2022
ANNUAL PROGRAMME

From maintenance technician to expert

WELCOME
TO QTE TRAINING GMBH

For successful companies, the benefits of employee qualification and training are an indispensable competitive advantage, which is why they invest in trainings and further education of their staff. The resulting knowhow not only increases the effectiveness of employees, but also makes them more flexible and, if necessary, allows them to be profitably deployed elsewhere.

PREFACE

Dear customers and partners,

In 2022, we would like to continue supporting your ongoing maintenance work with our training portfolio. Here, we remain true to our vision regarding target group-oriented training sessions on the topics of materials handling and troubleshooting and will be happy to support you as a competent training partner this year.

Together with you, we would like to resolve the shortage of skilled workers in a targeted manner by adding professional qualifications to your employees knowledge. As a result, your maintenance work will reduce equipment shutdowns, making a significant contribution to the global competitiveness of your company.

I would like to take this opportunity to thank all employees and partners - with whom we can look back on an extremely successful 2021. A year in which we also developed new concepts to better convey our practical knowledge to your maintenance staff.

✓ With our project “Fit for the maintenance of tomorrow”, we launched the Apprentice AcademyME together with our partner. Here, we are closing the knowledge gap between theory and practical work during apprenticeships.

✓ When you take part in our webinars, you can easily and conveniently do so via VM-Ware and simulations. Our modern and effective training courses can therefore be attended worldwide. We are looking forward to you benefiting from them too!

✓ Our hydraulic training courses have become well-established, and we have adapted our portfolio accordingly due to the high demand. Hydraulics is now an integral part of our training offer, and we are also looking forward to supporting your mechanical maintenance with materials handling and troubleshooting in this field.

In doing so, we are passing on our high quality standards to you and will be happy to support you - throughout Germany and internationally - as a training specialist for your maintenance work in 2022, too.

Stay on top of your game!

Yours,

BETTINA JACOBI
QTE Training GmbH

OUR TRAINING PROGRAMMES
FOR YOUR SUCCESS

OUR EXPERTISE
Our trainers look back on many years of experience in their respective areas of expertise, and have furthermore advanced trainings to become certified teachers or trainers. For us, it is very important that our trainers are up to date with the latest knowledge in their field. . In order to provide rhetorical and pedagogical training for our trainers, we regularly hold external seminars and workshops. This enables them to pass on complex material using a balanced mix of theoretical knowledge and practical exercises.

IN-HOUSE - WE WILL COME TO YOU!
Do you have your own training facilities and prefer conducted trainings to be conducted on site? If you book a QTE in-house training, we will organise trainings for you in the comfort of your own premises. Our trainers will come to you with all the necessary equipment. All you need to do is to register the participants and we will take care of the rest! Take advantage of our attractive fixed-price offers.

CUSTOMER SATISFACTION
… is very important for us! In order to ensure the quality of our trainings, we ask all participants to evaluate the effectiveness of each course they complete. This written feedback is then evaluated by an external company, and the results allow us to continuously optimise our services. In this way, your input helps us to make

SMALL GROUP SIZES FOR GREATER LEARNING SUCCESS
To guarantee the best possible learning outcomes, we work exclusively in small groups with a maximum of 8 participants. This allows us to respond to specific needs and also gives us more time if need be.

TRAININGS IN ENGLISH
We are an international provider of control technology trainings. Our qualified trainers can thus also conduct all the trainings we offer in English.

WEB SEMINARS
We have further improved our trainings in order to offer you greater flexibility. The QTE Training web seminars enable us to deliver training content directly into your home office or company.

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QTE TRAINING BOX
We have developed a QTE Training Box to help you consolidate the learning content in the long term. This box is the ideal option to complement our trainings with independent study.

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QTE TRAINING FOR TRAINEES
Trainees often face major challenges. In our trainings, our experienced trainers stimulate and motivate the participants, through practical tasks and a sense of team spirit.

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CONTENT

CONTENT

SIEMENS

PRODUCT TRAININGS

As a global market leader, Siemens offers proven solutions for the automation of industrial machines and systems. These solutions are the global standard in almost every automated enterprise. The advantages of Siemens controllers include the high level of reliability and stability of the systems.

S7 V5.X - COMMISSIONING

TARGET GROUP
Commissioning Staff I Service Technicians

REQUIREMENTS
Participation in the following QTE training:
"S7 v5.x - Maintenance and Servicing I Basic Course"
or a comparable qualification.

DESCRIPTION I DELIVERY
This training provides an introduction to the commissioning of PLC programs created using the SIMATIC Manager in the TIA Portal. In addition, you will also learn how to diagnose faults and locate typical system faults using the STEP7 diagnostic functions.

The training content is presented using a variety of different media and application examples. You will have the opportunity to apply your knowledge in practice using S7-1500 automation devices and a simulation model.

CONTENT
- A systematic approach to commissioning systems with PLC programs that have been created using the TIA Portal
- Commissioning of systems implemented with PROFINET
- How to recognise and eliminate typical hardware and program errors
- Options for checking that functions are correct
- How to detect errors in the configuration of PROFINET devices
- How to use the cross-reference list, watch list and diagnostic buffer for effective testing and troubleshooting when executing the program

MINIMUM NUMBER OF PARTICIPANTS
3

COURSE DURATION
4 days

PRICE
€1,590 plus VAT I meals included

S7 V5.X - MAINTENANCE AND SERVICING

BASIC COURSE

TARGET GROUP
Maintenance Staff I Commissioning Staff I Service Technicians

REQUIREMENTS
Prior knowledge of Microsoft Windows and digital technology

DESCRIPTION I DELIVERY
Maintenance staff are often confronted with various devices from different manufacturers. In addition to knowledge of existing equipment, this training will give you confidence in using the software. You will learn about typical PLC program functions, which will give you a good foundation in how to conduct more efficient troubleshooting.

The training content is presented using a variety of different media. You will be able to deepen your theoretical knowledge by means of typical application examples and simple programming exercises. You will also have ample opportunity to apply your knowledge in practice using S7-300 automation devices and a simulation model.

CONTENT
- Introduction to the hardware components of the SIMATIC S7 family
- You will learn how to use the following software interfaces: SIMATIC Manager, hardware configuration, symbol editor, variable list and force values, reference list, LAD/FBD as well as the IL editor
- How to create S7 programs using these editors
- Direct and symbolic addressing
- Integration of modules via Profibus-DP
- How to load and interpret programs
- Introduction to functions, function blocks and data blocks
- Introduction to arithmetic and conversion functions
- Introduction to error organisation blocks
- How to rectify program errors using the cross-reference list, the variable list & the diagnostic buffer of the CPU
- Troubleshooting and elimination of errors using a training model
- Short introduction to WinCC flexible

MINIMUM NUMBER OF PARTICIPANTS
3

COURSE DURATION
4 days

PRICE
€1,690 plus VAT I meals included

S7 V5.X - MAINTENANCE AND SERVICING

ADVANCED COURSE I

TARGET GROUP
Maintenance Staff I Commissioning Staff I Service Technicians

REQUIREMENTS
Knowledge of the content of the following QTE training:
"SIMATIC S7 - Maintenance and Servicing I Basic Course"
or a comparable qualification

DESCRIPTION I DELIVERY
This training is intended to refresh existing knowledge from the basic course and will teach you how to use the STEP 7 diagnostic functions for effective troubleshooting and how to efficiently eliminate errors in the Profibus configuration.

The training content is presented using a variety of different media. You will be able to deepen your theoretical knowledge by means of typical application examples. You will also have ample opportunity to apply your knowledge in practice using S7-315 automation devices and a simulation model.

CONTENT
- Refreshing your knowledge of S7 troubleshooting
- Typical fault types: hardware, program, logical and sporadic errors
- Introduction to a systematic approach to efficient troubleshooting
- How to locate system-specific errors
- The diagnostic possibilities of error organisation blocks
- How to detect and correct malfunctions using a training model
- How to use the STEP 7 diagnostic functions
- How to correct PROFIBUS configuration errors

MINIMUM NUMBER OF PARTICIPANTS
3

COURSE DURATION
3 days

PRICE
€1,270 plus VAT I meals included

S7 V5.X - MAINTENANCE AND SERVICING

ADVANCED COURSE II

TARGET GROUP
Maintenance Staff I Commissioning Staff I Service Technicians

REQUIREMENTS
Extended basic knowledge of Step7 v.5.x
Knowledge of the content of the following QTE training:
"SIMATIC S7 - Service and Maintenance I Advanced Course I"

DESCRIPTION I DELIVERY
This training will provide you with advanced skills that enable you to handle complex STEP 7 programs. You will learn how to rectify faults in more complex projects, including how to use error OBs to display faults in a targeted manner (for example on an HMI), how to set up data exchanges between several CPUs and how to use an integrated drive.

The training content is presented using a variety of different media and application examples. You will also have the opportunity to apply your knowledge in practice using S7-300 automation devices, the TP 177 HMI and the SINAMICS G120 drive unit.

CONTENT
- Programming languages LAD/FBD, SCL, IL
- How to recognise the structure of more complex programs and how to expand them
- Program-related error evaluation and handling
- How to use error organisation blocks
- How to create fault messages and display them on an HMI
- How to control a system from an HMI
- Data exchange between several SIMATIC CPUs via Profibus (process data, status information)
- Asynchronous drives with SINAMICS STARTER
- How to create an SCL source > generate it > create a program organisation unit
- Declaration of variables in SCL

MINIMUM NUMBER OF PARTICIPANTS
3

COURSE DURATION
4 days

PRICE
€1,590 plus VAT I meals included

S7 V5.X - DISTRIBUTED SAFETY

TARGET GROUP
Maintenance Staff I Service Technicians I Programmers I Project Engineers

REQUIREMENTS
Participation in the following QTE training:
"S7 v5.x - Maintenance and Servicing I Advanced Course"
or a comparable qualification

DESCRIPTION I DELIVERY
You will gain insights into the functionality, diagnostics, troubleshooting, programming and commissioning of Distributed Safety. This also includes the fail-safe central processing modules of the S7-300F and S7-400F as well as the ET200 fail-safe distributed systems.

The content is presented using a variety of different media. You will be able to deepen your theoretical knowledge using typical application examples. You will also have ample opportunity to apply your knowledge in practice using an S7-300 automation device and a simulation model.

