

INTERNATIONAL

REALTÁ MAPEI



Mapel on the Olympic Podium

A dive in paradise

Fiumicino airport satellite

A city within a city



11



WINNING NUMBERS FROM MAPEI

'Winning numbers from Mapei' is the advertising slogan that you can find on the last page of this issue.

A series of numbers: 39 plants, 900 million euros of planned turnover, a workforce of 3,000 people, over 500 adhesives, sealants and chemical products for construction, more than 9,000 tons of products per day, over 30,000 clients world-wide... These numbers indicate the dimensions of this multi-national company. Born 65 years ago in Milan, it has grown in

Europe, America, Asia, Oceania and Africa to become the world's leader in the sector of construction adhesives. These numbers are the result of the Group's internationalisation strategy followed during 2001 with the acquisitions of the Sopro-Dyckerhoff Group in Europe and the Chembond company in Canada. They're numbers in continuous evolution considering that, thanks to the innovating capacity of its research laboratories, Mapei is able to capture all the opportunities that a global market has to offer.

Mapei's numbers indicate strength, development, solidity. Winning numbers.



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INTERNET•INTERNET•INTERNET

We inform all the readers of Realtà Mapei International that as from July 11th 2002 the new Mapei web site is: www.mapei.com



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Main cover photo: Bizarre and skillfully mosaic games of shapes and colours distinguish the Discovery Cove in Orlando, Florida (article on page 16).

The recession is behind us, said Alan Greenspan, responsible for the American central bank, director of the global economic situation, and above all main guide, with his words and actions, of the US economy.

And not only is the American industry betting on this revival, but Wall Street is pushing the indexes up as well.

In spite of the unfavorable expectations of the beginning of the year, the American economy is recovering after a turbulent and uncertain period, which surely didn't facilitate a relatively quick resurgence.

The positive turnaround of the United State's economy is seen positively on this side of the ocean as well, where Europe too is confident in the recovery of its own internal economy.

It's therefore natural that enterprises all over the world are trying to anticipate what may happen in the following months, maybe with one exception: the building industry.

In fact, in the general panorama of a staggering economy, the construction sector is one of the very few that is still doing quite well.

And Giorgio Squinzi, Mapei directing manager, confirms: "it's a growing sector everywhere, with the exceptions of Germany and Austria in Europe and Argentina and Venezuela in South America".



MAPEI GLOBAL PLAYER

In this interview, Giorgio Squinzi explains the perspectives of the multi-national Italian company that has strengthened its worldwide leadership. The acquisitions of the German Sopro-Dyckerhoff and Canadian Chembond companies.

Mr. Squinzi, so you are one of the few contractors that is not crying at the beginning of this year?

"Actually, I'm crying too, but for all the hours I dedicate to working, not for my company's results.

The year 2001 closed out with a good increase, greater than 16% with respect to the results of 2000, and therefore aligned with our expectations. Turnover was 725 million euros (650 million

dollars), and workforce has exceeded 3000 people. It was substantially an internal growth, and characterized, towards the end of the year and therefore with impact on 2002, by two acquisitions: the German Sopro-Dyckerhoff and the Canadian Chembond".

Well then, let's talk about them...

"Sopro is third among German producers of adhesives and products for the installation of ceramic tiles and natural stones. It gives work to about 400 people, with a turnover of about 85 million euros; it's present with six plants in Germany, Austria, Poland, Russia, Italy and Portugal".

In Italy as well?

"Yes, with a company in the area of Sassuolo. In that area, in 2000, we already bought Adesital, with the objective, fully reached in only a few months, of increasing our production capacity in the Sassuolo area.

Now with Cercol, with a recently enlarged plant, we have a brand that is very well positioned in Italy and some foreign countries, with a valid commercial organization that will operate autonomously".

Let's get back to Germany and the acquisition of a large group such as the Sopro-Dyckerhoff company.

What are the consequences?

"The Mapei Group has now obtained a co-leader position on the German market, which has a share of 25% and is the largest and most technologically advanced in the world of chemical products for construction. And with the acquisition of the most prestigious and oldest brand on the German market, we have reached the objective of confirming in Germany, where Mapei was already present since 1999 with an extremely modern plant, our position as world leader. What's more, with this acquisition our Group now possesses a strong managerial structure, extremely efficient in the research sector, which has always been one of Mapei's priorities".

And in Canada?

"Chembond Limited has become part of our group; it's a company that produces and sells a line of adhesives and construction products in its plant in Brampton, Ontario.

Another step that strengthens our number one position in Canada".

Let's talk about 2002. What are the perspectives?

"We think that globally we'll have another good year".

Do you have a magic wand?

"No magic wand, it's just that the building industry is flourishing in North America, as well as in great part of Europe and Asia.

Even though the general economy is not going through a brilliant period, we plan to improve through the acquisition of new market shares. Furthermore, we plan to obtain a good return on the investments made in the last five years".

Can you give us some details?

"We expect a growth in Italy of 12%, lower than the 16% registered 2001. But

it is still a good performance, especially considering the absence of important public works and a flourishing economy. In Europe we are waiting for Germany's awakening, but I also expect above average results from East European countries that are making great progress.

Growth is expected to reach almost 20% in North America. Sales in the United States and Canada, together with Venezuela, make up about 30% of our global turnover. We plan to continue growing, increasing our current market shares of 25% in the US and 60% in Canada".

So has the American market recovered from September 11th?

"The building industry has no problems, there were only a few weeks of uncertainty after the terrorist attacks.

During Surfaces, the Las Vegas fair dedicated to floor coverings, we received the confirmation that the American economy is alive and that construction industry is flourishing. To this context, we can add the extremely positive moment regarding ceramic tiles, parquet and natural stones".

And in Asia?

"We are growing in different areas. Singapore, Malaysia, and Hong Kong are growing steadily; and a great increase is expected in Japan thanks to the new technologies developed specifically for that market".

So in 2002 Mapei's turnover will be...

"With the new acquisitions, the Mapei Group's turnover should exceed 900 million euros, over 800 million dollars. In June, a new plant will begin operation in Hungary, and by the end of the year the plant in Poland will be underway. What's more, in April a new Vinavil plant will be inaugurated in Egypt; this means that the Mapei Group will be present in every continent.

And looking beyond 2002?

"We're a global player and we are moving consequently. In particular, our strength resides in our capability in research and product innovation, to which we constantly assign 5% of our turnover, a value greater than that of any other company. Furthermore, we are aware that in our sector an efficient marketing strategy is fundamental, and investments in this direction will continuously increase".

Is there anything that you are particularly proud of?

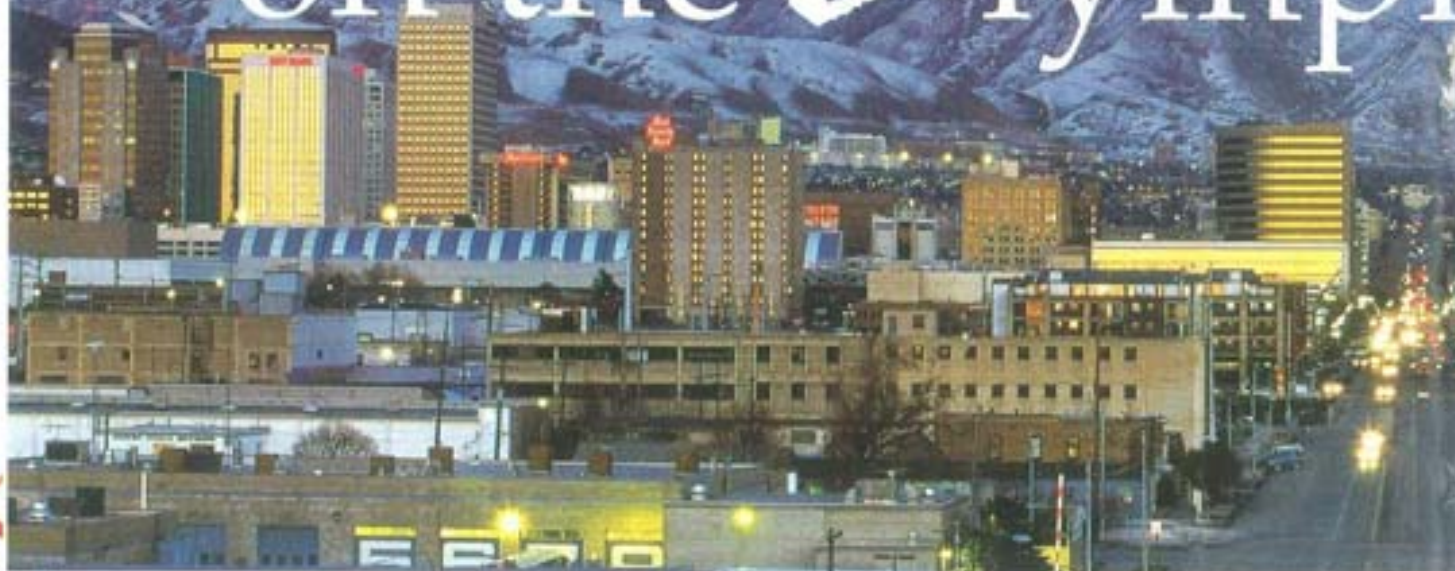
"Actually, I'm proud of two things: one, as Mapei, for having reached ambitious company objectives in spite of the difficult economic situation of this period.

The other, as the president of Federchimica, for having reached the agreement for renewing the contract of chemical workers after 4 months of negotiation without a single hour of strike. An agreement that involves about 220 thousand workers of chemical and pharmaceutical companies, and that plans an average increase of 88 euros and a reduction of work time by 8 hours.

An agreement that is therefore aligned with the type of advanced industrial relations that have always characterized the Italian chemical industry, and that's able to give companies the possibility to seize every opportunity of recovery".

Mapei on the Olympi

SALT LAKE CITY

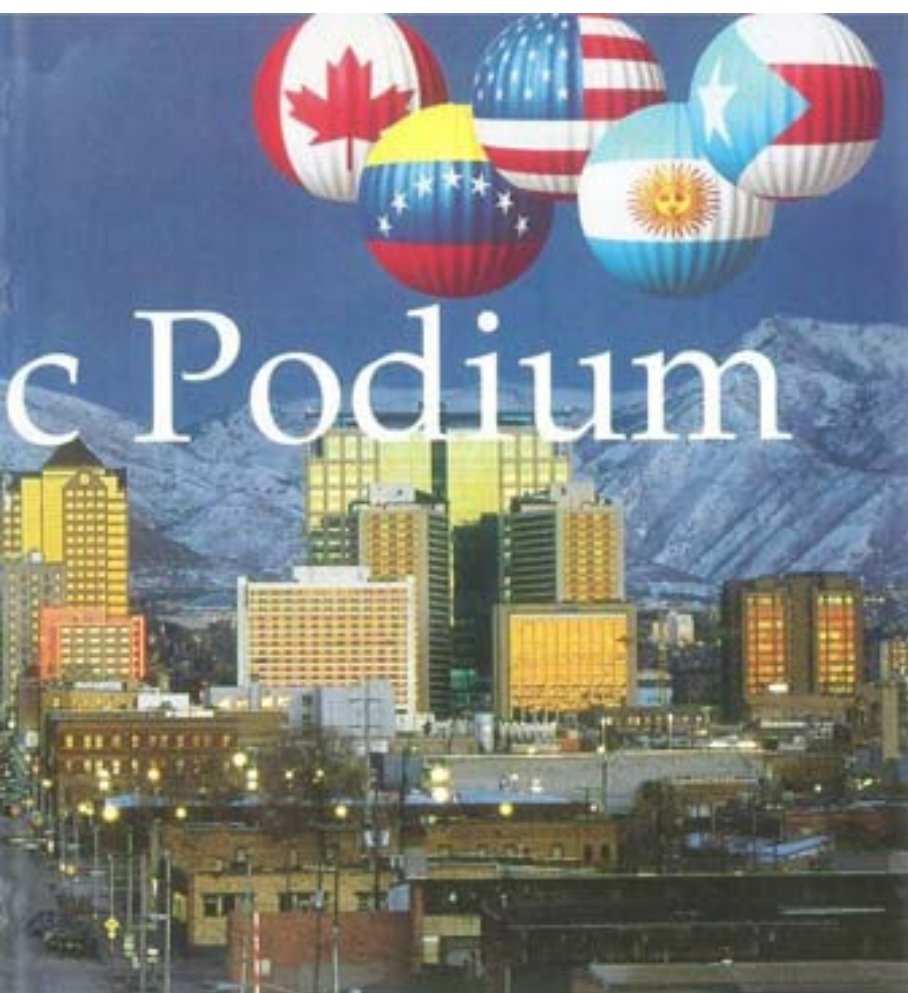


Salt Lake City, capital of Utah, was transformed for 18 days in February of this year as it became the global center for the Olympic Winter Games. With its slogan, "Welcome to the most beautiful snow in the world", the city was host to

1.5 million visitors, 2500 athletes from 72 countries, 100,000 volunteers and a television public of 3 million people. A combination of avant-garde technology and infrastructure created the tremendous framework that captured the imagination of its global audience.

At a cost of 300 million dollars, this imposing scene was protected by a wall of security provided by thousands of guards, video cameras and equipment specialized in recognizing explosives. The city, founded in 1847 by Brigham Young, then president of the Mormon Church, is situated on the Great Salt Lake. Its focal point is the Temple Square, home of the great Mormon Temple, a neo-gothic structure built from white granite and characterized by six majestic steeples. This plaza, spanning three square miles, played center stage each night to the





award ceremonies as the Wasatch Mountains loomed in the distance. For this occasion, the historic Heber Valley Railroad, created under Abraham Lincoln's presidency, was reopened. Hauled by the glorious Big Boy 618, the 1903 Union Pacific steam engine transported visitors on the Heber Valley Railroad through the Provo Canyon and into the Olympic grounds below. For those who are interested in the structures created for this event, the list includes seventeen buildings, some created specifically for the games, others restored for the occasion. Already present in almost all the Olympic venues from 1960 onward (and most recently, the 2000 Summer Games in Sydney), Mapei was also part of the 2002 Winter Games where it contributed with its products to help realize the numerous events, including both athletic and public arenas and infrastructures. In fact, it greeted guests at the airport and continued its presence in the Little America Grande Hotel.

Photo 1. A view of the Heber Valley Historical Railroad Station entrance way where the Mapei application systems included the KERALASTIC SYSTEM, TYPE 1 MASTIC, ULTRACOLOR, PRP 315, KERACRETE, ECO 185, ECO 575 and ECO 710.

Photo 2. At the Marriott Mountain Side Resort, the hotel located near the Park City Ski Arena, the Mapei installation systems used were ULTRAFLEX 2, KER 200, KER 800 and TYPE 1 MASTIC.

Photo 3. For the elegant Grand America Hotel by Little America built in Salt Lake City, the granite and marble floor installation was made possible with MAPECEM, PLANICRETE 50, KER 800, PRP 315, KERALASTIC SYSTEM and KERAPOXY.

Photo 4. Mapei products welcomed athletes and spectators alike as they arrived at the Salt Lake City Airport. Here, the Mapei products used were the KERALASTIC SYSTEM, ULTRACOLOR, ECO 420, ECO 710, ULTRABOND G19, ULTRABOND G21, ECO 350 PLANIPATCH.



Photo 5. The judges' tower located at the 120m ski jump, where athletes launch themselves into midair, was carpeted using Mapei's ECO 185, PLANIPATCH and ECO 350.

Photo 6. In the Rice Eccles Stadium, both commencing and ending ceremonies took place. Here, Mapei ULTRABOND G19 was used to install the AstroTurf covering the entire stadium field.

Photo 7. The ice hockey events took place at the E Center where tile was installed with Mapei TYPE 1 MASTIC and KER 200.

Photo 8. For the ceramic installation at the Delta Center, Mapei ULTRA FLEX 2, KER 200 and ULTRACOLOR were the products of choice.

Mapei products were used also in the restoration of the Heber Valley Railroad Station. In total, over 800,000 square feet of tile and stone and another 55,000 square feet of carpet, rubber and vinyl flooring were installed with Mapei products in athletic venues, plazas and other public centers throughout the Olympic city. They exist in the speed skating oval, the judges tower, the race track, the ice arena and the Rice Eccles Stadium. ULTRA BOND G19, a universal two-component polyurethane adhesive, was chosen for the rubber flooring and AstroTurf found in the sport venues. The ecologically-friendly adhesives ECO 300 and ECO 185 were the carpet adhesives for nearly 10,000 square yards of installation. ULTRACONTACT and GRANIRAPID were chosen and used for the sporting venues, whereas KERAPOXY and ULTRACOLOR, high quality grouts, were used in almost all the applications. In venues such as the Oquirrh Park Olympic Speed Skating Oval, considered the fastest skating oval in the world, and in the Rice Eccles Stadium, which hosted the opening and closing ceremonies, the rubber and AstroTurf flooring were installed with ULTRABOND G19, a universal polyurethane two-component adhesive. ECO 300 and ECO 185, two adhesives from Mapei's ECO line that are solvent free and have low VOC contents, were



implemented for the installation of over 10,000 square yards of carpeting in various buildings, one of which was the judge's tower at the Olympic Ski Jump. The success of the projects can be measured through the responses of those who actually used them. Warren Lyngle, of Lyngle Brothers Industries, oversaw the Oquirrh Park Speed Skating Oval where 46,000 square feet of Mondo flooring were installed. This venue holds one of the world's finest and fastest skating ovals in the world. "The installation was wonderful," states Lyngle, "we've used Mapei for years and there have been zero failures each time." Matt Dalton, of Design Team Inc., who inspected the installation at the







Photo 9. Thousands of square feet of rubber flooring were installed at the Oquirrh Park Speed Skating Oval, which is considered the fastest skating oval of its kind in the world. There, the Mapei products used were TYPE 1 MASTIC, KER 800, PLANIPATCH, ECO 350, ECO 575, ECO 300 and ULTRABOND G19.

Photo 10. Utah is the Mormon capital of the world. Mapei products KERABOND and KERAPLY were also chosen for the installation of the Latter-day Saints Church Assembly hall.

Photo 11. The Snow Basin was a departure point for the skiing events. The construction of the bathrooms and locker rooms of this location also include Mapei ULTRAFLEX 2, TYPE 1 MASTIC and ULTRACOLOR.



Judges Tower for the 120 Meter Ski Jump, agrees: "We've never had a bad Mapei installation. We used Mapei's ECO 185 because it has a proven track record with us, it is ecological, and we've never received a complaint."

Mark Knaphus, of Caffall Tile & Marble was involved in many of the venues for the Winter Games, including the Little America Grande Hotel, The Gateway Retail Center and the Historic Heber Valley Railroad Train Station, among many others. Each installation was a success and not once did Knaphus find a

problem with the Mapei products. "We've had very good success with the service from Mapei. Our questions get answered, the products are available, and they always have the right product for the application. Most importantly, they guarantee their products," confirms Knaphus.

It is not the first time that Mapei has used its products for important projects such as these. For instance, in the 2000 Olympic games in Sydney, Mapei contributed to the realization of famous projects recognized world-wide.

"Everyone is excited about being part of the creation of these venues," explains Bart Wilde, Mapei technical representative. "Being part of history like this really excited everyone involved, and it's wonderful that Mapei was given the honor of being part of such an important event."

TECHNICAL DATA

2002 Olympic Winter Games
The 2002 Olympic Winter Games were held from February 7 to 25 in Salt Lake City, Utah, USA.

Some numbers:

- 3,400 "Olympic family" members and official invitees
 - 2500 athletes
 - 72 participating nations
 - 19,500 volunteers
 - 174,000 attending journalists
 - 3 billion television spectators
 - 16,000 security officials
 - 310 million dollars spent for security
 - 17 building constructed or renovated
 - 12 buildings where Mapei was used
 - 89,000 square meters of tile and 6,150 square meters of resilient flooring installed with Mapei products
- The use of Mapei products was made possible thanks to the coordination of Bart Wilde, Mapei technical sales representative.

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



Photograph from Sportweek n. 9/02





A CITY

Positioned on a total surface area of 25,000 m², the multipurpose complex Babylon Centrum has already become a landmark in the Liberec region.

It's function does not end in merely commercial activity, but has become a social gathering place for the community.

WITHIN A CITY

Converting former industrial buildings into functional and architecturally pleasing infrastructures is an issue that concerns many city planners, especially in Europe. The reclaiming of abandoned manufacturing buildings in industrial areas is a recurrent problem. This is because companies, once part of the fabric of the city, have gradually moved to the outskirts of the urban center looking for larger, unencumbered areas with easier access to highways in order to facilitate transportation. The result is huge, neglected properties that often represent not only a challenge to architects, but also great opportunities to both private developers and local communities. Liberec is a town in the Czech Republic with an old weaving tradition, but the looms are now silent in all of the factories. One of these factories, the former Hevda, was transformed to accommodate the new Centrum Babylon, now a landmark of the region. In order to proceed with the project, the cooperation of the local government was necessary despite the dismal economic situation of the country. In turn, the city could develop thanks to the projected tourism boost fueled by such an investment. Indeed, Liberec has many attractions; most noted are its gardens, the local zoological garden (the oldest in Europe) and the botanical garden (now featuring several, rare plants). Both gardens have become symbols of the city. In addition, the geographic landscape with its mountains and the town's proximity to Poland and Germany are some of the reasons that led to the creation of Centrum Babylon. Situated not far from the city's downtown, Centrum Babylon is a multipurpose complex consisting of five



basic, yet large units taking up 25,000 m²: a covered shopping mall, dining facilities, funfair and sports facilities, an "Aqua park" and a hotel with a "Business Center" annex.

The multipurpose Centrum Babylon has become more than just a shopping mall, it is rather a gathering place where people can meet and socialize.

The complex design of the Centrum Babylon was carried out in the following stages.

The first stage

The first stage of the works commenced in the spring of 1998. The focus of construction concerned the shopping mall and part of the restaurant areas. That stage involved the repairing of 25,000 m² of the old sections; only the exterior walls of the old sections were left and some heavily damaged parts were replaced. The basement below, which spanned some 4,000 m² was cleared out and then renovated as all the existing floors had to be demolished and



replaced. Such an ambitious project could only be accomplished through the use of first-rate installation products. Right from the beginning, Mapei took part in the construction by supplying products for the floor and wall installation.

To adhere the ceramic tile on the cement-based screed, PRIMER G* was applied, a synthetic resin-based water dispersion primer, perfect for the treatment of surfaces prior to applying cement-based adhesives. Then, for the tile installation, a product that could guarantee a high adhesion and no meaningful shrinks was absolutely required owing to the treated surfaces.

That's why a KERABOND+ISOLASTIC* mixture was used in the ratio of 25 to 2. KERABOND* is a cement-based powder adhesive specifically designed for ceramic tiles, while ISOLASTIC is a flexible latex for cement-based adhesives. Another Mapei product, ULTRACOLOR, a fast setting grout, was chosen for the joints. Once the tiles were installed, the joints were brushed and cleaned of all residues and the grooves were filled with the mixture by means of a rubber float. The cycle included a final cleaning of the flooring, removing the layer of dust left by ULTRACOLOR with just a dry cloth. The same Mapei installation products were used for the wall tile as those used for the flooring, with one exception: KERACOLOR, a cement-based grout was used for the wall tile installation. The first stage of works and the main common areas were completed on November 1st, 1998.

The second stage

The second stage concerned the execution of the "restaurant unit". In this case, Mapei was also the partner of choice for the floors and wall tiling.

The same installation products used in the previous stage were supplied with one difference: the flooring in the areas with floor radiators required a higher ratio admixture of KERABOND+ISOLASTIC*.

The renewal of the old 4,000 m² basement below was also quite difficult.

