ABB UNIVERSITY COURESE DESCRIPTION

CN421
LV DC Drives DCS800 Application in industries and Case Study

Course goal

The goal of this course is to help students to understand DC drive DCS800 application and analysis the cause of failure.

Learning objectives

Upon completion of this course the participants will be able to:

- Understand DC drive system
- Know the DCS800 drive hardware
- Know the DCS800 drive control software
- Learn the method to tune the DCS800 drive
- Build the idea of DC drive maintenance management
- Master the method of DC drive advanced maintenance

Participant profile

System drive engineer, system maintenance engineer, maintenance supervisor, maintenance manager.

Prerequisites

The student shall to have product knowledge of DC drive or had related e-learning or instructor led course.

Topics

- DCS800 drive hardware
- DCS800 control software
- Large DC drives
- DCS800 control panel and PC software
- DCS800 drive commissioning and tune
- DCS800 drive fault tracing and trouble shooting
- DC drive system application and case study

Course type and methods

This is an instructor led course with interactive classroom discussions and associated lab exercises. Approximately 50% of the course is hands-on lab

Course Duration

The duration is 5 days

Course Outline

Day 1	Day 2	Day 3	Day 4	Day 5
Welcome Course overview low voltage system drive Basic DCS800 drive hardware Exercises and QA	DCS800 control software Large DC drives Exercises and QA	DCS800 control panel DCS800 PC software Exercises and QA	DCS800 commissioning and tune Exercises and QA	DCS800 fault tracing and trouble shooting DCS800 maintenance DC drive system application and case study Exercises and QA Course end

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ABB UNIVERSITY COURESE DESCRIPTION

CN432
Low Voltage System Drive ACS800 Application in Mining and Case Study

Course goal

The goal of this course is to teach students to start-up, adjust, operate, maintain and troubleshoot ACS800 multidrives.

Learning objectives

Upon completion of this course the participants will be able to:

- Understand low voltage system drive
- Commission and tune ACS800 multidrives
- Operate and maintain ACS800 multidrives
- Understand communication between ACS800 with control section AC800M
- The drives' parameters adjustment with technology process in mining

Topics

- Reading and interpreting circuit diagrams
- ACS800 system application program
- Control panel functions
- DSU，TSU，ISU and Inverter hardware
- Converter and Supply unit commissioning
- Fault diagnostics and case study
- DriveWindow commissioning and maintenance
- Tool operations
- Overview of process and manufacture characteristics in mining
- The drives' parameters adjustment with technology process in mining

Participant profile

System drive engineer, system maintenance engineer, maintenance supervisor, maintenance manager.

Prerequisites

The student should have Basic knowledge of electronics ， basic knowledge of drives, and mining process. Experience in using PCs in the Windows environment

Course type and methods

This is an instructor led course with interactive classroom discussions and associated lab exercises. Approximately 50% of the course is hands-on lab

Course Duration

The duration is 5 days

Course Outline

Day 1	Day 2	Day 3	Day 4	Day 5
Welcome Course overview low voltage system drive Basic DSU ISU TSU Exercises	ACS800 Inverter Hardware Circuit diagram ACS800 System Application Exercises	ACS800 System Application Control panel start-up and commissioning Exercises Q & A	Drive window Drive control with Fieldbus exercise	Fault diagnostics Case study ACS800 drives' parameters adjustment in Mining

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ABB UNIVERSITY COURESE DESCRIPTION

CN462
Programming AC800M and Drives in Mining

Course goal

The goal of this course is to teach the students Programming controller AC800M and Drives in mining.

Learning objectives

Upon completion of this course the participants will be able to:

- System 800xA architecture
- AC 800M Hardware
- Develop project specific libraries
- Configure AC800M hardware and I/O
- IEC 61131-3 programming language
- Control Modules
- Communication

Topics

- Overview of control system 800xA
- AC 800M hardware and I/O
- programming with FBD and ST
- Control Modules
- Communication
- Task and memory
- Drive control with AC 800M

Participant profile

System engineer, system maintenance engineer, System control engineer.