CONTENT
- Overview of standards and guidelines
- Principle of operation, system structure and peripherals of the SIMATIC S7-300F
- How to program a safety-related user program
- Distributed Safety - how to design a fail-safe periphery
- Options for diagnostics (CPU diagnostics, peripheral diagnostics, advanced diagnostic tools)
- Data exchange, troubleshooting the set-up of peripherals
- Exercises for how to set up the peripherals
- Programming examples (special programming features, emergency stop, protective door, safety shutdown, passivation)
- How to identify potential errors using a training model
- How to design a fail-safe periphery with Distributed Safety
- How to detect faults in how the peripherals are set up

MINIMUM NUMBER OF PARTICIPANTS
3

COURSE DURATION
2 days

PRICE
€1,050 plus VAT I meals included

S7 V5.X - SCL (STRUCTURED CONTROL LANGUAGE)

BASIC COURSE

TARGET GROUP
Programmers I Project Engineers I Maintenance Staff I Service Technicians

REQUIREMENTS
Extended basic knowledge of the Step 7 Manager

DESCRIPTION I DELIVERY
Employees are increasingly confronted with systems that are programmed in SCL. This training will give you insights into the Structured Control Language. After this training, you will be able to navigate through an SCL program and to locate errors more quickly.

You will get an introduction to the SCL Professional 2010 SR4 Editor in Step 7 Manager v5.5.

We will create SCL sources, call functions and function blocks that contain typical elements such as IF ... THEN and timers.

The training content is presented using a variety of different media. You will be able to deepen the theoretical knowledge you will gain by means of programming exercises on your own controller.

CONTENT
- The Step 7 SCL Prof. 2010 software
- How to create an SCL source > generate it > create a program organisation unit
- Declaration of variables in SCL
- SCL Online
- Debug info
- Keywords
- Structure of FC, FB > interface + code
- Declaration of SCL variables
- The IF, CASE functions
- How to insert SCL program organisation units from the library
- How to call up the IEC timer
- How to insert program organisation units from templates
- How to resolve translation errors

MINIMUM NUMBER OF PARTICIPANTS
3

COURSE DURATION
4 days

PRICE
€1,590 plus VAT I meals included

S7 V5.X - SCL (STRUCTURED CONTROL LANGUAGE)

ADVANCED COURSE

TARGET GROUP
Programmers I Project Engineers I Maintenance Staff I Service Technicians

REQUIREMENTS
Good knowledge of the Step 7 Manager
Participation in the following QTE training:
"S7 v5.x - SCL (Structured Control Language) I Basic Course"

DESCRIPTION I DELIVERY
Employees are increasingly confronted with systems that are programmed in SCL. This training will give you insights into the Structured Control Language. After this training, you will be able to navigate through an SCL program and to locate errors more quickly.

You will gain advanced knowledge in Step 7 v5.x SCL, which will enable you to understand complex programs and to create simple programs on your own.

The training content is presented using a variety of different media. You will be able to deepen the theoretical knowledge you will gain by means of programming exercises on your own S7-315 controller using Step 7 v5.5 and SCL Professional 2010 SR4 v5.3.

CONTENT
- From SCL source to program organisation units
- The message window in the SCL editor
- How to handle translation errors
- How to insert POU calls, including SFCs/SFBs
- IF with combined conditions
- ARRAY data type
- Functions and return values
- Calls with multiple arguments
- Advanced knowledge of edge detection and timers
- The GOTO jump label
- CASE
- Ring buffers
- FOR loop and EXIT
- WHILE loop
- Structured programming and commenting with Step7
- How to resolve translation errors

MINIMUM NUMBER OF PARTICIPANTS
3

COURSE DURATION
3 days

PRICE
€1,270 plus VAT I meals included

Our tip:

Save costs by booking the basic and advanced courses at the same time.

S7 V5.X - PROGRAMMING

BASIC COURSE

TARGET GROUP
Programmers I Project Engineers I Maintenance Staff I Service Technicians

REQUIREMENTS
Basic knowledge of how to program comparable PLC types
Knowledge of digital technology I Knowledge of computers and Microsoft Windows

DESCRIPTION I DELIVERY
You will gain an overview of the functional possibilities of the Siemens SIMATIC S7 PLC family as well as insights into the programming, structure and documentation of SIMATIC S7.

The training content is presented using a variety of different media. You will be able to deepen your theoretical knowledge by means of typical application examples. You will also have ample opportunity to apply your knowledge in practice using an S7-300 automation device and Step 7 v5.5.

CONTENT
- Product categories of the SIMATIC S7 family
- How to use the software interfaces of the SIMATIC Manager
- Structured programming and commenting with Step7
- How to input, load, read out and interpret a simple program
- How to program and test functions, function blocks, data blocks and organisation blocks
- Direct and symbolic addressing
- How to configure the CPU
- How to use the diagnostic buffer
- Arithmetic instructions and conversion functions

MINIMUM NUMBER OF PARTICIPANTS
3

COURSE DURATION
4 days

PRICE
€1,690 plus VAT I meals included

S7 V5.X - PROGRAMMING

ADVANCED COURSE

TARGET GROUP
Programmers I Project Engineers I Maintenance Staff I Service Technicians

REQUIREMENTS
Participation in the following QTE training:
"S7 v5.x Programming I Basic Course"

DESCRIPTION I DELIVERY
After this course, you will be able to independently recognise, analyse and modify complex processes in an S7 program. After this training, you will also be able to independently program extended functionalities.

The content is presented using a variety of different media (including various presentation tools) to illustrate all core topics of the training. The course alternates between theoretical and practical exercises.

CONTENT
- How to evaluate the status word
- Jump functions in IL
- Accumulator functions
- Advanced mathematical functions
- Indirect addressing
- Advanced data types
- Evaluation of faults

MINIMUM NUMBER OF PARTICIPANTS
3

COURSE DURATION
3 days

PRICE
€1,270 plus VAT I meals included

Our tip:

Save costs by booking the basic and advanced courses at the same time.

S7 V5.X
SI - GRAPH Sequential Function Chart Programming

TARGET GROUP
Maintenance Staff I Service Technicians I Programmers I Project Engineers

REQUIREMENTS
Participation in the following QTE training:
"SIMATIC S7 - Maintenance and Servicing I Basic Course"
or equivalent knowledge

DESCRIPTION I DELIVERY
This training will teach you how to use S7 GRAPH. You will learn how to configure and commission sequencers.

The training content is presented using a variety of different media. The course strikes the right balance between theoretical tasks and practical exercises using models. To this end, we use Step7 v5.5 with S7-Graph Professional 2010 SR4 v5.3 as well as S7-315 controllers.

CONTENT
- Technological tasks for sequencers
- How to create a sequencer with S7 Graph
- Transition-controlled branches
- How to configure actions in sequence
- How to program sequence actions
- How to program transitions
- How to program monitoring and locking
- Commissioning and test functions
- How to create a program for a simulation model

MINIMUM NUMBER OF PARTICIPANTS
3

COURSE DURATION
2 days

PRICE
€1,050 plus VAT I meals included

Our tip:

Save costs by booking the basic and advanced courses at the same time.

TIA - COMMISSIONING

TARGET GROUP
Commissioning Staff I Service Technicians

REQUIREMENTS
Extended basic knowledge of Step7v5.x
Participation in the following QTE training:
"SIMATIC S7 v.5x - Maintenance and Servicing I Basic Course"
or equivalent knowledge

DESCRIPTION I DELIVERY
This training provides an introduction to the commissioning of PLC programs created using the SIMATIC Manager in the TIA Portal. In addition, you will also learn how to diagnose faults and locate typical system faults using the STEP7 diagnostic functions.

The training content is presented using a variety of different media and application examples. You will have the opportunity to apply your knowledge in practice using S7-1500 automation devices and a simulation model.

CONTENT
- A systematic approach to commissioning systems with PLC programs that have been created using the TIA Portal
- Commissioning of systems implemented with PROFINET
- How to detect errors in the configuration of PROFINET devices
- How to recognise and eliminate typical hardware and program errors
- How to use the cross-reference list, watch list and diagnostic buffer for effective testing and troubleshooting when executing the program

MINIMUM NUMBER OF PARTICIPANTS
3

COURSE DURATION
4 days

PRICE
€1,590 plus VAT I meals included

TIA - MAINTENANCE AND SERVICING

BASIC COURSE

TARGET GROUP
Maintenance Staff I Service Technicians

REQUIREMENTS
Participation in this training requires prior knowledge of Microsoft Windows and digital technology

DESCRIPTION I DELIVERY
This course will teach you the necessary basics for operating the Siemens TIA Portal. Using practical examples, you will gain basic user knowledge to enable you to operate this software in your capacity as a maintenance technician. The learning objective of the training includes targeted, systematic troubleshooting.

The training content is presented using a variety of different media. You will be able to deepen your theoretical knowledge by means of typical application examples. You will also have ample opportunity to apply your knowledge in practice using S7-1500 automation devices and a simulation model.

CONTENT
- Introduction to the hardware components of the SIMATIC S7 family
- How to use the software interface of the TIA Portal
- How to create S7 programs in LD/FBD
- Variable lists and watch lists
- How to use the online functions of the TIA Portal
- How to create a PROFINET connection
- Input, readout and interpretation of programs
- Introduction to functions, function blocks and data blocks
- Introduction to arithmetic and conversion functions
- Introduction to error organisation blocks
- How to eliminate sources of error with the aid of watch lists, the diagnostic buffer and the cross-reference list
- How to detect and correct malfunctions using a training model
- A short introduction to the integrated WinCC Basic
- Simulation model with Sequential Function Chart

MINIMUM NUMBER OF PARTICIPANTS
3

COURSE DURATION
4 days

PRICE
€1,690 plus VAT I meals included

TIA - MAINTENANCE AND SERVICING

ADVANCED COURSE I

TARGET GROUP
Maintenance Staff I Service Technicians

REQUIREMENTS
Knowledge of SIMATIC S7 or participation in the following QTE training:
"TIA - Maintenance and Servicing I Basic Course"
or a comparable qualification

DESCRIPTION I DELIVERY
This training is intended to refresh the skills acquired in the TIA Portal basic course, in order to provide you with in-depth knowledge of troubleshooting and fault detection, and to consolidate and deepen your existing skills.

The training content is presented using a variety of different media. You will acquire theoretical knowledge through common application examples. You will then be able to apply this knowledge in practice using a simulation model.

CONTENT
- Refreshing your knowledge of troubleshooting in the TIA Portal
- Typical types of faults
- How to detect hardware and program errors
- A systematic approach to efficient troubleshooting
- Introduction to the diagnostic tools for error detection
- How to detect and correct malfunctions using a training model
- How to use the diagnostic functions of the TIA Portal
- How to configure PROFINET devices

MINIMUM NUMBER OF PARTICIPANTS
3

COURSE DURATION
3 days

PRICE
€1,270 plus VAT I meals included

TIA - MAINTENANCE AND SERVICING

ADVANCED COURSE II

TARGET GROUP
Maintenance Staff I Commissioning Staff I Service Technicians

REQUIREMENTS
Extended basic knowledge of Step7 v.5.x or Step7 TIA
Participation in the following QTE training:
"SIMATIC S7 - Service and Maintenance I Advanced Course"

DESCRIPTION I DELIVERY
This training provides advanced skills for working with complex STEP 7 programs. You will learn how to rectify faults in more complex projects, including how to use error OBs to display faults in a targeted manner (for example on an HMI), how to set up data exchanges between several CPUs and how to use an integrated drive.

