

Course description

J210 Power Electronics High Power Rectifier Systems Service & Commissioning

Course goal

ABB high power rectifier systems are employed in electro-chemical electrolysis processes, graphite electrolysis plants, and DC-arc furnaces. Typically, such plants consist of at least a rectifier-transformer, rectifier power part, rectifier cooling unit and control system. The course goal is to enhance participants to do commissioning and service on high power rectifier systems.

Learning objectives

Upon completion of this course, the participants know:

- The theory of power electronics and rectifier technology
- Basics of rectifier system design
- The typical design and configuration of rectifier systems
- The major components and main sections of rectifier systems
- Operation and operation levels
- Measurement and trouble shooting
- Safety & Handling
- Commissioning procedure

Prerequisites

Understanding of electrical systems and power electronics

Topics

- Basics of rectifier theory
- Rectifier connections
- 3-phase rectifier bridge
- Star-star surge reactor configuration
- Regulator function
- Phase control for thyristor applications
- Tap changer and transducer control for diode rectifier systems
- System design
- Design and system arrangement
- On-load tap changer transformer
- Parallel operation of rectifier groups
Typical arrangement
- Rectifier transformer
- Rectifier power part

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- Cooling unit
- System Control
Control, regulator and protection features of the rectifier system
- Local control system
- Master control concept
- Man Machine communication
- The AC 800PEC Control system
- Reading of drawings and manuals
- Measurement & Troubleshooting
- Safety & Health
- Rectifier hands on training

Methods

Lectures and demonstrations

Full functional rectifier demonstration unit with simulator

Factory visit tour

Participants

People who have to do commissioning and service on high power rectifier systems

Duration

5 days

Max. 8 participants

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