike, who together have been described by many as forming a real "battleship". For ten seasons, the professional team has given us many happy moments.

Mapei has put an end to its professional sponsorship deal but doesn't want to be sorely missed. All the same, it has many reasons for being satisfied and holding its head up high. Sport is full of striking images. The image most typically associated with cycling is of a man breaking away from the pack on his own. Mapei wanted to show it takes a team to win in cycling. It has succeeded. In the 1995 Tour of Italy, Rominger, Mapei-GB's leading rider who wore the pink jersey, was escorted by a cloud of cube-patterned jerseys. His team-mates were a stronghold for their leader. It was as if spectators watching the classic one-day races in Northern Europe could hear the tracks of a tank passing by. It was the Mapei train flattening the cobblestones on the way to Roubaix. Those who followed the events on the inside experienced some

BACK TO

A winning team has come to the end of the road.

thrilling moments as well as periods of dismay. Hardly surprising. Sport, and life in general, you get nothing for free. In what is considered an individual sport like cycling, Mapei wanted to show that team strategies go arm in arm with industrial activity.

The Mapei Group, international by vocation, has production plants or business offices all over the world. Mapei's sponsorship of cycling brought great athletes of varying talents and from

Photo 1. Paris - Roubaix '96: from left Tafi (3rd), Museeuw (1st), Bortolami (2nd). The most important team victory of all time.

Photo 2. The history of Mapei's professional team ended on a winning note: Paolo Bettini and Giorgio Squinzi lift the team's fifth team trophy on the podium of the 2002 World Cup.





different nations and cultural background together under the same banner. Mapei has endeavoured to help encourage and promote cycling, focusing on more than just winning races and titles; it can proudly claim to have often succeeded. On other occasions, it has been plagued by bad luck and poor management.

The feeble war on doping waged by international sports organisations certainly did not help brightening up the atmosphere at Mapei; and with regard to cycling equipment, the lack of interest in the "Vigorelli" Cycling Arena is no reward for a team like Mapei, which actually renovated it. Mapei is abandoning the world of professional cycling just as Adriano Baffi, Mapei's faithful standard-bearer but no longer a youngster, is retiring from the sport. This would seem to be anything but a sheer coincidence. Baffi is for everybody a young man with wholesome principles, an example of professionalism in good as well as bad times.

THE FUTURE

Just what Mapei has always wanted to be.

The cube-patterned jerseys will no longer be part of the professional cycling pack. Mapei, however, wants cycling to have a great future. The up-and-coming generations may both ethically and technically be just the lifeline cycling needs.

Besides helping cycling, Mapei is now taking part in various initiatives in culture and the arts in general. For this reason, and not just due to its long-term contracts, Mapei will continue its sponsorship of the Cycling & School project, primarily sponsoring boys of primary and middle school ages. Without neglecting their school work and home work, the youngsters will be able to enjoy watching the professionals at work. They will gain simple, sufficient knowledge of the basics so as to try and emulate Tafi or Freire or other champions; or they can just enjoy themselves out on a bike ride. The Mapei Group will no longer have its own international team at the Tour of Italy and Tour of France. But it will still have its intrepid amateurs in Italy and other countries, as it did even before it turned to professionalism. Their team used to wear a blue jersey with white stripes. Even before May 18th 1993 (the day Mapei ventured into professional cycling), Mapei team riders were already wearing cube-patterned jerseys. From now on, there will be a Mapei Corse Mediglia team. Giorgio Squinzi will be one of its amateur riders and Mapei's name will appear on the jersey of the Albonesi Cycling Club, an amateur team that takes part in important events. They have already won important titles on the road and track. It is all good fun and they always stick to the rules like true sportsmen. By leaving the professional ranks and going back to the amateurs, Mapei is returning to its roots.

The Mapei's standard bearers will no longer be racing on the cobblestones of the Paris-Roubaix any more. But not everything is lost for cycling and sport in general. Research and development have been, and continue to be, important pillars of Mapei's success in business and industry. The same philosophy has been applied to cycling and now also the Mapei Sport Service, a facility where leading cyclists from the professional team and riders from all the other sponsored teams have undergone tests and planned their training schedules. The Mapei team has been the first, and so far, the only professional team to have created its very own centre for carrying out tests.

The Mapei Sport Service is carrying on its work. Just as before, it will provide facilities for professionals and amateurs from all kinds of different sports. Cycling & School, cycling enthusiasts, culture, research and the Mapei Sport Service are all busy at work. Sportsmen everywhere, who told you that Mapei has left the stage?

1999



2000



2001



2002



2003



After 10 years in professional cycling Mapei has decided to sponsor only amateur teams.

