HD205P rig debuts in Kowloon's tallest building

The first HD205P Drill from the HD Engineering was used by the Hong Kong contractor Gammon to lay the foundations for Kowloon's tallest building. Only recently introduced, the new hydraulic crawler rig has been purpose-designed for piling applications in the toughest conditions and the tightest space constraints.

A 65-storey, 360 m-high skyscraper luxury residential development in Wan Hoi Street, Kowloon, Hong Kong, just a few minutes' walk from the Hung Hom ferry wharf, on completion, becomes Kowloon’s tallest building. Since the closure of Kai Tak Airport building height regulations have been relaxed on Kowloon-side.

The record-breaking residential development is being erected on a 3,000 sq m waterfront site with stunning views over the harbour to the famed skyline of Hong Kong Island.

The foundations contract was awarded to Gammon. The company began ground preparation works during the first week of August 1998. All drilling works were completed by the end of November.

The site stands on reclaimed land which means that Gammon had not had to deal with encroaching slopes and the associated engineering solutions – a problem that often plagues Hong Kong contractors.

However, reclaimed land presents its own difficulties. Aside from rubble and larger boulders, the infill at the reclaimed site contains a large amount of scrap building materials, making drilling laborious and time-consuming.

Gammon had to make drill holes for 240 soldier piles to form the foundations' diaphragm wall. The piles' diameters range from 460 mm to 560 mm and 660 mm and they were bored between 20 to 40 m in the ground.

The modified piling machine initially used proved unable to cope with the difficult ground conditions or create an aperture with a diameter of 560 mm or wider. Consequently, the Gammon team at Wan Hoi Street contacted head office and requested use of one of the company's two of HD 205P rigs, the only rig suitable for such a complex job.

Since the HD205P arrived on site, drilling rates had increased to 20 m per day – or the equivalent of one pile daily. Not only could the HD205P drill a hole with a diameter of 560 mm, but it was able to work its way quickly and efficiently through the debris-thick infill (often containing scrap metal).

In addition, the drill is extremely hardy and has built in shock absorbers for DTH drilling so requires little maintenance or replacement wear parts.

In a construction environment such as Hong Kong, where land is at a premium and time is money, buildings need to be constructed as quickly and smoothly as possible. According to Gammon, the HD205P is vital for the timely completion of foundations works – particularly in difficult ground conditions.

HD Engineering Ltd introduced the HD205P, a powerful new all-hydraulic, purpose-designed crawler drill rig for piling applications, requiring large diameter DTH hammers.

The versatile new rig has a heavy duty upper structure with a 13 m long mast and upgraded expandable undercarriage system which enables the rig to perform large jobs in the smallest working space.

Designed for versatility, the HD205P model features a number of advantages making the rig ideal for a variety of applications including drilling or predrilling of holes for piles using mainly large diameter down the hole hammer drilling (DTH), air and mud rotary drilling, by direct irradiation as well as reverse circulation.

The new rig is powered by a turbocharged, Deutz BF6M1013 watercooled diesel engine, rated at 126 kW, 168.8 HP at 2,300 r/min, which allows the rig to utilise a range of rotators and combination packages with different torque and speed options.

The expandable-retractable crawler undercarriage enables shipment of the powerful rig in a 40-ft container, once stripped of mast and other removable ancillaries. The mast has lifting eyes and an easy bolt-on arrangement.

An electronic remote control option also allows the rig to crawl onto trailers for transportation, or in hard-to-access areas.

The HD205P's turntable allows the upper structure a smooth and continuous rotation through 360 degrees.

The mast with a stroke length of 9.8 m is significantly heavier and longer than previous models. A built-in shock absorption system makes it suitable for large diameter DTH hammers. A maximum pull back of 30 t is possible.

The HD205P includes hydraulic adjustment for height on the breakout device, thereby greatly simplifying manual operations on the drill rods by the operator.

It also includes variable speed rotator heads Type HD6000R with a maximum torque of 6,000 kg at 230 bar for rotary or DTH drilling up to 813 mm (32 in) or larger hole diameters. The drill head can be side shifted hydraulically.

Enquiry No: C129/1/99