TRAINING CENTER

Seminar Description

sprecher *automation*

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PRODUCT-SPECIFIC TRAINING

SPRECON-E Basic Training

🗒 **Requirements:**

Knowledge of the most important terms in automation technology.

📍 **Seminar aim:**

Participants develop an understanding of the capabilities of the scalable control, protection and automation system SPRECON.

- You will have an overview of the structure of SPRECON
- You will understand the most important functions
- You will be familiar with the basic functioning of SPRECON

⚙ **Topics:**

- SPRECON product families at a glance
- The scalable concept of SPRECON
- The properties of the system components
- Architecture, hardware, performance
- How SPRECON works
- Processing of messages, measured values, commands and setpoints
- Diagnostics and testing options
- Configuration options
- Documentation

🕐 Duration: 1 day

SPRECON-E Service Program

🗒 **Requirements:**

SPRECON-E basic training or basic knowledge of the SPRECON system recommended.

📍 **Seminar aim:**

Participants are able to maintain the scalable SPRECON automation system using the tools provided by the system.

⚙ **Topics:**

- System architecture and hardware overview
- Connection technology, mechanics
- Functions of the SPRECON service program
- Diagnostic options
- Component replacement
- Loading parameters, loading firmware
- Remote maintenance
- Practical exercises with the SPRECON service program
- Use of the control unit
- Exercises with SPRECON-E-C and SPRECON-E-P devices

🕐 Duration: 2 days
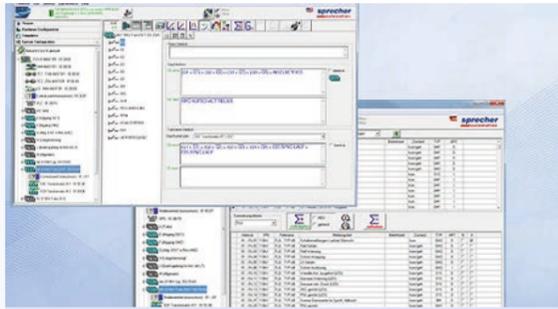
SPRECON-E Designer

SPRECON-E Designer is used for fast, clear and convenient parameterisation of control technology components and systems with a wide variety of architectures.

📋 **Requirements:**

Basic knowledge of the SPRECON automation system (e.g., from the SPRECON-E Basic Training course).

📍 **Seminar aim:**

Participants will master the correct configuration of the SPRECON automation system using the SPRECON-E Designer parameterisation program.

⚙️ **Topics:**

- Installation and basic parameterisation
- Hardware configuration
- Overview of system functions
- Editing process variables
- Creating:
  - Switchgear interlocks
  - Cyclic equations
  - Switching automata
  - Summary messages
  - Message groups
  - Service functions
  - Documentation

🕐 Duration: 2 days

SPRECON-E PLC Designer

📋 **Requirements:**

Knowledge of the most important terms in automation technology or SPRECON Basic Training.

📍 **Seminar aim:**

Participants will master the handling and creation of a control task in the SPRECON automation system using the SPRECON-E PLC Designer tool. They will become familiar with the IEC 61131-compliant programming language with a focus on FBD (function block diagram) and its use.

⚙️ **Topics:**

- Installation and basic parameterisation
- Hardware configuration
- Overview of system functions
- Editing process variables
- Creating:
  - Switchgear interlocks
  - Cyclic equations
  - Automatic switching
  - Summary messages
  - Message groups
  - Service functions
  - Documentation

🕐 Duration: 2 days
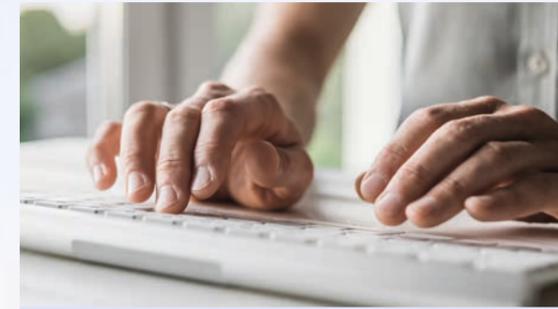
SPRECON-E-P Engineering

In the SPRECON-E-P combined protection and control devices, protection and control functions are separated from each other, as protection runs in its own independent task.

📋 **Requirements:**

Protection expertise, SPRECON-E Basic Training and SPRECON-E Designer knowledge.

