



DC Shovel Electrical Systems Training

Course Duration

2 days

Target Audience

Komatsu Service Engineers who 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 navigate
- Touch panel software tools and calibration
- Limit Systems
- Touch Panel Navigation LAB

DC Power Systems Overview

- Mechanical 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