Soilmec Journal
Year 7
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sm journal

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SOILMEC HYDROMILL REACHES 150 METER DEEP

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Soilmec SM-20 engaged in the initial phase of Costa Concordia recovering project.

colophon

Soilmec Journal – Year 7, Issue No. 1/2012

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ON COVER
New Soilmec Hydromill, photo by Piergiorgio Balestra

contents

Simone Trevisani, Managing Director.

The route to Renaissance

150 m-depth reached by the new hydromill by Soilmec. Given the soil conditions in which we managed to achieve such a depth, I can say that this is the new state-of-the-art of the sector of hydromills. It's not just overexcitement though. I'm fully aware of the long way we had to go through to get to this new record. An extraordinary result marking a real breakthrough.

Renaissance was a time of changes, during which a new way of considering the world and human beings emerged, leading to the dissemination of scientific knowledge; today, at the same way, Soilmec is entering a new phase similar to Renaissance. A spirit of entrepreneurship combined with modesty prevails: this is the key to good performances.

The result achieved by the new hydromill is only the starting point – very exciting indeed – of a full program of projects aimed at achieving ambitious goals. No need to say that we are always customer-oriented and we work to meet customers' needs.

Simone Trevisani

news

New important contracts for Trevi

TREVIICOS Corporation, a subsidiary of Trevi Group, has been awarded a prestigious new contract in Boston (USA) involving the execution of special foundations construction of the residential tower "The Kensigton" near the old Filene's site in downtown Boston. This project is part of Mayor Menino's plan to reevaluate downtown Boston which also included the accomplishment of various projects among which: the Paramount Theater, Boston Opera House and The Ritz-Carlton Hotel in Boston. The site set up and demolition phases have already started and work is expected to be completed by 2012. The logistical and geological complexity of the site along with the limited time available for the completion of the job demands an high degree of safety, quality and professionalism that have always characterized TREVIICOS Corporation as a key player in the United States for special foundations. The new residential complex, which will create 400 new jobs, will provide specifically the realization of a 27 story tower on a total 44,900 square meters space.

The Trevi division, specialized in ground engineering services, through its foreign subsidiaries, has recently been awarded important contracts in the United States and Africa

The U.S. Department of the Army, Jacksonville District Corps of Engineers – Florida has issued a Notice of Award to **TREVIICOS South Inc.**, a subsidiary of Trevi Group in the USA, of a contract of maintenance works for the Herbert Hoover Dike near lake Okeechobee in Florida (USA). The project involves the completion of work on a 990 meters section of the diaphragm wall on a portion of the dike near Port Mayaca. The project has been awarded to TREVIICOS South thanks to previously successfully completed works within the actual d ke which were commissioned by the same contractor.

Herbert Hoover Dike near lake Okeechobee, Florida (USA).

The CEO of Trevi Group Stefano Trevisani stated: *"The awards of these new contracts in different geographical areas confirm the willingness of our historical clients to continue to invest in technologically complex projects referring to highly specialized operators such as the Trevi Group. The award in Africa confirms the attention the Group gives to emerging countries and the leadership reached in the past years given both the continuity of the successfully completed works and the better than expected timing of execution. The jobs in the United States, as for the Boston project, represent a significant move towards a renewed innovative spirit which will bring to new investments in historical city centers. The cooperation with local and governmental bodies, that has always represented a distinguishing factor of the companies in the USA, will favor an increased involvement in other new projects. Notwithstanding the macroeconomic crisis we look forward with comfort aware of a robust portfolio backlog, of the strong financial soundness that distinguishes the Group as well as the technical-technological capabilities that allow us to face new challenges in the near future."*

Project of the Kensington residential tower, Boston (USA).

Trevi Group enters the Brazilian Oil market

The Exploration & Production activities in Brazil represent an important element of growth for the drilling sector allowing the Group to reach a relevant post both for the Drillmec and Petreven divisions which will be contemporarily involved. The signed agreement provides for both divisions to deliver oil drilling rigs and oil related services respectively.

Drillmec Inc., US subsidiary of the Trevi Group specialized in the design and production of oil drilling rigs, will provide the first hydraulic rig 220 tons HH model for the extraction of hydrocarbons and an additional two rigs of 300 tons each. The rigs will be produced both in Piacenza (Italy) and in Houston (Texas) and will be equipped with innovative digital control units. The high end technology of these revolutionary rigs increases the productivity rates of oil drilling and reduces the management costs with the highest standards of safety favoring Drillmec in the selection process.

The Trevi Group reached a management agreement with the Brazilian oil company Petra Energia for the provisioning of three oil drilling rigs and the joint venture services

Petreven grows in Argentina

Petreven has signed two contractual extensions of three years in Argentina, each relative to two oil drilling rigs HH series already operational in the country. Such contractual extensions relate to historical clients of primary standing such as Repsol YPF and Chevron.

The **Petreven** division, specialized in oil drilling services, has signed a joint venture agreement, with Petra Energia Brazil to exercise oil drilling services within the oil concessions operated by the same oil company. Petra Energia Brazil is one of the primary operators of the country with a widely diversified portfolio of onshore concessions that cover a total surface of about 143,321 square kilometers (the largest exploration area of the country) divided in 53 blocks in the 4 primary basins: Amazonas, Parnaiba, Sao Francisco and Solimoes.

Davide Trevisani, Chairman of Trevi Group stated: *"The Trevi Group has acquired strategic contracts and the choice of the oil company to refer to a single client both for the supply of oil rigs and related services, represents a key element for the future. The achievement of this important order enabled the Group to penetrate with success the Brazilian market, expanding even further our geographical presence in Latin America. The contract renewals in Argentina confirm the high quality of our services in an historical area of interest for the Group. The assignments of these relevant contracts reinforce the fact that the level of activity of the Group is high: we confirm the already known guidance of total consolidated revenues for 2011 of over one billion euro. We believe that the Oil & Gas sector, notwithstanding the current market uncertainties, will continue to show important opportunities for the future, offering operators the conditions for new and potential scenarios in Latin America and in the rest of the world."*

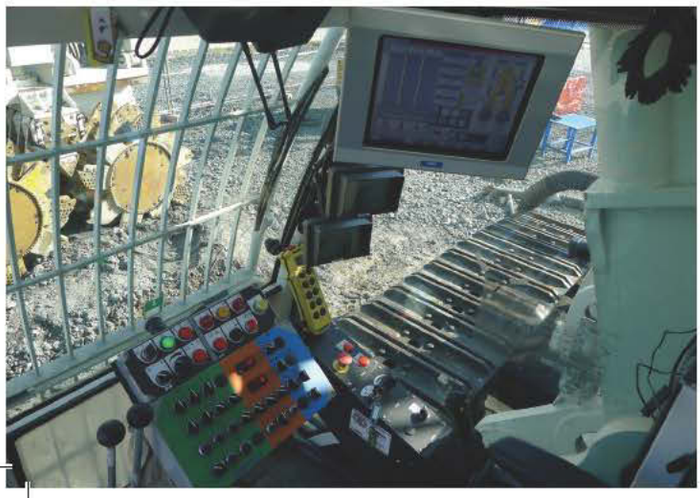
SOILMEC HYDROMILL ADVENTURE:
Excavation of 150 m in bentonite slurry

Testing a new equipment only through final acceptance tests at the factory or by drilling some metres at our test site sometimes is not enough, as an accurate feedback is needed on the solutions and techniques adopted. This becomes absolutely necessary when it comes to the hydromill that has been designed to reach a 150 m depth.

The first challenge is to identify the right site for testing. We were looking for an area in which the soil stratigraphy is predominantly characterized by rocks, due to the major strengths of the hydromill: minimum deviation from verticality and rapid crossing of rocky layers.

We carried out a geological investigation and identified the suitable site a few kilometres from the Soilmec headquarters, along the Savio river valley, on the slopes of the Apennines.

