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Underground eLearning

Continuous Miner Course Catalog

Contents

Continuous Miner FaceBoss 2.0 Components Training

Description:

In this eLearning module you will go through lessons that will familiarize you with the equipment on a FaceBoss 2.0 Continuous Miner, cover safety precaution, and the major electrical components that are used.

Module Outline:

- Lesson 1 - Equipment Familiarization and Safety
- Lesson 2 - Isolators and Circuit Breakers
- Lesson 3 - Supply Components
- Lesson 4 - Central Control Unit
- Lesson 5 - Microprocessor Current Transformer
- Lesson 6 - Vacuum Contactors
- Lesson 7 - Variable Frequency Drives
- Lesson 8 - Input/Output Module
- Lesson 9 - MMX and BBM
- Lesson 10 - Control Switches
- Lesson 11 - Overloads, Filter Toroid, and Inductors

Module Objectives:

Upon completion of this module, you will be able to:

- Describe the FaceBoss 2.0 control system and identify major components that make up the system.
- Describe safety precautions the must be followed as well as any safety labels found on the miner.
- Identify different access zones around the miner during different situations.
- Identify and Describe each electrical component that is used in the FaceBoss 2.0 control system

Continuous Miner FaceBoss 2.0 Electrical Circuits Training

Description:

In this eLearning module, you will learn how to read and interpret a typical FaceBoss 2.0 electrical schematic. You will learn about specific components that are involved in each circuit, what their purpose is within the circuit, and how the circuit works from the electrical schematic.

Module Outline:

- Lesson 1 - Pilot and Power Circuits
- Lesson 2 - Control and Lights Circuits
- Lesson 3 - Remote and Manual Circuits
- Lesson 4 - Pump Circuit
- Lesson 5 - Cutter Circuit
- Lesson 6 - Gathering Head and Conveyor Circuit
- Lesson 7 - Dust Collector Circuit
- Lesson 8 - Tram Circuit
- Lesson 9 - Hydraulic Controls
- Lesson 10 - Emergency Stop and Emergency Stop Override Circuits

Module Objectives:

Upon completion of this module, you will be able to:

- Describe each of the electrical circuits on a typical FaceBoss 2.0 Continuous Miner electrical diagram.
- Identify and describe the major components used in each of the electrical circuits.

Continuous Miner FaceBoss 2.0 Display Screen Training

Description:

In this eLearning module, you will learn how to navigate through all of the screens on a Continuous Miner FaceBoss 2.0 Display Screen. As you navigate through the different display screens within the screen groups, you will learn what each screens purpose is as well as how to read the screen. In the last lesson of this module, you will learn how to troubleshoot using the display screen.

Module Outline:

- Lesson 1 - FaceBoss 2.0 Display Screen Navigation: Part 1
- Lesson 2 - FaceBoss 2.0 Display Screen Navigation: Part 2
- Lesson 3 - FaceBoss 2.0 Display Screen Navigation: Part 3
- Lesson 4 - FaceBoss 2.0 Display Screen Navigation: Part 4
- Lesson 5 - FaceBoss 2.0 Display Troubleshooting

Module Objectives:

Upon completion of this module, you will be able to:

- Navigate to and describe each of the screens on the FaceBoss 2.0 display for a Continuous Miner.

Continuous Miner Automation Training

Description:

In this eLearning module, you will learn about the Continuous Miner Automation system, or CMA. In the first lesson, you will first look at how the automation works and the components involved to making the system work. You then will become familiar with the FaceBoss 1.0 screens that are related to the CMA and learn how to read/use each screen. In the second lesson of this module, you will learn about the BPX Two-Way Remote Commands that are used to control the automation as well as become familiar with the screens related to the CMA system on the BPX display. In the final lesson of this training module, you will learn how to read the operator screens for CMA and how to load a sequence table in FaceBoss 1.0.

