F.A.C.T

Festo Authorized and Certified Training Centre

Professional Diploma in Industrial Automation & Mechatronics

Festo - the Automation Company

/Festo Industry

Festo offers components, modules and solutions for all levels of Automation Technology in the Industry. Festo is providing pneumatic, electric and electronics components for all levels and applications in Factory and Process Automation.

The German Company Festo is one of the world leaders in Industrial Automation with more than 15.800 employees worldwide and represented by 58 branches and partners in 170 countries. More than 75 years of experience are waiting to assist you!

/Festo Didactic

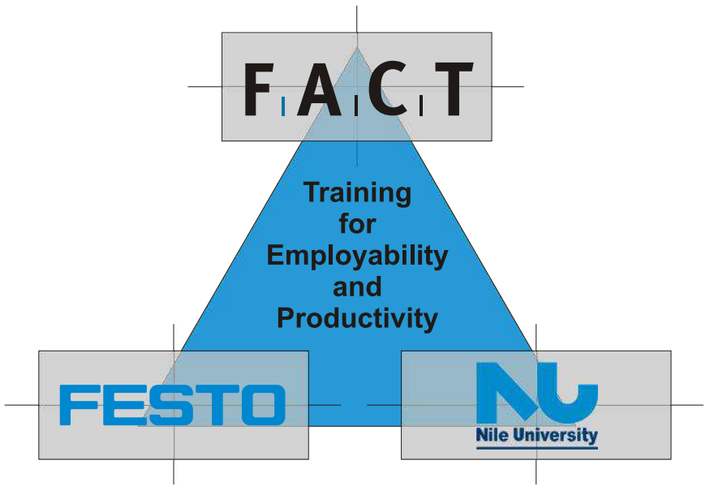
From basic training to the planning, control and handling of complex networked CIM-systems, Festo Didactic is the leading supplier of learning and training solutions for all educational and continuous training institutions. Our solutions are developed to meet your specific requirements for fast and effective learning and guaranteed training success. Festo Didactic is providing complete solutions from state-of-the-art training equipment, software, brainware, training programs up to complete turn-key training labs according to international standard.

FACT - a powerful partnership

Nile University (NU) is a world class research university committed to excellence in education and research.
NU is a leading university in technology and business education in Egypt and the Middle East/North Africa (MENA) region.
The decisive element of FACT is that the Nile University in Cairo has been authorized by Festo to offer expertise and know-how to the free market under the Festo brand.
Either for students – called Training for Employability or the Industry – called Training for Productivity.

The FACT advantages are numerous:

- cost effective
- highly flexible because of a modular training program
- highly efficient because the training is competency based
- international standard training facilities
- relevant to the demands of the local Industry today and in the future
- use of industrial equipment
- guaranteed Festo quality and standard
- Festo certificate on successful completion of training
- increase productivity by closing know-how gaps



Why Automation Technology

In the present world of rapid technological changes and growing globalization there is an urgent demand for the very best quality products and services that can only be supplied by a high level of productivity which requires automated manufacturing and process engineering systems.
Industrial Automation is very important to face the following tasks:

Globalization

The global market requests for availibility, quality, reasonable prices and services.