A continuous core boring down to a depth of 160 m allowed to detail the site stratigraphy which is made up as follows: under the first metres of sandy and gravel silts there are marly clays down to 50 m, a bank of bituminous clays characterized by high fragmentation and, within it, fibrous gypsum down to a depth of 100 m; an underwater clay landslide with sandstone and limestone down to 125 m and an alternation of medium-to-coarse grained compact and sandstone marls, weakly cemented.



Soilmec team celebrates the achieved results.

We tested the Tiger SC-135 c/w P450, powered by two C18 diesel engines – total power 900 kW – mounted on a SC-135 carrier, and fitted with the hydromill module SH-50 – 3,200 mm x 1,500 mm size –, tested with three different cutting units HH-10/12/14.

A real challenge in the challenge, as the panels drilled using this technique usually measure 2,800 mm with a thickness of 1,000/1,200 mm.

The mud processing plant is integral part of every jobsite with hydromill where drilling with bentonite slurry is carried out.

In our case, we adopted the new SMT-500 system characterized by a double stage of cyclones, where the first stage cyclones are two, with cut point D_{50} = 60 µm, whereas the second stage cyclones are 15 with cut point D_{50} = 20 µm. The system is perfectly integrated with the debris elimination system SDM-35 and the innovative centrifuge SDM-90s for fine components separation. The latter has been specially patented by Soilmec and is able to collect the mud directly treated by the SMT-500 system, in order to ensure an operation system in series with drilling and obtain the best performances in terms of bentonite slurry treatment.

The results are very satisfactory, and even more so if you consider the size of the panel and drilling rig, and the plastic nature of some soil layers, which are not beneficial to the hydromill performances.

Soilmec
In the world

Our history in China starts with a RT3/A2 rig

The first equipment sold to China dates back to the end of the '70s: it was a RT3/A2 rig and it was sold at the Shanghai exhibition by the former commercial director Giuliano Garavelli. This model underwent many updates during the years but it is still in production under the name RT3/ST; this clearly testifies the soundness of the design criteria that have always characterized the whole Soilmec range: innovation and reliability.

The Soilmec WujiangPlant.

Soilmec Wujiang Production staff with Andrea Lombardi and Giuliano Ghirardelli.

In the first half of the '80s other drill rigs were supplied, as well as casing oscillators, but most of them hit the Chinese market through the English branch of Hong Kong. Only a few years later, in 1985, there was the first sale of a hydraulic rig, a CM-35 model, to China National.

Between the '80s and the '90s, also upon the success achieved by Trevi (a Group company specialized in foundation works) in important projects in Indonesia and Singapore, it was possible to strengthen the presence in the Asian area, in order to better promote the Soilmec products.

Reception SM Cina

Agency agreements were then signed with local trading companies: William Hunt, with operative structures in Hong Kong, Taiwan and Korea; Peroni and Planters & Co. Most of the commercial activities in China were managed through Hong Kong and their good achievements were often conditioned by the not always friendly relations existing between the mainland and the "English colony".

We had to wait until the end of 1989 in order to push, once and for all, the presence of the strengthened Soilmec commercial unit into the Asian market. After having signed an agreement with the Bomag firm (an agent who used to work for different firms of the same German company), in 1991, we decided – considering the ever-growing chances offered by the Chinese market – to open a representation office in Peking.

From that moment on, it was possible to witness a gradual strengthening of the Soilmec position on the market of reference. The new leadership was "certified" by figures: over 300 rigs sold between the end of the '90s and the begin of the past decade; the

SR-80C assembled.

The After Sales team.

introduction of the concept of multifunction rig for the hydraulic rigs which involved the use of various technologies such as, for example, piles, diaphragm walls, hammer grab, clamps, pile-driver, etc…; the introduction of the first DMS instrumentation for the remote control of the rig functions.

In the middle of the '90s, Soilmec decided to further increase its presence in China and signed a Joint Venture agreement with the Ministry for Geology, aimed at the production of a new multifunction rig, the R-622. The agreement with the Ministry, that had a capillary ramification on the territory and was in touch with the main Chinese contractors for whom it performed most of the soil investigations, was aimed at favouring its development and sale. The chosen head office was Lianyungang, in the province of Jiangsu, because of its position by the sea and at the far end of the trans-Siberian line, connecting it to Europe. But, contrary to our expectations, the first "made in China" project with an Italian concept met various difficulties in finding raw and other materials which slackened its development. The joint venture was then terminated and efforts were then focused on the marketing of products entirely developed and built in Italy.

Employees posing
with a Soilmec SR-100.

Giuliano Ghirardelli, Managing Director of SWJ, is visited by the mayor of Wujiang, reflecting the excellent relations established with local authorities.

In the picture, from left: Stefano Cordella with Mr. Wang – Chinese railways (Soilmec best client in China), Giuliano Ghirardelli and the job site manager.

A cooperation agreement with the University of Tonji, where the SMW has established a scholarship for promising students in the field of mechanics, has been recently signed.

The recent history

On May 14, 2009 Soilmec Wujiang (SWJ) was established in the province of JiangSu. This strategic location, close to Shanghai and Suzhou, allows us well connection to major roads, sea and air routes. The high technological level of the area allowed the recruitment of highly qualified personnel.

After restructuring of warehouse and offices, covering a total area of about 9,000 sqm, the production was started at the beginning of 2010, assemblying Caterpillar – based SR machines.

Staff of Administration, Logistic, Marketing and General Affairs Departments.

The right marketing strategy, ensuring the customer a fully imported product, the constant assistance in the after-sales service, the availability of machines in stock allowed Soilmec Wujiang to collect success and prestige in the Chinese market in a very short time. In late 2010 and early 2011 a number of important commercial results were obtained: first complete hydromill with SC-120 crane; first SR-100 that can dig piles with a diameter of 3,500 mm and reaching a depth of 100 m, first ST-60 tunneling machine. This last equipment, along with Jet Grouting technology developed by Trevi, has allowed the completion of a railway tunnel in Lanzhou area, which has been stagnant for several years because of the difficulties encountered when crossing this land extremely subject to landslides. The company has now about 65 employees. Considering the vastness of the territory, the sales department and service has been strongly enhanced. The smooth integration between Chinese and foreign staff and the good relationship with local authorities have positively contributed to the succes of Soilmec.

Conscious of being only the beginning of our journey in a market characterized by fierce competition and many opportunities, we will be ready to face these difficult challenges with passion, innovation and human values that have always distinguished the Soilmec brand.

SR-70 assembled.

The highway that will disappear in the green

from the site

12

"A31" highway section from Vicenza to Rovigo, Valdastico sud job lot. Soilmec SC-90 with BH-12 "Rotograb"

At Valdastico sud, the project includes various highway sections that run in open trenches under ground level or in tunnels constructed by "the cut and cover method". For lot nr. 7 of the highway construction, the Italian company Serrenissima Costruzioni S.p.A. has entrusted Trevi S.p.A. to execute the diaphragm walls for the "autostrada" sections that run in open trenches, below the ground level and in artificial tunnels constructed by covering the walls. The tunnel section is 350 m long, the covering slab is supported by walls constituted by "T" panels 1,000 mm thick 2,700 mm width up to 35 m deep, while the trench is stabilized by of 1,000 mm and 1,500 mm thick panels 2,500 mm width, 33,60 to 38,5 m deep. After a first 7 m thick clay layer, 26-27 m sand and gravel are found that follows a second clay layer up to the requested depth. The water table is located at 1,5 below the ground level.

Diaphragm walls strict principle

For diaphragm walling, the fundamental rule is no deviation to the vertical alignment. In fact, it's the absence of excavation deviation, as well as the perfect concreting continuity between the panels that secures the wall watertightness. To avoid deviation, different systems have been proposed. An excavation guide, consisting in a long rigid single kelly section (with a length corresponding to the excavation depth) rigidly connected to the grab body or a telescopic kelly, in both cases sliding in an external guide. However, these do not give sufficient guarantee vertical alignment. In fact, the presence of obstacles found when excavating, will cause the deformation of the kelly and a consequently panel deviation that will be practically impossible to correct. This is the reason why Soilmec has proposed for many years the use of rope suspended grabs, free in the excavation but guided out of the trench.