The training content is presented using a variety of different media and application examples. You will also have the opportunity to apply your knowledge in practice using S7-1500 automation devices, the KTP 700 Basic HMI and the SINAMICS G120 drive unit.

CONTENT
- The LAD/FBD, SCL, and IL programming languages, how to interpret and expand more complex programs
- Program-related error evaluation and handling
- How to use error organisation blocks
- How to display errors on the HMI
- How to control a system from an HMI
- Data exchange between several SIMATIC CPUs via ProfiNet, put/get (process data, status information)
- The motion control technology object with SINAMICS STARTER (synchronous drive)

MINIMUM NUMBER OF PARTICIPANTS
3

COURSE DURATION
4 days

PRICE
€1,590 plus VAT I meals included

TIA - CHANGEOVER COURSE from SIMATIC S7 v5.x to the TIA Portal

TARGET GROUP
Commissioning Staff I Programmers I Project Engineers I Maintenance Staff I Service Technicians

REQUIREMENTS
Basic knowledge of programming with SIMATIC S7
Knowledge of digital technology
Knowledge of computers and Microsoft Windows

DESCRIPTION I DELIVERY
In this course, you will learn about the main differences between the SIMATIC S7-300 / 400 and the SIMATIC S7-1500, and the SIMATIC Manager and TIA Portal STEP 7 v5.x engineering tools. You will also be introduced to the configuration and extended programming possibilities of the SIMATIC S7-1500 automation system on the TIA Portal engineering platform.

The training content is presented using a variety of different media. You will be able to deepen your theoretical knowledge by means of typical application examples. You will have ample opportunity to apply your knowledge in practice using S7-1511-1PN automation devices.

CONTENT
- Engineering tools on the TIA Portal: SIMATIC STEP 7 and SIMATIC WinCC Basic
- Introduction to the SIMATIC S7-1500 hardware
- Configuration of devices and networks from the SIMATIC S7 system family using the example of the SIMATIC S7-1500
- The PLC variable list and PLC data types
- Program organisation units and editors
- New programming options for the SIMATIC S7-300 and S7-1500
- Troubleshooting on the S7-1500 PLCs using the TIA Portal tools
- Introduction to the SIMATIC WinCC Basics operator control and monitoring system
- Migration of a SIMATIC STEP 7 V 5.x project to the SIMATIC TIA Portal
- Watch and force lists

MINIMUM NUMBER OF PARTICIPANTS
3

COURSE DURATION
3 days

PRICE
€1,350 plus VAT I meals included

TIA - SCL (STRUCTURED CONTROL LANGUAGE)

BASIC COURSE

TARGET GROUP
Programmers I Project Engineers I Maintenance Staff I Service Technicians

REQUIREMENTS
Extended basic knowledge of the TIA Portal
Participation in the following QTE training:
"TIA - Maintenance and Servicing I Basic Course"

DESCRIPTION I DELIVERY
Employees are increasingly confronted with systems that are programmed in SCL. This training will give you insights into the Structured Control Language. After this training, you will be able to navigate through an SCL program and to locate errors more quickly.

You will receive an introduction to the SCL programming language. We will create Boolean logics, calculate with numerical values and call up functions and function blocks.

The training content is presented using a variety of different media. You will be able to deepen your theoretical knowledge by means of typical application examples. You will have ample opportunity to apply your knowledge in practice using the S7-1511-1PN automation devices and a simulation model.

CONTENT
- Basic IF ... THEN ... ELSEIF functions
- How to calculate using numerical values
- Using R_TRIG for edge detection according to IEC standards
- How to assign, set, reset in SCL
- How to call up function blocks in SCL
- How to call up functions and use the return value in SCL
- GOTO jump instructions
- Case analysis using CASE ... OF
- TON and TOF timers in SCL
- Loops using the example of FOR and the EXIT termination condition
- Sequencer (state machine) with the sequence number as integer
- Declaration of strings in TIA (1500 PLC)
- Introduction to string functions

MINIMUM NUMBER OF PARTICIPANTS
3

COURSE DURATION
4 days

PRICE
€1,690 plus VAT I meals included

Our tip:

Save costs by booking the basic and advanced courses at the same time.

TIA - SCL (STRUCTURED CONTROL LANGUAGE)

ADVANCED COURSE

TARGET GROUP
Programmers I Project Engineers I Maintenance Staff I Service Technicians

REQUIREMENTS
Extended basic knowledge of the TIA Portal
Participation in the following QTE training:
"TIA - SCL (Structured Control Language) I Basic Course"

DESCRIPTION I DELIVERY
Employees are increasingly confronted with systems that are programmed in SCL. This training will give you insights into the Structured Control Language. After this training, you will be able to navigate through an SCL program and to locate errors more quickly.

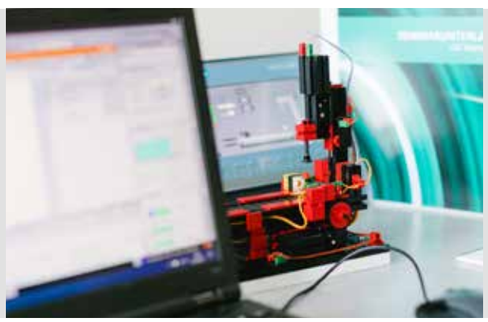
The training content is presented using a variety of different media. You will be able to deepen your theoretical knowledge by means of typical application examples. You will have ample opportunity to apply your knowledge in practice using S7-1500 automation devices.

CONTENT
- How to set up edge detection in SCL via IF
- How to use slice access in SCL
- The string functions LEN, FIND, etc.
- The FOR, WHILE loops and leave with EXIT
- Calculator with ring buffer
- Multi-dimensional arrays
- How to nest loops
- Sequential Function Chart (state machine) using a training model

MINIMUM NUMBER OF PARTICIPANTS
3

COURSE DURATION
3 days

PRICE
€1,270 plus VAT I meals included



TIA - PROGRAMMING

BASIC COURSE

TARGET GROUP
Programmers I Project Engineers I Maintenance Staff I Service Technicians

REQUIREMENTS
Knowledge of the TIA Portal

DESCRIPTION I DELIVERY
You will gain deeper insights into structured programming using the TIA Portal. This includes graph sequencers as well as IL programs.

The training content is presented using a variety of different media. You will be able to deepen the theoretical knowledge you will gain by means of practical exercises.

CONTENT
- How to use the software interface of the TIA Portal
- How to configure the hardware of a Siemens 1500 station
- How to integrate a third-party device (including GSD) via Profinet
- Structured programming with the TIA Portal
- How to program and test functions and function blocks
- How to create global DBs and your own data types
- How to program and interpret GRAPH sequencers
- How to create more complex programs
- Arithmetic instructions and conversion functions
- How to work with different data types (INT, REAL, TIME, ARRAY, etc.)
- Alarm-controlled program processing
- How to create PROFINET connections

MINIMUM NUMBER OF PARTICIPANTS
3

COURSE DURATION
4 days

PRICE
€1,690 plus VAT I meals included

TIA - PROGRAMMING

ADVANCED COURSE

TARGET GROUP
Programmers I Project Engineers I Maintenance Staff I Service Technicians

REQUIREMENTS
Good knowledge of the SIMATIC S7
Participation in the following QTE training: "TIA - Programming I Basic Course"
or a comparable qualification

DESCRIPTION I DELIVERY
You will gain insights into structured programming using the TIA Portal. This includes graph sequencers as well as IL programs.

The training content is presented using a variety of different media. You will be able to deepen the theoretical knowledge that you will gain by means of practical exercises.

CONTENT
- How to create and interpret more complex programs
- How to use advanced mathematical functions
- Slice access
- Programming with SCL
- How to handle complex data types such as arrays, strings and structs
- Evaluation of faults
- Graph sequencers

MINIMUM NUMBER OF PARTICIPANTS
3

COURSE DURATION
3 days

PRICE
€1,270 plus VAT I meals included

Our tip:

Save costs by booking the basic and advanced courses at the same time.

TIA - SAFETY INTEGRATED

TARGET GROUP
Commissioning Staff I Programmers I Project Engineers I Maintenance Staff I Service Technicians

REQUIREMENTS
Participation in one of the following QTE trainings:
"TIA - Programming I Basic Course" and / or "TIA - Maintenance and Servicing I Advanced Course"
or a comparable qualification.

DESCRIPTION I DELIVERY
You will gain insights into the functionality, diagnostics, troubleshooting, programming and commissioning of the TIA S7 Safety Advanced. This also includes the fail-safe central processing modules of the S7-1200 and S7-1500 as well as the ET200 fail-safe distributed systems.

The content is presented using a variety of different media. You will be able to deepen your theoretical knowledge using typical application examples. You will also have ample opportunity to apply your knowledge in practice using an S7-1500 automation device and a simulation model.

CONTENT
- Overview of standards and guidelines
- Principle of operation, system structure and peripherals of the SIMATIC S7 Safety Advanced
- How to program a safety-related user program
- Safety Integrated - how to configure a fail-safe periphery
- CPU diagnostics, peripheral diagnostics, advanced diagnostics tools
- Data exchange, troubleshooting the set-up of peripherals
- Exercises for how to set up the peripherals
- Programming examples (special programming features, emergency stop, protective door, safety shutdown, passivation)
- How to identify potential errors using a training model

MINIMUM NUMBER OF PARTICIPANTS
3

COURSE DURATION
2 days

PRICE
€1,050 plus VAT I meals included

TIA - Sequential Function Chart PROGRAMMING

TARGET GROUP
Commissioning Staff I Programmers I Project Engineers I Maintenance Staff I Service Technicians

REQUIREMENTS
Participation in the following QTE training:
"TIA - Maintenance and Servicing I Basic Course"
or a comparable qualification

DESCRIPTION I DELIVERY
This training will teach you how to configure, program and commission sequencers based on the TIA Portal.

The training content is presented using a variety of different media. The course strikes the right balance between theoretical tasks and practical exercises using models.

CONTENT
- Technological tasks and sequencers
- Alternative and simultaneous branches
- How to create a sequencer based on the TIA Portal
- How to program chain blocks
- How to program sequence actions
- How to program transitions
- How to program monitoring and locking
- Event-driven actions
- Commissioning and test functions

MINIMUM NUMBER OF PARTICIPANTS
3

COURSE DURATION
2 days

PRICE
€1,050 plus VAT I meals included

PROFINET
EXCHANGING DATA WITH STEP7 V5.X

TARGET GROUP
Commissioning Staff I Programmers I Project Engineers I Maintenance Staff I Service Technicians

REQUIREMENTS
Basic knowledge of STEP 7

DESCRIPTION I DELIVERY
Using SIMATIC components, you will learn how to quickly and effectively configure PROFINET, how to commission it and how to eliminate faults. The training focuses on the planning, installation and configuration of the network to avoid errors during set-up and commissioning.

