



**Asset Monitoring For
Smarter, Safer Mining.**

Connecting Every Miner. Every Asset. Every Zone.

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• OVERVIEW.

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Real-time visibility for the connected mine:

HELIX Smart Monitoring is a dedicated monitoring module within the HELIX Platform that delivers continuous visibility of critical mining assets through intelligent sensors, industrial devices and operational systems.

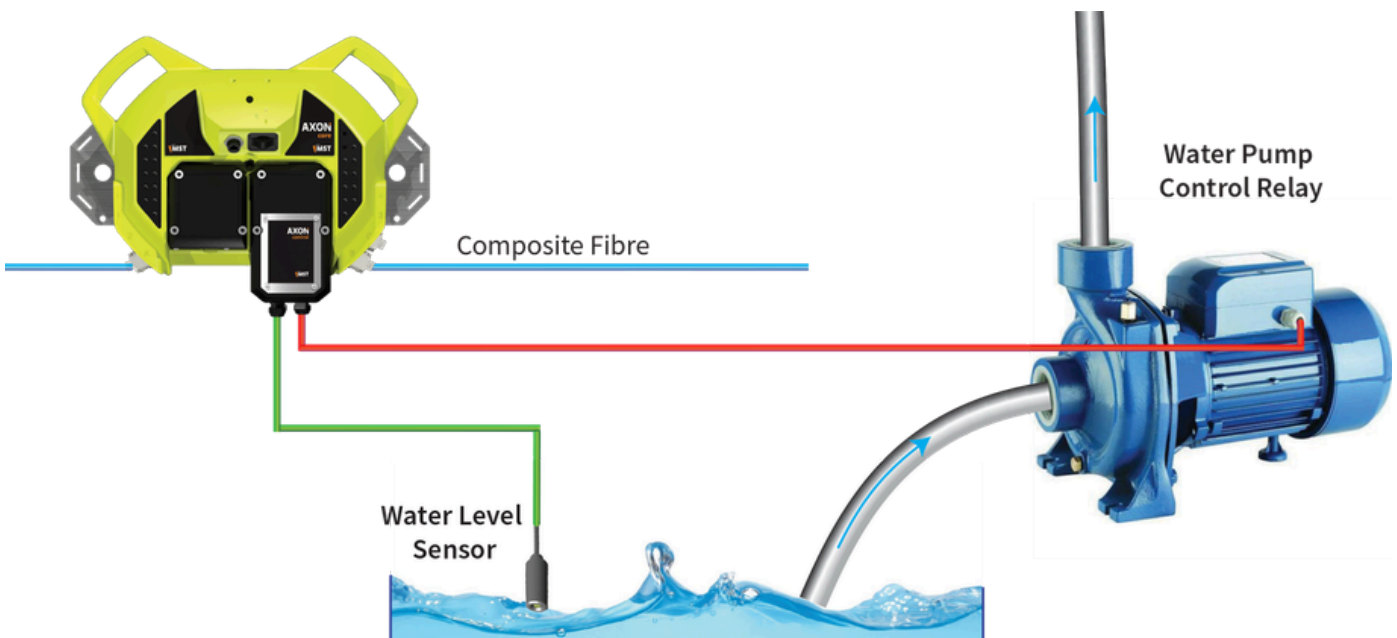
Working together with MST's AXON communication infrastructure, HELIX Smart Monitoring transforms operational data into real-time insights that improve safety, increase productivity and enable informed operational decisions across underground and surface mining operations.

Whether monitoring water systems, ventilation, environmental conditions or fixed infrastructure, HELIX Smart Monitoring provides the operational awareness required to support safer and more efficient mining.

Continuous Visibility Across Your Mining Operation!

Mining operations rely on thousands of critical assets operating simultaneously:

- Pumps / Ventilation systems (VoD)
- Environmental monitoring stations.
- Mine interior traffic control.
- Electrical infrastructure.
- Processing equipment.
- Water management systems.



Maintaining continuous awareness of these assets is essential for improving safety, reducing operational risk and minimising unplanned downtime.