Soilmec BH and GH grabs

BH and GH grab models are rope suspended, hydraulically operated. They are free hanging in the excavation, just guided by the gravity. While outside of the trench they are provided with a guiding system to ease maneuvers.

When the grab is lifted out of the trench, the short kelly section fixed to the grab body top slides into the guide freely hanging from the crane boom through universal joint and the grab becomes guided. This external telescopic system provides efficient guiding for quick maneuvers out of the trench and direct unloading over the truck.

By grab swinging, the lateral deviation deriving from the teeth dissymmetric fitting may be avoided. By chiseling, transversal deviations may be corrected.

"Rotograb", an innovative solution

After years of success of BH grab model, Soilmec is bringing onto the market the BH and GH Rotograb version: BHR, and GHR. As previously both models are fitted with telescopic guides (including two sections instead of three for out of the trench maneuvers), but to the contrary of the previous models, the BHR e GHR Rotograb version have the great advantage of having the hydraulic hose coilers located on the crane boom instead of being mounted on the guide itself. This improved coilers location allows BHR "in front of the wall" working, which is the key solution for many job sites located in urban areas. In addition, the coilers installed on the crane boom lower section are easy to reach for maintenance. On a long running job site such as Valdastico, where thousands of square meters have been produced, this point contributes, even indirectly, to reinforce the productivity.

In addition to the previous models, Rotograb models are provided with a grab body rotation system, including two groups, allowing the grab rotation to its vertical axis. A hydraulic gear motor moving a swinging gear located at the lower part of the external telescopic guide and a mechanical break located in the short kelly section fixed the grab body.

BH-12R and SC-90 crane: a successful couple

The vertical alignment compliance not depends from the grab only. In fact, because turret crane oscillations on the vertical plane may cause excavated panel transversal deviations, vertical alignment it is also related to the crane. Therefore, the grab carrier has to be very stabile: the grab extraction efforts should not cause any crawler movement. For the same reason, the crane swinging gear should not have clearance to avoid turret oscillations.

It is consequently very important for the panel quality to carefully select the crane capacity according to the grab model.

Also crane winch capacity and type plays an important role as the capacity and speed are directly conditioning the working sequence duration – and consequently the production – as well as the possibility of excavation correction through the free fall capability.

For above mentioned reasons SC-90, 90 t crane fitted with 2 free fall winches 30 t capacity each, is an ideal carrier for Rotograbs. Of course, the same consideration is valid for the new SC-100 – the higher specification model to the SC-90.

Panel joints

The job site has the classical diaphragm walling work organization with bentonite preparation plant, desander, fresh bentonite maturation pool, recovery pool and mixing pool.

In diaphragm walling the panel joint water tightness is a very

SC-100
FOUNDATION CRANE

Diesel engine	Deutz TCD 2015
Power rating @ 1900 rpm	480 kW / 643 HP
Operating weight (approx.)	100000 kg / 220460 lb
Max lifting capacity	100000 kg @ 3,8 m / 220460 lb @ 12.4 ft
Max boom lenght	42 m / 137.8 ft
Max winch line pull (grab version)	2 x 304 kN / 2 x 68341 lbf

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Drilling and Foundation Equipment

BHR-12
HYDRAULIC GRAB

Max depth	75 m / 246 ft
Tot. weigt	12 t / 26455 lb
Panel width	500 - 1200 mm / 19.7 - 47.3 in
Panel lenght	2000 - 3500 mm / 79 - 139 in
Closing force	295 kN / 66319 lb$_f$
Thrust at 30 Mpa	1360 kN / 305734 lb$_f$

soilmec
Drilling and Foundation Equipment

Production

The diaphragm wall average daily industrial production reaches 150 m² panels by 11 working hours shift. The equipment reliability, the regular grab swinging, the relatively easy soil conditions as well as the support given to the operator by the electronic device embarked on the grab body, with monitor displaying in the cab the panel deviations, give an extremely reduced vertical alignment panel deviation which remain under one percent.

sensitive point. All solutions to improve the tightness are based on the principle that the joint tightness is increased – its permeability reduced – when the way to be covered by the water to pass from the external face to the internal one increases. Many are the solutions based on large diameter pipes, on flat sheet pile, sheet piles with trapezoidal section, tangent small pipes. All these solutions are offering week and strong points. Heavy large diameter casings, for example, are difficult to handle respect to sheet piles. But generally speaking all classical system are requiring hydraulic extractors that are making the job site organization harder.

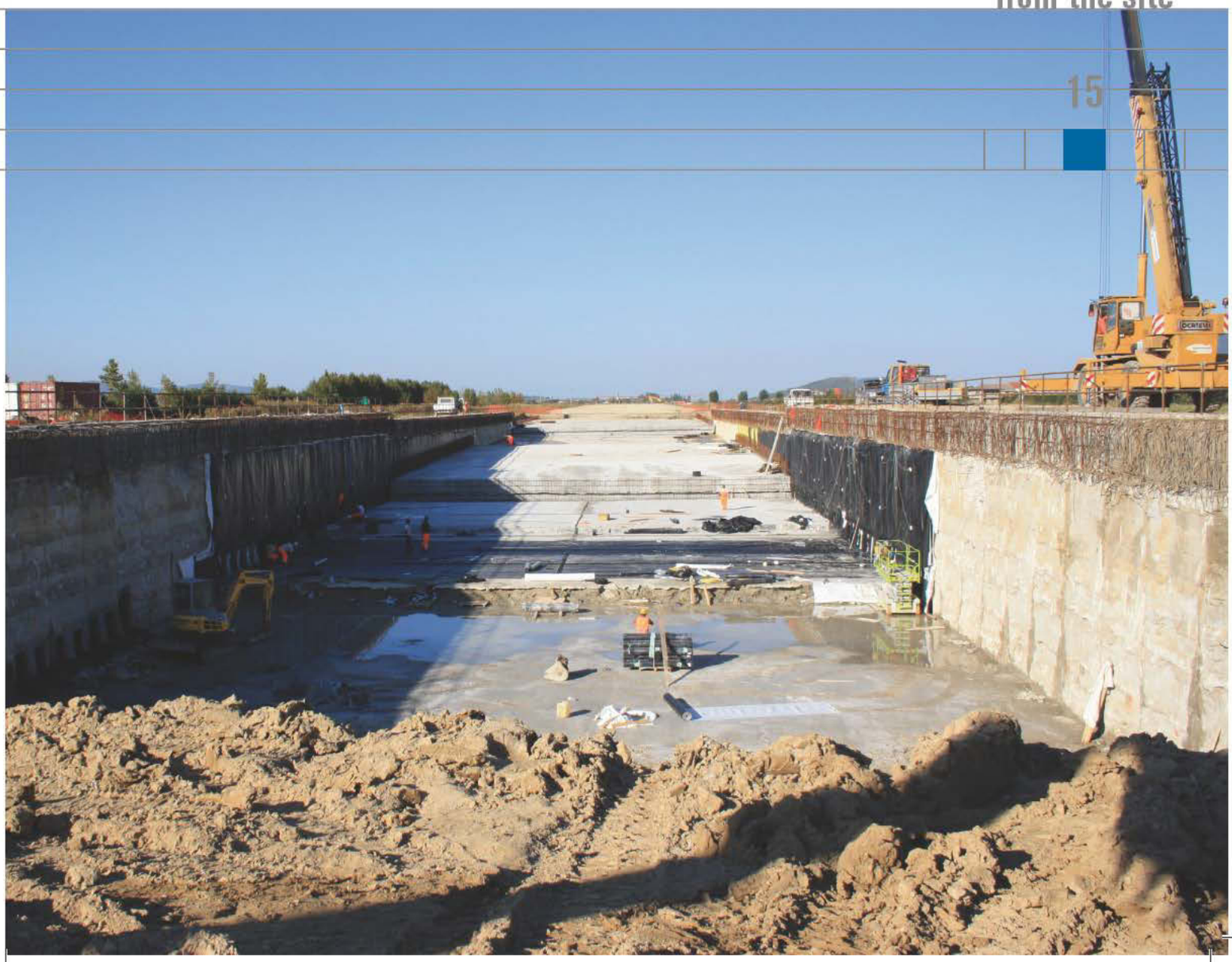
Trevi has adopted a very original solution, consisting of shaping the panel joint by a means of a provisory breakable PVC pipe. PVC pipes are fixed on both sides of the reinforcement cages of the primary panels, then, when excavating the secondary panel, pipes are destroyed.

