

# Gland seal problem solved for mines

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Staff Writer

South Africa's first successful installation of 18 heavy-duty Hydra-Cell pumps that provide gland seal flushing was commissioned in November last year at Foscor Phalaborwa.

Several mines are monitoring the installation closely and it appears that other orders will follow soon, says Monitor Engineering & Marketing sales engineer **Len Palmer**.

He tells *Engineering News* that the mine, which mines phosphate, agreed to a single unit being trialed for a year in January last year.

The trial proved so successful that ten months later the mine placed an order for a further 18 Hydra-Cell D35 pumps with motors and baseplates.

"The mine deals with a particularly abrasive product, phosphate slurry, which must be pumped away to a slimes dam."

Usually, Palmer explains, this is done by running several all-metal slurry pumps in series.

The 14 x 12 all-metal slurry pumps pump to a head of 30 bar.

But, he says, there are shortcomings with this method.

"At the gland seal, if you do not have enough water pressure, the slurry will push back through into the seal chamber and cause abnormal wear."

The result for the mine is excessive downtime, high maintenance and call-out costs.

*'Downtime and call-out time have been completely eliminated'*

To avoid this, the gland seals of pumps have to be kept at a pressure of 50 kPa above the pressure being pumped.

"This enables the creation of a water seal that keeps the slurry out," Palmer explains.

Failure to maintain this pressure results in slurry entering behind the impeller, causing excessive wear and early pump failure.

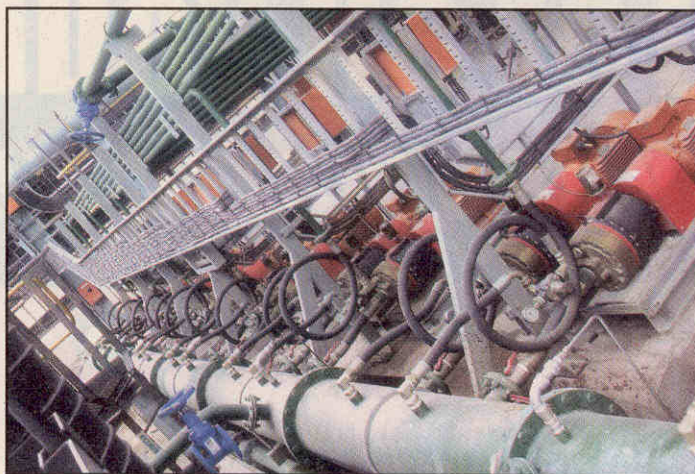
In addition, the recovered grey water used by the mine for flushing contains abrasive particles that cause the conventional gland seal pumps to fail.

Section engineer at the mine **Vincent Manthata** wanted a solution that would save on the millions of rands spent in maintenance each year.

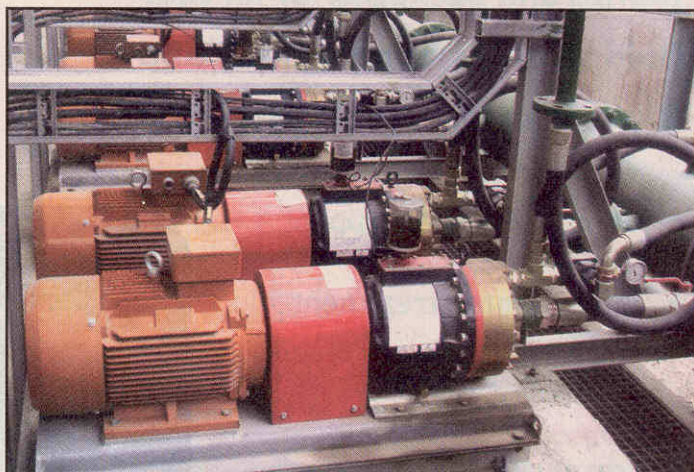
The D35 was initially used as an experimental pump on a US copper-mine with a great measure of success just over five years ago.

Based on the results, Monitor investigated local conditions that would benefit from the pump, and Foscor was a company that stood out, says Palmer.

However, the pump is not limited to this application, he says, and can be used in most duties that require a low-flow, high-pressure solution and complete reliability.



Some 18 D35 pumps were commissioned at Foscor Phalaborwa



A close up view of the D35 pump at Foscor Phalaborwa

As examples he cites applications such as lime dosing, sulphuric acid and hydrochloric acid pumping.

Payback time when maintenance costs are compared should be only ten months.

"Downtime and call-out time have been completely eliminated," says Palmer.

In the five months that the pumps have been in operation, the mine has not experienced a single failure or the need to call out a technician on a breakdown.

This validates the expenditure of R1-million spent on buying the 18 pumps, baseplates and electric motors, argues Palmer.

He adds that the D35 can handle small particles of phosphate as found in the recovered grey water.

The five diaphragms allow for no pulsation at low speed.

A flow of up to 132 l/min at 80 bar pressure can be achieved by the model D35 positive displacement pumps, which exceeds the slurry pump requirements and enables the D35 to work continuously and without stress.

Hydra-Cell pumps are manufactured in the US. There are currently ten models available covering duties from 0.5 l/min to 132 l/min at pressures up to 172 bar.

Depending on the duty required, they can be assembled from a variety of materials that are capable of providing a solution for the most severe duties in industry.

Further to this, the company as distributor for Hydra-Cell in Southern Africa, can offer a complete backup for repairs and a 95% first pick on parts availability.

Don't over analyse your marriage; it's like yanking up a fragile indoor plant every 20 minutes to see how its roots are growing.



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Model	l/min	bar
G20	0.1-4	0-100
G03/G13	1-10	0-70
G04	1-9	0-170
G10	2-30	0-83
G15	5-45	0-170
G25	4-75	0-70
G35	16-140	0-83

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