The training content is presented using a variety of different media. You will be provided with training models for the practical exercises.

CONTENT
- The PROFINET IO basics, including project planning and programming, and the PROFINET RT & IRT basics
- Guidelines for setting up PROFINET IO networks
- PROFINET network components and gateways
- How to commission a PROFINET IO network
- How to diagnose and locate faults in a PROFINET IO network
- Comprehensive practical examples with exercises

MINIMUM NUMBER OF PARTICIPANTS
3

COURSE DURATION
2 days

PRICE
€1,050 plus VAT I meals included

PROFINET
EXCHANGING DATA WITH THE TIA PORTAL

TARGET GROUP
Commissioning Staff I Programmers I Project Engineers I Maintenance Staff I Service Technicians

REQUIREMENTS
Participation in one of the following QTE trainings:
"TIA - Programming I Basic Course"
"TIA - Maintenance and Servicing I Basic Course"
or a comparable qualification

DESCRIPTION I DELIVERY
Using SIMATIC NET components, you will learn to quickly and effectively configure, commission and troubleshoot a PROFINET network in the TIA Portal environment. The training focuses on the planning, installation and configuration of the network to avoid errors during set-up and commissioning.

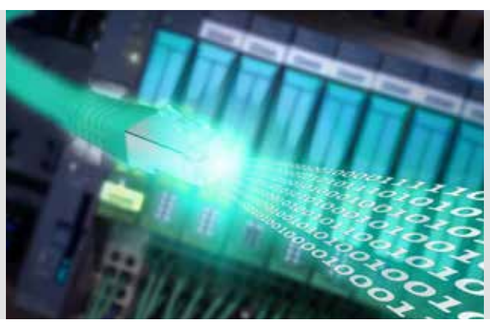
The training content is presented using a variety of different media. You will be provided with training models for the practical exercises.

CONTENT
- The PROFINET IO basics, including project planning and programming, and the PROFINET RT & IRT basics in the TIA Portal
- Guidelines for setting up PROFINET IO / CBA networks
- PROFINET network components and gateways
- How to commission a PROFINET IO network
- How to diagnose and locate faults in a PROFINET IO network
- Comprehensive practical examples with exercises

MINIMUM NUMBER OF PARTICIPANTS
3

COURSE DURATION
2 days

PRICE
€1,050 plus VAT I meals included



WinCC flexible 2008

TARGET GROUP
Commissioning Staff I Programmers I Project Engineers I Maintenance Staff I Service Technicians

REQUIREMENTS
Basic knowledge of Microsoft Windows
Participation in the following QTE training:
"S7 V5.x - Maintenance and Servicing I Basic Course"

DESCRIPTION I DELIVERY
You will gain an overview of the various Siemens TPs and OPs. We will teach you the basics of Step 7 programming, from project design for WinCC flexible-based visualisation to how to set up an executable HMI.

The training content is presented using a variety of different media. You will be able to deepen your theoretical knowledge by means of illustrative sample programs and practical exercises. For this purpose, we will use the Step7 Manager v5.5 and WinCC flexible 2008 SP3.

CONTENT
- Possible applications of Siemens TPs and OPs
- Data exchange between the target device and the TP
- System, bit and analogue messages
- Buttons and I/O fields
- Recipe processing
- How to set and adjust the communication parameters of the HMI connection
- Project backup and recovery via backup/ restore
- Dynamisation of objects

MINIMUM NUMBER OF PARTICIPANTS
3

COURSE DURATION
3 days

PRICE
€1,350 plus VAT I meals included

WinCC Advanced (TIA Portal)

TARGET GROUP
Commissioning Staff I Programmers I Project Engineers I Maintenance Staff I Service Technicians

REQUIREMENTS
Basic knowledge of the TIA Portal
Participation in one of the following QTE trainings:
"TIA - Maintenance and Servicing I Advanced Course"
"TIA - Programming I Advanced Course"
or a comparable qualification

DESCRIPTION I DELIVERY
You will gain insights into SIMATIC WinCC based on the TIA Portal. You will also become more confident in using the software interface and will learn how to quickly integrate SIMATIC WinCC Comfort/Advanced into your everyday work.

The content is presented using a variety of different media. The course alternates between theoretical and practical exercises.

CONTENT
- How to configure Siemens HMI stations
- Data exchange between HMI stations and various PLC processors
- Basic instructions for the tool package, images and variables
- Fault and process messages
- Input/output fields
- HMI recipe processing
- HMI user administration
- How to set up and adjust the communication parameters
- Data backup via backup/restore
- Dynamisation of objects: bar and curve diagrams
- Practice exercises using a training model

MINIMUM NUMBER OF PARTICIPANTS
3

COURSE DURATION
3 days

PRICE
€1,350 plus VAT I meals included

DRIVE TECHNOLOGY BASICS

TARGET GROUP
Maintenance Staff I Service Technicians I Project Engineers

REQUIREMENTS
Basic knowledge of electrical engineering

DESCRIPTION I DELIVERY
This training will teach you the basics of how to select, handle and connect different drives.

The training content is presented using a variety of different media. The course strikes the right balance between theoretical tasks and practical exercises using models.

CONTENT
- Differences between the drive systems, three-phase current, servo and DC motors
- How to select the right drive system
- How to select the right power electronics
- How to select and calculate upstream and downstream fuses, automatic circuit breakers and motor contactors
- The pros and cons of group drives
- How to connect power electronics to controls
- Connection via bus systems, cables, analogue signals and digital signals
- Feedback of real-time signals to the power electronics and the PLC
- How to set torques, currents and ramps
- Controls and control programs for positioning drives
- Safe drive shutdown

MINIMUM NUMBER OF PARTICIPANTS
3

COURSE DURATION
2 days

PRICE
€1,050 plus VAT I meals included

SIMOTION SCOUT FOR MAINTENANCE STAFF

COMPACT COURSE

TARGET GROUP
Maintenance Staff I Service Technicians

REQUIREMENTS
Basic knowledge of drive technology, automation technology and the Step7 Manager V5.x

DESCRIPTION I DELIVERY
In this course, you will learn how to commission a servo drive using the Scout v4.5 software. Additional topics include troubleshooting, software upload/download, an introduction to control panels, how to commission a drive and how to move axes.

The training content is presented using a variety of different media. The course strikes the right balance between theoretical tasks and practical exercises using models.

The available devices include a SIMOTION D410 Integrated with PM240 and a Siemens servo with encoder and DRIVE-CLiQ connection.

CONTENT
- The basics of drive technology & control engineering
- Hardware: SIMOTION components, series, firmware versions, memory cards, licensing
- Hardware configuration: SIMOTION embedded in Step7, stand-alone HW configuration in Scout
- Hardware peripherals: motor, encoder and DRIVE-CLiQ interfaces
- Software: the basics of and differences between Starter and Scout
- Motor, encoder and DRIVE-CLiQ interfaces
- Fault detection and diagnostics
- Signal analysis and trace recordings
- How to use control panels for commissioning
- How to handle different program versions between the programming device and the target device, RAM to ROM

MINIMUM NUMBER OF PARTICIPANTS
3

COURSE DURATION
3 days

PRICE
€1,750 plus VAT I meals included

SIMOTION SCOUT I DRIVE TECHNOLOGY

TARGET GROUP
Project Engineers I Commissioning Staff I Maintenance Staff I Service Technicians

REQUIREMENTS
Basic knowledge of drive technology, automation technology and the Step7 Manager

DESCRIPTION I DELIVERY
In this course, you will learn how to commission a servo drive using the Scout software. Additional topics include troubleshooting, software upload/download, an introduction to the targeted handling of control panels, how to commission a drive and how to move axes.

In this course, you will learn how to commission a servo drive using the Scout software. Additional topics include troubleshooting, software upload/download, the targeted handling of control panels, how to commission a drive and how to move axes.

The training content is presented using a variety of different media. The course strikes the right balance between theoretical tasks and practical exercises using models.

CONTENT
- An in-depth introduction to drive and control technology
- Hardware configuration: SIMOTION embedded in Step7, HW configuration with SIMOTION CU as the controlling CPU
- Hardware peripherals: motor, encoder and DRIVE-CLiQ interfaces
- Software: Starter, Scout
- Software: the Starter/Scout basics
- Advanced error detection and diagnostics
- Signal analysis and trace recordings
- How to use control panels for commissioning
- How to handle different program versions between the programming device and the target device, RAM to ROM

MINIMUM NUMBER OF PARTICIPANTS
3

COURSE DURATION
5 days

PRICE
€2,720 plus VAT I meals included

FREQUENCY CONVERTERS: COMMISSIONING, CONFIGURATION AND DATA EXCHANGE

TARGET GROUP
Commissioning Staff I Maintenance Staff I Service Technicians

REQUIREMENTS
Basic knowledge of drive technology and automation technology

DESCRIPTION I DELIVERY
As part of this training, you will commission converters and drive systems, configure the converters and set up data exchanges via PROFIBUS and PROFINET. Certain important functions and setting options will be presented through a step-by-step approach. You will thus learn how to correctly commission and configure a converter, including data exchange with a higher-level control system for safe and reliable system operation.

The training content is presented using a variety of different media. The course strikes the right balance between theoretical tasks and practical exercises using models.

CONTENT
- Structure and functionality of converters
- How to set up data exchanges via PROFIBUS/PROFINET
- How to (re)configure important functions
- How to commission converters
- Transfer of setpoints and actual values
- How to set and modify control functions
- Converter diagnostics and troubleshooting

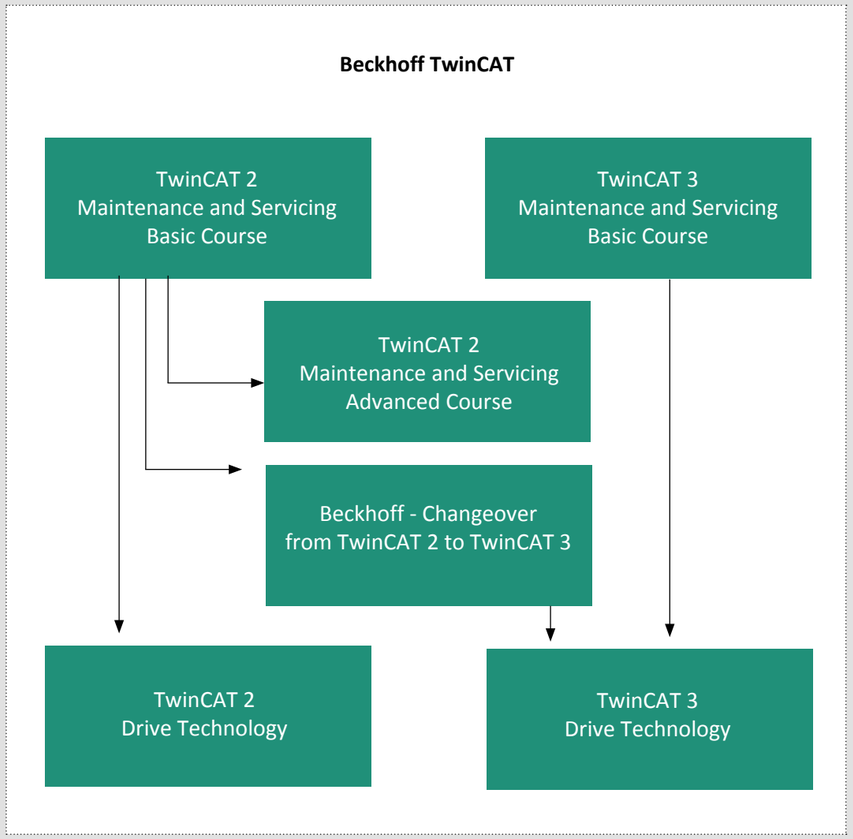
MINIMUM NUMBER OF PARTICIPANTS
3

COURSE DURATION
3 days

PRICE
€1,690 plus VAT I meals included

BECKHOFF
PRODUCT TRAININGS

THE BENEFITS FOR YOU
The Beckhoff TwinCAT system enables you to use almost any compatible Windows-based computer to control your machine or system in real time.
The TwinCAT environment relies on control programs and development environments for programming, diagnostics and configuration.



