

MOTION CONTROL

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SIMOTION System And Programming | MC-SMO-SYS | 5 days

DESCRIPTION/OBJECTIVE

This course provides a basic knowledge for the SIMOTION system. The participant learns the configuration and startup of the system with axis, drives and visualization devices. The course also deals with programming of motion sequences with the help of Motion Control charts (MCC) and LAD/FBD.

Applications for positioning, gearing, measuring units and output cams are discussed and illustrated at exercises at training racks.

TARGET GROUP

- Programmers
- Commissioning engineers
- Engineering personnel
- Maintenance personnel
- Service personnel
- Operators

REQUIREMENTS

- Basic knowledge of automation
- Basic knowledge of motion control, being familiar with SINAMICS S120.

CONTENT

- Overview of SIMOTION system
- A glance at the components of a SIMOTION system
- Engineering system SCOUT
- Hardware platforms of SIMOTION
- Motion control technology packages
- Creating a SIMOTION project
- Starting up axis with D435
- Programming of user programs with MCC and LAD/FBD
- Configuring execution system
- Using tools for error diagnosis and program test
- Communication with the periphery and HMI
- Practical exercises on training racks



SINAMICS G120 Parameterizing and Commissioning | DR-G12-PM | 4 days

DESCRIPTION/OBJECTIVE

SINAMICS G120 allow the variable-speed operation of induction motors to drive pumps, fans, conveyor systems and many other machines. This course shows you how to handle the SINAMICS G120 inverter.

After the course you are able to correctly commission the inverter and adapt it to address the particular application. You will know suitable inverter functions and parameter settings for a wide range of applications. You can make a data backup, and taking the appropriate measures when faults occur.

TARGET GROUP

- Programmers
- Commissioning engineers
- Engineering personnel
- Maintenance personnel
- Service personnel
- Operators

REQUIREMENTS

- Basic knowledge of automation
- General knowledge of AC drives, converter technology and control engineering.

CONTENT

Design and principle of operation of the SINAMICS G120 inverter with:

- Control Unit CU
- Power Module PM

Parameterization, data backup and diagnostics with:

- BOP-2 and IOP operator panels
- STARTER PC tool
- Setpoint channel and closed-loop control
- Control signals and signal interconnections
- Inverter functions

Practical exercises using the training device with:

- SINAMICS CU240E-2 PN with PM 240 FS A
- SIMOTICS induction motor



SINAMICS S120 Service and Commissioning | DR-S12-PM | 5 days

DESCRIPTION/OBJECTIVE

This training course encompasses the basics of the SINAMICS S120 drive system. It provides the technical knowledge for startup, parameterization, maintenance, drive optimization, and troubleshooting.

Also, in this course, basic knowledge of communication of PROFIBUS is included. Practical exercises for reinforcing the knowledge will be carried out on the SINAMICS S120 Training Case.

On completion of the course, participants will be able to implement automation solutions with the SINAMICS S120.

TARGET GROUP

- Programmers
- Commissioning engineers
- Engineering personnel
- Maintenance personnel
- Service personnel
- Operators

REQUIREMENTS

- Basic knowledge of automation
- General knowledge of AC drives, converter technology and control engineering.

CONTENT

- Brief overview of fundamentals of the drive system
- Principles and overview of the SINAMICS S120
- Motors and encoders for the SINAMICS S120
- Design of the drive system and overview of documentation and service
- Startup and parameterization with the STARTER commissioning tool
- Diagnostics and troubleshooting
- Using the memory card: Structure and data backup
- Data backup using the STARTER commissioning tool
- Fundamentals of communication via PROFIBUS
- Software functions, closed-loop control and optimization of SERVO and VECTOR drives
- Startup of the integral basic positioner (EPOS)
- Hardware setup, wiring
- Introduction of parameter structure and function diagrams
- Practical exercises on the SINAMICS S120 training units



SINAMICS S120 - Parameterizing Safety Integrated | DR-S12-SAF | 4 days

DESCRIPTION/OBJECTIVE

In this course you learn the handling of drive based Safety Functions. You know applications of the different functions and you can parameterize them. Therefore you use the benefits in comparison with a conventional safety technology, like reduced cabling or faster commissioning of identical machines. In the course you will go through all steps for the implementation of the safety functions until the final acceptance report.

TARGET GROUP

- Programmers
- Commissioning engineers
- Engineering personnel
- Maintenance personnel
- Service personnel
- Operators

REQUIREMENTS

- A basic ability to use an MS Windows PC, keyboard and mouse to open and close programs, locate files, drag, drop, copy and paste objects/text.
- Knowledge of SINAMICS S120 according to the course DR-SNS-SI.
- For the topic PROFIsafe knowledge of SIMATIC S7 is useful.

CONTENT

- Fundamentals, standards and regulations of Machine Safety
- Procedure of risk assessment
- Performance Level (PL) and Safety Integrity Level (SIL)
- Safety Evaluation Tool (SET) for the evaluation of PL and SIL
- SINAMICS S120 Safety Integrated Basic Functions and Extended Functions
- Control of the drive integrated Safety Functions via
 - Terminal Module TM54F and DRIVE-CLiQ
 - SIMATIC F-CPU and PROFIsafe
- Effect of the settings of the closed-loop control and the kinetic energy of an axis on the safety functions
- Execution of the acceptance test and preparation of the acceptance report
- Procedures for the handling of spare parts and at retrofit measures
- Practical exercises on training kits with SINAMICS S120, TM54F and SIMATIC F-CPU