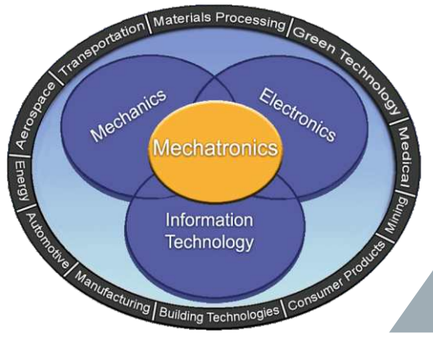
Productivity

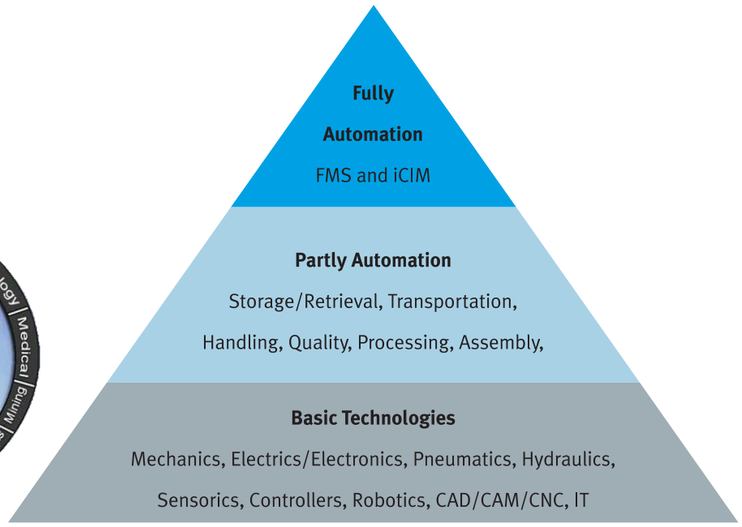
Increase the Productivity by producing on a higher level of Automation

- Quality
- Time
- Costs

are the key factors

Modern systems have reached a level of sophistication, which would have been hard to imagine using traditional methods. To be able to handle such networked systems a new way of thinking and acting is required - Mechatronics !
Mechatronics integrates the classical fields of mechanical, electrical and computer engineering and information technology and is focussing on the interfaces between the different technologies and their technical collaboration.





ADVANCE YOUR CAREER

Either for students, technicians or engineers, NU partnered with FESTO, as a world leader in the field of automation and mechatronics to offer **"FESTO Professional Diploma in Industrial Automation & Mechatronics"**. Providing industry with human technical development in the field of automation and mechatronics. This diploma is certified from both FESTO and AHK (The German chambers of commerce).

Why FESTO Diploma?

- Recognized international industrial certifications from FESTO & AHK.
- Immediate access to international high-tech and state-of-the-art technologies and industrial equipment.
- Increasing your job opportunities with competency based training.
- Effectively handling of new manufacturing and control systems.
- Relevant to the demands of the local Industry today and in the future.

Nile University

FESTO

CERTIFIED

AHK

German
Chamber of Commerce

PROFESSIONAL DIPLOMA IN INDUSTRIAL AUTOMATION & MECHATRONICS

Code: FESTO_Diploma01

Short description: The “Professional Diploma in Industrial Automation & Mechatronics” covers essential and advanced topics in Mechatronics technologies such as; fluidics, robotics, electrical drives, CNC and PLC.

Contents: The professional diploma contains five main technologies of mechatronics. Each main technology contains two to three modules. Each module is around 32 contact hours:

1-Fluidics:

1.1.Pneumatics PNB (111)

1.2.Electro-Pneumatics (EPB 121)

1.3.Hydraulics Basics (HYB 311)

2-Automation:

2.1.PLC programming basics (PLC 131)

2.2.PLC programming advanced (PLC 232)

3-Electrical Drives:

3.1.DC Drive & Characteristics (EDDC 311)

3.2.AC Drive & Characteristics (EDAC 321)

4-Robotics:

4.1.Introduction to Kinematics & robot programming Basics (ROB 111)

5-CNC:

a.CNC Basics/ Iso G-code language-according to Sinumerik 810/840D Mill (CNC 413)

b.CNC Basics/ Iso G-code language-according to Sinumerik 810/840D lathe (CNC 422)

PROFESSIONAL DIPLOMA IN INDUSTRIAL AUTOMATION & MECHATRONICS

Competencies: The participant ....

