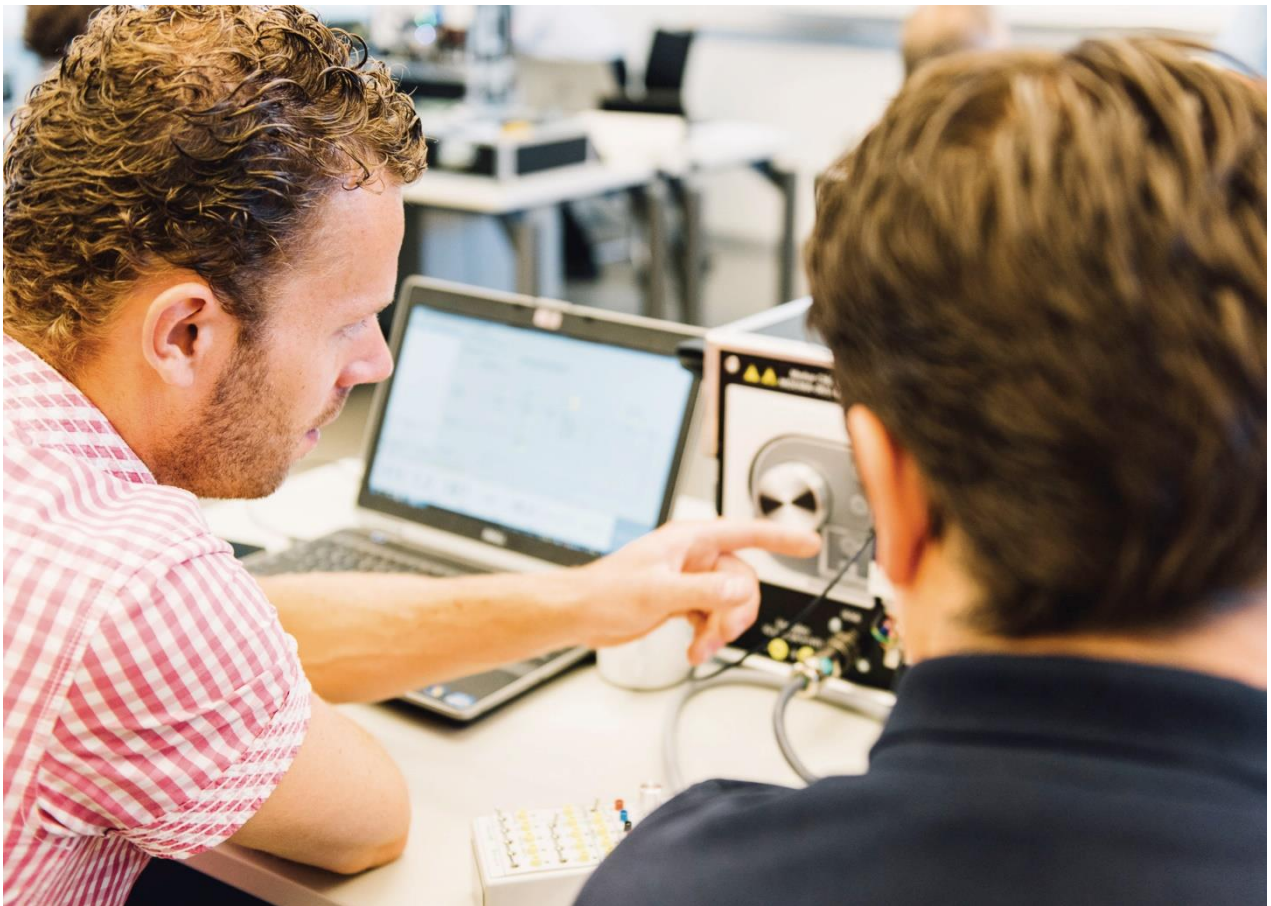


# Simplicity is the key

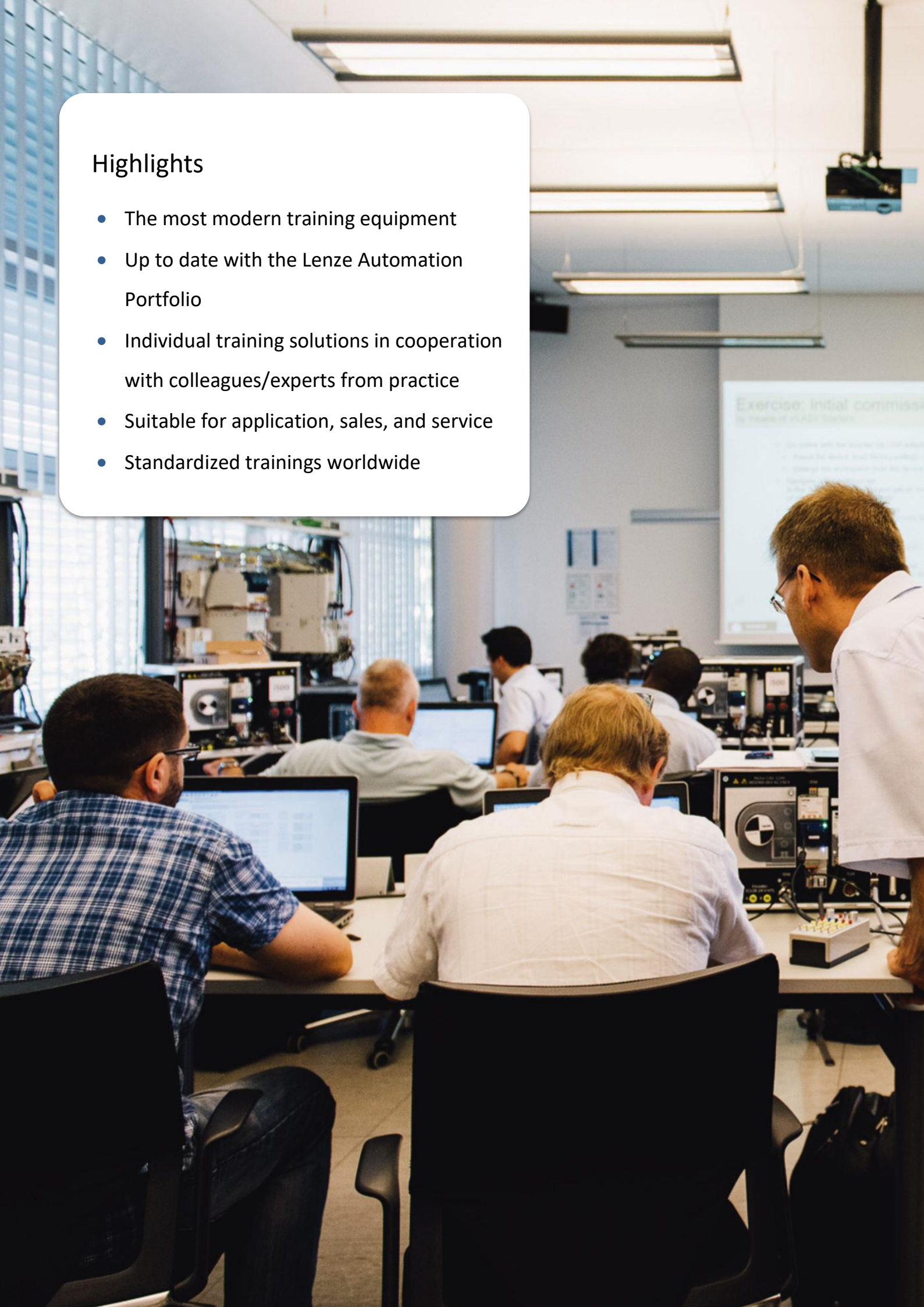


As easy as that.

**Lenze**

## Highlights

- The most modern training equipment
- Up to date with the Lenze Automation Portfolio
- Individual training solutions in cooperation with colleagues/experts from practice
- Suitable for application, sales, and service
- Standardized trainings worldwide





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# Enough space for Your essentials

To find the perfect solution for your machine, we work together - with you - in all 5 stages of the engineering process. With the help of our experts, you will find enough space for your essentials – your ideas!

To support you the best way possible, we provide you a wide range of training offers where we hand you the opportunity to get to know our products, drive solutions and automation systems.

Add our expertise to your experience and make your everyday work even more efficient, secure and above all - simple.

The Lenze training portfolio is optimized for all 5 stages of your projects and beyond

1

Developing ideas

2

Drafting concepts

3

Implementing solutions

4

Manufacturing machines

5

Ensuring productivity

# For every task the right training

## Start-up trainings Planning

- Design engineer
- Project engineer
- Application engineer
- Programmer

The right choice from the beginning:  
Our one day start-up trainings give you a quick and very practice oriented overview of the possibilities offered by our products and solutions. Having that knowledge will make it easier for you to find the best solution for your machine concept.

Note: We offer our start-up-trainings only on demand.

## Interactive online trainings Advanced

- Design engineer
- Project engineer
- Application engineer
- Programmer
- Maintenance engineer
- Sales

Take advantage of our online trainings and expand your knowledge - any time & any place.

## Commissioning & Application trainings Implementation

- Design engineer
- Project engineer
- Application engineer
- Programmer
- Commissioning engineer

Get your machine going:  
Technical know-how is indispensable for the successful implementation of your idea. In our Commissioning & Application trainings you will get to know our products and learn how to work with our software. This will help you to handle future applications and operations more easily.

## Service-Trainings Operations

- Maintainer
- Commissioner

Ensure productivity: Our service trainings provide you with practical knowledge you need for reliable machine diagnostics and fast troubleshooting. Additionally, we will show you how to quickly replace defective elements and make the machine ready for operation again.