When destroying the PVC pipe – with a special tooth fitted to the grab –, the concrete of the primary panels is scratched and cleaned presenting a refreshed surface securing the concrete continuity when concreting the secondary panel.

Because of PVC pipe form, the panel joint becomes "Ω" shaped, a longer joint, increasing consequently the watertightness.

Where is A31?

The road will be installed between open air walls, below ground level or slab covered tunnels. The highway lanes will leave field green-line undisturbed the: no/low noise, no signs… A31 will disappear.



Low overhead rigs facilitate safe, speedy transmission line construction

Industry studies estimate that utilities in the U.S. and Canada will add or upgrade over 65,000 miles (104,607 km) of transmission lines before 2020 to connect to new-largely renewable-power generation sources. In many cases, contractors will have to work under existing energized lines. The Soilmec SR-80 rig with a low overhead attachment (LHR) kit with a modular mast, a more powerful crowd system, and a high torque/high speed rotary group is uniquely suited for jobs with severe height limitations.

The SR-80 with a LHR kit has a modular mast height that ranges from 5.80 m to 9.80 m max length. The crowd system includes a strong chain that can transmit 230 kN pull up and pull down force. The rotary group reaches 250 kNm max torque and a max speed of 100 rpm through a 9-element locking Kelly. Powered by a compact V6-turbo Diesel engine, the SR-80 LHR is suitable to drill very large bored piles up to a diameter of 2,500 mm and 60.9 m max depth.

ENR Top 600 Specialty Contractor McKinney Drilling Co. has already put the versatile SR-80 to work on a transmission project in Pennsylvania. A new, seven-mile 230 kV transmission line under construction by Peco Energy Co. in Chester County, east of Philadelphia, Penn. will traverse farms, fields and streams along the utility's existing transmission line right-of-way.

McKinney Drilling was subcontracted by general contractor J.G. Nascon, Inc. to install drilled shaft foundations beneath the existing lines for new the monopoles. Crews had to work under energized lines to install new higher, slimmer, space efficient monopole transmission towers.

Dan Santaniello, district general superintendent for McKinney Drilling, says: *"Compared*

to our other rigs, we gained five additional feet of headroom to work beneath the existing live wires and more torque compared to anything else we've found on the market."

McKinney used the SR-80 rig to drill 39 shafts, 7 ft to 10 ft diameter and up to 38 ft deep in soil conditions that varied from soft soil to weathered and hard rock.

In addition to more headroom and more power, another advantage of the SR-80 for McKinney was its surprising mobility. The shafts were separated by an average of 1,500 feet, which the tracked rig easily traveled. However, property access and cross country terrain required the McKinney crew of three to break down, transport and reassemble the rigs about every 5 monopole locations.

"The SR-80 is easy to assemble, move and reassemble, particularly for a rig of this size," says Santaniello. *"I'm not sure there's another rig on the market that could have completed a low headroom job such as this with the same speed and ease."*

Thanks to Sybil Hatch

SM-5E

A new electrically powered version for tunnel job

Trevi has used the new Soilmec SM-5E "electric" version for Mirti square, the new underground station in Rome

The job consisted of radial consolidation drilling in a pre-existing tunnel, in a very confined space, with presence of heavy water leakage and without the output of exhaust emissions.

The Soilmec SM-5E multipurpose drilling rig is the result of the collaboration between Soilmec technological research and the Trevi Group, who brought their jobsite experience to the Soilmec designers. The new rig derived directly from the SM-5 has the same main features just the power source an ABB electric engine has been changed. It is in compliance with the emissions standard (Tier III stage A and B) and develops a maximum rated power of 75 kW. As with the SM-5 fitted with diesel engine, the SM-5E has been designed for works to be performed in restricted spaces. Versatility is the key concept that has conditioned this rig design. In fact, thanks to its optimized mast articulation and the large range of rotary heads, it covers a broad application field: anchoring and tie-backs, micro-piles, jet grouting (fitted with special extension), coring, water well as well as tunneling and radial soil consolidation.

SM-5E
HYDRAULIC DRILLING RIG

ENGINE		ABB Motors
Rated Power @ 2300 rpm		75 kW / 101 HP
MAST	Feed stroke	1400-1900-2400 mm / 4.6 - 6.2 - 7.9 ft
	Max feed force	40 kN / 8992 lb_f
ROTARY RANGE	Max torque	687 - 972 daNm / 5067 - 7170 lb_f ft
	Max speed	98 - 862 rpm
CLAMP & BREAKER	Range diameter	50-220 mm / 2 - 8.7 in
JET GROUTING	Max treatment depth (in single passage)	7,5 m / 24 ft
	Max rod diameter	90 mm / 3.5 in
DIMENSION	Width	1600 mm / 5.2 ft
	Min head room	<3m / <9.8 ft
	Weight	5600 kg / 12346 lb

soilmec
Drilling and Foundation Equipment

Such versatility derives from the following features.

- Rotary heads: with torque ranging from 687 to 972 daNm and 98 to 862 rpm max. drilling speed.
- Three mast lengths with 1,400, 1,900 and 2,400 mm feed/hoist strokes, making the rig use possible in low head room conditions.
- New kinematism including two slew rings: one horizontal located on lower frame to allow drilling over the crawler by rotation +/- 90° in respect to rig longitudinal axis; the second located on the back of the mast secures +/- 180°rotation for radial drilling.
- Smart and compact design.
- Ease of transport and fast rig set up.

In addition, for operator comfort and safety the SM-5 offers the choice between hydraulic and radio remote control board completed with numerous safety devices, while for maintenance, the bonnets allows easy accessibility.

The SM5, because of its compactness, unique mast movements, small dimensions and large range of rotaries, the rig is one of the best in its category.

ENGINE FOCUS

Type	ABB Motors
Rated Power	75 kW
Number of poles	4
Power supply	400-690V/50 Hz
Engine speed	1483 rpm
Protection class	IP65

CAP/CSP
Further Developments

new technologies

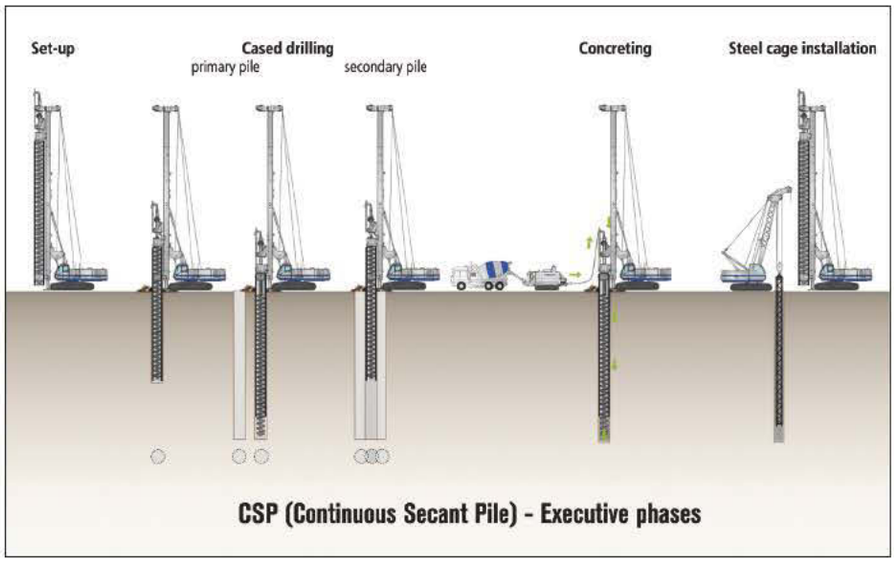
20

The Cased Auger and Secant Piles (CAP/CSP) performances, as well as quality and safety standards, have been improved thanks to some devices fitted on the SR-100 in CSP version, one of Soilmec top models for this technology

