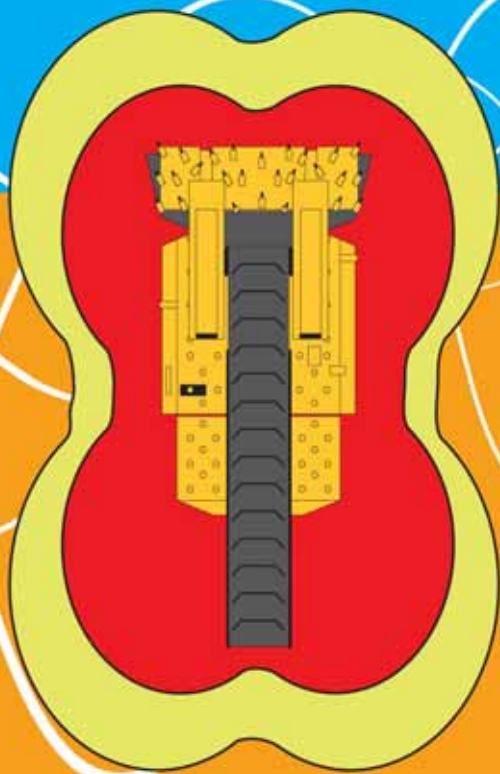




IMPACT

The FUTURE of mining communications

Proximity Detection



HazardAvert®

Productivity & Safety through
Mine-Spec digital applications

Provides Silent Zones within Red Zone
Shaped Zones for use during cutting
Machine stops on Zone breach
Data logging for incident reports



IMPACT

Proximity Detection



The ImPact Technology suite is designed to lead mine safety and digital communications in to the future. The inclusion of HazardAvert® in to the ImPact technology suite has further strengthened the ImPact Proximity Detection system.

With the development of the HazardAvert® System, Frederick Mining Controls, LLC has positioned itself as an industry leader in Proximity Detection and Avoidance. Working in partnership with the Mine Safety and Health Administration (MSHA) to reduce crushing and pinning type fatal accidents, the HazardAvert® was the first Proximity Detection system approved by MSHA.

It has been successfully tested and in operation on various types of underground equipment including continuous miners and shuttle cars.

Using a Magnetic Marker Field, HazardAvert® Systems alert miners to danger areas as they work and navigate around heavy equipment and their inherent danger zones, and with selected systems, can automatically slow or stop the machines if miners are in a position of imminent threat.

Features and Benefits

Applications

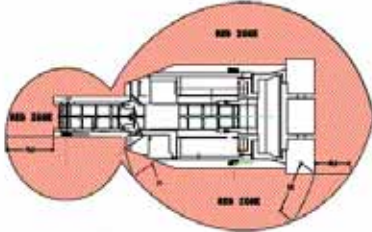
Proximity Detection
Incident logging
Collision risk reduction
Access control
Silent zones

Fail safe operation	Loss of power to system, signal degradation, zone changes and damage to cables will all cause the machine being operated to switch off.
Rugged system components	Generators, Controller and displays are in X/P or F/P enclosures. Generators are designed to withstand 10g shocks. Enclosures sealed with O rings to prevent water ingress
Logging and auditing	Provides "black box" functionality to facilitate the investigation of incidents. Ability to connect to server and upload logged events.
Silent zones	Ability to set up multiple silent zone areas withing the detection feild
Visual indicators	Power indicators on each Generator confirms power and signal confirmation as well as indicating that a miner is in the zone area or if the remote stop has been activated.

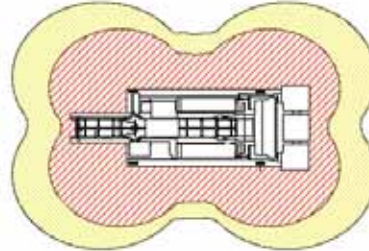


ImPact Proximity Detection / HazardAlert system

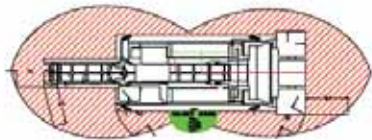
The integration of the HazardAvert® technologies in to MST's Proximity Detection system has provided a solution for proximity detection in the complex situations that arise around continuous miners and shuttle cars



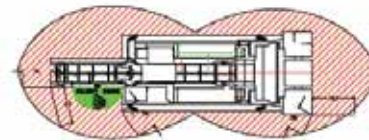
Three Generator System
Installed on a continuous miner