# Your benefits with Lenze

## Time saving

Don't waste any time: In short, modular structured trainings you get to know the possibilities of our portfolio. This allows you to concentrate on what is really important: The fast and efficient implementation of your project.

## Proximity

Join the training of your choice when it suits you best. Our trainings are offered at various locations worldwide throughout the whole year. This means you are not only flexible in terms of time, also in terms of location.

## Expertise

Hands-on training experience: all our trainings are practical, application-based and are taught by experienced Lenze trainers. The knowledge you gain can be immediately applied into your everyday business.

## Variety

Always the right training: Our wide range of trainings focuses ideal to your engineering process.



# Save time & costs with the interactive online training portal

As applications become increasingly complex, there is less and less time for personal training. In response to this increasing trend, Lenze offers a range of interactive digital online trainings with didactically structured content. Basic knowledge is taught effectively in a short amount of time\*.



[Lenze online - trainings](#)

Workshop  
Robotics

Inverter i500  
Service, Installing  
& Commissioning

Basics of  
Drive  
technology

PLC Designer  
IEC61131-C  
introduction

Lenze SMART  
Motor

Mechatronics  
– Actuators  
& Sensors

Safety  
technology

And much  
more...!

\*All Online Trainings are available in the following languages: DE, EN, CH, IT, PL, ES und FR





# Lenze insight: A view into the training room

Equipped with the most modern training components, we offer training courses that clarify the direct handling of the Lenze Automation components. Experience the reaction of the motor behavior to changes in the control circuit and test the Lenze FAST Framework platform with its benefits for fast machine commissioning.



# Training locations

## Austria | AT

Asten



Dornbirn



## Bulgaria | BG

Plovdiv



## Czech Republic | CZ

Humpolec



Červený Kostelec



## Hungary | HU

Budaörs



## Lithuania | LT

Kaunas



## Poland | PL

Katowice



Toruń



## Russia | RU

Moscow



## Slovakia | SK

Trnava



## Slovenia | SL

Ljubljana-Črnuče



Worldwide at  
your side:  
Eastern Europe

\*Detailed location information on page 43

# All events at one sight: up-to-date and always available

All our events are available 24/7 online! Check the wide range of available courses and choose the one that suits you best. We are also happy to create a training, tailored to your individual needs and requirements.

