



PBE

ENGINEERING SAFETY. POWERING PRODUCTIVITY.

KEY PRODUCTS

www.pyottboone.com

Mine Wide Monitoring

Our MineBoss™ monitoring and control platform has become the most used system for underground mining in the U.S. coal industry today. Applications include ventilation fan monitoring, pump control, mine wide atmospheric gas monitoring, material level monitoring, fire alarms, and more.



MineBoss™ Monitoring and Control Station

The start up and shut down of equipment from the computer system allows one person to control the entire operation. Increasing safety while minimizing downtime and lost production with our systems has saved mining operations millions of dollars and man hours over the years. The ease of our system versus the technical difficulty of comparable products on the market makes it the popular choice in the mining industry.



Computer to Network Interfaces



Conveyor Monitoring



For nearly twenty years our conveyor monitoring and Belt Boss Series have been a key component of PBE's product catalog. It is now the most common monitoring and control product of underground coal mine conveyor systems in the U.S. Our basic switches are available in compact units for zero speed, slip or sequence monitoring with universal outputs or we have total belt head monitoring in the form of our flagship Belt Boss control stations.

A single Belt Boss not only monitors the speed and material spill indicators of the conveyors but also controls the dust suppression, fire protection, and the operation of the conveyors. The start up and shut down of the equipment is indicated with audible and visual alarms for maximum safety of mine personnel. Networking them into our MineBoss™ computer system gives a single employee total control of the material handling system.

Tracking Boss System



Model 1981 Tag Reader

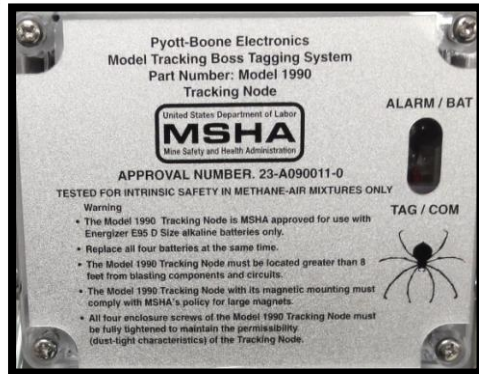


MineBoss Optional Touchscreen

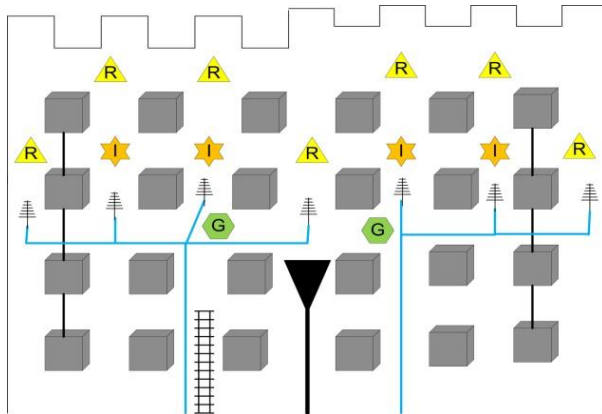
The PBE Tracking Boss system, along with our MineBoss™ computer station, identifies the location of all tagged personnel and equipment in the mining operation. Readers are positioned based on regulatory requirements or desired accuracy to provide zone based tracking of all moving company assets during normal or emergency situations.

Any resource can be located in a matter of seconds. The new, battery operated, Model 1990 wireless tracking node is now available as well as yagi antennas for our leaky feeder communications bringing quality voice and tracking to the working section with no wiring or cumbersome installations for fast and easy expansion of the system.

Tracking Boss Wireless Nodes



Model 1990 Tracking Node



The Model 1990 wireless tracking node is now MSHA approved under 23-A0900110 and is also Pennsylvania approved. It works with all existing PBE *Tracking Boss* systems and eliminates any tracking related power or antenna cables in the working section or other areas of the mine.

The unit operates on four “D” cell batteries and communicates tag data to additional units until the data is transmitted onto the leaky feeder system as seen in the above illustration. The leaky feeder then carries the data to the MineBoss™ computer.

The Model 1990 has an expected battery life of 1-2 months, measures 4-1/2”W x 3-1/2”H x 3-5/8”D, and is installed on roof support plates or other metal surfaces by a 3” diameter magnet and pre-installed mounting plate with several holes for various tie down options. Also included is a steel tether rope with two “carabiner” clips for additional fall protection.

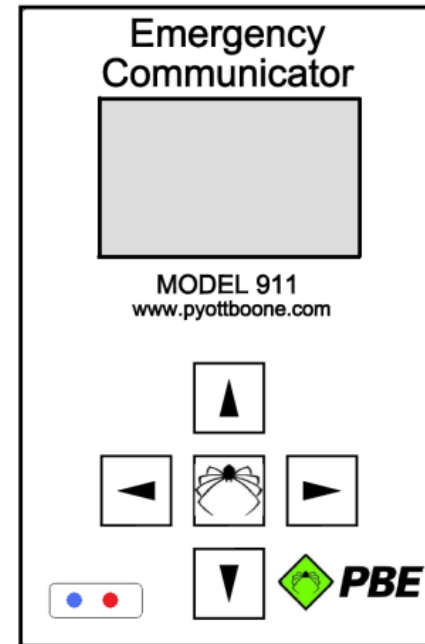


Texting Tag

Due to the difficulties encountered in getting voice communications in the working sections, we have developed a Texting TAG with an expected MSHA approval in the first quarter of 2012.

