

Downsizing

Micropiles, also known as minipiles, are the main choice of foundation system for many ground-engineering projects. *GDI* talks to piling-rig manufacturers about the technology

Micropiles are often used for the underpinning of foundations of existing structures to preserve them for various reasons, whether historical, cultural or related to stability.

They can provide structural support, enhance mass stability and transfer loads. Accordingly, micropiles can also guarantee the stability of slopes, while horizontal micropiles can be used for tunnel construction as support for the arch roof and sides.

Simply put, micropiles are small-diameter piles that do not usually exceed 300mm in diameter, compared with large-diameter piles that go up to 3,000mm. Due to the small size of the piles, the rigs themselves are often more compact and lighter, and this also goes for ancillary equipment like grout mixers and grout pumps.

"Big advantages of micropiles are their high carrying capacity, less site constraint problems and self-sustained operation," explains Pierluigi Sanchi from Fraste's sales department.

Marco Rapuano, sales director for micropiling and georesources at Soilmec, says: "Micropiles can penetrate to hundreds of feet in depth, and each of the piles can support many tonnes of load. Maximum depths can easily exceed 100m."

Small sites where heavy plant is not allowed, noise and vibration restrictions apply and/or headroom is limited are particularly suitable for micropiling rigs. This could include job sites such as basements and gardens, which simply can't accommodate heavy machinery.

CLIENT REQUIREMENTS

The needs of piling and foundation contractors when it comes to

equipment vary greatly, and many are asking for higher productivity in more complex settings, as well as larger drilling diameters offered by compact rigs.

Clients will naturally need different solutions for different job-site conditions. Sanchi notes that Fraste will sometimes get requests for small machines with high torque and force, and other times larger rigs, when the client doesn't have any issues with overhead restrictions.

"There is a clearly noticeable trend where our clients are looking for our compact-class drilling equipment," adds Sigg Ottersbach, sales director and product manager of German Hütte Bohrtechnik. "A lot of jobs

have to be carried out as refurbishment and upgrading projects in already existing buildings or on existing structures, e.g. stabilising of foundations and carriageway additions on bridges."

In this sector it is also necessary to have the certainty of being able to carry out any works, in any direction, without having to worry about the stability of the drilling rig.

While micropiling methods have not changed much over the years, clients are still interested in the latest technologies that will ease their jobs while also boosting safety and reducing their environmental footprint, including radio remote controls, rod-handling systems and energy-efficient drive systems.

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The HBR 202 E/D drill rig features a design with unique mast movements to reach drilling positions for special applications



Latest features

HÜTTE BOHRTECHNIK

Hütte Bohrtechnik's compact-class drill rigs HBR 202, with integrated electric motor or diesel engine, and HBR 203, with separate E or D power pack, were designed to fulfil clients' need for small drill rigs for large-diameter bores.

The rigs are especially designed for difficult drilling conditions in confined and limited areas, which require particularly compact and mobile equipment, but at the same time drilling big diameters of, for example, up to 324mm and 406mm.

The compact-class Hütte drill rigs HBR 202 E/D and HBR 203 E/D are self-contained, fully hydraulic crawler drill rigs, which feature a compact and robust design, simple controls, as well as high efficiency.

They incorporate the latest diesel technology (Step IV/Tier IV Final), meeting the strict emissions regulations in the EU and US. Furthermore, the units provide a modern and operator-friendly hydraulic system.

All movements of the drilling unit can be controlled delicately. An automatic temperature control ensures an optimal operating temperature even under difficult conditions. The stepless adjustable tramping speed provides a versatile and mobile machine movement.

Both types are fully radio-controlled, which ensures an operation from various positions and control of the drill rig according to the latest safety requirements.

The drill rigs are equipped with telescopic undercarriages that can be extended from 740mm to 1,200mm, as well as a telescopic drill mast with a length of 2,530-3,770mm, and an overall feed length of 1,200-2,200mm.

Clamping and breaking units for a maximum diameter of 406mm can be applied, whereas, as per demand from clients,

bigger size clamping units up to 610mm have already been incorporated. Together with the powerful rotary head type HG28, which can achieve a maximum rotation speed of 82rpm and a maximum torque of 27,000Nm, which is a very compact and powerful rotary head, the Hütte rigs are suitable for big-diameter surface drilling jobs, which require high torques. ▀