Module Outline:

- Lesson 1 **–** CMA Introduction and FaceBoss Screens
- Lesson 2 **–** CMA BPX Remote Commands and Screens
- Lesson 3 **–** CMA Operator Screens and Loading Sequence Tables

Module Objectives:

Upon completion of this module, you will be able to:

- Describe the basics of how the Continuous Miner Automation system works.
- Identify the components such as screens and sensors that are used with the system.
- Navigate and read the FaceBoss screens that are associated with the Continuous Miner Automation system.
- Demonstrate how to complete all of the CMA remote commands on a BPX remote and describe what each command does.
- Describe the different items on the automation screen on the BPX remote display and read and interpret the screen during operation.

Continuous Miner Gen 2 SMARTZONE **–** IntelliView Training

Description:

This is an eLearning module covering the IntelliView software that is used to setup and troubleshoot the generation 2 SMARTZONE proximity system on Continuous Miners. This module will first cover the Read-Only level program by showing the different tools and screens used in the software. You will then look at how to use the software as a troubleshooting tool by looking at the diagnostic indicators as well as different scenarios and how to troubleshoot them. You will also take a look at what additional features are available in the customer level program that are not available in the read-only program. The last lesson in this module will cover how to do a zone adjustment procedure using the customer level software.

Module Outline:

- Lesson 1 - Read-Only Program Overview
- Lesson 2 - Read-Only Status Screen
- Lesson 3 - Read-Only Configuration Screen and Charting
- Lesson 4 - Troubleshooting: Diagnostics
- Lesson 5 - Troubleshooting: Zone Performance Issues
- Lesson 6 - Troubleshooting: Machine Won't Move and Sporadic Shutdowns
- Lesson 7 - Troubleshooting: Cutter On Zone not Shrinking and Random Dropouts of Operator Status
- Lesson 8 - IntelliView Customer Level Program
- Lesson 9 - IntelliView Zone Adjustment Procedure

Module Objectives:

Upon completion of this module, you will be able to:

- Identify and describe each of the tools in the tool bar in the IntelliView software.
- Describe what the status, configuration, and charting screens are used for and what information can be found on each of these screens.
- Describe what the Proximity Enable Output does and what causes it to be active or in-active
- Demonstrate how to open the diagnostic data inspector and activate the locator status data.
- Determine if a locator is set as operator or not by looking at the status screen.
- Determine what zones in the system are breached by looking at the status screen.
- Demonstrate how to save a global configuration file to your computer.
- Demonstrate how to setup a chart to show distance, message timing and signal strength. Describe how to read each of these charts.
- Describe what a pass or warning/failure means on key indicators in the diagnostics data inspector screen.
- Describe what steps need to take place to properly troubleshoot any warning or failure statuses that are present in the diagnostic data inspector screen.

- Describe what additional features are included in the customer program that are not in the read-only software.
- Demonstrate how to create primary zones and describe what zones need to set as primary zones.

- Demonstrate how to edit zones and describe what zones you are able to edit.
- Describe the allowable size of the primary shutdown zone.
- Demonstrate how to create a zone and describe the fields used in the add zone menu.
- Demonstrate how to record data and save it into a batch file.

- Describe how to determine if a zone needs adjusted.
- Describe and demonstrate the proper procedure in adjusting a zone.
- Describe and demonstrate how to conduct the static and dynamic tests after zone adjustments have been made.

Continuous Miner Lightweight Remote Training

Description:

In the Continuous Miner Lightweight Remote Training module, you will first learn how to setup the miner for remote operation. This includes looking at what needs to be done with circuit breakers and control switches, how to connect the remote using the umbilical connection, and teach/learning the remote. Separate lessons are available for the 14CM15, 14CM27, and 12CM27 models. You will then learn how to use the lightweight remote to operate a Continuous Miner. In the operation lesson, you will first learn how to read each of the indicator lights on the remote. You then will learn how to use the remote to start and shutdown machine functions using the remote as well as operate the equipment with the remote.