The screenshot displays the Lenze website's navigation bar with links for 'Produkte', 'Lösungen', 'Service', and 'Unternehmen'. A search bar is present with the placeholder text 'Suchbegriff eingeben'. Below the navigation bar, the 'Workshop' section is highlighted, showing a list of training events. The events are listed with their topics, locations, and dates. A smaller inset image shows a close-up of the website's header and navigation menu, highlighting the 'Training' link and the 'Trainingsangebote' button.

Topic	Location	Date
Inverter i500 - Inbetriebnahme & Applikation	DE Asten(Österreich)	04.02.2020
X4Remote - Einführung	DE Asten(Österreich)	07.02.2020
Servo-Inverter i950 - Inbetriebnahme & Applikation	DE Asten(Österreich)	18.02.2020
Servo-Inverter i950 - Inbetriebnahme & Applikation	DE Dornbirn (Austria)	25.02.2020
Safety controller c250-S - Sicherheitstechnik	DE Asten(Österreich)	05.03.2020
Servo-Inverter i950 - Sicherheitstechnik		
FAST Robotics		

## Dates available:

The latest training dates can be found on the individual homepage of the respective country:  
(e.g. [www.lenze.pl](http://www.lenze.pl) for POLAND).

# Systems

## Digital:

Suitable for:

- Design engineers
- Project engineers
- Application eng.



Easy Product Finder



x500 IoT Gateway

## Visualization:

Suitable for:

- Application eng.
- Programmers
- Commissioning eng.



EASY UI Designer



VisiWinNet (on request)

## Lenze FAST Framework:

Suitable for:

- Design engineers
- Project engineers
- Application eng.
- Programmers
- Commissioning eng.



FAST Application Software



FAST Robotics

# Automation

## Application:

Suitable for:

- Design engineers
- Project engineers
- Application eng.
- Programmers
- Commissioning eng.



PLC Designer Introduction



PLC Designer OOP



Motion Control

## Functional Safety:

Suitable for:

- Application eng.
- Programmers
- Commissioning eng.



c250-S

## Commissioning & Service:

Suitable for:

- Maintenance eng.
- Commissioning eng.



Controller Based Automation



# Drive Technology

## Application:

Suitable for:

- Design engineers
- Project engineers
- Application eng.
- Programmers
- Commissioning eng.



i500



i950



9400



8400

## Functional Safety:

Suitable for:

- Application eng.
- Programmers
- Commissioning eng.



9400 and SM302



i950 Extended Safety

## Commissioning & Service:

Suitable for:

- Maintenance eng.
- Commissioning eng.



i500



i950 Basic STO / ES



9400



8400



9300 (on request)

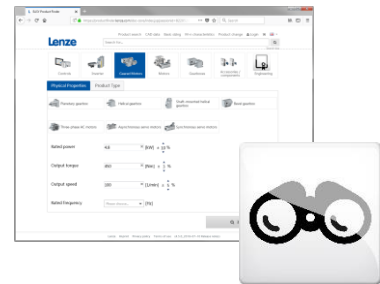


8200 Vector (on request)

## EASY Product Finder

### Training objectives

The EASY Product Finder (EPF) supports engineers and buyers with the digital selection and acquisition of Lenzes drive- and automation products. From a fast and easy product search up to extensive documentation, with the EASY Product Finder you can find instructions, manuals, video tutorials and answers to frequently asked questions.



You can find the EPF on our website under “Product Finder”.

Within 4 short videos we explain the “First Steps” and the “Easy Handling” of the EASY Product Finder. By clicking on the links below you can access the individual videos. For easier handling, the videos have been listed chronologically.

### Agenda

- Learning module 1 - First Steps
  - 1. [Introduction \(Youtube Video\)](#)
- Learning module 2 - Easy Handling
  - 2. [Search and filter \(Youtube Video\)](#)
  - 3. [Adapt products \(Youtube Video\)](#)

**Date:** Any time – available online

## x500 IoT Gateway

### Target group machine operators and machine & plant manufacturers

This training is for people from the areas of development and application who want to integrate their machines and systems in terms of software and motion applications with technology modules in standardized software project structures.



### Training objectives

The main target of this online training is to get familiar with the Lenze X4 remote and its major functions.

Please visit the interactive [Lenze Online Training Portal](#) to attend the "Lenze X4 Remote"-course for a guided step-by-step tutorial.

### Agenda

In short [YouTube](#) video tutorials you will receive a comprehensive step-by-step guide for a quick start-up of the Lenze X4 Remote cloud solution.

- Module 1 - Introduction & Quick Start
  - [A short tour of the new X4 Remote \(YouTube-Tutorial\)](#)
  - [How to create your X4 Remote account \(YouTube-Tutorial\)](#)
  - [How to setup your company in X4 Remote \(YouTube-Tutorial\)](#)
- Module 2 - Getting online
  - [Getting your machine online \(YouTube-Tutorial\)](#)
  - [Setup your machine in the cloud \(YouTube-Tutorial\)](#)
  - [Configure the VPN connection \(YouTube-Tutorial\)](#)
- Module 3 - Services
  - [Add services to your machine \(YouTube-Tutorial\)](#)
  - [Add a data-source to your x500 \(YouTube-Tutorial\)](#)
  - [Setup the cloud logging \(YouTube-Tutorial\)](#)
  - [Setup the cloud notify \(YouTube-Tutorial\)](#)
- Module 4 - Dashboards & User management
  - [Create pages and cards in studio \(YouTube-Tutorial\)](#)
  - [Work with machine templates \(YouTube-Tutorial\)](#)
  - [Rights management explained \(YouTube-Tutorial\)](#)
  - [Add users to your X4 Remote company \(YouTube-Tutorial\)](#)
- In addition (X4 Remote v1):
  - [Setup a VNC connection to your PLC \(Youtube-Tutorial\)](#)
  - [Logging in to your Lenze Digital account \(YouTube-Tutorial\)](#)
  - [Creating a new user account \(YouTube-Tutorial\)](#)
  - [Create an initial configuration for your x500 \(YouTube-Tutorial\)](#)
  - [Connecting the x500 to the cloud \(YouTube-Tutorial\)](#)
  - [Configure the VPN connection to your x500 \(YouTube-Tutorial\)](#)
  - [Configure a new OPC UA datasource \(YouTube-Tutorial\)](#)
  - [Adding additional information about your x500 \(YouTube-Tutorial\)](#)
  - [Adding a dashboard to your machine with X4 remote \(YouTube-Tutorial\)](#)

