

GeoDrilling

INTERNATIONAL



- Piling & foundations
- Ground stabilisation
- Italian manufacturers

soilmec®
Drilling and Foundation Equipment

technology solutions and support in place.

The company is looking to redesign rigs, potentially starting next year. Its three design concepts involve: a silent rig, a rig which can fold together to fit in a 10ft (3.048m) container, and an extreme rough-terrain rig, all four wheels of which can be moved independently. The rig will be remote-controlled to improve safety. These rigs are used 1,000-1,500 hours a year and operators can save 10 litres of fuel per hour.

"On top of that [here at Intermat], we introduced radio remote control for the cabin rig. [Operators drill] very close to the pit wall, which can be 100m steep. Taking the operator away maybe 20m feels much more comfortable. We [also] have some new products coming later this year," Markku Teräsvasara, president, Atlas Copco surface drilling division, informed *GDI*.



During the show, **Klemm Bohrtechnik** presented the KR 909-1 drill rig for the first time with wire-line winch for wire-line core drilling applications. The machine includes a diesel engine with a common rail-injector system, load-sensing hydraulics and plunger rods with increased corrosion resistance via a combined chrome-nickel protective coating.

With an overall weight of 13t, the KR 909-1 slots into the mid-range drill rig category. The compact design allows work to be carried out on construction sites with limited degrees of freedom. Its optimised mast articulation means that the rig's stability is guaranteed in every conceivable drilling position without the need for additional outriggers, thereby significantly reducing set-up time.

Due to the machine's inherent design, the desired drilling method can be freely selected. Options range from pure rotary drilling with a single rotary head unit and DTH hammer, top drifter drilling through to double head drilling in either rotary/rotary or rotary/rotary-percussive configuration. Thanks to the on-board hydraulic components, after-market re-equipping to other drilling methods and rotary drilling units is easy. Klemm also unveiled its new KR 801-35 rig at Intermat.

The new **Soilmec SF-65** was also presented in Paris. It is a rig capable of executing piles with a diameter of up to 1,000mm and at a depth of 30m. The innovative solution of a telescopic mast,

both vertical and horizontal, allows, on one side, the transport of the whole equipment without having to dismantle any of the components, while on the other, it also allows for drilling at 360°, just by rotating the turret. The performance, in terms of diameter and depth reached and

the solution offered by the telescopic mast, makes this equipment competitive in urban job sites where the assembling and dismantling speed, along with the flexibility in the centring the drilling vertical lines, are undoubtedly the key factors of its success. ▼

Above left: Soilmec's new SF-65

Above right: Klemm's KR 909-1

"The total value of the equipment on offer over the six days was estimated at US\$2 billion, some 5% of which translated into orders"

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Mission: impossible

A 3m-diameter siphon shaft is being drilled in basalt in Melbourne

The Yarra River is in east-central Victoria, Australia. The city of Melbourne was established in 1835 on the river's lower stretches. From its source, the river flows 242km west along the Yarra Valley, through Greater Melbourne, to empty into Hobsons Bay.

A sewage siphon, built in brick in 1911 under the river close to Walmer Street Footbridge, in a green residential suburb of Melbourne, has to be replaced.

Soilmec's
SR 100 in action



The siphon brings sewage water across the river from Yarra Bend Park to Walmer Street Bank, where a new inspection shaft, 3m in diameter and 20m deep, has to be drilled.

The siphon, 150m long, to be executed by horizontal directional drilling, is of 450mm diameter. It will be fitted with two pipes of 160mm and 190mm diameters.

The main contractor, Fulton Hogan, has entrusted the shaft drilling to BRC Piling.

The geological conditions of soil to be drilled are very difficult, especially on the Walmer Street Bank. On top, fill and residual intact soil areas present up to 100MPa UCS values. Five to 10m of slightly weathered basalt, sand, basalt gravel and cobbles follow, up to a weathered siltstone horizon at the shaft bottom.

Drilling power

Because of the shaft diameter and soil difficulties, BRC decided to use Soilmec's most powerful rig: the SR 100 in LDP configuration.