HELIX Smart Monitoring is the monitoring module within the HELIX Platform that connects operational data from sensors, industrial equipment and monitoring devices into a single, centralised operational view.

The solution provides real-time monitoring, configurable alarms, historical trends and intuitive dashboards that help operators identify abnormal conditions before they impact production.

Operating on MST's high-performance AXON communications infrastructure, HELIX Smart Monitoring delivers reliable on-site data collection and visualisation even across large underground mining operations.

Key Outcomes:

- Improve operational visibility.
- Increase personnel safety.
- Reduce manual inspections.
- Detect abnormal conditions earlier.
- Support proactive maintenance
- Improve operational decision-making.

Industrial Devices:

- HELIX Smart Monitoring also integrates operational information from industrial controllers, process equipment, cameras and other field devices using standard industrial communication interfaces, providing a unified operational view within the HELIX Platform.

Scalable by Design:

- As operational requirements evolve, HELIX Smart Monitoring expands alongside the mine, supporting additional assets, monitoring points and operational use cases without changing the core monitoring platform.

Complete the Connected Mine:

- HELIX Smart Monitoring provides the real-time operational visibility required to support safer, more efficient mining operations.
- When combined with the HELIX Platform and MST's AXON communications infrastructure, it becomes part of a complete digital ecosystem that transforms operational data into actionable intelligence—connecting every asset and helping operations make faster, better-informed decisions.

Applications

HELIX Smart Monitoring supports a wide range of mining applications across underground and surface operations.

Fixed Infrastructure:

- Monitor
 - Pumps
 - Valves
 - Pipelines
 - Conveyors
 - Processing equipment
 - Remote infrastructure

Water Management:

- Monitor:
 - Water levels.
 - Pumps.
 - Flow.
 - Pressure.
 - Tank levels.
- Benefits:
 - Prevent flooding.
 - Improve pump reliability.
 - Reduce manual inspections.
 - Optimise water management.

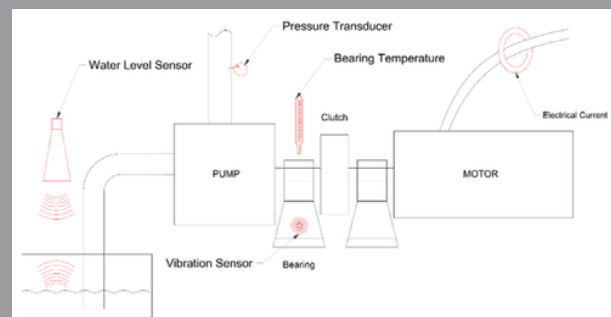
Ventilation Monitoring:

Monitor:

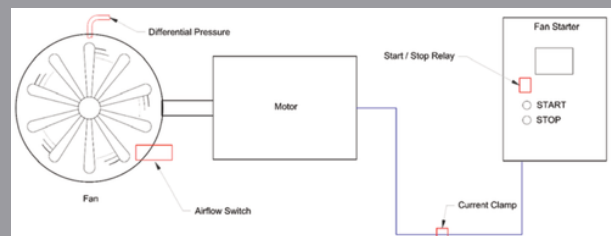
- Airflow.
- Differential pressure.
- Fan operation.
- Ventilation status.

Benefits:

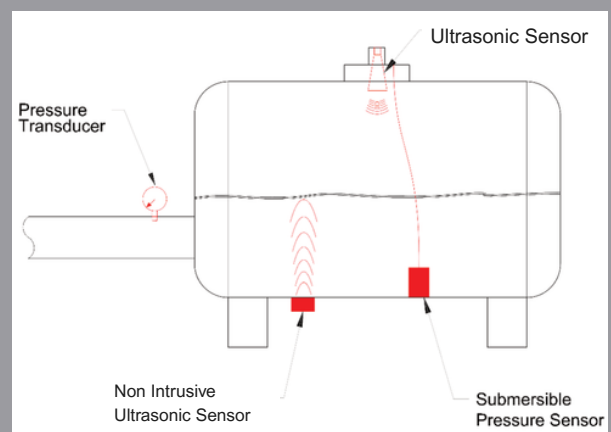
- Improved underground safety.
- Better ventilation efficiency.
- Operational visibility.