RELENTLESS ADRIANO B

Incredible but true: Adriano Baffi is giving up racing. The ruthless sprinter from Vailate (Cremona) can boast 18 seasons in the professional ranks, 6 wearing the Mapei jersey. After joining the Mapei-GB "battleship" in 1995, he stayed for two years. In 1999, he returned to the Mapei-Quick Step team. Baffi has always been a wonderful example of a courteous, well-mannered young man of exemplary professional integrity. Adriano was born on August 7th, 1962. Adriano De Zan, who was by then a RAI TV commentator, was asked to be the godfather at his baptism. On Saturday, November 2nd, 2002, during the "Six Day Race" in Grenoble, Baffi decided to bring his career to a symbolical close. The French organisers decided to devote part of the programme for Adriano to do a number of laps of honour, receive his prizes and give interviews. About fifty fans from Lombardy travelled to Grenoble by bus to join Baffi for the celebrations. Giorgio Squinzi, president of the Mapei Group, also made the journey to Grenoble and presented him with a special award to thunderous applause. "I would like to thank Giorgio Squinzi - so the rider from Lombardy underlined -



Small photo on the left, Baffi is congratulated by Giorgio Squinzi. Main photo, Baffi (on the right) gives Villa a helping hand during an Americana in Stuttgart.



who is more like a father than a sponsor for me." Grenoble has twice been the scene of celebration for this great sprinter. He actually won the "Six Day race" here paired with Marco Villa. Adriano is one of the most famous cyclists to have followed in his father's footsteps. His father, Pierino, competed as a professional for 13 years, taking part in 12 Tours of Italy and 6 Tours of France. Dad Pierino won 55 road races during his career. Adriano can boast 66 victories on the road. "I beat my dad - Adriano told us - and that is no mean achievement. My father was a team mate and close friend of Fiorenzo Magni. As a rider I get along with everybody. But I feel closer to the team than to any one rider: the Mapei team. The cube-patterned jersey is like a second skin."

What was the most thrilling moment in your career?

"There have been many wonderful moments. I will never forget my victory in the Cuneo-Lodi stage of the 1990 Tour of Italy, my first. That year I actually won two stages. I then won 3 stages of the 1993 Tour of Italy and the jersey for the overall points winner. Then there

FINALLY CALLS IT A DAY



were the two victories in the Milan-Vignola race. My dad had also won the same race." Baffi turned out to be a great all-round rider. He was not just a successful sprinter. He even managed to win in stage races like the 1988 'Settimana di Sicilia' and the 1995 'Vuelta a Murcia' wearing the Mapei team colours. His stage wins in events like the Paris-Nice (4), Tour of Switzerland (1), Spanish events, the Puig Trophy one-day race, the Montecarlo-Alassio and the Paris-Camembert, make him a highly successful road racer. On the track Adriano was Italian Champion in the points race (1987, 1988 and 1999). In 1997 (paired with Villa) and 1998 (with Collinelli), he also won the so-called "Americana". In 1988, Baffi arrived second in the points race at the World Championships in Gand. He has won 15 "Six Day Races." "That year - Adriano told us - I was certain to win the world championship. Unfortunately I underestimated Wider, who got the better of me." Born in Vailate, he has been married for 14 years to Mirella, his childhood sweetheart from Vailate. They have known each other since primary school. They have

two children, Piero (12 years old) and Marta (8 years old)."

Baffi, are you sure you want to retire?

"I have, indeed, decided to stop competing at the end of the 2002-2003 winter track racing season. The 'San Sebastian Six Hour Race' will probably be my last event."

Do you feel you are past your best?

"Not at all. I am fit and competitive enough to carry on for another 4-5 years at the top. My decision was not just taken in relation to my physical fitness and form. There are other issues, such as my family, that persuaded a forty-year-old super-enthusiastic rider like me to quit. In the 'barnum' event of a 'Six Day Race', at least the 80% of the racers are slower than me. In 2002, I also won 2 road races, as well as a number of minor circuit races. There are, however, riders who stop racing after seven or eight years without having won anything at all on the road. I went two years without winning anything.

At a certain age you have to start thinking about your future outside of cycling."

Have you already decided what you want to do when you "grow up"?

"The Italian Cyclist Federation - Baffi told us - has offered me a job as supervisor at the "Centri di Avviamento al ciclismo" (centres for introducing young people to cycling). Basically I would be expected to go round the various cycling tracks and provide technical support and, if necessary, advice on sports equipment to trainers, especially when competition and training camps. I really like the job. It gives me the chance to stay "glued" to cycling without neglecting my family."

Have your children shown any interest in cycling?