In order to ensure safety in job-sites, the target has been to improve and simplify the conveying system. This need had been expressed by some of our most important customers, especially in Europe and Asia. With the new system, the excavated material is loaded onto the flight to be transported from the top of the casing to the base of the rig through a **Spoil Chute**.
It is composed by a telescopic column of pails connect to each other by a rope and

CAP/CSP advantage

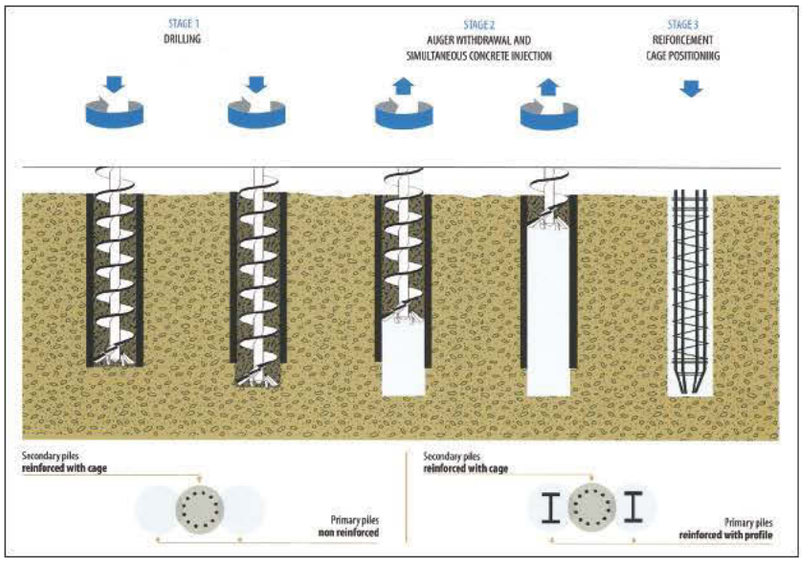
- The method can be used in a wide range of **cohesive and cohesion-less soils.**
- Possibility to **overpass light reinforced concrete** slab, obstructions, etc.
- Casing stiffness, **verticality**: deviation from the verticality < 1% - 1.5%.
- It does not require the use of **bentonite fluid** as hole support: excavated material is not polluted by bentonite, avoiding disposal problems and costs.
- The technology does **not produce shocks, vibrations or noise:** can work in **urban areas.**
- Minimum required equipment (drilling rig & concrete pump): can operate in **restricted areas.**



CSP (Continuous Secant Pile) - Executive phases

moved by means of a proper winch. In addition, our Technical Department has also development a lower double roller auger-cleaner that works thanks to gravity by using its own weight; but with the option to be hydraulically operated.

The new spoil collecting and conveying system is characterized by simplicity and the fact that it does not hinder the drilling stroke, which can still reach the maximum depth afforded by the machine. The great performance of the rig is guaranteed thanks to the double independent rotary head that, assisted by the crowd-force of the crowd-winch system, assures the best production rate. Finally thanks to the new 8,5 m auger extension, a maximum drilled depth of 28,6 m and a max cased depth of about 20 m can be reached. These results, combined with a maximum 1,200 mm diameter piles, allow Soilmec to be leader in this technology.



Soilmec dealers meeting

Paris, April 14th-16th 2012

Intermat 2012 was once again the occasion for the usual yearly meeting of the Soilmec marketing network: the Dealer Meeting. The worldwide Soilmec Network met in Paris, together with the whole staff from the headquarters in Cesena, for a two-day meeting dedicated to the analysis of the market situation and to the decisions to be made about the strategies for the next three years (Vision 2013). The Dealer Meeting ended with a day dedicated to the Intermat exhibition where the Soilmec novelties were exhibited within the niche of CFA piles.

Soilmec Colombia is born

On 20th March, the new branch Soilmec Colombia was officially registered at the Chamber of Commerce in Bogotá.

Exhibition and award in Belgrade

Soilmec took part in the 38th Exhibition of the Construction Sector in Belgrade, a very important event for the whole Balkan area. 800 exhibitors from 16 countries, 50.000 visitors from all over the Balkan region: these are the main figures of this exhibition. Soilmec attended the event with a stand covering 150 m^2, in the open space, showing the models SR-80C and SM-14.

A specialized panel, chaired by Prof. Srdjan Bosnjak, holding the chair of Construction rigs at the University of Belgrade, chose Soilmec as the winner of the first prize, being the most outstanding exhibitor in terms of technological content boasted.

Moreover, in coordination with the Association of the Construction Engineer of Serbia, and with the kind support of the President, Dott. Slobodan Otovic, a presentation of the Trevi Group was organized. The speakers were Fabrizio Giordani, Matteo Ziller and Adriano Barbieri. The audience was made of a hundreds of engineers who showed great interest and sometimes even true astonishment in front of the capabilities and references of the Group companies.

Rig "purification" in Japan

Soilmec has successfully delivered a new SR-40 to Fukuda Kogyo, one of its most important Japanese customers

Soilmec has successfully delivered a new SR-40 to Fukuda Kogyo, one of its most important Japanese customers. The unit has been specially designed and manufactured to have an increased working clearance from the ground. The equipment was enthusiastically received by the Fukuda Kogyo staff who organised for a "purification" ceremony to wish safety during site operations. The ceremony was celebrated by a local priest. The supply is the outcome of cooperation in order to meet with the customer requirements within the Japanese highly competitive market, where the high technological and site levels demands the utmost attention to design and manufacture.

Soilmec India expands operations in Bangladesh

Soilmec India is now in the process of scaling up its international operations, beginning with the execution of key projects across Bangladesh

Soilmec India recently ensured the completion of the Saibad Water treatment plant project near Dhaka, where main machines from the company's marquee, the SR-40, SR-50 and SR-60 were used to achieve the target of increasing the water supply to the town by 22,500m^3/day within a record span of 3 months. The company is currently undertaking the active management of two flyover projects in Dhaka. The first project is an elevated highway project near the airport in Dhaka, while the other is a railway crossing project. Both projects entail the use of Soilmec's SR-40 & SR-60 machines that operate with a 1200mm diameter; piling to the depth of is 42-44 m. In addition, Soilmec India has extended the services of its internationally acclaimed green technology, CFA (Continuous Flight Auger) to its customers in Bangladesh also selling one unit of this revolutionary technology in the country.

The company has also converted the sale of 7 other machines in Bangladesh. "We are proud to play a contr buting role to the infrastructural development of Bangladesh and be associated with such prestigious projects", said Mr. Sanjoy Chakrabarty, MD, Soilmec India, "Some of the other operational sites at which our SR- 40, SR-50, SR-60 machines are currently being used include Incepta, Abdul Monem, Hojgaard", he adds.

Soilmec India received a positive response following its participation at the 14th ConExpo that was recently hosted by CEMS Global in Dhaka, Bangladesh.

Keeping in view the proposed infrastructural development of Bangladesh as one of the most promising economies, the company endeavours to serve as a key vendor of foundation equipment with its trademark efficiency and reliability. Already established as a market forerunner in the 400 crore Indian piling industry, the company also aims at expanding its business operations to Sri Lanka in the near future.

Extract of Davide Panzavolta interview at the Indo-Italian Chambers

Sanjoy Chakrabarty
and Davide Panzavolta.

Soilmec is one of the leading companies for 40 years in the design, production and distribution of equipment for soil engineering: could you tell us your success history?

Founded in 1969, as a Trevi workshop, our forty-year history is full of inventions and achievements. The way we design and build equipment is continuously adapted to the real requirements of the jobsite. The constant cooperation with our parent company Trevi (specialist in foundation engineering and one of the most important contractors in the world) has created a unique and successful model in the world of foundations. Continuous innovation, advanced technology and reliability are the keys to our success, but also our wide presence in the world which allows us to continuously meet the needs of our customers.

