

Maintaining a skilled, knowledgeable workforce is a challenge everyone faces. With changing technologies and fluctuations within the mining industry, it can be especially daunting. Whether you need training for a new hire or a veteran, it can be difficult to find training that is engaging, technologically relevant and easy to fit into busy schedules. Product Training and Publications, the technical communication and training group within P&H Mining Equipment, strives to provide you with the knowledge, skills and competencies needed for your employees to achieve their highest performance potential.

Product Training and Publications has identified eLearning as the primary delivery method for the knowledge components of Fundamental and Product Specific Training. eLearning provides several advantages over traditional training methods:

- eLearning content can be accessed on any computer that has Internet access by any individual who has the appropriate login and password credentials.
- Immediate availability of training content. Students receive the training they require right now, when the training is required most. This provides a quicker, more productive workforce.
- Reduces the cost of training by eliminating travel, living, and other expenses associated with Instructor Led Training.
- Provides students with the ability to learn at their own pace and in their own comfortable environment.
- Improved retention of technical and operational content.
- The training content can be delivered to a large contingent of people in varying locations and be technically consistent across the board.
- Training content can be tailored to an individual's personal strengths and weaknesses. This provides a targeted more effective training solution for today's workforce.
- When used as a prerequisite to Instructor Led Training, eLearning can level the playing field between novice and senior personal. This makes the Instructor Led Training more effective by allowing the Instructor to spend more time developing skills rather than knowledge-based components.

This Course Catalog contains descriptions of the eLearning Lessons available to you through Product Training and Publications.

Lesson Duration:

Each eLearning Lesson is designed to be 15 – 45 minutes in duration. However, because eLearning is self-paced training, actual duration may vary per student.

Target Audience:

Operators, Technicians, and Engineers who will operate and/or perform maintenance on P&H Mining Shovels and/or Drills.

Prerequisites:

Students should have a basic working knowledge of computers, and fundamental understanding of electronics, mechanics, pneumatics, hydraulics, operation, etc., as it applies to the systems of a P&H Shovel and/or Drill.

Lesson Location:

eLearning content can be accessed on any computer that has Internet access by any individual who has the appropriate login and password credentials.



General eLearning Course Catalog

Computer Requirements:

It is recommended that all computers accessing eLearning content have the basic minimum requirements:

- Internet Explorer version 7 or better.
- Flash Player version 8 or better.
- Java version 1.5 or better.
- Latest version of Windows Media Player.
- Adobe Reader version 8 or better.

General eLearning

Module 2 Safety (KMC Only)

Lesson 2.1	General Safety Precautions
Lesson 2.2	Electrical Hazards
Lesson 2.3	Mechanical Hazards

Module 3 Introduction and Product Overview

Lesson 3.1	Shovel Introduction
Lesson 3.2	Operation Basics
Lesson 3.3	Electrical Basics
Lesson 3.4	Mechanical Basics
Lesson 3.4	P&H Centurion Control System – Touch Panels
Lesson 3.5	Shovel Electrical Overview AC Shovels
Lesson 3.6	P&H Centurion Control Systems – Touch Panels – AC
Lesson 3.8	320XPC Product Overview
Lesson 3.9	77 Class of Drill Product Overview

General Lesson Descriptions

Module 2 Safety Lessons (KMC Only)

Lesson 2.1 General Safety Precautions

Lesson Description:

In this Lesson you will learn about the general safety issues associated with P&H Electric Mining Shovels.

Objectives:

Upon completion of this Lesson the student will:

- State the purpose of a Lockout/Tagout program
- Identify sources of safety information/references
- Identify the responsibilities of all crew members
- State the purpose of planning a job

Lesson Outline:

- Topic 1 Lockout/Tagout
- Topic 2 Safety Sources
- Topic 3 Responsibility of All Crew Members
- Topic 4 Planning the Job

Lesson 2.2 Electrical Hazards

Lesson Description:

This Lesson will identify some common-sense electrical safety rules you can use to be safe while working on the electrical equipment.

Along with these common-sense electrical safety rules, this Lesson teaches you how to perform a general Risk Analysis that will help you identify those electrical hazards that are associated with your particular situation.

Objectives:

Upon completion of this Lesson the student will:

- Identify and describe safety concerns on P&H Electric Mining Shovels as related to electrical hazards
- Describe how to perform a risk analysis of the electrical system
- State the definition of ESD and explain how to avoid damaging equipment through the transfer of static energy

Lesson Outline:

- Topic 1 General Electrical Safety
- Topic 2 Risk Analysis
- Topic 3 ESD

Lesson 2.3 Mechanical Hazards

Lesson Description:

This Lesson will identify some common-sense mechanical safety rules you can use to be safe while working on the equipment.