"Cycling - says Adriano the dad - is a sport you have to love. As long as I am still competing, they certainly won't ask to take part in children's races. I will not do anything to force them to compete. But if they want to, I certainly will not get in their way. They must have the right motivation."



1ST GRAND PRIX MAPEI REFERENCES

This year saw the introduction of an initiative regarding all Mapei subsidiary companies: the 1st Mapei Reference Grand Prix, which made its debut during the last edition of the Cersaie (see article on page 8), with the awarding ceremony held on Friday, October 4th. The competition regards the references of works carried out with Mapei products, or carried out by companies with other brands but part of the Group, and gathered among the various subsidiaries between October 2001 and September 2002. Among the over one thousand references in competition, we chose the ones that best represented international building done with Mapei products in the different areas listed below.

Mapei's jury based its selection on the following criteria:

- 1) originality
- 2) specificity of the worksite
- 3) quality and quantity of the Mapei products used
- 4) client importance
- 5) documentation attached (reports and photographs).

Here are the winners of this first edition, sector by sector:

● CERAMIC: Shopping Center Campo dei Fiori, Gavirate (Varese), Italy

(see article published on Realtà Mapei n. 56)

The designers that collaborated in the construction of this extremely modern shopping center bet everything on product quality, for a result with a high technical content and a guarantee of reliability in time: this is why they recommended Mapei products. In fact, the target of installing thousands of square meters of porcelain tile coverings was achieved.

Mapei coordinator: Andrea Peli, Mapei SpA

Award accepted by: Andrea Peli

Retailer: Centro Ceramiche Pagnoncelli, Capriate (BG).

● MARBLE AND NATURAL STONES: Düsseldorf Airport, Germany

(see article published on Realtà Mapei n. 54)

For creating the coverings of this airport, considered one of the most beautiful and functional in the world, Mapei supplied a wide range of products for installing the Chinese granite in the areas of the A and B terminals. The result obtained was excellent.

Mapei coordinator: Walter Mauer, Mapei GmbH, Germany

Award accepted by: Reiner Wetzel, Mapei GmbH

Retailer: Mühl Produkt & Service Alsdorf GmbH.

● RESILIENT: Magna Steyr, Graz, Austria

(see article published on Realtà Mapei n. 58)

In this business center, over 5 thousand square meters of linoleum was installed in different formats and colors. Work regarded the covering of the floors in various offices, and was carried out using Mapei adhesives.

Mapei coordinator: Jana Brandl, Mapei GmbH, Austria

Award accepted by: Jana Brandl

Retailer: Wegl Wolfgang GmbH, Graz.

● BUILDING: Bell-tower of Serra San Quirico (Ancona), Italy

(see article published on Realtà Mapei n. 57)

This was a highly prestigious and even cultural operation. The entire masonry structure of this antique bell-tower was

redone using the Mapei FRP System.

Mapei coordinator: Manuele Borghi, Mapei SpA

Award accepted by: Manuele Borghi

Retailer: Santacchi Forniture Srl, Camerino (MC).

● ADMIXTURES: New headquarters of the Permasteelisa Group, Treviso, Italy

(see article published on Realtà Mapei n. 58)

An almost unique effort considering the types of products used for building and assembling the precast concrete structures. It's the first finished worksite in Italy to use admixtures of the Mapei DYNAMON SYSTEM line, which guaranteed a reduction of work time and perfect concrete workability in spite of the climate.

Mapei coordinator: Ettore Menegaldo, Mapei SpA

Award accepted by: Ettore Menegaldo

Retailer: Antonio Basso Prefabbricati, Treviso

● CURIOSITY

Equally matched, the following received a special mentioning:

- the chess pieces created with ULTRAPLAN and ULTRAPLAN ECO (see article on Realtà Mapei n. 55) - award accepted by Sarah Rose and Mark Louch, Mapei UK

- the Leonardo da Vinci Bridge in Norway - award accepted by Havard Skjorhaug and Trond Hagerud, Rescon Mapei

- the Opus furnace (see article on Realtà Mapei n. 56) - award accepted by the Mapei coordinator Giorgio Roncan, Mapei SpA.

● SPECIAL AWARDS

During the evening, three special prizes were awarded:

Absolute First Prize for the Group, won by Mapei SpA for the number and the quality of the references sent; the **Prize for non-Mapei subsidiaries not in competition**, won by the Polish company Sopro and by Adesital (award accepted by Riccardo Sighinolfi and Francesca Rovatti); finally, the **Special Prize "Image and communication" for Mapei subsidiaries**, won by the reference that gave Mapei the most recognition in the world: the one regarding the 2002 Winter Olympic Games in Salt Lake City, USA (see article published on Realtà Mapei n. 52 and on Realtà Mapei International n. 11).