TWINCAT 2
MAINTENANCE AND SERVICING
BASIC COURSE

TARGET GROUP
Maintenance Staff I Service Technicians

REQUIREMENTS
Extended basic knowledge of digital technology and Microsoft Windows
Knowledge of other PLC programs is an advantage

DESCRIPTION I DELIVERY
This training will give you confidence in handling the TwinCAT software for programming and hardware configuration to support your existing systems based on Beckhoff PLCs. By learning about common PLC program functions, you will gain the ability to conduct more efficient troubleshooting.

The training content is presented using a variety of different media. You will be able to deepen your theoretical knowledge by means of typical application examples and simple programming exercises. Practical examples and a training model will be used to consolidate the topics covered in the course. You will thus have ample opportunity to apply your newly acquired knowledge of Beckhoff TwinCAT 2 in practice.

CONTENT
- How to use the Beckhoff TwinCAT 2 software
- Basics of the IEC 61131-3 programming standard
- How to create, extend and link input and output variables
- How to use the system manager
- Basics of programming with PLC Control
- Program expansion and program analysis
- How to save and download the source code to the PLC
- How to compare programs
- How to integrate libraries
- Basics of integrated visualisation
- How to create boot projects

MINIMUM NUMBER OF PARTICIPANTS
3

COURSE DURATION
4 days

PRICE
€1,750 plus VAT I meals included

TWINCAT 2 MAINTENANCE AND SERVICING

ADVANCED COURSE

TARGET GROUP
Maintenance Staff I Service Technicians

REQUIREMENTS
In-depth knowledge of TwinCAT 2
Participation in the following QTE training:
"TwinCAT 2 - Maintenance and Servicing I Basic Course"

DESCRIPTION I DELIVERY
Additional insights into program organisation units, system-related functions and more complex types of programming for systems automated with Beckhoff TwinCAT 2.

The training content is presented using a variety of different media. You will be able to deepen your theoretical knowledge by means of typical application examples and programming exercises. Practical examples are used to consolidate the topics covered in the course. You will thus have ample opportunity to apply your newly acquired knowledge in practice using a CX9020 PLC with TwinCAT 2.11.

CONTENT
- Simulation on a laptop (target system = local machine)
- How to evaluate the status words of complex terminals
- How to integrate additional libraries in TwinCAT2
- How to add actions to function blocks
- Structured text editor: loops, loop termination with exit, arrays
- Flags & memory overlapping access
- How to write persistent data to ROM (SD card)
- TcUtilities.lib (e.g. how to read out the CPU load and latency)
- Error codes, ADS return codes
- Introduction to SFC/AS SFC (steps & transitions, time monitoring)

MINIMUM NUMBER OF PARTICIPANTS
3

COURSE DURATION
3 days

PRICE
€1,450 plus VAT I meals included

TWINCAT 2 DRIVE TECHNOLOGY

TARGET GROUP
Maintenance Staff I Service Technicians

REQUIREMENTS
Basic knowledge of TWINCAT 2
Participation in the following QTE training:
"TwinCAT 2 - Maintenance and Servicing I Basic Course"

DESCRIPTION I DELIVERY
You will gain basic knowledge of simple point-to-point movements, from inserting an axis object to controlling a position.

The training content is presented using a variety of different media. You will be able to deepen the theoretical knowledge you will gain using your own CX9020 PLC and EL7201 servo terminal with linear axis and Beckhoff servo drive.

CONTENT
- Point-to-point positioning
- PtP module in ADS
- How to create a motion NC task
- How to integrate the TC2-MC2 motion library
- How to build an axis block in PLC Control
- How to link an axis object
- Basic drive parameters
- Online commissioning panel
- How to zero the axis position
- How to calculate increments to position

MINIMUM NUMBER OF PARTICIPANTS
3

COURSE DURATION
1 day

PRICE
€510 plus VAT I meals included

Our tip:

Consolidate your knowledge of drive technology by booking this course together with the "TwinCAT 2 Maintenance and Servicing I Basic Course".

TWINCAT 2 TO TWINCAT3 CHANGEOVER

TARGET GROUP
Maintenance Staff I Service Technicians

REQUIREMENTS
Extended basic knowledge of Beckhoff TwinCAT 2
Knowledge of computers and Microsoft Windows

DESCRIPTION I DELIVERY
In this course, you will learn about the differences between Beckhoff TwinCAT 2 and Beckhoff eXtended Automation (XAE), as well as about the project planning and programming options on the Beckhoff TwinCAT 3 engineering platform.

The training content is presented using a variety of different media. Practical examples are used to consolidate the topics covered in the course. You will have ample opportunity to apply your newly acquired knowledge using training models.

CONTENT
- The Beckhoff eXtended Automation Engineering (XAE) tool and device runtime (XAR)
- Introduction to the TwinCAT 3 system
- How to configure devices
- Program organisation units and editors
- Storage areas, reference lists, watch lists
- License management, how to generate a test license
- How to go online, write/force values
- How to program FBs and FCs in FBD and ST
- Insights into ScopeView
- Diagnostic options and troubleshooting in TwinCAT 3
- Basics of integrated visualisation
- How to compare program versions

MINIMUM NUMBER OF PARTICIPANTS
3

COURSE DURATION
3 days

PRICE
€1,350 plus VAT I meals included

TWINCAT 3 MAINTENANCE AND SERVICING

TARGET GROUP
Maintenance Staff I Service Technicians

REQUIREMENTS
Extended basic knowledge of digital technology and Microsoft Windows
Knowledge of Beckhoff TwinCat 2 is an advantage

DESCRIPTION I DELIVERY
This training will give you confidence in handling the TwinCAT software for programming and hardware configuration to support your existing systems based on Beckhoff PLCs. By learning about common PLC program functions, you will gain the ability to conduct more efficient troubleshooting.

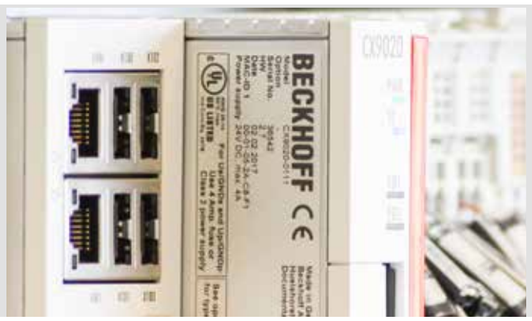
The training content is presented using a variety of different media. You will be able to deepen your theoretical knowledge by means of typical application examples and simple programming exercises. Practical examples and a training model will be used to consolidate the topics covered in the course. You will thus have ample opportunity to apply your newly acquired knowledge of Beckhoff TwinCAT 3 in practice.

CONTENT
- Introduction to Beckhoff eXtended Automation Engineering (XAE)
- Overview and structure of the hardware components
- Programming in FBD and ST
- How to create a PLC program
- How to create global variables
- Types of variable data, data types (DUT)
- Program, function, function block
- Introduction to programming according to IEC 61131-3
- Exercises, diagnostics, troubleshooting
- How to create boot projects
- How to use TwinCAT 3 Scope View as a PLC analyser
- How to compare programs
- How to integrate libraries in TwinCat 3
- Basics of integrated visualisation in Twin Cat 3

MINIMUM NUMBER OF PARTICIPANTS
3

COURSE DURATION
4 days

PRICE
€1,750 plus VAT I meals included



TWINCAT 3
DRIVE TECHNOLOGY

TARGET GROUP
Maintenance Staff I Service Technicians

REQUIREMENTS
Basic knowledge of TWINCAT 3
Participation in one of the following QTE trainings:
"TwinCAT 3 - Maintenance and Servicing"
or "Changeover from TwinCAT 2 to TwinCAT 3"

DESCRIPTION I DELIVERY
You will gain basic knowledge of simple point-to-point movements, from inserting an axis object to controlling a position.

The training content is presented using a variety of different media. You will be able to deepen the theoretical knowledge you will gain on your own controller with linear axis and a Beckhoff servo drive.

CONTENT
- Point-to-point positioning
- PtP module in ADS
- How to create a motion NC task
- How to integrate the TC2-MC2 motion library
- How to build an axis control block in PLC Control
- How to link an axis object
- Basic drive parameters
- Online commissioning panel
- How to zero the axis position
- How to use increments to calculate a position

MINIMUM NUMBER OF PARTICIPANTS
3

COURSE DURATION
1 day

PRICE
€510 plus VAT I meals included

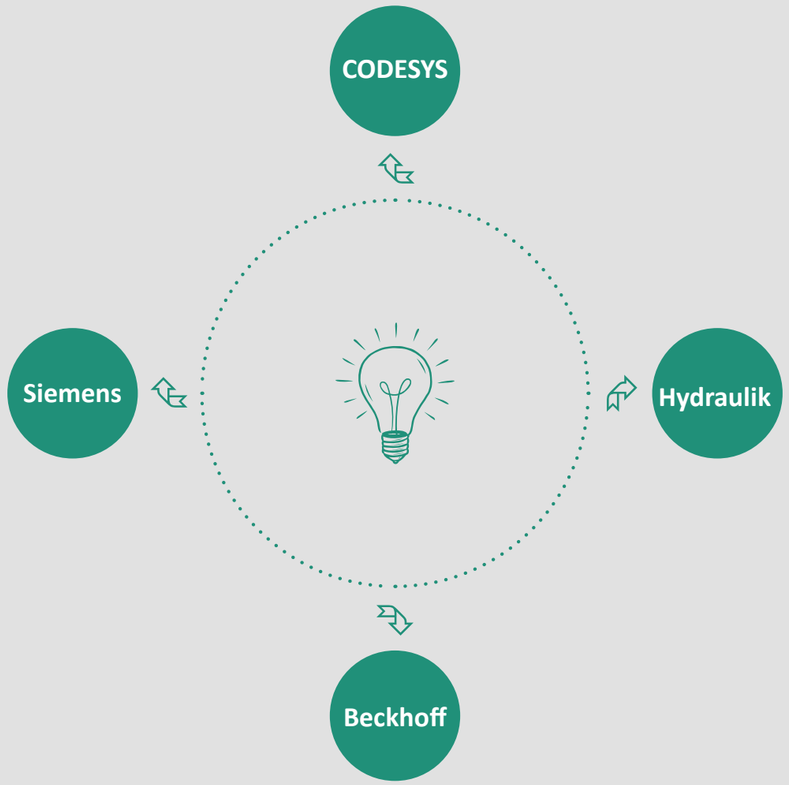
Our tip:

Book this training as an add-on to the "TWINCAT 3 Maintenance and Servicing" course.

