

Training brochure  
The right training for any task

# Simplicity is the key



**Lenze**  
engineers *in motion*

# Highlights

- State of the art training equipment
- At the cutting edge of the Lenze Automation portfolio
- Individual training solutions provided by experts from practice
- For application, sales and service
- Globally available and standardized



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# Trainings give you space for your essentials

On the way to the perfect solution for your machine tasks, we accompany you in all 5 phases of the engineering process. So, you always have enough free space for the essentials – your ideas! To assist you in the best possible way, we offer you a wide range of training courses in which you can get to know our products, drive solutions and automation systems. Add our expertise to your experience and make your everyday work even more efficient, safer and above all – easy.

The Lenze training portfolio is optimized for all 5 phases of your project and beyond.

1

Developing  
ideas

2

Drafting  
concepts

3

Implementing  
solutions

4

Manufacturing  
machines

5

Ensuring  
productivity

# The right training for any task

## Start-up training for the planning phase

- Construction
- Project planning
- Application
- Programming

The ideal choice right from the start:

Our one-day start-up training courses give you a quick and very practice-oriented initial overview of the possibilities offered by our products, solutions and systems. With this knowledge, it will be easy for you to make the best choice for implementing your machine concept.

## Interactive online training for the progress phase

- Construction
- Project planning
- Application
- Programming
- Maintenance

Take advantage of our online training offer and expand your know-how at any time and any place.

## Commissioning and application training for the implementation phase

- Construction
- Project planning
- Application
- Programming
- Commissioning

Get your machine up and running quickly: Technical know-how is essential for the successful implementation of your idea. In our training courses on system commissioning and application, you will get to know our products and software better - for smooth application and routine operation.

## Service training for the operation phase

- Commissioning
- Maintenance

Ensure permanent operation: Our service training courses equip you with practical knowledge that enables you to make reliable diagnoses on your machine and quickly fix faults. And for the worst-case scenario, you will learn how to quickly replace defective elements and put the machine back into operation.

# Your benefits with Lenze

## Time saving

Don't waste time: Learn about the possibilities of our portfolio in short, modular courses. So, you can concentrate on what's important: The fast and efficient implementation of your project.

## Proximity

Simply attend your desired training when it suits you best: We offer our training courses at many locations worldwide throughout the year. This means that you are not only flexible in terms of time, but also in terms of location.

## Expertise

Teaching content made tangible: All courses are practical, hands-on, and led by experienced trainers. This makes it easy for you to immediately integrate what you have learnt into your everyday work.

## Variety

Always the right training: Our wide range of training courses is geared to your engineering process.



## Systems

### Digital

For:

- Construction
- Project planning
- Application



EASY Product Finder



IoT Gateway x500



Cyber Security

### Visualization

For:

- Application
- Programming
- Commissioning



EASY UI Designer



VisiWinNET

### Lenze FAST Framework

For:

- Application
- Programming
- Commissioning



FAST Application Software



FAST Robotics



# Automation

## Application

For:

- Application
- Programming
- Commissioning



PLC Designer Introduction



FAST Motion Control



PLC Designer OOP



FAST Application Template

## Functional safety

For:

- Application
- Programming
- Commissioning



c250-S

## Commissioning & Service

For:

- Application
- Commissioning
- Maintenance



Controller-based Automation

# Drive Technology

## Commissioning & Application

For:

- Electrical design
- Project planning
- Application
- Programming
- Commissioning



i500



i650 motec



i950



8400



9400

## Functional safety

For:

- Application
- Programming
- Commissioning



i950 Extended Safety



9400 with SM302

## Service

For:

- Commissioning
- Maintenance



i500



i950



8400



9400



8200 vector and 8200 motec



9300

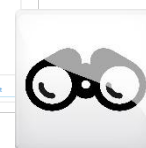
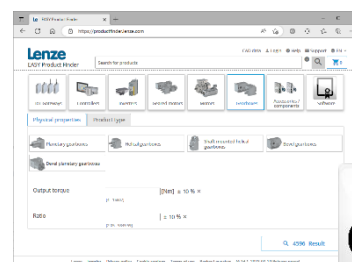
## EASY Product Finder

### Target group

- Plant and machine manufacturers

### Employees from the areas

- Construction
- Project planning



### Targets

The EASY Product Finder - EPF for short - supports you in the digital selection and procurement of Lenze drive and automation components. From a quick and easy product search to comprehensive documentation, you can use the EPF to configure your suitable product, export CAD files and request your personal quote. You can easily find the EPF on the Lenze website under "EASY Product Finder".

Get the knowledge for the "Easy Handling" of the EASY Product Finder in short tutorials.

By clicking on the links below, you can access the four individual tutorials quickly and easily. For ease of use, the tutorials are listed chronologically.

