Greater contact

Robert Pell takes a snapshot of how developments in rock tools are leading to improved drilling productivity and accuracy

Without a competent cutting tool or delivery item, any operation will fail to attain increased efficiency or reliability in drilling. Many OEMs develop rock tools for their own drill rigs, but which can alsobe used on competitors' rigs. There are also numerous specialised companies who place full emphasis on single products such as drill bits.

Rockmore International has developed a new drill bit designed for top hammer drilling with the aim to reduce operating cost and increase drilling efficiency. The new StarFlow drill bit, which has been designed for percussive drilling applications in hard and abrasive rock, increases drilling productivity due to the newly developed bit face design. The bit face has an advanced cutting geometry and the placement of the flush holes, flush grooves, and tungsten buttons has been altered from traditional designs. The placement of five flush holes and flush grooves gives the StarFlow bit its star shaped design. The flush holes are placed to increase the flow of the flushing medium mixed with the displaced rock cuttings, allowing effectual evacuation of waste material from the drilled hole. The new design also includes ten large tungsten carbide inserts on the periphery row for enhanced rock breaking and penetration rates. The inserts are some 5 mm larger in diameter compared to previous models, leading to a longer bit life. The StarFlow design is offered in threaded button bits larger than 127 mm for top hammer applications.

As announced by ***IM*** earlier this year, Rockmore has also introduced the latest addition to their ROK series DTH hammer product line – the ROK 600A and 650A. The 6 in DTH hammers have been designed for increased performance and penetration rates suited to smaller compressors. This reduced use of compressed air lowers costs. Pejman Eghdami, Executive Vice President of Rockmore International said "Our new A Series line incorporates technological advancements that allow the hammers to be compatible with a wider range of compressors. This has been achieved by lowering air consumption rates and instilling higher efficiency levels."

The lower air volumes per hammer cycle have been achieved through the re-designed piston and wear sleeve components, and because of this reduced air consumption, the A Series DTH hammer can be used with many drill rigs with smaller compressors (>1,000 SCFM). The 600A and 650A both use the patented Rockmore SonicFlow technology, which optimises airflow by simplifying and streamlining the air paths to minimise backflow and turbulence, and are both available with various thread connections with optional back reaming button inserts to increase component life.

Boart Longyear has introduced a number of new bits to their range over the last 12 months, developed for specific customer applications, but which can also be used for a larger pool of customers in both the surface and underground operations. Boart Longyear covers all geographical regions with distribution centres on six continents, and has equipment used on the full range of commodities from gold and silver to coal. Boart recently introduced the S250M3 muffled rock drill, which has been designed to channel more energy into the face of the rock instead of into the driller operating the machine. As a result the S250M3 has a 39% increased torque over prior versions, and it creates 50% less noise pressure (6 dB).

Across all areas of mining, increased safety remains a focus area. John Nielson, Senior Global Product Manager at Boart Longyear told ***IM***: "It is our goal to make the safest, most productive tools available in the market, Our own employees in our Drilling Services division use our tools, and we want to be sure that our colleagues go home without harm or injury at the end of every shift. Every Boart Longyear employee has stop work authority if they witness a process or procedure that is unsafe. We actively work to minimise and eliminate risk where possible."

Nielson also commented on the current market conditions for rock tools stating that "the production tooling market has stayed very steady compared with previous year. Active mining has continued, in spite of decreased spending on exploration, expansion, and fleet removal."

Element Six has recently developed percussive diamond inserts for hard rock drilling applications. The new percussive diamond inserts (PDIs) have been developed for high impact resistance and reduced wear rates, even in abrasive rock formations. Andries Vollgraaf of H&A Drilling, in Vanrhynsdorp, South Africa states: "The PDIs from Element Six have demonstrated that we can keep drilling and still achieve high penetration rates whatever hard rock we face." The new PDIs use patented diamond technology to combine geometrical and material aspects for increased wear resistance on the diamond layer. The synthetic diamond dome has been designed with a geometry that dissipates stresses encountered during demanding drilling conditions, and the optimised diamond microstructure has been developed for increased resistance of the diamond layer on the rock face.

Fordia offers a range of drilling solutions with its line of diamond tools, equipment and accessories designed for the mineral exploration and geotechnical industries. Especially designed to withstand the most abrasive rock formations, the HERO Abrasive range is "an ideal choice for those ground types." Its redesigned components offer an increased resistance to abrasion and its reinforced diameter preserves the internal and external diameters. Used together with an appropriate drilling additives mix, it allows optimising performances in abrasive grounds.

The latest addition to the Fordia HERO series is the Abrasive line

The HERO core bits are already well-recognised around the world for their high penetration/lifetime ratio and they are available in various hardness levels (3, 7, 9 and 11). The series' Abrasive version allows clients to receive those same benefits in a new variety of grounds. The HERO Abrasive series has recently completed its long validation process and is now available to customers, with the HERO 7 Abrasive and the HERO 9 Abrasive, which are available in all standard formats. The first matrix is suited in medium hardness to very hard abrasive ground (between 5.0 and 6.5 on the Mohs scale) as it offers a great versatility, while the second matrix provides its best performances in hard to very hard abrasive ground (6 to 7.5 on the Mohs scale), particularly in ground containing iron ore.