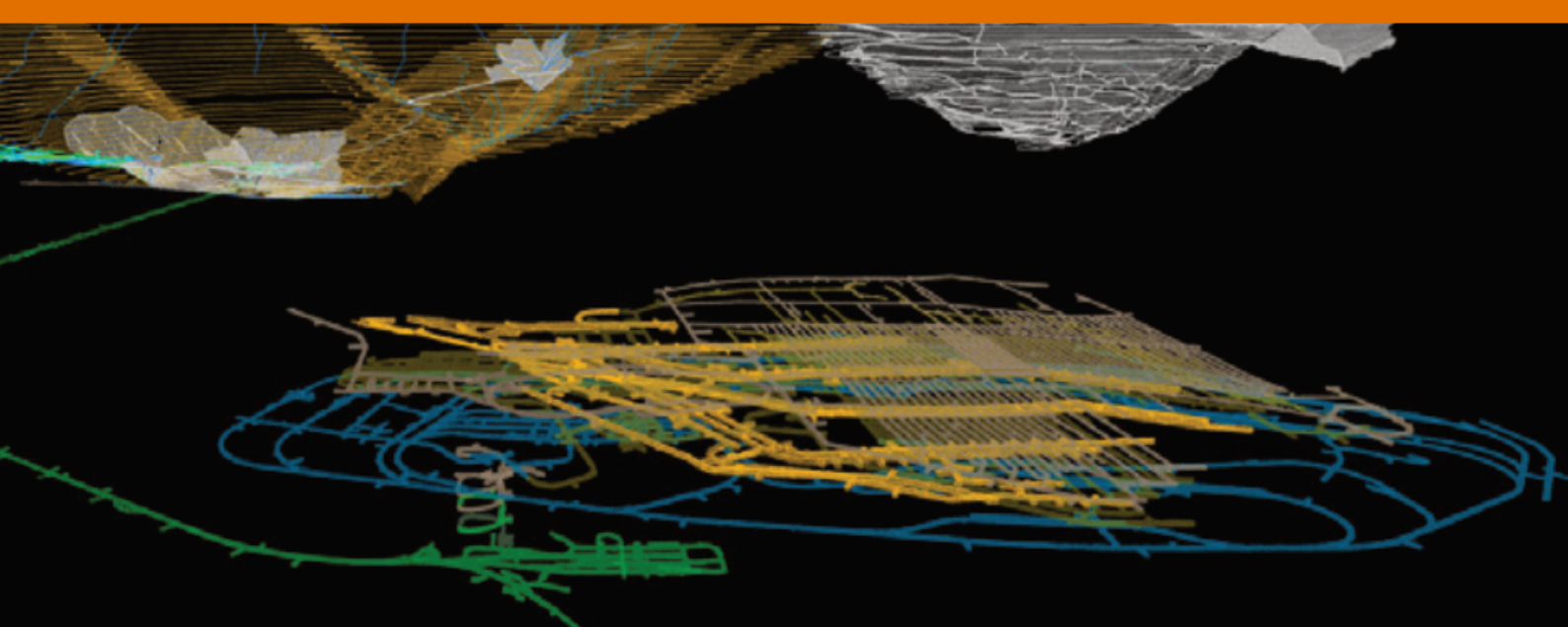
Ultrasonic Distance, Temperature, Vibration, Pressure and Electrical Current



Differential Pressure, Airflow, Electrical Current, Relay



Ultrasonic Sensor, Pressure Transducer, Submersible Sensor, Non-Intrusive Ultrasonic Sensor



HELIX Smart Monitoring supports a wide range of mining applications across underground and surface operations.

