Proximity Detection Systems
Reliable, proven solutions for mining safety
**HazardAvert®**  
**Proximity Detection System**

**DURABLE, PROVEN DESIGN FOR UNDERGROUND & SURFACE MINING**

HazardAvert® is a proximity detection system designed to increase safety awareness and prevent accidents and injuries by detecting when a person enters a specifically marked area around operating machinery. When this zone is breached, the system emits an audible and visual warning alarm and can be programmed to automatically slow or stop the machine.

HazardAvert can be used in underground and surface mines; coal and non-coal. While the core technology is consistent across all types of mining, the system is specifically tailored according to the application and mining type.

With systems deployed in all major mining markets around the world, HazardAvert has a proven track record for successfully operating in working sections with multiple miners and multiple pieces of machinery.

**DETECTING POTENTIAL DANGER**

HazardAvert creates an electromagnetic marker zone around machinery using field generators. The generators are fitted onto machinery and create zones designated as the ‘warning zone’ and ‘hazard zone’. These marker zones can encompass the entire machine and its turning radius or be specific to defined areas.

Miners wear Personal Alarm Devices (PADs) that detect and measure these magnetic zones and determine their proximity from the machine. If a miner enters the zone, the PAD emits an audible and visual warning alarm that varies depending on whether the warning or hazard zone is breached. Only when a miner enters the hazard zone will the machine automatically slow or stop.
The Display Pod is mounted in the operator’s compartment on haulage vehicles to notify the operator of individuals close-by. The Pod uses easy-to-see LED lights to signal when a worker enters the warning or hazard zone. All data—location and movements of equipment and miners—are stored in the Pod’s database and can be captured either via Bluetooth®, or wirelessly transmitted to the central office using HazardLink over StrataConnect networks.
The zones of the HazardAvert system can be customized as desired. Generators placed on continuous miner booms ensure that the zones remain constant as the boom articulates.

CUSTOMIZABLE ZONES FOR MINE-SPECIFIC APPLICATION

At installation, zones can be shaped using multiple generators on the same machine, enabling custom shapes and sizes to allow greater control. The zones are then standardized for the mine and repeatable across all machinery in that mine. This increases the ease of use and simplifies training.

Zones on haulage vehicles can be temporarily reduced by the continuous miner operator to allow the vehicles to interact as necessary. As the haulage vehicle approaches the continuous miner, the miner operator is alerted and then, by using the PAD, can manually reduce the zone size of the hauler. As it retreats, the zone automatically returns to its preset size.

Silent zones on haulage equipment can be created to allow machine operators to sit in the operator’s compartment or function in specified areas without activating the alarm or disabling the machine. As soon as the operator exits this silent zone however, they will automatically trigger the system.
HazardAlarm™
Alarm-Only Proximity Detection System

HazardAlarm is a simplified, alarm-only proximity detection system that uses a single generator to create an electromagnetic field around machinery to warn the machine operators and individuals of the potential for collision. It is ideal for use on any haulage type machinery. Because it uses only a single generator, it is a cost-effective, easy to install proximity solution.

HOW IT WORKS

If an individual is in the collision path of a piece of machinery, HazardAlarm will alert both the machine operator and the individual. If the individual is in close proximity to the machine, but is not in danger of being struck, the system will not alarm.
The HazardAvert Proximity Ready Kit allows underground coal mines to lay the groundwork for proximity detection, ensuring a quick, final install at a later date. After installing the Proximity Ready Kit, the remaining HazardAvert system components can be quickly and easily installed when the mine is ready.
**HazardLink**

**REAL-TIME SAFETY & PRODUCTIVITY DATA**

Strata proximity systems continuously monitor interactions between machinery and between the machinery and miners. HazardLink was developed to wirelessly transmit that information directly to a user interface at the surface of the mine.

The safety data shows who walks into which zones and for how long. The productivity data shows the interactions of the equipment, including where it is located, how long it stays in that location and if and when it is shut down. Using this data, operations can conduct detailed analysis of safety and productivity data.

**SUMMARY**

HazardAvert and HazardAlarm are proximity detection systems designed to prevent heavy machinery related accidents, injuries, and deaths. Both systems utilize the same system components and technology. Generators installed on machinery create electromagnetic fields, and the miner-worn Personal Alarm Devices (PADs) interact with these fields and emit alarms.

**HAZARDAVERT®**

- Used on continuous miners and mobile haulage machinery
- Utilizes multiple generators to create custom sized and shaped fields
- Any PAD in close proximity to the machine will trigger alarms
- System can be programmed to stop or disable machinery

**HAZARDALARM™**

- Used on only mobile haulage machinery
- Uses only one centralized generator to create a standard field
- Will only alarm when there is potential for collision between the machinery and a PAD