**Date:** Any time – available online

## EASY UI Designer – WebVisu Introduction

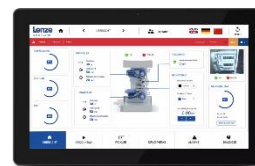
### Target group machine operators and machine & plant manufacturers

Employees from the areas of:

- Application engineers
- Project engineers

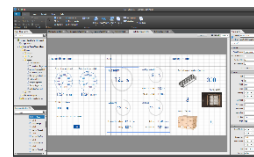


EASY UI Designer



### Training objectives

The participants will be capable of independently configuring automation systems using EASY UI Designer, as well as implementing and commissioning basic applications.



### Agenda

- Connection to the controller
- Overview of EASY UI Designer and further product versions
- Introduction to EASY UI Designer Editor and the Project Wizard; to Form Designer and project configuration; Defining internal and external (controller) variables and user controls; Creating cross-references and performing troubleshooting; Managing and switching between multiple languages; Using alarms, trends and formulae; Using user management and logbook functions
- Creating a basic visualisation application
- Practical exercises on the training equipment

**Duration:** 1,5 Days (Day 1: 9:00 am – 4:30 pm, Day 2: 8:30 am – 1:00 pm)

## VisiWinNet® Smart Introduction

Introduction to the VisiWinNet Smart with the Controller 3200C/p500/p300

### Target group machine operators and machine & plant manufacturers

This training is for people from the areas of dimensioning and application who want to integrate, program and commission automation systems with VisiWinNET® Smart in their machines and plants

### Training objectives

The participants will be capable of independently configuring automation systems using VisiWinNET® Smart, as well as implementing and commissioning basic applications.

### Agenda

- Connection to the controller
- Overview of VisiWinNET Smart and further product versions
- Introduction to VisiWinNET Smart Editor and the Project Wizard; to Form Designer and project configuration; Defining internal and external (controller) variables and user controls; Creating cross-references and performing troubleshooting; Managing and switching between multiple languages; Using alarms, trends and formulae; Using user management and logbook functions
- Creating a basic visualization application
- Practical exercises on the training equipment

**Duration:** 1,5 Days (Day 1: 9:00 am – 4:30 pm, Day 2: 8:30 am – 1:00 pm)





## FAST Application Software

Introduction to the Controller-based FAST Application Software with the Servo-Inverter i700

### Target group machine operators and machine & plant manufacturers

This training is for people from the areas of development and application who want to integrate their machines and systems in terms of software and motion applications with technology modules in standardized software project structures.



### Training objectives

The "FAST Application Software" course focuses on engineering-oriented application training. After completing the training, participants should be capable of applying the technology modules and the FAST Application Template, as well as understanding and exploiting their added value in a standardized software and project structure. The training creates the basis for participants to independently extend their knowledge within the scope of projects.

### Prerequisites

Participation in the Lenze "Motion Control" training

### Agenda

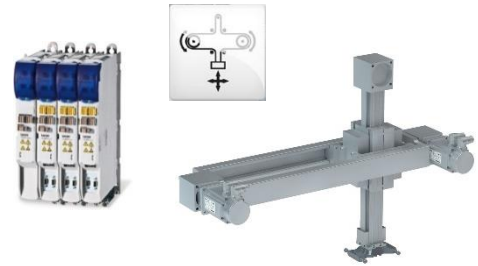
- Introduction to Lenze FAST technology modules
- Interfaces: Principle and scalability technology modules "Electrical Shaft, Virtual Master, FlexCam"
- Modularisation of machine modules
- Introduction FAST Application Template: Elements and software structure; Machine modules and applications, communication, state machine, error handling, mechanisms during engagement; Visualisation, diagnostics and operation
- Practical exercises on the training equipment

**Duration:** 2 Days (8.30 am – 4.30 pm)

## FAST Robotics

### Target group machine operators and machine & plant manufacturers

This training is for people from the areas of development and application who want to integrate automation systems with the Servo Inverter i700 and Controller 3200 C in their machines and systems in terms of software and who create robotic applications.



### Training objectives

The participants learn how to commission a robotic PLC program and how to adapt the program to individual applications requirements.

### Prerequisites

- Good knowledge from the training PLC Designer Introduction and Motion Control
- Additional recommendation for this workshop: The online robotic base training "Robotic Basics"

### Agenda

Initial commissioning of a customer-specific robotics application by means of practical exercises on training setups:

- Integrate and configure customer-specific kinematics
- Define coordinate systems and reference and commission robots
- Insert auxiliary axes
- Configure trajectories, perform movements and adapt trajectories
- Use technology modules
- Test application

**Duration:** 1 Day (8.30 am – 4.30 pm)

## PLC Designer Introduction

Introduction to the PLC Designer and the IEC 61131-3 programming

### Target group machine operators and machine & plant manufacturers

This training is for people from the areas of development, application, commissioning and service who work with the PLC Designer V3 and want to learn the basics of the IEC61131-3 programming.



### Training objectives

The participants will gain technical knowledge on how to apply, program, commission and use the diagnostics options of »PLC Designer«. They will learn the basics of how to use this product and perform IEC61131-3 programming.