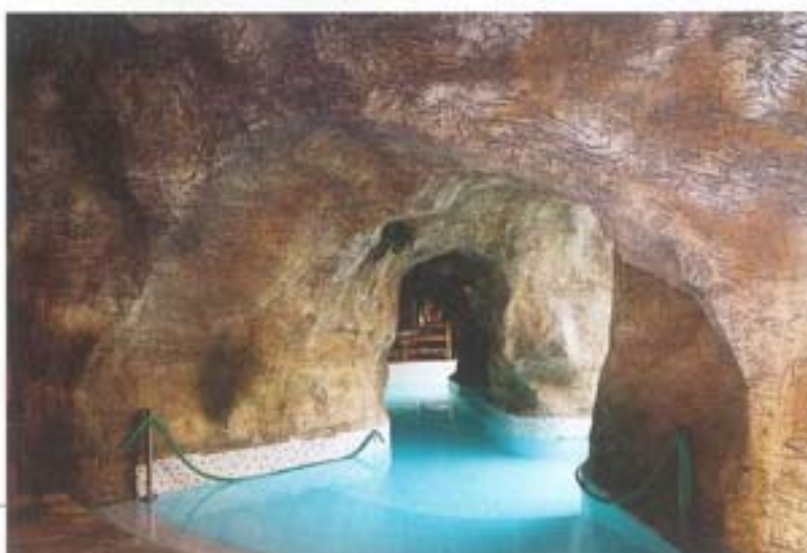
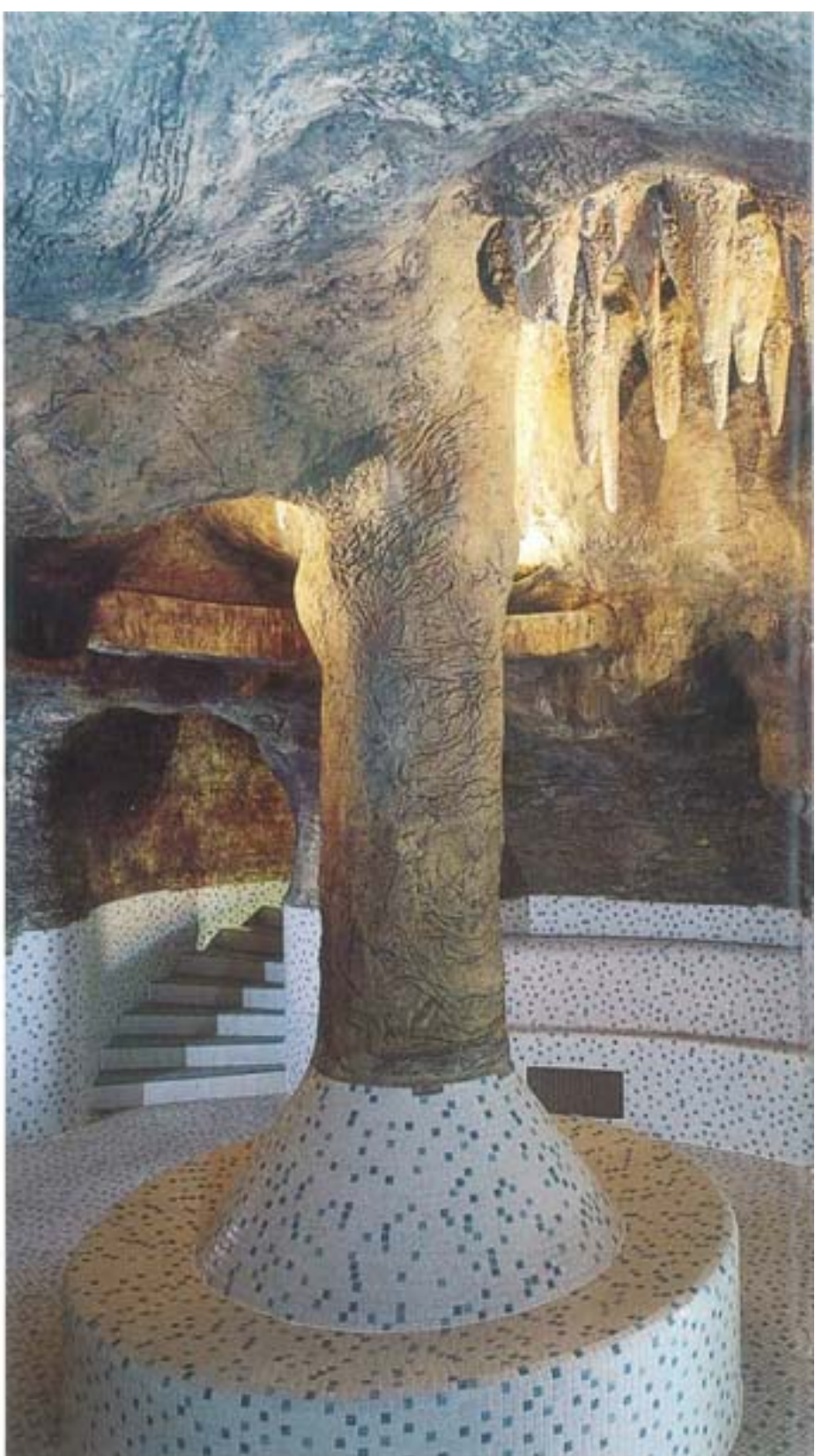
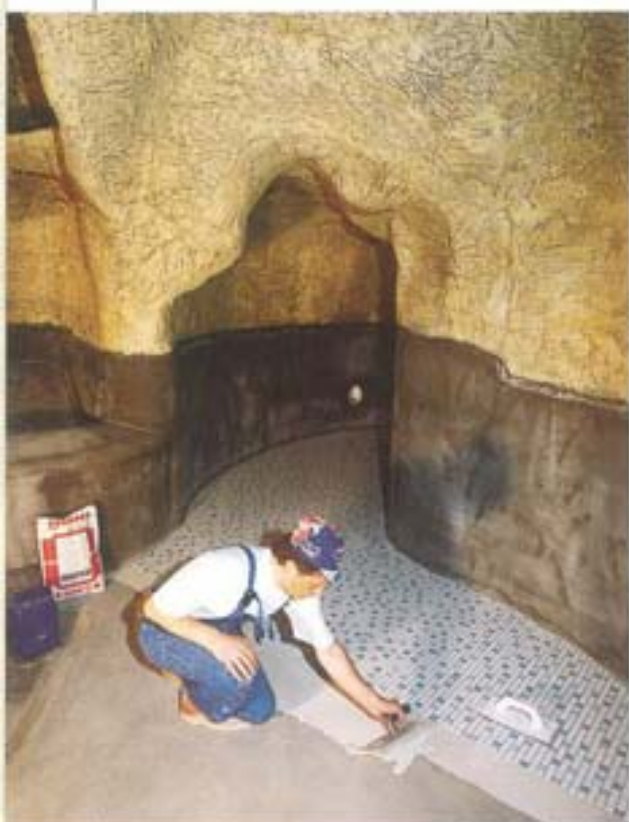
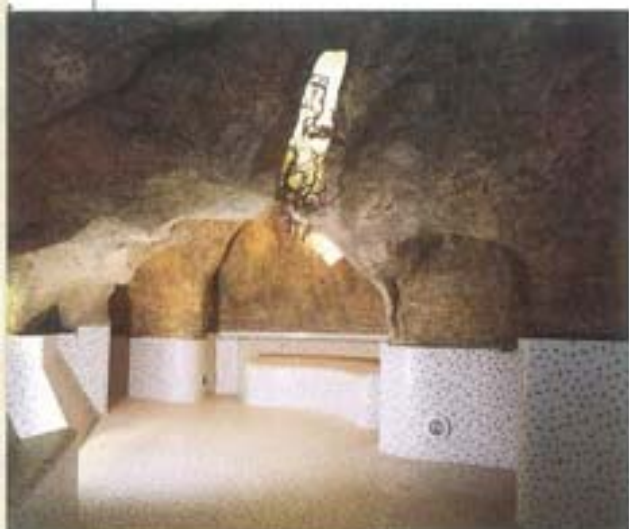
Here, to clean the stone pillars and remove the mortar and the residual binders, they made use of KERANET*, an acid-cleaner suitable for removing traces of cement and lime, as well as efflorescent salts. WALLGARD GRAFFITI REMOVER GEL*, a gel detergent used to remove

writings from all kinds of surfaces was also used.

This stage was completed in the second half of 1999.

The third stage

The third stage of the execution focused on the funfair. Here, too, as in the shopping mall, both the wall and floor tile installations made use of the same Mapei products. However, this part presented a specific problem, one that required the waterproofing of the staff bathrooms located right above the cellars without using membranes or sheaths outside the building mass. Mapei's solution was MAPEGUM WP*, a fast-drying flexible liquid membrane used as a waterproofing





and water-repellent adhesive that is totally solvent-free. Once it is laid and dried, MAPEGUM WP turns into a flexible and non-sticky waterproof sheath. Considered as the natural match for MAPEGUM WP*, MAPEBAND, a rubber tape for flexible sealing and waterproofing was used to seal some "difficult" places, like corners, expansion joints, water drains, etc. For the interior of the bowling hall, the floor installation was partly carried out with Cetris, a "reconstructed" wood for which KERALASTIC*, a two-component polyurethane adhesive mixed with FUGOLASTIC*, was used. This third stage was finished in December 1999.

The fourth stage

The fourth stage of execution consisted of the Aqua park, the most difficult one since it is one block in length. The Aqua park complex accommodates fitness rooms, solarium, massage areas, and restaurants. In short, it's a real relaxation center! The actual Aqua park consists of three connecting areas: the first one features several recreational facilities such as slides, mazes, children's swimming pools, etc. In the central area there is a large swimming pool with a hydro massage and fountains while in the third area the swimming pools are set in a system of communicating grottoes including sauna baths, massage areas, Turkish baths, etc. To carry out the fourth part of the Centrum Babylon, the existing rooms were demolished in order to build a large, central "atrium" and prepare for the planned grottoes. First, a large roof in reinforced concrete (about 600 m²) was built to set the grottoes around the swimming pools. This roof consisted of a steel lattice frame clad with gunite and sprayed with two or three layers of mortar. In order to improve its water resistance, IDROSILEX, a special integral

waterproofing component that helps to reduce the widespread porosity of the mortar was added to the cement-based mixture. A synthetic rubber latex, PLANICRETE*, was used to improve adhesion characteristics.

The rock relief was obtained by pressing some waxed paper into the top layer of mortar sprayed on the grottoes. As a final coat, MAPELASTIC*, a two-component cement mortar for concrete waterproofing, was applied to the sprayed mixture. The final color of the surfaces was obtained by means of several shades of ELASTOCOLOR*, partly sprayed and partly hand-applied by brush or roller. After completing the grottoes, the walls of the pools had to be leveled. Once the surfaces were cleaned and smoothed, they were treated with PRIMER G*, a synthetic-resin-based primer and a special mortar, NIVOPLAN, was used for the wall leveling.

NIVOPLAN*, combined with PLANITOP 100*, a fast-setting mortar, is most suitable for leveling horizontal and vertical concrete surfaces. The same leveling was carried out also for the flooring of the pools. The surfaces, primed with PRIMER G*, were leveled with ADESILEX P4*, a cement adhesive used to level uneven substrates. All the surfaces, both vertical and horizontal, were then treated again with PRIMER G* and, later, with a special water-repellent binder, MAPELASTIC* which was applied in two coats.

MAPELASTIC* was again used for the expansion joints, while MAPEBAND* was chosen for the waterproofing.

To check the quality of the work, a flood test was organized throughout the various development stages. After emptying out the pools, any small imperfections of the surfaces were leveled with NIVORAPID*, a fast-drying thixotropic leveling mortar, combined with the mixture LATEX PLUS*, a flexible latex especially designed to be used with NIVORAPID. Once these slight snags were solved, a ceramic mosaic was bonded on the bottom and walls of the swimming pools with KERABOND+ISOLASTIC*. In this case, KERAPOXY*, a two-component epoxy grout, was chosen for the joints.

MAPESIL AC*, a single-component acetic silicone sealant was used for the sealing. One of the many problems that had to be solved was the protection of the walls of the old sections from the considerable quantity of water found there. This was solved with ANTIPLUVIOL S*, a transparent siloxane, resin-based, water-repellent compound which is a ready-to-use product that doesn't need to be diluted and is easy to apply. In this part of the complex, the most important application stage was the waterproofing of the pools and rooms. For this purpose, plenty of AQUAFLEX*, a flexible, liquid waterproofing membrane was used.

The product is most suitable for the waterproofing of ceramic and natural stone floorings and was successfully applied in this area of the Centrum Babylon. After cleaning and preparing the substrate, the AQUAFLEX* coat was applied on the flooring and, once dry, it changed into a flexible and tenacious sheath that was ready for the tile or stone application. MAPEBAND* was used as the waterproofing system.

For the flooring of the paths round the pools and some relaxation rooms, installers opted for a special and valuable



Brazilian stone that is non-absorbent. The stone components were laid with GRANIRAPID*, a fast setting two-component system that is suitable for natural and artificial stones. The preparation procedures for this product are similar to those of other adhesives for tiles, but its use is recommended when needing to pave large surfaces quickly, especially if severe weather conditions are considered, as in this case. KERAPOXY* was used for the deep and uneven joints along the slabs. Again, the combination of KERABOND+ISOLASTIC* for the tiling and KERACOLOR+FUGOLASTIC* for the joints were chosen for the other Aqua park areas.

The final stage

The fifth and last stage of the project provided for a hotel with accommodation for 300 people and a Business Center annex. In these rooms, the ceramic tiling was carried out with the same Mapei products already used in the previous stages. In this particular case, KERABOND+ISOLASTIC was the installation system used along with KERACOLOR+FUGOLASTIC for the joints. KERALASTIC, a two-component polyurethane adhesive was also used in some penthouse suites and in the top floor terraces. Once applied and set, the mixture changes into a flexible film, that is shrink-free, waterproof, and assures perfect adhesion to tiles. For the waterproofing of the bathrooms, restaurants and common areas, MAPEGUM WP* was used combined with MAPEBAND, as described above. The entire Centrum Babylon was completed with the opening of the hotel in October 2000.



PROJECT DATA

Shopping mall (Stage 1):

Ceramic wall tiling: 450 m²

Ceramic flooring: 1,100 m²

Restaurants (Stage 2):

Ceramic wall tiling: 1,210 m²

Ceramic flooring: 4,600 m²

Funfair (Stage 3):

Ceramic wall tiling: 350 m²

Ceramic flooring: 2,150 m²

Aqua park (Stage 4):

Swimming pool ceramic tiling: 1,800 m²

Wall tiles - glass: 550 m²

Wall tiles - other: 2,300 m²

Floor tiles - routes (natural stone): 1,700 m²

Floor tiles - other: 2,500 m²

Water-repellent binders - pools: 1,800 m²

Water-repellent binders - other: 3,500 m²

Hotel and business center (Stage 5):

Ceramic wall tiling: 3,500 m²

Ceramic flooring: 2,000 m²

Water-repellent binders: 3,400 m²

TECHNICAL DATA

Centrum Babylon - Liberec (Czech Republic)

Project: conversion and structural upgrading of a former industrial center

Years of construction: Spring 1998/autumn 2000

Client: Centrum Babylon a.s. - Liberec

Project: Union Arch Liberec (architectural design), Sportprojekta s.r.o. - Brno (Aquapack); Sportakcent s.r.o. - Prague (Aqua park systems)

General Contractor: Sdružení Havax s.r.o. - Liberec

Material Supplier: Dorint s.r.o. - Liberec

Laying Contractor: Kodet s.r.o. - Kladno

Materials installed: ceramic tiles and mosaic, natural stone

Mapei products used: ADESILEX P4, ANTIPLUVIOL S, AQUAFLEX, ELASTOCOLOR, GRANIRAPID, IDROSILEX, KERABOND, KERABOND+ISOLASTIC, KERACOLOR, KERACOLOR+FUGOLASTIC, KERALASTIC, KERANET, KERAPOXY, LATEX PLUS, MAPEBAND, MAPEGUM WP, MAPELASTIC, MAPESIL AC, NIVOPLAN, NIVORAPID, PLANICRETE, PLANITOP 100, PRIMER G, ULTRACOLOR, WALLGARD GRAFFITI REMOVER GEL.

Mapei coordinator: Zdenek Runstak

"The products mentioned in this article belong to the lines "Products for ceramic tiles and stone materials" and "Building specialty line". The technical data sheets are contained in the Mapei Global Infonet CD and in its Internet site www.mapei.com. Mapei adhesives and joints comply with EN 12004 and prEN 13888 standards.

Adesilex P4 (C2F): rapid setting self back-buttering mortar with medium deformability for ceramic tiles

Antipluviol S: transparent siloxane resin-based water-repellent compound

Aquaflex System: flexible, waterproofing and anti-fracture liquid membrane

Elastocolor: protective and decorative elastic paint based on acrylic resins in water dispersion

Fugolastic: liquid polymeric additive for Keracolor FF and GG

Idrosilex: integral waterproofing for cementitious mortars

Granirapid (C2F): two-component adhesive system with rapid setting and hydration for fixing ceramic tiles, natural and artificial stone (adhesive up to 10 mm thick)

Kerabond (C1): cement-based powder adhesive for ceramic tiles (adhesive up to 5 mm thick)

Kerabond+Isolastic (C1): cement-based powder adhesive for ceramic tiles (adhesive up to 5 mm thick) added with flexible latex.

Keracolor FF (CG2): cement-based grout for up to 6 mm joints

Keracolor GG (CG2): cement-based grout for 4 to 15 mm joints

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

Keranet: acid-cleaner for ceramic tiling. Most suitable for removing efflorescent salts and the final cleaning of terracotta. Coming in powder (concentrated) or liquid (15% water solution)

Kerapoxy (RG): two-component, acid-resistant epoxy grout for min. 3 mm wide joints. Available in 26 colors

Latex Plus: elasticising admixture to be mixed with Keraquick for increased deformability and Nivorapid for improving deformability as well as adhesion on difficult surfaces

Mapeband: polyester reinforced rubber tape for flexible sealing and waterproofing of internal and external expansion joints

Mapegum WP: liquid elastic membrane for interior waterproofing

Mapelast: flexible, two-component cement mortar for waterproofing concrete, swimming pools and balconies

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

Nivoplan: leveling mortar for 2 to 30 mm thick walls

Nivorapid: ultra-fast (4-6 hours) setting thixotropic cement-based leveling mortar for vertical surfaces, too, 1 to 20 mm thick

Planicrete: synthetic rubber latex for improving adhesion of cementitious mortars

Planitop 100: light grey and rapid-setting fine mortar for repairing and smoothing concrete and renders

Primer G: synthetic resin-based water dispersion primer low on volatile organic substances (VOC)

Ultracolor (CG2ArW): fast setting and drying grout for 2 to 20 mm joints, available in 26 colors; no efflorescence.

WallGard Graffiti Remover Gel: gel detergent for graffiti-damaged surfaces.





A dive in paradise

Until now, swimming with dolphins and other forms of marine life was an experience reserved for very few people. Today, with the opening of the wonderful "Sea World and Bush Entertainment" center in the "Discovery Cove" in Orlando, Florida, this dream has come true.

The work that was carried out in the park to offer visitors a "realistic" image of paradise is truly remarkable.

This dream has become reality thanks to the contribution of Reptile Design, which allowed the birth of an enchanting place such as the Discovery Cove. Ralph Young, with the help of Houston Winn and Jim Spencer, Reptile Design's creative designers for the project, made an amazing use of mosaic art, while

Mapei supplied installation technology, and precisely KER 200* and KER 700* as sealants and KER 121*, an adhesive low-thickness grout modified with polymers. Thousands of colored mosaic cover various areas of the park, in a sequence of tropical images so beautiful that the visitor doesn't know on which "magic combination of colors" to place his feet. Wherever he looks, the tiles are animated in circles and figures, representing animals and imitating the flow of the ocean's waves.

In the Administration Building, for example, an elaborated mosaic of over 75 m²




Photo 1. Sophisticated combinations of shapes and colors brighten up the different areas that compose the Discovery Cove in Orlando.

Photo 2. Thousands of tiles compose the numerous mosaics that surround the park, in a continuous succession of combinations of shapes and colors that immediately call to mind the sea and luxurious tropical paradises.



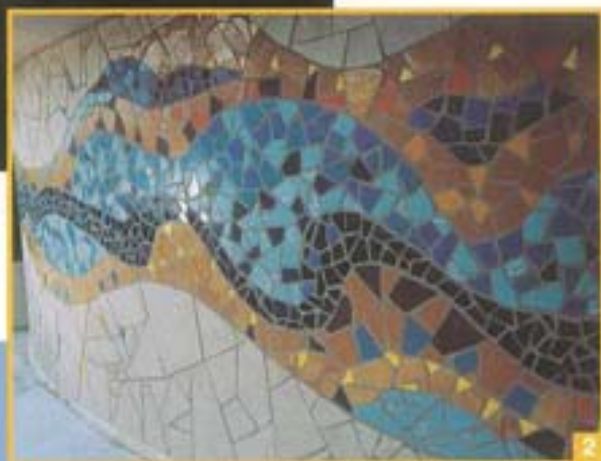
SeaWorld.

1
Photo 3. A detail of the mosaic pavement of over 1,000 m², totally based on the contrast between the slate elements and the ceramic tiles that reproduce a portrait of water.

Photo 4. Installation phase of the slate elements and preparation of the substrate for the colored ceramic tiles.

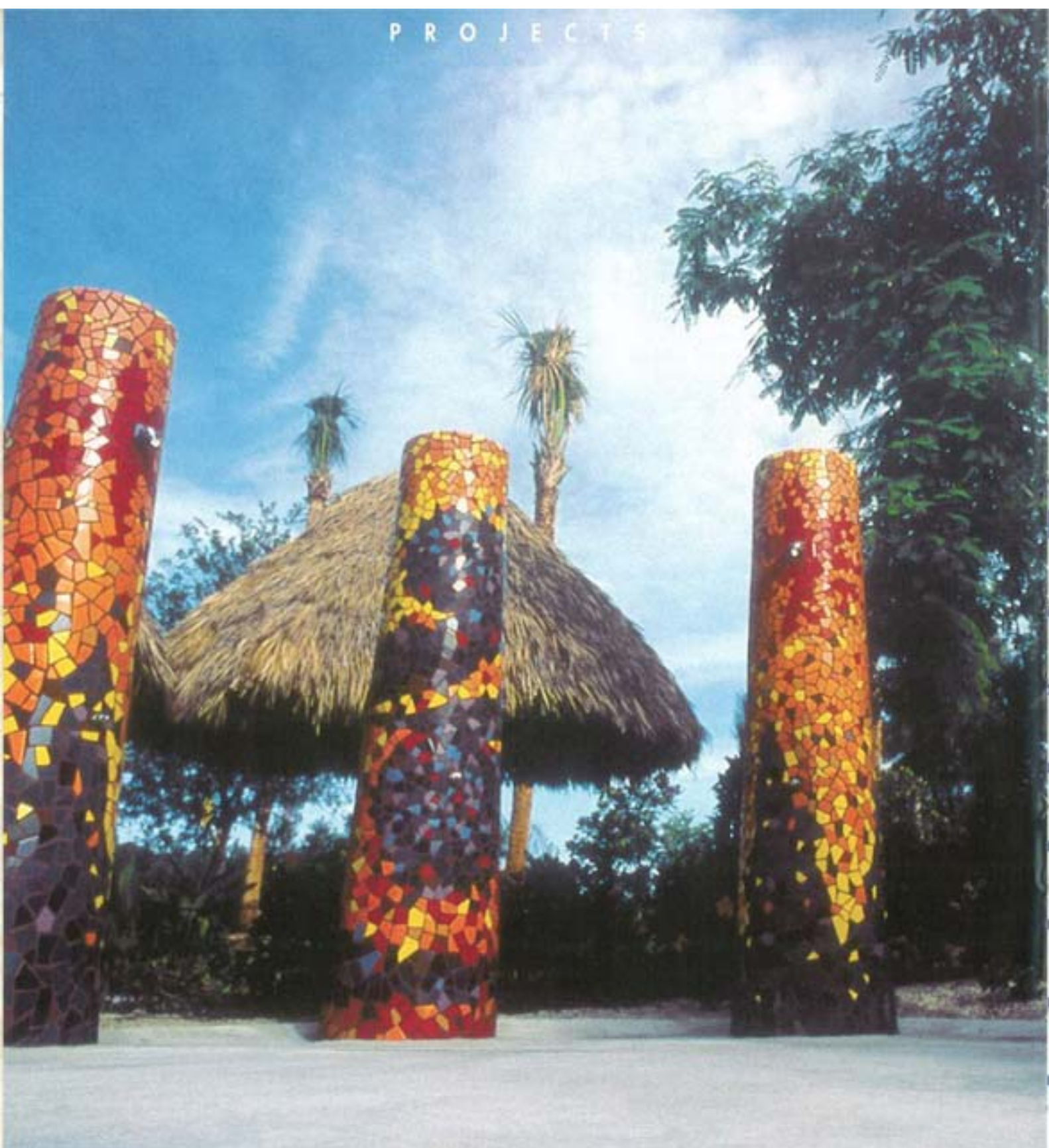
Photo 5. The constructive elements of the elaborated mosaics were previously prepared on the basis of designer's drawings.

Photo 6. In the operational phases, great attention was paid to the installation of tiles, that were shaped and chamfered on site to reproduce the drawings of the project with the utmost precision.



depicts marvelous water-works. And still, the pavement is a combination of two tones of slate and ceramic tiles that are shaped and chamfered on site, to realize the drawing requested by the designers with maximum precision. The ceramic mosaic was used in combination with glass mosaic to emphasize the sensation of water in movement. Even restoration points offer a continuous reminder of aquatic images and give the sensation of walking on a tropical island. And the list of wonders





continues with the restaurant, the signs, the vases, the bathrooms: in any direction, you can see excitement, spectacular mosaics and decorations that are never the same.

