AMT COLLISION AVOIDANCE SYSTEM FOR HEAVY MOBILE EQUIPMENT

Since the introduction of large surface mining equipment, there have been ongoing problems with collisions on mine sites. Poor external vision due to blind spots and limited manoeuvrability are all major contributing factors in mine site heavy vehicle accidents.

In response to the requirements of the mining industry's pressing need to provide the safest possible environment for operators of heavy mining equipment and the smaller vehicles that they interact with, key industry stakeholders representing the interest of the mining industry approached Australian owned and operated, Advanced Mining Technologies Pty Ltd (AMT) together with the Commonwealth Scientific Industrial Research Organisation (CSIRO) to develop a solution. The key objective was to research, design and develop a stand-alone Collision Avoidance System that was capable of providing heavy vehicle operator's with a visual and audible early warning system to assist in the avoidance of potential hazards and collisions with other vehicles and items of plant.

During the research phase of the project it was noted that most mines have adopted standard safety procedures or "soft barriers" such as, no-go zones for Light Vehicles (LV), standard parking and start-up procedures and audible reversing alarms for Heavy Vehicles (HV), however these measures were not preventing collisions and fatalities.

After four years of collaboratively working with the Australian Mining Industry in researching, developing and conducting extensive mine site trials, AMT developed a world-class, Australian made, stand-alone Collision Avoidance System.

AMT's Collision Avoidance System (CAS-CAM/RF®) offers mining companies and equipment operator's unrivalled safety and peace of mind with an automatic 360-degree object detection system that is continually looking in all high-risk directions to identify potential high-risk scenarios. When a programmed risk scenario is identified, the system's cameras switch to view the vehicle at risk and provide the operator's of both vehicles with an early visual and audible warning of the pending danger. Moreover, the system is designed as a stand-alone safety system and operates independent of any other mine infrastructure, telemetry, GPS or vehicle computer systems. The system has self-diagnostic capabilities and monitors and reports any faults to the operator. The in-vehicle colour monitor stores all data associated with any predefined vehicle interactions. Each vehicle that is equipped with AMT's safety system has its own ID, thus providing an audit trail in the event of an incident. The system is modular in design and uses 'plug and play' components for minimal downtime in the event of external damage.

AMT's unique CAS-CAM/RF® system uses Radio Frequency (RF) proximity sensing technology which enables designated "risk zones" to be programmed relative to any mobile equipment, including: Truck, Dozer, Grader, Loader, Scraper, Medium Vehicle, Drill, Dragline, Shovel and LV. In addition to mobile plant, other equipment and assets such as lighting plants, pit pumps, stockpile pillars etc can be installed with Stationary Objects (SO) RF transceivers with programmed no-go zones thereby providing protection from collision by HV's.

Because every mine site is different and all alarming and risk scenarios are fully programmable, AMT in consultation with clients provides a full site safety audit and risk assessment. This provides a tailored solution for alarming scenarios based on object type, distance, direction of travel, speed, location (front, rear, sides or radius) to ensure that audible alarms are only generated for high risk interactions and not during normal operations.

Typical high risk scenarios that the CAS-CAM/RF® system provides effective anti-collision solutions include:

- Truck to LV
- Truck to Truck (e.g. front to rear)
- Truck to Dozer
- Dozer to LV
- Loader to LV
- Grader to LV
- Dragline / Shovel to Dozer
- Dozer to Stationary Object (e.g. portable lighting tower, pit pump)
- any other machine to machine, machine to LV, machine to Stationary Object scenarios

Whilst AMT's Collision Avoidance System (CAS-CAM/RF®) has been designed as a stand-alone safety system, the system can be interfaced with third party Fleet Management Systems and is therefore capable of providing remote data exchange for all onsite vehicle interactions. Data can be exchanged in either real time, or in packages to a central computer for management reporting and monitoring as well as a mine site supervisor's mobile phone the second a high risk vehicle interaction occurs. CAS-CAM/RF actively monitors hazard exposure and is a highly effective system for managing the risk of onsite vehicle collisions.

In addition to providing a unique world class Collision Avoidance System (CAS-CAM/RF®), AMT offers clients world-class service, safety inspections and audits, spare parts and support capabilities.

Whatever your requirements may be, AMT has the solutions and capacity to work with your organisation to tailor a Collision Avoidance System and service package that meets your current and future requirements.

AMT's major clients include BHP Billiton, Anglo American, Coal & Allied and VALE with sales in Australia, South America, South Africa, Indonesia and China.

For more information on AMT's products and services, contact our office to talk to one of our engineers personally or visit our website www.advminingtech.com.au