### Agenda

- Introduction to controller 3200 C and p500 and the I/O System 1000
- Structure of »PLC Designer« V3
- Standard project with I/O mapping, connecting to the controller
- Project settings/-download, boot project, source code up-/download
- Using libraries and the device repository
- Presentation of variable & data types, POUs (program, function block, function), tasks, persistent & retain variables
- Using monitoring, variable forces, overwriting, trace, text list, logbook
- Introduction to IEC61131-3 programming languages, focusing on the FUP languages and structured text
- Using basic data structures
- Introduction to visualisation with the »PLC Designer«
- Practical exercises on the training equipment

**Duration:** 1 Day (8.30 am – 4.30 pm)

## Motion Control

Introduction to the Controller-based Motion with the Servo-Inverter i700

### Target group machine operators and machine & plant manufacturers

This training is for people from the areas of development and application who want to integrate automation systems with the Servo Inverter i700 and Controller 3200 C and/or p500 into their machines and plants to create motion applications.

### Training objectives

The "Motion Control" training is an engineering-oriented system and application training. The participants will gain basic knowledge of how to test, evaluate and implement applications. The training creates the basis for participants to independently extend their system knowledge within the scope of projects

### Prerequisites

Participants should ideally complete the "«PLC Designer» Introduction" training module to ensure that they have the necessary knowledge before attending this course.

### Agenda

- Introduction to the 3200 C controller, p500 panel controller, I/O System 1000, Controller-based Motion and «PLC Designer»
- Introduction, configuration, commissioning of i700 servo inverters, SoftMotion axis and EtherCAT fieldbus
- PLCOpen blocks, motion and visualisation projects
- Positioning with the FB-AxisBasicControl and "Application Sample i700"
- The PLCOpen motion functions: homing, electrical shaft, cam and brake
- Lenze touch probe function blocks
- Drive and motion operating modes (csp, csv, cst)
- Applying a virtual axis
- Practical exercises

**Duration:** 2 Days (8.30 am – 4.30 pm)



## FAST Application Template OMAC/PackML

Introduction to the Controller-based FAST Application template OMAC/PackML with the Servo-Inverter i700

### Target group machine operators and machine & plant manufacturers

This training is for people from the areas of development and application who want to integrate their machines and systems in terms of software by using standardised software and project structures as well as defined application templates.

### Training objectives

The "FAST Application Template OMAC" training is a software-oriented application training. After completing the training, participants should be capable of using the Lenze FAST Application Template OMAC with its software project structures and functionalities and also understand the added value associated with this.

The training creates the basis for participants to independently extend their system knowledge within the scope of projects.

### Prerequisites

Participation in the training «PLC Designer» introduction

### Agenda

- Introduction to the FAST Application Template OMAC
  - Elements and software structure
  - Machine modules and applications, communication, state machine, error handling and mechanisms during engagement/disengagement
- Visualisation, diagnostics, handling Practical exercises on the training equipment

**Duration:** 1 Day (8.30 am – 4.30 pm)





## PLC Designer OOP

Introduction to the OOP/object oriented programming of the PLC Designer

### Target group machine operators and machine & plant manufacturers

This training is for people from the areas of development, application, commissioning and service who work with the PLC Designer V3 and would like to use object oriented programming.

### Training objectives

The participants will gain basic knowledge of object oriented programming with the «PLC Designer» by usage of data structures defined by the user.

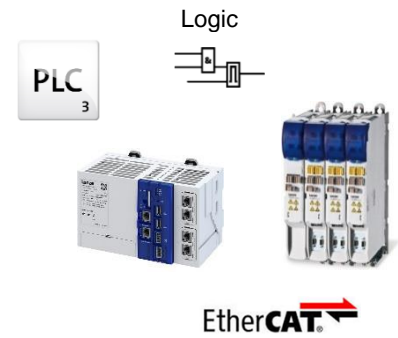
### Prerequisites

Participation in the "PLC Designer Introduction" training

### Agenda

- Introduction at object oriented programming:
  - Methods, Properties, Inheritance, Interfaces, Data structures defined by the user
- Practical exercises on the training equipment

**Duration:** 1 Day (8.30 am – 4.30 pm)



## Controller-based Automation: Service & Commissioning

Service & Commissioning of the Controller 3200 C / c300/ p500 / p300 & Servo-Inverter i700



### Target group machine operators

Employees from the areas of:

- Commissioning
- Service

### Training Objectives

In this training course, participants will learn the basics of installing, commissioning, operating and servicing the controller, the servo-inverters i700 and the EtherCAT field bus.

They will gain the technical knowledge necessary for commissioning, parameter setting and eliminating faults on the systems.

### Agenda Day 1 (Service & Commissioning)

- Brief introduction of controller, servo-inverter and EtherCAT
- Diagnostics and elimination of errors (focus »EASY Starter«)
- Replacement and backup of the devices
- Practical exercises on the training equipment;

### Agenda Day 2(Commissioning)

- Mounting and commissioning of the systems
- Parametrization, optimization, and advanced diagnostics (focus »PLC Designer«)
- Practical exercises on the training equipment

**Duration:** 2 Days (8.30 am – 4.30 pm)

## Inverter i500

### Target group machine & plant manufacturers

Employees from the areas of:

- Electrical construction
- Dimensioning
- Machine application
- Commissioning



### Training objectives

The participants learn how to commission the Inverter i500 and how to adapt the applications to individual requirements.

### Prerequisites

The free online training "Inverter i500 Basics" is recommended for this workshop.

### Agenda

Practice: Commissioning of the Inverter i500 for different applications using different engineering tools (Keypad, PC) and adapting them to the individual needs.