Behind the mirage

Of course, the work necessary to realize a similar project was a challenge right from the start. As explained by Ralph

Young, the combination of materials used for the mosaics, as well as their thicknesses and different levels of porosity, made work execution particularly difficult. Furthermore, the installation of all the coverings was done between December 1999 and January 2000, in a particularly unfavorable period due to the adverse weather conditions. In all, thirty people worked simultaneously, from the application of the adhesive for installing the tiles to their sealing, on a total surface of over 700 m². For this reason, thanks to the intervention of the general tile contractor, Nehemias Rivera, the main contractor, Suitt Construction, chose Mapei KER 200* sealant instead of an



Photo 7. And after the "dive in paradise... with the dolphins", 14 giant columns that emerge like majestic pillars in various tones of red allow the fortunate swimmers to wash themselves up: in fact, they are 14 giant showers.

epoxy sealant that was previously planned by the specifications. All Mapei products, the adhesive KER 121* as well as the grouts KER 200* and KER 700*, were supplied by Summitville Orlando Inc. In spite of the dimensions and complexity of the project, the KER 200* sealing grout worked perfectly, as confirmed by Ralph Young, who added: "I filled in spaces of different widths and thicknesses, from 1/8" to 1 1/2", with no

problems. In some areas of the pavement that required flawless execution, for example near the main entrance, I sealed even under rain and in the cold". Ralph Young continued his testimony by talking about the good results provided by the KER 700* grout: "This grout is a good alternative when it's not possible to use an epoxy product. I don't think there is any other product that offers the same performance of KER 200*. It doesn't drip vertically on the walls and it perfectly bonds all the different types of materials that I use for the mosaics requested by my clients, such as porcelain, glass, tiles of all kinds, hand made mosaics, steel, shells, etc".

Once in the Discovery Cove, visitors will simply be amazed by the wonders of the park, and will not easily forget its beauty. Thanks to the collaboration between designer Susan Price of Reptile Design and the architect John Kasman, and to the quality of Mapei products, for each lucky visitor the "dive in paradise" will be an unforgettable experience. 

TECHNICAL DATA

Discovery Cove Park - Orlando, Florida (USA)

Year of construction: December 1999/January 2000

Mosaic creative design: Reptile Design, Orlando; creative designers: Ralph Young, Houston Winn and Jim Spencer; coordinators: designer Susan Price and architect John Kasman
Executive design: architects Peckham, Gayton, Albers and Viets, Inc. of St. Louis (Missouri); designer Suzanne Sessions, Inc., of St. Louis

General contractor: Suitt Construction

General tile contractor: Nehemias Rivera

Materials installed: mosaic tiles of different materials and shapes

Mapei Products: KER 121, KER 200, KER 700

Main supplier of mosaic tiles: QTC - Quarry Tile Company, Spokane (Washington)

Mapei Reseller: Summitville Orlando Inc.

Mapei coordinator: Diana Chiodi

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





THE SONY CENTER OF POSTDAMER PLATZ

The installation of 70,000 square meters of coverings for the new "multi-theater" cinema in Berlin has decreed the union between two companies who are leaders in their respective sectors: Stræhuber AG for textile coverings and Mapei for bonding products. Efficiency and quickness were made possible only thanks to the high-performance solutions used.

A colossal project, that of the new Sony Center of Postdamer Platz in Berlin. A carefully done project in which particular attention was paid to selecting the trimmings to obtain spectacular aesthetic effects; the great internal spaces of this new enormous center for music

and entertainment were therefore valorized through the use of textile coverings in an unusual matching with marble. In fact, large slabs of anthracite-grey marble frame the flaming textile "leit-motiv" of 96 meters, which marks a path that starts at the "Music Box" area and continues through all eight cinema theaters; it finally ends up at the bar, located in a vertically developed space with 40-meter-high walls enclosed by a dome-





Above, Sony Center in Berlin.
Below, various phases of covering installation:
Photo 1. The application of fiberglass mesh, above the route of the cable-holder canals, guarantees homogeneity and stability to the cement substrate.
Photo 2 and 3. Installation of cork, applied before the linoleum covering, guarantees greater acoustic insulation.
Photo 4. Linoleum and (photo 5) moquette installation in the different rooms of the Sony Center.

shaped cover. This path is practically a long red carpet, created exclusively for the Sony Center, on which words from scenes of Martin Scorsese's "Taxi Driver" are reproduced; it's as if the sequences of the movie, one after the other, unfold along the entire path. A path full of special effects, obtained with spectacular rays of light characterized by brilliant red and yellow colors.
The budget required for this operation, one and a half billion marks (about 1500 billion lire), is a great testimony to the construction boom that the German capital is going through after reunification. In fact, this project involved only specialized companies able to offer the necessary products and

work flexibility to ensure the workflow for all 5000 men involved, while fully respecting planning. 70,000 square meters of coverings were required to bond for just the pavement alone. As far as the textile coverings are concerned, Straehuber, which created a special collection called "Eurocarpet" for the occasion, depended on the cooperation of Mapei, who in 1999 opened a plant in the eastern Land of Sassonia-Anhalt managed by Hans-Dieter Albreit. This union brought a greater selection of products most appropriate to meet the required installation times and methods, which were complex due to the overlapping of workers.



For this reason, the availability of easy to apply and quick drying products was fundamental. For example, for levelling the substrates, Mapei proposed ULTRAPLAN ECO*, a self-levelling compound with great superficial hardness specifically designed for high-traffic pavements. It's ideal for situations like these since it doesn't create much dust during mixing, it only requires a single coat, it sets to light foot traffic after two hours, and after twelve hours it's ready for pavement installation. These characteristics allowed the work phases to proceed as planned without delay, and most of all they guaranteed the necessary salubrity of the work environment. In fact, ecological solvent-free products with a low content of volatile organic compounds (VOC) were used in accordance with German standards. To improve the adhesion of ULTRAPLAN ECO*, a coat of ECO PRIM R*, a solvent-free liquid primer with a low content of VOC, was applied to the substrate. ULTRA/BOND ECO 185* was used for bonding textile pavements of the "Interface Heuga", "Palette 2000" and "Eurocarpet" series; it's a solvent-free resin-based liquid adhesive with high initial setting and the ability to block even the most "nervous" coverings, with the advantage of low costs due to its high output with low product consumption; for example, with a B1 notched trowel, 290 grams per square meter are spread, and with a B2 notched trowel it's possible to obtain 420 grams per square meter. Linoleum, on the other hand, was chosen for computer centers and was installed on a layer of cork for greater acoustic insulation. For the cork and the linoleum, installed transversally with respect to each other for greater stability, bonding was done with ULTRA/BOND ECO 540*, a quick-drying adhesive that allowed for the application of "Linodur", produced by DLW, just twenty-four hours after installing the cork. Copper bars connected to the entire protection system were applied underneath the linoleum to correspond with the path to position the grounding



... We were...
... That's the last...
... I... some...
... nervous...
... sure we could run...
... of his block...
... (looks across at...
... anything strange...
... No, why?
... Why's that taxi...
... us?
... What taxidriver?
... That taxidriver...
... How long has he b...
... I don't know but...
... Travis's cold, piercin...
... cross the street fro...
... If watching the war...
... stance. A thin red...
... changes TRAVIS's gaze...
... (Determined) Wel...
... TOM walks towards...
... between him and the p...
... strides out the fro...
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... it is. (TRAVIS tu...
... Huh?



conductors, which were placed every 35 meters. Here, the linoleum was fixed with AQUACOL T CONDUCTIVE*, a liquid adhesive with high conductivity, to facilitate the electric system's grounding. In some rooms, ULTRA/BOND ECO FIX* was used for bonding the textile tiles of the "Interface Heuga" line.

Particular attention was paid to the treatment of the substrates near the cable-holder canals that run along the entire Sony Center. Above the canals, made of aluminum and enclosed by a cover, ADESILEX LP* adhesive was used to bond a fiberglass mesh needed to fix the final levelling layer at that point. Levelling was done with NIVORAPID*, a quick-drying cement compound that gave the substrate the uniformity required for the installation of thin textile or linoleum material.

In the remaining surface of the substrate, cracks and joints due to canals were restored and sealed with EPORIP*, an epoxy adhesive specific for monolithic screeds. ECO PRIM R* neoprene primer was then applied to the entire surface to safely fix the new coverings.

The success of the Sony Center in Berlin enthused everyone and in particular the head designer of Straehuber, Uwe Sauer, who confirmed that the German company will continue its collaboration with Mapei, and is looking forward to the creation of new prestigious projects that will change the face of Berlin.

In the photo at the center, a close-up of the particular red covering with words from scenes of "Taxi Driver", specifically created for the Sony Center by the German company Straehuber AG.

"The technical data sheets of the products mentioned in this article are contained in the Mapei folder n. 2: "Products for the installation of resilient wood and textile floor and wall coverings". The technical data sheets are contained in the Mapei Global Infonet CD and in its Internet site www.mapei.com.

Aquacol T Conductive:
conductive, solvent-free, fast-setting resin-based liquid adhesive

Adesilex LP: *double coat polychloroprene adhesive in solvent solution for vinyl and rubber pavements and coverings.*

UltraBond Eco Fix: *liquid adhesive with permanent tack for dry-lay floor tiles and low emission of VOC. Allows removal and replacement of tiles several times.*

Eco Prim R: *solvent-free neoprene primer in water dispersion with low emission of VOC.*

Eporip: *solvent-free two-component epoxy adhesive for bonding either new or old concrete and for the monolithic sealing of cracks in screeds*

Nivorapid: *ultra-fast drying (4-6 hours) thixotropic cement-based levelling mortar for vertical surfaces; for thicknesses from 1 to 20 mm.*

UltraBond Eco 185: *liquid super-adhesive with high initial setting and low emission of VOC for textile floor and wall coverings*

UltraBond Eco 540: *liquid adhesive with low emission of VOC.*

Ultraplan Eco: *ultra-fast hardening (12 hours) self-levelling compound for thicknesses from 1 to 10 mm and with low emission of VOC.*



TECHNICAL DATA

Sony Center - Berlin (Germany)

Year of construction: from March to December 2000

Project: Arch. Helmut Jahn

Textile coverings supplied and installed by: Straehuber AG - "Eurocarpet"

"Interface Heuga" and "Palette 2000" series

Linoleum supplied by: DLW - "Linodur"

Mapei products used:

ULTRAPLAN ECO, ULTRA/BOND ECO 185,

ULTRA/BOND ECO 540, AQUACOL T

CONDUCTIVE, ADESILEX LP,

NIVORAPID, EPORIP, ECO PRIM R,

ULTRA/BOND ECO FIX

Mapei coordinators: Jürg Thielemann and

Robert Kucharzewski

FIUMICINO AIRPORT

WESTERN SATELLITE

Operational since 1999, the enlargement of the "Leonardo da Vinci" airport has allowed the Roman airport system to reach a receiving capacity of over 30 million passengers.

The program agreement signed by the Ministry of Transportation and the Aeroporti di Roma company for the enlargement of the "Leonardo da Vinci" airport dates back to 1996.

A development plan with investments of over 1721 billion lire, of which 1321 were provided by the Italian government and 400 by the airport company. At the end of 1999, the Western Satellite became operational with a new international air-terminal. Objective: allow the Roman airport system to reach a receiving capacity of over 30 million passengers by the end of 2000.

The objective was achieved, further qualifying Fiumicino as a strategic access point between Europe and the world's southern hemisphere. The development plan now requires the completion of the first module of an area destined to freight traffic (Carco City) by the end of 2001, as well as the new pier C.

The tender for the enlargement and restoration of the international Satellite was won by the temporary incorporation between Nesco Entrecanales Cubiertas SA, Gruppo Acciona SA and Lamaro Appalti Spa. For work execution, these companies formed the Ecla Consortium that arranged a tender for floor installation won by the temporary incorporation between Edil Pav and the Cooperativa Ceramica of Imola. The floors in the Satellite and in the station was of polished 60x60 porcelain gres, in the bathrooms of 30x30 porcelain gres, polished for the floors and rough for the walls, in the luggage areas opaque 10x10 porcelain gres, and in the storage areas 7.5x15 red gres.

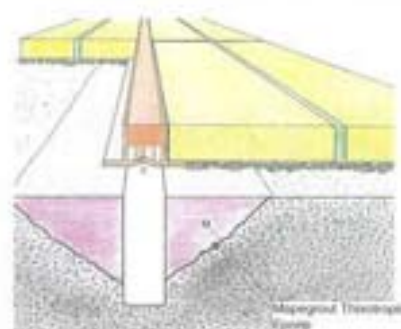
The contract specifications required fresh on fresh tile installation on cementitious grout, but considering the significant surface dimensions, the load and the heavy traffic of the floors, Mapei proposed an executive variant: the screed was made of sand and cement with 300 kg/m³ dosage added with MAPEFLUID PZ500*, reinforced with an electro-welded 20x20 Ø 6 grid; previously, a slipping layer composed of a nylon sheet was installed, and the split joint openings were designed. The solution was accepted. Installation surface was a total of



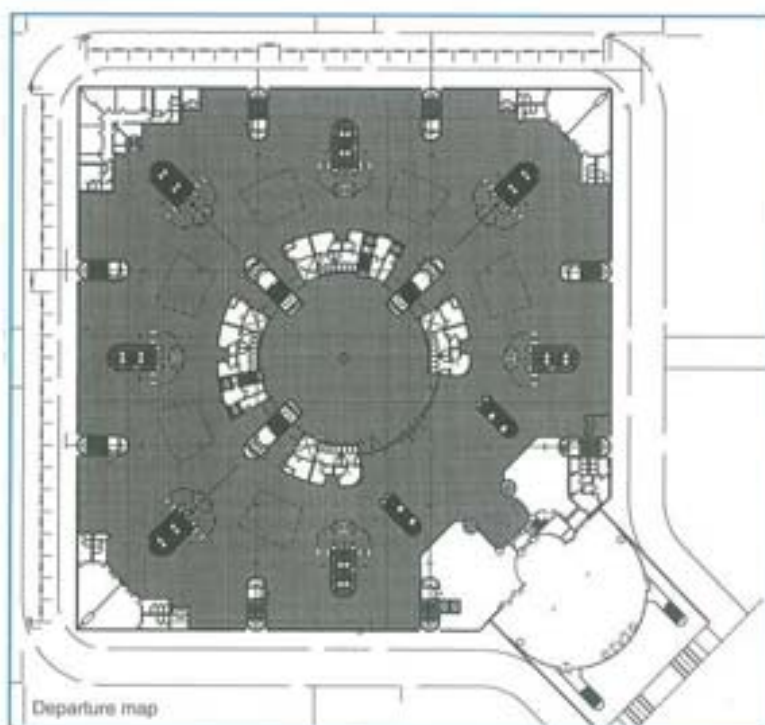


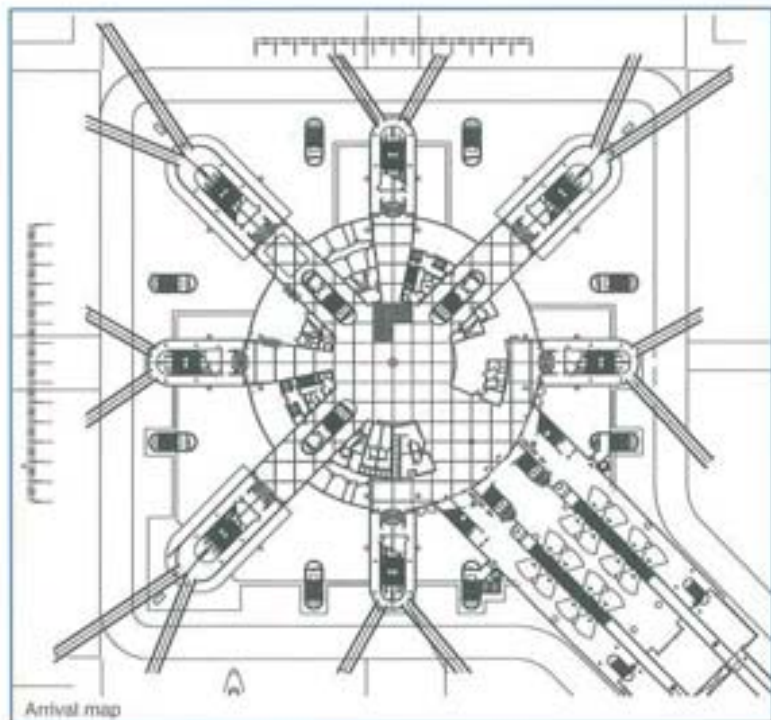
18,000 m²; for the 60x60 cm porcelain gres the KERAFLOOR+ISOLASTIC* system was used, while the KERABOND+ISOLASTIC* system was used for the 30x30 cm format. Both adhesive systems are based on cement and flexible latex, and allow to obtain

exceptional bonding strength and deformability. What's more, KERAFLOOR* is indicated for large formats and permits the recovery of levelness in the installation phase up to a thickness of 15 mm. Installation was done using the buttering method. The 5 mm joints were sealed with cement-grey ULTRACOLOR*. Screed cuts for expansion joint execution were done in squares of about 20 m², with a depth equal to about 2/3 of the thickness,



The drawing shows the placement of the joint structural joint.





without notching the reinforcement grid. Expansion joints were made using pre-finished joints installed with MAPEGROUT THIXOTROPIC* and EPORIP*. During installation, in order to respect timing and to anticipate the delivery of some

areas, TOPCEM*, a special rapid-drying normal-setting hydraulic binder, was chosen for the screeds instead of cement. This system allowed floor installation 3-4 days after casting the screed itself. To allow the other companies (electric systems, conditioning, counter-ceilings) to work in these areas, GRANIRAPID Grey* was used to bond the porcelain; this two-component quick-setting and hydrating adhesive system is set to light foot traffic after only three hours. In spite of the difficulties caused by the dimensions of the areas covered and the selection of large polished materials, the final result is without a doubt excellent thanks to the careful design of the installation pattern, and the perfect installation carried out by a team of highly specialized workers who used the products recommended by Mapei's technical assistance at their best.





The photos published on these pages, except for the ones regarding the work phases, are courtesy of the Cooperativa Ceramica di Imola, who we thank for their kind collaboration.

TECHNICAL DATA

International Air-terminal Western Satellite of the "Leonardo da Vinci" airport - Fiumicino, Rome (Italy)

Intervention scope: installation of floors (about 16,000 m²) and wall coverings

Year of construction: beginning of construction July 1998, end of construction February 1999

Customer: Aeroporti di Roma

Director of Works: architect Tommaso Bianco

AutoCAD Abacus: Imola Engineering with the collaboration of Lamaro Costruzioni

Material Installed:

- Satellite and Station - floors: 60x60 TOP615 L, finely polished porcelain gres supplied by the Cooperativa Ceramica di Imola

- Bathrooms and facilities - floors: 30x30 polished porcelain gres, 30x30 rough porcelain gres supplied by the Cooperativa Ceramica di Imola

- Luggage area - floors: 10x10 opaque porcelain gres supplied by Cercom

- Structural joints: Joint

Installation Contractor: Ecla Scarl Consortium (NESCO Entrecanales Cubiertas SA, Gruppo Acciona SA and Lamaro Appalti Spa)

Ecla Consortium Construction Site Director: Engineer Paolo Conteduca

Installation Company: Ati (temporary incorporation between Edil Pav of Sigismondi Sandro - Monte San Giovanni Campano, Frosinone - and the Cooperativa Ceramica di Imola)

Satellite and Station work summary:

Screed composed of sand and TOPCEM	m ² 10,000
Screed composed of sand - cement and MAPEFLUID PZ 500	m ² 10,000
Anchoring slurry composed of PLANICRETE and TOPCEM	m ² 14,500
60x60 porcelain gres installed with KERABOND+ISOLASTIC, KERAFLOR+ISOLASTIC and GRANIRAPID	m ² 20,000
Porcelain gres coverings installed with KERABOND+ISOLASTIC	m ² 4,500
Grouting done with cement-grey ULTRACOLOR	m ² 20,000
Split joint welding on the screed, on fields of about m ² 35 with EPORIP	m ² 20,000
MAPEGROUT THIXOTROPIC and EPORIP for structural joint installation	m 300
Mapei coordinators: Renato Soffi and Pino Mancini	

The pictures of the work phases on the page aside show the installation of polished porcelain gres with installation following a pattern. Imola Engineering, in collaboration with Lamaro Costruzioni, created the installation abacus taking into account both the structural and installation joints. Bonding was done using the buttering method, with KERAFLOR+ISOLASTIC. The problems encountered during installation were caused by the weight of the tiles, which caused "crushing" of the adhesive (solved thanks to the suggestions of Mapei technicians), and by the difficulty of keeping the squares orthogonal in every direction considering that installation followed a pattern and regarded an extremely vast surface.

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Mapei adhesives and sealants are compliant with EN 12004 and prEN 13888 standards.

Topcem: normal setting special hydraulic binder with rapid drying (7 days)

Planicrete: synthetic rubber latex for improving the adhesion and mechanical resistance of cement mortars

Mapefluid PZ 500: superplasticising pozzolanic admixture for concrete

Kerabond (C1): cement based powder adhesive for ceramic tiles (thickness of adhesive up to 5 mm)

Kerafloor (C1): cement based powder adhesive for ceramic tiles (thickness of adhesive up to 15 mm)

Isolastic: flexible latex additive to be mixed with Kerabond or Kerafloor

Granirapid (C2F): two-component adhesive system with rapid setting and hydration for ceramic tiles, natural and artificial stones (thickness of adhesive up to 10 mm)

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

Mapegrout Thixotropic: controlled-shrinkage fiber-reinforced grout for the repairing of concrete

Eporip: two-component epoxy based adhesive for bonding new to old concrete and for the monolithic sealing of cracks in screed.



The "Redemptor

The chapel is in the Vatican and its renovation was made possible thanks to the Sacred College's gift to the Pope for the fiftieth anniversary of his ordination.

Pope John Paul II made himself clear. Once renovated and decorated, it was crucial the *Redemptoris Mater Chapel* highlight the point where East and West meet. The Pope said: "The Chapel is going to be a sign of the union of all the Churches represented with the Holy City. In addition, it shall serve as a meaningful example of the time honored traditions in the Vatican." And so it was. The book *"La Cappella 'Redemptoris Mater' del Papa Giovanni Paolo II"*, published by Libreria Editrice Vaticana, tells the whole story about the chapel, from how the decision was reached to renovate it, to a recount of the work done. Henceforth, monsignor Piero Marini, bishop of Martirano and master of the papal and liturgical celebrations, tells how everything originated from a gift made to the Pope from the Sacred College in 1996, when the whole church celebrated the fiftieth anniversary of the ordination of John Paul II. Monsignor Marini explains, "On that occasion, the Cardinals wanted to surround the Pope with their presence

LA CAPPELLA
"REDEMPTORIS MATER"
DEL PAPA GIOVANNI PAOLO II

The pictures and some passages of the article published in these pages are extracted from the book *"La Cappella Redemptoris Mater del Papa Giovanni Paolo II"*. The volume, edited by Apa-clement-Valenziano (format 260x355, 297 pages rich in illustrations), is available at

Libreria Editrice Vaticana,
phone +39-06-698.85003
fax +39-06-698.84716.

We thank them for their donations of the pictures and text used for this article.



and their affection. Some of them had been present at his election, most had been appointed by him; all of them wanted to express their devotion and esteem to Peter's successor with a significant gift. The gift given by the Sacred College consisted of

"Our Lady of the Sign" Chapel



a certain amount of money that the Pope himself would assign, in his judgment, to some important work. On November 10, 1996, concluding the jubilee events, the Pope addressed the Sacred College with these words: "Thank you whole-heartily for the

sum you have offered on this occasion through the Cardinal Dean. I'm sure you will appreciate my assigning it to a work that will remain in the Vatican. I have chosen the



renovation and decoration works of the Redemptoris Mater Chapel in the Apostolic Palace.''

The Redemptoris Mater Chapel, named Matilde until 1987-88, is in the same Vatican buildings that house the recently renovated Sistine Chapel. It is accessible through the Sistine Salons, where some Mapei products were used a few years ago for the Vatican Library Galleries (see Realtà Mapei n. 21, page 2). The design and carrying out of the mosaic works in the Redemptoris Mater Chapel were entrusted to the Center of Ezio Aletti (Centro Ezio Aletti), Pontificio Istituto Orientale, and to the indefatigable work of Father Marko Ivan Rupnik and his aides, all under the supervision and authoritative expertise of Father Tomas Spidlik. Since the chapel is meant for liturgy celebrations, especially those officiated by Pope Wojtila, the renovation team didn't focus solely on the mosaic decoration, preferring to also consider a worthy renovation of the whole area, where the Pope would exercise his papal functions.

Works, times and stages

• *The assignment* - In 1996, the art department of theological studies at the Aletti Center was entrusted with the renovation of the Redemptoris Mater Chapel. Father Marko Ivan Rupnik and

Father Tomas Spidlik were in charge of the theological and artistic sides of the planning and execution of the chapel.

• *The wall of Celestial Jerusalem* - The Aletti work staff relied on the cooperation of Russian mosaicist Alexander Kornoukhov who was entrusted with the execution of Celestial Jerusalem. Kornoukhov worked on this project for six months, from December 1, 1996 to June 30, 1997.

• *The other walls* - The other walls were carried out by Father Rupnik and his aides. The Centro Aletti team worked on this project from November 5, 1997 to August 30, 1999.

• *The vault* - The mosaic execution of Father Rupnik's designs for the vault was entrusted to master Rino Pastorutti from the Spilimbergo School. Pastorutti worked from January 12, 1999 to August 16, 1999, helped by Master Livio Del Frari in the final stage.