What is the Soilmec competitive advantage in India?

We have made a large investment in human resources and focused on the local production of drilling tools in conjunction with accessories from the facilities in India. We have been proposed as the only company in India to have three different spare parts stock locations, and we have points of service wherever there is a job site with our equipment. Today Soilmec India has 50 employees, our biggest competitor employees no more than 7-8 people. The difference in our approach to customer service is therefore visible to all our customers. We can also offer a larger product range than any competitor can offer.

Soilmec works in 90 countries on 5 continents. When and how has the company decided to be present in India?

We have always been present in India, first through our subsidiary in Singapore; we then changed our strategy and followed the Indian market from Italy. At the end of 2006 we made the decision to establish Soilmec India. The market has responded quickly with remarkable results, the market share increased from 5% to 40% in just two years.

How important is updating the product range in respect to the needs of the market?

I would say essential. The market is constantly changing and therefore we need to interact with it. We need rapid response and flexibility to serve the creation of custom products. But more often it is our group which influences the market through designing new solutions and technologies. This makes us particularly proud of our achievements.

What are the most recent projects by Soilmec in India?

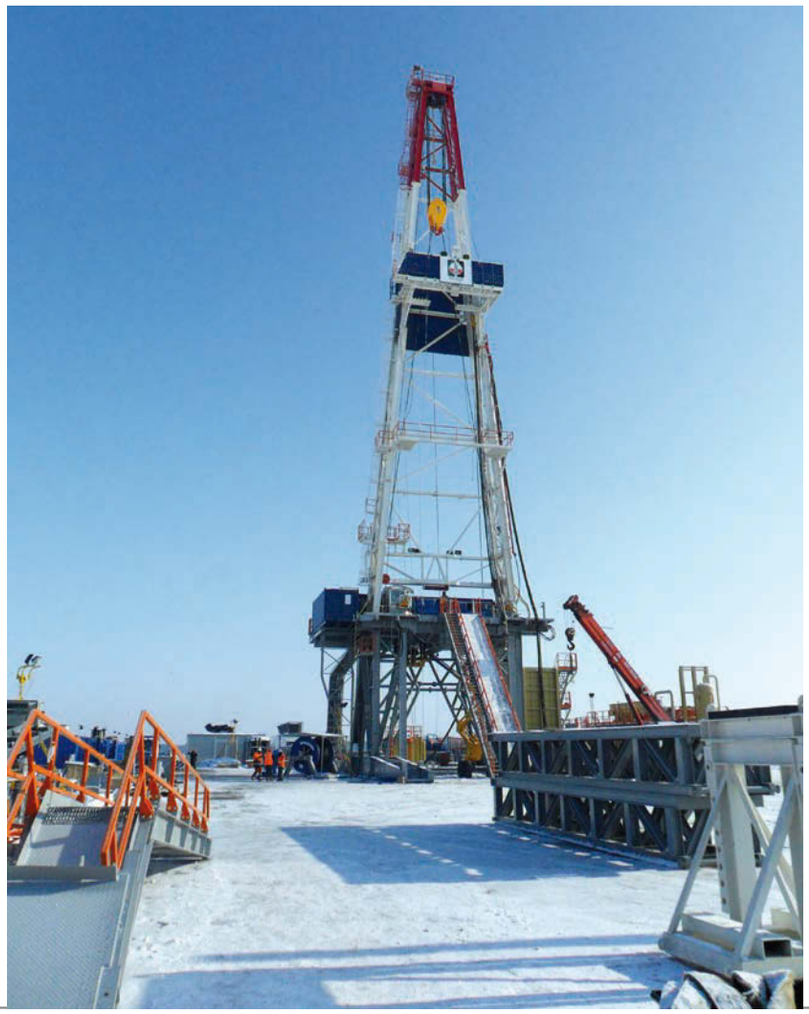
Tisco Kalinganagar Steel Plant, NTPC-SAIL's Bhilai power project, Chennai Metro, Metro Jaipur, Kolkata Metro Reliance Power Nellore, Kolkata airport, etc…

What sectors will generate more opportunities for Italian companies?

I think both highway and railway tunnels will be an opportunity, then of course the highways and high speed railway.

With 35,000 km of roads and highways to be built by 2015 in India, there are many opportunities in the foundation market. What are the future plans of Soilmec in India?

Too consolidate what we already have, expand the local structure and bring new technology to service the country of India.



Inauguration ceremony in Poland for the first Walking Drilling Rig

On 7th and 8th March 2012, the first Drillmec 2000 HP Walking Drilling Rig produced by Drillmec for the Polish Drilling Contractors Oil and Gas Exploration Company Cracow Ltd. (OGEC Cracow), has been put into operation through a two days inauguration ceremony in Lubycza Krolewka, Lubelskie province in the east part of Poland, where the rig will be involved in a "shale gas" project. The event has been attended by more than 100 representatives of the local and foreign Oil Companies, owner of the 100 and more new concessions for shale gas drilling research in Poland sold in the last two years, among them: PGNiG, Chevron, Exxon Mobil, ENI SpA, Dart Energy, Cuadrilla Resources, Marathon, Talisman, Conoco Phillips/Lane Energy.

The event saw an elaborated and well organized ceremony starting in the morning of the first day in a conference room in the near hotel with a welcome by management board of OGEC Cracow Ltd, an audio-visual presentation of the rig's main features and concepts and Drillmec production range by Giuseppe Falbo, Drillmec Sales Area Manager for Europe, and Tomasz Maloziec, Director of Drillmec Polska; in the afternoon the participants have been transported by three shuttles to the rig site where, divided in groups, they had the opportunity to view in details the state-of-the-art of Drillmec 2000 HP Walking Drilling Rig.

During the rig site visit, by mean of dedicated functional demonstrations performed by a combined staff of OGEC Cracow technicians and Drillmec technicians, emphasizing the main components and solutions which allow this 2000 HP Land Rig configuration to be specifically designed and suitable for shale gas drilling projects in Poland and Europe. Specifically, the attention of participants has been focused on the Rig Walking

System: the rig is equipped with a modern moving system composed of 4 hydraulic operated Rig Walker Units that, similar to four legs installed on each corner of the rig's substructure, allows to move the complete rig unit in working configuration in eight different directions covering in a few time the distance between two wells in cluster configuration.

The day after, March 8th, the same ceremony in a more compact format, has been repeated by OGEC Cracow in front of a group of about 50 representatives of the main authorities in Poland including members of Polish Government. The event has successfully contributed to increase the interest in Drillmec products for those Oil Companies and Drilling Contractors who, in the near future on the wave of world interest for shale gas drilling, are going to play a role as main actors in the Oil and Gas business in Poland.

Drillmec opens a new office in Australia

In November 2011, Drillmec strengthened the company's presence in the Australasia region by bringing on board a new Drillmec Australia representative. Matthew Drew has enthusiastically accepted the role to serve as Drillmec Australia & New Zealand's Business Development Manager. He is bringing forth a very wide range of experience coming from a Drilling Services background: directional drilling, logging while drilling, and technical support for such product lines. Also, he has worked worldwide on deep water rigs, land rigs, and slant rigs on many projects breaking world records. Most importantly he has experienced the challenging drilling conditions and logistics found only in Australia and New Zealand. Matthew Drew stated: "I look forward to serving our Australasian clients to fit them with innovative, cost reducing equipment in order to make them more productive and profitable. Many Australasian clients have already embraced the new technology and ideas that Drillmec has to offer, and together we will push the drilling industry forward".

First Drillmec HH-350 sold in New Zealand

During this first quarter 2012 Drillmec has achieved another important target: first HH-350 sold in New Zealand. The Customer MB Century who purchased several Mobil Rigs in the last few years, has now finally decided to purchase and operate this HH Drillmec Rig.

Drillmec rigs for geothermal power in Turkey

Turkey is located on the Mediterranean volcanic belt which is one of the richest geothermal fields. The country has about 13% of the world's geothermal potential and is ranked 7th in the world. The installed geothermal electricity generation capacity in 2010 was 100 MWe where as direct use installations were approximately 795 MWt.

