

Evaporative Dewatering Solution Flows Smoothly—with the Right Pump Choice

By Danny Sanders



New regulations no longer permit Australian mines to discharge mine water directly into existing natural waterways such as streams or rivers. One of the more efficient alternative methods to handle this water, according to a leading supplier of pumps and related equipment to the Australian industry, is to disperse mine water by evaporative technology that coordinates misting operations with optimum weather conditions.

The worldwide mining industry contends with harsh, rugged, trying conditions every day. Companies that provide equipment and services to the industry must be 100% confident that they are supplying their customers with machines that can live up to the stresses and challenges associated with round-the-clock mining operations.

In Australasia—comprising Australia, New Zealand, New Guinea and neighboring Pacific Ocean islands—Resource Equipment Limited (REL) has developed a reputation as a leading pump and pumping-services provider for the mining, oil-and-gas and heavy-engineering industries. Headquartered in Welshpool, Western Australia, REL also has satellite locations in Mackay, Queensland, and Rutherford and Singleton, New South Wales.

One of REL's specialties is the creation of mine dewatering systems. Key

components in these systems are industrial pumps. In the past, water delivered to a mine's surface or entrance was discharged into nearby waterways, such as creeks or rivers. However, recent modifications in Australia's mining regulations prohibit this type of discharge, meaning that another method of eliminating the water needed to be found.

One alternative method is through an evaporation process, where a control box and timer are used to set a schedule for the water from the mines to be fed via industrial pump and a series of pipes to a set of evaporators (typically one pump per six evaporators). When the water reaches the evaporators, it is turned into a fine mist and then blown by a series of large oscillating fans into or over a large water source, such as a lake, retention area or dam.

"The most effective way to reduce excessive mine water is to evaporate,"

maintains Anthony Paul, director of PumpNSeal Pty. Ltd., Wangara, Western Australia, a supplier of pumps, mechanical seals and related industrial equipment for the mining and other industries. "Previous evaporation methods just used water cannons that were not that effective. Now, the pumps and evaporators are controlled by mini weather stations so they only operate when the temperature and wind direction is suitable."

REL was quick to take the lead in providing this type of mine-dewatering technology, but had begun to notice the centrifugal pumps it was using on its evaporation systems weren't performing as well as expected.

"We were using fairly standard construction ISO pumps to supply our assisted-evaporation systems," said Tony Ryder, managing director of REL. "To be honest, I was just getting sick of



Evaporative dispersal systems typically include one pump per every six evaporator units.

their failure rate, their low life and the performance problems we were having.”

For a solution, Ryder turned to PumpNSeal, which had supplied equipment, maintenance services and training

to REL since 2004, and had 65 years of product-supply expertise in the mining and related industries. As a distributor since 2001 of System One centrifugal pumps from Blackmer, based in Grand

Rapids, Michigan, USA, PumpNSeal offered a solution to REL's dilemma: System One's LD17 centrifugal pump.

“The System One meets the needs of the types of applications in which REL specializes because it is constructed with a heavy-duty, solid, low-deflection shaft that prevents common vibration damage, and provides greater stability at the mechanical seal area to improve seal life and extend bearing and shaft life,” said James Lee, product specialist for Blackmer.

The LD17 pump also features stainless-steel components for compatibility with corrosive liquids and has oversized bearings that offer greater load capacity and extend bearing life. The result is a pump that Blackmer claims eliminates the frequent maintenance shutdowns that hinder competitive brands of centrifugal pumps.

“I had supplied pump sets to REL in the past, but they had been inexpensive, throw-away ISO spec pumps,” said Paul. “They started to realize it is not the initial cost of purchasing a pump, but the total life cost that matters. Realizing that, they found they needed

something more reliable and resistant to a wider range of aggressive fluids, hence the stainless-steel System One pumps. They also recognized the benefits of a short pump-shaft overhang and there is no process pump on the market that matches the low shaft stiffness ratio of the LD17 pump. The pumps can operate across a wide range of their performance curve with minimal shaft deflection, which, in turn, increases mechanical seal and bearing life.”

Ryder was already familiar with the LD17s when Paul suggested them as the solution to REL’s evaporation-system needs. In addition to the reliability of the LD17, he also found benefit in the pump’s ability to handle a wide variety of liquids, an operational characteristic the pumps REL had previously used could not offer.

“Many of the products being pumped in mining operations change in either pH or salinity content as they are managed over time and we were experiencing pump failure as a result of corrosion,” he said.

Since installing the first of the water-evaporation systems to feature



Pump services supplier REL found that replacing conventional, standard-construction ISO pumps with Blackmer’s System One LD17 centrifugal pumps solved the performance and wear problems it had experienced with its previously installed evaporative water systems.

LD17 pumps acquired from PumpNSeal in late 2010, REL and its end-user customers have experienced none of the breakdowns and operational inefficiencies that dogged the other pumps. The pumps are mounted with 75-kW motors with a 310-mm impeller trim, which gives them the capability to operate at speeds as high as 2,900 rpm.

“We have been using the System One pumps for a short period of time, but the results have been excellent,” Ryder said. “We have replaced approximately 25 to 30 units with the System One pump, which speaks volumes to the pump’s success.

“What our customers know is that the systems we deliver to them are hugely reliable, trouble-free and deliver absolutely to their needs,” said Ryder. “That’s the significant thing here—it’s all about getting things done and making that happen as simply, painlessly and effectively as possible. This is what the System One delivers in spades, the ability for us to confidently offer a truly successful solution. The pumps we were previously using were the weak link in the systems we offered, but that is no longer the situation since we began using the System One pumps.”

Sanders is director of sales—Asia/Pacific for Blackmer (www.blackmer.com), a member of the Pump Solutions Group (www.pumpsg.com) comprises seven pump brands: Almatec, Blackmer, EnviroGear, Griswold, Mouvex, Neptune and Wilden.