

Right: installation of the stainless-steel riser at the pilot location

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brine, causing the water pressure to rise approximately 1bar.

Consideration must also be given to the quality of seal as the brackish water in the upper section needs to be separated from the salt water in the deeper section. For this reason, a special cone has been mounted on the flange and a tapered counterpart with rubber rings is attached to the underside of the RO unit.

For ease of inspections and servicing, the RO unit can be installed and removed by a 3in (8cm) stainless-steel riser. During operation the filtrated water is

pumped through this riser to the surface.

Recently developed 16in (41cm) membranes are placed within the RO unit. With the bigger membrane surface, when compared with the standard membranes used over the last 30 years, the aim is to achieve an abstraction of 50m³/hour and a recovery of 50%.

The Puro system has already attracted considerable attention, and in October 2010 the Puro system ended with the highest score at the Dutch InnoWATER funding scheme, affording the consortium a further €500,000 (US\$ 690,170) of funding.

The results of the pilot are awaited with interest. ▽



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In deep water

The Rockmore ROK 500DH hammer helps water-well driller in a tight spot

Officially released last year, Rockmore International's ROK 500DH down-the-hole (DTH) hammer is part of the company's emerging Deep Hole series.

Designed to increase drilling effectiveness in deep-hole applications, the ROK 500DH incorporates engineering advancements for DTH drilling in geothermal, exploration, water-well and other mining and construction sectors.

Rockmore has also made some recent updates to the hammer to improve its operation.

In late spring 2013, the hammer was able to get a water-well driller in Washington, US, out of a tough spot when

The ROK 500DH hammer



Current demand

"Most drilling customer for the Deep Hole series are in the water-well and geothermal applications," says Eghdami. "And we have sold many units to North and South America and Europe."

"Demand for our products has been steady in the second half of this year, despite a lower level earlier this year. The water-well and geothermal drilling markets are still facing challenges in a weak European economy and from a very slow US economic recovery. We expect a slow increase in demand for drilling consumables next year." ▽

his existing hammer quit working before it had reached the water

table.

The crew had used a competitor's hammer, which failed at about 1,300ft (396.2m). They called Rockmore International's distributor at Drillers Depot in Portland, Oregon, for help, and Rockmore was able to get the ROK 500DH-001 hammer out to the customer on the same day and finish the job for them.

"The DH hammer was the right choice for the job because the existing competitor's hammer stopped drilling before the target depth was achieved as it could not manage to flush the cuttings at that depth," explains Rockmore International's executive vice-president, Pejman Eghdami. "Our DH hammer is specifically designed to flush water and rock cuttings in very deep and difficult rock conditions and operate efficiently and effectively in such water-well and geothermal environments."

The ROK 500DH hammer mounted on a drill rig



Job details

Hole diameter: 5.75in (15cm)
Rockmore bit: DH500-146CCV-3107
Rig model and compressor capacity: Atlas Copco with 950cfm (1,614m³/h) and 350psi (24.6kgf/cm²)
Location: East of Vancouver, Washington, US
Depth: Started at 1,300ft (396.2m) and finished at 1,400ft (426.7m)
Hammer model: ROK 500DH-001
Problem solved: Driller was using a hammer that was getting no penetration rate at 1,300ft. After installing the ROK 500DH, they were able to finish the hole to 1,400ft