



**Complementary
Solutions
for Mining.**

**COMMUNICATION
NETWORKS**
Supplement

A Komatsu technology brand

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COMPLEMENTARY SOLUTIONS

Engineering the Connected Mine.

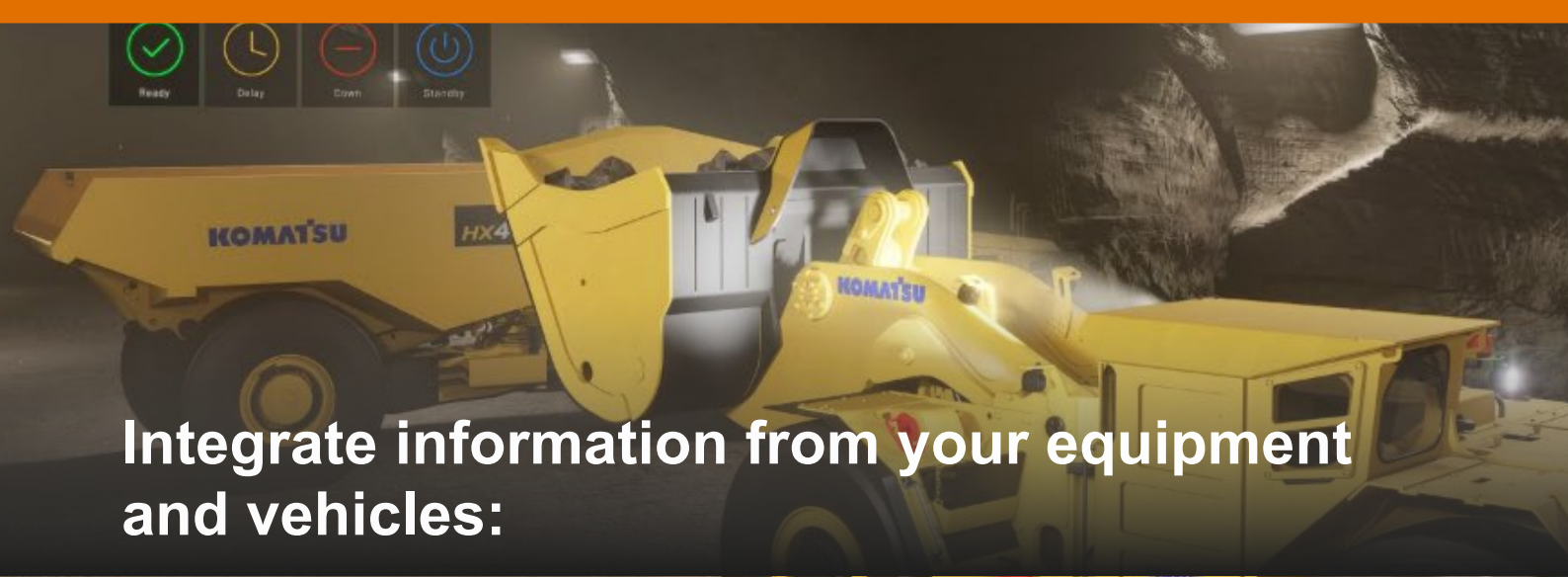
Modern mining demands more than reliable communications—it requires a connected digital ecosystem that improves safety, productivity, and operational visibility across the entire operation.

MST Global delivers integrated technologies that connect people, vehicles, equipment, and critical infrastructure through high-performance networks, intelligent data, and resilient communications.

From everyday operations to emergency response, our solutions are designed to help mining companies operate more safely, efficiently, and with confidence.

Our Integrated Mining Solutions:

- **HELIX | Vehicle Intelligence & Operational Analytics.**
 - A connected platform that integrates vehicle telemetry, real-time tracking, onboard intelligence, and operational data to improve safety, productivity, and fleet performance.
- **MinePhone MP70 & MP71.**
 - Rugged underground communication devices that provide reliable voice, Push-to-Talk, messaging, and emergency communications, keeping mining teams connected wherever they work.
- **WSN / Wireless Sensor Network.**
 - Specifically created for use in underground hard rock mines the WSN proves its worth in difficult areas, and where installing and maintaining cabling is challenging.
- **PED | Personal Emergency Device.**
 - A Through-The-Earth communication system that delivers mine-wide emergency alerts, operational messaging, remote equipment control, and remote blasting capabilities—even without underground communication infrastructure.