- Presentation of the Inverter Drives i500
- Characteristics of setpoint structure and operating modes and selection of control signals
- Adapting the Inverter i500 to the requirements of a conveyor drive (I/Os, motion profile, start/stop behaviour)
- Inverter i500 default settings (favourite list, parameter sets, access control)
- Optimization of motor control
- Integration to master control via field bus
- Advanced functions of Inverter i500 (process controller, help functions, supervision)

**Duration:** 1 Day (8.30 am – 4.30 pm)

## Servo-Inverter i950

### Target group machine & plant manufacturers

Employees from the areas of:

- Electrical construction
- Dimensioning
- Machine application
- Commissioning

### Training objectives

The participants learn how to integrate i950 in machine solutions and how to adapt the applications to individual requirements.

### Prerequisites

The knowledge of the free-of-charge online tutorial "PLC Designer introduction" (see Youtube "Lenze Group") is required for this workshop.

### Agenda

- Getting to know the use cases of the Servo Inverter i950 with integration in the Lenze automation platform
- Commissioning of the Servo Inverter i950 based on the three application solutions base, para, prog
- Realisation of individual needs for typical applications using engineering software «EASY Starter» and «PLC Designer»
- Connection and integration to a master control via system bus and field bus system

Duration: 2 Days (8.30 am – 4.30 pm)



## Inverter Drives 8400

### Target group machine & plant manufacturers

Employees from the areas of:

- Electrical construction
- Dimensioning
- Machine application
- Commissioning



### Training objectives

The participants will be capable of commissioning the Inverter Drives 8400 independently and adapting applications to their own requirements. They will also learn about the functionalities and control characteristics.

### Prerequisites

Basic knowledge of electrical engineering is required.

### Agenda

- Presentation of the Inverter Drives 8400
- Commissioning and diagnostics using the keypad and the »Engineer« software
- Creating projects, implementing applications
- Guide to using the function block editor and oscilloscope
- Operating modes with and without encoder feedback
- Pre-made applications for speed-controlled and position-controlled drives (speed actuating drive, table positioning)
- Connecting fieldbuses
- Practical exercises on the training equipment

**Duration:** 2 Days (8.30 am – 4.30 pm)



## Servo Drives 9400

### Target group machine & plant manufacturers

Employees from the areas of:

- Electrical construction
- Dimensioning
- Machine application
- Commissioning



### Training objectives

The participants will be capable of independently configuring the Servo Drives 9400, implementing applications and starting up the system. They will also gain comprehensive knowledge of how to operate Lenze's Engineer engineering software.

### Prerequisites

Basic knowledge of electrical and drive engineering.

### Agenda

- Presentation of the Servo Drives 9400
- Project planning, installation and operation
- Commissioning and adapting pre-made applications
- Parameter setting, diagnostics and error correction using the keypad and »Engineer«
- Basic drive functions and modes of motor operation
- Creating and configuring own applications using the FB editor
- Integrating the Servo Drives 9400 into CAN networks and configuring multi-axis applications
- The basics of positioning technology and resolving positioning tasks
- Practical exercises on the training equipment

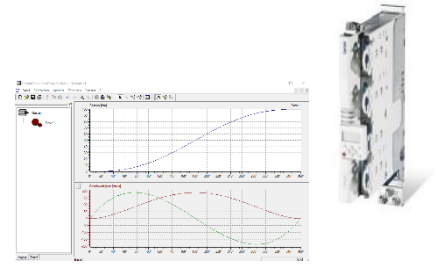
**Duration:** 3 Days (8.30 am – 4.30 pm)

## Servo Drives 9400: Electronic CAM profiler

### Target group machine & plant manufacturers

Employees from the areas of:

- Electrical construction
- Dimensioning
- Machine application
- Commissioning



### Training objectives

The participants will be capable of independently configuring the Servo Drives 9400 with the "Electronic CAM profiler" application, implementing applications and starting up the system. They will also gain application oriented knowledge of how to effectively operate Lenze's Engineer engineering software.

### Prerequisites

Participation in the "Servo Drives 9400 - Commissioning & Application" training

### Agenda

- Basics of CAM-technology
- Application examples about "CAM-technology"
- Introduction to the "CAM-profiler" application
- Usage of different CAM profiler functionalities
- Additional parameterisation and configuration of the application with the »Engineer« software
- Practical exercises on the training equipment

**Duration:** 2 Days (8.30 am – 4.30 pm)

## Servo Drives 9400: Servo PLC

### Target group machine & plant manufacturers

The 9400 Servo PLC offers, in addition to the functionality of a servo inverter, the features of a PLC, programmable according to the industry standard IEC 61131-3. This training is for people who design and program the 9400 Servo PLC.



### Training objectives

During the training, the participants will familiarize themselves with the application options of the 9400 Servo PLC. The participants will then be able to program and commission the 9400 Servo PLC using the »PLC Designer« programming environment.

### Prerequisites

- Detailed knowledge of how to use the Servo Drives 9400 HighLine
- Programming knowledge in line with IEC 61131-3 or comprehensive experience in the field of PLC programming

### Agenda

- Overview of the hardware and software structure of the 9400 Servo PLC
- Presentation and application of the »Engineer« and »PLC Designer« software products
- Diagnostics options
- CANopen field bus communication
- Practical exercises on the training equipment

**Duration:** 3 Days (8.30 am – 4.30 pm)

## Servo-Inverter i950

### Target group machine operators and machine & plant manufacturers

Employees from the areas of:

- Maintenance
- Commissioning

### Training objectives

Participants gain technical knowledge to diagnose and troubleshoot problems and operate the EASY Starter and other engineering tools in service cases of the i950. Additional topics are the device handling and electrical/mechanical installation steps.