Along with these common-sense mechanical safety rules, this Lesson teaches you how to perform a general Risk Analysis that will help you identify those mechanical hazards that are associated with your particular situation.

Objectives:

Upon completion of this Lesson the student will:

- Identify and describe safety concerns on P&H Electric Mining Shovels as related to mechanical hazards.
- Describe how to perform a risk analysis of the mechanical systems.

Lesson Outline:

- Topic 1 General Mechanical Safety
- Topic 2 Risk Analysis

Module 3 Introduction & Product Overview Lessons

Lesson 3.1 Shovel Introduction

Lesson Description:

This lesson provides the technician with an overview of the shovel sections, motions, systems, and interior and exterior components.

Objectives:

Upon completion of this Lesson the student will:

- Understand and identify the major sections associated with P&H Mining Shovels
- Understand and identify the major motions associated with P&H Mining Shovels
- Understand and identify the major systems associated with P&H Mining Shovels
- Understand the purpose and function of the exterior components associated with P&H Mining Shovels
- Understand the purpose and function of the interior components associated with P&H Mining Shovels
- Understand the purpose and function of the major components and controls associated with the Operator Cab on P&H Mining Shovels

Lesson Outline:

- Topic 1 Introduction
- Topic 2 Shovel Sections
- Topic 3 Shovel Motions
- Topic 4 Shovel Systems
- Topic 5 Exterior Component Overview
- Topic 6 Interior Component Overview
- Topic 7 Loading Control Center

Lesson 3.2 Operation Basics

Lesson Description:

This lesson is intended to provide the technician with a general overview of the theory of operation for a P&H electric mining shovel. Due to the wide variety of mining operations and conditions, this lesson cannot detail every application or task. It is intended to suggest general operating procedures and techniques only. Specific procedures will vary from mine to mine.

Objectives:

Upon completion of this Lesson the student will:

- Understand the steps required to properly operate the Shovel Hoist motion
- Understand the steps required to properly operate the Shovel Swing motion
- Understand the steps required to properly operate the Shovel Crowd motion
- Understand the steps required to properly operate the Shovel Propel motion
- Understand how a shovel operator should setup the shovel for productive digging
- Have a thorough understanding of the Mechanical and Electrical System Inspection required prior to starting the Shovel
- Have a thorough understanding of the Ground Level Inspection required prior to starting the Shovel
- Have a thorough understanding of the On-Board Inspection required prior to starting the Shovel
- Have a thorough understand of the Operation Station Inspection required prior to starting the Shovel
- Have a through understand of the 4 Phases required to properly operate the Shovel through a complete Dig Cycle
 - Phase 1 Digging
 - Phase 2 Swinging to the Truck
 - Phase 3 Dumping
 - Phase 4 Returning to the Bank.

Lesson Outline:

- Topic 1 Shovel Operation Introduction
- Topic 2 Individual Motion Control Procedures
- Topic 3 Setting Up for Productive Digging
- Topic 4 Systems Pre-Start Inspection – Mechanical Systems
- Topic 5 Systems Pre-Start Inspection – Electrical Systems
- Topic 6 Shovel Pre-Start Inspection – Ground Level
- Topic 7 Shovel Pre-Start Inspection – On-Board
- Topic 8 Shovel Pre-Start Inspection – Operator's Station
- Topic 9 Dig Cycle

Lesson 3.3 Shovel Electrical Basics

Lesson Description:

This lesson is intended to provide the user with an introduction to electrostatic discharge, general electrical guidelines, and troubleshooting steps.

Objectives:

Upon completion of this Lesson the student will:

- State the definition of ESD and explain how to avoid damaging equipment through the transfer of static energy
- Have a thorough understand of how to navigate through a P&H electrical schematic
- Be introduced to a Six Step Troubleshooting technique
- Understand the steps recommended for shutting the equipment down for maintenance procedures

Lesson Outline:

- Topic 1 Electrostatic Discharge (ESD)
- Topic 2 Schematic Diagram Guidelines
- Topic 3 Troubleshooting Electrical Equipment
- Topic 4 Maintenance Shutdown Procedures

Lesson 3.4 Shovel Mechanical Basics

Lesson Description:

This lesson covers basics procedures used in many of the mechanical maintenance tasks of P&H Mining Shovel. The procedures covered in this lesson are general in nature and will apply to a number of tasks on the shovel.

