



FUGRO ROTARY DRILLING TECHNIQUES

In commercial and industrial sectors, increasingly sophisticated technology has led to a steep rise in the creation of – and requirement for – higher-quality data. This is also true in borehole drilling.

INTRODUCTION

Our expert drillers are experienced in a wide variety of methods for obtaining high-quality cores and by matching geological conditions to the appropriate drilling plant they can improve sample recovery. Our drillers pay particular attention to variations in the piezometric head within the borehole and feedback from the rotary rig, enabling them to respond to sensitive changes in the lithology being cored. The careful design of the drilling flush storage, cleaning and circulation system optimises borehole stability and bit lubrication, and aids the transfer of cuttings from the bit face.

WIRELINE CORING

Using the wireline coring method, the drill string/casing is advanced along with the core barrel. Rather than drilling rods being tripping in and out, the core barrel is then retracted on a wire. This speeds up the recovery of each core run, especially at greater depths, and maintains a hole in weaker ground. Geobor ‘S’ obtains laboratory-quality samples of over 100 mm diameter.

CONVENTIONAL CORING

In certain ground conditions conventional coring using triple tube systems may provide a suitable alternative to the more sophisticated wireline techniques.

Plant, equipment and drillers from Fugro are capable of undertaking any coring requirement.

Our resources include the following:

- A selection of truck- or track-mounted rigs, small trailer and skid-mounted drills, or portable and semi-portable equipment for sites with access or headroom constraints
- A wide range of core barrels, such as:
 - 42 to 115 mm diameter core using T Series metric equipment
 - 76 to 140 mm diameter core using DCDMA equipment
 - 108 mm diameter core using Triefus triple tube retractor and non-retractor equipment
- A variety of drilling plant capable of undertaking inclined drilling operations using conventional or wireline drilling techniques.

OPEN HOLE DRILLING

Fugro can offer full hole drilling techniques: direct or reverse circulation systems with conventional tricone or drag bits and down-the-hole hammer techniques using air, water, mist, polymer or foam circulation. We can also use dry drilling techniques such as auger or barrel auger systems.

AUGER DRILLING

Where a dry drilling technique is needed to penetrate soil or waste deposits, we can offer various types of auger equipment, including:

- Solid stem or barrel auger systems, suited to penetrating domestic refuse and other waste materials, generally used for installing gas monitoring points, gas flare stacks or gas pumping wells
- Hollow stem augers with a wireline sampling system, suited to investigating contaminated land and facilitating recovery of a continuous 100 mm diameter soil sample to profile the ground penetrated
- These systems are also used for mineral resource investigations such as sand and gravel surveys.

BOREHOLE TESTING, SURVEY AND INSTRUMENTATION

We offer a wide range of in situ testing techniques in rotary drilled boreholes, including variable head, constant head and packer permeability tests, well pumping trials, pressuremeter and dilatometer tests,



Core Sample Recovery.

impression packer tests and various wireline logging probes including closed circuit television. Core orientation techniques, such as those using Tropari and Eastman survey instruments, can be used too. Other borehole survey methods, like down-hole and cross-hole seismic are also available in-house.



Wireline coring equipment.

Fugro is proficient in installing and operating a vast array of permanent borehole instrumentation, including standpipes for gas, water or leachate monitoring and ground movement monitoring, such as inclinometers and magnetic extensometers.



Core boxes being documented at Fugro.