

## SINAMICS and SIMOTICS - Basics of Drive Technology (DR-GAT)

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### Objectives

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This course provides extensive basic information for activities in the field of electrical drive technology. The topics are addressed in a general manner, independently of specific products. In further courses on SINAMICS converters, you will be able to more easily realize details and understand their context. This is an advantage both in commissioning and diagnostics, and when configuring and planning drive systems.

### Target Group

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Sales personnel  
Project managers, project assistants  
Startup engineers, configuration engineers  
Service personnel  
Maintenance personnel

### Content

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Electronic components: diode, thyristor, transistor, IGBT  
DC converter: design and function

- Bridge connection: behavior on ohmic and inductive load
- Rectifier and inverter operation
- Gating angle, commutation, inverter commutation failure

AC converter: design and function

- Rectifier, DC link, inverter
- Pulse width modulation, pulse-edge and space-vector modulation
- Generator operation: feedback and braking resistor

Line connection: active power and reactive power, harmonics  
Line-side and motor-side components: reactors, filters, fuses  
Mechanics: equations of motion, energy balance, gear ratio  
Motors: design, function and equivalent circuit diagram

- DC motor
- Synchronous motor
- Asynchronous motor

Measuring systems for sensing speed and position  
Control technology:

- Controller and control loops, optimization criteria
- Speed, torque and current control
- V/f control and vector control

### Prerequisites

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Basic knowledge in electrical engineering

### Type

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Face-to-face training

### Duration

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5 days

### Language

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