Integrate information from your equipment and vehicles:

The AXON and HELIX digital ecosystem, combined with advanced solutions such as the VIP (Vehicle Intelligence Platform) and SENSE Hub, delivers a comprehensive platform for real-time connectivity, vehicle monitoring, and operational intelligence in mining environments.

- Technically, this solution integrates high-bandwidth AXON network infrastructure (fiber + wireless) with on-vehicle data acquisition and processing, enabling seamless collection, transmission, and analysis of critical operational data.
- The VIP unit provides detailed vehicle diagnostics, payload monitoring, and tracking, while the SENSE Hub acts as a high-performance onboard data hub, integrating multiple communication technologies (Wi-Fi, BLE, LTE) and interfacing directly with vehicle systems and sensors.
- Together, these solutions enable a fully connected environment where vehicles, personnel, and infrastructure are integrated into a unified digital platform, supporting advanced automation, monitoring, and decision-making.

Transforming data into actionable insights for safer and efficient mining operations.

- **Enhanced operational visibility:**
 - Real-time monitoring of vehicles, equipment, and conditions.
- **Improved safety:**
 - Integrated tracking, proximity awareness, and alarm systems.
- **Increased productivity:**
 - Optimised fleet performance and data-driven decision-making.
- **Reliable communication:**
 - Continuous data transmission using AXON network infrastructure.
- **Future-ready platform:**
 - Supports multi-protocol connectivity (Wi-Fi, BLE, LTE).
- **Reduced downtime:**
 - Remote diagnostics and predictive maintenance capabilities.

Key Capabilities:

- Vehicle diagnostics and telemetry: support for protocols such as CAN, J1939, and VIMS.
- Real-time and offline data handling: data buffering when out of network coverage.
- Integrated tracking: GNSS, Wi-Fi, and BLE-based location services.
- Multi-network communication: seamless integration across wireless and wired networks.
- Edge computing capabilities: onboard processing and intelligent data handling.
- IoT integration: connection to sensors, alarms, and automation systems.



Reliable Communications for Safer, More Productive Mining Operations.

In mining, every second counts.

The MST MinePhone MP70 and MP71 are purpose-built communication devices designed to deliver reliable, secure, and continuous connectivity in underground mining environments. Powered by industrial Wi-Fi and VoIP technology, these rugged handsets enhance operational coordination while improving worker safety.

The MinePhone MP70 and MP71 are part of MST's digital mining communications ecosystem, providing dependable voice communications, Push-to-Talk (PTT), text messaging, and emergency response capabilities specifically engineered for mining operations.

Seamlessly integrated with wireless infrastructure and MST tracking solutions, these devices enable real-time collaboration between operators, supervisors, maintenance teams, and emergency personnel, keeping your workforce connected throughout every shift.

MP70 Intrinsically Safe MinePhone:

- Designed for hazardous mining environments, the MP70 combines rugged durability with intrinsic safety certification, making it the ideal communication device for operations where worker protection is paramount.
- Its extended standby time and emergency features ensure reliable communication when it matters most.

MP71 MinePhone:

- Purpose-built for hard rock mining, the MP71 delivers high-quality full-duplex voice communications, enabling more natural conversations and improved team coordination.
- Advanced communication capabilities, centralised management, and personnel tracking integration make it an ideal solution for maximising operational efficiency.





WSN / Wireless Sensor Network.

The MST technology suite is an industry leader in mining communications and digital infrastructure.

The Wireless Sensor Network (WSN) utilises the latest in wireless meshing technology to optimise communication and safety systems in hazardous mine environments.

The WSN elegantly extends the benefits of a mine's existing, high bandwidth network through the WSN self-forming mesh networks. These networks wirelessly connect sensors in hazardous and dynamic parts of the mine back to the main mine data backbone, delivering crucial information where fixed cables or manual data gathering is difficult or dangerous. Data is delivered seamlessly, in real time, from the remote sensors underground.

