

COVER STORY

AEL AT THE FRONTIER

OF UNDERGROUND BULK EMULSION DELIVERY

AEL Mining Services, headquartered in Johannesburg, South Africa, is one of the world's leading suppliers of explosives and initiating systems. With a legacy of over 100 years in the explosives industry, AEL remains at the forefront of continued product innovation.

Recently the company achieved a great feat with the successful implementation of a concept and new system established in collaboration between itself and a platinum mining major. This entailed pumping emulsion down a vertical pipe, to the underground at a depth of 208 metres below the surface, strategically positioned as close to as many work faces as possible at the mine.

This innovation improves primary logistical concerns. It also reduces the potential safety hazards created by too many vehicles and people travelling on the underground roadways at any given time, as well as delivering time savings, diesel and maintenance reduction costs and reduced turnaround times.

CHANGING THE GAME

The conventional process of transporting bulk emulsion underground is by means of mobile charging units and their respective bulk refilling units, and involves travelling on the underground roadways for up to five kilometres to reach the working faces.

"About two years ago, Amplats' Bathopele mine, a large consumer of pumpable emulsions in the South African

platinum industry, as well as AEL, DMR, CIE and RSV Consulting, critically evaluated the potential to deliver emulsion into the workings by means of a vertical pipe from surface", AEL product manager, Mark Cross, explains.

AEL had a base case with which to develop the system as it had installed a 40 metre vertical pipe for a platinum mine in the Eastern Limb (Steelpoort) in 2008 with great success.

The concept was born shortly thereafter to pump emulsion down a vertical pipe, into underground storage tanks at a depth of 208 metres below the surface, strategically positioned as close to as many work faces as possible at the mine's Central shaft.

"We worked in conjunction with experts who specialise in emulsion rheology to develop a product-specific solution, that could accurately determine the flow rates and pipe pressures to be anticipated," Cross says.

The drilling of the 208 m borehole and the installation of the emulsion and sensitiser pipes and their ancillary equipment at Bathopele's Central shaft was started about a year ago, and was completed in April 2011 when the

