COURSE DESCRIPTION

J850 UNITROL® 6000 X-Power Operation and Maintenance training

Course goal

UNITROL® 6000 X-Power is the newest product of UNITROL® series of excitation systems introduced by ABB Switzerland AG. It is a microprocessor-based system using the state-ofthe-art technologies currently available. Its design is based on ABB's high performance controller family AC 800PEC. UNITROL® 6000 X-Power is mainly used for high demanding static excitation system. The course goal is to teach students to operate, maintain and troubleshoot the UNITROL® 6000 X-Power excitation system

Main learning objectives

Upon completion of this course, the students:

- Remember the synchronous machine and its operating conditions
- Know the duties of excitation systems
- Can explain the hardware concept and used configuration of the UNITROL® 6000 X-Power excitation system
- Are familiar with the principle mode of operation of the electronic devices with its indication and settings
- Can read and interpret the hardware drawing
- Are able to operate the voltage regulator using the excitation control terminal
- Can explain the most important software functions
- Are able to localize and replace defective components
- Is able to carry out the maintenance work based on the maintenance schedule

Participant profile

Operation and maintenance personnel

Prerequisites

Basic knowledge of electronics and power generation

Personal computer knowledge is required

– English Level: B1

Topics

– Basic of excitation system and operating condition of the synchronous machine

- Configurations of UNITROL® 6000 X-Power with its redundancy principle
- Setup and principle of operation of the hardware
  - Main Controller
  - Measuring and I/O interfaces
  - HMI and Communications
  - Excitation Control Terminal ECT
  - Converter Control Panel CCP
  - Power Converter
- Principle operation of the software
- Voltage regulator with limiters and power system stabilizer
- Superimposed cos phi / VAR control
- Channel and follow-up control
- Monitoring and protection
- Ethernet addressing and communication to upper control systems

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- How to use the tools for UNITROL® 6000 X-Power utilized for maintenance
  - PECinstaller and configurator tool
  - Excitation Control Terminal
- How to use the Local Control Terminal ECT
  - Operate the excitation system locally
  - Verify the operating point of the synchronous machine
  - Displaying signals on the panel
  - Use the trending and transient recorder
  - Reading the event/alarm logger
  - Identify and interpret alarm indication
- How to use the Converter Control Panel
- Maintenance and troubleshooting procedures
- How to replace hardware components
- How to verify proper operation of the excitation system
- How to perform functional tests

Learning methods and tools

- Lectures for introduction
- Practical exercise using UNITROL® 6000 X-Power excitation demo equipment
- Hands-on training using generator simulator

Duration

5 days, Max. 8 participants
Tailor made and on-site training courses on request
Registration Link: J850 UNITROL® 6000 X-Power

Course map

	DAY 1	DAY 2	DAY 3	DAY 4	DAY 5
Topics	– Course overview – Basic of excitation systems – Introduction to UN6000 system topology – The hardware arrangement and principle operation of the hardware devices – How to read the hardware diagram	– The power converters utilized by UNITROL® 6000 X-Power – Introduction to the software – Operation aspects of UNITROL ® 6000 X-Power – The redundancy principle – Factory visit	– How to use the various tools of UNITROL® 6000 X-Power – Ethernet Addressing – Software download/upload – How to use the Converter Control Panel	– How to use the Excitation Control Terminal - Operator panel - Parameter settings - Trending - Transient Recorder - Power chart - Event recorder - ECT settings – Exercises using Simulators	– Maintenance aspects – How to replace hardware components – How to run functional tests – Troubleshooting aspects, Alarm handling
Time	8:30 am – 4:30 pm	8:30 am – 4:30 pm	8:30 am – 4:30 pm	8:30 am – 4:30 pm	8:30 am – 4:30 pm

Typical course layout (time or sequence may change)

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