



HELIX sentinel

Your mine's electronic tag-board solution

Overview

HELIX Sentinel is an electronic tag-board system seamlessly integrated into HELIX. Sentinel offers a streamlined solution with the ability to visualise the location of personnel underground. This system allows for access to a digital dashboard, enabling users to identify the current whereabouts of individuals within particular zones or areas. Multiple electronic tag-boards can be strategically deployed on flat screens in key areas to provide real-time awareness of the personnel present in each designated area. Sentinel is the newest addition to MST's HELIX platform to transform your mine's operations into a dynamic digital canvas. Offering real-time insights through intuitive and customisable visual cues, Sentinel empowers you to proactively manage personnel safety and optimise mining operations, delivering tangible benefits.

Benefits:

The Helix Sentinel system prioritizes both safety and efficiency in underground operations. Real-time personnel location and activity data empowers proactive safety measures through automated zone monitoring, immediate incident response, and enforcement of protocols via continuous monitoring and alerts. Data-driven resource allocation and reduced manual tasks through automation significantly improve operational efficiency.

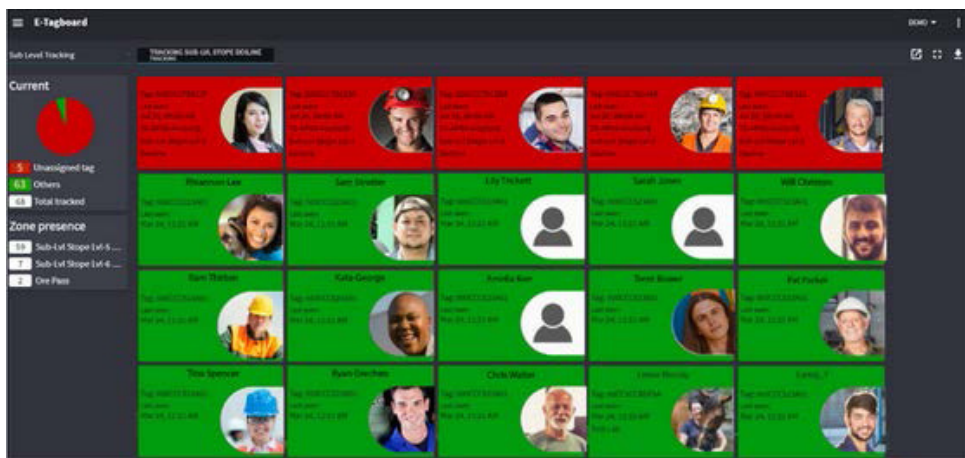


Figure 1. Electronic tagboard screen example

User journey with HELIX Sentinel

Sign-In Process:

- A user begins their work shift by signing in at the HELIX Kiosk located at the mine entrance.
- The electronic tag-board actively records the sign-in information, ensuring real-time tracking initiation

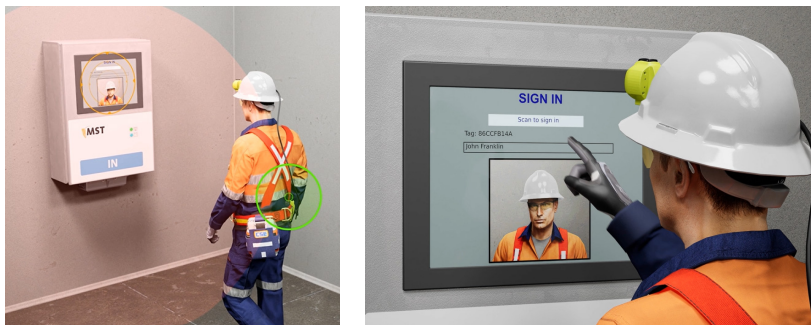


Figure 2: personnel sign-in at kiosk

Entering the Work Area:

- As the user moves into the designated work area, HELIX Sentinel tracks their location in real-time.
- The electronic tag-board displays the personnel present in each zone, providing a visual representation on strategically deployed screens.

Work in Progress:

- Throughout the work shift, the system continuously monitors personnel locations and activities.
- In case of any discrepancies or safety concerns, proactive warning messages are shown in the E-Tagboard for swift intervention.

Sign-Out Process:

- Upon completing the work shift, the user signs out at the HELIX Kiosk used for sign-out.
- The electronic tag-board updates in real-time, reflecting the personnel's status as they exit the designated work area.

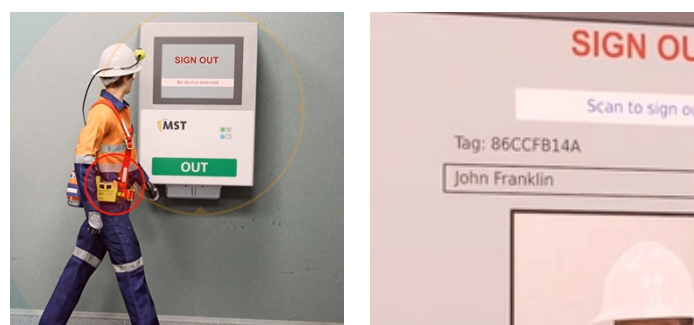


Figure 3: personnel sign-out at kiosk

Use cases

Below are key use cases that empower the mine to monitor and enhance operational safety:

Use Case 1: Unassigned Tag Alert

Scenario: Personnel with an unassigned tag enters a monitored zone.