Specifically created for use in underground hard rock mines, the WSN is proves its worth in difficult areas, and where installing and maintaining cabling is challenging, such as:

- Haulage levels.
- Active ore drives and working faces.
- Areas where remote or autonomous machines are in use.

The use of 802.15.4 protocol ensures stable meshing and low power consumption, to transmit data from geotechnical and other instruments in a simple, efficient and reliable manner.

Benefits:

REMOTE TELEMETRY UNIT (RTU)

- Designed to fit around rock bolts and geotechnical instruments for secure installation.
- Self-contained battery powers its own electronics as well as the external instruments.
- 802.15.4 mesh radios provide wireless connectivity.
- RTUs create their own wireless mesh network.

GATEWAY (GW)

- Robust, high IP rated
- Creates interface between RTU wireless mesh network and fixed mine Wi-Fi network.
- Extends capacity of, and leverages, mine's existing Wi-Fi backbone.
- Very simply powered and connected via PoE port at the fixed AP, e.g. IMPACT NS50.

A seamless system:

The WSN enables connectivity to all parts of the mine by leveraging the existing mine Wi-Fi backbone. This is achieved through the use of two robust, high IP rated devices:

- Remote Telemetry Unit (RTU)
- Gateway (GW)

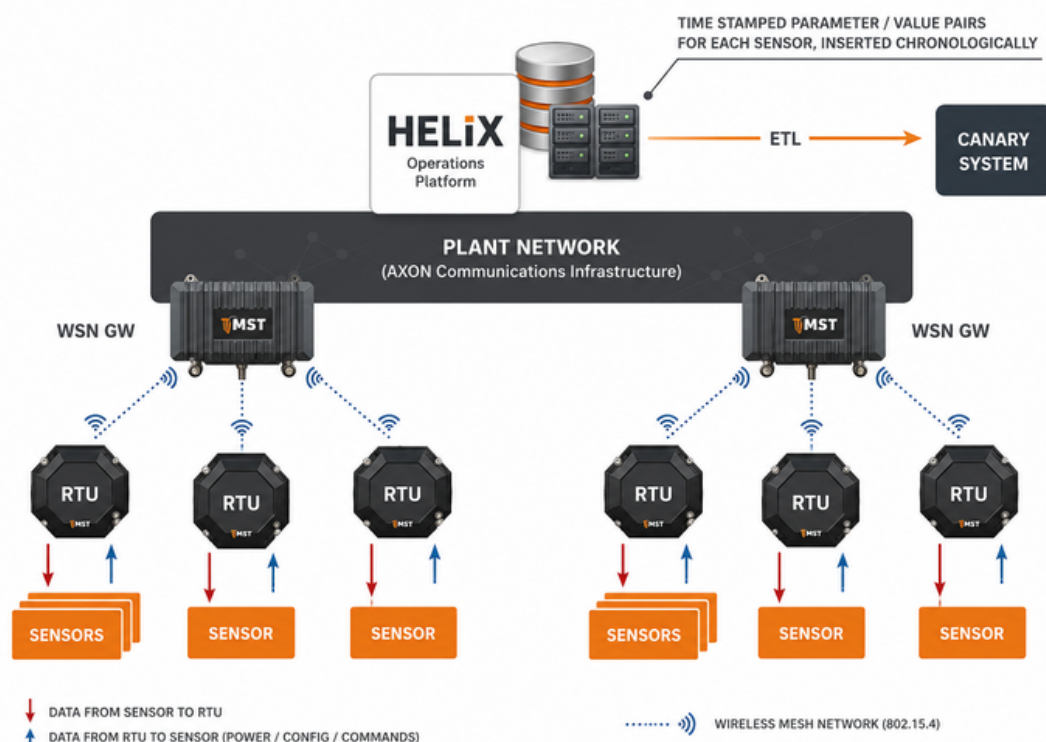
The RTUs utilize 802.15.4 radios to connect with each other to form their own wireless mesh network.

Designed for secure installation, each RTU easily fits around rock bolts and geotechnical instruments for secure installation. Additionally, the fully self-contained battery not only powers itself, but also powers the external instruments.