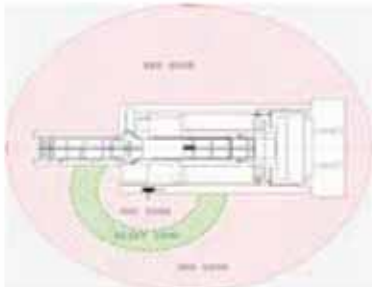
Four Generator system to allow for greater
shaping of zones to match machine
contours



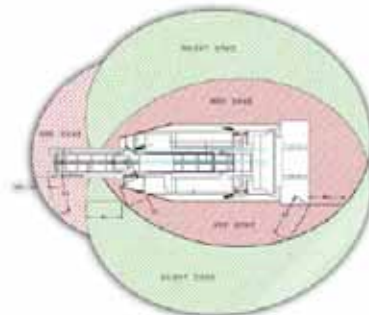
Silent Zone added for CM operator



Silent Zones can be created in
almost any location deemed to
be safe



Customisable silent zones allow
mines to perform ththier tasks

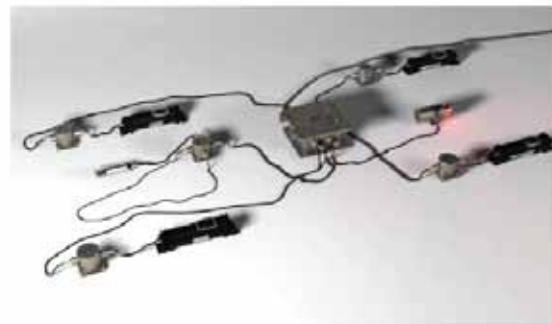


Three Generator System
Installed on a continuous miner



XP-Generator and Armour

- Creates reliable field around vehicle
- Heavy duty construction to ensure ruggedness
- Maximum protection against rock falls, heat, protruding metal objects and corrosive environments



Example of a 4 generator layout

- Typical for a Continuous Miner
- 4 Generators and Armour
- 1 XP Controller Housing
- 5 K-Boxes
- XP - Tracker display POD

IMPACT

The FUTURE of mining communications

Network Infrastructure

- Takes your LAN underground cost effectively
- Forms the foundation of the ImPact portfolio
- Enables remote monitoring and control of equipment
- Allows easy and modular design of underground networks
 - Facilitates wireless data communications and VoIP
 - Reads Wi-Fi tags to support location aware application
- Rugged IP66 housing designed for the mine environment



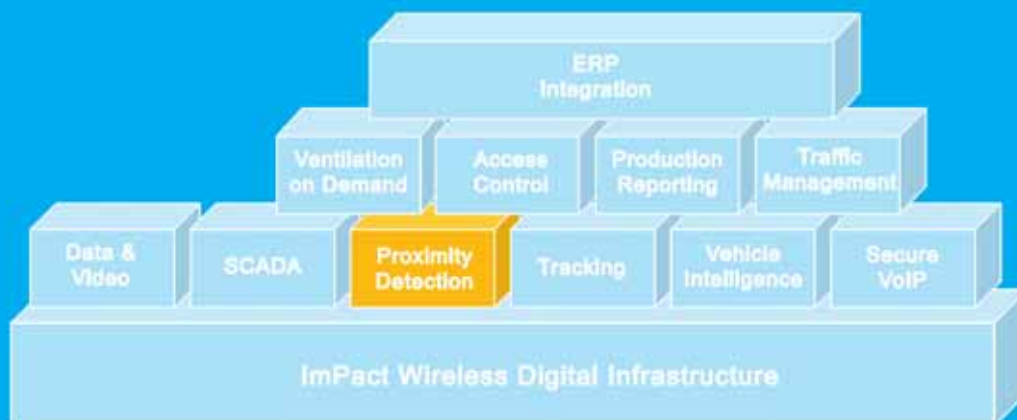
Vehicle Intelligence Platform

- View vehicle diagnostics in real-time
 - Payload data in real-time
 - Acquire vehicle location data
- Report productivity information with greater accuracy
- Integrate with leading manufacturers' equipment (Such as Caterpillar etc)
- Compliments your existing Mine Site Technologies Ethernet system



Asset Tracking

- Locate and track personnel and asset movement in real time
- Quickly identify and locate all personnel in crisis situations
 - Manage mine assets more effectively
 - Identify bottlenecks and efficiency deficits faster
 - Control area access
- View vehicle location data
- Increase control of personnel / vehicle interactions



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Mine Site Technologies Pty Limited reserves the right to make changes to the specifications and information contained in this brochure at any time and without notice.
Photo of Atlas Copco Equipment, Joy Mining & Komatsu. MST-PR02309