📍 **Seminar aim:**

Participants can program the protective function independently. (Note: The configuration of the control function is taught in the SPRECON-E-C Parameterisation seminar.)

⚙️ **Topics:**

- System architecture and hardware overview
- Parameterisation of the protection functionality
- Image design for the local display
- Diagnostic options
- Structure and mechanics
- Practical exercises with the Designer and SPRECON-E-P

🕐 Duration: 2 days

SPRECON-V460 Operation & Configuration

📋 **Requirements:**

SPRECON-E Basic Training or basic SPRECON system knowledge recommended.
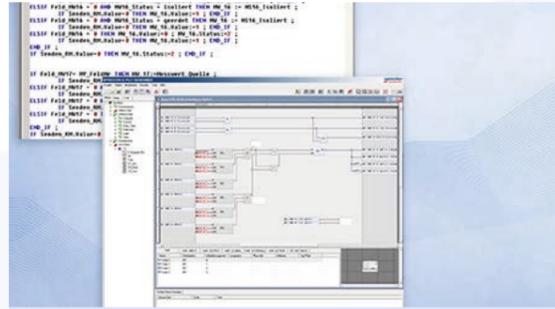
📍 **Seminar aim:**

The participants can use the SPRECON visualisation designer (editor) and independently make changes and additions to a SPRECON-V project. (A new SPRECON-V project will be started during this seminar. The most important functions of SPRECON-V will be explained in the course of this project.)

⚙️ **Topics:**

- Overview of SPRECON-V460
- The Designer (Editor)
- Project creation
- Data point parameterisation
- Image construction
- Static image elements
- Dynamic image elements
- Interface with IEC 60870-5-104 / IEC 61850
- Command input
- Alarm function
- Practical exercises
- Data backup
- Handling user documentation

🕐 Duration: 2 days

GENERAL TECHNICAL TRAINING

Introduction to Automation Technology for Energy Systems

Requirements:

Basic knowledge of electrical engineering.

Seminar aim:

Participants are familiar with the specific terms and issues relating to automation technology and tele-control technology and are familiar with terms such as double signalling, type identification and blocking.

Topics:

- Objectives of automation technology
- Basic structure of automation systems
- Information and information handling
- Messages, measured values, counted values, commands, setpoints
- Data communication
- Physical interfaces and transmission media
- Protocols IEC 60870-5-101/104, IEC 61850 and IEC 61131-3
- Information about important standards
- Cross-system concepts
- Data addressing

Duration: 2 days

Introduction to Protection Technology

Requirements:

Basic knowledge of electrical engineering and knowledge of energy generation and distribution.

Seminar aim:

Participants will learn the basic concepts and tasks involved in grid protection technology. They will also receive an overview of the SPRECON-E-P range of protection products.

Topics:

- Protection technology tasks
- Terms and abbreviations
- Types of faults
- Measuring transformers
- Line protection
- Transformer protection
- Busbar protection
- Sprecher Automation protection portfolio

Duration: 2 days

Introduction to Substation Technology

Requirements:

Basic knowledge of electrical engineering.

Seminar aim:

Participants will acquire basic knowledge of the primary technology of switchgear (structure, different configurations) and gain process engineering expertise for switchgear technicians.

Topics:

- Basic structure of switchgear
- Components of switchgear
- Voltage levels
- Busbar systems
- Switchgear designs
- Functions in switchgear
- Practical demonstration of switchgear devices

Duration: 2 days

IEC 60870-5-101/-103/-104 Theory & Practice

Requirements:

Basic IT and communication skills or basic SPRECON system knowledge.

Seminar aim:

Today, telecontrol communication is no longer limited to the connection between the control center and substation. There are also standards for meter reading transmission and communication between protection and control devices. First, a theoretical overview of the most important standards is provided, followed by practical examples. Functions such as general queries and control commands are also explained.

Topics:

- Overview of standards
- Address concepts
- Setting up an IEC 60870-5-101 connection
- The most important data formats
- Important application functions
- Parameterisation of commands
- Setting up an IEC 60870-5-104 connection
- Analysis tools and protocol test systems
- Time settings
- General queries
- Practical examples

Duration: 2 days

Fundamentals of the IEC 61850 Series of Standards

Requirements:

No prior knowledge of IEC 61850 is required.

Seminar aim:

IEC 61850 is the basis for modern communication in energy supply. In this seminar, you will learn about the most important parts of the standard and its application through theory and practice. We will demonstrate the use of Substation Configuration Language (SCL) and explain the differences between client/server, GOOSE and sampled value services.