### Training content

- First Steps
  1. [Introduction \(YouTube<sup>↗</sup>\)](#)
- Easy Handling
  2. [Search and Filter \(YouTube<sup>↗</sup>\)](#)
  3. [Customize products \(YouTube<sup>↗</sup>\)](#)
  4. [Edit shopping cart \(YouTube<sup>↗</sup>\)](#)

Duration: 0.5 h

Date: Anytime (available online)

## Remote Service Platform x4 and IoT Gateway x500

### Target group

- Plant and machine manufacturers

### Employees from the areas

- Project planning
- Application



### Targets

Familiarize yourself with the Lenze Remote Service Platform x4 and its features and see its added-value. Visit the interactive Lenze Online Training Portal to participate in the "Lenze X4 Remote" course and receive guided step-by-step instructions.

In addition, short tutorials practically show you how to commission the Lenze x4 Remote Cloud solution. By clicking on the following links, you can access the individual English tutorials quickly and easily (switch on the subtitles in your language, if required).

### Training content

- Introduction & Quick Start
  1. [A short tour of the new X4 Remote \(YouTube<sup>↗</sup>\)](#)
  2. [How to create your X4 Remote account \(YouTube<sup>↗</sup>\)](#)
  3. [How to setup your company in X4 Remote \(YouTube<sup>↗</sup>\)](#)
- Go online
  4. [Getting your machine online \(YouTube<sup>↗</sup>\)](#)
  5. [Setup your machine in the cloud \(YouTube<sup>↗</sup>\)](#)
  6. [How to configure the VPN connection \(YouTube<sup>↗</sup>\)](#)
- Services
  7. [How to add services to your machine \(YouTube<sup>↗</sup>\)](#)
  8. [How to add a data-source to your x500 \(YouTube<sup>↗</sup>\)](#)
  9. [How to setup Cloud Logging \(YouTube<sup>↗</sup>\)](#)
  10. [How to setup Cloud Notify \(YouTube<sup>↗</sup>\)](#)
- Dashboards & User Management
  11. [How to create Pages and Cards in Studio \(YouTube<sup>↗</sup>\)](#)
  12. [How to work with machine templates \(YouTube<sup>↗</sup>\)](#)
  13. [Rights management explained \(YouTube<sup>↗</sup>\)](#)
  14. [How to add users to your X4 Remote company \(YouTube<sup>↗</sup>\)](#)
- Additions (X4 Remote v1)
  15. [Configure the VNC connection to your PLC \(YouTube<sup>↗</sup>\)](#)
  16. [Logging in to your Lenze Digital account \(YouTube<sup>↗</sup>\)](#)
  17. [Creating a new user account \(YouTube<sup>↗</sup>\)](#)
  18. [Create an initial configuration for your x500 \(YouTube<sup>↗</sup>\)](#)
  19. [Connecting the x500 to the cloud \(YouTube<sup>↗</sup>\)](#)
  20. [Configure the VPN connection to your x500 \(YouTube<sup>↗</sup>\)](#)
  21. [Configure a new OPC UA data source \(YouTube<sup>↗</sup>\)](#)
  22. [Adding additional information about your x500 \(YouTube<sup>↗</sup>\)](#)
  23. [Adding a dashboard to your machine with X4 remote \(YouTube<sup>↗</sup>\)](#)

Duration: 2 h

Date: Anytime (available online)

## Cyber Security

### Target group

- Plant and machine manufacturers

### Employees from the areas

- Application
- Programming

### Targets

Participants gain basic knowledge of emerging legal requirements in the context of cyber security as well as knowledge of which industry standards can be used to meet these legal requirements. In addition, the training creates the basis for being able to use the security functions in Lenze control systems independently.

### Training content

- Introduction
  - Increasing threat situation
  - Legal background (CRA and NIS-2)
- Cyber security basics
  - Integrity, confidentiality, availability
  - Certificates and encryption
- Introduction to IEC 62443
- Cyber security in the Lenze automation system
  - Security during setup of the development environment
  - Security during PLC programming
  - Security on the controller

Duration: 1 day

Date: Please start individual inquiry.





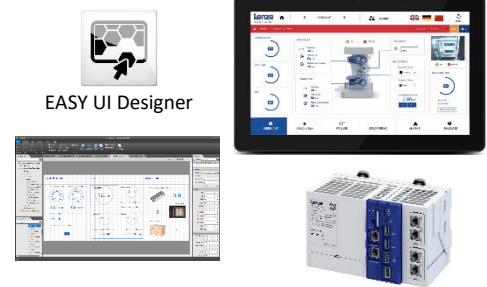
## EASY UI Designer – Introduction

### Target group

- Plant and machine manufacturers

### Employees from the areas

- Application
- Programming
- Commissioning



### Targets

The participants will be able to independently plan and design automation systems with the »EASY UI Designer«, implement simple applications and put them into operation.