• *The execution of the works* - The first task consisted of the removal of all the velvets previously covering the walls. The underlying plaster, which was in dismal condition and could not support the load of the new mosaics, was pick-axed. The preexistent nineteenth-century wall decorations, which were only partly visible, had no special artistic value and had in fact been tampered with during some previous renovation works.

However, the pavilion vault presented a number of bi-chromatic, eighteenth-century decorations of some interest. Centered in these decorations was a rectangular panel bordered by varied rows of valuable polychrome sixteenth-century tempera paintings in stuccoed frames. The quality of these paintings required their preservation, so a self-bearing contact vault was installed in which the artwork was laid. This vault consisted of a metal grid, the bearing bars of which were inserted in the boundary walls on dividing slabs applied with shrink-proof mortar. The secondary bars acted as spacers within which some large-diameter wire nets were welded together. A Nervometal net smoothed with NIVOPLAN® and PLANICRETE was critical in defining the arches of the new vault. The same procedure was followed for the walls by applying a Nervometal net blocked by electro welded wire nets by means of expanding rivets in the walls. Finally, to fasten the mosaics, the KERABOND+ISOLASTIC® flexible system was applied in a 1:3 ratio. This system was used for the vault and most of all the other surfaces.





TECHNICAL DATA

"Redemptoris Mater" Chapel - the Vatican
Project: renovation and mosaic decoration of the
vault and walls

Years of project: 1996-1999

Design and execution: Ufficio Tecnico
Governatorato, the Vatican City

Head of Technical Department: Engineer
G. Cusianna

Design and execution of mosaic works:
Centro Ezio Aletti del Pontificio Istituto
Orientale, under the guidance of Father Marko
Ivan Rupnik and Father Tomas Spidlik.
In cooperation with Russian mosaicist
Alexander Kormoukhov, Master Rino Patorutti
from the Spilimbergo School and Master Livio
Del Frari

Mapei products used: NIVOPLAN,
PLANICRETE, KERABOND+ISOLASTIC
Mapei coordinator: Pino Mancini

"The products mentioned in this article belong to the line "Products for ceramic tiles and stone materials". The technical data sheets are contained in the Mapei Global Infonet CD and in its Internet site www.mapei.com. Mapei adhesives and joints comply with EN 12004 and prEN 13888 standards.

Isolastic: flexible latex adhesive to mix with Kerabond and Kerafloor

Kerabond (C1): cement-based powder for ceramic tiles (up to 5 mm thick adhesive)

Nivoplan: grout for 2 to 30 mm thick walls

Planicrete: synthetic-rubber latex for cement-based grouts to improve mechanical and adhesive characteristics.



Not Just Fashion

In Australia, an architectonic complex - hotel and residential units - entirely designed by Versace: a project of "high fashion constructing" realized with the best products on the market. An appointment that Mapei could not miss.



For Versace, the Italian Renaissance and Baroque not only represent a source of inspiration for high fashion creations, but also and above all a deeply rooted stylistic influence. The elements and suggestions borrowed from this historic and artistic period have therefore influenced not only "haute couture" clothing, but everything that regards the fashion world and life itself, from show-rooms to private homes.

A striking example of this style's reproduction is the prestigious Palazzo Versace realized in Gold Coast, Australia, an important locality near Brisbane, in the Queensland territory, at about 400 kilometers north of Sydney. Indeed an ambitious project: an architectonic complex - hotel and residences - inspired by styling



elements and concepts of the late Renaissance-Baroque architecture and by the proven line for interiors "by Versace". This dream has come true thanks to the team work carried out by the architects of the DBI Design Corporation studio, responsible for architectonic design, by the designers of the Versace "team", responsible for the interiors and for image coordination,

and by the Sunland Group, the "main contractor".

The project will extend over 2.2 hectares, privileging a western exposure towards the "Broadwater Side" coast.

The architects have developed the residential areas on the sides of the central body, the hotel, orienting the nucleus towards the hinterland and the rear of the property towards the lagoon and the sea.

The presence of numerous pools, basins and fountains - just like in a Renaissance garden - create a suggestive continuity between the ocean and the mainland. Furthermore, the designers were required to obtain the highest number possible of rooms on three floors, which is the maximum height allowed by the municipal building plans: the solution adopted required the realization of numerous covered terraces. To take advantage of the panoramic view of the ocean, the rooms, the restaurants and other important common areas have been oriented in the direction of the sea.

The design of the entire complex transmits an intense architectonic message: it's a strictly formal construction, but characterized by evident classical elements such as columns, pilaster strips, gables, etcetera.

The complex is characterized by an absolutely luxurious setting, where the richness of the architectonic combinations of volumes and surfaces is combined with the extreme variety of formal and composite solutions of the gardens and fountains. The exterior is refined and characterized by green spaces and ponds, mosaics, basins refined with marble, decorations, statues and other ornaments such as stone obelisks that emerge from the pools, vases and terra-cotta objects. Even richer are the solutions for the interiors, in the hotel as well as in the apartments, where

everything has been realized following a strict rule: the search for quality and prestige. In fact, extreme attention is paid to details, to accessories and to the matching of materials, colors and surfaces.

Parquet on top, Lignobond below

With such richness and luxury, each solution is worthy of a detailed description. But we've decided to talk about the wooden surfaces used for the floors in the rooms, the meeting rooms and many common areas. For the areas finished with parquet, as for all other floors, the Versace design team developed elaborated geometric patterns characterized by inserts and crossings, enhanced by the contrast of the different color tonalities of the woods used. The flooring is made of American oak, Merbau and Sonokaling. It was supplied by the Ceipo company of Singapore, which guaranteed the absolute quality of the wood thanks to the experience matured in similar prestigious interventions. "The parquet floor is the signature of Versace hotels. We worked in close collaboration with the project manager - says Ceipo manager - to supply the parquet required on time and in compliance with their specifications". The parquet was cut and prepared in pre-assembled panels, ready to be exported to Australia and installed on the spacious surfaces of the Palazzo Versace. Panel installation was done by Fletcher Floors, a local family-size company, present on the market since 1966, and specialized in the installation and maintenance of wooden floors.

A difficult task for the installers, which can be summed up in the words of the manager Warren Fletcher: "We wanted to be sure that installation was adequate to the hotel's quality, so we developed special procedures that would satisfy the furnishing and finishing requirements requested by Versace". Since parquet installation, as all other applications, required that the designers carefully select the best products on the market, it was obvious that they include Mapei, represented here by LIGNOBOND®; this product, a two-component polyurethane adhesive for floor installation, was chosen for its excellent adhesive and flexibility qualities: "a product that ensures parquet's stability over time", said Warren Fletcher.

LIGNOBOND® is used to bond large and



small strips of wood and all types of wood parquet and on any type of construction support.

Totally solvent-free (which sensibly reduces the risk of allergies), it's composed of a polyurethane polymer (part A) and of a special hardener (part B): carefully

mixing the two parts produces a uniform colored paste that is easy to apply with a notched trowel. After hardening, the product doesn't present shrinkage, and is transformed in an elastic film, resistant to humidity and heat and with excellent bonding properties. After the installation of wooden floors, the surfaces were treated with a specific oil that improves and protects the wood without causing it to lose its typical qualities, and avoids that the surface be covered with a plastic looking film.

From a technical and aesthetical point of view the result was again perfect: the wood harmonizes with the other materials of Palazzo Versace, such as marble, creating a refined and elegant atmosphere.



The opening photo and the one on this page are courtesy of "Australian Design Trends" - vol. 12/n. 12.

"The products mentioned in this article belong to the line "Products for the installation of resilient, wood and textile floor and wall coverings".

The technical data sheets are contained in the Mapei Global Infonet CD and in its Internet site www.mapei.com.

Lignobond: water and solvent free, two-component polyurethane adhesive for wooden floors.



TECHNICAL DATA

Palazzo Versace Hotel - Gold Coast, Queensland (Australia)

Year of construction: 2000

Project: DBI Design Corporation - Gold Coast

Main Contractor: Sunland Group - Gold Coast

Wood floors installed by: Fletcher Floors

Parquet supplied by: Ceipo Australasia, Singapore (American oak, Merbau, Sonokaling)

Mapei product used for parquet installation: LIGNOBOND

Mapei reseller: Fletcher Floors

Mapei coordinators: Ron Daniels, Ray Donaldson, Les Taylor

LIGNOBOND

TWO-COMPONENT POLYURETHANE ADHESIVE FOR WOODEN FLOORS.

The total absence of solvents considerably reduces the risk of allergies.



Two-component polyurethane water and solvent-free adhesive for wooden floors.

Where to use:
Bonding of all types of wooden flooring over cement screeds, heating floors, ceramic tiles.

Technical Data:
CONSISTENCY: Part A: thick paste; Part B: fluid paste.
COLOUR: Part A: dark brown or light brown; Part B: brown.
INFLAMMABILITY: no.
MIX RATIO: Part A: Part B = 90 : 10.
POT LIFE OF MIX: 40-50 minutes.
APPLICATION TEMPERATURE RANGE: from +10°C to +30°C.
OPEN TIME: 1 hour.
INITIAL SETTING: 5 hours.
SET TO LIGHT FOOT TRAFFIC: after 12-24 hours.
SANDING: after 24 hours.
STORAGE: 24 months.
APPLICATION: notched trowel

Technical Characteristics
 LIGNOBOND is a two-component totally solvent-free adhesive, composed of part A, a polyurethane polymer, and part B, a special hardener.

Carefully mixing the two parts of LIGNOBOND forms and evenly coloured paste that is easy to apply with a notched



LIGNOBOND is available in light or dark colour.

trowel. After hardening (approx. 24 hours at room temperature), which occurs only through chemical reaction and without shrinkage, LIGNOBOND is transformed into a flexible film, resistant to moisture, heat and other environmental agents. LIGNOBOND is unaffected by molds and bacteria, and it is especially recommended for installing moisture-sensitive wood on substrates with little water absorption capacity.

LIGNOBOND belong to the line: "Products for the installation of resilient, wood and textile floor and wall coverings". The technical data sheet is contained in the Mapei Global Infonet CD and in its Internet site www.mapei.com.



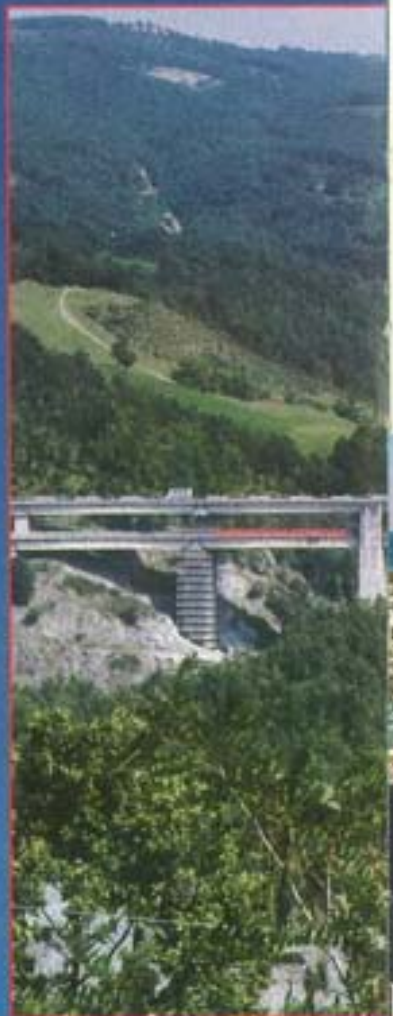
LIGNOBOND is identified with the symbol at the left, an alembic containing a small flower, similarly to all water dispersion or solvent-free Mapei products that therefore do not require a fire prevention certificate for flammable substances.

NINETY METERS HIGH

In a segment of the Cisa Motorway, a consolidation intervention has allowed the recovery of extremely high piers without the interruption of traffic.

When managing a motorway network, the concept of maintenance does not only regard a series of ordinary routine interventions; it's necessary to consider extraordinary operations as well.

The scope of these operations is to guarantee optimum operational conditions in time, and to ensure the integrity of structures (bridges, piers, abutments) and tunnels which, in our country and with few exceptions, are all made of reinforced concrete. According to the most refined definition, this is a composite material composed of the structural union between concrete and steel. But concrete, like all construction





materials (including steel), ages and deteriorates. What's more, in various geographic areas it's necessary to consider the frequent freeze/thaw cycles that are extremely harmful to the concrete's integrity.

Deterioration is mainly due to the physiology of the structure, to the environmental conditions, and therefore to thermal variations, but also to the use of salts which dissolve in water when it percolates, damaging the underlying structures. Furthermore, during the sixties and seventies, the structures were designed with criteria that today are no longer in use, and were generally made of ordinary concrete, often without adequate internal reinforcing.

Through the years, this material has shown evident limits and has caused numerous problems.

To solve this series of problems it's necessary to organize an adequate program of recovery interventions, composed of a precise succession of phases: the determination of the deterioration's cause; the selection of the applicative techniques and materials; the selection of the operational guidelines

Project indications

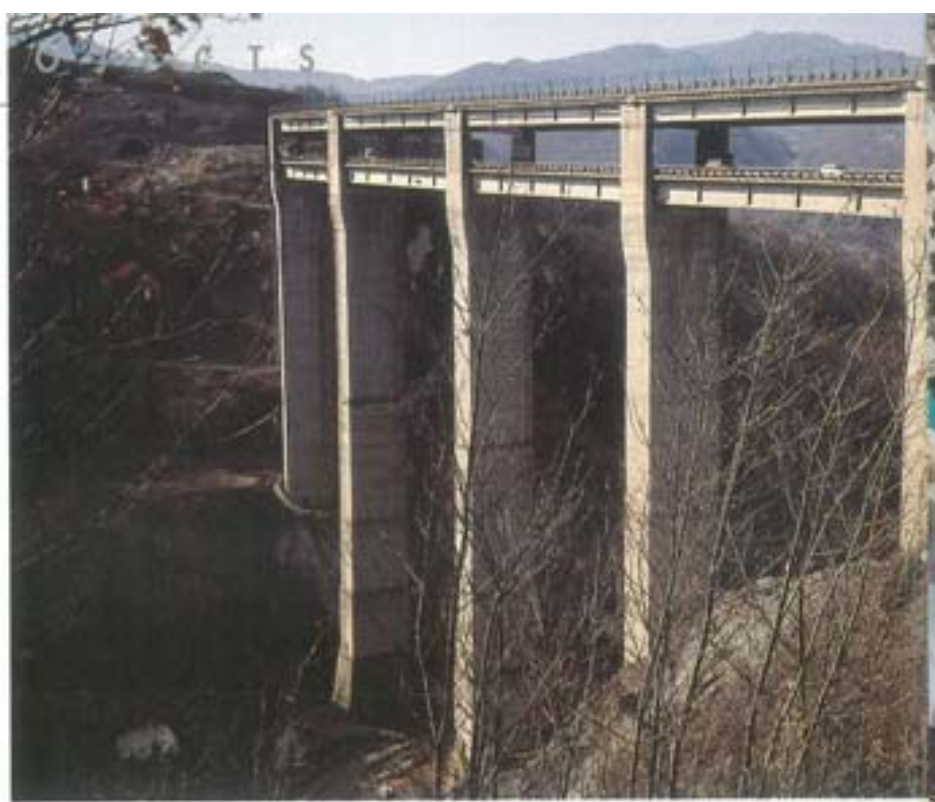
The project's directives regarding the products to use are quite clear, and state literally: "The rheo-plastic mixtures used, with compensated shrinkage, are supplied dry and premixed, and are mixed in special mixers with the amount of water recommended by the producer. The operation temperature of these materials is about 293 K, but temperatures between 278 and 308 K are also acceptable. These grouts are reinforced using electro-welded steel grids, which allow to compensate hygrometric shrinkage and the expansive actions of the grout itself. They contain (for resisting to particularly ventilated conditions, with low atmospheric humidity) plastic micro-fibers, uniformly distributed within the mix.

The concrete on which the grout is applied must be wet to refusal before the application of the covering.

The grouts must be laid without frameworks when the thickness of the recovery must not exceed 3 centimeters or when it's not required by the project. For greater thicknesses, it's possible to cast special concretes in non-wooden frameworks. These special concretes are obtained by mixing rheo-plastic premixed grouts, with compensated shrinkage, together with selected, washed, and correctly dimensioned aggregates (25 millimeters). The grouts are applied with a trowel or with spraying equipment. The grouts are protected from evaporation with a layer of "curing" agent: the use of polyethylene transparent sheets is not allowed since they hinder the dispersion of hydration heat. The grouts' contrasted expansion must not be lower than 0.4/1,000 after 7 days. After 28 days, the value of the expansion must not be lower than the value at 7 days, and must not be higher than the same value increased by 30%.

Testing adhesion to the support, determined by shearing, is to be conducted on 7x7x28 beams, composed in part by a concrete wedge with R_{ck} 45 N/mm² and seasoned at least 28 days, with a surface inclined at 20 degrees. Shearing resistance is required on the inclined surface.

Adhesion tests carried out through direct traction are to be done on samples with a 50 millimeter diameter".



that must be included in the specifications; the careful execution of each operational phase.

Control of the structures

Autocamionale della Cisa is the company that manages the motorway section that connects Parma with La Spezia, crossing the Tuscany-Emiliano Apennines. During the sixties and seventies (the last section was opened in 1975), about 140 structures (for a total of 450,000 square meters of bridges) and 14 tunnels were built. Recently the company has renewed the managing contract until 2010, and has

presented a new plan of intervention with investments of about 1,000 billion lire. The extraordinary maintenance done on the Roccaprebalza (Berceto -Parma) viaduct is the most significant intervention that the Autocamionale della Cisa has carried out in the last years: work (done by the Rabbiosi company of Bolzano) started in 1999 and was finished in autumn of 2000.

The cost of the intervention was of over 7.5 billion lire. The viaduct is characterized by the extraordinary dimensions of the central piers, about 90 meters high at the intrados. In this segment, traffic is organized on two overlaid roadways, which create a double level sustained by 90 meter piers. During a preliminary check a percolation of brackish water, involving nine piers of the entire viaduct, was discovered. What's more, the deterioration was in an advanced state.

The main difficulty of the intervention consisted in the fact that, given the height of the pier, it was necessary to intervene at high





altitudes. In similar cases, the application of recovery techniques is complicated, and the use of top quality material, technologically advanced solutions and equipment, besides specialized workmanship, is extremely important. The restructuring and reinforcement interventions consisted in specific activities:

- hydro-demolition of the piers, for an average penetration of about 7 centimeters (in some cases even 13 centimeters were reached), for the removal of the degraded parts;
- sandblasting of the reinforcement bars, totally cleaned and treated with anticorrosive products and "passivating" material;
- installation of an integrative reinforcement (fit to resist to a second



Photo 1. Close-up of degraded concrete

Photo 2. One of the deteriorated piers of the viaduct, the 7th

Photo 3. The structure's new reinforcement

Photo 4. Machine laying of the MAPEGROUT T60C* grout

Photo 5. Grout finishing with a plastering trowel, and application of MAPEURE E*anti-evaporation agent

- category earthquake);
- laying of rheo-plastic grout;
- final treatment through the application of an elastic two-component cement grout, MAPELASTIC*, and successive laying of a polyurethane two-component system preceded by the application of an apposite primer.

Mapei's role

Before its use, the material destined to the recovery and reinforcement of the structures undergoes special tests carried out by the contractor, as well as by the supplier of the products. Mapei, after the tests done by the Autocamionale della Cisa, personally carried out a further certification of final quality. Using a laboratory installed on the construction site and equipped with

all the necessary instrumentation, tearing tests and mechanical and elastic performance verifications were carried out.

Mapei's policies, as well as its constant presence on the construction site, underline once more the importance of a strong collaboration between the contractor and the product supplier.

Previously sharing information allows to avoid useless and expensive damaging or unsuccessful interventions.


In general, a recovery grout used for this type of intervention requires specific characteristics. It must adhere perfectly to the support and must guarantee limited shrinkage to avoid cracking; furthermore, it must be impermeable and able to resist to chemical aggression. Of course, the material selected must present an adequate mechanical resistance and elastic module. In this case, as previously mentioned, attention was focused on the recovery of 90 meter high piers, in particular weather conditions and in the presence of significant vibrations. For the occasion, Mapei research laboratories created a specific product, called MAPEGROUT T60C* (the "C" stands for "Cisa"). It's a premixed thixotropic single-component cement-based grout, composed of sulfate-resistant hydraulic binders, synthetic polyacrylonitril fibers, an organic corrosion inhibitor, selected aggregates and special water retaining admixtures. This solution substantially derives from the already known MAPEGROUT T60* grout, used for recovering structures in degraded concrete in general and for protecting reinforced concrete from sulphate aggression. What reason required the creation of this specific product? "The material had to guarantee adequate pumping at great heights, even with high temperatures, and appropriate mechanical characteristics". Moreover, it was possible that the grout remain inside the tubes for long periods of time (even an hour): for this reason the product had to be fluid enough to avoid obstructing the tubes.

After removing the degraded parts and spray cleaning the surfaces with water to remove impurities and contamination, MAPEFER* was used for preparing the supports. This two-component anticorrosive cement grout, (based on polymers in water dispersion, cement binders and corrosion inhibitors), is specifically used for protecting the

concrete's reinforcement bars.

The application of this product is fundamental for protecting the structure in time from corrosion and carbonation, therefore guaranteeing durability.

A water-based anti-evaporation product, MAPECURE E*, was then applied to allow better curing of the grout applied.

This product was then removed by means of sandblasting before the application of a protective finishing. Finally, MAPELASTIC* grout was chosen for the final protective layer of the recovery: this two-component cement product is particularly flexible, and is able to support movements of up to one millimeter without cracking; it's totally impermeable, and creates a special "elastic skin" on the surface treated. 

In the picture on this page: one of the viaduct piers after the recovery intervention. (The picture is courtesy of the "Nuovo Cantiere" magazine).

"The products mentioned in this article belong to the line "Building specialty line". The technical data sheets are contained in the Mapei Global Infonet CD and in its Internet site www.mapei.com.

Mapecure E: curing compound in water emulsion

Mapefer: anti-rust mortar for reinforcing rods

Mapelastic: two-component flexible cement mortar for waterproof protection of concrete, swimming pools and balconies

MapegROUT T60: sulphate-resistant thixotropic fibrous mortar for the repair of concrete (MapegROUT T60C is a special formulation, specially studied for this type of intervention).



TECHNICAL DATA

Roccaprebalza Viaduct - Berceto (Pr)

Intervention: structural consolidation

Year of construction: 1970

Year of intervention: 1999/2000

Design: Mr. Giuseppe Mancini

Design coordinator: Mr. Nicolai Zanettini

Technical assistant: Mr. Marco Martini

Director of works: Mr. Corrado Zanichelli (Autocamionale della

Cisa Spa); **Director of works assistant:** Mr. Giuseppe Bernazzoli

Contractor: Rabbiosi, Bolzano

Contractor Technical Director: Mr. Luciano Fogolari

Construction site director: Riccardo Vidrih

Construction site Capo: Mr. Iago Manera

Hydro-demolition: Mosconi Brothers, Edolo (BS)

Plastering machines: Püzmeister; **technical assistance:** Mr.

Gervasoni

Mapei products used: MAPEGROUT T60C, MAPEFER, MAPELASTIC, MAPECURE E

Mapei coordinators: Fulvio Bianchi, Carlo Campinoti, Carlo Alberto Rossi, Pasquale Zaffaroni

DYNAMON SYSTEM

Reasonably considered the new generation of acrylic admixtures, this system presents an extremely high technological content that allows to reach exceptional performance.

DYNAMON SYSTEM is composed of acrylic hyperplasticisers for eliminating the steam treatment in precast concrete and for excellently maintaining workability of ready-mix concrete.

The system is based on the DPP (Designed Performance Polymer) technology, the new chemical process that allows, through the complete design and production of monomers, to modulate the characteristics of the admixture

with respect to the specific performance required for the concrete. It's divided in DYNAMON SR for ready-mix concrete and DYNAMON SP for precast concrete structures. The ready-mix concrete market in Italy is becoming an extremely professional industrial sector. Production is being oriented towards concretes that offer greater structure durability, but that at the same time offer greater reliability during installation.

These are the reasons that brought Mapei to develop the DYNAMON SR line specifically for the ready-mix concrete market. The line is composed of three hyperplasticiser admixtures, DYNAMON SR1, DYNAMON SR2 and DYNAMON SR3, developed to obtain exceptionally long workability concretes in different consistency classes and with different environmental temperatures.

Long workability is an essential

parameter for assuring that the concrete produced in a mixing plant does not present lower levels of workability at the moment of casting; this avoids dangerous retempering responsible for lower concrete mechanical performance, as well as for shorter service life of the structure.