Environmental Monitoring:

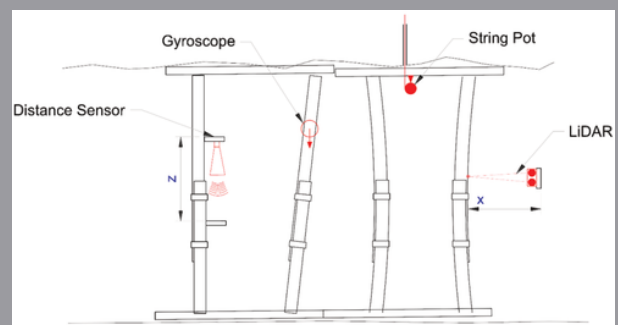
- Monitor:
 - Temperature.
 - Humidity.
 - Gas concentrations.
 - Dust.
 - Noise.
 - Air quality.
- Benefits:
 - Continuous environmental awareness.
 - Improved worker safety.
 - Regulatory compliance.

Equipment Health Monitoring:

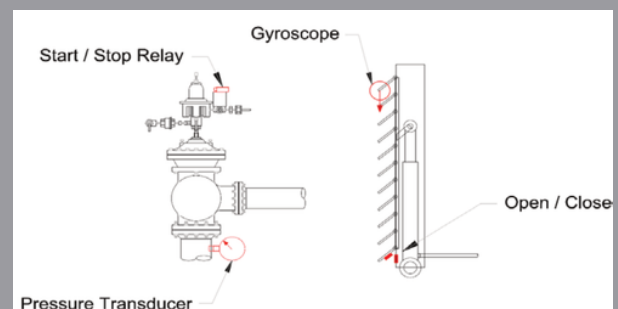
- Monitor:
 - Vibration.
 - Bearing temperature.
 - Electrical current.
 - Pressure.
 - Mechanical condition.
- Benefits:
 - Predictive maintenance.
 - Increased equipment availability.
 - Reduced unplanned downtime.

Visual Monitoring:

- Integrate industrial cameras and visual monitoring devices into HELIX dashboards, providing operators with immediate visual confirmation of field conditions alongside real-time operational data.



Differential Pressure, Airflow, Electrical Current, Relay



Relay, Gyroscope, Pressure Transducer



Water Pump Monitoring

Benefits:



3D Connect
Interactive Spatial
Insights



Sentinel
Enhanced Safety Monitoring



Intelligent Control
Process Automation



**Smart
Monitoring**
IoT Network



Dispatch
Optimise Fleet
Management.



Telemetry
Track Equipment Health

Real-Time Operational Visibility:

- Monitor critical infrastructure and operational assets continuously through a centralised HELIX dashboard.
- Operators gain immediate visibility of asset status, sensor values and alarm conditions from anywhere within the operation.

Intelligent Alarm Management:

- Automatically notify operators when monitored conditions exceed predefined thresholds.
- Examples include:
 - High water levels
 - Equipment overheating
 - Ventilation anomalies
 - Abnormal vibration
 - Pressure deviations
 - Environmental changes
- This enables faster response times and helps reduce operational risk.

Flexible Sensor Integration:

- HELIX Smart Monitoring supports a broad range of industrial monitoring devices and sensors, allowing mining operations to build monitoring solutions tailored to their operational requirements.
- The platform is designed to integrate with existing infrastructure, simplifying deployment while protecting previous investments.

VCU Generic Sensors



Historical Data and Operational Trends:

- All monitored information is stored for trend analysis, reporting and operational investigations.
- Historical data helps maintenance and operational teams identify recurring issues, optimise maintenance strategies and continuously improve performance.

Designed for the HELIX Platform:

- As a native HELIX module, Smart Monitoring shares operational information with other HELIX capabilities including visualisation, automation, reporting and analytics, creating a consistent operational experience across the mine.

Powered by MST Communications:

- Reliable monitoring begins with reliable communications.
- HELIX Smart Monitoring leverages MST's AXON communications infrastructure to transport operational data from field devices to the HELIX Platform, providing dependable, real-time visibility across underground and surface operations.
- This high-performance communications backbone enables:
 - Reliable data collection
 - Continuous monitoring
 - Scalable deployments
 - High availability
 - Future-ready expansion





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 to improve underground safety and productivity with HELIX Smart Monitoring in your mine.



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APAC

EMEA

AMERICAS

ASIA