As of 2005 170 geothermal prospects had been identified with 95% in the low-to medium enthalpy range suitable for direct-use applications. The proven potential is 3293 MWt and the total geothermal potential is approximately 31,500 MWt. This power is sufficient to cover 30% of Turkish residences heating. However, before using the geothermal sources, several processes were required starting from drilling wells to building power plants.

Like in the Oil drilling industry, Drillmec's role comes as early as in the drilling phase to access the underground hot water. Having a previous experience in both oil sector and geothermal drilling sectors, Drillmec has designed the proper rig that suits the Turkish market in terms of capacity, technology, and cost. In 2009 Drillmec has delivered two medium-sized mobile rigs to the state owned company MTA that is specilized in gethermal sector exploratory drilling. The rigs served to explore all the terrains in the territory to identify and asses the geothermal potentials. The ministry of energy, then established concessions accordingly and granted licences to start operations including the private sector as well.

Consequently, having the licences extended to the private sector created a high demand for drilling rigs. In fact, Drillmec has delivered two medium-deep mobile drilling rigs to Turkey and selaed two other deals to deliver other two within April 2012.

Drillmec delivers the first lot of the 11 rigs contract with GUMUS - Yildizlar SSS Holding

2,000 HP Land Rig.

On March 2011, Drillmec S.p.A and GUMUS signed a contract for the supply of 11 deep oil drilling rigs with 1,000 HP, 2,000 HP and 3,000 HP capacities. GUMUS (Gumus Madencilik Insaat Petrol Turizm Sanayi Ve Ticaret A.S.) is the energy company that is part of Yildizlar SSS Holding, a well established Holding in group of companies in Turkey. GUMUS' target is to start operations by the beginning of 2012 as part of Turkey's booting energy program. Thanks to its long experience in the oilfield and good presence in the Turkish market, Drillmec is supplying its new Turkish customer with a complete package studied to satisfy the industry needs as well as a continuous assistance and consultancy in the field.

At the beginning on November 2011, Drillmec has started to ship the first 2,000 HP land rig destinated to east Turkey where the first drilling operations will take place. The other remaining rigs will also be shipped right after the first shipment is completed. All the rigs will be commissioned in Turkey to allow an immidiate drilling commencement.

Besides being a good market for oil rigs where Drillmec is well introduced, Turkey is also a good promissing market for geothermal industry as part of Turkey's renewable energy program. Drillmec has already exported to Turkey several rigs for this purpose and the best is yet still to come.

First contract signed for a Drillmec HH-75 CBM rig

Drillmec keeps on expanding its presence in south-east pacific area. Thanks to the technical features of the rigs which are API certified, we are awarding several contracts in the CBM field in the far east areas. Late February Drillmec signed a contract for the first HH-75 CBM rig for Indonesia with PT Timas Suplindo. The company has a large client list from the pulp and paper, steel, oil and gas and petrochemical industries. More recently, it has started expanding into offshore Oil and Gas construction with a series of strategic alliances with world class organizations. The HH-75 rig, which will be delivered at the end of July 2012, is truck mounted and self loading/unloading with hydraulic jack up system. It is also equipped with driller control cabin and high speed coring head.

Drillmec supplies new work-over rigs in Oman

As demand increases in Oman for work-over operations, new start-ups have emerged to respond to the high demand and stumulate the work-over industry. PDO (Petroleum Development Oman) had opened new doors and given opportunities to new investors and young operators to take part of the most growing sector in the country. Drillmec, as a rig and hoist manufacturer, has been supplying hoists and rigs for this purpose for the last six years. On December 2011 and February 2012, Drillmec has closed two deals to supply a total of four hoists to cover newly assigned work-over contracts.

With continous research and field feedback, Drillmec has updated the hoist's design to allow very fast rig-up and rig-down without using neither ground anchoring nor heavy metal bases. The hoist is raised and operated using side outriggers for stabilization on the ground. This feature allows considerable time-cutting during installation and moving. In addition, the hoist's design enhances safety thanks to the guylines fixture to the stabilizers which eliminates accident' risks while other equipment are moving in the site. Other features are also available for the newly designed hoists and can be applied according to the user's will and need. As an example, disk brakes drawworks can be used with auxiliary disk brakes as well, which enhences performance (better braking force) and reduces operation and maintenance costs. Not to mention operator's comfort and safety as the new hoists can be equipped with driller's cabins for cold weather.

It is needless to say that the competition in workover rigs market is getting fierce. Nonetheless, innovation and continous research to support the end user and give him a competitive advantage remain the only key to success.

FTA Newsletter

The new issue of FTA newsletter has been published. The magazine points out the main initiatives (courses, workshop, training news, etc.) promoted by the association.

The newsletter also emphasizes and spreads the association's site contents; visitors can subscribe (**on www.ftacademy.it**) and receive the newsletter periodically.

"Synergy, an interaction of more players joining forces and working towards a mutual goal, in order to attain bigger and better results". This is the winning decision chosen by the Trevi Group, through their divisions, Drillmec and Soilmec, to sign a cooperation agreement with EGT (a renowned Italian company in the field of micro-drilling and tunnels) for the manufacturing and sale of HDD (Horizontal Directional Drilling) equipment.

The valuable expertise and the technological advances developed within their specific domains coupled with innovation and strong international presence are the common factors making these leading companies stand out in a highly competitive market. Additionally, the added value of this cooperation, brought by Drillmec and Soilmec, is the experience and coverage of the Trevi network of international subsidiaries and companies, including Petreven, who, for their daily building activities, use highly advanced drilling equipment and ancillaries under the most diverse environment conditions.

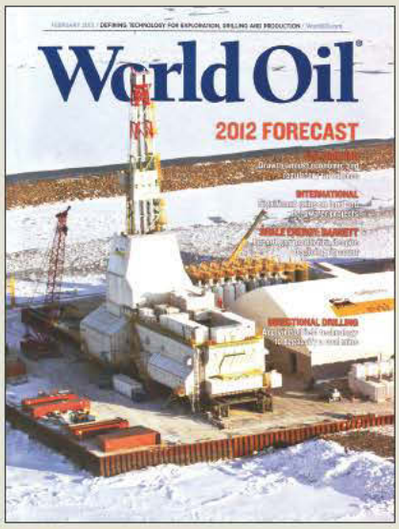
Oil & hydrocarbons drilling and the environmental preservation are just a few areas where "Horizontal Directional Drilling" (HDD) can be successfully employed and where the "Synergy" can bring in its advantages and assert the Italian enterpreneurial and technological excellence worldwide.

Their true desire to pursue new challenges and set new targets has been pivotal to their choice of industrial and technological integration in a quite new field for them, such as horizontal directional drilling. And this is just the beginning…

Trevi Group has signed a cooperation agreement with EGT for the manufacturing and sale of horizontal directional drilling equipment (HDD)

Soilmec and Drillmec on covers

A Drillmec rig appears on the cover of the issue of February 2012 of the prestigious international magazine "World Oil".



A Soilmec R-625 drilling rig appears on the cover of the June 2012 issue of "GE-Ground Engineering" magazine.

Brazilian newspaper "O' Globo" published an illustrated article regarding Drillmec debut on local Oil & Gas market.


UM NOVO 'PRÉ-SAL'

Especialistas e empresários dizem que é preciso criar política para setor

Objetivo é estabelecer novo papel do gasoduto Brasil-Bolívia e preço para indústria

Os investimentos das empresas

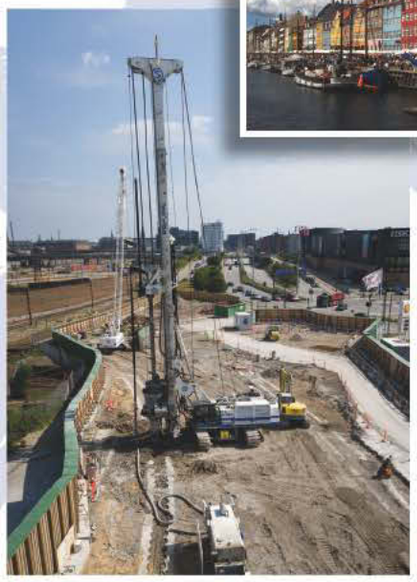
OGX

PETROBRAS

PETRA

Soilmec and Drillmec in action at...