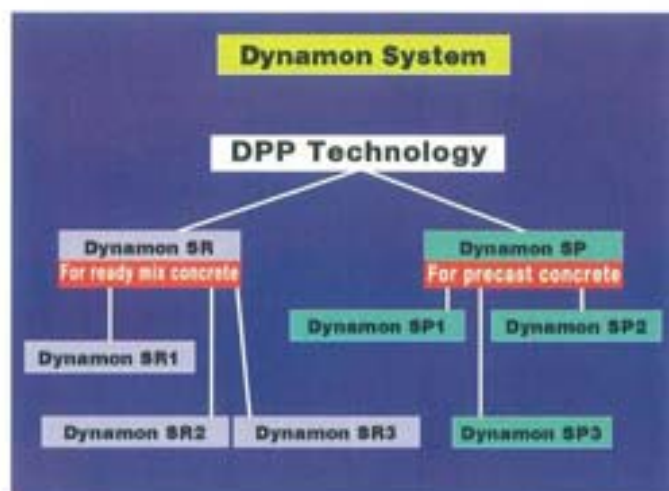
The advantages offered by DYNAMON SR1, SR2 and SR3 make these admixtures ideal for the preparation of self-compacting concretes characterised by high flowability without the high viscosity typical of concretes manufactured with traditional high-dosage hyperplasticisers.

The precast concrete industry is a sector in continuous technological evolution, and has grown in the last years mainly in the industrial construction area, where structures must be realized in very short time and with low investment costs. This is why the main requirement of a precast element producer is the need to obtain the requested mechanical performance for various structural elements in the shortest time possible. Today, this result is usually obtained through the use of accelerated

steam curing process, with its related disadvantages regarding costs, performance and durability of precast structures. The steam treatment of concrete elements has a negative influence on a series of fundamental parameters such as shrinkage, creep, mechanical resistance at long ages modulus of elasticity, which, especially in pre-stressed concrete elements, affect the design of structural elements.

Another negative factor of steam curing regards the presence of possible Micro-defects inside the elements, due to thermal stress. To solve these problems, and to contribute to innovating and developing the sector, Mapei has specifically studied the DYNAMON SP line for the precast concrete industry. The line is composed of three hyperplasticiser admixtures (DYNAMON SP1, DYNAMON SP2, DYNAMON SP3), calibrated for the progressive and total elimination of steam curing treatment and for increasing durability and service life of concrete structures.

The DYNAMON SP admixtures are also particularly fit for precast self-compacting concretes.



SELF-COMPACTING CONCRETE

Properties and applications of Self-Compacting Concrete (SCC). Equipment for its evaluation and some useful suggestions on mix-design, ingredients, production and placing.

by Luigi Coppola

The term "Self-Compacting Concrete" (SCC) identifies a category of cementitious mixtures that can be cast into a framework and fill every corner exclusively thanks to the weight of the material (1), without the need of any type of compacting or external vibration. Self-compacting concrete has a high deformability at the fresh state, or in other words, a great capacity of modifying its shape under the effect of gravity (and even more so if external forces are applied).

This allows to reach areas of the framework located 10 m away from the casting point even through obstacles such as congested reinforced sections.

Besides a high deformability at the fresh state, self-compacting concrete also has a great resistance to segregation (Fig. 1).

This property ensures the capacity of the cement mixture to be cast and to flow inside the

Evaluation of self-compacting concrete properties

The measurement of SCC rheological properties can be done, along with the traditional Abrams cone method, greatly used for evaluating the consistency of traditional fluid or super-fluid concrete, with a series of new equipment and methods that allow a complete view of deformability at the fresh state and resistance to segregation. The most used methods are slump-flow, the V-funnel, the U-box and the L-box with vertical and horizontal reinforcements.

Slump-flow measurement consists in the determination of the average diameter (d_f) of the concrete obtained after lifting the Abrams cone (Fig. 2) when concrete flow has come to a stop, along with the measurement of the time necessary (t_f) to reach this final position. The d_f and t_f values are proportional respectively to the deformability and the viscosity of the mixture: in order to obtain a self-compacting concrete it's necessary to reach high values of d_f along with low values of t_f . Table 1 sums up the typical values of d_f and t_f for a self-compacting concrete compared with those of a super-fluid concrete (S5 consistency class).

The emptying time (t_e) of a known volume of concrete from a V-funnel (Fig. 3) is directly correlated to the material's viscosity: the lower t_e , the less viscous the concrete is.

A complete view regarding the rheological properties of the concrete can be obtained by means of the

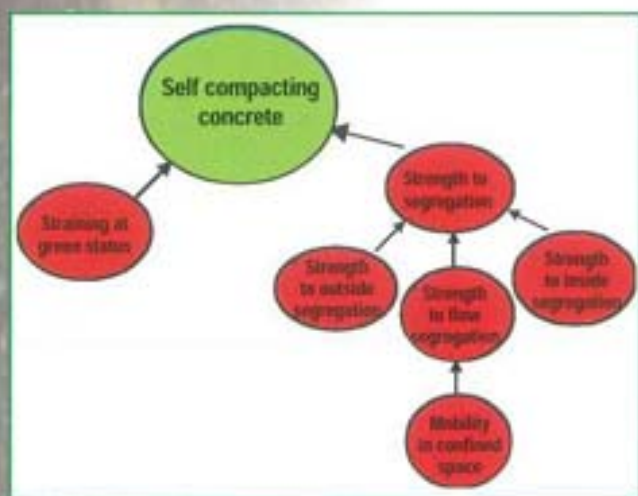


Fig. 1. Properties of self-compacting concrete.

framework while maintaining a uniform distribution of its ingredients during placing (resistance to external segregation), during the filling of the moulds when the material collides with the reinforcement bars (resistance to flow segregation) and when filling is complete, avoiding separation of coarse aggregates at the bottom, and the rising of bleeding water to the surface (resistance to internal segregation).

The resistance to flow segregation is one of the most required characteristics from a self-compacting concrete.

It consists in the ability of the concrete to flow without stopping around obstacles such as reinforcements or narrow sections determined by variations in geometry of the structural elements (mobility in congested areas); here there's a high probability of blocking caused by an increase in the number of collisions between coarse aggregate particles consequent to the loss of the mixture's laminar flow (2).

Table 1. Slump-flow method: typical values of d_f and t_f for superplasticized and self-compacting concrete.

CONCRETE		
d_f	SELF COMPACTING ≥ 600 mm ≤ 750 mm	SUPERPLASTICIZED (S5) ≤ 500 mm
t_f	5-12 sec. ready-mix concrete 20-35 sec. pre-cast concrete	8-12 sec > 18 sec.



Fig. 2. Slump-flow.

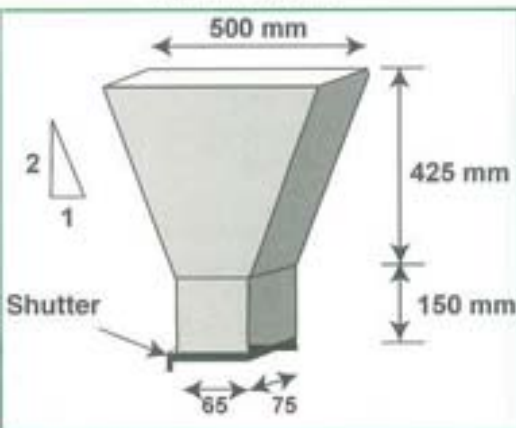


Fig. 3. V-funnel.

U-box (Fig. 4).

The apparatus is composed of a U-shaped box and two chambers separated by a partition gate.

The concrete, introduced in chamber A, after lifting the gate flows into chamber B. To obstruct the flow a metallic grid is placed between the two chambers: the number and the diameter of the bars that compose the grid can be varied depending on the level of self-compactability that is to be obtained, which, in turn, is related with casting difficulty.

This can be associated with the minimum clearance of the structure to which the concrete is destined: clearance < 50 mm requires the use of the mesh made of 5 \varnothing_{10} bars, while for clearance between 50 and 150 mm, a grid with 3 \varnothing_{13} bars can be used.

If clearance is greater than 150 mm then no obstacle between the two chambers is required.

(Clearance (i) determines the maximum size of the aggregate: (D_{max}): $i < 50$ mm and $D_{max} \leq 16$ mm; $50 \leq i < 150$ mm and $D_{max} \leq 20$ mm; $i > 150$ mm and $D_{max} \leq 25$ mm).

The test consists of measuring (Fig. 4) the height (H) of the concrete in

chamber B, the time necessary to reach that height, and the content of coarse aggregate per cubic meter near the bars (G).

The value of G is therefore compared with the nominal value (G_0) in order to evaluate the concrete's resistance to flow segregation and its mobility in narrow spaces: G/G_0 should result greater than 0.9.

The evaluation of this property can also be done using the L-box with horizontal reinforcements (Fig. 5).

Due to the reduced clearance (minimum value of 38 mm) and the high number of bars, this test results to be the most difficult.

Composition characteristics and mix-design

As described, self-compacting concrete must be characterized by high deformability at the fresh state and low segregation. In terms of rheological characteristics, this means that the mixture must possess a relatively high cohesion (in Bingham's equation this corresponds to the minimum shearing stress needed to keep the material at the liquid state) and a low plastic viscosity (this corresponds to the shearing stress necessary to produce a unit increase in fluid rate).

Unfortunately, these two properties are antithetic since, in general, the factors that improve the mixture's cohesion (f) (increase in segregation resistance) worsen flow properties through an increase in plastic

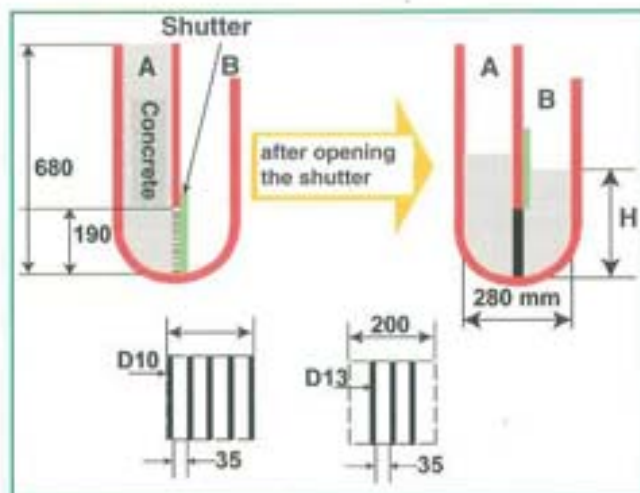


Fig. 4. U-box.

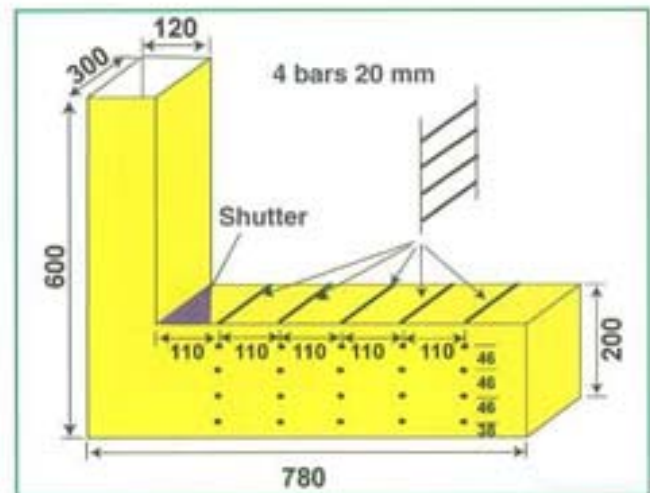


Fig. 5. L-box with horizontal reinforcements.

viscosity (η).

For example, a reduction of the w/c ratio allows to increase f , but also causes an increase of η . Consequently, for self-compacting concrete it's not possible to reduce w/c below a certain value without negative effects on material deformability and mobility.

For this reason hyperplasticizing admixtures – in the case of self-compacting concrete – must be used at the same w/c ratio, with the objective of increasing workability and therefore material mobility through a decrease of plastic viscosity.

The penalization of segregation resistance consequent to the increase of workability can be faced with the combined use of pozzolanic or calcareous fillers and viscosity modifying agents that allow to increase f without substantially modifying η .

From a rheological point of view, self-compacting concrete can be outlined as a fluid composed of two phases: the paste (water, cement, filler and the fraction of 150 μm sand) which makes up the conveyor fluid, and the conveyed phase, made up of aggregates.

Therefore, in order to achieve the required level of self-compactability, it is necessary to increase the volume of fine material and decrease the volume of aggregates with respect to the corresponding values typical of a traditional super-fluid concrete.

A practical rule is that of limiting the volume of coarse aggregate to 340 l/m^3 while at the same time guaranteeing a volume of fine material between 170 and 195 l/m^3 . Fig. 6 summarizes the main compositional differences between traditional and self-compacting concrete.

Advantages of self-compacting concrete

Over the last twenty years, two processes with opposite effects on the durability and reliability of reinforced concrete structures have been remarked.

The first is based on the classification of environmental aggression levels and the relative solutions to adopt in terms of $(w/c)_{max}$, cement dosage and minimum concrete cover; this has increased the durability of the concrete and potentially that of reinforced concrete and pre-stressed reinforced concrete structures.

The second is determined by a general decline of workmanship quality not accompanied by a substantial increase in the level of mechanization, with a consequent increase of concrete defects and therefore a drastic reduction of the maximum potential durability ensured by the use of concrete compliant with national and European norms (3).

Thanks to its high stability and deformability, the use of self-compacting concrete makes the level of durability and reliability of the structure independent from the existing on-site conditions related to the quality of labour, casting and compacting systems available.

In particular, the high resistance to external segregation and the mixture's self-compacting ability allow the elimination of macro-defects, air-bubbles, and

honeycombs responsible for penalizing mechanical performance and structure durability.

A further advantage of using self-compacting concrete is represented by a reduction in construction time thanks to the greater speed of casting due to the complete elimination of vibrating operations.

In general, it's calculated that the use of self-compacting concrete can reduce construction time of massive structures by about 20-25%.

Furthermore, the use of self-compacting concrete allows to use innovative construction techniques, such as casting the concrete from the bottom towards the top (Fig. 7), or the use of pipes fitted with valves from which the concrete is supplied allowing to accurately control the filling level of the frameworks (4).

With regards to the elimination of vibrations, self-compacting concrete offers undeniable advantages for the workers' health.

In fact, the effects of vibrations on the human body are well known. In severe cases, these effects determine behavior disorders such as insomnia, loss of mnemonic capability, and hyper-stimulation of the peripheral nervous system which causes the "white finger" or "dead finger" syndrome (the loss of sensibility of the hands).

Furthermore, the elimination of the vibration process allows to obtain further improvements of working conditions thanks to the reduction of noise level. In fact, it is well known that hearing stress, for workers on construction sites and in pre-casting plants, causes a high risk of occupational deafness. The elimination of vibrations and noise due to the use of self-compacting concrete determines a decisive reduction of occupational diseases, with positive effects on the entire community thanks to the reduction of medical costs and the improvement of the quality of life for the workers.

Another advantage in using self-

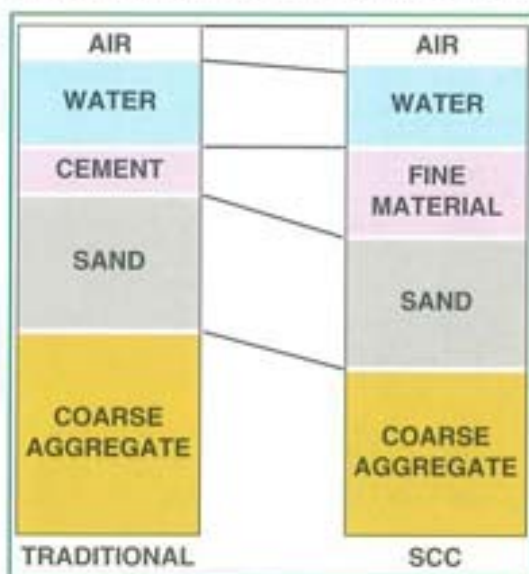


Fig. 6. Schematic differences in mixture composition between traditional super-fluid and self-compacting concrete



Fig. 7. Construction of a supporting wall by casting of self-compacting concrete from the bottom.

compacting concrete is the improvement of the aesthetics of concrete surfaces. In fact, the elimination of the vibration process avoids entrapped air-bubbles moving to the walls of the framework (which usually occurs in structures with external vibration), reducing the formation of surface defects typical of traditional concrete structures. In fact, in the absence of vibrations, air-bubbles are easily expelled thanks to the minor viscosity of the concrete, and are not squeezed on the vertical walls of the framework, resulting in excellent aesthetics.

It is evident, though, that the aesthetics of the structure will still depend on the type of framework (wood, plastic, cardboard, steel, etc.) and the type of releasing agent used.

Preparation and casting

For preparing self-compacting concrete it's possible to use the same plants used for manufacturing traditional concrete. In particular, ingredient mixing can be done both in vertical axis mixers as well as in truck mixers.

The adding of the ingredients must be done after having introduced at least 90% of the mixing water required. Then the remaining water and the viscosity modifying agent is added. Finally, the mixture's fluidity is checked

by using one of the methods for measuring the rheological proprieties. Workability during mixing must be adjusted keeping in mind the transportation time and the casting methods. Besides the traditional methods (slump-flow, L-box, etc.) – fluidity can be checked on site with a special apparatus (Fig. 8) through which the concrete flows from the truck before being sent to the pump.

Pumping operations can be done with 100-125 mm diameter pipes that are no longer than 300 m. It is appropriate to keep in mind that during pumping, besides a loss in workability it's reasonable to

expect a greater loss of pressure (with respect to traditional concrete) due to the increase of self-compacting concrete's speed inside the pipe.

The increase in pumping speed, the increase in speed of casting and the lower viscosity of the self-compacting concrete produce, with respect to traditional super-fluid concrete, a greater lateral pressure on the frameworks which therefore should be correctly dimensioned. At the same time it's necessary that the frameworks be verified for sealing in order to avoid – especially at the base of vertical structures – overflowing of concrete.

The concrete dropping height, which must be adjusted each time according to the geometry of the structure and the percentage of reinforcement, must not exceed 5 m.

Furthermore, before proceeding, it is appropriate to define the points and the sequence of casting, keeping in mind that the mixture's ability to flow laterally generally reaches 15 m. Finally, during the casting of closed elements and with particularly narrow sections, points for air expulsion must be planned. In selecting the release agents and cleaning methods for the frameworks, the same requirements of traditional

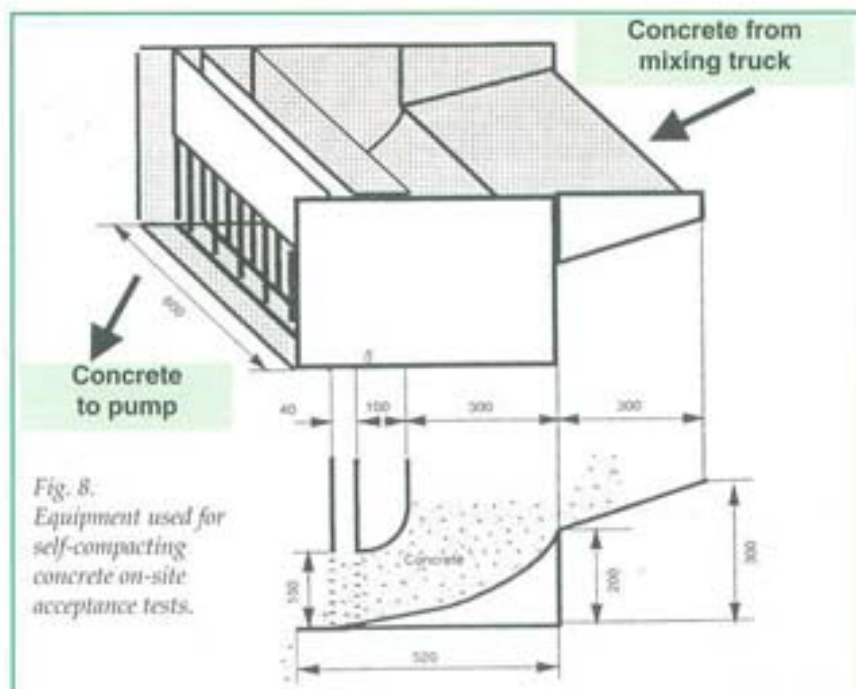


Fig. 8. Equipment used for self-compacting concrete on-site acceptance tests.



concrete are valid. As far as wet curing is concerned, consider that the lower quantity of bleeding water (with respect to traditional concrete) can determine faster drying of the self-compacting concrete. Therefore, if superficial finishing operations are required, it's necessary to keep the surface wet or protect it with curing agents. Of course, wet curing of the casting's surface is an important operation for guaranteeing a "skin" that's impermeable and resistant to aggressive environmental agents.

Conclusions

Self-compacting concrete characterized by high fluidity and the absence of segregation can be used for reinforced concrete and pre-stressed reinforced concrete without the need of vibration.

Using self-compacting concrete therefore allows to obtain long lasting structures that are independent from the workmanship and the compacting systems available on-site.

Finally, self-compacting concrete can reduce casting time, improve aesthetics, and most of all improve working conditions thanks to the elimination of noisy vibrating operations. 37

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ADMIXTURES FOR SELF-COMPACTING CONCRETE

Mapei has specifically developed a series of admixtures for the production of Self-Compacting Concrete (See Page 41):

- **DYNAMON SR3:** superplasticizer based on modified acrylic polymer for ready mix concrete with low water-cement ratio, extremely high mechanical strengths and long slump retention. By adding between 0.41 and 0.58% in volume of DYNAMON SR3 with respect to the weight of fine material, mixtures with more than 660 mm (after 30 minutes) slump-flow can be produced.
- **DYNAMON SP1:** superplasticizer based on acrylic modified polymer for precast concrete with low water/cement ratio and very high mechanical strengths at early and final age.

By adding between 0.6 and 1% in volume of DYNAMON SP1 with respect to the weight of cement, self-compacting concrete can be produced with a slump flow higher than 600 mm.

- **DYNAMON SP3:** superplasticizer based on acrylic modified polymer for precast concrete with low water/cement ratio and very high mechanical strengths at early age in winter time, without steam curing. By adding between 1 and 1.5% in volume of DYNAMON SP3 with respect to the weight of cement, self-compacting concrete can be produced with a slump flow higher than 600 mm.

- **VISCOFLUID SCC:** a viscosity modifying admixture for the production of self-compacting concrete with high stability and no segregation. Adding between 0.1 and 0.2% in volume of VISCOFLUID SCC with respect to the weight of fine material, (in combination with DYNAMON SR3, SP1 or SP3) allows to produce self-compacting concrete with practically no segregation and bleeding.

Further and more detailed information on the admixtures may be obtained from the technical data sheets of the single products. The following products can also be used in the preparation of Self-Compacting Concrete:

- **MAPEPLAST PT1:** air-entraining agent for self-compacting concrete resistant to freeze-thaw cycles;
- **MAPEPLAST SF:** powder silica-based admixture for self-compacting concrete with high mechanical strength, high impermeability and durability;
- **EXPANCRETE:** expansive agent for shrinkage compensating self-compacting concrete;
- **FORM-RELEASE AGENTS DMA 1000, DMA 2000 and DMA 3000** for releasing the concrete from the frameworks;
- **MAPEURE E:** curing emulsion for protecting the concrete from rapid water evaporation.

For more information, please visit the Mapei website: www.mapei.com, or ask for the documentation and technical data sheets of the products mentioned (Fax: +39-02-37673.214 - E-mail: mapei@mapei.it).



Fig. 1. Self-compacting concrete before quality control.

Fig. 2. On-site evaluation of self-compactability.



Waterproofing systems ceramic tiles in humid

In new constructions and in restoration interventions, the importance of waterproofing is evident: it preserves the structures from the physical and mechanical aggression of water, and isolates interior environments guaranteeing the necessary salubrity conditions. Too often, though, waterproofing is done only to protect against external water (rainwater or groundwater, for example), without considering that for particular environments "internal" impermeable protection is also needed. In fact, the construction of bathrooms, laundries, locker-rooms, kitchens, etcetera, requires the use of advanced materials, but that are nonetheless very sensible to water (for example, gypsum, plaster board and wood for walls; anhydrite screeds for pavements). All these materials, if not adequately protected, present serious problems if they remain in contact with water. In fact, the continuous presence of water on pavements and ceramic coverings- and not only - generates leaks between the tiles that cause humidity stains which, besides being anti-hygienic, ruin the aesthetics of the environment. But there's more: the continuous penetration of water in interstitial spaces causes the deterioration of wall structures over time, even with perfect waterproofing against external water. To solve these problems, Mapei has developed a waterproofing and installation system for ceramic tiles for interior humid environments based on the combined use of single-component products - five in all, technologically advanced and easy to use. The system has been developed studying specific products, selected considering the type of support to work on, the type of covering used and the environmental conditions.

The system requires the sequential use of: MAPEGUM WP - MAPEBAND - KERAFLEX - ULTRACOLOR - MAPESIL AC.

"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 in its Internet site www.mapei.com.

Mapei adhesives and sealants are compliant with EN 12004 and prEN 13888 standards.