Module Outline:

- Lesson 1 – 14CM15 Set-Up for Lightweight Remote Operation
- Lesson 2 – 14CM27 Set-Up for Lightweight Remote Operation
- Lesson 3 – 12CM27 Set-Up for Lightweight Remote Operation
- Lesson 4 – Lightweight Remote Operation

Module Objectives:

Upon completion of this module, you will be able to:

- Set a Continuous Miner up for operation with a lightweight remote.
- Set a Continuous Miner up for operation with the remote connected umbilically.
- Teach/Learn the system.
- Identify the meaning of the indicator lights on the remote station.
- Start and shutdown machine functions with the lightweight remote as well as operate the equipment with the remote.

Continuous Miner JNA FaceBoss 1.0 Screen Navigation

Description:

The continuous miner FaceBoss display is a powerful tool that provides information on the operating condition and parameters on the machine. The JNA control system has numerous FaceBoss display screens to provide detailed information on motors, control components, and communication lines. The FaceBoss display is also used to present and modify the parameters that control the operation of the miner. Toolbars on the display screens have icons that open the different screens. Successful use of the JNA control system relies on being able to navigate these display screens, and this lesson shows you how to do that.

Module Outline:

- Lesson 1 - Continuous Miner JNA FaceBoss 1.0 Screen Navigation

Module Objectives:

Upon completion of this module, you will be able to:

- Navigate the FaceBoss display with the mouse and lightweight remote.
- Select a display icon from the tool bars to go to a display screen for desired machine information.
- Navigate the FaceBoss display screens.
- Use the status screen to determine the machine condition.

Continuous Miner SMARTZONE Training (1st Generation)

Description:

The Joy SMARTZONE Proximity detection system was designed as a training aid for Continuous Miner operators. The system helps operators learn how to remain outside of a hazardous "red zone" while operating the continuous miner. The SMARTZONE system creates a red zone around the Continuous Miner. This prevents the operator from continuing to operate the tram and conveyor swing functions if standing inside the zone. This system also provides a yellow warning zone which extend beyond each of the red zones.

Module Outline:

- Lesson 1 - Continuous Miner SMARTZONE Introduction and Components
- Lesson 2 - Continuous Miner SMARTZONE Transmitter Charging and Testing
- Lesson 3 - Continuous Miner SMARTZONE Operation
- Lesson 4 - Continuous Miner SMARTZONE Post-Assessment

Module Objectives:

Upon completion of this module, you will be able to:

- Describe the purpose of the SMARTZONE system as well as its main functionality.
- Identify and define the components needed to operate the SMARTZONE system.
- Properly charge the transmitter and list best practices for charging.
- Determine the status of the transmitter by the LED indicator lights on the transmitter.
- Properly test the SMARTZONE system and describe when testing is needed.
- Conduct a proper start up procedure and pre-shift test of the SMARTZONE system.
- Determine the status of the SMARTZONE system by use of the diagnostic lights on the transmitter and receivers.
- Place the transmitter in the correct areas for use during operation and list what can affect the performance of the SMARTZONE system.

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Continuous Miner Pre-Shift Machine Inspection and Lubrication

Description:

Proper maintenance is an important factor in reducing machine downtime. A machine that is properly lubricated, adjusted, and maintained will remain in service for longer periods between overhauls. It will also operate more efficiently. Having a standard lubrication schedule is also an important piece of maintaining your continuous miner and keeping it running at full productivity. A recommended scheduled lubrication chart is provided with each machine. It is important to follow this chart to prevent wear and reduce heat buildup. Lubrications are used to reduce friction, carry away heat, prevent rusting, and keep dirt out of an area. This module covers the inspection of a continuous miner that needs to be done before the start of each shift as well as how to follow the lubrication schedule to keep your machine well lubricated.

