

MINING, TUNNELING & QUARRYING

Quick STUDY

Hydra-Cell
Seal-less Pumps

www.Hydra-Cell.com

Location:	Hungary
Application:	Bore hole consolidation and drill head cooling
Media:	• Bentonite
Model No.:	D10XKCTHFEYA
Flow Rate:	1.3 - 8 gpm (5 - 30 l/min)
Pressure:	725 - 1000 psi (50 - 69 bar)
Hydra-Cell Advantages:	• Seal-less design, tolerating abrasives • High-pressure capability • Small footprint • Consistent flow rate • Self-priming



Bentonite Applications in Hole Boring

To consolidate boreholes drilled in unstable earth by "steel moles" during tunneling and mining operations, a commonly used method of supporting the walls of the hole is to pump a suspension of bentonite into the hole at pressure.

A well-known manufacturer of drilling equipment in Hungary was using high-pressure piston pumps with an outdated design for this work, but too frequent replacements and the difficulty of obtaining spare parts led the company to find a better alternative.

After consultation with the Hydra-Cell distributor, the equipment manufacturer rejected the possibility of using a current version of the old piston pumps and the Hydra-Cell D10 is now its preferred pump. The seal-less design of Hydra-Cell means it has no difficulty in handling the abrasive particles in the bentonite suspension.

Holes from 6 to 20 inches in diameter (150 - 500 mm) are initially sustained with bentonite slurry. In loose soils the bentonite consolidates the wall of the hole. When drilling in hard stone soils the bentonite also serves as coolant medium for the drill head.

The pumps are driven by hydraulic motors served with power from the tunneling machine.

Characteristics of Fluid Pumped:

☒ Contains Abrasives ☐ Corrosive ☒ Solids in Suspension ☐ High-temp. (>158°F/70°C) ☐ Non-lubricating ☐ High-viscosity (>500 cPs)