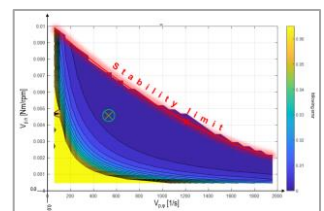
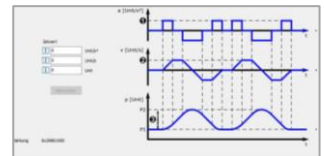
### Agenda

- Basics of drive technology
- Easy Starter handling for service cases
- Diagnostic options (Status LEDs, error messages, history memory, Trend and oscilloscope)
- Practical error detection and trouble shooting
- Data backup, device recovery and firmware update
- Drive optimization and Autotuning
- Facts about firmware compatibility and user settings

**Duration:** 1 Day (8.30 am – 4.30 pm)



Easy Starter



## **Inverter i500**

### **Target group machine operators and machine & plant manufacturers**

Employees from the areas of:

- Operation
- Maintenance
- Service



### **Training objectives**

The participants learn how to run diagnostics and how to eliminate faults, use the keypad, the EASY Starter and further engineering tools in order to eliminate faults.

### **Prerequisites**

The free online training "Inverter i500 Basics" is recommended for this workshop.

### **Agenda**

Practice: Detecting errors and eliminating faults using different engineering tools (Keypad, PC):

- Operation of keypad and EASY Starter when service is required
- Diagnostic options (Status LEDs, error messages, history memory, Trend)
- Data backup and recovery
- Facts about firmware compatibility and user settings

**Duration:** 1 Day (8.30 am – 4.30 pm)

## **Inverter Drives 8400**

### **Target group machine operators and machine & plant manufacturers**

Employees from the areas of:

- Operation
- Maintenance
- Service



### **Training objectives**

In this training course, participants will learn the basics of installing and servicing the Inverter Drives 8400.

They will gain technical knowledge on:

- diagnostics and eliminating malfunctions (troubleshooting)
- using the keypad, »EASY Starter« and additional service engineering tools

### **Prerequisites**

Basics of electrical engineering

### **Agenda**

- Accessing parameters and exporting status information to the Inverter Drives 8400 using the keypad
- Diagnostics with the »EASY Starter« and »Engineer« software packages (device statuses, error responses, log-book, trend, data logger, oscilloscope)
- Commissioning specified user parameter settings
- Steps for complete data backup
- Service case "Device replacement"
- Useful information on installation and operation
- Practical exercises on the training equipment

**Duration:** 1 Day (8.30 am – 4.30 pm)

## Servo Drives 9400

### Target group machine operators and machine & plant manufacturers

Employees from the areas of:

- Operation
- Maintenance
- Service



### Training objectives

In this training course, participants will learn the basics of how to install and service the Servo Drives 9400.

They will gain technical knowledge on:

- Diagnostics and eliminating malfunctions (troubleshooting) on the Servo Drives 9400
- Using the keypad
- Using »EASY Starter« and »Engineer«

### Prerequisites

Basic privour knowledge of electrical engineering is required.

### Agenda

- Accessing parameters and exporting status information to the Servo Drives 9400 using the keypad
- Diagnostics with the »EASY Starter« (device statuses, error responses, logbook, service register, trend)
- Commissioning pre-made applications
- Steps for complete data backup (e. g. for altered parameter setting in the device)
- Service case "Device replacement"
- Useful information on installation and operation
- Checking and optimising the motor control
- Practical exercises on the training equipment

**Duration:** 1 Day (8.30 am – 4.30 pm)

## **Inverter Drives 8200 vector & 8200 motec Service**

### **Target group machine operators and machine & plant manufacturers**

Employees from the areas of:

- Commissioning
- Service
- Dimensioning



### **Training Objectives**

In this training course participants learn the basics of installing, commissioning, and servicing the inverter drives 8200 vector and 8200 motec to ensure the operation.

They will gain the technical knowledge necessary for commissioning, parameter setting and eliminating faults on drives.

### **Agenda**

- Basics of electromagnetic compatibility
- Mechanical installation and commissioning
- Introduction Global Drive Control
  - Select target system
  - User interface and parameter window
  - Function block editor
  - Oscilloscope function
- Setting parameters, diagnostics and elimination of errors with Keypad and Lenze PC software "Global Drive Control" (GDC)
  - Change drive parameters
  - Diagnostics and elimination of errors
- Practical exercises on the training equipment

**Duration:** 1 Day (8.30 am – 4.30 pm)



## Servo Drives 9300 Service

### Target group machine operators and machine & plant manufacturers

Employees from the areas of:

- Commissioning
- Service
- Dimensioning

### Training Objectives

In this training course, participants will learn the basics of installing and servicing the Inverter Drives 8200 and Servo Drives 9300.

They will gain technical knowledge on diagnostics and eliminating malfunctions (troubleshooting) using the keypad, »EASY Starter« and additional service engineering tools.



### Agenda

- Accessing parameters and exporting status information to the Inverter Drives 8200 and Servo Drives 9300 using the keypad
- Diagnostics with the »EASY Starter« and »Global Drive Control« software packages (device status, error responses, logbook, trend, oscilloscope)
- Commissioning specified user parameter settings
- Introduction Global Drive Control
  - Select target system
  - User interface and parameter window
  - Function block editor
  - Oscilloscope function
- Steps for complete data backup
- Service case "Device replacement"
- Useful information on installation and operation
- Practical exercises on the training equipment

**Duration:** 1 Day (8.30 am – 4.30 pm)

## Servo Drives i950: Extended Safety

### Target group machine & plant manufacturers

Employees from the areas of:

- Electrical construction
- Dimensioning
- Machine application
- Commissioning



Safety over  
**EtherCAT**



### Training objectives

The Participants will be able to independently configure the i950 ES Servo Inverter with safety modules, implement applications, commission the system and guarantee operation.

