

Geoquip brings borehole camera to UK

THE ability to see into a deep borehole has been an aspiration for well drillers, well owners, and geologists for hundreds of years. Whether attempting to retrieve a lost tool, determine the cause of sandy water, demonstrate the results of cleaning a well or show the depth of a newly drilled borehole, the need for a visual inspection is crucial.

According to Mike Deed, managing director of Geoquip Water Solutions, it is not surprising that the camera that could revolutionise the borehole inspection process – and the drilling industry – has come from the Laval stable, home of the first borehole camera.

Geoquip is a specialist supplier to water-related industries and the UK distributor of the Laval R-Cam 1000.

In 1946, Claude Laval II took on the challenge of designing a borehole camera system in the agriculture fields of Fresno in California. After several failed attempts, he discovered a design which could withstand the pressure of 600m of submergence, as well as the extra challenges of remote frame advancing and remote flash. His camera was 2.7m long and weighed over 90kg. With this technological breakthrough in the summer of 1947, Laval became the first person to photograph the interior of a well.

Sixty years later, technology has changed drastically. Cameras are more compact and affordable. Borehole cameras are commonly used for inspection of vertical pipes up to 1,525m deep. They weigh less than 6kg and utilise high-intensity lighting attachments. With remote focus, adjustable lighting and automatic gain controls, these cameras can inspect boreholes up to 183cm in diameter.

Mr Deed believes the introduction of the R-Cam 1000 has had a strong impact on the US drilling market. Geoquip has now brought it to the UK. He said: "It is a completely portable, self-contained video inspection system that can inspect boreholes up to 300m deep and 40cm in diameter. This lightweight, smaller size, professional-grade camera features dual viewing capability, an on-screen depth counter, liquid crystal display, DVD recorder, 12V DC power supply and everything else needed to conduct a professional survey."

Scott Miller of Northern Virginia Drilling in Virginia, USA, said: "Having this unit so portable has allowed me to reach some nasty areas. I've taken that camera into terrain where you couldn't get an all-terrain vehicle."

The camera has been used to diagnose problems in water wells, the rehabilitation of existing wells, the geologic monitoring of boreholes in earthquake zones, rescue operations and as a before-and-after video inspection for well rehabilitation.

Side view of a potable water well before cleaning showing iron oxide and iron-related bacteria and contamination; Side view of a potable water well after cleaning using the Laval R-Cam 1000



Side view of the Laval R-Cam 1000

Improving the quality of water in developing nations is one area where video cameras can make a life-saving difference, particularly in areas where poor construction techniques are more common. Dom Nwachukwu of Groundwater Development Engineering in Lagos, Nigeria, reported: "We have twice so far in two holes found a problem area we can address immediately and re-shoot later."

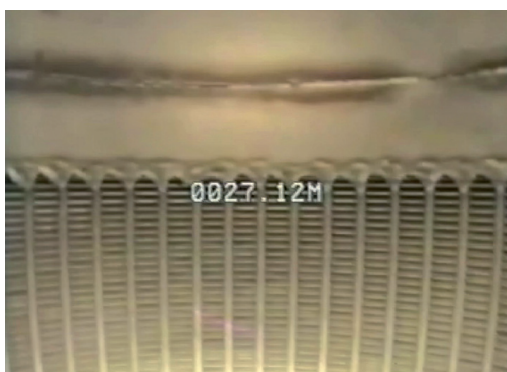
Borehole video cameras have been used for rescue operations in mines in North America, and were pivotal in saving 'Baby Jessica' after the child fell into an 8in borehole in Texas in 1988. Laval's camera was used during the rescue operation at the fatal Crandall Canyon coal mine collapse in 2007, where it confirmed a survivable space existed.

Governments and municipalities throughout Canada, the US and Japan have discovered that owning their own video camera has allowed them to assess the quality and workmanship of their boreholes. This ability to visually inspect the work has led to higher-quality boreholes and minimised litigation.

The applications for these smaller professional inspection systems are wide and diverse. Cameras have been used in New York for the inspection and visual verification of micropiles during construction. Micropiles are 300mm or less in diameter, employ a single rod or pipe and are grouted in place with cement. They serve as a critical anchor for the foundations of high-rise buildings. New York now requires video inspection of all micropiles throughout the state.

During the initial phases of the World Trade Center transportation hub project, Nicholson Construction Company, in a joint venture with EE Cruz, employed a portable borehole video system to measure operational parameters.

In Belgium and Austria, portable camera systems have even been used for the inspection of chimneys and smokestacks.



■ TRELLEBORG FACE SEALS

Trelleborg Sealing Solutions has launched its new range of mechanical face seals, engineered for rotating applications in arduous environments where they withstand severe wear and prevent ingress of harsh and abrasive external media. The manufacturer says the seals – available with metal parts in cast iron or bearing steel – are suitable for use in drilling machines.

■ MOBILE MAPPING SYSTEM

A 'plug-and-play' mobile mapping system, which can be used on land or at sea, has been launched by eye-safe laser measurement technology specialist Measurement Devices Ltd (MDL). Laser scanning, GPS and an inertial navigation sensor are combined in the lightweight Dynascan which can be mounted on a range of transportation.

■ ENIGMA, MECK LOCK JOIN

Enigma Vehicle Systems plc and Meck Lock UK have announced a new collaboration in security and tracking products for the UK construction and plant industry. The system combines Skyline advanced GPS satellite tracking and telematics from Enigma with the hydraulic anti-theft system from Meck Lock.

■ FUGRO SCOTLAND OFFICE

Fugro Engineering Services has opened a Scottish office. Glasgow-based Fugro Scotland offers a full range of ground investigation services including cone testing techniques. The manager of Fugro Scotland is Gordon McKeown.

■ CONTROLS CATALOGUE

Italy-based Controls has published the 2009 edition of its 500-page catalogue of testing equipment for the construction industry. The catalogue, now in its seventh edition, is a guide to tests on concrete, asphalt, cement, rock, soil and steel. It presents over 4,000 articles grouped into 11 product ranges, and is available in English, French, Spanish and Italian.

■ VAREL, VARCO SETTLE

Varel International Energy Services has reached a patent cross license agreement with National Oilwell Varco Inc and its ReedHycalog unit involving ReedHycalog's leached diamond cutter technology and Varel's high energy tumbling technology.