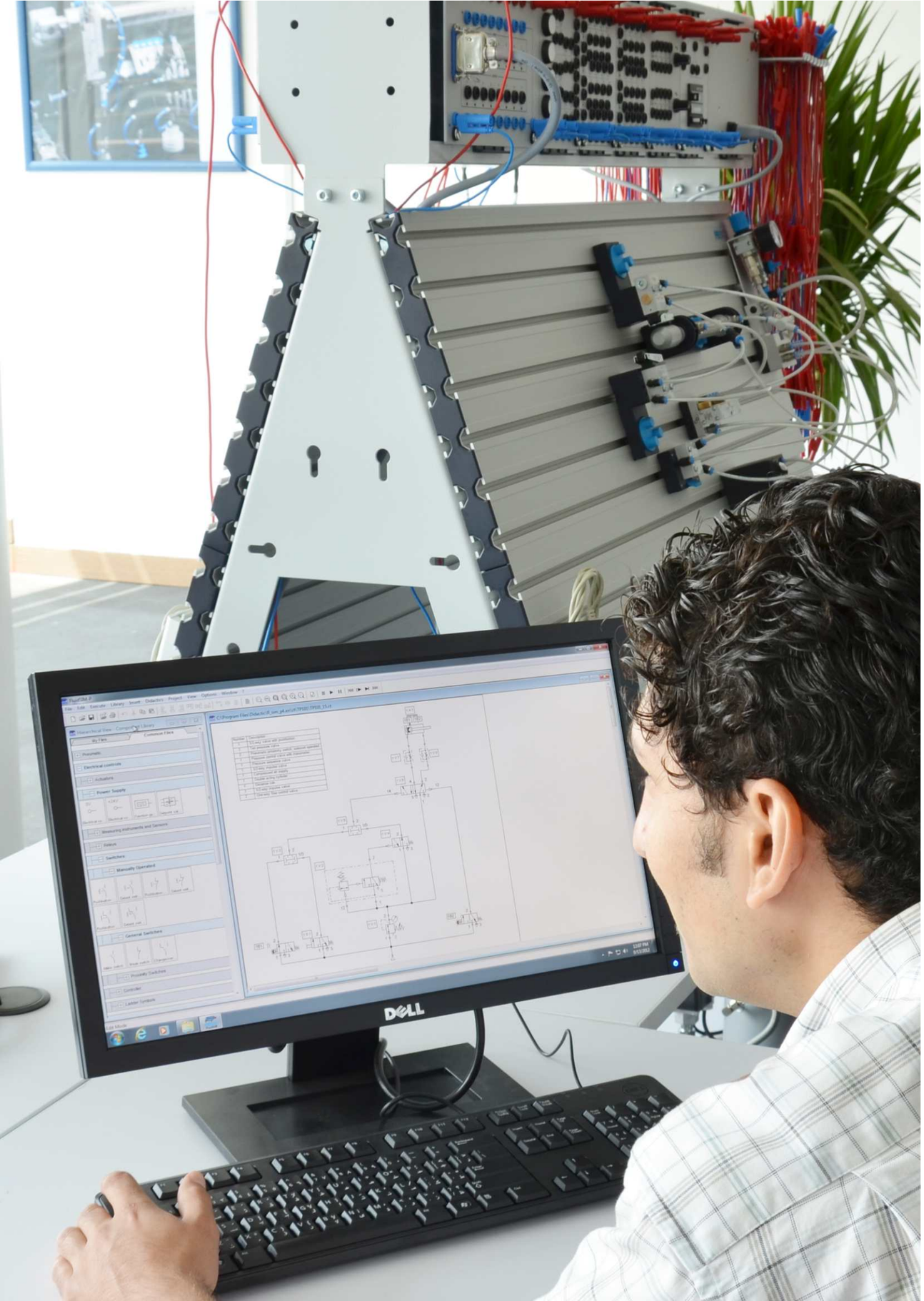
- can identify and describe the operation of pneumatic, electro-pneumatic, electrical and PLC components and sensors.
- can assemble, and test Mechatronic circuits (pneumatics, electrical, and software).
- recognizes and can differentiate between the different types of programming used in industry.
- can download a program and commission a PLC control system.
- can troubleshoot basic Mechatronic systems.
- Read and understand the technical documents, reports and outlines specific to the system and subsystems, and be able to consult with experts.
- Work effectively as a team-member and coordinate the activities with upstream and downstream operations.
- Understand and implement safety regulations required for operation of the system.

Target Group: University Students, Technicians or Engineers

Prerequisites: Basic engineering knowledge.