### Training content

- System topology and connection to the controller
- Create projects via project wizard
- Page creation with control elements and implementation of functionalities with events
- General structure of the WebVisu, instantiation of elements and navigation guidance
- Language switching
- Process communication
- Alarm handling
- Recipe management
- User management
- Commissioning of the Touch Panel v450
- Practical exercises on training setups

Duration: 1 day

Date: Please find out training offer on country-specific website or start individual inquiry.

## VisiWinNET® Smart – Introduction

### Target group

- Plant and machine manufacturers

### Employees from the areas

- Application
- Programming
- Commissioning

### Targets

Participants will be able to independently design automation systems with VisiWinNET® Smart, implement simple applications and commission them.

### Training content

- Connection to the controller
- Overview of VisiWinNET® Smart and other product variants
- Introduction to the VisiWinNET® Smart Editor and its Project Wizard, the Form Designer and project configuration
- Cross-referencing and debugging
- Creating internal and external (controller) variables and user controls
- Manage and switch multiple languages
- Using alarms, trends, and recipes
- Apply user management and logbook functions
- Creation of a simple visu application with practical exercises on training setups

Duration: 1.5 days

Date: Please find out training offer on country-specific website or start individual inquiry.



## FAST Application Software

### Target group

- Plant and machine manufacturers

### Employees from the areas

- Application
- Programming

### Targets

Participants will receive an introduction to the controller-based FAST Application Software with the i700/i750 servo inverters and will be able to apply the technology modules and the Lenze FAST Application Template and understand and use their added-value in a standardized software and project structure. The training creates the basis for the independent deepening of the system knowledge within the scope of projects.

### Prerequisite

Knowledge of the "FAST Motion Control" training course is assumed.

### Training content

- Introduction Lenze FAST technology modules  
Interfaces: Principle and scalability
- Technology modules  
"Electric Shaft, Virtual Master, FlexCam"
- Modularization of machine applications
- Introduction FAST Application Template  
Presentation of the elements and the software structure  
Machine modules and applications, communication, status machine, error handling and coupling mechanisms  
Visualization, diagnostics and operation
- Practical exercises on training setups

Duration: 2 days

Date: Please find out training offer on country-specific website or start individual inquiry.



## FAST Robotics

### Target group

- Plant and machine manufacturers

### Employees from the areas

- Application
- Programming
- Commissioning

### Targets

Participants will be able to independently commission a Robotics PLC program and adapt the program to their own application requirements.

### Prerequisite

Knowledge of the "FAST Motion Control" training course is assumed. Participation in the online training course "Robotics - Basics" is recommended.

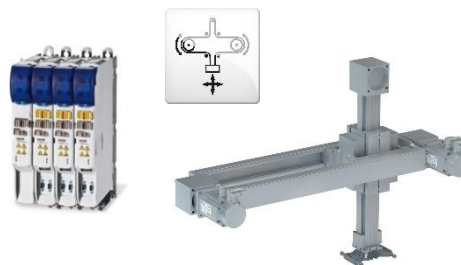
### Training content

Initial commissioning of a customer-oriented Robotics application through practical exercises on technical setups:

- Integrate and configure customer-specific kinematics
- Define coordinate systems, and reference and commission robots
- Include auxiliary axes
- Program motion trajectories, execute movements, and adjust motion trajectories
- Use technology modules
- Testing the "Conveyor Tracking" application

Duration: 1 day

Date: Please find out training offer on country-specific website or start individual inquiry.



## PLC Designer Introduction

### Target group

- Plant and machine manufacturers
- Machine operator

### Employees from the areas

- Application
- Programming
- Commissioning

### Targets

The participants acquire the technical knowledge in the application, programming, commissioning, and diagnostic possibilities of the »PLC Designer«. They will learn the basic features of its handling and the application of IEC61131-3 programming.

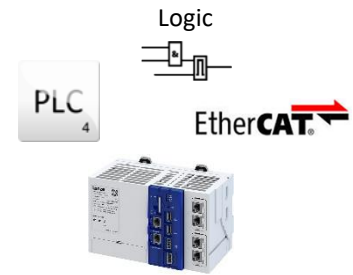
### Training content

- Introduction to the hardware of controller with I/O system
- Structure of the »PLC Designer« V3
- Creating a standard project with I/O mapping and connecting to the controller
- Project settings, project download, boot project, source code download and upload
- Use of libraries, device repository
- Introduction of variable & data types, POU's (program, function block, function), tasks, persistent & retain variables
- Using monitoring, forcing, and overwriting variables, trace, text list, logbook
- Introduction to IEC61131-3 programming languages with focus on FBD and Structured Text languages
- Use simple data structures
- Introduction to the visualization with the »PLC Designer«
- Practical exercises on training setups

Duration: 1 day

Date: Please find out training offer on country-specific website or start individual inquiry.

