

Geomechanics adds Sonic Capability



GEOMECHANICS



GEOMECHANICS



INTRODUCTION

Geomechanics Pty (Ltd) is the flagship venture in the group. It was founded in 1989 by Dave Rossiter, to service the Geotechnical drilling and soil and rock testing market. It specialises in geotechnical investigations for railway lines, bridges, tunnels, roads and other large civil engineering projects.

The Group has its head quarters near Lanseria International Airport, north of Johannesburg, South Africa. Premises include 4000 square meters of factory space, a workshop of 2200 square meters and 1000 square meters of office space.

OUR MISSION

At Geomechanics we are committed to sustainable development.

Health, safety and environmental responsibilities are integral to the way we do business. We commit to continual improvement in our performance and efficient use of natural resources and aspire to zero harm to people and the environment.



Geomechanics offers rotary-core drilling, symmetrix overburden drilling, reverse-circulation drilling, conventional air-percussion drilling and now sonic drilling. This enables it to offer solutions in the following areas:

- Borehole drilling and in-situ testing, including:
 - Permeability Testing
 - Percolation testing and Lugeon testing
 - Piezometer installations
 - Pressure meter testing (PMT)
 - Standard penetration testing
 - Vane shear testing
 - Penetrometer testing
 - Plate load testing
- Quarry site investigations
- Foundation solutions
- Bridge abutments
- Tailings
- Dam safety monitoring
- Gold assay and de-watering in failure zones



SONIC DRILLING

Geomechanics has added Sonic Drilling technology and expertise to its growing fleet of over 60 rigs.

Sonic Drilling offers many advantages over conventional drilling in overburden ground conditions:

- It delivers superior information collection
- It reduces waste by up to 80%
- It is 3-5 times faster than conventional drilling
- Superior well construction
- It reduces risk of project failure due to unknown or difficult subsurface conditions.
- It enables more to be done with a single borehole because it advances a temporary outer casing as the borehole is drilled.

The Sonic 450-24 rig is able to provide continuous core samples to depths of more than 100 meters without using any drilling mud. As a result, sonic drilling can be employed in many applications including geotechnical and geothermal projects, environmental investigations and mineral exploration.



SONIC DRILLING



BENEFITS

Whether your drilling needs are for environmental, water supply development, geoconstruction, geotechnical or mineral exploration, Sonic drilling technology offers several distinct advantages over conventional drilling in overburden ground conditions.

Superior Information

Sonic drilling provides a continuous, relatively undisturbed core sample of unparalleled quality and accuracy through any type of formation. When using the Iso-Flow groundwater profiling system, hydrogeological and geochemical data can be easily obtained.

Waste Reduction

Sonic drilling reduces waste by up to 80% relative to conventional methods by other competitors.

Speed

Sonic drilling is two to three times faster than conventional overburden drilling methods when sampling.

Superior Well Construction

Sonic drilling causes minimal disturbance to the surrounding bore hole wall, resulting in more efficient well development and performance.

Risk Minimization

Sonic drilling greatly reduces the risk of project failure due to unknown or difficult subsurface conditions. Projects finish on time and on budget. Sonic drilling obtains the lowest total project cost possible.

Flexibility

Sonic drilling advances a temporary outer casing as the borehole is drilled, allowing you to do more within a single borehole.

SPECIFICATIONS

POWER SOURCE: Caterpillar C7, 6 CYL, 7.2L, Turbocharged, 250HP @ 1800 RPM, Tier 4 "Flex", Hydraulic Oil Cooler, 24VDC

RIG DECK: (4) 4" x 24.5" Jacklegs w/ Counter Balance Valve, (4) Jackleg Covers, Formed & Reinforced Deck Skin, Tubular & Channel Framework, Anti-Slip Surface

DRILLING MAST: Single Tube Construction, 15 FT Head Travel, Hydraulic Cylinder/Chain Driven System, Fully Enclosed, Pullback 22,260 LBS, Pulldown: 12,369 LBS, Max Casing Length 10 FT

JIB HOIST (OPTION) : Main Hoisting Winch, Top Mount, 4,000 LBS Capacity (Bare Drum), 72 FPM

WATER PUMP (OPTION): FMC W1122 BCD, 37 GPM, 1,000 PSI (Other pump sizes available)

HYDRAULIC SYSTEM: Triple mount pump drive, 6 variable displacement pumps, pressure and flow controlled

SONIC HEAD: Model Sonikor 50K, Hydraulic 60 Degree Tilting Cylinder; Upgraded Water Swivel

HOSE CARRIER SYSTEM: High Pressure Hydraulic Tubing

CONTROL CONSOLE / SWING ARM: Compact Lightweight Configuration, Ergonomic Configuration, Key Start, Remote Throttle, Digital Tachometer, Pilot Control Valves, Electro Mechanical Valves

CRAWLER BASE: Rubber Tracks, Wireless Radio Transmitter

BREAKOUT TABLE: BTC-28 Open C-Clamp Table, Clamping Range: 2.5 to 8.625 inch nominal c/w hinge



HOW IT WORKS

The Sonic Drill Corporation's patented sonic drill head works by sending high frequency resonant vibrations down the drill string to the drill bit, while the operator controls these frequencies to suit the specific conditions of the soil/rock geology. Resonance magnifies the amplitude of the drill bit, which fluidizes the soil particles at the bit face, allowing for fast and easy penetration through most geological formations. An internal air spring isolates these vibrational forces from the rest of the drill rig.

By providing the necessary rotational and vibrational forces, the sonic rig is able to core and case holes in any overburden material, drilling where most other rigs can't.





GEOMECHANICS

GeoMechanics & Geomech Africa

28 Central Road, Sunrella, Gauteng, South Africa

PO Box 68063, Bryanston, South Africa, 2021

Tel: +27 (0)11 966 7760

Fax: +27 (0)86 663 3896

www.geomechanics.co.za info@geomechanics.co.za