### Prerequisites

Participation in the „i950 – Commissioning & Application“ training

### Agenda

- Introduction to functional safety in mechanical engineering
- Understand and parameterise the monitoring functions:
  - **SOS** (Safe Operated Stop)
  - **SS1, SS2** (Safe Stop 1, 2)
  - **SDI** (Safe Direction)
  - **SBC** (Safe Brake Control)
  - **PDSS** (Position Dependent Safe Speed)
  - **SLS, SMS** (Safe Limited, Maximum Speed)
  - **SHOM** (Safe Homing)
  - **SAC** (Safe Cam)
  - **SLP** (Safe Limited Position)
  - Repair and special operation
- Connection via FSoE and PROFISAFE to a safety controller
- Creating envelope curves in the «EASY Starter» - Oscilloscope for diagnosing the monitoring functions
- Setting the safety parameters and commissioning the standard TAs in the «EASY Starter» and «PLC Designer»
- Hardware overview i950 Extended Safety

**Duration:** 2 Days (8.30 am – 4.30 pm)

## c250-S: Functional Safety Programming

### Target group machine & plant manufacturers

Employees from the areas of:

- Electrical construction
- Dimensioning
- Machine application
- Commissioning



Safety over  
EtherCAT



### Training objectives

The participants will learn how to realize the safety functions of a machine with Safety Controller c250-S, Lenze controller and Lenze inverter.

### Prerequisites

The knowledge of the free of charge Online-Tutorial "PLC Designer Introduction" (watch on Youtube "Lenze Group") to operate the »PLC Designer« and the participation in the „Servo Drives i950 – Extended Safety“ training is required.

### Agenda

- Presentation of the components and technical data
- Electrical connection of the components
- Integration of the components into an existing »PLC Designer« project
- Parameterization of the components with the »PLC Designer«
- Creating an safety-oriented program with the »PLC Designer«
- Data exchange between standard controller and safety controller
- Reading status information with the standard controller
- Activation of safety functions in the inverter via FSoE
- Access protection of the safety-oriented program
- Diagnostics and troubleshooting
- Monitoring of safe analog values of the inverter

**Duration:** 1 Day (8.30 am – 4.30 pm)

## Servo Drives 9400: Safety

### Target group machine & plant manufacturers

Employees from the areas of:

- Dimensioning
- Electronics development
- Application
- Commissioning



### Training objectives

The participants will be capable of configuring the Servo Drives 9400 independently with safety modules, implementing applications, commissioning the systems and ensuring service.

### Prerequisites

This training builds on the "Servo Drives 9400 - Commissioning & Application" training.

### Agenda

- System presentation/introduction to the SM0, SM100, SM301 and SM302 safety modules
- Background information on safety engineering
- Parameter setting and configuration
- Commissioning, diagnostics and service
- Practical exercises on the training equipment

**Duration:** 2 Days (8.30 am – 4.30 pm)

## **Drive Solution Designer**

### **Target group machine operators and machine & plant manufacturers**

Employees from areas of development, dimensioning and planning at manufacturers or users machines/systems.

### **Training Objectives**

This training offers participants a detailed overview of DSD software and functions. Participants will learn how to use the software and be able to perform dimensioning autonomously for Lenze drive systems.

### **Equipment**

Participants are kindly requested to bring a suitable notebook (Windows XP, Vista, 7 or 8, RAM: min. 1 GB).

### **Content**

- DSD – A link in the engineering chain
- DSD software (structure and architecture)
- The DSD user interface
- Preparing projects
- Exploring DSD program flow
- Results and logs
- Motion planning in DSD
- Basic multi-axis designs
- Analyzing and optimizing designs
- Application-oriented training exercises

**Duration:** 2 Days (8.30 am – 4.30 pm)

## Registration terms & participation conditions

### Registration

We kindly ask you to register early enough for the training of your choice to secure your spot. To sign up please use the online contact form on our website or get in touch with our local representatives directly. The contact details are listed on the following page (p.40) of this brochure.

Once we receive your registration, we will send you a confirmation of participation. The final invitation with all the relevant organizational details, will be sent out around 3 weeks before the beginning of the training. Please wait for the final invitation before making the travel arrangements (e.g., hotels, flights, trains, ...).

### Cancellation Policy

The cancellations are free of charge 3 weeks prior to the date of the training start. Later cancellations will be charged with 50% of the training fee. The nomination of substitute participants is possible and free of charge. In case of a no-show, we will 100% cancellation fees are charged.

### Copyright

All training materials may not be reproduced or/and shall not be passed on to third parties without a written permission of Lenze SE.

### Liability

Lenze reserves the right to cancel or reschedule the trainings. In the event of under-subscription or any other reasons making the training impossible to take place, alternative dates will be offered.

### Lenze assumes no liability

- For information given during the training
- For any damage or consequential damage resulting from the training

### Safety Instructions

Participants agree to comply with the safety instructions provided at each laboratory workstation.

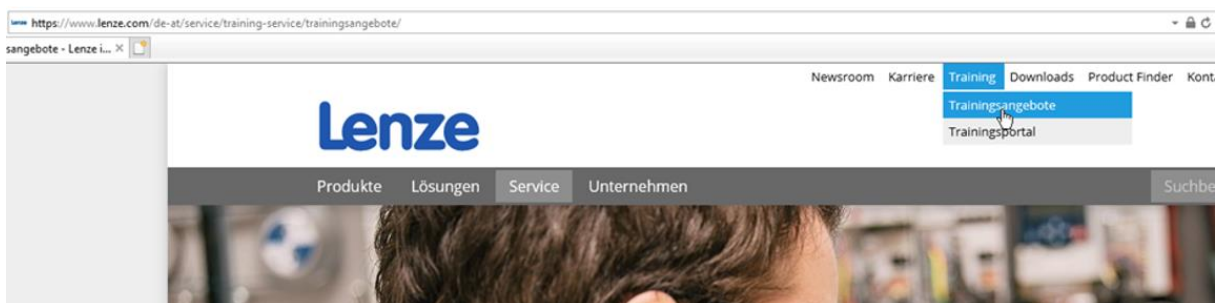
### Training hours

Our Trainings start at 8:30 am and end at 4:30 pm.

Start-up Trainings begin at 9.00 am and end around 3:00 pm.

## Dates & pricing

All dates and costs are available on our homepage. If you already have a Lenze contact person, please feel free to inform them about the training that you are interested in.



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