Please also note the online trainings "PLC Designer Basics: First Steps" and "PLC Software Development" in the Lenze online training portal, which provide you with similar expertise through self-study.





## FAST Motion Control

### Target group

- Plant and machine manufacturers
- Machine operator

### Employees from the areas

- Application
- Programming
- Commissioning

### Targets

The participants acquire the basic knowledge for testing, evaluating, and implementing motion applications with servo inverters. The training creates the basis for independent deepening of the system knowledge within the scope of projects.

### Prerequisite

The knowledge acquired in the training "PLC Designer Introduction" or in the free online trainings "PLC Designer Basics: First Steps" and "PLC Software Development" is assumed.

### Training content

#### Day 1 (Basics)

- Quick familiarization with project creation with the »PLC Designer«
- Initial commissioning of i700/i750, i950 as EtherCAT devices incl. Softmotion
- PLCopen  
Basic Motion function blocks, extended motion functions (homing, positioning)
- Lenze Motion  
Positioning, axis synchronization, operating modes

#### Day 2 (Advanced)

- Virtual axes
- Holding brake control
- Torque Mode CST
- Electric shaft
- Cam profiler
- Lenze touch probe function blocks

Duration: 2 days

Date: Please find out training offer on country-specific website or start individual inquiry.



## PLC Designer OOP

### Target group

- Plant and machine manufacturers

### Employees from the areas

- Application
- Programming

### Targets

The participants acquire the basic knowledge of object-oriented programming using user-defined data structures with the »PLC Designer«. The training creates the basis for the independent deepening of the system knowledge within the scope of projects.

### Prerequisite

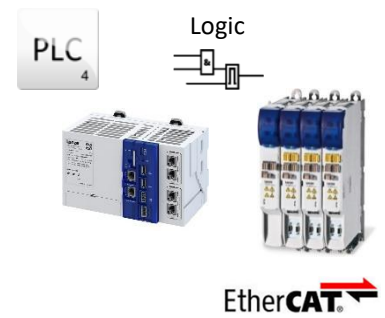
The knowledge acquired in the training "PLC Designer Introduction" or in the free online trainings "PLC Designer Basics: First Steps" and "PLC Software Development" is assumed.

### Training content

- Introduction to object-oriented programming
  - Methods, properties, interfaces, and inheritances
  - User-defined data structures
- Practical exercises on training setups

Duration: 1.5 days

Date: Please find out training offer on country-specific website or start individual inquiry.



## FAST Application Template OMAC/PackML

### Target group

- Plant and machine manufacturers

### Employees from the areas

- Application
- Programming

### Targets

The participants should be able to use the controller-based FAST Application Template OMAC/PackML and understand and use its added-value in a standardized software and project structure. The training creates the basis for the independent deepening of the system knowledge in the context of projects.

### Prerequisite

The knowledge acquired in the training "PLC Designer Introduction" or in the free online trainings "PLC Designer Basics: First Steps" and "PLC Software Development" is assumed.

### Training content

- Introduction FAST Application Template OMAC/PackML
  - Presentation of elements and software structure
  - Machine modules and applications, communication, status machine, error handling as well as coupling mechanisms
- Visualize, diagnose and operate
- Practical exercises on training setups

Duration: 1 day

Date: Please start individual request.



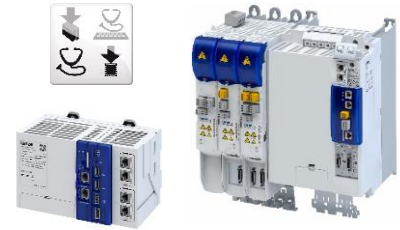
## Controller-based Automation – Service & Commissioning

### Target group

Plant and machine manufacturers  
Machine operator

### Employees from the areas

Application  
Commissioning  
Maintenance



### Targets

The training covers the basics of installation, commissioning, operation and service of the controllers, the servo inverters i700/i750, i950 and the EtherCAT field bus.

Participants acquire the technical knowledge to independently commission, parameterize, diagnose, and troubleshoot controller-based automation systems.

### Training content

#### Day 1 (Service)

- Brief presentation of the controllers, the servo inverters and the EtherCAT field bus
- Diagnosis and troubleshooting (focus on »EASY Starter«)
- Device replacement & backup
- Practical exercises on training setups

#### Day 2 (Commissioning)

- Assembly and commissioning of the systems
- Parameterization, optimization, and advanced diagnostics (focus on »PLC Designer«)
- Practical exercises on training setups

Duration: 2 days

Date: Please find out training offer on the country-specific website or start individual inquiry.

## Inverter i500 – Application

### Target group

Plant and machine manufacturers

### Employees from the areas

Electrical design  
Project planning  
Application  
Commissioning



### Targets

Participants will be able to commission the Inverter i500 independently and adapt applications to their own requirements.

