Course description

G700
ACS 1000 Medium Voltage Drive Operation and Maintenance

Course goal

The goal of this course is to train the participants in the safe operation, control, configuration, troubleshooting and maintenance of the ACS 1000.

Learning objectives

The course goal is to teach students to operate, maintain and troubleshoot the ACS 1000 drive, air-cooled and water-cooled units.
Upon completion of this course, students will be able to locate the hardware components, to verify and replace drive's parts and to perform preventive maintenance.
The use of the available programming and troubleshooting tools is trained by practical operating exercises.

Participants

Electricians, technicians and engineers who operate, maintain or troubleshoot ACS 1000

Prerequisites

- Basic knowledge of AC motors and drives
- Basic knowledge using computers with Windows

Topics

Generalities

- ACS 1000 family overview, system requirements
- AC motor and DTC control
- Medium voltage safety requirements

Hardware description (power electronics & control)

- Component and PCB functions
- Hardware schematics and electrical drawings
- PCB settings and configuration
- ACS 1000i characteristics

Water-cooled system

- Water circuits description
- Preventive maintenance

Operation

- Energize / de-energize the drive, start-stop sequence
- Local operation with drive control panel and DriveWindow tool
- Remote control

Software introduction

- Software structure, parameter's description
- Application configuration, parameter settings

Fault tracing and troubleshooting

- Alarm and fault indications
- Checking and replacing PCB's and components
- Using DriveWindow SW tool for configuration and troubleshooting
- Getting help from ABB

Methods

Lectures and demonstrations
Practical exercises with training equipment
Factory visit

Follow-up training

G794 DriveMonitor™ Operation & Maintenance

Duration

3 days
Max. 8 participants
Tailor made and on-site training courses on request

Course description

G700
ACS 1000 Medium Voltage Drive Operation and Maintenance

Course outline

Day 1	Day 2	Day 3
■ Course overview ■ Product overview ■ Power electronics hardware: description and function, for air cooled and water cooled drives	■ ACS 1000i characteristics ■ Control HW ■ Protection concept ■ Operation of the drive ■ Hands-on training: component's location and verification, operation ■ Factory visit	■ DTC control platform ■ Application SW ■ DriveWindow ■ Preventive maintenance ■ Hands-on training: troubleshooting using control panel and DriveWindow, parts measurements and replacement

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Power Electronics and Medium Voltage Drives
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Course description

G711
ACS 1000 Medium Voltage Drive Service and Commissioning

Course goal

The goal of this course is to introduce and instruct the service and commissioning engineer to the ACS 1000. To allow them to learn in a safe and instructive environment the techniques required to carry out the correct procedure in commissioning, servicing and maintaining the ACS 1000.

Learning objectives

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

- Understand the drive system topology
- Carry out basic commissioning, service and maintenance work as well as fault-tracing.
- Verify and modify drive parameters
- Locate and replace faulty hardware components
- Using MV Drive Portal database to update the knowledge of the drive, get familiar with spare parts and warranty issues handling
- Start the certification program for commissioning; after completion of the certification program the participants are allowed to commission the medium voltage drive system

Participant profile

Commissioning and service engineers, testing and maintenance personnel of ABB or certified technical partners

Prerequisites

- Good engineering knowledge of AC drives and motors
- Personal computer knowledge
- Laptop with DriveDebug and DriveWindow loaded, fiber optic programming tool (RUSB-02 or PCMCIA equivalent)
- Successful completion of the e-learning course (G711e) – The participant will be enrolled automatically into the e-learning course (G711e) by applying for the G711 course.

Topics e-learning course (G711e)

Generalities

- ABB medium voltage drives family overview
- Three-level inverter topology, DTC control
- Options and typical applications

Control Hardware description

- Component and PCB functions
- Main circuit diagrams
- PCB settings and configuration

Hardware description

- Air cooled drive
- Water cooled drive
- ACS 1000i drive

Protection concept

- Fault classes
- Protective reactions

Topics classroom course

Generalities

- MV data base instruction
- Software compatibility and downloading sequence
- How to use software tools
- How to give a short customer training after commissioning

Course description

G711
ACS 1000 Medium Voltage Drive Service and Commissioning

Demonstration drives

- Component recognition and location
- Starting/stopping procedures
- Motor runs and tuning

Drive commissioning

- Commissioning Manual
- Commissioning procedure, application configuration

Software description

- Software structure, parameter's description
- Pass codes, service parameters

Fault-tracing and troubleshooting

- Alarm and fault indications
- Insulation resistance measurement
- Measuring and replacing PCB's and power components

Methods

- e-Learning, internet based course
- Lectures and demonstrations
- Practical exercises with training equipment

Follow-up training

- G719 ACS 1000 Hands-on Training
- G795 DriveMonitor™ Service & Commissioning
- ACS 1000 Expert Days

Duration

- Ca. 2 days e-learning
- 3 days classroom training
- Max. 8 participants

Course outline (classroom training)

Day 1	Day 2	Day 3
■ Component recognition and location ■ Operation of the drive ■ Software structure, parameter's description ■ Pass codes, service parameters	■ MV data base instruction ■ Software compatibility and downloading ■ How to use software tools ■ How to give short customer training	■ Insulation resistance measurement ■ Preventive maintenance ■ Checking/exchanging semiconductors ■ Troubleshooting