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Product Training & Publications

DC Shovel Electrical Systems Training

Course Duration
Two days

Target Audience

Electricians, Technicians and Engineers who will service and maintain P&H Mining shovels

Description
The student is introduced to the operation and maintenance of the P&H Electrical mining shovel. Furthermore the course focuses on critical knowledge and skills required in supporting present day P&H Electrical mining shovels. Topics included are the Centurion DC Shovel Control System. The concepts that are covered in the classroom are reinforced in a laboratory environment that allows the students to load install and configure application software.

Prerequisites
Students should have a basic knowledge of power electronics and computers. It is suggested that students complete Power, Drive and Control System eLearning training modules.

Course Location
- Field

Course Objectives
Upon completion of this course the student will be able to:
- Identify and explain the purpose of all the major components.
- Use application software and programs as required.
- Remove and replace faulty components.
- Conduct failure analysis.
- Explain the inter-relationship of the shovel systems.
- Analyze schematics and control diagrams used for troubleshooting and repair.

Main Concepts

- DC Power System overview
- Drives Windows overview
- AC800M (Advant Controller 800) Hardware overview
- Control Builder overview
- System Maintenance and Troubleshooting

Day 1

Course Introduction

- Introductions
- Class Objectives
- General Safety
- ESD
- Pre-Assessment

Electrical System Block Diagrams

- Systems Diagram Overview
- Shovel Schematics
- Use of the index
- Use of Location Codes
- Reading P&H Schematics
- *Schematic Exercises*

Touch Panel & GUI Systems

- Touch Panel Navigation
- Touch Panel Software Tools & Calibration
- Limit Systems
- *Touch Panel Navigation LAB*

DC Power Systems Overview

- Power Conversion
- P&H Converter Configuration
- Protection Circuits
- SCR Troubleshooting 101
- RPC Power Circuit Operation
- RPC Control Circuit Operation
- RPC Intelligent PLC operation

Drive System Hardware Overview

- DCS600 Circuit Board Operation
  OR
- DCS800 Circuit Board Operation
- Fault Finding

Day 2

Advant Controller 800 & Remote I/O Hardware Review (AC800)

- Advant Controller
- Remote I/O
- Monitoring I/O Status
- *Student Exercises*

Air System

- Theory of Operation
- Hardware Overview
- Troubleshooting
- *Student Exercises*

Brake System

- Theory of Operation
- Hardware Overview
- Troubleshooting

Automatic Lubrication System

- Theory of Operation
- Hardware Overview
- Troubleshooting
- *Student Exercises*

Hoist Lube Pump System(4100XPC)

- Theory of Operation
- Hardware Overview

Auto Crowd Belt Tensioning System (4100XPC)

- Theory of Operation
- Hardware Overview
- Troubleshooting

Course Evaluation and Wrap

- Post –Assessment
- Course Evaluation