The Gateway provides the interface between the wireless mesh network formed by the RTUs and the fixed mine network. Robust and high IP rated, the Gateway is very simply powered and connected via a PoE port at the fixed AP (such as an IMPACT NS50).

Multiple meshed RTU networks and Gateway units can be used simultaneously in various locations around a mine. Each forms an independent yet fully integrated WSN.

A turnkey solution, from instrument sampling through to data handover, the MST Wireless Sensor Network is an industry leader for communications extension in active mining environments.



PED

Emergency Messaging with PED

- Emergency messaging within 15 seconds anywhere in the mine
- Individual, group and broadcast paging

Remote Equipment Switching with ControlPED

- Controls fans and pumps
- individually, as groups or all

Remote Blasting with BlastPED

- Centralised blasting
- Safe and secure
- Reduce misfires and missed blasts
- Eliminates high-cost firing networks

PED, Personal Emergency Device, is a critical communications solution for underground mining, designed to deliver emergency messages, operational instructions, and control signals through rock strata using Through-The-Earth, TTE, technology based on Ultra Low Frequency, ULF, signals.

- Unlike traditional systems that depend on line of sight, distributed antennas, or infrastructure installed throughout mine galleries, PED uses the rock strata itself as the transmission medium. This enables communication with deep, remote, or hard-to-reach areas of the mine, providing a valuable communication layer when continuity, coverage, and speed are essential.
- The solution enables evacuation alerts, individual, group, or general broadcast messages, and operational communications to be sent directly to personal receivers integrated into miners' cap lamps, vehicle-mounted devices, or fixed equipment receivers. In an emergency, PED can transmit critical instructions to all personnel in approximately 15 seconds, helping reduce response times and improve coordination in situations where every second matters.
- PED is not only an emergency tool. Its value also extends to daily operations: it allows key personnel underground to be contacted, supports activity coordination, communicates stoppages or operational updates, assists with the remote control of fans and pumps, and can be integrated with specialised applications such as BlastPED for safe, centralised remote blasting.



CONTROLPED®

- The ControlPED is a receiver that allows the remote switching of equipment, such as fans, pumps, etc



BLASTPED®

- The Blast PED is the receiver/exploder unit that allows for the remote initiation or firing of blasts.



AUTOPED®

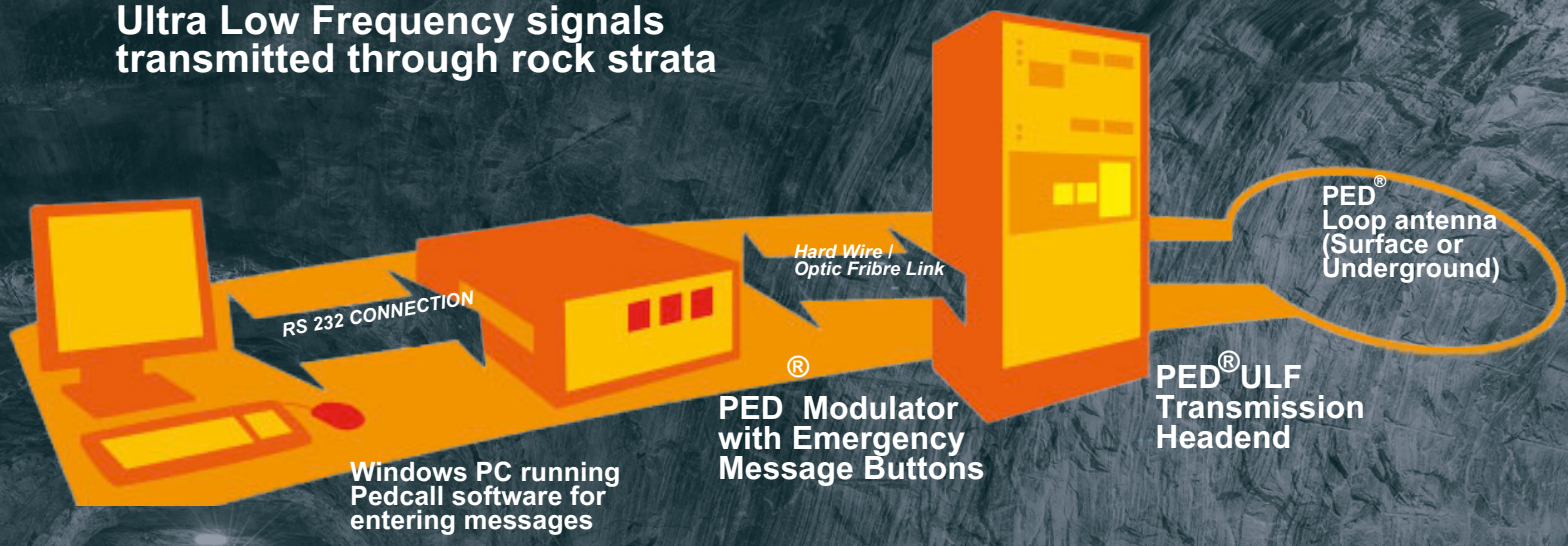
- AutoPED is a vehicle-mounted receiver to ensure personnel travelling in a vehicle receive messages