Objectives:

Upon completion of this Lesson the student will:

- Be aware of things to look for during a routine daily inspection of wire rope
- Have a thorough understand of how plastic shims are used on P&H shaft and bearing assemblies
- Become familiar with the types of fasteners used on P&H equipment
- Understand the different grade of bolts and how it influences the standard torque value specified for a bolted joint
- Be able to explain the installation and lubrication of P&H gear type motor couplings

Lesson Outline:

- Topic 1 Wire Rope Inspections
- Topic 2 Shims
- Topic 3 Fasteners and Hardware
- Topic 4 Motor Couplings

Lesson 3.4 P&H Centurion Control System - Touch Panels

Lesson Description:

In this Lesson you will learn about the new Operator interface, or Touch Panel, associated with the Centurion Control System.

Objectives:

Upon completion of this Lesson the student will:

- Explain and identify the different parts of the Centurion Control System Touch Panel.
- Identify and navigate through the various Operational Screens associated with the Centurion Control System Touch Panel.
- Identify and navigate through the various Diagnostic Screens associated with the Centurion Control System Touch Panel.
- Identify and navigate through the various Setup Screens associated with the Centurion Control System Touch Panel.
- Identify and navigate through the various Activity Screens associated with the Centurion Control System Touch Panel.
- Identify and navigate through the various Help Screens associated with the Centurion Control System Touch Panel.

Lesson Outline:

- Topic 1 Touch Panel Basics
- Topic 2 Operation Screens
- Topic 3 Diagnostic Screens
- Topic 4 Setup Screens
- Topic 5 Activity Screens
- Topic 6 Help Screens

Lesson 3.5 Shovel Electrical Overview AC Shovels

Lesson Description:

This Lesson provides the learner with a general overview of some of the electrical components of the P&H AC Shovel.

Objectives:

Upon completion of this Lesson the student will:

- Have a basic understanding of the Power Distribution on a P&H AC Shovel.
- Have a basic understanding of the purpose of the different Protection Circuits used on a P&H AC Shovel.
- Identify the location of the AC Motors used on a P&H AC Shovel.

Lesson Outline:

- Topic 1 Power Distribution
- Topic 2 Protection Circuits
- Topic 3 AC Motors

Lesson 3.6 P&H Centurion Control Systems - Touch Panels - AC

Lesson Description:

This Lesson introduces the Shovel Operator and Maintenance Technician to the different screens associated with a Centurion AC Shovel Touch Panel.

Objectives:

Upon completion of this Lesson the student will:

- Have a thorough understanding of the layout of a Centurion AC Shovel Touch Panel.
- Have a thorough understanding of the Operation Screens and how to navigate through them.
- Have a thorough understanding of the Diagnostic Screens and how to navigate through them.
- Have a thorough understanding of the Setup Screens and how to navigate through them.
- Have a thorough understanding of the Activity Screens and how to navigate through them.
- Have a thorough understanding of the Help Screens and how to navigate through them.

Lesson Outline:

- Topic 1 Touch Panel Basics
- Topic 2 Operation Screens
- Topic 3 Diagnostic Screens
- Topic 4 Setup Screens
- Topic 5 Activity Screens
- Topic 6 Help Screens

Lesson 3.8 320XPC Product Overview

Lesson Description:

This Lesson will provide a base knowledge of the new 320XPC drill. Descriptions and locations of the various components will be provided to give a better understanding of the drill's new layout.

Objectives:

Upon completion of this Lesson the student will:

- Discuss major historical developments and facts of P&H Blasthole Drills.
- Identify the importance of the P&H Blasthole Drills in mine operations.
- Describe the purpose and capabilities of the 320XPC Blasthole Drill.
- Identify the main systems of the 320XPC Blasthole Drill.

Lesson Outline:

- Topic 1 320XPC Blasthole Drill Introduction
- Topic 2 320XPC Main Systems

Lesson 3.9 77 Class of Drill Product Overview

Lesson Description:

In this lesson you will see a brief overview of each of the major systems that shape the 77 class of Blasthole Drills as well as a few of the defining features. At the end of this lesson you will understand each system and the main functionality of each system. While this lesson is a brief overview, knowing and understanding the main functionality of the major systems will increase your knowledge as well as give you a baseline to advance your awareness throughout the remaining lessons.

Objectives:

Upon completion of this Lesson the student will:

- Have a brief understanding of the 77 class of Drills
- Be able to identify the Major Systems
- Have a brief understanding of the system that make up the drill

Lesson Outline:

- Topic 1 Drill Introduction
- Topic 2 Major Systems
- Topic 3 Major Systems Descriptions