### Prerequisite

To prepare for a successful participation, Lenze recommends the free online training courses "Inverter i500 - Basics" and "Inverter i500 - Application".

### Training content

Commission the Inverter i500 with the engineering tools (keypad, PC) and adapt it to your own requirements:

- Setpoint structure and operating modes and control signal selection options
- Adaptation of the inverters to the requirements of a conveyor drive (I/Os, motion profile, start/stop behavior)
- Standard functions of the inverters (favorite lists, parameter sets, access control)
- Optimization of the motor control
- Integration to master control via fieldbus
- Advanced inverter functions (process controller, auxiliary functions, monitoring)

Duration: 1 day

Date: Please find out training offer on the country-specific website or start individual inquiry.



## Inverter i650 – PLC

### Target group

Plant and machine manufacturers

### Employees from the areas

Application  
Programming  
Commissioning



### Targets

Participants will become familiar with the possible uses of the programmability of the i650 motec inverter in accordance with industry standard IEC 61131-3 using the »PLC Designer« (V4) programming environment. The training provides the basis for independently implementing your own projects with the i650 motec inverter.

### Prerequisite

Participants should have completed the free e-learning courses “Inverter i500 – Commissioning & Application” and “PLC Designer Basics – First Steps.” Programming knowledge in accordance with IEC 61131-3 or extensive experience in the field of PLC programming is advantageous.

### Training content

- Overview of the hardware and software structure of the i650 motec inverter
- Use of the »EASY Starter« and »PLC Designer« (V4) engineering software for project creation and programming
- Diagnostic options
- Getting to know the motion functions (positioning, referencing, etc.)
- Practical exercises on training setups

Duration: 2 days

Date: Please start individual inquiry.

## Servo Inverter i950 – Application

### Target group

Plant and machine manufacturers

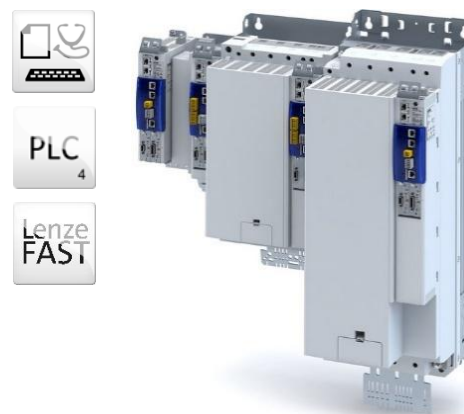
### Employees from the areas

Electrical design

Project planning

Application

Commissioning



### Targets

Participants learn how to integrate i950 servo Inverters into a machine and adapt them to individual requirements. The training creates the basis for independent implementation of their own projects with the i950 servo inverters.

### Prerequisite

To prepare for a successful participation, Lenze recommends the free online training courses "PLC Designer Basics: First Steps" and "Servo Inverter i950 - Application".

### Training content

- Overview of hardware components and their installation
- Commissioning with the »EASY Starter«
- Basics of positioning technology and positioning tasks
- Implementing and adapting prefabricated applications in the »PLC Designer«
- Electric shaft and multi-axis operation
- Connection and integration to a master control via the system bus or field bus interface
- Implementing the individual requirements of typical applications using the »EASY Starter« and »PLC Designer« engineering software
- Practical exercises on training setups

Duration: 2 days

Date: Please find out training offer on the country-specific website or start individual inquiry.

## Servo Inverter i950 – Servo PLC

### Target group

Plant and machine manufacturers

### Employees from the areas

Application  
Programming  
Commissioning



### Targets

Participants will become familiar with the possible uses of the programmability of the i950 Servo PLC in accordance with the IEC 61131-3 industry standard using the »PLC Designer« (V4) programming environment. The training provides the basis for independently implementing your own projects with the i950 Servo PLC.

### Prerequisite

Participants should have completed the free e-learning courses “Servo Drive i950 – Application” and “PLC Designer Basics – First Steps.” Programming knowledge according to IEC 61131-3 or extensive experience in the field of PLC programming is an advantage.

### Training content

- Overview of the hardware and software structure of the i950 Servo PLC
- Use of the »Easy Starter« und »PLC Designer« (V4) engineering software for project creation and programming
- Diagnostic options
- Getting to know the motion functions (speed control, positioning, referencing, etc.)
- Practical exercises on training setups

Duration: 2 days

Date: Please start individual inquiry.

## Inverter Drives 8400 – Application

### Target group

Plant and machine manufacturers



### Employees from the areas

Electrical design

Project planning

Application

Commissioning

### Targets

Participants will be able to commission the Inverter Drives 8400 independently and adapt applications to their own requirements.

### Prerequisite

To prepare for a successful participation, Lenze recommends the free online training course "Inverter Drives 8400".