Topics:

- Fundamentals of the IEC 61850 standard
- Data models and abstract services (ACSI)
- Specific communication mapping (SCSM)
- Client/server communication
- GOOSE communication and related applications
- Sampled values on the digital process bus
- Fundamentals of system specification, parameterisation and documentation based on SCL
- Network architectures
- Analysis tools and protocol test systems
- Practical examples

Duration: 2 days

IEC 61850 in Detail – Advanced Course

Requirements:

- Course: "Fundamentals of the IEC 61850 Series of Standards"
- Knowledge of digital communication and network technology, as well as switchgear and electrical engineering.

Seminar aim:

Participants learn how to apply and parameterise IEC 61850 functions. This involves test concepts, important parameters for report and GOOSE applications and handling documents such as PICS, MICS and TICS.

Topics:

- Data models in detail
- Reporting and logging of data
- GOOSE and sample value concepts
- Control model concept
  - Differences between control models
  - Command level concepts – local/remote/ location
- Parameter sets
- Analog signal processing
- Blocking of functions
- Test concepts/functions
- Gateways and proxies
- Hierarchy management of logical devices
- Extension of the IEC 61850 definition range via namespaces
- Monitoring functions

Duration: 2 days

Train the Sprecher Trainer

Requirements:

Experience with the project planning and commissioning of Sprecher Automation automation systems based on SPRECON-E.

Seminar aim:

In this seminar, participants learn about Sprecher Automation's didactic concept and training methods and apply them themselves. Practical exercises take place at Sprecher Automation's special training facility. In addition to theoretical content, there are trial training sessions with video feedback. This seminar strengthens presentation and methodological skills — an important prerequisite for certification as a Sprecher Certified Trainer.

Topics:

- Structure of the voice-over training course
- Functions of the training course
- Contents and application of the Powerpoint-based training materials
- Didactic concept
- Change of methods in voice-over training
- Use of video tutorials
- Video analysis

Duration: 2 days

CYBERSECURITY

Operational Technology (OT) – Basic Course

📋 **Requirements:**

Basic knowledge of automation technology for energy supply systems.

📍 **Seminar aim:**

Broad basic knowledge of network components, protocols, intrusion detection, standards and laws.

⚙️ **Topics:**

- Understanding the differences between IT and OT
- Standards and laws (IEC, NIS etc.)
- OSI model
- Cabling (twisted pair and fibre optic)
- Switching, VLAN, routing
- Network protocols
- Next-generation firewall
- Monitoring (SNMP, Syslog)
- Topologies and redundancies
- Cybersecurity and intrusion detection
- Encryption

🕑 Duration: 2 days

Operational Technology (OT) – Advanced Course

📋 **Requirements:**

The knowledge imparted in the Basic Course Operational Technology (OT) is a prerequisite.

📍 **Seminar aim:**

Deepening basic knowledge of networks, protocols and IT security. The training course consolidates what has been learned through practical exercises and theory quizzes.

⚙️ **Topics:**

- Overview of important standards and laws (IEC, NIS, IEC 62443) with practical examples
- Network technology and practical application
- Network architectures in the OT sector
- Segmentation, filtering, routing and security
- Understanding SNMP for system monitoring
- Malware, attacks and protection strategies
- Encryption in OT systems
- Certificates and PKI (Public Key Infrastructure)
- Use of VPN and TLS for secure communication

🕑 Duration: 2 days

Cybersecurity: Hardening of SPRECON-E

📋 **Requirements:**

Prerequisites are the knowledge imparted in the Basic Course Operational Technology (OT) and fundamental SPRECON system knowledge.

📍 **Seminar aim:**

Participants learn how to convert an unsafe system into a safe one themselves. All exercises are based on practical examples using SPRECON-E products. Typical safety risks in a control system with SPRECON-E-T3 (substation) and SPRECON-E-C92 (control center) are highlighted. The system is then secured step by step.

⚙️ **Topics:**

- Configuring secure service access for SPRECON-E
- LDAP and RADIUS settings
- Setting up the SPRECON web server with HTTPs
- SNMPv3 in SPRECON-E
- Encryption with IPsec in SPRECON-E-C and -T3
- Syslog configuration in SPRECON-E
- Firewall configuration in SPRECON-E

🕑 Duration: 2 days

Cybersecurity: Hardening of Microsoft Windows & SPRECON-V460

📋 **Requirements:**

Basic knowledge of installing, setting up and administering operating systems.