***Keraflex (C2TE):** high adhesion strength cement-based adhesive, with fair deformability and no vertical slip, ideal for ceramic tiles and stone material*

***Mapeband:** Polyester reinforced rubber tape for flexible sealing and waterproofing of internal and external expansion joints*

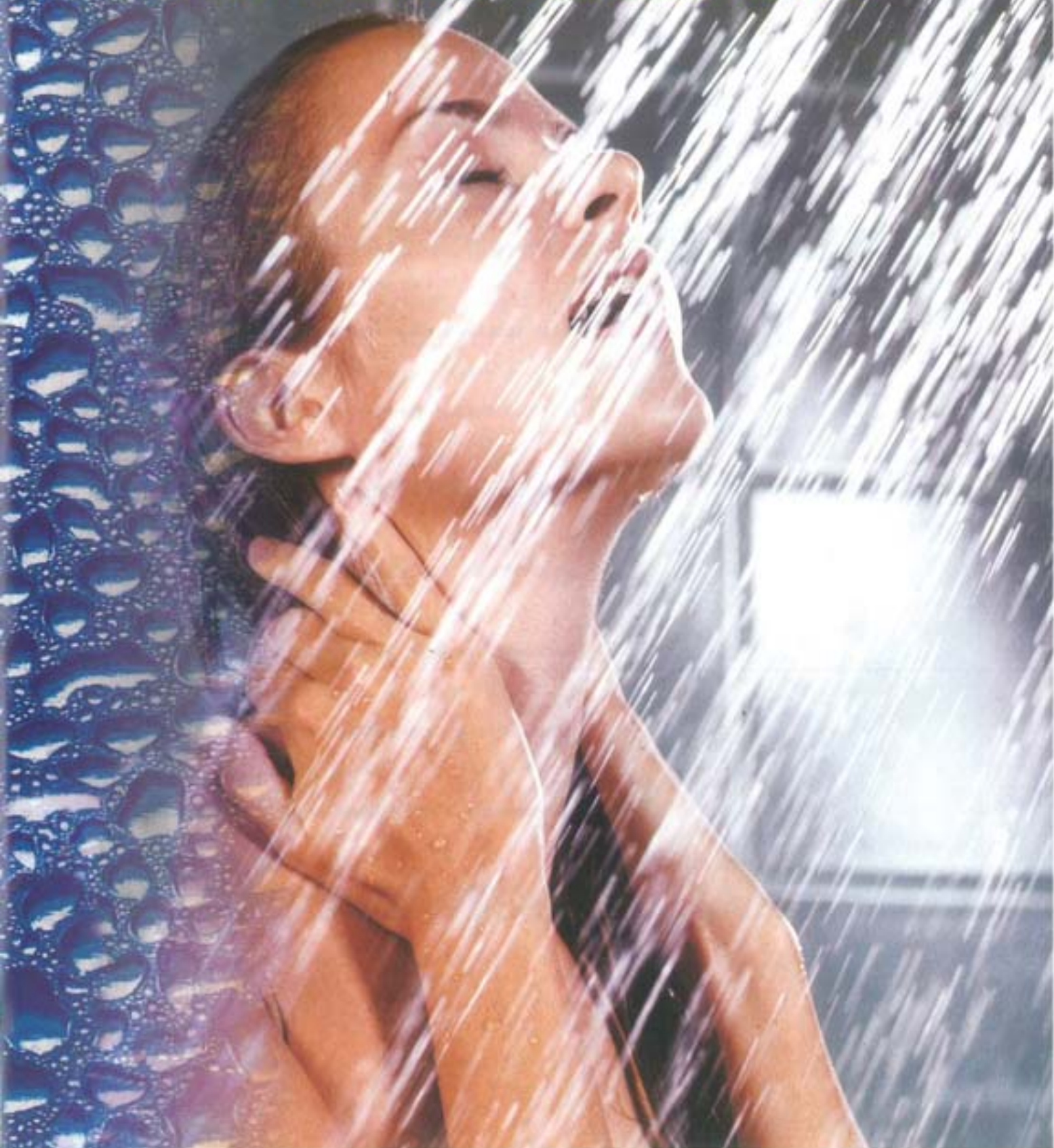
***Mapegum WP:** flexible liquid membrane for interior waterproofing*

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

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



**for the installation of
interior environments**



Waterproofing systems for the installation of tiles that are sensitive to moisture, for example in showers.

The following are the application steps:



- 1 Apply a coat of **Mapegum WP** with a brush in all the corners of the walls, floors and by the drains and water pipes.
- 2 Place **Mapeband** over **Mapegum WP** whilst it is still wet.
- 3 Apply two coats of **Mapegum WP** with a roller on the walls and on the floors, the 2nd coat at right-angles to the 1st.
- 4 Install the shower tray.
- 5 Fix the tiles on the floor with **Keroflex**.
- 6 Install the tiles on the walls with **Keroflex**.
- 7 Grout the joints with **Ultracolor**.
- 8 Seal the shower tray and all the corners with **Mapesil RC**.



Waterproofing shower boxes, bathrooms, changing rooms, kitchens, laundries, etc. is a necessary operation because in modern building, a fast-track system, materials that are sensitive to water are often used, e.g. gypsum or chipboard and wood for walls, and anhydrite screeds for floors.

Moisture penetration through the tiles, provoked by the continuous spray of water in shower cubicles, tubs, sinks, sanitary fixtures, etc. cause unaesthetic and antigenic humidity spots, but above all cause damage to the substrate structure.

Installation of ceramic tiles on walls and screeds Example gypsum, chipboard, anhydrite Application phases of the system:



Mapegum WP is a ready to use liquid membrane for waterproofing: it is not inflammable, it is perfectly waterproof, has good flexibility and dries rapidly.

Mapeband is a synthetic rubber tape for waterproofing all corners and pipe connections.

Keroflex is a single part, semi-flexible cement based adhesive for the installation of ceramic tiles on floors and walls.

Ultracolor is a fast-setting polymer modified cementitious grout for 2 to 20 mm joints. Available in 26 colours.

Mapesil AC is a single component silicon sealant. Available in 26 colours.

Mapel's answer to these problems is the development of a waterproofing and installation system for ceramic tiles in humid interiors that is secure and long-lasting, using single part products that are easy to use.

The choice of the products was based on:

- the type of substrate;
- type of covering;
- the ambient conditions.



THE ENCHANTED FOREST

Millenary tree trunks, extraordinarily preserved by a layer of clay for millions of years. An important "living" fossil patrimony maintained on the hills of Umbria, which for centuries have kept secrets that probably can now be revealed.

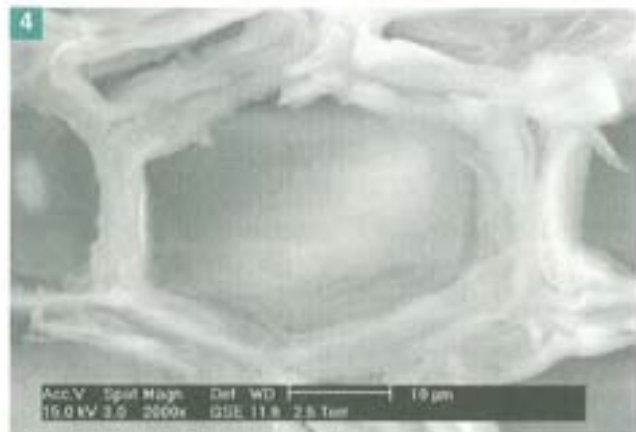
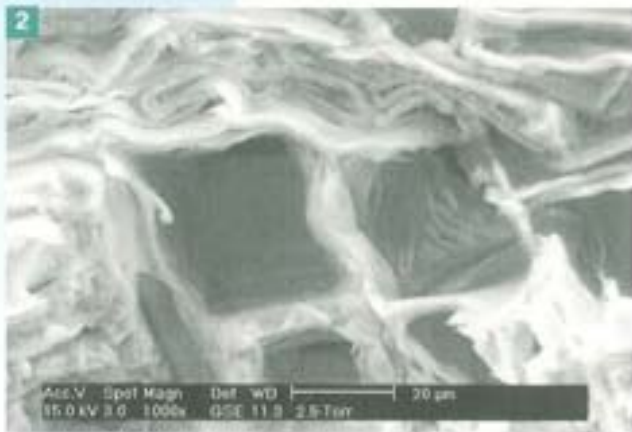
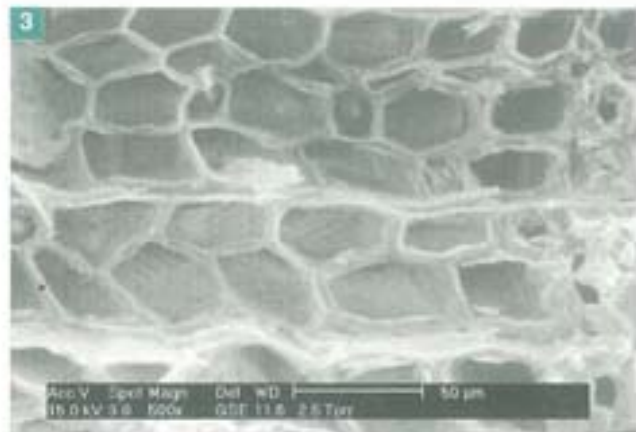
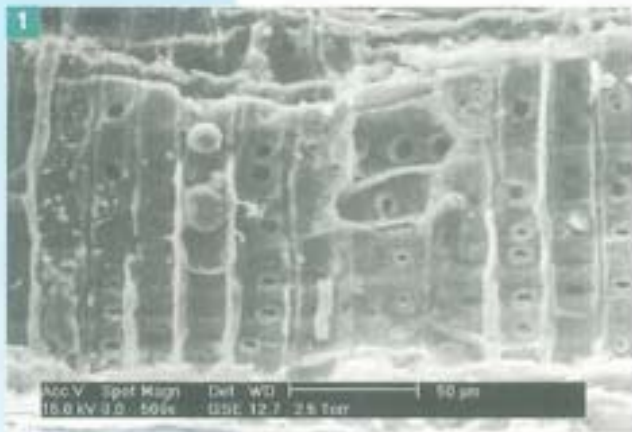
Almost fifty trunks were buried under layers of clay for thousands of years at Dunarobba, a small centre of Avigliano Umbro, on the hills between Perugia and Terni, inside a vast area already known for the richness of its fossil deposits. It's an area that was born around the banks of a primitive group of lakes named "Lago Tiberino", where the humid climate favoured the growth of flourishing forests, such as the one of Dunarobba.

And it's definitely not a recent discovery. Already in 1600 it was the object of great interest for the 'Accademici dei Lincei', the Lincei Academicians, who included Federico Cesi, one of the founders of the Academy itself (1603), and Francesco Stelluti, who mentioned it in his "Trattato sul legno fossile minerale", (Treatise on mineral fossil wood) in 1637. It was then forgotten, only to be rediscovered in 1986 during the excavation activities carried

out by a local furnace company. And once again people started talking about this fossil patrimony, rare not so much for its age or for the number of specimens, but for the unpredictable state of preservation of the remains, as demonstrated by the vertical position of the trunks and by the non-petrification of the wood that still seems freshly cut. The reason may surely be attributed to the particular ground poor of mineralising salts and anaerobic bacteria, and most of all to the clay that has buried the trunks for two million years. In fact, the clay has kept the trunks in a "mummified" state, leaving the wood in unaltered conditions, and allowing it to still move and react to the environment's climatic variations.

Practically, the isolating action of the clay layer avoided those mineralisation and decomposition processes that started when the trunks were directly exposed to atmospheric agents and rain.





Photos of some fossil wood samples taken using a Scanning Electron Microscope in the Mapei R&D Laboratory of Milan:

1. Longitudinal section of the fossil wood in the upper cortical area; the interlacing of micro-canals typical of vegetable structures is clearly visible.
2. Close-up of the cortical area; the crushed cells near the bark are evident.
3. Central section of the fossil wood; the (hexagonal) cells are well conserved, as if the sample was still "fresh".
4. Close-up of the wood's cell.

The action of the pouring rain combined with the wind and sudden temperature changes damages the wood's cortical part, which, after losing its vital substance, breaks away from the trunk and becomes sawdust. The process is accelerated by the attacks of birds and insects, such as the "Xylocopa Violacea", that are attracted by the plants. For this reason, "hut" shaped covers were prepared for immediate protection.

Laboratory analysis

The palaeontologist studies carried out on the clay and on the entire surrounding environment, along with the interdisciplinary contribution of the Universities of Perugia, Padova, L'Aquila and Viterbo, has led to important conclusions. First of all, it was probably a forest of trees very similar to modern day sequoias, of the Taxodiaceae family, that were already thousands of years old when buried. Furthermore, the pollen analysis revealed that the forest probably

dates back to the Pleistocene period, approximately two million years ago, just about when the Italian peninsula and the primitive Apennine valleys were starting to form. The dendro-chronological tests reveal the presence of growth rings, which demonstrates that contrarily to what previously believed, in that period there was already an alternating climate, even though temperatures were colder with respect to modern times.

Mapei's intervention

The problem of the wood's conservation could not however be solved only with temporary operations of this type, and the Archaeological Superintendence for Umbria, the 'Istituto del Legno' (Wood Institute), and the University of Florence decided to find a definitive "technological" solution that would allow to leave the trunks outside. This is why in 1997 Mapei laboratory technicians, in particular from the division of Adhesives for Resilient





The pictures on this page show the trunks of the Dinarobba Fossil Forest and their protective shelters.

material, were contacted by the professor Stefano Berti of the University of Florence to find a product that could satisfy these requirements. Mapei thus started a series of tests on small samples of fossil wood to determine their physical-mechanical, dimensional and hygrometric behaviour as environmental conditions and humidity change. Of all the tests carried out, of fundamental importance were the "SEM" microphotographs (scanning electron microscope): high definition enlargements of up to a hundred thousand times revealed that the wood cells, recognizable thanks to their hexagonal structures, are alive and that

only their borders are atrophied due to mummification. The cellular part of the wood is intact, but its structure is "unbalanced": the core continues to assimilate water through direct contact with the mud, but it's not able to discharge it externally because the membrane is atrophied, while the cortical part assimilates humidity but is not capable of holding it, totally dispersing it into the environment. It's this impermeability between the two parts that causes the cracks and the breakaway of the bark. In all this time though, the clay did not avoid the crystallization of the wood's natural resin, which, after its transformation into "amber", lost its ability to penetrate the wood's fibres and to carry out its protective function. Consequently, it was necessary to create a compound with a natural resin behaviour, an impermeable barrier through which the wood could breath but that at the same time could be removed in case of necessity. Subsequently, mixtures based on natural binders were prepared, such as waxes, colophony (a



natural resin), colophony esters and synthetic derivatives in dilutions in natural solvents like terpenes and spirits. After six months of experimentation on small samples of original wood and tests on some conifers, species that are similar to modern sequoias that were not available since they are close to extinction, six different formulations were obtained; from these, the two that showed the greatest stability to changes in humidity and climate were chosen.

The current situation

Everything is now ready, though we are still waiting to solve bureaucratic problems regarding the site and to clarify the terms of the financing necessary to give the CNR and the consultant operators the possibility to verify the on-site effectiveness of the solutions. In the meantime, all the plants have been unburied and only three trunks are under exam: one has been left outside,

another has been cut at ground level and a third is kept in a climatic chamber. In view of the new biogenetic technologies, lately someone even proposed cloning the samples of the fossil forest; though this news-item was then denied, it confirms the great interest regarding this enormous finding.

In any case, besides eventual scenarios regarding DNA, certainly the Dunarobba forest represents an important occasion of study, and the need of preserving the site as correctly as possible, without the risk of contaminating the findings' original condition, must not be taken lightly.



Antique Art

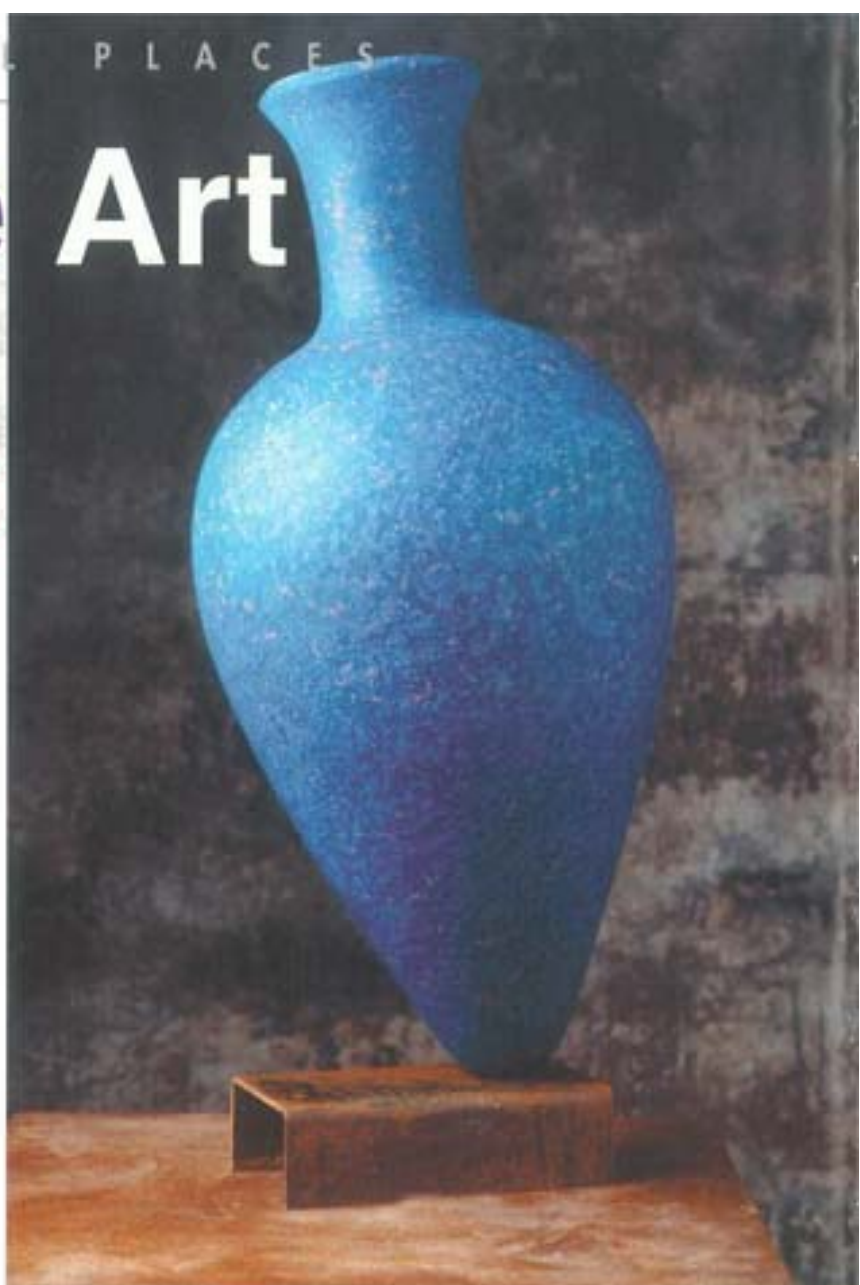
MODERN TECHNIQUES

The sculptures thought of and created by the artist from Iceland, Haukur Hardarson, are somewhat magical; they recall northern myths of a world characterized by daylight for one half of the year, and by darkness for the other half. Griffins, unicorns, centaurs, chimeras, a series of fantastic creatures that are part of every population's culture, continue to live in tales and legends. These objects created by Hardarson recall this universe of mythological animals. They seem as if they were created in hidden places, and they bring to mind ancient stories and artisan care obtained through accurate hand work. Amphoras, vases, and sculptures amaze the observer for the care and time spent by the artist in creating each single piece. The technique used is apparently simple: the objects are made using a paintbrush by gradually spreading numerous layers of grout mixed with different colors on a clay model. The grout is then grinded patiently to reveal the layers of color below the surface.

A procedure that's similar to the erosion due to time, and that gives the sculpture an antique look. At a glance, the objects seem to be cast in metal, but at a closer observation they appear in all their complexity, and seem as if they were made of metal, wood, or stone. To create his works of art though, Hardarson uses tested and advanced Mapei products that he mixes to obtain the final desired result: NIVORAPID with ULTRAPLAN, or with IDROSILEX PRONTO, or all three together. Or still, NIVORAPID with GRANIRAPID and ULTRAPLAN, or the last two only; or GRANIRAPID with MAPEGROUT FAST-SET or with MAPEGROUT THIXOTROPIC or NIVORAPID. Lately, he has been experimenting new combinations: NIVORAPID with MAPEGROUT FAST-SET and NIVORAPID with MAPEGROUT THIXOTROPIC.

The methods and the products used allow the sculptures to look like fossils or ancient urns accidentally discovered by an archeologist. Considering the care and time the artist puts in each single work, his production is composed only of a few sculptures per year; they are one-of-a-kind works of art with a final surprise for the observer, since a fantastic animal 'is hidden' inside each creation.

For whoever would like to contact the artist directly: haukur@haukur.is



MOSAICO

an art form on the move

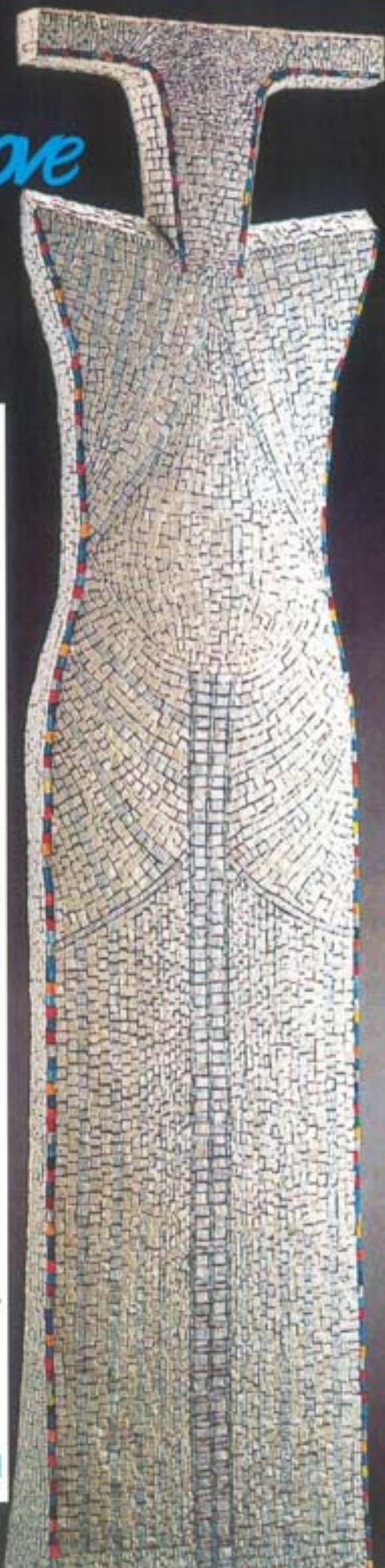
The elegance and versatility of an ancient building technique rediscovered through the sculptures of Paola Scibilia.



The art of mosaic has historically fulfilled both an important cultural and functional role, evolving in harmony with the technological advancements which have revolutionised the construction industry through the ages. Almost as old as civilisation itself, appropriately, the medium was born principally to beautify and embolden rather than strictly to cover and protect urban roads and pavements and the walls and floors of sacred buildings. Soon, it became recognised as a means of immortalizing the culture and knowledge of an epoch, thanks above all to the durability of the materials used. Moreover, although archaeological evidence indicates that mosaic was most frequently applied as a decorative covering on flat surfaces, in respect of advances in architectural science artists began to experiment; the potential of mosaic as a sculptural medium was even explored, though never truly fulfilled. It's by taking this as her inspiration that the contemporary talent of Paola Scibilia has been able to emerge, having discovered a new, previously unexploited plasticity which leaves scope for exciting and original work with mosaic. As Peter Fischer highlights in his monograph "Mosaics Cicladici", on the hieratic style of the Treviso "artiste", what distinguishes mosaic art is above all the material, formed exclusively from small pieces more or less uniform in shape, which are aligned to form pictures and shapes. The natural shades of the materials or chromatic additives are the only other design apparatus. The word design should nevertheless be used with some caution. In reality the subject is stylised through its coloured background and the joints themselves, between one piece and another, which by creating "directional lines" add a certain dynamic energy to the work. In Scibilia's work, mosaic takes on a new dimension, deriving "body" and movement as it becomes like a second skin protecting the figures represented in the sculpture: they are female bodies, austere divinities, and models up to two metres tall. The structures are held in place by an iron body wrapped in a plaster layer, on which the chips are affixed. And it's the sticking of the pieces and the grouting of the joints which is the most delicate aspect of the mosaic technique, where the artist reveals the full extent of his or her craftsmanship and the choice of adhesives becomes critical, both for safety and manoeuvrability as the artist manipulates the pieces into position.

Mapei suggested that a plaster substrate be prepared with PRIMER G, a primer which creates a sufficiently adhesive surface for all types of finishing.

As regards the sticking of the pieces itself, by using KERABOND, mixed with ISOLASTIC, a strong-sticking elastic mixture is obtained which, by virtue of its quick drying-time and its consistency, enables the artist to arrange patterns with considerable precision. For works commissioned from abroad, the elasticity of the adhesive must go hand in hand with good superficial impermeability properties, particularly when the surfaces are vulnerable to humidity, as is the case at the base of the hand mixed plaster. In this instance KERALASTIC represents an ideal solution, as it can absorb the stress exerted on delicate materials, such as glass, as they are stuck. For some works the final grouting of the pieces can be performed with KERACOLOR, a mortar which, coloured or neutral, is suited to both internal and external applications.