The enlargement and the new building operations - required to host the various disciplines and the numerous spectators of this extraordinary event - were carried out with success and in short time thanks to the technology of Mapei products.

Mapei coordinators: Diana Chiodi and Bart Wilde, Mapei Corp.

Award accepted by: Nick Di Tempora and Ephraim Senbetta.

Furthermore, the following references in progress received a special mentioning for the vastness of the interventions and the long work times required: the dam of the Three Gorges, in China; the Tomei and the Akaiwa tunnels, both in Japan; the Four Seasons Hotel, in Egypt; the canals of Venice and the church of Padre Pio in San Giovanni Rotondo.

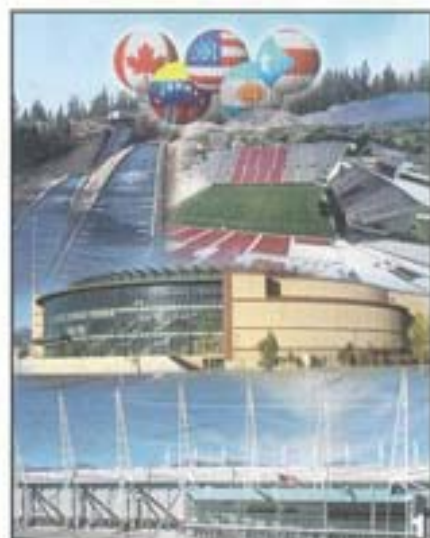
Registrations to the international Mapei References competition 2003 are open: to participate, just send the documentation regarding the reference proposed to the Mapei Marketing Office no later than August 31, 2003. So may the best participant win, wherever he may be!

1ST GRAND PRIX MAPEI REFERENCES



Categories and projects awarded

1. Special Award "Image and Communication" for Mapei subsidiaries: 2002 Winter Olympic Games in Salt Lake City - USA
2. Ceramic: Shopping Center Campo dei Fiori of Gavirate (Va) - Italy
3. Marble and natural stones: Airport of Düsseldorf - Germany
4. Resilient: Magna Steyr, Graz - Austria
5. Building: Bell-tower of Serra San Quirico, Ancona - Italy
6. Admixtures: New Headquarters of the Permasteelisa Group, Treviso - Italy
7. Curiosity: Chess, Leonardo da Vinci Bridge, Opus Furnace



WE ARE THE CHAMPIONS



Two pictures (interior and exterior) of the Rolling Stone. The show room made a stop in Orlando, Florida, last May and participated with Mapei at Coverings.

MAPEI ON TOUR with "The Rolling Stone"

It carries the name of a famous 70's rock legend, it travels throughout the United States on board a giant showroom trailer and has an adventurous spirit worthy of the Wild West. But it's neither a rock star nor a western movie hero.

The Rolling Stone is a laboratory on wheels, a giant showroom that visits clients directly, an entrepreneurial experiment that proved absolute success. Seen from the outside, it would seem to be a normal trailer, but once inside one discovers a surprising array: the walls are completely covered with stone slabs of every type and description.

The Rolling Stone is the brainchild of BuffaloStone Inc., a provider of natural stones for construction that has its head office in the state of Wyoming.

"The idea of creating a travelling showroom came to us when we saw the client interest in our products", says Cory Lawrence, Chief Operating Officer of BuffaloStone. "We realized that the best way to spread the word about our products was to make sure the public saw it first hand", continues Lawrence. "And now we bring our showroom directly to the distributors, we hold conferences for architects and designers and we give people the opportunity to touch and feel the quality of our products", he concludes.

Once on board the Rolling Stone, many visitors are amazed. How is it possible, they ask, that a trailer 36 feet long and 8.5 feet wide, with a traditional suspension system and completely covered with stone slabs on the inside, can travel for thousands of miles, without any of the slabs coming off.

The secret lies in Mapei's GRANIRAPID SYSTEM, one of the products obtained thanks to the Time Saving technology, which allows for perfect adhesion in a minimum time frame.

"Only three hours after having set the stone, we took a test drive of about 30 miles: not a single stone moved, not even the slightest budge. This result is better than any other testament as to the quality of Mapei products", comments Lawrence with a smile. One stone is worth a thousand words.



NEW FIGURES FOR MAPEI GROUP

2003

39

Plants



Projected
turnover

7

Billion

Euros

3450

Employees

of which **350** in our
7 R&D centres



More than

500

Adhesives • Sealants
Chemical products
for the building

More than

30000

Customers worldwide...



More than

90000

Tons of
products a day



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performance in compliance
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