Challenges in Mining - Managing Trailing Cables

Problem: Cable Locating

On Site:

Mines are dynamic environments. With equipment moving constantly, locating a specific cable or coupler can be a challenge. This problem is amplified by darkness, snowfall, and windrows covering cable and equipment

Off Site:

Mines that send cables off site for repair or coupler installation may have added challenges of maintaining accurate inventory of cables and locations

Challenges in Mining - Managing Trailing Cables

Problem: Real Time Cable Data

Mining cables do not have the capability to store their own data or history. This can make it difficult to preserve and track important information including:

Repair History – how many times has a particular cable been repaired

Cable Information – what is the actual length of the cable (after previous repair)

Event / Environment Sensing – get real time data on cable temperature, energy state, and impact sensing!

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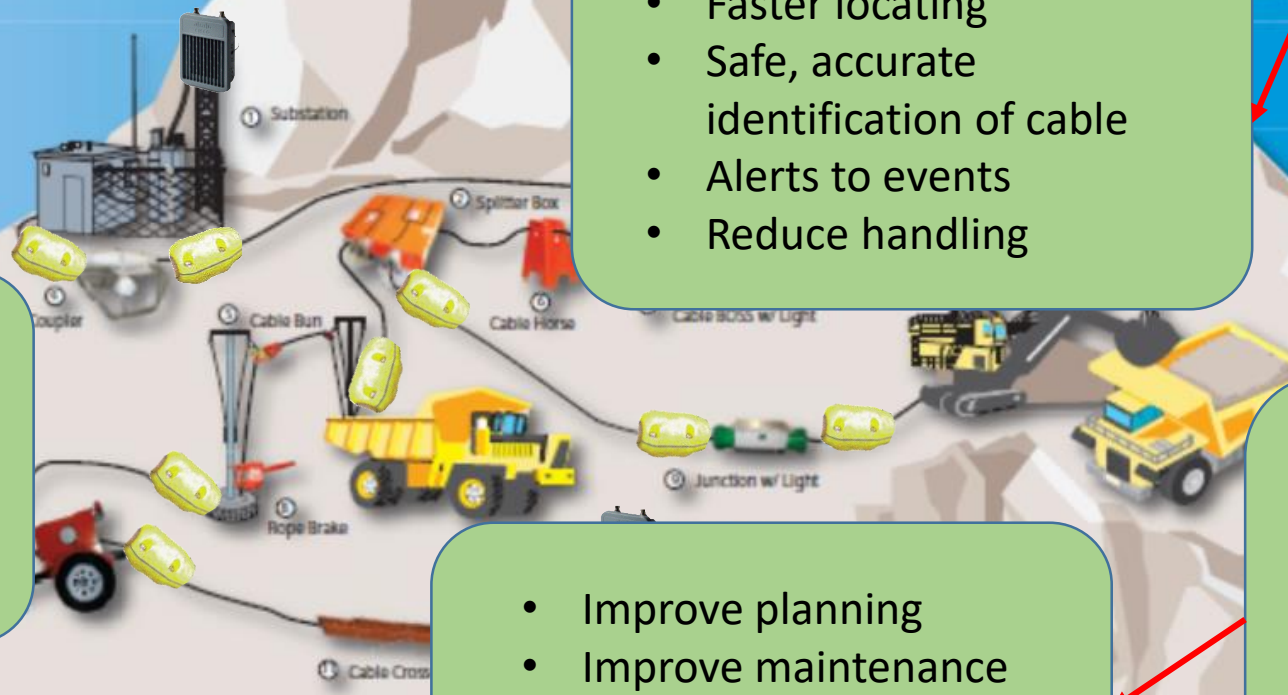
SOLUTION: Pygo™ Cable EdgeX

Electrical Crews / Cable Installers

- Real time data on cable availability
- Alerts to events
- Reduced damage



- Faster locating
- Safe, accurate identification of cable
- Alerts to events
- Reduce handling

Operations / Cable Handling

- Improve planning
- Improve maintenance
- Improves safety
- Save time and money

Electrical Planning / Management

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SOLUTION: Pygo™ Cable EdgeX

Typical Pygo™ Mine Site Deployment

Monitored Zone 1

1 X Cisco™ LoRaWAN Gateway
10 X Pygo™ Sensor Modules

Monitored Zone 2

1 X Cisco™ LoRaWAN Gateway
10 X Pygo™ Sensor Modules

Data Processing
Data Retrieval / Integration Display and Reporting

System Components

Cisco™ LoRaWAN Gateway

Pygo™ Sensor Module

Data Retrieval / Integration

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Cable EdgeX Architecture

End-to-End Encrypted

Ethernet

Cellular Backhaul

PYGO AMERICA, INC.

PYGO™ Software

- Device Management
- Network Monitoring
- Security & Data APIs

Dashboard

Customer Native Applications

Analytics

PYGO Cable EdgeX Wireless Sensors, Battery Operated

Wireless, Low Power, Long Range, ISM Band LoRaWAN® Network

Cisco® Wireless LoRaWAN Gateway (Outdoor, IP67) (-40 to 158°F (-40 to 70°C)

Connected through client-side existing network infrastructure (Ethernet) or Cellular Backhaul (when ethernet connectivity is not available)

PYGO µServices – Software to manage the network, security, device configuration, admin – deployed on client's on-premise network

Open API's to integrate with client's native systems (HTTPS, MQTT, ArcGIS, customer owned cloud deployments)

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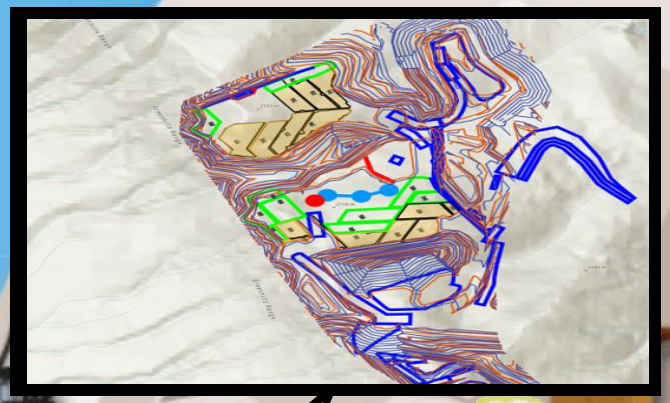
Data and Analytics



Real Time Cable Data and Analysis = Less Downtime

- More accurate maintenance planning
- Accurate cable inventory and availability
- Improve response time for cable failures
- More efficient cable moves
- Incident reporting

Please visit Patton & Cooke or Pygo on LinkedIn or search YouTube for the latest videos featuring CableEdgeX technology

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