Module Outline:

- Lesson 1 **–** Continuous Miner Pre-Shift Inspection
- Lesson 2 **–** Continuous Miner Lubrication

Module Objectives:

Upon completion of this module, you will be able to:

- Describe why it is important to conduct a proper pre-shift inspection.
- List what items on the continuous miner needs to be inspected before each shift.
- Explain what must be done if any issues are found during a pre-shift inspection.
- Describe why a standard lubrication schedule is important in keeping a JOY continuous miner maintained.
- Describe all precautions that you must practice while lubricating a JOY continuous miner.
- Describe the different types of lubrications listed in the lubrication specification sheets provided by JOY.
- Locate the lubrication specification sheets and the lubrication diagram in the JOY provided parts book and have the knowledge to read and understand each chart and diagram.
- Categorize each lubrication point on the JOY continuous miner by the recommended lubrication intervals and the type of lubrication needed.

Continuous Miner BPX Two-Way Remote Training

Description:

In this eLearning module you will go through lessons that will cover how to set your machine up for two-way remote operation, complete the teach / learn process, learn each of the display screens and how to navigate them, learn about the Key Test Station, using BPX Two-Way remote to operate the miner, and cleaning the remote and charging the battery. There are multiple lessons available for setting up a miner for BPX Two-Way Remote operation that include the 14CM15, 14CM27, 12CM27, 12HM36, and 12HM46.

Module Outline:

- Lesson 1 - 14CM15 Set-Up for Two-Way Remote Operation
- Lesson 2 - 14CM27 Set-Up for Two-Way Remote Operation
- Lesson 3 - 12CM27 Set-Up for Two-Way Remote Operation
- Lesson 4 - 12HM36 Set-Up for Two-Way Remote Operation
- Lesson 5 - 12HM46 Set-Up for Two-Way Remote Operation
- Lesson 6 - BPX Teach/Learn Procedure
- Lesson 7 - Two-Way Remote Display Screens and Screen Navigation
- Lesson 8 - Continuous Miner Two-way Remote Operation
- Lesson 9 - Two-Way Remote Sensors: FaceBoss 2.0
- Lesson 10 - Two-Way Remote Sensors: FaceBoss 1.0
- Lesson 11 - Two-Way Remote Cleaning and Charging
- Lesson 12 - Key Test Station for BPX Two-Way Remote

Module Objectives:

Upon completion of this module, you will be able to:

- Describe how to set a continuous miner up for two-way remote operation.
- Perform the teach/learn process on the two-way remote for normal and emergency operation.
- Describe the different screens available on the BPX Two-Way Remote.
- Navigate through all of the screens using the navigation buttons on the BPX Two-Way Remote.
- Describe the buttons on the two-way remote and their functions.
- Perform start and shutdown operations on the two-way remote for continuous miner machine functions.
- Perform auxiliary functions using the two-way remote station.
- Describe the sensors internal to the Two-Way Remote and their functionality.
- Navigate and change any of the parameters in FACEBOSS related to the sensors.
- Describe proper techniques on how to clean the Two-Way Remote and Remote Battery as well as the importance of keeping the remote and battery clean.

- Describe how to properly charge the Two-Way Remote battery and how to determine if the battery has charged successfully.
- Describe what the Key Test Station can be used for.
- Demonstrate how to teach/learn the BPX to the Key Test Station.
- Demonstrate how to test the operation of all the buttons and levers on the BPX remote as well as the impact and tilt trip sensors using the Key Test Station.
- Demonstrate how to load files onto the BPX using the Key Test Station.

Continuous Miner Dust Collector System

Description:

In this training you will learn about the dust collect system on 14CM27 and 12CM27 continuous miners. You will learn the components that make up the dust collector system, the function of each component, the operation of the system, and how to troubleshoot the system.

Module Outline:

- Lesson 1 – Continuous Miner Dust Collector System

Module Objectives:

Upon completion of this module, you will be able to:

- List and locate the components of the dust collector system.
- Describe the function of the major components of the dust collector system.
- Perform routine maintenance of the dust collector system.
- Troubleshoot the dust collector systems issues.

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