

COURSE DESCRIPTION

# G731 ACS5000 Air Cooled Operation & Maintenance Classroom training in Turgi, Switzerland

#### 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 ACS5000.

# Main 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 ACS5000 air cooled drive

# **Prerequisites**

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

# **Topics**

# Generalities

- ABB medium voltage drives family overview
- ACS5000 5-level inverter topology and DTC control

# Hardware description

# (power electronics & control)

- Component and PCB functions
- Hardware schematics and electrical drawings
- PCB settings and configuration
- ACS5000 air cooled characteristics

# 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 introduction

- Software structure, parameters description
- Application configuration, parameter

#### 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

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# **Course type**

This is a face to face class room training with maximum 8 participants.

# Learning methods

- Lectures and demonstrations
- Practical exercises with training equipment
- Factory visit

# Duration

3 days

#### To register:

Please apply online (signup required): ABB MyLearning/G731

Custom-tailored training courses or standard training at additional course dates are available on request.

<u>Please note</u>: The course is only carried out if at least 4 participants have been booked.

# **Course outline**

DAY 1	DAY 2	DAY 3
Course overview     Product overview	Hands-on: Checking/replacing semiconductors	<ul><li>Drive system requirements</li><li>Application SW</li></ul>
Power part	Hands-on: Operation of the drive	<ul><li>Protection concept</li></ul>
<ul> <li>Control part</li> </ul>	Hands-on: SW tool DriveWindow	— Hands-on: Troubleshooting, fault
<ul> <li>Integrated transformer</li> <li>(Optional)</li> </ul>	<ul> <li>Preventive maintenance</li> </ul>	finding exercises
<ul> <li>Excitation Unit (Optional)</li> </ul>		



Classroom training



Hands-on training

E-mail: <u>ch-learningcenter-mvdrives@abb.com</u> Visit <u>our page</u>

mylearning.abb.com



COURSE DESCRIPTION ADD-ON FOR G731

# G731b ACS5000A Operation & Maintenance G731vc ACS5000A Operation & Care Web-based alternatives

#### **Preface**

Due to travel restrictions in connection with COVID-19, the access to normal classroom trainings is limited. Therefore, we offer variants with contents delivered over web.

#### Main learning objectives and topics

The objectives and topics are the same as for the regular classroom course (see course description *G731 – ACS5000 Air Cooled Operation & Maintenance*), except some hands-on exercises in the Virtual Classroom variant.

#### Participant profile

Same as for regular course

#### **Prerequisites**

Same as for regular course

#### **Option 1: Blended Learning**

The training is split in 2 parts: Web-based training followed by the classroom hands-on session

#### Virtual Classroom part

- Content distributed over 3 days (experience has shown, that more than half a day virtual training at once is tiring and therefore not effective)
- In the mornings: Approx. 3h instructorled virtual classroom training (e.g. via Skype)
- Interactive training with state-of-theart online tools in small classes of 5 – 8 participants.
- In the afternoons: Approx. 1h self-learning tasks and self-assessments, trainer available for support

#### Hands-on part

 2 full days of classroom training with training equipment (instead of 3 days) Focus on practical exercises, putting theory into practice

# **Advantages of Blended Learning**

- Virtual classroom part is location independent; no travelling required
  - → COVID-19 does not stop us from learning
- Participants have a common level of knowledge, when coming to the handson part
  - → Time for practical exercises on the training equipment is maximized
- Combination of different learning methods is more effective
- Recalling information, which was learned earlier, strengthens the knowledge

# **Disadvantages of Blended Learning**

- Virtual Classroom training is mainly limited to theoretical topics
  - → This makes it more tiring
- No real hardware at hand during Virtual Classroom sessions
  - → Makes it more difficult to visualize the knowledge
- The whole training is less compact, due to split over 2 weeks

#### Duration

- 3 days Virtual Classroom training
- 2 days hands-on training in our Learning Center

ABB Switzerland Ltd Learning Center MV Drives Austrasse CH-5300 Turgi

E-mail: <a href="mailto:ch-learningcenter-mvdrives@abb.com">ch-learningcenter-mvdrives@abb.com</a>
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#### **Option 2: Virtual Classroom only**

#### Methods

- In the mornings: Approx. 3h instructorled Virtual Classroom training, e.g. via MS Teams. Experience has shown, that more than half a day virtual training at once is tiring and therefore not effective.
- Interactive training with state-of-theart online tools in small classes of 5 – 10 participants.
- In the afternoons: Self-learning tasks on training equipment accessed over web, self-study and self-assessments; trainer available for support

#### Limitations

The following topics cannot be covered to the same degree as in the regular class-room training:

- Operation of demo unit
- Semiconductor check and replacement
- Fault finding exercises on demo unit
   Those topics are taught as good as possible using videos, demonstrations, case studies, etc.

#### <u>Duration</u>

3 days Virtual Classroom training

#### To register

Please apply online (log in to MyLearning first): ABB MyLearning/G731

#### Recommended follow-up: Hands-on training

- Hands-on training in our training center can be booked separately at a later date.
- Up to 2 full days of classroom training with training equipment
- Focus on practical exercises, putting theory into practice
- Combinations with other trainings, Factory Acceptance Test, etc. possible