

Taking pit safety to a new level

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Anglo Coal South Africa is in the final stages of rolling out a high-tech traffic awareness and vehicle collision warning system at our opencast mining operations.

The SAFEmine GPS technology installed in 750 light and heavy pit vehicles is designed to alert drivers to dangerous situations and aims to eliminate the high number of transport-related incidents prevalent in open cut mining.

The technology is an adaptation of equipment successfully used in the aviation industry, and was extensively tested at Landau Colliery following research and development work undertaken by Anglo Coal's Regional Engineering Services and SAFEmine, a Swiss service provider.

According to control and instrumentation engineer Steve Niven, the technology was modified to withstand arduous mining conditions, and is unique in that it assists operators to identify dangerous situations at both close proximity and long range.

"The GPS satellites orbiting the earth transmit signals to the equipment fitted with SAFEmine. This information is then processed by each unit, which calculates the position, speed and direction in which the vehicle is travelling. Every 250 milliseconds this data is transmitted to any vehicle in the vicinity of 500 meters," he explains.

The system calculates vehicles' relative position to each other and indicates to the operator how far a vehicle is away from him and its position. If one or both of the vehicles are in motion, SAFEmine determines if they are on a collision path. If so, it alerts the operators via a flashing light and an audible alarm which persists until one of the drivers has either stopped or taken evasive action to avoid an accident.

Steve points out that a number of incidents occur when haul trucks reverse or drive into vehicles situated in their blind spots, something that will be addressed by SAFEmine, which alerts operators to any vehicles parked within 10 metres of them. The system also alerts the operator when safe following distances are not maintained.

SAFEmine complements the cameras and thermal imaging devices that were previously installed in all heavy mining equipment. These eliminate blind spots and improve visibility at night and in misty and dusty conditions.

Operator training has commenced on this user-friendly traffic awareness and vehicle collision warning system, and preliminary feedback has been positive. It has been designed so that nuisance alarming is kept to a minimum, and another benefit is that the technology can be quickly and cost-effectively installed. Test stations are situated at brake test ramps so that operators can ensure that the equipment is working correctly before entering the pit, and this has become part of the standard pre-start checklist.

Steve and his team are already working on a number of advancements to the product, and the system will soon be rollout out to all permanent contractors. The introduction of this technology takes Anglo Coal a step closer to compliance with Anglo American's Fatal Risk Standards, which address high-level hazards and eliminate or minimise the risk of fatalities or injuries. The rollout follows proof of concept work carried out by Anglo American's Collision Avoidance Working Group at Kumba's Sishen Mine.



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SAFEmine global positioning system technology has been installed in 750 light and heavy pit vehicles.



Anglo Coal South Africa's traffic awareness and vehicle collision warning system aims to eliminate the high number of transport-related incidents prevalent in opencast mining.