PERSONAL RECEIVER

- Integrated with a miner's cap lamp.

Ultra Low Frequency signals transmitted through rock strata



Advantages of the PED Solution:

With more than 25 years of use in mining and deployments in over 150 mines worldwide, PED combines technical reliability, operational experience, and an architecture designed for demanding underground environments. It is a solution that strengthens safety, improves mine-wide communication, and provides operations with a dependable tool to respond, coordinate, and act when it matters most.

- For mining operations, PED provides a reliable communication layer designed for real underground conditions. It enables rapid emergency alerts and clear instructions to be sent to personnel, including the nature of the emergency, evacuation routes, or required procedures.
- PED delivers mine-wide coverage by transmitting signals through rock strata using Through-The-Earth technology. Because it does not rely on line of sight or infrastructure installed in every gallery, it helps reduce underground infrastructure requirements and minimises vulnerable communication points.
- In an emergency, PED can broadcast critical messages across the mine in approximately 15 seconds, helping reduce response times and improve coordination when every second matters. It also provides operational resilience by acting as a redundant communication and control network when other systems may be affected by power loss, physical damage, fire, or rockfall.
- Beyond emergency use, PED supports daily operations by enabling individual, group, and general broadcast messaging. This allows teams to contact key personnel underground, coordinate activities, report stoppages, request support, and reduce operational delays.
- The solution also supports remote equipment control through ControlPED, enabling the operation of fans, pumps, and other fixed equipment. Through BlastPED, it can support safer centralised remote blasting, helping keep personnel away from the blast area and potentially reducing the need for costly physical blasting cable networks.
- PED can integrate with PEDCall software, mine monitoring systems, HELIX, Wi-Fi acknowledgement capabilities, Leaky Feeder VHF networks, ICCL cap lamps, and process equipment controls, extending its value across the mine's operational ecosystem.
- PED is a proven solution for underground mining operations seeking to strengthen safety, improve communication, support productivity, and enhance emergency response capability.



Looking for solutions to improve safety, productivity, and operational performance in your mine?

www.mstglobal.com

- Visit the MST Global website to explore innovative technologies designed for underground mining and tunnelling.
- Discover integrated solutions for communications, automation, IoT, fleet management, personnel tracking, and digital operations, backed by real-world customer success stories, technical resources, product information, and the latest industry innovations.
- Whether you're evaluating new technologies or planning your next digital transformation project, MST Global provides the insights and expertise to help you make informed decisions.

LinkedIn:

- Stay connected with MST Global on LinkedIn and be the first to discover our latest innovations in underground mining technology.
- Follow us for product updates, customer success stories, industry insights, event highlights, expert perspectives, and the latest advancements in automation, connectivity, safety, and digital transformation.
- Join our community and stay informed about the technologies shaping the future of mining.

YouTube channel:

- Explore MST Global's latest innovations in underground mining technology.
- Discover videos featuring communication networks, automation, fleet management, safety solutions, IoT, real-world customer success stories, product demonstrations, and digital technologies designed to improve mine safety, efficiency, and productivity.

Talk to our experts about how our Tracking Solutions can improve underground safety and productivity within your mine.

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APAC

EMEA

AMERICAS

ASIA