Duration: 320 Contact Hours

Order Number: FACT-FSETO Diploma01-1017



Pneumatics

Code: PNB 111

Short description: Pneumatics is one of the most important technology used in the Industry. This workshop will provide the necessary know-how based on hands-on training on real industrial equipment.

Contents:
- Introduction Basic Technologies of Mechatronics
- Theory in Pneumatics - fundamentals, applications, air pressure-supply
- Function of the components
- Handling of FluidSim Pneumatics
- Direct and indirect control of pneumatic cylinders
- Memory control
- Basic digital functions - AND, OR, NOT, RS-FF
- Pressure and time control
- Interlacing circuit

Competencies: The participant ....
- understands the importance of Pneumatics in the Industry
- understands the physical fundamentals of Pneumatics
- understands all important aspects of air-pressure supply
- knows the construction and function of components
- is able to handle the planning, design and simulation software FluidSim
- is able to plan, design, set-up and test of Pneumatic circuits
- understands the speed control of Pneumatic actuators
- understands the function of end-position sensors
- understands the pressure- and time control of Pneumatic actuators

Prerequisites: No prerequisites required

Duration: 4 days

Order Number: FACT-PNB111-1012

Electro-Pneumatics Basic

Code: EPB 121

Short description: Electro-Pneumatics is the perfect tool to be prepared for the next step of PLC controlled manufacturing process. This workshop will work-out all basic aspects of electrical control in Pneumatics.

Contents:
- Introduction Basic Technologies of Mechatronics
- Theory in Pneumatics and Electrics - fundamentals, applications, supply
- Function of the components
- Handling of FluidSim Pneumatics
- Direct and indirect control in Electro-Pneumatics
- Interlacing circuit
- Memory control
- Basic digital functions - AND, OR, NOT, RS-FF
- Function of end-position sensors

Competencies: The participant ....
- understands the importance of Pneumatics in the Industry
- understands the physical fundamentals of Pneumatics and Electrics
- understands all important aspects of air-pressure supply
- knows the construction and function of components
- is able to handle the planning, design and simulation software FluidSim
- is able to plan, design, set-up and test of Electro-Pneumatic circuits
- understands the speed control of Pneumatic actuators
- understands the function of end-position sensors
- understands the function of electronic proximity switches

Prerequisites: No prerequisites required

Duration: 4 days

Order Number: FACT-EPB121-1012

Hydraulics Basics

Code: HYB 311

Short description: If it comes to high force & high precision in the industry. Hydraulics is required. This workshop will provide the necesarry know-how based on hands-on training on real industrial equipment

Contents:
- Introduction Basic Technologies of Mechatronics
- Theory in hydraulics - fundamentals, applications & supply
- Function of the components
- Handling of FluidSim hydraulics
- Differences between hydraulics & pneumatics
- Plan, Design, set-up & test of basic hydraulics circuits
- Plan, Design, set-up & test of pressure control circuits
- Plan, Design, set-up & test of flow control circuits

Competencies: The participant ....
- understands the importance of hydraulics & pneumatics in the Industry
- understands the physical fundamentals of hydraulics
- understands all important aspects of hydraulic power unit
- knows the construction and function of components
- is able to handle the planning, design and simulation software FluidSim
- is able to plan, design, set-up and test of basic hydraulic circuits
- understands the speed control of hydraulic actuators
- understands the pressure control of hydraulic actuators
- understands the function of end-position sensor

Prerequisites: No prerequisites required

Duration: 4 days

Order number: FACT-HYB311-1012

Factory Automation - PLC programming Basics

Code: PLC 131

Short description: This training program is focussing on the structure and mode of operation of PLC as well as how to create basic logic association programs. A key element of the workshop is application and handling, using the programming terminology and taking into account the various interfaces between the individual technologies (mechanical, pneumatics, electrical and PLC).