Electronic tag-board swiftly presents unassigned tags on the screen as personnel with unassigned tags enter monitored zones. This real-time visibility provides control room personnel with information that can therefore ensure adherence to mine processes, enabling quick and efficient response to potential safety concerns.

Use Case 2: Zone Time Compliance

Scenario: Ensuring compliance with mine policies regarding time spent in specific zones.

HELIX Sentinel enables configuration of time limits for staying underground or within specific zone groups. In the event of a breach, the electronic tag-board swiftly displays the non-compliant personnel, allowing for proactive intervention to maintain safety protocols and prevent prolonged stays underground. Additionally, the system extends its monitoring capabilities to ensure personnel adhere to shift schedules, promptly identifying personnel overstaying their specified shift end times

Use Case 3: Kiosk Sign-In Monitoring

Scenario: Enforcing a mandatory sign-in policy for personnel entering underground or specific zones.

The electronic tag-board actively monitors personnel entries through kiosks. If any personnel are detected without proper sign-in, the system notifies relevant authorities. This robust tracking mechanism ensures comprehensive monitoring of individuals and enhances overall safety measures.

Use Case 4: Zone Presence Tracking

Scenario: Detecting discrepancies in the presence of signed personnel within a zone.

If a person has signed into a zone but cannot be tracked within that specific area, the electronic tag-board will promptly highlight the specific personnel. This feature ensures the accuracy of zone-specific tracking, allowing for immediate corrective actions in the event of anomalies.

Essential components

HELIX 3D Connect:

HELIX 3D Connect is the foundation platform for HELIX and a prerequisite for all HELIX modules. It manages and monitors your mine's operations, seamlessly integrating with Sentinel to deliver valuable insights.

HELIX Sentinel:

Enables real-time tracking of personnel within designated zones through the electronic tagboard interface.

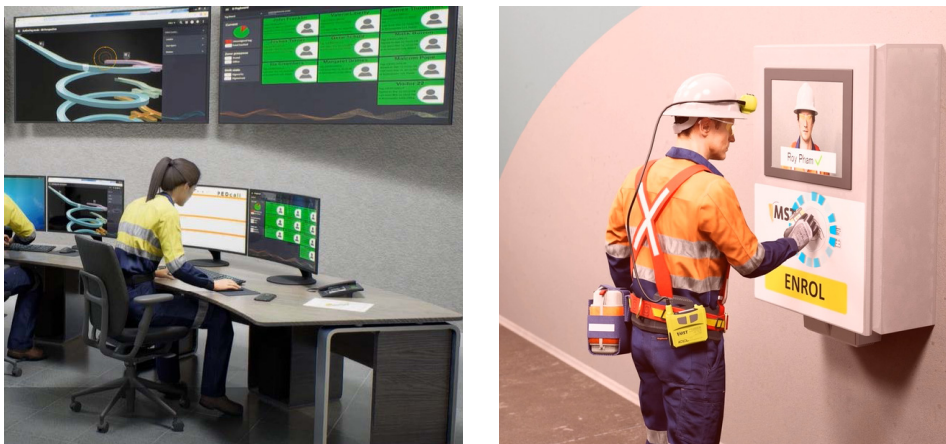


Figure 4: control room (left), personnel enrolling tag at kiosk (right)

Additionally, Sentinel offers three flexible configurations to meet the specific needs of your operation:

1. Signup station: Monitors personnel signed into a zone group for exceeding a specified time limit.
2. Tracking: Tracks personnel and unassigned tags present in a zone.
3. Signup station and tracking: Combines both functionalities, monitoring for unassigned tags, missing sign-ins, personnel not detected and exceeding time limits.

Each section appears as a tab, allowing you to switch between functionalities seamlessly. Additionally, the display time can be configured for each section in full-screen mode for hands-free optimal viewing experience.



Optional component

Optimize your mine's workflow with HELIX Sentinel's Offline Kiosk—an optional component providing personnel with a convenient way to sign in and out of zones. This versatile addition comes in two types:

1. With a Swipe Card Reader:

A card reader mechanism allows users to assign tags automatically. This streamlined process eliminates the need to escalate tag changes to supervisors. Users can effortlessly manage tag assignments using swipe cards, ensuring a smooth and autonomous workflow.

2. Without a Swipe Card Reader:

Tags are pre-assigned for mines not requiring a card reader. In the event of any issues during Sign-In or Sign-Out, the system generates a warning message. This feature allows users to promptly escalate issues to their supervisor for tag assignment changes.

The Offline Kiosk automatically synchronizes with the central system once connectivity is restored, ensuring comprehensive data integrity throughout the process.

Upgrade Your Mine with HELIX Sentinel: Make the leap to peak mining performance by choosing HELIX Sentinel as your electronic tagboard gateway. Tailor the configuration to your specific needs and unlock the benefits of enhanced safety, improved efficiency, and optimized profitability.

HELIX Sentinel: real-time data for a safer mine

Contact MST Global today to learn more about how our HELIX Sentinel solution can help improve safety efficiency, and productivity in your mining operation.