

On track

Dando Drilling International is preparing its site-investigation rig range for the High Speed 2 (HS2) railway project and further demanding geotechnical work in the UK

The Terrier keeps a level mast even when on inclines up to 30°

In a recent discussion about the UK geotechnical and site-investigation sector, Dando Drilling International's sales manager Callum Mee commented: "The UK geotech sector has rebounded firmly and is continuing to look very positive indeed.

"Construction is on the move again, and with the addition of the huge HS2 project, now assumed to be given approval, geotechnical rigs are going to be in more demand than ever."

A visit to Dando's five factory buildings in West Sussex reveals that the company has been



gearing up to meet the stringent demands put on drill manufacturers and contractors in the UK and across the EU.

"We have just come through a period of low-demand for drilling equipment in the UK and elsewhere in Europe," CEO

Martin Fitch-Roy explains. "However, during this period, Dando expanded its design team and focused on a new range of rigs that would exceed forthcoming H&S legislation for safer, more productive and efficient equipment."

SAFETY IN MIND

With new ISO EN standards in place, and more on the way, the company has moved to ensure that its rigs are in full compliance. "The new legislation has been good for the industry," says Mee. "Many of our component suppliers, engine suppliers for example, have launched new products that give Dando and our customers greater flexibility and choice."

As a result of these changes, Dando now offers a number of engine options on its rigs that are compact but produce more power than previous models, and with low emissions and low noise levels.

Mee feels that meeting future health and safety standards, as well as those already established, is important in the current market, especially as purchases for HS2 and other projects start to gain momentum.

"Over the past months many of our UK orders have been from smaller contractors, who are anticipating picking up site-investigation jobs left aside by the bigger contractors who will be directing their assets to the [HS2] project."

HS2 Ltd, the company responsible for developing the high-speed rail network, is also readying its own health and safety requirements for contractors and equipment used to prepare the new rail infrastructure. CEO Fitch-Roy comments on this: "We ensured we were well aware of HS2 stipulations from an early stage."

Reflecting the current climate in the UK geotechnical field, Dando has updated its range of site-investigation rigs and designed a number of new models, specifically with HS2 drilling needs in mind.

HEIGHT RESTRICTIONS

Traditionally, Dando's smallest track-mounted rig, the Terrier, has been a useful solution to tight spaces. The 90cm-wide Terrier can track through a standard



doorframe and can be used with either a percussive drive sampler mast, or a rotary mast for coring.

However, for even tighter access areas, or where very steep inclines are prohibitive for the crawler, the mast can be detached and used independently of the base unit at a distance of up to 30m.

If sampling and testing is required at a greater depth, but also within very limited access spaces, the shell-and-auger D1500LHR is a new option. The smallest of Dando's cable-percussion rigs has a knock-down mast design that can be carried on to the drill site in pieces and erected on a small footprint. The mast is also telescopic, and the rig can be used in 2.6m of headspace and extended up to 3.2m, where conditions allow.

ON THE RAILS

With railway site-investigation as a goal, Dando took the D1500LHR and mounted it on a small crawler. With the mast down, the rig is able to track through narrow passages in much the same way as the Terrier and works for geotechnical sampling and testing in a railway environment.

The track-mounted D1500LHR was designed and built in collaboration with a customer. Mee explains: "The customer



wanted a rig that he could drive down from the railway platform, onto the railway tracks and then take samples and run tests along the line."

The rig can also be tracked in a straight line with the mast up. This allows for quick relocation when multiple, closely spaced holes need to be drilled.

VERSATILE SOLUTIONS

One of the hallmarks of the HS2 project is the variety of geotechnical work that will be needed. From buildings, platforms and tracks, to embankments, tunnels, car parks, access routes, environmental monitoring and a huge number of additional supporting systems, a wide variety of site-investigation work will be needed.

This will require rigs able to drill to different depths, take a variety of sample types, and deal with a range of geologies between London and Birmingham, and then on to Manchester and Leeds.

For the softer geologies and shallower depths typically experienced in UK site-investigation work, Dando offers the D2500 and D4000 cable-percussion rigs. With 2½t and 4t of pullback respectively, these rigs are able to take U4/100 samples and run standard penetration tests (SPTs) to considerable depths. ▶

Above left: the track-mounted D1500LHR designed for use on railways

Above: the Multitec 4000 is a top-drive rig with swing-in SPT hammer option

"Dando is now designing a new range of dedicated site-investigation rigs for slope work at steeper angles"



Above: the **► CORING** dual-mast Terrier has both a percussive mast and a rotary mast

Above right: the SDC375 sonic rig can overcome UK's tricky geology



Where a combination of sampling, SPT and coring to prove bedrock is required, the new dual-mast Terrier, Mee believes, works best. "The Terrier's percussive mast is mounted alongside the rotary mast on a sliding carriage," he explains.

"When regular sampling and testing procedures are completed with the percussive mast, a pull of a lever moves the rotary mast into perfect alignment over the bore. Then a core can be taken quickly to prove the bedrock."

The number of large civil-engineering projects on HS2, such as tunnels and bridges, will require deeper core samples. The Multitec 4000 and 9000 are both fully featured rotary rigs with a mast-mounted swing-in percussive hammer to conduct testing.

"The Multitec 4000 is new to our range," explains engineer Rupert Coler. "It's a solution for deeper geotechnical work. The 9000 was introduced two years ago and has proven itself with the power for larger-diameter samples at depth."

With 4t of pullback, the Multitec 4000 can retrieve H-sized core samples at depths to 100m, while the Multitec 9000 model, with 10t of pullback, is able to retrieve larger Geobor S-sized samples.

SONIC

As the HS2 project moves north from London, a wide range of difficult geologies will be encountered. Coler elaborates: "Where unconsolidated geologies, or where softer clays, sands and gravels are sometimes interspersed with larger rocks, a

contractor would find sonic drilling unparalleled." These kinds of geologies are often found in the areas of glacial drift found along the proposed HS2 route.

The Dando SDC375 sonic drill uses the Sonikor 50k head built by Canadian Sonic Drill Corporation. Sonic drilling is renowned for retrieving high-quality samples in geologies where core retrieval is usually regarded as difficult. It also has the advantage of coping with rocks and boulders interspersed with softer sand, clay and gravel.

"Where a percussion rig would encounter delays, a sonic rig will continue through boulders with little interruption and minimal deviation," says Coler.

ON SLOPES

Sloping terrain and embankment work is another common feature of railway site-investigation. "This is a particularly exciting area of development for us," Fitch-Roy divulges.

"While our Terrier model has been used for embankment work for a long time and can maintain a level mast at up to 30°, we are now designing a new range of dedicated site-investigation rigs for slope work at even steeper angles and a greater variety of depths." ▼