Contents:
- Overview of controllers used in the Industry
- PLC fundamentals in general
- Functions of the components used in Electro-Pneumatics
- Handling of the PLC programming software
- Definition of the in- and output addresses
- Absolute and symbolic addressing
- Structural programming and uncondition and condition call
- Planning, edit and test projects in digital technology

Competencies: The participant ...
- knows the different controllers used in the Industry
- understands the function of all Electro-Pneumatic componentes
- understands the function of a PLC
- is able to define the in- and outputs
- understands the absolute and symbolic addressing of in- and outputs
- has an overview about the PLC programming languages - LAD, STL, FBD
- knows all basic digital modules - AND, OR, NOT, RS-FF ...
- is able to plan, edit and test PLC projects in Ladder Diagram

Prerequisites: Basic Electro-Pneumatics knowledge

Duration: 4 days

Order Number: FACT-PLC131-1012

PLC programming Advanced

Code: PLC 232

Short description: This training module is based on the know-how of the basic PLC programming module by transferring that know-how to the single stations of a Flexible Manufacturing System. The participants will plan, edit and test PLC project solutions for the single stations of the Factory Automation system called MPS 200.

Contents:
- Functions of the single FMS stations
- Components - specification and function
- Definition of the input and output addresses of the FMS stations
- Absolute and symbolic addressing
- Plan, edit and test PLC projects for each single FMS station
- Planning of the I/O-communication between the single stations
- Plan, edit and test the I/O-communication
- Plan, edit and test the material- and signal flow through the entire FMS

Competencies: The participant ...
- knows the functions and symbols of different sensors and actuators
- is able to distribute an entire project into logical steps
- is able to plan a step-by-step programming solution with a PLC
- is able to test a programming solution according to a specification
- understands the levels of industrial communication
- is able to plan an I/O-communication within a FMS
- understands the Stop and Emergency Stop conditions within a FMS
- is able to test an entire project solution according to a specification

Prerequisites: Completion of PLC 131or basic know-how in PLC programming

Duration: 4 days

Order Number: FACT-PLC232-1012

DC Drives Control and Characteristics

Code: EDDC 311

Short description: This course will allow the participants acquire the appropriate competencies to select appropriate DC motors and their installation according to the industrial necessities to get the best efficiency. The laboratory is equipped with the top equipment for this purpose.

Contents:
-Direct Current Machines
-SI Units & Electrical Basics
-DC Motors Classification
-DC Motor Structure & Components
-DC Motor Speed, Direction & Torque
-DC Motor Control & Protection
-DC Motor Commissioning
-DC Motor Braking Techniques
-DC Motor Graphical Representation & Characteristic Curve
-DC Motor Performance

Competencies: The participants ...
-Become familiar with the working principle of the DC motor.
-Diagnose the operation of DC motors.
-Choose the appropriate type of DC motor according to application & load.
-Interpret the electrics diagrams.
-Interpretation of engine variables of its operation.
-Choosing the appropriate elements of motor protection.
-Will be able to handle motor simulation using DriveLab Software.
-Implementation of motor connection.
-Learn to implement of braking techniques.
-Become familiar with the DC Motor commissioning.
-Become familiar with the DC Motor control.

Prerequisites:
-Basic knowledge of electricity
-Good knowledge in operating a PC with a windows interface

Duration: 4 days

Order number: FACT-EDDC311-1012

AC Drives Control and Characteristics

Code: EDAC 321

Short description: This course will allow the participants acquire the appropriate competencies to select appropriate AC motors and their installation according to the industrial necessities to get the best efficiency. The laboratory is equipped with the top equipment for this purpose.