### Training content

- Overview of hardware components and their installation
- Commissioning and diagnostics with the keypad and the »Engineer« engineering software
- Create projects, implement applications
- Handling FB editor and oscilloscope
- Operating modes with and without encoder feedback
- Prefabricated applications for speed and position-controlled drives (actuator speed, table positioning)
- Connection of field buses
- Practical exercises on training setups

Duration: 2 days

Date: Please find out training offer on the country-specific website or start individual inquiry.

## Servo Drives 9400 – Application

### Target group

Plant and machine manufacturers

### Employees from the areas

Electrical design  
Project planning  
Application  
Commissioning



### Targets

Participants will be able to independently configure the 9400 Servo Drives, as well as implement and commission applications.

### Training content

- Overview of hardware components and their installation
- Commissioning and adaptation of prefabricated applications with the »Engineer« engineering software
- Basic drive functions and motor operating modes
- Creating and configuring your own applications with the FB editor
- Integrating the 9400 Servo Drives into CAN networks and setting up multi-axis applications
- Basics of positioning technology and positioning tasks
- Practical exercises on training setups

Duration: 2 or 3 days

Date: Please find out training offer on the country-specific website or start individual inquiry.



## Servo Drives 9400 – Electronic cam profiler

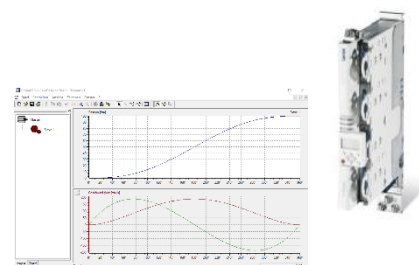
### Target group

Plant and machine manufacturers

### Employees from the areas

Application

Commissioning



### Targets

Participants will be able to independently configure Servo Drives 9400 with the "Electronic cam" application, as well as implement and commission applications.

### Training content

- Basics of cam technology
- Application examples for cam technology
- Introduction to the "Electronic cam" application
- Apply different cam functions
- Further parameterization and configuration of the application with the »Engineer« engineering software
- Practical exercises on training setups

Duration: 2 days

Date: Please start individual inquiry.

## Servo Drives 9400 – Servo PLC

### Target group

Plant and machine manufacturers

### Employees from the areas

Application  
Programming  
Commissioning



### Targets

The participants are familiarized with the possible uses of the programmability of the 9400 Servo PLC according to the IEC 61131-3 industry standard with the »PLC Designer« (V2) programming environment. The training creates the basis for the independent implementation of own projects with the 9400 Servo PLC.

### Prerequisite

Knowledge of the training course "Servo Drives 9400 - Application" (9400 HighLine) and programming knowledge according to IEC 61131-3 or extensive experience in the field of PLC programming are required.

### Training content

- Overview of the hardware and software structure of the 9400 Servo PLC
- Use of the engineering software »Engineer« and »PLC Designer« (V2) for project creation and programming
- Diagnostic options
- Fieldbus communication CANopen
- Practical exercises on training setups

Duration: 3 days

Date: Please start individual inquiry.

## Inverter i500 – Service

### Target group

Plant and machine manufacturers

Machine operator



EASY Starter

### Employees from the areas

Commissioning

Maintenance

### Targets

The participants acquire the technical knowledge for the diagnosis and independent troubleshooting of inverter i500 as well as the operation of the keypad, »EASY Starter« and other engineering tools for service.

### Prerequisite

To prepare for a successful participation, Lenze recommends the free online training "Inverter i500 - Basics".

### Training content

- Basics of drive technology
- Handling of the keypad and the »EASY Starter« in case of service
- Diagnostic options (status LEDs, error message, history memory, trend, and oscilloscope)
- Troubleshooting and fault elimination in practice
- Data backup and recovery
- Things to know about firmware compatibility and user settings
- Practical exercises on training setups

Duration: 1 day

Date: Please find out training offer on the country-specific website or start individual inquiry.

## Servo Inverter i950 – Service

### Target group

Plant and machine manufacturers  
Machine operator

### Employees from the areas

Commissioning  
Maintenance

### Targets

The participants acquire the technical knowledge for the diagnosis and independent troubleshooting of i950 servo inverters as well as the operation of the »EASY Starter« and other engineering tools for service.

### Prerequisite

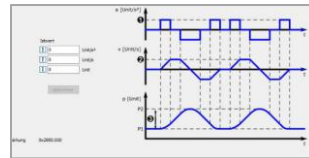
To prepare for participation, Lenze recommends the free online training course "Servo Inverter i950 - Service", which provides a series of video tutorials to get you started.

