

Course description

G731

ACS 5000 Air Cooled 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 air cooled ACS 5000.

Learning objectives

Upon completion of this course, the 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.

Participant profile

Electricians, technicians and engineers who operate, maintain or troubleshoot the ACS 5000 air cooled drive

Prerequisites

- Basic knowledge of AC motors and drives
- Basic knowledge of MS Windows based computers

Topics

Generalities

- Introduction to product
- AC motor and DTC control

Hardware description (power electronics & control)

- Component and PCB functions
- Hardware schematics and electrical drawings
- PCB settings and configuration

Air cooling system

- Cooling circuit description
- Preventive maintenance



Operation

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

Software

- 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 on request

Course description

G731

ACS 5000 Air Cooled Medium Voltage Drive Operation and Maintenance

Course outline

Day 1	Day 2	Day 3
<ul style="list-style-type: none">■ Course overview■ Product overview■ Power part■ Control part■ Integrated transformer■ Excitation Unit	<ul style="list-style-type: none">■ Hands-on: Checking/replacing semiconductors■ Hands-on: Operation of the drive■ Hands-on: SW tool DriveWindow■ Preventive maintenance	<ul style="list-style-type: none">■ Drive system requirements■ Application SW■ Protection concept■ Hands-on: Troubleshooting, fault finding exercises

Course description

G732

ACS 5000 Water Cooled 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 water cooled ACS 5000.

Learning objectives

Upon completion of this course, the 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 the ACS 5000 water cooled drive

Prerequisites

- Basic knowledge of AC motors and drives
- Basic knowledge of MS Windows based computers

Topics

Generalities

- Introduction to product
- AC motor and DTC control

Hardware description (power electronics & control)

- Component and PCB functions
- Hardware schematics and electrical drawings
- PCB settings and configurations

Water cooling system

- Cooling circuits description
- Preventive maintenance



Operation

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

Software

- 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 material
Factory visit

Follow-up training

G794 DriveMonitor™ Operation & Maintenance

Duration

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

Course description

G732

ACS 5000 Water Cooled Medium Voltage Drive Operation and Maintenance

Course outline

Day 1	Day 2	Day 3	Day 4
<ul style="list-style-type: none">■ Course introduction■ Product overview■ Line Supply Unit■ Inverter Unit■ Control Unit	<ul style="list-style-type: none">■ Excitation Unit■ Water Cooling Unit■ Hands-on: Checking/replacing semiconductors■ Factory visit	<ul style="list-style-type: none">■ Hands-on: Operation of the drive■ Hands-on: SW tool DriveWindow■ Application SW■ Drive system requirements	<ul style="list-style-type: none">■ Protection concept■ Hands-on: Troubleshooting, fault finding exercises■ Preventive maintenance

Course description

G741

ACS 5000 Medium Voltage Drive Service and Commissioning

Course goal

The goal of the course is to introduce and instruct the service and commissioning engineer to the ACS 5000, both air and water cooled version. 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 5000.

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.
- Set and tune application and motor control parameters.
- Locate and replace faulty hardware components
- Using MV Drive Portal database to update the knowledge of the drive.
- 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 (G741e) – The participant will be enrolled automatically into the e-learning course G741e by applying for the G741 course.



Topics e-learning course (G741e)

Generalities

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

Hardware description (power electronics & control)

- Main circuit diagrams
- Component and PCB functions

Water cooled system

- Water circuit description

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

Demonstration drive

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

Course description

G741

ACS 5000 Medium Voltage Drive Service and Commissioning

Drive commissioning

- Cold commissioning procedure
- Tests and reports
- Calculation of motor parameters

Software description

- Software structure, parameter's description
- Application programming
- Fieldbus programming (interfacing with overriding system)
- Setting and tuning motor control parameters

Fault-tracing and troubleshooting

- Alarm and fault indications
- Measuring and replacing power components

Methods

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

Follow-up training

- G749 ACS 5000 Hands-on Training
- G795 DriveMonitor™ Service & Commissioning
- ACS 5000 Expert Days

Duration

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

Course outline

Day 1	Day 2	Day 3	Day 4
<ul style="list-style-type: none">■ Course overview■ Revision of G741e e-learning■ Operation of the drive■ Drive system requirements■ Factory visit	<ul style="list-style-type: none">■ Power part commissioning■ Application SW■ Software tools■ Control SW overview and programming	<ul style="list-style-type: none">■ Motor parameter calculation■ Torque control SW (AD INU)■ Torque control SW (SD INU)	<ul style="list-style-type: none">■ Preventive maintenance■ Checking/exchanging semiconductors■ Service processes■ Troubleshooting