LATERAL THINKING
COMPREHENSIVE PRODUCT TRAINING

Your machines and systems often contain controls from various manufacturers, which is why it is important to eliminate any sources of interference quickly and in a targeted manner.

As an independent solution provider, QTE Training will support you with expertise for systematic troubleshooting, which can easily be applied to different products.
This will enable you to work in a cost-effective manner and to minimise downtime.



PLC MEETS HYDRAULICS

INTERACTION BETWEEN CONTROLLER AND HYDRAULIC APPLICATION

TARGET GROUP
PLC Maintenance Staff and Programmers | Maintenance Staff | Hydraulic Designers and Engineers

REQUIREMENTS
PLC and/or hydraulics knowledge

DESCRIPTION I DELIVERY
A PLC only makes sense if it is used to manage loads, and these are often hydraulic. In principle, hydraulic loads don't necessarily require a PLC. However, today's hydraulic systems are so complex that they can only be operated by means of control technology.

The aim of this course is to provide participants with an understanding of electrical and IT-based control systems and mechanical hydraulics and to build a bridge between the two fields.

The goal is to overcome the boundaries between programming and work on the actual systems, and between the electronic and mechanical components.

CONTENT
- What is a PLC?
- What is hydraulics?
- How is control technology used in hydraulics?
- What is the impact of the control system on the loads?
- How do the loads affect the control system?
- Examples of controlled loads:
  - Path-controlled cylinders
  - Proportional valves
- How do supposedly insignificant components affect the control system and the loads?

MINIMUM NUMBER OF PARTICIPANTS
3

COURSE DURATION
3 days

PRICE
€1,290 plus VAT I meals included

Changeover from Step7 to TwinCAT 2 I 3

BASIC COURSE

TARGET GROUP
Maintenance Staff I Commissioning Staff I Project Engineers I Service Technicians

REQUIREMENTS
Extended basic knowledge of Step7 v.5.x or Step7 TIA

DESCRIPTION I DELIVERY
We will explore the differences and similarities between the two programming environments by comparing them with each other and by preparing typical Step7 approaches for TwinCAT in accordance with IEC 61131-3.

The training content is presented using a variety of different media and application examples. You will have the opportunity to apply the newly acquired knowledge in practice using a Beckhoff Embedded PC CX-9020 and a simulation model.

CONTENT
- The IEC 61131-3 standard
- HW configuration and I/O <> device, assignment, process data object
- OB1 <> MAIN program
- Declaration of variables, addressing according to IEC 61131-3
- Siemens counters, timers, edge generators and the corresponding IEC program organisation units
- Concept (global) DB <> global variable list
- Concept instance DB <> instances according to IEC 61131.3
- Interrupt OB35 / cycle time <> 2nd program, task, task priority
- VISU / HMI > HMI variable list <> direct access to VAR on the PLC

MINIMUM NUMBER OF PARTICIPANTS
3

COURSE DURATION
3 days

PRICE
€1,350 plus VAT I meals included

CODESYS 2.3 to target system WAGO 750-841/842

BASIC COURSE

TARGET GROUP
Maintenance Staff I PLC Programming/Automation Beginners

REQUIREMENTS
Previous knowledge of Microsoft Windows

DESCRIPTION I DELIVERY
This course will teach you the basics of PLC-based automation with IEC 61131-3 compliant programming, including a detailed explanation of the interplay between hardware and software. We will assign variables to inputs/outputs and create a simple program that we will test in a simulation environment. This can also be done without any hardware.

The training content is presented using a variety of different media and application examples. You will have the opportunity to apply the newly acquired knowledge, either based on a CODESYS 2.3 simulation or using your own WAGO 750-841 device (in that case, please make sure to have your device available for the training).

CONTENT
- Basic knowledge of the hardware and how to configure it
- A basic understanding of the sequence of a PLC program, including the process image and program execution
- Introduction to the CODESYS 2.3 programming environment
- How to declare variables
- MAIN program
- The LAD/FBD, ST programming languages
- Program organisation units, functions, function blocks and instances

MINIMUM NUMBER OF PARTICIPANTS
3

COURSE DURATION
3 days

PRICE
€1,290 plus VAT I meals included

ANNUAL TRAINING FOR QUALIFIED ELECTRICIANS

ACCORDING TO DGUV (BLGV), TRBS, DIN EN 50110 AND THE GERMAN ORDINANCE ON INDUSTRIAL SAFETY AND HEALTH (BETRSICHV) FOR QUALIFIED ELECTRICIANS

TARGET GROUP
Qualified Electricians | Qualified Electricians with Specialist Knowledge | Work Managers | Plant Managers

REQUIREMENTS
Basic knowledge of electrical engineering

DESCRIPTION I DELIVERY
In Germany, companies are obliged to provide annual trainings for qualified electricians under DGUV regulation 1. The German Occupational Safety Act, the German Industrial Safety Regulation with technical rules for operational safety (TRBS), DGUV Regulation 3 (formerly BGV A3) as well as DIN EN 50110-1 mandate regular trainings for qualified electricians.

The participants will be introduced to the content of the latest regulations and will receive practical advice on how to implement them in their daily work. This will improve their ability to recognise and assess the dangers involved in electrical engineering tasks. They will learn which protective measures are suitable and effective for preventing accidents and will be able to implement them safely.

CONTENT
- Greater awareness of occupational safety in the electrical sector, including the dangers associated with electrical current and the risk of accidents
- Examples of accidents
- DGUV regulation 3 (formerly BGV A3) "Electrical systems and equipment"
- Requirements for people working in the electrical sector
- The five safety rules (for work on de-energised equipment)
- How to operate and handle electrical installations
- TRBS 1203 "Qualified Persons"

MINIMUM NUMBER OF PARTICIPANTS
5

COURSE DURATION
1 day

PRICE
€330 plus VAT I meals included

HYDRAULICS

TRAININGS

HYDRAULICS NEW TRAININGS

Control systems and PLC often operate hydraulic processes and thus are in charge of a field of hydraulic components. Mobile and stationary hydraulic systems are used in a wide range of industrial applications, such as modern production plants and manufacturing facilities. They are applied for translational motion when power is required. Due to their specific advantages, including high power density, high positioning accuracy and excellent controllability, hydraulic drives are indispensable in the machine building, automotive and aircraft industries.

What happens inside your system when you issue commands via the controller?
Our HYDRAULICS trainings for MAINTENANCE STAFF and trainees will provide you with the answers. Apart from technical maintenance staff, the primary target group, we also focus on programmers and PLC maintenance staff. The transition from control system to implementation often comes with a heightened risk of malfunctions. An important goal of the trainings we offer is to build a bridge between these two fields and to impart applicable practical knowledge for faster fault analysis and rectification.

Our seminars focus on the basic principles of hydraulics and the functioning and application of control and drive elements, both in theory and through practical exercises. Learning how to read circuit diagrams and faults analysis are also part of our diverse range of HYDRAULICS trainings.

HYDRAULICS FOR MAINTENANCE STAFF HANDLING AND TROUBLESHOOTING

BASIC COURSE

TARGET GROUP
Maintenance Staff | Service Technicians | Fitters | Designers | Engineers | Hydraulic Service Providers | Occupational Safety Specialists | Sales Staff

REQUIREMENTS
Technical training

DESCRIPTION I DELIVERY
HYDRAULICS are a part of most technical professional's formal training. However, in most cases, the field of hydraulics is covered in such a limited way, that most trainees only have a rudimentary grasp of its true potential.
This course focuses on the principles of operation of hydraulic systems, from the basics of hydraulics and the associated components all the way to expert knowledge.
The theoretical knowledge is conveyed in a practical way using training systems.

CONTENT
- What are hydraulics?
- Advantages and disadvantages of hydraulics
- Physical principles of hydraulics
- Force/pressure and speed
- Hydraulic pumps
- Pressure relief valves
- Screw connections, lines, hoses
- Directional control valves
- Additional valve types
- Hydraulic cylinders
- Hydraulic fluids, tanks, filters
- Circuit symbols according to DIN ISO 1219 and DIN ISO 1219-1
- Malfunctions in hydraulic systems

MINIMUM NUMBER OF PARTICIPANTS
3

COURSE DURATION
3 days

PRICE
€1,290 plus VAT I meals included

HYDRAULICS FOR MAINTENANCE STAFF HANDLING AND TROUBLESHOOTING

ADVANCED COURSE

TARGET GROUP
Maintenance Staff | Service Technicians | Fitters | Designers | Engineers | Hydraulic Service Providers | Occupational Safety Specialists | Sales Staff

REQUIREMENTS
Hydraulics Course I | Technical Training

DESCRIPTION I DELIVERY
This training is focused on the quick identification of faults and issues in hydraulic systems and how to resolve them effectively. A deeper understanding of hydraulic systems and their components helps to improve their design and maintenance, including the speed and efficiency of the associated processes. The participants will use training systems to simulate and analyse faults and find systemic solutions.

CONTENT
- Refreshing and expanding basic knowledge
- Error and fault analysis
- Possible sources of error
- Systematic diagnostic measurements
- Data analysis
- Extended knowledge of the various components: valves, cylinders, pumps, pressure accumulators
- How to read and create hydraulic circuit diagrams
- Circuit symbols according to DIN ISO 1219 and DIN ISO 1219-1
- Methodical solution analysis
- Preventive maintenance

MINIMUM NUMBER OF PARTICIPANTS
3

COURSE DURATION
3 days

PRICE
€1,290 plus VAT I meals included

Our tip:

Save costs by booking the basic and advanced courses at the same time.

HYDRAULIC HOSE LINES

TARGET GROUP
Maintenance Staff | Service Technicians | Fitters | Designers | Engineers | Hydraulic Service Providers | Occupational Safety Specialists | Sales Staff

REQUIREMENTS
Work in a field related to hydraulics | Technical training

DESCRIPTION I DELIVERY
Hydraulic hose lines are the most sensitive component in any hydraulic system, and yet they are often neglected.

