

## COURSE DESCRIPTION

# CHH647 – Ring-Geared Mill Drive System Operation and Maintenance

### Course goal

The goal of this course is to teach operation and maintenance aspects of a medium voltage (MV) ring-geared mill drive system (RMD<sup>plus</sup>) to participants. An RMD<sup>plus</sup> system includes converter power transformer(s), MV converter(s) and MV motor(s).

### Main learning objectives

The participants will be able to:

- Identify system hardware components and understand their function
- Carry out specific maintenance activities described in project documentation
- Understand the converter(s) internal wiring diagram(s) as well as interface signals to external devices and control systems
- Understand the protection concept of the system
- Start up, operate and troubleshoot the RMD<sup>plus</sup> system

### Participant profile

This training is targeted to engineering staff, maintenance and service personnel as well as to operators.

### Prerequisites

Participants should have basic knowledge of electrical systems.

### Topics

- Converter(s) input transformer(s)
  - Project specific drawings and documentation for maintenance and troubleshooting
  - Hardware description
  - Supervision signals interface description
  - Maintenance instructions

- Variable speed drive (VSD)
  - ABB MV frequency converters – product overview
  - Hardware and software overview
  - Components and boards functions
  - Project specific drawings and documentation
  - Power and supervision signals interface with external devices and control systems
  - Fault tracing, troubleshooting and practical exercises
  - Maintenance instructions and exercises
- MV motors
  - Project specific drawings and documentation for maintenance and troubleshooting
  - Hardware description
  - Supervision signals interface description
  - Maintenance instructions and exercises
- Interlocks for operation
- Mill functions
  - Overview of available mill functions
  - Frozen charge protection and remover
  - Mill overload and over duty cycle mode
  - Service mode description, creeping and automatic positioning
  - Stop modes
- Control locations
  - Remote operation from PLC/DCS
  - Local operation from RMDcockpit and mill local control panel (MLCP)
- ABB 24/7 support
  - How to contact Minerals SupportLine
  - Capabilities for remote support

**Course type and methods**

This is an instructor-led course with theoretical lectures, interactive classroom discussions, associated practical exercises using the equipment at site, demonstration of best practice examples and group work.

**Remarks**

This customized training program can only be delivered at the customer's site where the dedicated equipment is available for demonstration and practical exercise purposes. Project specific documentation will be used.

**Duration**

The duration is 3 days.

**Course map**

	DAY 1	DAY 2	DAY 3
<b>Topics</b>	Welcome, personnel introduction Course introduction Introduction to RMD <sup>plus</sup> System components Main circuit breaker Transformer Motor VSD Others Interface between components Protection and interlock concept	VSD layout VSD schematics VSD troubleshooting Mill functions	Hands on training Maintenance tasks Basic troubleshooting and support Start-up and operation Summary Questions & answers Evaluation
<b>Time</b>	9:00 am – 5:00 pm	9:00 am – 5:00 pm	9:00 am – 5:00 pm

Typical course layout (time or sequence may change)