Prerequisites

Students shall know the fundamentals of working with Distributed Control Systems and have basic knowledge of IEC 61131-3 programming and of working with Microsoft Windows 7, Windows 10 or Windows Server 201x.

Course type and methods

This is an instructor led course with interactive classroom discussions and associated lab exercises. Approximately 50% of the course is hands-on lab

Course Duration

The duration is 5 days

Course Outline

Day 1	Day 2	Day 3	Day 4	Day 5
Course overview 800xA system architecture CBM Project and Application structures AC 800M Hardware	AC 800M Hardware Library for mining Variable and Data Type	Applications with Function Block Diagram (FBD) and Structured Text (ST) Memory and Task	Control Module Drive control with AC 800M	Communication

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ABB UNIVERSITY COURESE DESCRIPTION

CN476
MV Drive ACS6000 Application in Mining and Case Study

Course goal

The goal of this course is to teach students to start-up, adjust, operate, maintain and troubleshoot MV Drive ACS6000.

Learning objectives

Upon completion of this course the participants will be able to:

- Understand Medium Voltage Drive system
- Know ACS6000 Phase Module in ARU/INU
- Know ACS6000 3- Level DTC theory
- Operate and Protection ACS6000
- Study ACS6000 software program
- The drives' parameters adjustment with technology process in mining
- Troubleshooting ACS6000 and Case study

Topics

- Reading and interpreting circuit diagrams
- ACS6000 INU/ARU hardware with control boards
- ACS6000 Common Bus Bar
- ACS6000 WCU and Startup
- ACS6000 Exciter Control Unit
- Control panel operation
- DriveWindow program Tool
- Overview of process and manufacture characteristics in mining
- ACS6000 Preventive Maintenance
- ACS6000 Troubleshooting and case study

Participant profile

System drive engineer, system maintenance engineer, maintenance supervisor, maintenance manager.

Prerequisites

The student should have Basic knowledge of electronics ， basic knowledge of drives, and mining process. Experience in using PCs in the Windows environment

Course type and methods

This is an instructor led course with interactive classroom discussions and associated lab exercises. Approximately 50% of the course is hands-on lab

Course Duration

The duration is 5 days

Course Outline

Day 1	Day 2	Day 3	Day 4	Day 5
Welcome	ACS6000 CBU	ACS6000 WCU	Drive window	Fault diagnostics
Course overview	Circuit diagram	Control panel	Preventive Maintenance	Case study
MV drive introduce	ACS6000 System	WCU start-up	Circuit diagram	Q&A
ACS6000 ARU/INU	Application	Exercises	exercise	Final exam
Exercises	Exercises	Q & A		

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ABB UNIVERSITY COURESE DESCRIPTION

CN525
Mine Hoist Brake System

Course goal

The goal of this course is to teach students to run, maintain ABB mine hoist brake system.

Learning objectives

Upon completion of this course the participants will be able to:

- Know the mine hoist brake system hardware
- Learn hydraulic valves function
- Know the air gap control
- Know the accumulator refilling
- Learn how to use the test box for valve adjustment
- Know the method of setting hydraulic unit
- Know the mechanical maintenance procedures, including lubrication unit

Participant profile

Electrical and mechanical engineer, system maintenance engineer, maintenance supervisor, maintenance manager at mine for hoist brake system.

Prerequisites

Related mine electrical and mechanical knowledge

Topics

- Overview of the hydraulic braking system
- Composition of hydraulic brake control system
- Hydraulic valves function and hydraulic flow chart
- Air gap control
- Accumulator maintenance / refilling
- Hydraulic unit settings
- Maintenance, changing valves / adjustment
- Troubleshooting
- Safety

Course type and methods

This is an instructor led course with interactive classroom discussions and associated lab exercises. Approximately 50% of the course is hands-on lab

Course Duration

The duration is 3 days

Course Outline

Day 1	Day 2	Day 3
Welcome Overview of the hydraulic braking system Composition of hydraulic brake control system Air gap control Accumulator maintenance / refilling Q & A	Hydraulic unit settings Hands on for Hydraulic unit settings Q & A	Maintenance, changing valves / adjustment Troubleshooting Safety Q & A Course close

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