The aim of this training is to fill this gap. The correct handling of hydraulic hose lines helps to minimise malfunctions in hydraulic systems and machines and reduces the associated costs.

The training content is presented using a variety of different media and application examples drawn from every-day practice.

CONTENT
- Design and function of hydraulic hose lines
- Production and assembly
- Labels
- Interpretation
- Basic knowledge of hydraulic systems and how they work
- Damage – hose burst, pinholes, external/ internal damage
- Hose-line protection
- Prevention of errors
- The risks involved in handling hydraulic hose lines and occupational safety
- DGUV regulation 113-020
- Testing

MINIMUM NUMBER OF PARTICIPANTS
3

COURSE DURATION
2 days

PRICE
€1,020 plus VAT I meals included

HYDRAULICS FOR MAINTENANCE STAFF OCCUPATIONAL SAFETY

TARGET GROUP
Maintenance Staff | Service Technicians | Fitters | Designers | Engineers | Hydraulic Service Providers | Occupational Safety Specialists | Sales Staff

REQUIREMENTS
Work in a field related to hydraulics | Technical training

DESCRIPTION I DELIVERY
In hydraulics maintenance, safety should always be the first priority. This course provides valuable guidance that may help to save lives.
This training will focus on how to identify risks, avoid accidents and prevent damage, as well as how to respond if something does go wrong.
The course is designed to encourage the participants to rethink their own behaviour, to raise their awareness of the risks and to make sure that they always put their own safety, and that of others, first.

CONTENT
- Design and function of hydraulic hose lines
- Safety in accordance with DGUV information 209-070
- Maintenance of machines, systems and vehicle attachments equipped with hydraulic components
- Work on hydraulic components
- With a focus on hoses, tubes and connection technology
- Risk identification
- Hazard assessment
- Rules and regulations
- Behavioural safety at work
- Testing

MINIMUM NUMBER OF PARTICIPANTS
3

COURSE DURATION
2 days

PRICE
€1,020 plus VAT I meals included

PLC MEETS HYDRAULICS

INTERACTION BETWEEN CONTROLLER AND HYDRAULIC APPLICATION

TARGET GROUP
PLC Maintenance Staff and Programmers | Maintenance Staff | Hydraulic Designers and Engineers

REQUIREMENTS
PLC and/or hydraulics knowledge

DESCRIPTION I DELIVERY
A PLC only makes sense if it is used to manage loads, and these are often hydraulic. In principle, hydraulic loads don't necessarily require a PLC. However, today's hydraulic systems are so complex that they can only be operated by means of control technology.

The aim of this course is to provide participants with an understanding of electrical and IT-based control systems and mechanical hydraulics and to build a bridge between the two fields.

The goal is to overcome the boundaries between programming and work on the actual systems, and between the electronic and mechanical components.

CONTENT
- What is a PLC?
- What is hydraulics?
- How is control technology used in hydraulics?
- What is the impact of the control system on the loads?
- How do the loads affect the control system?
- Examples of controlled loads:
  - Path-controlled cylinders
  - Proportional valves
- How do supposedly insignificant components affect the control system and the loads?

MINIMUM NUMBER OF PARTICIPANTS
3

COURSE DURATION
3 days

PRICE
€1,290 plus VAT I meals included

QUALIFIED PERSONS HYDRAULIC HOSE LINES ACCORDING TO BETRSICHV, TRBS 1203 AND DGUV 113-020

TARGET GROUP
Maintenance Staff | Service Technicians | Fitters | Designers | Engineers | Hydraulic Service Providers | Occupational Safety Specialists | Sales Staff

REQUIREMENTS
Work in a field related to hydraulics | Technical training

DESCRIPTION I DELIVERY
All companies are obliged to carry out a documented visual inspection of the hydraulic hose lines on their machines, assemblies and equipment at least once a year. This inspection may only be carried out by so-called "qualified persons".
You will receive training in both technical matters and in the legal requirements concerning hydraulic hose lines.
Once you have passed the final test, you can nominated as a "qualified person" by your employer, provided that other requirements are met.

CONTENT
- Physical and technical basics of hydraulics
- Principles of operation of hydraulic systems
- Design and function of hydraulic hose lines
- Production, labelling and assembly
- Hazards
- BetrSichV – German Ordinance on Industrial Safety and Health
- TRBS 1203 – qualified person
- Tasks and responsibilities
- Safety regulations for hydraulic hose lines and hydraulic fluids as per DGUV 113-020
- • Hazard assessment
- • Final testing
- • DGUV regulation 113-020
- • Testing

MINIMUM NUMBER OF PARTICIPANTS
3

COURSE DURATION
2 days

PRICE
€1.020 plus VAT I meals included

The seminar provides important knowledge on technical and regulatory issues. In addition, qualified persons must have appropriate vocational training and experience.

Important!

According to the German Ordinance on Industrial Safety and Health (BetrSichV), operators of machines and systems with hydraulic components are responsible for their safe operation and are thus liable for damages. They are obliged to check all hydraulic hose lines once a year, after conducing a risk assessment. This inspection shall only be carried out by a qualified person.

QTE Training will support you in the implementation of these statutory requirements.

HYDRAULICS FOR TRAINEES
FÜR AUSZUBILDENDE

TARGET GROUP
Trainees | Students

REQUIREMENTS
Trainees in technical professions

DESCRIPTION I DELIVERY
An introduction to HYDRAULICS is part of the training for most technical professions. However, this is often not enough to gain a good understanding of hydraulics and its application.

This course covers the essentials of hydraulics in general, as well as the associated components and how to read hydraulic circuit diagrams.

The theoretical knowledge is conveyed in a practical way using training systems.

CONTENT
- What is hydraulics?
- Physical principles of hydraulics
- Circuit symbols according to DIN ISO 1219 and DIN ISO 1219-1
- Force/pressure and speed
- Hydraulic pumps
- Pressure relief valves
- Screw connections, lines, hoses, valves
- Hydraulic cylinders
- Hydraulic fluids, tanks, filters
- Advantages and disadvantages of hydraulics

MINIMUM NUMBER OF PARTICIPANTS
3

COURSE DURATION
3 days

PRICE
€1,290 plus VAT I meals included

WEB SEMINARS
QTE TRAINING ONLINE

HOW TO HARNESS YOUR POTENTIAL THE SMART WAY
Companies are currently faced with the challenge of providing urgently needed knowledge whilst still remaining cost-efficient. Web seminars eliminate travel and accommodation costs. This means that you can train more employees with the same budget.

Through our live webinars, we will provide your maintenance staff with important training content using equipment supplied by us, conveniently via live streams. In parallel with the webinars, we will also send you our training models for practice-oriented teaching.

TECHNICAL REQUIREMENTS
Ahead of each web seminar, we clarify the technical requirements with our customers and provide training via Microsoft Teams. Participation requires a fast WiFi connection and a second monitor, both for the training documentation and the respective programming environment. In addition, a USB-Ethernet adaptor is required to access the PLC in order to add a second IP address, so that the trainer can respond to the participants' questions in real time and, in the event of problems, can directly intervene in their programming environment.

Easier than expected!

Our tip:

Register several employees at the same time and benefit from our attractive discounts and "closed" company web seminars - at a time of your choosing!

VISION & MISSION

OUR COMMITMENT TO QUALITY

We want to inspire our customers with our services, which is why we incorporate suggestions and feedback into the continuous development of our company processes.
We never stand still.
We are constantly reviewing and improving our processes.

CONTINUOUS DEVELOPMENT I INNOVATION

Standing still means going backwards.

We practise long-term thinking. We are constantly reviewing our company processes. We adapt our continuous development to the technical requirements and to our customers' needs.

VALUE-BASED INTERACTIONS

Working together on equal terms is important for us.

We practise fairness, trust, openness and flexibility in our internal processes and in our relationships with our customers and partners.

KNOWLEDGE TRANSFER

Thanks to our focus on target groups, we are able to offer our customers the best possible learning outcomes.

What makes us stand out is our practical experience.

QTE TRAINING BOX

SUSTAINABLE LEARNING

Many of our course participants have expressed a desire to deepen or refresh the knowledge they have acquired in our trainings. However, it is usually not possible to offer training directly on a PLC because the control systems used in production processes only permit interventions in the event of a fault, which is not the right time for acquiring new skills, since the focus will naturally be on rectifying the fault as quickly as possible. That is why we have decided to offer you our QTE Training Box, a hardware set that we have developed over the course of hundreds of trainings.

The QTE Training Box includes a comprehensive package of control components that you can use to simulate all our Siemens TIA-based exercises in order to expand and consolidate the know-how gained in our trainings.

- TIA station (S7 1511-1PN, DI/DQ 16 module plus WAGO switch-off module with various digital and analogue I/Os)
- PROFINET connection to the interface module
- Eight switches/buttons and LEDs for simulating an I/O
- 0… 10 V source including digital display as a signal source for analogue input
- Model (conveyor belt with punch) including wiring to a PLC I/O
- Attractive box for transport and storage

Other models available on request (e.g. Beckhoff)

Our tip:

In order to be able to store new knowledge in our long-term memory, it first has to pass through the bottleneck of our working memory. Any information that the working memory cannot quickly process and link in a meaningful way will be completely discarded. Repetition improves our ability to retain what we have learnt and thereby ensures better learning outcomes.

FROM AN APPRENTICE TO THE MAINTENANCE TECHNICIAN OF TOMORROW

The Apprentice Academy ME stands for effective, conscientious and well-founded training for your apprentices. QTE Training GmbH & gpdm mbH implement apprentice training courses that are quickly tailored to your needs. As a result, we deepen the educational know-how of your future maintenance staff. Our diverse experience in the industrial and automation sectors guarantees you comprehensive solutions for every type of training requirement.

APPRENTICE ACADEMY ME

TRAINING COURSE CONTENTS

1ST YEAR OF TRAINING I 10 TRAINING DAYS
Module 1: Introduction to Boolean Logic
Module 2: Structuring a PLC Programme

2ND YEAR OF TRAINING I 10 TRAINING DAYS
Module 3: Hardware Configuration
Module 4: Visualisation with WinCC

3RD YEAR OF TRAINING I 10 TRAINING DAYS
Module 5: Programming and Commissioning
Module 6: Troubleshooting in the TIA Portal

The course content is based on the training fields of the respective apprenticeship years.

"I wish I had had this type of training in the first year of my apprenticeship. It would have helped me a lot."
Berke D., 2nd year apprentice, Vitaqua company

Apprentices can ask questions they have from their everyday work, which are then discussed together.

QTE Training GmbH trains nationwide specialists in the field of commissioning, maintenance and servicing technology in the TIA portal technology.

Every participant benefits from this extensive technical expertise.

