

# Durable High-flow Pumps Ensure Uptime

*The newest models are built of materials resistant to corrosive liquids and abrasive solids*

By Jesse Morton, Technical Writer

## Summit ESP, Hercules HPS Pumps

Halliburton Summit ESP pumps are constructed of advanced materials, feature compact designs and offer proven efficiency to help miners beat challenges posed by corrosive liquids and operational constraints, a pump expert with the company said. “Our electric submersible pump (ESP) technology, adapted from oil and gas, improves reliability and performance in mining environments,” said Terry Fletcher, senior business development account manager, Artificial Lift.

“Designed for challenging wellbores, these pumps feature a shorter, slimmer profile that does not sacrifice production rates,” he said. “Each unit can withstand abrasive solids, corrosive fluids and high-flow rates.”

Offered as part of a complete service solution, ESP solution designs can be 187-mm (7.38-in.) in diameter, thereby lowering “costs by reducing the required wellbore size,” Fletcher said. Halliburton pumps are “available in 783-kW (1,050-hp) motors and various metallurgies to suit specific demands.” An ESP solution can use tandem motors for up to 1,565 kW (2,100 hp), and “can be configured for different power supply ratings, which gives operators flexibility across sites.”

Halliburton pumps feature “tungsten carbide stage bearings and DuraHard 15

coating, applied through a surface molecular bonding process, which offer high hardness and ductility to extend runtime and minimize wear,” he said. “Octolock pumping system nesting hubs prevent diffuser spinning.” Further reducing maintenance costs, “the design facilitates the rapid replacement of key components to help minimize downtime.”

ESP portfolio solutions offer flow “rates of over 520 m<sup>3</sup>/h (2,300 g/m),” he said. “Halliburton holds ISO-9001 certifications.”

Based on core ESP technology, the supplier’s Hercules horizontal pumping system (HPS) is a “cost-effective, reliable and low-maintenance option with short lead times for medium- and high-pressure dewatering, suitable for underground and deep open-pit applications,” said Neil Ferrier, international sales leader, HPS, Artificial Lift.

“The advanced technology of Hercules HPS addresses the demand for modern solutions that deliver maximum reliability and field efficiency,” he said. “With a modular, compact design that installs quickly, allows field repairs without disturbing pipework and reduces downtime and exposure, the solution runs with minimal noise and vibration.”

With a common ancestry, HPS and ESP solutions share common features. For example, both feature the supplier’s Tiger Shark pumps with Erosion Buster ESP diffusers.

The basic HPS design integrates “four core components on a single skid to maximize reliability and field efficiency,” Ferrier said. “These include a standard 2-pole electric motor, a bearing housing/thrust chamber, a single mechanical seal at suction pressure and a long-life pump barrel.” The motor can be configured to use diesel, natural gas, or turbine power.

The four-part “design allows for quick replacement of the bearing housing and seal without pipework disturbance, which extends runtime and minimizes work-over frequency,” he said. “Maintenance requirements are low, and service is fast with available, affordable parts.”

Other design features further reduce and simplify maintenance. As with the ESP, the HPS features tungsten carbide stage bearings and the DuraHard coating for durability and wear resistance that reduces maintenance requirements.

The list of benefits offered is topped by optimal durability. “Advanced technology improves runtime and reliability while reducing safety risks, such as abrasive fluid cutting through the diffuser, or outer pump housing and diffusers spinning inside the housing, which can cause pump failure,” Ferrier said. The solution “uses a single rotary seal exposed to suction pressure, reducing leakage issues common in positive displacement or plunger pumps.”

Other benefits include lower operating expenses. “Hercules HPS pumps run quietly and produce pulse-free flow, which reduces stress on pipework and valves,” he said.

As with the ESPs, the Hercules HPS is offered as a complete service solution. “Technicians are Mine Safety and Health Administration trained and certified,” Ferrier said.

Historically, miners have adopted HPS solutions to cut downtime and costs. “In a Canadian underground hard rock mine, HPS units replaced reciprocating pumps and led to fewer maintenance hours, fewer unplanned callouts, less downtime and lower repair costs within months,” he said.



Based on core Summit ESP technology, the high-flow Hercules HPS can replace reciprocating pumps, cutting downtime and costs. (Photo: Halliburton)