First, a 3,050mm hole was drilled in the 1m thick clay strata overlaying the basalt at the drilling spot. At the top of the shaft, to stabilise the clay and establish an external protection at the hole mouth, a 3m internal diameter, 2m-long casing section was driven into the 3,050mm drilled shaft section. It will be fitted later with welded cross bars for final top hat stability. During drilling, the casing also acts as a safety barrier for the piling crew. This diameter was chosen to allow the passage of further casing that should shore the bore.

In fact, the 20m shaft to be drilled will become a manhole after completion, so it has to be fitted with permanent casing.

The basalt layer has been cored to 2,900mm diameter up to 9.75m deep. This large shaft diameter in such difficult soil conditions dictated the method of pre-drilling, starting from a diameter of 1,200mm, then enlarging the hole to 2,400mm and finally 2,900mm.

Once the rock had been cored at 2,900mm, the permanent casing was inserted. It was vibratory driven in two sections, 12m and 8m, 20mm thick, through the short 3,050mm diameter upper casing and vibrated to the bore toe.

The casing was pre-prepared with a series of threaded holes so that grout lines could be attached after completion. The outside of the casing was pressure-grouted to stop the inflow of any water or material when the horizontal bore comes through.

In the basalt, the recorded drilling progression reached 10cm/hour.

In comparison with the traditional method of using an oscillator in combination with the drilling rig and heavy double wall casing sections, the BRC method including casing vibratory driving has brought a significant advantage.

Vibratory driving used in combination with the Soilmec SR 100, capable of delivering high torque and good crowd force values, has enabled BRC to reduce the shaft execution time by 50% in comparison with the preliminary evaluations.

The rig

The Soilmec SR-100 is designed for large-diameter piles (up to 3,500mm) at depths up to 92m. The 480kW engine has low noise levels and exhaust emissions. The 150-ton-class machine has been ergonomically designed with a spacious quiet cab and controls within easy reach of the operator.

The SR-100 in Kelly version has the Drilling Mate System on a 12" touch screen in the cab to monitor/control operating parameters. It can include features allowing analysis and printing of production data and job site reports, while a modem gives remote surveying of data and rig status. ♥

"Vibratory driving has enabled BRC to reduce the shaft execution time by 50%"



Time to GET busy

Ground Engaging Technologies nears the end of its first year in business

Although Ground Engaging Technologies (GET) could be considered an emerging company, having only been trading for just shy of a year, owner Tim Saboury brings 25 years of

experience in the design, manufacture and use of drilling tools for the piling and foundation industry.

Going into business at a time of global financial turmoil may have put some off,

but GET has a solid strategy. The company's aim is to support the UK piling and foundation industry by supplying high-quality drilling tools and consumables with continuity, quality and cost being of paramount importance.

Since GET began trading in May 2011 its main drive has been to invest in an extensive inventory of consumables from around the world.

The company has also invested in its own manufacturing and helical press facilities, giving it full control over manufacture and standard of finish.

GET makes drilling tools and equipment including solid and hollow stem continuous flight augers (CFA) for mini-piling and restricted-access machines, drilling buckets, CFA coupling and individual flight segments. GET will soon add innovative consumable products reflecting advances in techniques and machinery.

To complement its own range of manufactured tools, GET works with US companies to supply drilling polymer from FDSCO for bore support and stabilisation; cluster drills for drilling large-diameter piles in hard rock conditions; and Miller products, such as Kelly bar swivels. ▀



Specialists in both the manufacture and supply of high quality tools and consumables, for the piling and drilling industry

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Back to school

Simplex Westpile is piling for a school extension in London

UK-based Simplex Westpile is preparing the ground for the extension of Notting Hill and West Ealing High School in London. Works, which began in September 2011, include piling for a new sports hall and additional classrooms.

This involves the installation of 191 plan metres of 900mm-diameter continuous flight auger secant piles to construct retaining walls with excavation depths of up to 10.75m plus 98 750mm-diameter rotary bored tension piles up to 38m deep, and 18 plan metres of 750mm-diameter rotary contiguous piles for retaining walls and tower cranes.

Interserve is the main contractor and took possession of the site in August 2011. Simplex Westpile's works there are drawing to a close and Interserve's are due to be completed at the end of this year. Simplex Westpile has used rigs manufactured by both Soilmec and Bauer on this project. ▀



Class action: Simplex Westpile began work at the school last year