TAFI the GLADIATOR of MAPEI QUICK • STEP untouchable in the mythical Classic

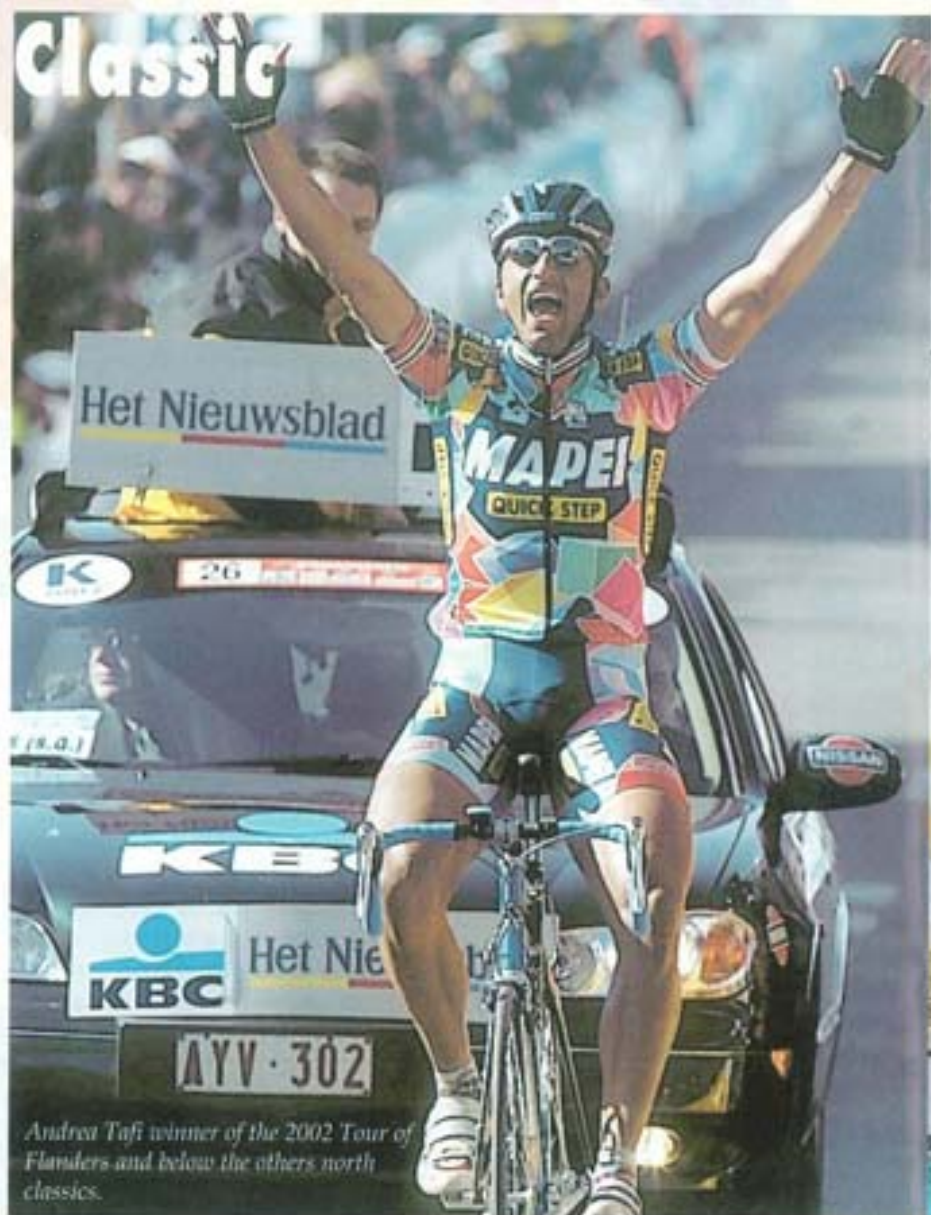
by Alessandro Brambilla

The "Gladiator", Andrea Tafi, certainly lived up to his name in one of cycling's great arenas at the Tour of Flanders in April. Tafi capped an exhibition of force, tactical nous and cohesion by the entire Mapei-Quick-Step team with his victory in round three of the 2002 UCI World Cup. At 35 years 11 months the affable Mapei "statesman" became the oldest ever winner of the Tour of Flanders, and ninth oldest to claim victory in any of cycling's "Classics".

The 2002 Spring season rapidly unfolded into a celebration of cycling's senior citizens: either side of Tafi's solo win, the 35 year-old Mario Cipollini had prevailed on the first major date of the cycling calendar in Milan-San Remo, while later ex-Mapei legend Johan Museeuw dominated Paris-Roubaix. Just days earlier Museeuw, 36, had been contemplating retirement, relegated into second place by his old team-mate in his "beloved" Tour of Flanders.

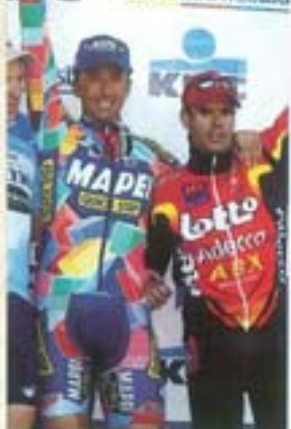
Such thoughts were of course far removed from Tafi's delight in Meerbeeke.

On an unseasonably warm afternoon the Tuscan had finally found the benign conditions he craved, and wasn't about to pass up what he acknowledged would be one of last chances to add the Flanders crown to the Paris-Roubaix triumph scooped in 1999. Now



Andrea Tafi winner of the 2002 Tour of Flanders and below the others north classics.

Het Nieuwsblad



The 2002 Tour of Flanders Flanders (1°), Museeuw (2°), Van Petegem (3°). Below, Tafi in action.



Tafi can sleep easy: with this double his entry into the feted caste of "adopted Flandrians" is assured.

As ever on Belgium's favourite sporting occasion, hostilities between pre-race favourites opened shortly before the feared Muur de Grammont. In just a crucial clutch of seconds Tafi would construct his triumph, as he and Daniele Nardello moved to give Mapei-Quick Step the numerical edge in what would be the winning seven-man breakaway. Also present as the Grammont loomed, although isolated, were Peter Van Petegem, Rolf Sorensen, George Hincapie, and Gabriele Missaglia. Just one other team - Domo - could boast two riders: Enrico Cassani and the three-time champion and danger man Museeuw. On the torrid, cobbled, Grammont ascent Cassani, Sorensen, and Missaglia would soon fade, purged by Museeuw; Nardello and Tafi could only hang on. The Belgian's power was ominous. Almost as impressive was his compatriot Van Petegem, though neither the pre-race favourite nor

FLANDERS



Daniele Nardello, 5th placed.

Museeuw could shake off Nardello, Tafi or the "third man" Hincapie in the final 25 km. The day's last obstacle, the Bosberg, proved indecisive. Five men, it seemed, would contest a sprint that was on paper kinder to the Belgian duo, on past form the faster finishers.

After a flurry of attacks from all five riders, Tafi seized his moment 3500 km from the line. For the first time no one reacted – or could react – to a stinging acceleration and soon the Gladiator had opened up a ten-second gap, never to be closed. Four hundred metres of daylight

were enough; Tafi saluted Museeuw's disbelieving fans as his cruised home, the home idol now barely in eyeshot. Seconds later Nardello crossed the line arms aloft in celebration of a third Tour of Flanders title for Mapei-Quick Step.

Tafi would later acknowledge the gesture of solidarity, as he paid generous tribute to the Italian champion in the post-race festivities. Nardello had settled for fifth in the scramble for the minor places, Museeuw claiming an empty consolation in second, ahead of Van Petegem and Hincapie.

Twenty-one seconds had elapsed since Tafi crossed the line. "Bettini, Zanini, Nardello and all of the other Mapei-Quick Step riders were immense," enthused Tafi, the native Florentine who now resides near Pistoia, northwest of the Tuscan capital.

"Our directeur sportif, Serge Parsani, urged me to try my chances and that's what I did. I attacked several times before finally breaking clear. Nardello and I made a brilliant team; we beat Museeuw and Van Petegem, both of whom are Belgian, and for them this race is sacred. They'd also made an agreement to try to nullify our advantage."

For Tafi Flanders was the end of quest which has spanned his 13-year career. The Mapei veteran of eight seasons now vaunts a palmarès unexpected of a rider who's vocation was originally that of domestique – cycling's appellation for the humble "water carrier". His tally of World Cup victories now stands at 5, including the 1996 Tour of Lombardy, his standing that of one of the finest Classics riders of the current generation. No Italian can match Tafi in terms of World Cup victories.

When not tormenting his rivals on the cobbles of Northern Belgian and the Somme, Andrea also likes to win other, prestigious, cycle races: the Giro del Lazio (3 times), Paris-Bruxelles, the GP Fourmies (twice) and the 1998 Italian national championship in Bergamo all figure on the powerful "rouleur's" CV.

"I've won all that a rider of my physical make-up can win," Tafi admits.

"The Tour of Flanders, Paris-Roubaix and the Tour of Lombardy are cycling 'monuments'. I'm not as young as I once was, but how can you give up after tasting glory like this?"

His Retirement on ice until the end of the 2003 season, the Gladiator is already eyeing his next objective: "This has been the year for riders aged over 30. The trend could continue at the World Championship at Zolder, in Belgium, on October 13.

There I want to leave my mark.

I've already won World Cup races; I've worn the Italian champion's jersey in 1998. All that's missing in the rainbow jersey.....and that's the one I want!"

Tour of Lombardy '96



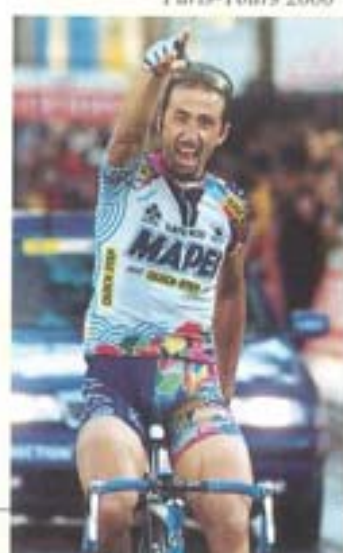
Rochester classic '97



Paris-Roubaix '99



Paris-Tours 2000





BETTINI - GARZELLI,

involved not only in preparing the decisive Mapei assault, but also in defending the advantage as Bettini and Garzelli dove-tailed ahead. The reward came with Bettini's fourth success in a World Cup event and the eighteenth for a Mapei-Quick Step rider. If Bettini's performance was no less impressive than his 2000 victory, Garzelli was also a revelation. He effectively condemned men like triple Tour de France hero Lance Armstrong by creating an eleven-man split on the Cote de Vequee, 52 km out. As a gap was eeked open, Bettini followed, urging his team-mate on. Garzelli duly forced the pace again on the slopes of La Redoute, and four more men wilted: Garzelli, Bettini, Basso, Codol, Spezialetti and Celestino, plus the blossoming German star Kessler, were now in command.

Paolo Bettini was crowned champion of Liège-Bastogne-Liège for the second time in three years. "La Doyenne", the Belgian race historically rated as the hardest and most prestigious of cycling's "Classics", ended in a double triumph for Mapei-Quick Step, as Bettini narrowly closed out team-mate Stefano Garzelli. The Mapei pair had dominated the closing stages of the race: first Garzelli broke the shackles of the peloton along with seven other riders, then the 2000 Giro champion linked up with Bettini to ground down their breakaway companions one by one on the insidious run-in to Liège. Earlier in the 260 km race Bettini and Garzelli's Mapei-Quick Step colleagues had set the tone for a true triumph of team-work. Andrea Noe', World Champion Oscar Freire, Cadel Evans and Daniele Nardello were all heavily

Below, Bettini (1st) and Garzelli (2nd) on the podium of the 2002 Liège-Bastogne-Liège and above at the finish line.





The two photos on the left, Bettini and Garzelli during the race.

year's win at the Grand Prix of Zurich Bettini affirmed his new, senior status in arguably the most hotly-contested Classic of recent seasons. The quality of the beaten Zurich field and in particular Jan Ullrich's second place were the best possible testament to "il Grillo's" coming of age.

"In first Liège – Bettini reflected after La Doyenne – I won in a sprint ahead of David Extbarria and Davide Rebellin. It happened in a flash, but it also finally made me feel like a captain in my legs and in my head. The emotion of this year's win lasted longer."

"The last ninety minutes of the race were

A REGAL DOUBLE IN LIÈGE

Behind Lance Armstrong's US Postal train briefly threatened to haul its leader back. This was the cue for Bettini to accelerate again on the "Cotes" of Sprimont and Sart-Tilman. Bettini's impetus, combined with a moment's hesitation in the chasing pack ensured that Armstrong and further danger men Michael Boogerd and Francesco Casagrande were distanced irrevocably. With two options in the seven man lead-group the equation for a Mapei win appeared simple. Wisely, though, Bettini and Garzelli opted not to risk a sprint. Instead Garzelli produced a devastating attack on the final climb, the Cote de Saint Nicolas, to which only Bettini could respond. Of the flagging pursuers just Basso resisted briefly, before resigning himself to third place. The Mapei missiles now homed in on victory; Bettini and Garzelli even shook hands as the line approached in a gesture of mutual gratitude. From the Mapei team-car directeur sportif looked on, having refused to dictate the verdict of a sprint which would logically favour the speedy Bettini. And so it proved, as the 2001 World Championship runner-up eased home in a 258 km race eaten up at an average speed of 38.8 km/h. Born in Cecina, near Pisa in Tuscany on April Fools Day, 1974, Paolo Bettini was until recently best known for his selfless dedication to ex-Mapei man Michele Bartoli; after his latest tour de force he now stands proudly alongside his former captain as a double winner of Liège-Bastogne-Liège and benchmark in the current generation of Italian Classics experts.

Bettini's success in Walloon was the 22 in a burgeoning Mapei career which dates back to 1999. At first a foot-soldier, now a Mapei sergeant major, with last

a Mapei-Quick Step procession; Garzelli was superb. He knew that this is the Classic I'm most fond of, and he sacrificed his own hopes for me. He knew that I was feeling good.

Stefano's performance was a lesson in selflessness."

As, side by side with Bettini, he became familiar with the undulating final third of the route in training 48 hours earlier, Garzelli had perhaps already glimpsed the dream-scenes of Liège.

After the race, he too was euphoric: "We were simply brilliant," beamed the 28 year-old from Varese. "The sprint was a real one. I'd forced the pace on the Cote de Saint Nicolas and I'd also been pushing hard on the flat. I therefore couldn't react when Paolo overtook me close to the line."

If, for Bettini, the overall prize in the World Cup now becomes an even more enticing ambition, the 70 points Garzelli's earns towards his points tally also leaves him well placed. The UCI ten-race challenge now takes its summer sabbatical with Garzelli – as well as Bettini and Oscar Freire – looming large over current leader Johan Museeuw. "There are other World Cup races which suit me too," Garzelli warns. "True, I've won the Tours of Italy and Switzerland in the past, but I'm not only a stage race rider.

From now on I'll make sure I ride aggressively..."



Right, the victory of Paolo at the 2000 Liège.

MAPEI QUICK • STEP, a bewitched Euro-Giro

ASSUMPTIONS

The Tour of Italy has been characterized, as many know, by the exclusion of Stefano Garzelli, who was positive to the anti-doping checks carried out on the 13th of May, at the end of the second lap (Koln-Ans - Liege), lap where he also managed to win the pink T-shirt.

It is easy to summarize the position of the Sport Group and the choice of the management options taken for this event as not easy or expected: it is necessary to get to the bottom of it to make things as clear as possible. If, from the different degrees of sport judgements, it is proved that Garzelli voluntarily used doping (thus going against the ethics not only of sport, but of our team in particular), he will have to take the consequences of his actions and pay for the significant damage to the morals and image he caused to the Sport Group and to his own fellow cyclists. On the other hand if it comes out that he took doping substances unwillingly, unluckily nobody will give him back a Tour where he looked like a winner since the first laps, but he will have to get back his credibility and trust. From the evidence which has come out up to now (besides his declarations of innocence), it is not yet possible to exclude that he has been made positive by contaminated food he ate. For us, the worst hypothesis would be to be left in doubt.

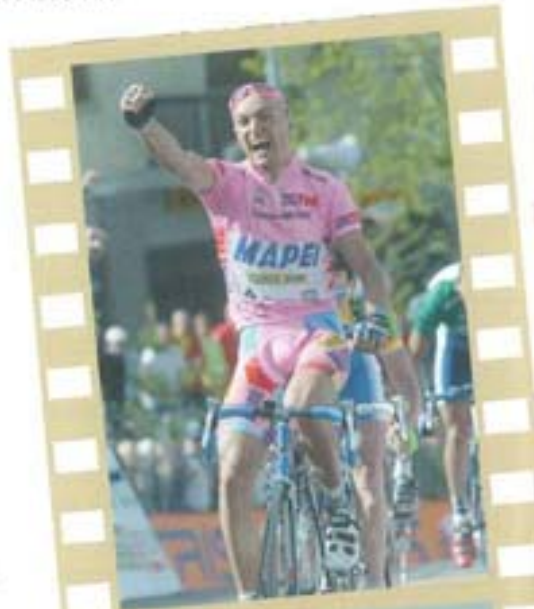
This event has deeply affected the Mapei-Quick Step team, and especially those (athletes and staff) who were protagonists of this tour and experienced both stress and emotions and who, despite everything, managed to show the strength of a team able to react even during the worst moments. They reacted up to the point of dreaming of success together with another man, that is the revelation Cadel Evans, an athlete who gave everything before surrendering to his competitors, as did his fellow cyclists.

The Giro d'Italia 2002 started with a thrilling episode from Mapei-Quick Step. In Groningen, in Holland, before the start of the first timed race, during the warming up, Daniele Nardello cantered an advertising board which had fallen down from the railings. The Italian Champion flew over the railings, but he miraculously landed unhurt. Then the race started. Maybe the accident that happened to Nardello before starting the competitive phase of the European Giro was a bad omen.

Liegi (Belgium) is usually a fiefdom of Mapei-Quick Step. In 2000 and 2002 the Liegi-Bastogne-Liegi was won by Paolo Bettini. When Bettini obtained his second success, Garzelli arrived in 2nd position. Mapei-Quick Step, the queen of Liegi, could not lose the second untimed lap of the European Tour. This started from Colonia (Germany) and finished at Liegi-Ans. A puncture prevented Bettini from competing successfully. But Stefano Garzelli managed to win for Mapei-Quick Step. With spectacular progress during the final upward slope the cyclist of Varese (who has been with Mapei-Quick Step since 2001) managed to win Casagrande. The emerging Australian Cadel Evans, who has joined Mapei-Quick Step this year, finished 8th with 3". Romano Prodi, president of the European Community, let Garzelli wear the pink t-shirt. Besides Stefano and Evans, also Andrea Noè (15th at the finish), Dario Cioni and the other standard bearers of Mapei-Quick did well. During the laps finishing at Esch sur Alzette (Luxemburg) and Strasburg (France) Davide Bramati, Paolo Fornaciari, Robert Hunter, Daniele Nardello and all the Mapei-Quick Step team escorted the cyclist in the pink t-shirt.

TWO HEROES BUT ALWAYS ONE TEAM

During the EuroGiro Garzelli and Evans lived through moments of immense joy and moments of profound sadness, shared also by Noè, Cioni and the whole team. Mapei-Quick Step lived up to its high standards, faithful to its two leaders.





The first day in Italy of the Tour of Europe was the fifth untimed lap from Fossano to Limone Piemonte. Garzelli won again, preceding Santiago Perez in the upward slope and consolidating his record in the general classification.

This lap was a tactical masterpiece of Mapei-Quick Step, with Bettini who escaped during the penultimate upward slope, Madonna del Colletto, leading the main adversaries of Garzelli into a furious chase. The following day, during the Cuneo-Varazze, some competitors who were not dangerous in terms of the final classification, took the advantage. Lombardi won the lap and the German Jens Heppner, 7th at the finish, jumped to the head of the classification table. Garzelli with 3' 33" was pushed into 2nd position by Heppner. This was a favourable situation, with Heppner's Telekom (which could not defend his record on the big mountains until the end of the Tour) having to control the race.

Garzelli went on in the Tour wearing the green t-shirt of the Mountain Grand-Prix leader. But after Tivoli-Caserta (ninth untimed lap) Garzelli was suspended from cycling because of reasons which are not clear yet and thus was excluded from the competition.

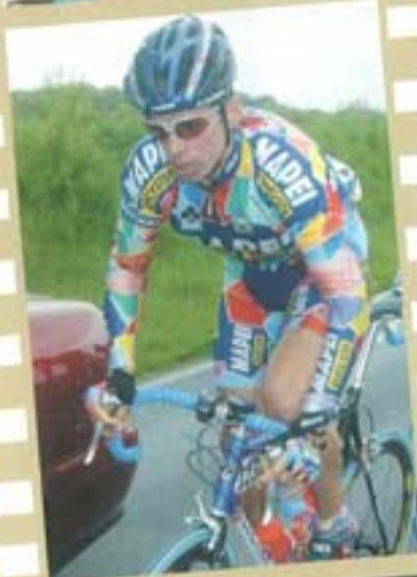
Evans became the leader of Mapei-Quick Step in the general classification table. The Australian did very well during the thirteenth lap, which finished with the upward slope of San Giacomo. He passed the finish line in 2nd position, 13" after the Mexican Perez Cuapio. In this way Cadel jumped to the 5th place in the general classification table, 2' 39" far from Heppner. Twenty-four hours later the American Hamilton won the Numana timed lap. The performance of Evans, 3rd with 41" and of Cioni, 7th with 1' 02" were excellent.

The positive result using the stopwatch enabled the Australian to jump to 2nd position in the classification table, only 48" from Heppner.

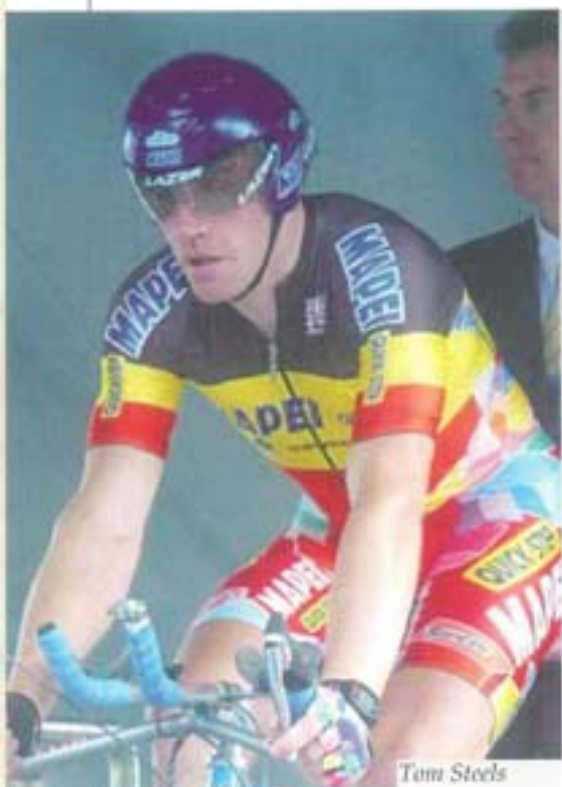
Evans' big day was Cornegliano - Corvara (sixteenth lap), 163 kilometres with the climbing of Forcella Staulanza, Fedaiia-Marmolada, Pordoi and Campolongo. The legendary lap was won by Perez Cuapio, Evans finished 7th, 58" from the Mexican. Heppner arrived after a big delay. Evans wore the pink t-shirt. Cadel is the first Australian to become leader of the Italian Tour. On the eve of Corvara - Folgaria, a lap which includes 5 long upward slopes in the Dolomites and which finishes very high, the general classification table was as follows: Evans 1st, Dario Frigo 2nd with 16".

Since it was his first participation in a prestigious 3 week lap race, Evans paid for the effort: at Folgaria he arrived a lot later than Tonkov, the winner of the lap and than Savoldelli, the new pink t-shirt.

