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## COURSE DESCRIPTION

# G860 PCS6000 Operation & Maintenance Classroom training in Turgi, Switzerland

### Course goal

The goal of the course is to introduce and instruct the service and operation engineer to the PCS6000 Product Family. To allow them to learn in a safe and instructive environment the techniques required to carry out the correct procedure in operating and maintaining the PCS6000 frequency converter.

### Main learning objectives

- Upon completion of this course, the participants will be able to:
- Describe the service training and authorization program
- Identify the PCS6000 configurations
- Explain the converter components and functionality
- Explain the operational sequences (control & emergency)
- Carry out standard maintenance
- Verify proper functionality of certain components
- Exchange standard parts
- Connect to IPC and use the software tools
- Carry out basic troubleshooting using service software and manuals

### Participant profile

Electricians, technicians and engineers who operate, maintain or troubleshoot PCS6000. It is also a prerequisite for future commissioning & service engineers.

### Prerequisites

- Electrical engineering knowledge & experience
- Laptop

### Topics

- System description
- PCS6000 product overview
- Control hardware
- Power hardware
- Water Cooling Unit
- Maintenance
- Control sequences
- Troubleshooting
- Practical exercises
- Service processes

### Follow-up training

- G861 Service & Commissioning

### Course type

This is a face to face classroom training with maximum 6 participants.

### Learning methods and tools

This is an instructor led course with lectures and demonstrations. For maximum effectiveness it's based on a good balance between theoretical training and practical exercises with training equipment

**Duration**  
4 days

**To register:**

Please apply online ([signup](#) required):  
[ABB MyLearning/G860](#)

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

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

**Course outline**

DAY 1	DAY 2
<ul style="list-style-type: none"><li>— Welcome, course goals and schedule</li><li>— Introduction to PCS6000</li><li>— Safety instructions for training unit</li><li>— Hardware description</li><li>— Hands-on:<ul style="list-style-type: none"><li>• Operation of the converter</li><li>• Demonstration of control sequences</li></ul></li><li>— Exercise: Reading electrical circuit diagrams</li></ul>	<ul style="list-style-type: none"><li>— Converter components and functionality in detail</li><li>— Introduction to manuals and reports (user manual, service manual, maintenance report, etc.)</li><li>— Hands-on: Preventive maintenance<ul style="list-style-type: none"><li>• Installation inspection</li><li>• DC link checks</li><li>• Functionality and security procedures</li><li>• GRB and GDM/GBM checks</li><li>• Insulation resistance test</li></ul></li></ul>
DAY 3	DAY 4
<ul style="list-style-type: none"><li>— Introduction to IPC and software tools</li><li>— Hands-on:<ul style="list-style-type: none"><li>• Software download to PEC</li><li>• Change IP address of IPC</li></ul></li><li>— Hands-on:<ul style="list-style-type: none"><li>• Test IGCT's and diodes</li><li>• Semiconductor replacement</li></ul></li><li>— Factory visit</li></ul>	<ul style="list-style-type: none"><li>— Troubleshooting procedure</li><li>— Hands-on: fault finding exercises</li><li>— Warranty and failure reporting</li><li>— Final exam</li><li>— Course conclusion and feedback</li></ul>



Classroom training



Hands-on training

COURSE DESCRIPTION ADD-ON FOR G860

# G860b PCS6000 Operation & Maintenance

## G860vc PCS6000 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 *G860 - PCS6000 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 instructor-led virtual classroom training (e.g. via Skype)
- Interactive training with state-of-the-art 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

- 3 full days of classroom training with training equipment (instead of 4 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 hands-on 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
- 3 days hands-on training in our Learning Center

## Option 2: Virtual Classroom only

### Methods

- In the mornings: Approx. 3h instructor-led 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-the-art 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 classroom training:

- Operation of demo unit
- Preventive maintenance hands-on
- Semiconductor check and replacement
- Fault finding exercises on demo unit

Those topics are taught as good as possible using videos, demonstrations, case studies, etc.

### Duration

4 days Virtual Classroom training

### To register

Please apply online (log in to MyLearning first): [ABB MyLearning/G860](#)

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

- Hands-on training in our training center can be booked separately at a later date.
- Up to 3 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