This new product will feature:

- Full texting capabilities
- User adjustable canned messages
- Unit to unit texting
- Unit to office/surface texting
- Page all capabilities
- Full Tracking TAG functionality
- Panic/Advisory functionality
- Integral rechargeable NiMH battery



Proposed Cover Image

Fire Suppression



Flow Boss Zone Control Assembly

Our fire suppression systems are on guard around the clock to protect conveyor drives, belt storage and other critical areas of the mine material movement system from disaster. In 2011 we introduced our new MSHA accepted Flow Boss fire suppression system. Flow Boss system uses steel mounting structure to cover the conveyor belt drive areas.



Model 229A Dry Chemical Fire Suppression

Other models are available as water or chemical based solutions to meet the specific needs of any operation. Often used as stand alone systems they can also be connected to a Belt Boss control station to supply status information to the MineBoss™ computer.

Communications



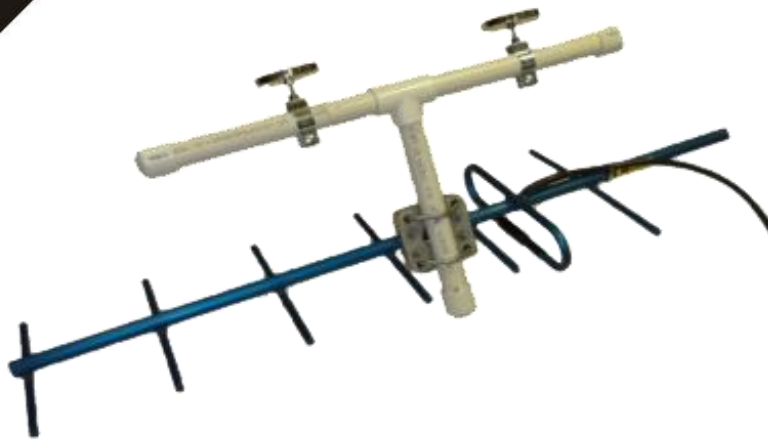
Underground communications has been a staple of PBE's since the 1970's with our comprehensive line of Page Boss telephones. Our phones can operate as a completely permissible system or interface with any standard 12 VDC phone on the market. Continuing in that tradition, we offer the Minecom brand of leaky feeder radio systems. Offering both VHF and UHF frequency bands we customize the system to each customers needs and as an authorized Motorola radio dealer have the experience and knowledge to provide a complete solution.

We provide options to connect the pager phone system to a radio channel, interface the system to a PBX phone network for outside calling, or link multiple mine sites to a central office. Our future includes wireless communications and personal texting devices as added options or stand alone applications.

Leaky Feeder Line Amplifier



Yagi Antennas



The next step in our plan to eliminate cables from the working area is the use of Yagi antennas on the Minecom leaky feeder system. These external antennas boost the radio signal in the mine tunnels for extended range. Antennas for the UHF and VHF systems have been recently approved by MSHA and with the Minecom antenna coupler can be quickly added to any leaky feeder system.



*Leaky Feeder
Antenna Coupler*

Gas Monitoring

The Model 2100 and 3000 series of gas monitors includes gas sensors for everything from oxygen and carbon monoxide to hydrogen sulfide. Regardless of the type of ore in production we have a unit designed to monitor the mine atmosphere 24 hours a day, 7 days a week. Multiple communication protocols are available so that the system can be part of the total MineBoss™ network, a third party control platform, leaky feeder wireless or, in the near future, a fiber optic or wireless mesh network.



Model 3011 Smart Remote

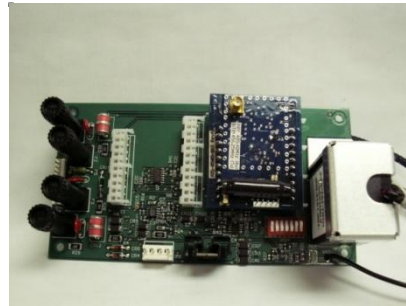


Model 3011 PREP Smart Remote

Hybrid Wireless Gas Monitors



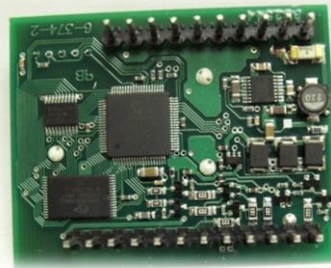
Wireless O2 Monitor



Backplane Board



Mesh Sensor Radio Adapter Top



Mesh Sensor Radio Adapter Bottom

The new hybrid wireless CO, O₂, CH₄ and Multigas monitors provide the following information: gas level in PPM, alarm and warning status, status of four dry contact inputs, temperature, line voltage, test button status. The Backplane Board accommodates two plug-in cards for communicating on various wireless interfaces which include the following: Bluetooth, UHF Leaky Feeder, and VHF Leaky Feeder.

The Backplane Board also contains Charge Management and Battery Backup capabilities that include the following: charge and maintain charge of a lead acid battery with intrinsically safe limits, provide a minimum of 48 hours of standby power, incorporates a low voltage dropout disconnect to protect the batteries from excessive discharge. A Mesh Sensor Radio Adapter (plug-in card) provides the following functions: Bluetooth link, and communication with the CPU and battery telemetry. Several Models have been submitted to MSHA for approval.

Wireless Gas Monitors

The next generation of PBE gas monitor will be a battery operated wireless unit with the following key features

- Designed to MSHA Part 18 Intrinsically Safe standards
- Powered by 6x D cell batteries with no external wiring
- An expected 3 to 4 month battery life depended on environmental conditions
- Optional power connections for permanent installations
- Communicate over PBE wireless infrastructure or a leaky feeder backbone
- Quick latch enclosure lid for easy battery replacement



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*If you have any questions please contact a member
of our sales and marketing team!*

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PBE Website Development



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