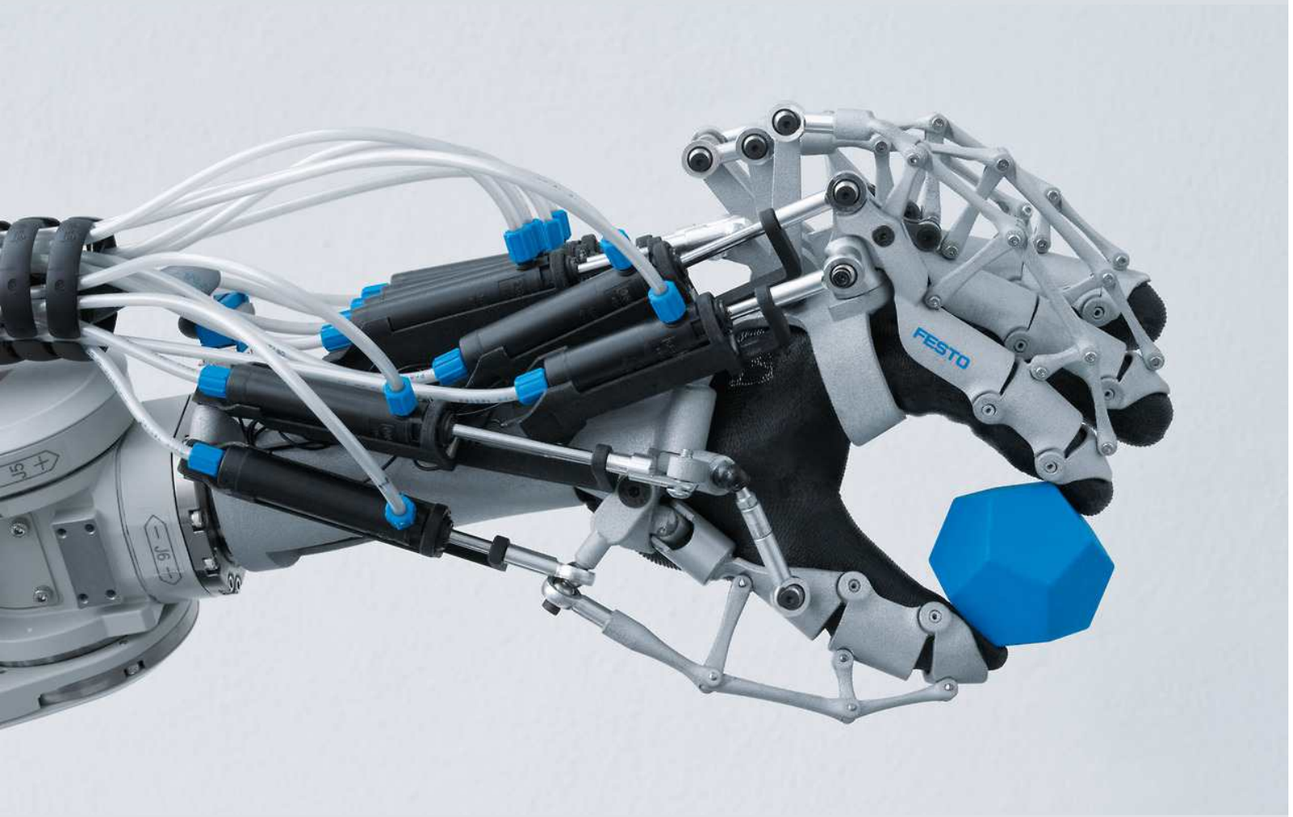
Contents:
-SI Units & Electrical Basics
-AC Motors Introduction
-AC Motors Classification
-Induction Motors
-3-Phase Asynchronous Motor
-3-phase Motor Speed, Direction & Torque
-3-phase Motor Control & Protection
-3-phase Motor Commissioning
-3-phase Motor Braking Techniques
-3-phase Motor Graphical Representation & Characteristic Curve
-3-phase Motor Performance

Competencies: The participants ...
-Diagnose the operation of electrics motors.
-Choose the appropriate type of motor according to an application.
-Interpret the electrics diagrams.
-Will be able to handle motor simulation using DriveLab Software.
-Interpretation of engine variables of its operation.
-Choosing the appropriate elements of engines protection.
-Dimensioning of installation components.
-Implementation of motor connection.

Prerequisites:
-Basic knowledge of electricity
-Good knowledge in operating a PC with a windows interface

Duration: 4 days

Order number: FACT-EDAC321-1012



Robotics

Code: ROB 111

Short description: For many years robotics has been evolving fast, providing speed, precision, and quality in production processes. This course provides you with an insight into robotics hardware technology, its function, and operation.