### Training content

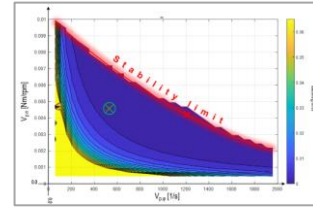
- Basics of drive technology
- Handling of the »EASY Starter« in case of service
- Diagnostic options (status LEDs, error messages, history memory, trend, and oscilloscope)
- Troubleshooting and fault elimination in practice
- Data backup and recovery
- Things to know about firmware compatibility and user settings
- Practical exercises on training setups

Duration: 1 day

Date: Please find out training offer on the country-specific website or start individual inquiry.



EASY Starter



## Inverter Drives 8400 – Service

### Target group

Plant and machine manufacturers  
Machine operator



### Employees from the areas

Commissioning  
Maintenance

### Targets

The participants acquire the technical knowledge for the diagnosis and independent troubleshooting of Inverter Drives 8400 as well as the operation of the keypad, »EASY Starter« and other engineering tools for service.

### Prerequisite

To prepare for a successful participation, Lenze recommends the free online training course "Inverter Drives 8400".

### Training content

- Parameter access and reading of status information on the Inverter Drives 8400 using the keypad
- Diagnostics with the »EASY Starter« and »Engineer« (device states, error response, logbook, trend, data logger, oscilloscope)
- Commissioning of specified user parameterizations
- Data backup and recovery
- Troubleshooting and fault elimination in practice
- Things to know about installation and operation
- Practical exercises on training setups

Duration: 1 day

Date: Please find out training offer on the country-specific website or start individual inquiry.

## Servo Drives 9400 – Service

### Target group

Plant and machine manufacturers  
Machine operator

### Employees from the areas

Commissioning  
Maintenance

### Targets

The participants acquire the technical knowledge for the diagnosis and independent troubleshooting of 9400 Servo Drives as well as the operation of the keypad, »EASY Starter« and other engineering tools for service.

### Training content

- Parameter access and reading of status information on the 9400 Servo Drives using the keypad
- Diagnostics with the »EASY Starter«  
(device states, error response, logbook, service register, trend)
- Commissioning of specified applications
- Data backup and restore (e. g. in case of changed parameterization in the device)
- Troubleshooting and fault elimination in practice
- Things to know about installation and operation
- Practical exercises on training setups

Duration: 1 day

Date: Please find out training offer on the country-specific website or start individual inquiry.



## Inverter 8200 vector and 8200 motec – Service

### Target group

Machine operator

### Employees from the areas

Maintenance



### Targets

The participants acquire the technical knowledge for the diagnosis and independent troubleshooting of inverters 8200 vector and 8200 motec as well as the operation of the keypad, »EASY Starter« and other engineering tools for service.

### Training content

- Basics of drive technology and electromagnetic compatibility
- Parameter access and reading of status information on the 8200 vector and 8200 motec inverters using the keypad
- Diagnostics with the »EASY Starter« and »Global Drive Control« (GDC) (device states, error response, logbook, trend)
- Data backup and restore (e. g. in case of changed parameterization in the device)
- Troubleshooting and fault elimination in practice
- Things to know about installation and operation
- Practical exercises on training setups

Duration: 1 day

Date: Please start individual inquiry.

## 9300 Servo Inverter – Service

### Target group

Machine operator

### Employees from the areas

Maintenance

### Targets

The participants acquire the technical knowledge for the diagnosis and independent troubleshooting of 9300 Servo Inverters as well as the operation of the keypad, »EASY Starter« and other engineering tools for service.



### Training content

- Basics of drive technology and electromagnetic compatibility
- Parameter access and readout of status information to the 9300 Servo Inverter using the keypad
- Diagnostics with the »EASY Starter« and »Global Drive Control« (GDC) (device states, error response, logbook, trend, oscilloscope)
- Data backup and restore (e. g. in case of changed parameterization in the device)
- Troubleshooting and fault elimination in practice
- Things to know about installation and operation
- Practical exercises on training setups

Duration: 1 day

Date: Please start individual inquiry.



## Servo Inverter i950 – Extended Safety

### Target group

Plant and machine manufacturers

### Employees from the areas

Application  
Programming  
Commissioning



Safety over  
**EtherCAT**



### Targets

Participants will be able to independently design the i950 Extended Safety (ES) Servo Inverter with safety module, implement applications, commission the system, and ensure operation.

### Prerequisite

Knowledge of the "Servo Inverter i950 - Application" training course is assumed.

### Training content

- Overview of hardware components (i950 ES)
- Introduction to functional safety in mechanical engineering
- Understanding and parameterizing 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 envelopes 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«.
- Practical exercises on training setups

Duration: 2 days

Date: Please find out training offer on the country-specific website or start individual inquiry.

## Safety controller c250-S – Functional Safety Programming

### Target group

Plant and machine manufacturers

### Employees from the areas

Application  
Programming  
Commissioning



Safety over  
EtherCAT®



### Targets

Participants learn how to logically link safety functions of a machine with the c250-S safety controller.