Soilmec **SR-90** in CFA configuration at work in **Canada**



Soilmec **SR-100** in action for Cityringen Metro Project, **Copenaghen**

click on site

Soilmec **SR-65** at work for highway expansion in Fort Worth, **Texas**

Drillmec **HH-220** in **Chile**

Soilmec **ST-120** at work for A-14 highway tunnel near Senigallia, **Italy**

Drillmec **HH-300** for Cofor Company, **France**

Three **Soilmec drilling rigs** in action on **Jeddah** airport, Saudi Arabia

A "team" of Soilmec machine, **SR-40**, **SR-50** and **SR-70**, in action, **Philippines**

Drillmec **G-102** near Mitchell, **Australia**

Intermat 2012

The Soilmec show in Paris

Intermat 2012 was once again the occasion for the usual yearly meeting of the Soilmec marketing network: the **Dealer Meeting**. The worldwide Soilmec Network met in Paris, together with the whole staff from the headquarters in Cesena, for a two-day meeting. The Dealer Meeting ended with a day dedicated to the Intermat exhibition where the Soilmec novelties were exhibited.

The new **SF-65** was presented, a rig capable of executing piles with a diameter of up to 1000 mm in diameter and at a depth of 30 m. Together with SF-65, the **SM-28 and SM-10 micropile drill rigs** were presented. **SM-28 is a drill rig whose performance** makes it at the top of the rigs of its category, especially with regard to the jet grouting. **SM-10** was designed in order to guarantee the highest multifunctionality as for the micropiles' working applications, especially for the works to be carried out inside tunnels.

Moreover, two small-sized (but "big" in terms of performances offered) rigs of the micropile range have been exhibited: the **SM-3** with an external power pack and the **SM-5E** that is equipped with an electric engine. As for the technology sector, Soilmec, which has always been oriented to be a "solution provider" for its customers, and not just a supplier of equipment, has presented the **SR-90 rig, CAP version,** at Intermat, highlighting its bucket-discharging system. This technology is today used by Trevi, the Soilmec *sister company,* in the execution of the project for the construction of the Metro in Copenhagen.

The number of clients visiting the Soilmec stand was remarkables. Clients managed to talk about their projects within the usual warm Soilmec environment, a true "made in Italy" one , being able to receive answers to all their questions from the Soilmec Network and technicians.

CONCRETE SHOW 2012
August 29-31, 2012
São Paulo (Brazil)

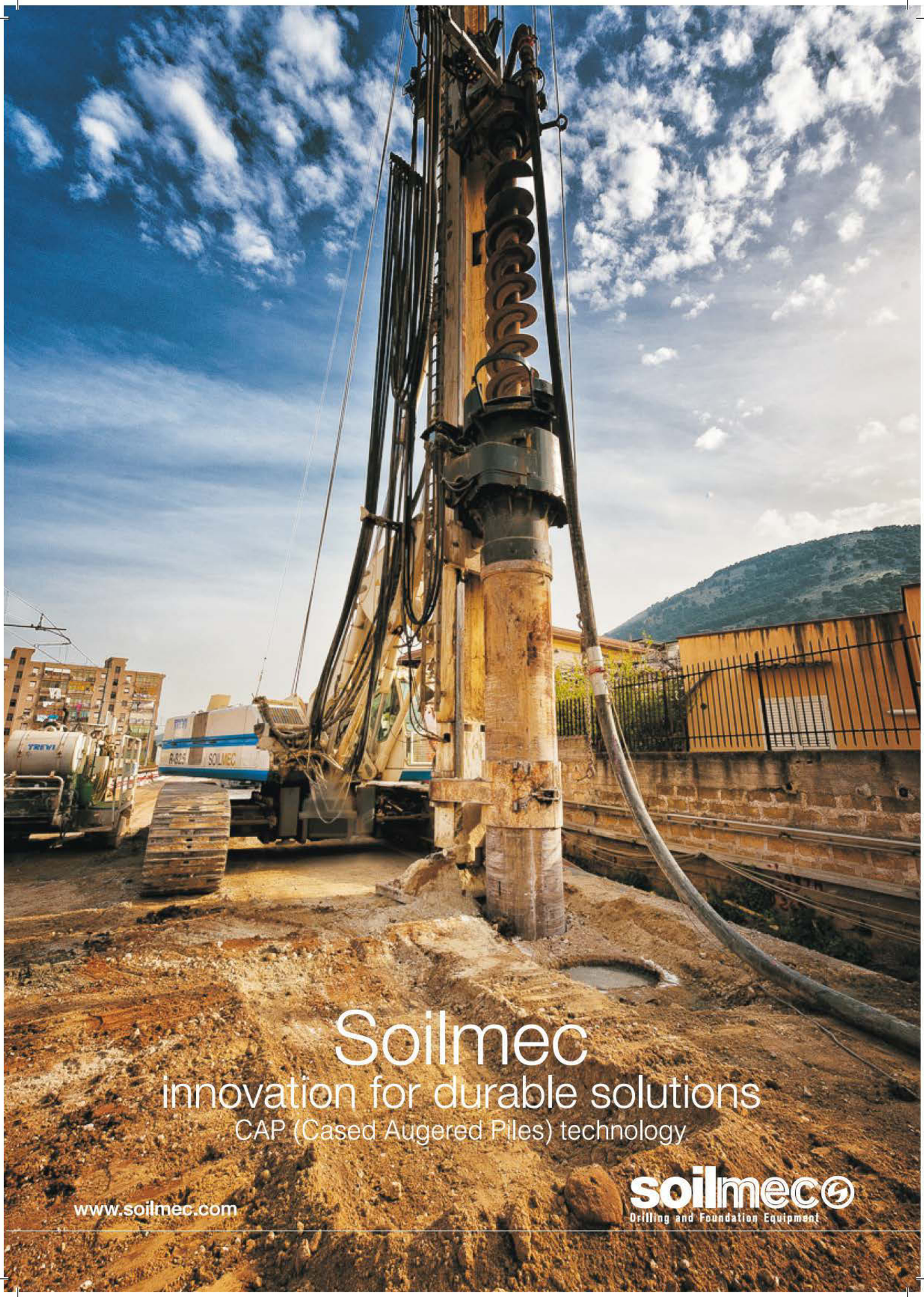
Concrete Show South America – the leading exhibition and conference on concrete technology in Latin America – is an international meeting point of business and technology, exclusive for concrete supply chain and its users. The trade show will be attended by thousands of construction professionals from all over the world gathering in Sao Paulo to do business. This year Concrete Show South America promises to bring a even larger and better show with the best and new technologies in machineries, equipments, commercial construction products, services and constructive systems from leading industry suppliers.

GEOFLUID
October 3-6, 2012
Piacenza (Italy)

Geofluid is the international exhibition and conference of technologies and equipment for prospecting, extracting and conveying underground fluids. The show has constantly grown in terms of exhibited product range and highly qualified visitor attendance always focusing the specialized target of drilling and underground working sectors, including subsoil fluid prospecting and extraction, soil investigation, special foundations and geotechnical works and other geological and geophysical applications.

BAUMA CHINA 2012
November 27-30, 2012
Shangai (China)

1,892 exhibitors from 37 countries and 155,615 trade visitors from 171 countries: bauma China set new records again in 2010. But the international industry gathering is not just convincing because of its remarkable numbers across the board. The quality of its exhibitors and visitors is also impressive. All the international key players present their machines and products at bauma China. 93 percent of all visitors here are decision-makers who are looking specifically for new solutions: CEOs, managers, investors and buyers from around the world, and of course from Asia's major growth markets in particular.



Soilmec

innovation for durable solutions

CAP (Cased Augered Piles) technology

www.soilmec.com

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Drilling and Foundation Equipment