Contents:
- Robot arm design
- Robot controller
- Joint movements
- Coordinate systems
- Speed commands,Movement commands
- Creating Position Lists
- Formulate, download and testing of related sequence programs
- Multi-tasking
- Uploading data from robot controller
- Safety regarding robots

Competencies: The participant ...
- describe the mechanics behind robotics systems
- describe the working principles behind the control of movement and speed
- explain what a coordinate system is
- read and write a basic robotics sequence program
- identify and eliminate faults using the status display

Prerequisites: Completion of EPB 121 or basic know-how in Electro-pneumatics and in operating a PC with a Windows interface

Duration: 4 days

Order Number: FACT-ROB 111-1017

CNC Basics / ISO G-Code Language – According to SIEMENS Sinumerik 810/840D Mill

Code: CNC 411

Short description: CNC Machines are one of the most important equipment used in industry. This workshop will provide the foundation of CNC programming and operation of milling machine according to SIEMENS Sinumerik variant. Throughout carefully reading the standard mechanical drawings, knowing how to transfer these into a proper readable G-Code, then safely operating CNC machine to deliver the desired final product.

Contents:

- Introduction about CNC machine system, history, different types, applications and components.
- Principles of ISO G-Code SIEMENS Sinumerik 810/840D structured program.
- ISO G-Code SIEMENS Sinumerik 810/840D Path and data commands, Feed control and spindle movement.
- Systems of coordinates: Absolute and relatives, Cartesians or polars
- Machine coordinate system and user coordinate system
- CAD/ CAM solutions
- Zero- offset and Zero-tool assignation
- Safely machine operation
- Samples according to SIEMENS Sinumerik 810/840D
- Measurement and quality control.

Competencies: The participant ....

- understands the basics on how to program a CNC Machine
- understands how to manage the System of Coordinates
- understands how to control the tools and the tool movement
- knows the structure and the syntax of a single block of ISO G-Code SIEMENS Sinumerik 810/840D
- knows the set of Words for Milling Machines
- is able to read and write simple NC programs through SIEMENS Sinumerik 810/840D Machine Interface
- is able to open an NC program and modify some instructions or add new blocks/words
- is able to define and put into the NC program the technological parameter
- understands the differences between Machine Coordinate System and User Coordinate System
- is able to simulate the tool path and understand it

Prerequisites: Basic engineering understanding

Duration: 4 days

CNC BASICS / ISO G-Code Language – According to SIEMENS Sinumerik 810/840D Lathe

Code: CNC 412

Short description: CNC Machines are one of the most important equipment used in industry. This workshop will provide the foundation of CNC programming and operation of turning machine according to SIEMENS Sinumerik variant. Throughout carefully reading the standard mechanical drawings, knowing how to transfer these into a proper readable G-Code, then safely operating CNC machine to deliver the desired final product.

Contents:

- Introduction about CNC machine system, history, different types, applications and components.
- Principles of ISO G-Code SIEMENS Sinumerik 810/840D structured program.
- ISO G-Code SIEMENS Sinumerik 810/840D Path and data commands, Feed control and spindle movement.
- Systems of coordinates: Absolute and relatives, Cartesians or polars
- Machine coordinate system and user coordinate system
- CAD/ CAM solutions
- Zero- offset and Zero-tool assignation
- Safely machine operation
- Samples according to SIEMENS Sinumerik 810/840D
- Measurement and quality control.

Competencies: The participant ....

- understands the basics on how to program a CNC Machine
- understands how to manage the System of Coordinates
- understands how to control the tools and the tool movement
- knows the structure and the syntax of a single block of ISO G-Code SIEMENS Sinumerik 810/840D
- knows the set of Words for turning Machines
- is able to read and write simple NC programs through SIEMENS Sinumerik 810/840D Machine Interface
- is able to open an NC program and modify some instructions or add new blocks/words
- is able to define and put into the NC program the technological parameter
- understands the differences between Machine Coordinate System and User Coordinate System
- is able to simulate the tool path and understand it

Prerequisites: Basic engineering understanding

Duration: 4 days

Contact Data

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