📍 **Seminar aim:**

In this course, participants learn how to harden Microsoft Windows according to CIS and deepen their knowledge with practical exercises. Building on this, measures for hardening a SPRECON-V460 system are applied.

⚙️ **Topics:**

- Installation of Microsoft Windows
- Hardware-specific topics: TPM, UEFI BIOS, SecureBoot etc.
- Windows system settings: Device Manager, drivers, computer management, event manager, network, firewall
- SPRECON-V460 Hardening and verification
- Implementing and adapting hardening measures
- CIS benchmarks
- CIS tool and scan

🕑 Duration: 2 days

INDIVIDUAL TRAININGS

Project-specific Workshops

📑 Requirements:

Depending on the training goal.

📍 Seminar aim:

All training courses are structured as interactive, moderated training sessions. This means that you will have sufficient time during the training to put the knowledge you have acquired into practice.

⚙ Topics:

- You determine the exact content in consultation with us based on our training courses and your projects.

🕐 Duration: 1 day

CERTIFICATION

SCME – Sprecher Certified Maintenance Engineer

📑 Requirements:

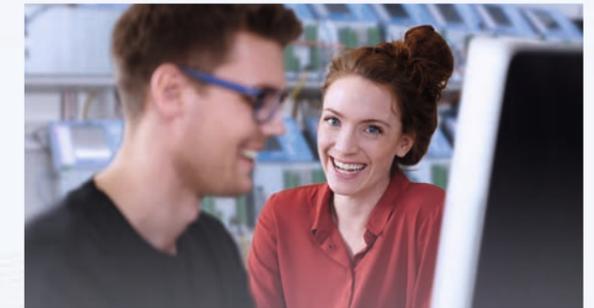SPRECON-E basics and service training, as well as knowledge of network and communication technology.

📍 Seminar aim:

SCMEs can independently perform maintenance and repair work on SPRECON automation systems, as well as carry out engineering tasks under supervision.

⚙ Topics:

- Repetition of the SPRECON-E Basic Training and SPRECON-E Service courses
- Examination:
  - Multiple choice test
  - Practical examination

🕐 Duration: 1 day

SCSE – Sprecher Certified System Engineer

📑 Requirements:

SPRECON-E Basic and Service Training or SCME certification, SPRECON-E Designer, PLC, COMM3 and SPRECON-V460 training, IEC 60870-5 and IEC 61850 seminars, knowledge about network and communication technology, analysis in automation systems, a minimum of 2 years of professional experience in the field of energy automation, proof of independent work with SPRECON automation systems (FAT, SAT protocols).

📍 Seminar aim:

SCSEs are capable of independently solving engineering tasks related to SPRECON automation systems.

⚙ Topics:

- Examination:
  - Multiple choice test
  - Independent parameterisation of a system
- Decision of the certification committee

🕐 Duration: 1 day

SCSP – Sprecher Certified System Professional

Requirements:

Completed SCSE certification, at least 5 years of professional experience in the field of energy automation, proof of held product training courses (including list of participants), filled-out feedback forms for at least 5 courses in 3 different subject areas (e.g. SPRECON-E Basics, Service, PLC, SPRE-CON-V460, Standards).

Seminar aim:

SCSPs perform complex automation tasks independently. In addition, participants have sufficient knowledge to evaluate any SPRECON automation system and act as project coaches for it.

Testing:

- Examination:
  - Multiple choice test
  - Independent creation of an automation concept
- Decision of the certification committee

Duration: 1 day

SCTR – Sprecher Certified Trainer

Requirements:

At least 3 years of professional experience in the field of energy automation, 'Train the Trainer' training at Sprecher Automation, proof of held product training courses (including list of participants), filled-out feedback forms for at least 5 courses on 3 different topics (e.g. SPRECON-E Basics, Service, PLC, SPRECON-V460, Standards).

Seminar aim:

SCTRs can pass on specialist knowledge to third parties using the methods and didactic concept of the Sprecher Automation Training Center.

Topics:

- Train the trainer
- Decision of the certification committee

Duration: 1 day

MORE INFORMATION

RATES & AVAILABILITIES

www.sprecher-automation.com/en/training

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OR

VIA WEBSITE

www.sprecher-automation.com/en/registration-training-center

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