TRAINING LOCATION

Our training sessions take place in Vitaqua GmbH's bright and modern training rooms. There, participants have the opportunity to work with the latest technology and software.

CO-OPERATION WITH THE GPDM

We have successfully established ourselves in the Metal Engineering education sector through long-term co-operation in apprenticeship qualifications.

QTE TRAINING INTERNATIONAL

SUCCESSFUL INTERNATIONAL PARTNERSHIPS

In recent years, we have managed many international projects. Our trainers are frequently on the road on behalf of QTE Training GmbH, especially in China, the Middle East and South Africa.

In cooperation with the Kassel-based certification body CertEuropaA, we offered trainings "Made in Germany" at the Suzhou Chien-Shiung Institute of Technology in Taicang, a suburb of Shanghai.

Our staff trained the local technicians and engineers with great care and sensitivity, always with a view to striking the right balance between theory and practice. This is the main reason for our international success.

During the trainings, which lasted for several days, the participants were introduced to the handling of the machines with the help of English-language training documents and models they had brought along.

QTE GROUP

WORKING TOGETHER FOR YOUR SUCCESS

As your system-independent partner for automation technology, we work with you to develop suitable solutions for your machines and systems. We focus mainly on the automotive industry and its suppliers. However, our solutions are also increasingly in demand in other sectors, such as pharmaceuticals, food, water and waste water.

Our employees are working in Germany and abroad to successfully implement automation projects for our customers. It goes without saying that this also includes Industry 4.0.

Together with our partners, it is our vision to improve the efficiency and safety of processes, while at the same time making them cheaper and easier to operate.

In addition, we systematically pass on the knowledge we gain to our customers.

QTE SERVICE & SYSTEMS

PROJECT MANAGEMENT AND SUPPORT IN THE FIELD OF INDUSTRIAL AUTOMATION

QTE is your partner for automation technology and control solutions for new and existing systems, from small applications to complex plants. We support you with tailor-made solutions based on the latest control technology, from the design phase all the way to commissioning. In all our projects, we focus on providing solutions that are both innovative and efficient.

Thanks to their many years of experience, our experts are proficient in all common PLC programming standards and can set up almost any robot, regardless of the manufacturer and model. In addition, our experts will share their knowledge with your employees as part of our PLC training courses.

We are happy to advise and support you in the optimisation of your automation processes - whatever the industry.

- AUTOMATION TECHNOLOGY
- PROJECT MANAGEMENT
- BUILDING AUTOMATION I SMART HOME
- INDUSTRIAL AUTOMATION

☏ +49 561 94033301
✉ info@qte-sus.com



STRONG PARTNERSHIPS

INTENSE COLLABORATION FOR HIGHER QUALITY

We have realised that, with special co-operation, we can think even further outside the box and gain other perspectives through intense collaboration.

Our co-operation partners and staff at QTE Training have the same goal. Together, we work on strategies and tailor-made solutions for our customers. Compared to other companies, we are much faster and more effective thanks to our types of co-operation. Our customers, experiences added value through our support and can implement their projects in-house more quickly. We are proud of this fact and are looking forward to future projects.

With the OEE, we are working on improving and expanding the manufacturing potential of our customers. We want to achieve top results for these companies, which we support together, by increasing gross profit and reducing fixed costs accordingly.

PassPlus is the pioneer for constructive co-operation between companies in mechanical and plant engineering. PassPlus is active here and abroad. In our joint projects, we develop opportunities for our customers to optimise the industries of tomorrow.

We have a long-standing partnership with gpdm in the area of apprentice qualification. Together, we have already successfully established ourselves in the Metal Engineering education sector.

WHAT OUR CUSTOMERS SAY ABOUT US:

"My staff really benefited from the training provided by QTE."

"Every question was answered and every problem solved."

"The training was very practical."

"Highly effective. Thanks to the small group size, the trainer was able to address all my questions."

"The training was 100 % satisfactory."

"I learned more than expected. The best training I've ever had!"

"Very good and informative training. I can only recommend it."

"The training is structured in such a way that participants can deepen their knowledge of the material from the basic course while also learning new things."

OUR PARTNERS

Quality binds us together – this is demonstrated by the long-standing relationships we have with our customers. Numerous well-known companies from a wide range of industries trust in the quality offered by QTE Training GmbH.

AUTOMOTIVE I SUPPLIERS

Adam Opel
Benteler
BMW
Borbet
Bosch
Continental
Deutz
Gestamp Griwe
HELLA GmbH & Co. KGaA
Ford Werke
KSM Castings
Magna Steyr
Volkswagen
ZF Friedrichshafen
ZF Lenksysteme
Lühr Filter

STEEL

Hydro Aluminium
RHI Magnesita

PHARMACEUTICALS

B Braun
CSL-Behring

Food & Beverage

ARDAGH Group
Melitta
Vitaqua
Warsteiner

Weitere Branchen

Miele

We are happy to provide you with further customer references on request!

CONTACT DETAILS

CONTACT PERSONS

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www.QTE-Training.de

TERMS AND CONDITIONS

1. SCOPE:
All trainings pursuant to the QTE Training Catalogue and all individually agreed trainings provided by QTE Training GmbH are subject to the Terms and Conditions. Any conditions agreed with the customer which deviate from these Terms and Conditions shall only apply if expressly approved by QTE Training GmbH.

2. SCOPE OF SERVICES:
The scope of services of the trainings includes the delivery of the respective training at the agreed location, and the provision of hardware, training documents and a certificate of participation. The description of the contents of the courses corresponds to the standard of the catalogue of QTE Training GmbH at the time of publication. QTE Training GmbH expressly reserves the right to make changes or adjustments during the trainings. In the case of trainings that are tailored to a specific customer, the respective scope of services shall be defined accordingly. Participants are entitled to a certificate of participation if they have attended more than 80% of the time allotted to the training in question. The customer warrants that the scope of services will be used exclusively by the customer and not by any third party, unless otherwise agreed in writing.

3. REGISTRATION, DATA PROCESSING:
Registrations are made in writing, using either the registration form on the website or by written order. After receipt of the order, the customer will receive an order confirmation regarding the requested training, the location, the date and the price. Furthermore, the customer also consents that the personal data contained in the registration form may be stored and processed by QTE Training GmbH.

4. PRICES AND TERMS OF PAYMENT:
The prices for the trainings are listed in the appendix to the catalogue (valid at the time of publication) or need to be agreed in the case of customised trainings. The customer will always receive a corresponding offer in advance. Expenses for accommodation, lodging and travel are to be borne by the customer. Unless otherwise agreed, the prices are quoted in euro, excluding value added tax and other fees or expenses, and are subject to change. After registering, the customer will receive an invoice, the net amount of which is payable, free of any expenses or deductions, within 14 days of the invoice date but no later than the start of the training course.

5. CANCELLATION:
The Customer has the right to nominate substitute participants prior to the start of a training, provided that QTE Training GmbH raises no justified objections. QTE Training GmbH will invoice the following amounts for agreed trainings which have not been taken up: No free is charged for a written cancellation up to 4 weeks prior to the start of the training. In the event of cancellation up to 3 weeks before the start of the training course, 50% of the course fees will be charged, and in the event of cancellation up to 2 weeks before the start of the training course, 70% of the course fees will be charged. In the event of a cancellation less than 2 weeks prior to the start of a training, the course fee shall be paid in full. Should a participant be prevented from participating due to illness or other similarly serious reasons and a free cancellation is no longer possible, QTE Training GmbH may issue a voucher entitling the participant to participate at a later date to be determined by QTE Training GmbH.

6. RESERVATION OF RIGHT TO AMEND:
QTE Training GmbH reserves the right to change the location and/or time of announced or agreed trainings should this be necessary for material or legally justified reasons (e.g. in the event that the number of participants is too low, the trainer falls ill, due to national or international regulations, sanctions or for similar reasons) and to replace the trainer. If a training is cancelled altogether, any fees that have already been paid will be refunded. In the event of a change of time or place, the customer has the right to cancel in writing and free of charge within 3 calendar days of receipt of the notification of change. Otherwise, the change will be considered as agreed under the new conditions. The customer waives any claims for wasted expenditure and any other claims for damages and expenses.

7. WEBINARS:
As part of its webinars, QTE Training provides the customer with training hardware. This hardware remains the property of QTE Training GmbH. In case of damage, QTE Training GmbH reserves the right to charge the customer accordingly.

8. IN-HOUSE TRAININGS:
In the case of in-house trainings, the customer shall ensure that the regulations of the German Infection Protection Act are observed.

9. SAFETY REGULATIONS:
The participant undertakes to comply with the applicable safety, accident prevention and security regulations as well as with all instructions and special access regulations on the premises of QTE Training GmbH.

10. LIABILITY:
Both in its training materials and during the trainings, QTE Training GmbH provides technical information to the best of its knowledge and belief. However, QTE Training GmbH does not guarantee that this information is always free of errors. Within the scope of its business liability insurance, QTE Training GmbH is liable to the customer for any damages caused, up to the total net amount of the training price. Furthermore, QTE Training GmbH shall be liable for damages in the event of intent or gross negligence. Liability for slight negligence, compensation for consequential damages, pure financial losses, lost profits and damages from claims against third parties against the customer are excluded, as is liability that the training will be successful. In the event of damage to the customer's data storage media, the obligation to pay compensation shall not include the cost of replacing lost data. Any further claims for damages, for whatever legal reason, are excluded. If a training takes place on the customer's premises, QTE Training GmbH shall not be liable in the event of accidents, loss or damage to the customer's property, unless the damage was caused intentionally and by gross negligence.

11. COPYRIGHT, COPYRIGHT PROTECTION AND CONFIDENTIALITY:
All documents provided by QTE Training GmbH are the intellectual property of QTE Training GmbH and/or third parties. They may not be passed on or duplicated without the express permission of QTE Training GmbH. The software provided by QTE GmbH for the purpose of the training may neither be removed nor copied in whole or in part. The customer shall be liable for non-compliance with this provision.

12. MISCELLANEOUS PROVISIONS:
Should individual provisions of this agreement be or become ineffective and/or unenforceable in whole or in part, all other provisions shall remain unaffected. The same applies to any gaps in the provisions that have not been specified.

13. APPLICABLE LAW/PLACE OF JURISDICTION:
The exclusive place of jurisdiction for any legal disputes with the customer arising from or in connection with the contractual relationship shall be the court in Kassel, Germany, having jurisdiction over QTE Training GmbH. However, QTE Training GmbH shall be entitled to bring an action before any other court which may be competent under national or international law. German law shall apply exclusively to all legal transactions, in particular those based on these Terms and Conditions for training. Excluded from this are referral norms, in particular those of international private law, insofar as these refer to the application of foreign law. If German law provides for the application of special international material standards that also apply in Germany, such as the UN Convention on Contracts for the International Sale of Goods, these shall not be applicable.

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