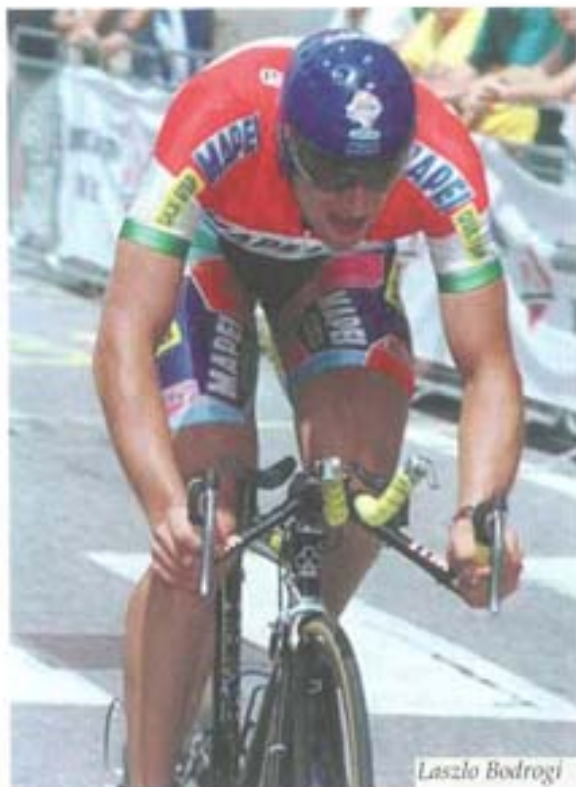
All the sportsmen agree that, with more experience and athletic maturity, Evans will become a great cyclist of lap races. The Italian Tour 2002 was won by Salvoldelli. The Italian tour continues to be bewitched for the team the main sponsor of which is Mapei. Up till now the only victory of Mapei was that obtained by Toni Rominger in 1995 in the final classification table of the Italian Tour. In the 1996 Tour, Abraham Olano (Mapei-GB), who was then the current World Champion, wore the pink t-shirt two days before the end of the Tour, at Passo Pordoi. But the day after he lost it and finished the tour in 3rd position of the classification table. In the '97 Italian Tour, Pavel Tonkov, the new standard bearer of Mapei-GB, wore the pink t-shirt during the third day, winning the timed lap of San Marino. Tonkov managed to be the leader for 11 laps. Pavel lost his leadership because of a tactical mistake during the lap finishing in Cervinia. Despite 3 wonderful lap victories, including the Malà - Edolo with its crossing of the terrible Mortirolo, Tonkov arrived 2nd in the '97 Tour, 1' 27" far from Gotti. Tonkov and Mapei-Bricobi were great also in the 1998 Tour. Pavel did not wear the pink T-shirt, but he won the lap arriving to Alpe di Pampeago in front of Pantani. The result of the '98 Tour was decided on the penultimate day, with the timed lap of Mendrisio-Lugano, during which Pantani did a time 5" longer than Tonkov. In the final classification table Pantani won Tonkov with 1' 33". In that Tour Mapei-Bricobi won, besides the honourable result of the Russian, also the 4th place with Camenzind and the 6th place with Faresin, triumphing in the teams classification. Winning a new pink t-shirt in Milan is still in the dreams of Mapei-Quick Step.



MAPEI QUICK • STEP, stocks up on national titles and sprint wins



Tom Steels



Laszlo Bodrogi



This year the Mapei Group is the sponsor of two professional teams. Both the "top team" (consisting of 27, internationally-established pro's) and the "junior group" (a "nursery" of budding talents in their first and second year among cycling's elite) bear the Mapei-Quick Step name.

Traditionally national championship week-end represents an ideal moment for these riders to showcase Mapei's multinational corporate ethos, on the eve of the Tour de France. Four more national titles duly arrived this year, to extend a long line of successes for professional cycling's most decorated team.

Already the most prolific winner in Mapei's ten year stint in the peloton, Tom Steels has cemented his place in the Mapei Hall of Fame by becoming the team member with the most national crowns. The Flandrian sprinter carried off

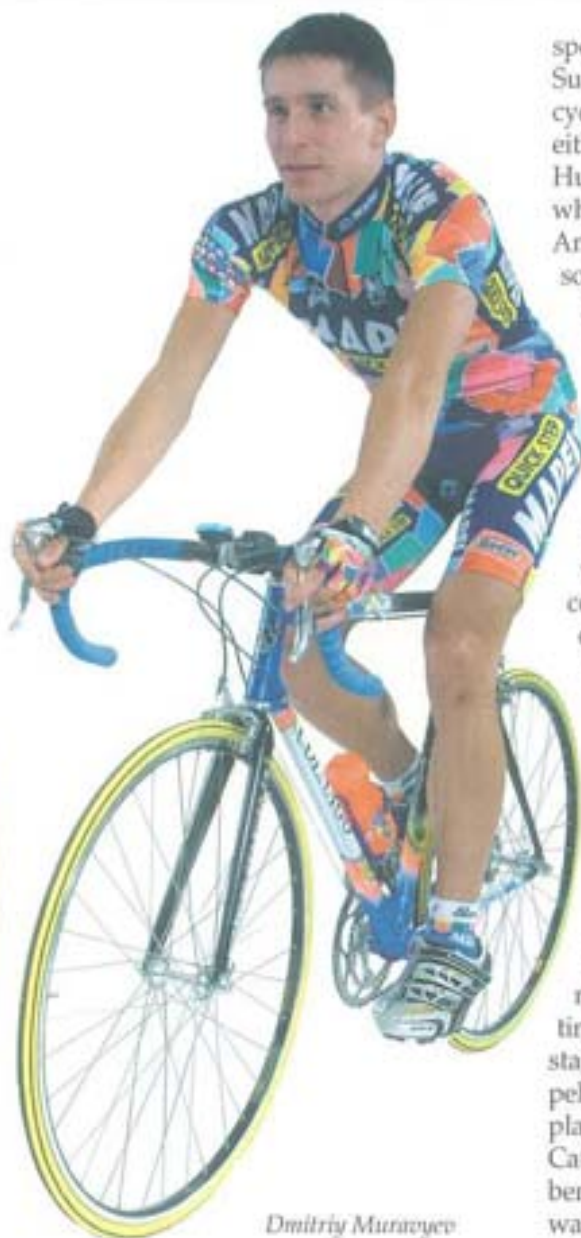
the prized yellow-red-black Belgian champion's jersey in 1997 and 1998, and this year warded off defending champion Ludovic Capelle to claim victory in a bunch sprint. Steels name can be said to sit proudly alongside two Titans of Belgium's national sport such as Roger de Vlaeminck and Eddy Merckx, both former national champions. This victory should also signal the end of a two-year ordeal punctuated by ill-health and injury for Tom, who for almost a decade has been considered one of the premier sprinters of his generation.

As Steels celebrated an overdue renaissance, he paid tribute to Mapei-Quick Step team-mate, Fabian de Waele: "The way that Fabian set up the sprint for me was perfect," he said.

If the story of the day in Belgium was the rebirth of an established star, in Kazakhstan a new name, Dmitriy Muravyev, dominated the headlines. Muravyev, also of Mapei-Quick Step, put on one of the most eye-catching individual displays of Nationals weekend when he prevailed after a 80 kms break-away. The un-fancied 24 year-old outwitted men like 2001 Tour de France revelation Andrei Kivilev and Telekom's Serguei Yakovlev, to name but two of his rivals. Similarly hotly contested was the Russian time-trial championship. Here, too, a Mapei rider proved unbeatable. Former World U23 time-trial champion Euvegeni Petrov added his national title to his burgeoning honours list on a 33 kms circuit near Moscow, his



Evgueni Petrov



Dmitriy Muravyev

49.9 km/h proving too hot for Dimitry Semov and Vladimir Karpets. While Petrov's Russian conquest was a first in that nation for Mapei, Laszlo Bodrogi has accustomed Mapei to victory in the Hungarian National Time Trial Championship. This year the powerful 25 year-old completed his hat-trick of consecutive victories in the event, on a 40 kms circuit through the outskirts of Budapest. Bodrogi's average speed was a withering 50.72 kms/h – enough to see off Messers Szabo and Szuromi, and also to reaffirm Laszlo's potential as a future hour-record candidate. For the moment the "Bodro's" palmarès just continues to blossom: the former runner-up in the World U23 time-trial championship has won more races than any other Mapei rider since he turned pro' in 2000. In March, Bodrogi added arguably his most prestigious bouquet to a gathering collection, scooping the spoils at the prologue in Paris-Nice.

Thanks to Steels, Muravyev, Petrov and Bodrogi Mapei's all-time national championship count climbs to 23, its tally of national road race titles to 17. Five national champions jerseys have been obtained in Belgium, courtesy of Johan Museeuw (1996 season), Axel Merckx (2000), and Steel's three. In Italy Mapei riders have been even more dominant, through Gianni Faresin ('97), Andrea Tafi ('98), Michele Bartoli (2000) and Daniele Nardello (2001). Abraham Olano ('94) and Manuel Fernandez Gines ('96) in Spain, then Oscar Camenzind ('97) in Switzerland, also chipped in during Mapei's first three years of

sponsorship.

Success hasn't been restricted to the cycling strongholds of western Europe, either. Further afield, Bodrogi was also Hungarian Road Race Champion in 2000, while the Czech Jan Svorada ('98), American Fred Rodriguez (2000) and the sole Japanese rider ever to represent a Mapei team, Yoshiyuki Abe ('97) all held their respective national crowns when sporting Mapei colours. In a different discipline altogether, the track, Adriano Baffi swept up the Italian points race championship in 1999.

The quartet of Mapei-Quick Step victories this year typified the team's continuing good form in the early weeks of the stage-race season. Before celebrating selection to compete in his first Tour de France, Pedro Horrillo (28) limbered up with a win in the first stage of the Bicicleta Vasca.

Horrillo's sprint took him clear of breakaway companion Inigo Landaluze on a rain-sodden 160kms Billabona – Ursubil course.

Tom Steels, too, was in the groove in Spain. Before adorning the Belgian red-yellow-black stripes for the third time, the eight-time Tour de France stage winner relegated some of the peloton's top sprinters to the minor places in stage six of the Tour of Catalunya. Robbie McEwen, later the benchmark sprinter in the Tour de France, was among the men beaten by Steels.

In week one of the Tour McEwen was beaten by another quicksilver Mapei rider, Oscar Freire. The 26 year-old World Champion's finishing burst in the Tour's second stage between Luxemburg and Saarebrucken was one of the most spectacular of the race, shattering the hopes of local fans baying for an Erik Zabel victory. This was Freire's first win in the Tour, but surely not the last; Freire is a man who wins an average of one in every seven races in which he takes part! No Spanish rider had tasted success in a bunch sprint in the Grand Boucle since Miguel Poblet in the eight stage of the 1956 edition. Sadly for Oscar, a fall days later would announce an abrupt end to a promising Tour debut; Freire was forced to bow out, but his thoughts quickly turned to his next objective. In October the World Championships travel to Zolder, Belgium, and Oscar's record in the event reads played four, won two.

RUNNING IS HEALTH

CASTELLANZA (Varese) – The Italian term “podismo” tallies closely with the English definition of “running”, and is derived from the Greek “pous, podós”, the foot. This is of course the oldest – some would also claim the most noble – athletic discipline.

Who, after all, hasn't heard the fable of Fidippide and the origins of the Marathon? Legend has it that it was 490 BC when the Greeks emerged triumphant from a long and bloody conflict with Persia, and the commander Miliziade dispatched his doughty messenger Fidippide on an epic 42.175-kilometre errand to spread the news in Athens. Fidippide's starting point was Marathon, his destination the famous arena in the Greek capital. The Calvary would end when he collapsed in an exhausted heap, to the amazement of a huge crowd assembled for a more traditional athletic spectacle in the Athens stadium. Fidippide's heroism was never forgotten,

but over two thousand years would pass before it was honoured formally by the Greek government. Official recognition came with the introduction of a race over 42.175 kilometres, to be known as the marathon. Soon the longest race of all would be established as the blue ribbon event of the modern Olympics. The history of the Olympics is both fascinating and inspiring; the example of Fidippide, on the other hand, although equally intriguing, is best left to the realms of Greek mythology by those who simply want to run for health and pleasure.

“There are notable advantages for people who run – assures Aldo Sassi, director of the Mapei Sport Service – providing that they approach the activity in a sensible manner. The most significant gains are for the cardio-circulatory system, but there are other health benefits to be had. Running can help to prevent illness, for example, especially of a cardio-circulatory nature, but not only this. It also helps to maintain muscle tone and improve efficiency in the lower limbs, as well as enhancing our ability to carry out those routine, daily tasks which require relatively intense and prolonged effort. For this at least, running is the best form of training.”

“Another, well known advantage of jogging,” Sassi goes on, “is that it helps weight control. I'd also add that quite apart from being healthy, it can be enjoyable simply from the point of view of enjoying the fresh air and also the sense of achievement which transcends abilities and ambition.”

What are the best pieces of advice you can give to people thinking of taking up running, particularly for reasons linked to health or weight control?

“A gradual approach is fundamental in an aerobic exercise like running,” responds Sassi, whose advice and expertise as an athletic trainer has been sought by numerous top-class runners. “To begin with two or three sessions per week are quite adequate, starting off



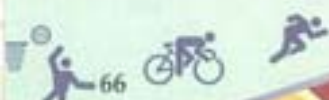
Photograph used for a publicity campaign for Opel cars, whom we thank.

Left, the October 2000 edition of the Berlin marathon.

Right, Roberto Calandro, a leading light at the Stramilano competition, a race for which he prepared with the help of the Mapei Sport Service.



VALUTAZIONE TECNICA
MIBELL'AREA
AUTOREGOLAZIONE DELL'ESERCIZIO



with short runs of just 10 - 15 minutes and building up to around 40 minutes or more."

Do you have to keep to a regular pace?

"No, especially not those who are just starting out. It's quite alright to alternate intervals running at a moderate pace with walking."

And in this case you have to respect a strict regimen of when to run and when to walk?

It's subjective - Sassi points out - and it depends on several factors, not least body weight and whether the subject's lifestyle is more or less active or sedentary. At first it's best not to run yourself completely out of breath, and a good gauge is whether you can talk whilst running with your training partner(s)."

What are the potential problems?

Initially you might encounter problems linked to the locomotor system, or the muscles and articulations. If not, providing that the circulatory system is in good order, there aren't usually any adverse effects. To limit potential risks, I'd advise aspiring runners to start out on predominantly flat courses and ideally on good, regular surfaces. If you avoid ruts and potholes you're also more likely to avoid injury, especially ankle problems.



Better to keep to well-surfaced roads or head for the dirt tracks?

Flat footpaths and tracks are best, and better still if you can run on areas of well-tended grass - football pitches and golf courses or similar.

If you have no option but to tackle climbs and generally hilly courses, on the steepest sections it's best to walk briskly rather than run. The cardio-circulatory exertion is still fairly intense even if you walk uphill.

Can anyone start running immediately?

There are no adverse effects as long as the cardio-circulatory system is healthy and, above all, if the person's weight is more or less as it should be. Subjects who are overweight should consult a doctor or an athletic specialist for advice on a gradual approach to exercise.

Is there an age limit?

No, although over-40s are advised to consult a sports doctor before beginning a training program. After a check-up, jogging is a sport that you can practice with peace of mind.

QUESTION AND ANSWER FORUM

WHAT SERVICES DOES THE MAPEI SPORT SERVICE OFFER FOR RUNNERS?

The question goes to professor Franco Impellizzeri, director of the evaluation laboratory in the Mapei Sport Service.



At the Mapei Sport Service we don't discriminate between the leisure-runner who jogs to stay in shape and the top-class athlete who competes in Olympic marathons. The runner who comes to our centre for the first time is initially submitted to a basic medical check. The next step is the plicometre test (to measure the subject's percentage of body fat), which is vital for the subsequent definition of a training program. We also advise enthusiasts who don't go for a sports medical at least once a year to take a cardiogram test every twelve months. At the Mapei Sport Service middle-distance, long-distance and all other categories of runners are submitted to specific tests like the "Mader" or the "Conconi". These are tests specially designed for resistance sports and can be performed on a normal treadmill. Both are used to measure heart rate at the anaerobic threshold; with this data, custom-recommendations on ideal training methods and schedules can be obtained, in addition to clear indications on improvement over time. On the basis of test results personalized training regimes for cross-country, middle and long-distance can be drawn up, as well as for joggers who just want to keep fit in the most effective and professional way possible. With the "Mader" test we can also give accurate advice on the rhythm to follow in races like half and full marathons: this can be extremely helpful, especially for amateurs.

MAPEI GIVES UP CYCLING AT THE END OF THE SEASON

It is with great sorrow that on the 25th June Giorgio Squinzi took the painful but thought through decision to abandon the sponsorship of the cycling team at the end of the year, sponsorship which had started in 1993. Giorgio Squinzi and Mapei prefer to inform the readers of *Realtà Mapei* by publishing the complete text of the official press bulletin which sanctioned the decision and which deeply shocked all the Italian and international sport press.

The interview published by the *Sole 24 Ore* on the 28th June which we report translated in its entirety is a further contribution towards clarifying the reasons that pushed Mr. Squinzi to take this painful step. This is especially for all those who did not understand or did not want to understand, the serious and deep motivations that caused this irrevocable decision. Giorgio Squinzi and Mapei nevertheless want to give thanks through the pages of *Realtà Mapei* – because they can not do it directly – to all the customers, acquaintances, cycling and other sport agents, professional and ordinary fans for their support and encouragement.

Press release



MAPEI GIVES UP CYCLING AT THE END OF THE SEASON

At the end of a deep analysis of the problems that presently affect cycling and top sports in general, the Mapei Group has decided to give up the sponsorship of the homonymous sports team at the end of the current agonistic season. This decision has come after 10 years of commitment in professional cycling of the Company – world leader in the production of adhesive materials for the building trade –, this commitment has allowed to give rise to a team that during this period of time has been for eight times the number one team in the world. "We have given a lot to cycling during these ten years – has said Mr. Giorgio Squinzi, Mapei Group Chairman – but we have also received a lot from this sport, in terms of agonistic satisfactions. Finally some change signals can be made out in the movement, they are critical to give back to the bicycle sport that credibility that its popularity and its history deserve: but these signals are still too feeble, the progress is too slow compared to the seriousness of the situation, which is not such as to justify a commitment like ours any longer. I repeat that I cannot deny the fact that we give up this sport having had a lot of satisfactions, but also with the bitter feeling to have been misunderstood too many times and not rarely hindered for what we have tried to do and for the new models we have proposed, both for what concerns the organization and the management of the team (for example ISO 9001:2000 certification), and also the fight against doping. Another bitter feeling remains for not being able to fully see the results of the important commitment that has led us to create a group of young professional cyclists, grown with the logic that I hope will characterize the future of cycling, and, from the agonistic point of view, the regret for never having won the Sanremo race and the Tour, the only missing pearls of our palmares: I hope these two goals will soon be attained by athletes that until the end of the present season will be members of our team. There will be many chances to thank them all and all the staff of the team from today until the Tour of Lombardia: and I am sure that those will still be chances to be successful, because I know that everybody will do their part as ever, just as we will do ours, until the last day". During the following weeks will be defined the modalities in which the Mapei Group will keep its presence in the sports world in the coming future.

Milan, June, 25th 2002

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Interview with Giorgio Squinzi (Mapei): "Farewell to a sport which has no more rules because of doping and betting"

«Escaping from corrupted cycling»

To sponsor the team 10 million € invested each season

MILAN June 28. "In cycling it is not possible to make serious entrepreneurial calculations anymore. It is a sport which is too conditioned by external factors which have nothing to do with the athletic competition. Doping and betting have made the field performances too uncertain and, as an entrepreneur, I can not accept to invest further in these conditions".

Giorgio Squinzi, president of Federchimica and boss of Mapei - 36 plants, 900 million Euro turnover and 3000 employees, world leader in production in building adhesives - has decided to leave the scene of the competition, giving an abrupt stop to sponsorship in the sponsor of the Mapei-Quick Step cycling team. This is a painful exit which represents a farewell to the sport which Squinzi has loved the most, and to the point that he entrusted the image of his own company to it. During the last five years Mapei has invested a figure of nearly 50 million Euro in cycling. But - says Squinzi - this investment does not guarantee a return anymore. And so, after 10 years of success (only the Tour de France and the Milan - Sanremo haven't been won) Mapei is abandoning cycling in the middle of a season with many victories and on the eve of the Italian championship which runs Sunday.

Why did Mapei choose cycling as a means of promoting the company?

I inherited my passion for cycling from my father, who was a cyclist of the twenties and the founder of the company in 1937. Cycling is in the DNA of Mapei: it is a sport which has many passionate fans within those who work in the building industry, which is our market, and so it gives visibility to our brand and has an international connotation. Up to now, the cost-performance calculation, which goes beyond passion, has proven itself to be right, even if measuring the sponsorship returns is never easy. The investment was part of an important industrial project. The objective of which was to become protagonists in sport, in Italy and abroad in countries such as, for example Canada, Slovenia and Cuba, where we also had commercial projects.

Why did you abandon it then?

The painful decision of leaving this world is linked to the events of doping and to other factors external to the sport which have inappropriately influenced the results. I want to make it clear that I have not taken this decision on my own, but that it has been made during last Sunday night, after many months of pondering.

What do you mean by factors external to sport?

Besides haematic doping, there is betting. Two years ago I publicly declared that doping played an important role in defining the classification of the great lap completions. This caused hard reactions, but it corresponded to reality. I fought for a clean sport with certain rules and during the years I removed all the athletes and doctors which did not guarantee their correctness. The Mapei logic is that our athletes must be exclusively followed by our doctors at our centre in Castellanza. But as a sportsman and as an entrepreneur, I can not accept that a jade becomes a thoroughbred, as is possible when using haematic doping. This is the main difference with the cycling of heroic times. I would have gone on in a different context, only to push forwards the young that we are bringing up and that show promise, but there is no more meaning to it.

What about bets?

We can not control them, but they do exist. We talk about it in the group and I received e-mails on the subject that I forwarded to the competent bodies. Illegal betting makes results completely false.

How does betting work?

You must bet on a cyclist chosen out of two. It is as if there were only two athletes in a competition. During a cycling competition it is just too easy to penalize one in favour of the other.

How do you explain the case of Garzelli?

The matter of Garzelli is still unexplainable because of the times and the amounts of substance detected. But the strangest thing is that, even before the analysis were completed, the Guardia di Finanza di Padova already knew that two of Mapei's athletes had been found positive. In the light of the Garzelli matter I understood that the investments to sponsor a cycling team is no longer justified and that Mapei, which is the only team certified ISO 9001, which means that it respects a precise sporting logic, is even more fragile and exposed to external attacks. We are not liked in the cycling environment because we were the first to accept urine-blood crossed analysis, but people do not know these things and they paint everything the same so that the returns in term of image are even more uncertain. The public wants a real and believable cycling sport, just as the sponsors that invest a sack of money in it.

What is missing to make the fight against doping effective?

The will, without doubt. Before the important tours some athletes stop running, they disappear for a month and they come back in better shape than ever. How do they train? Where do they go? We proposed that Uci introduced real surprise checks during the periods before the main lap races, but not like those phoned on the Italian Tour. And then, would it be fair that the "ill" athletes that came to the races full of corticoids, but authorized by their sanitary book as ill, stay at home. But this is a moment full of unexplainable things. Just think about the Parigi-Roubaix of this year where there were no anti-doping checks.

But are there any signs of change?

Yes, but they are too weak to be convincing and effective.

But how can we cleanse a cycling world which, in the last few years, has seen everything: athletes fist fighting fans, amateurs that supply doping substances to professionals, every type of unfairness just to get a meaningless Gpm, cyclists testing positive to cocaine?

We must clean up the square and be brave enough to say full stop and new paragraph and start again from the young. It is according to this logic that Mapei, even if abandons the major cycling, continues the school project, an initiative dedicated to the young because we still believe in the educational values of sport.

Do you think that also among the athletes there is enough determination to fight for a clean sport?

Yes, because they are conditioned by the philosophy of the group. Some athletes that speak of loyalty on the microphones, then say look at that imbecile that was caught when the microphones are off. But also many team managers have the philosophy of "do what you must do to go fast, but if the discover you, you are off".

Mr. Squinzi, do you still ride a racing bike?

Every Sunday, and now will ride it even more often.

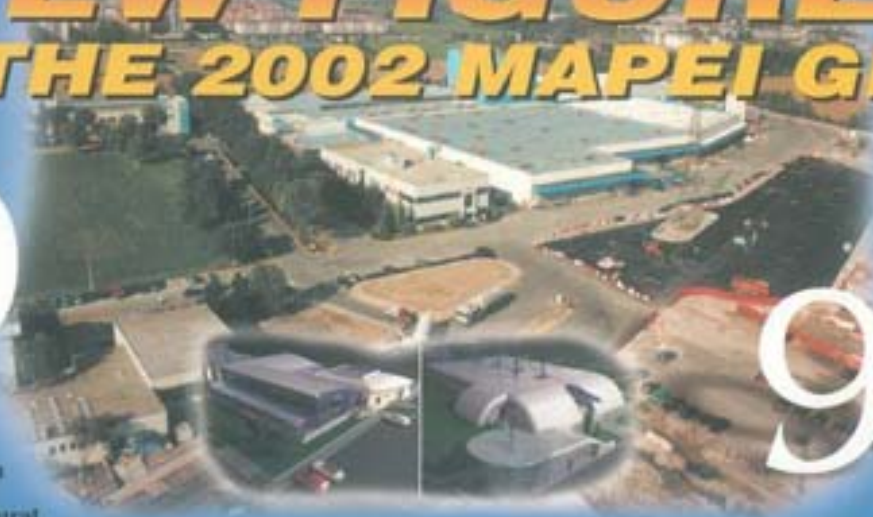


NEW FIGURES **FOR THE 2002 MAPEI GROUP**

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Plants

The Robbiano di Mediglia plant (Milan-Italy) and a close-up of the architectural project for the buildings of the production unit



Projected turnover

9000

Million Euros



more than

500

**Adhesives • Sealants
Chemical products
for building**

3000

Employees

of which **312** in our 7
R&D centres



more than

9000

**Tons of
products a day**

more than

30000

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