### Prerequisite

The knowledge from the training "Servo Inverter i950 - Extended Safety" and the free online training "PLC Designer Basics: First Steps" is required.

### Training content

- Overview of the hardware components (c250-S safety controller, safety I/O module, safety bus coupler)
- Electrical connection of the components
- Creation of a safety-oriented program with the »PLC Designer« according to PLCopen Safety
- Extension of an existing »PLC Designer« project to include safety control
- Logical data exchange between standard and safety controller via EtherCAT
- Reading out status information with the standard controller
- Activation of safety functions in the inverter via FSoE
- Access protection of the safety-oriented program
- Diagnosis and troubleshooting
- Practical exercises on training setups

Duration: 1 day

Date: Please find out training offer on the country-specific website or start individual inquiry.

## Servo Drives 9400 – Safety engineering

### Target group

Plant and machine manufacturers



### Employees from the areas

Application  
Programming  
Commissioning

### Targets

Participants will be able to independently configure the Servo Drives 9400 with safety module, implement applications, commission the system, and ensure operation.

### Prerequisite

Knowledge of the "Servo Drives 9400 - Application" training course is assumed.

### Training content

- Overview of the safety components (SM0, SM100, SM301 or SM302)
- Overview of functional safety in drive technology
- Parameterization and configuration
- Commissioning, diagnostics, and service
- Practical exercises on training setups

Duration: 2 days

Date: Please find out training offer on the country-specific website or start individual inquiry.

## EASY System Designer - Drive Sizing

### Target group

- Plant and machine manufacturers

### Employees from the areas

- Construction
- Project planning

### Targets

Participants gain the knowledge of the functions and application of the software to be able to independently perform the design for Lenze drive systems in their working area.

### Prerequisite

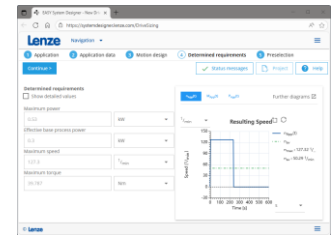
Lenze recommends that participants work on their own laptop (operating system: Windows 11) with EASY System Designer - Drive Sizing (ESD) and bring it to the training.

### Training content

- Software ESD (structure and architecture)
- User interface of the ESD
- Prepare projects
- Program sequence in the ESD
- Results and protocols
- Motion planning in the ESD
- Simple multi-axis design
- Analyze and optimize designs using application-oriented exercises

Duration: 2 days

Date: Please find out training offer on country-specific website or start individual inquiry.



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# Registration terms and participation conditions

## Scope of application

These conditions apply to classroom training and online-based live webinars organized by Lenze. They only include the generally applicable points.

Please note that additional country- and event-specific conditions of participation apply, which will be provided to you by your contact person at Lenze prior to registration.

## Registration

Please let us know as soon as possible if you are interested in a training course using the online contact form or the contact address on our website.

After clarifying your request and receiving your written order, Lenze will send you a binding order confirmation.

Three weeks before the training, you will receive the final invitation to the training with all relevant details.

Please make travel bookings, e.g. for hotels, flights, trains and rental cars, only after receiving the invitation.

## Cancellation policy

Cancellations by participants are free of charge up to three weeks before the start of the training, after that half the training fee will be charged. The nomination of a substitute participant is possible and free of charge.

In the event of non-attendance on the day of the training session without prior written notice, we will charge you 100 % of the cost of the training session.

## Copyright

Training documents may not be reproduced or passed on to third parties without written permission from Lenze SE.

## Liability

Lenze reserves the right to cancel training courses in case of under-subscription or for other reasons, as well as to change training dates. We will offer you alternative dates in these cases. In such cases, we will contact you immediately and offer alternative dates. If the date is postponed by Lenze, you have the option of cancelling the event free of charge.

Lenze assumes no liability

- for information provided written or verbally during the training courses or contained in training documents,
- for any damage or consequential damage that may result from training sessions.

## Safety instructions

Participants agree to comply with the safety instructions and local regulations that are provided at the training workplace.

In accordance with the applicable regulations for the protection of information technology systems, the connection and use of your own storage media (e.g. USB sticks) with Lenze devices is not permitted without explicit consent.

## Training times

Full-day trainings begin at 8:30 a.m. and end at 4:30 p.m. each day.

Start-up trainings begin at 09:00 and end around 15:00.

For half-day or individually arranged trainings, please refer to the details on the website and in the training invitation.

## Dates & costs

You can find our dates and the costs applicable to the respective training at [www.lenze.com/training](http://www.lenze.com/training). If you are interested in an individual training, please contact your direct contact person at Lenze or get in touch with us via the contact address for training on the country-specific website.





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