

Vertical to horizontal drilling

Challenge

Until now a commercially viable, robust, lateral, radial drilling system was not available although it's been of great interest to the coal and oil and gas industry for many years. Drilling horizontally maximises drainage efficiency and stimulates reservoirs in ways that cannot be achieved from a vertical well.

Solution

The outcome of 19 years and \$40 million of research and development by Mining3 and its mining industry partners has created the first significant radial drilling technology set to change the industry. A feat of engineering excellence, the technology sees traditional drill heads replaced with a high-pressure jetting system that rapidly creates an extensive pattern of horizontal tunnels for oil and gas to flow directly into a vertical well. Multiple radials can be placed at various depths.

The radial drilling technology maximises drainage efficiency, increases production and could be an enabler in some geological locations where there is currently no economic means of recovery.

Local and international field trials have been completed with a number of operators, showing significant increases in production and recovery of oil and gas in these wells. Furthermore, capital and operational expenditure were lowered while recoverability increased.

Field trials on wells including BHP Billiton (QLD, Australia), O-Tex (Oklahoma, USA) and Henderson & Erickson (Midland Texas) have demonstrated the technology works and is highly effective.



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How it works

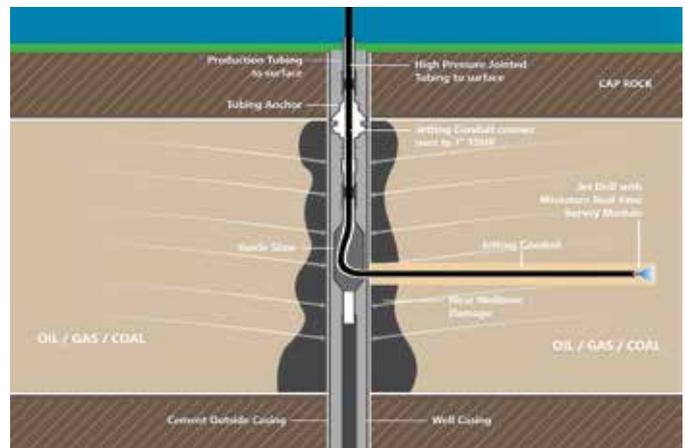
The innovative drilling technology has been engineered with a flexible, high performance, instrumented jet head. The expertly engineered system is steerable, controlled, flexible, robust and reports to the operator in real-time. It is able to turn from vertical to horizontal within the confines of a well bore and is strong enough to mill through a steel casing. There is no other technology in the world that can reliably perform this process on a commercial basis.



The flexible hose enters through an existing vertical well. Once in position it rapidly drills an extensive pattern of lateral radials into the various target formations using water at extremely high pressure.

Benefits

- **Increased production:** Expected improvements between 3x to 10x the existing production
- **Improved recovery:** More than double the total oil and gas recovery
- **Environmental:** Reduced footprint with fewer vertical wells
- **Alternative to fracking:** Through a controlled and directed stimulation
- **Rapid and simple deployment:** A typical well should be completed in 4-5 days
- **Unlock value in existing assets:** Access underperforming formations stranded behind casing
- **Decrease formation damage:** Bypassing formation damage zones and establishing new connectivity to the reservoir



Status

For further information, contact Mining3's spinoff company, V2H – www.v2hInternational.com.

About Mining3

Mining3 works in collaboration with mining companies, equipment and technology manufacturers and universities to actively seek solutions to the grand challenges facing the industry.

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