



NOAMAN ENGINEERING CO.

شركة نومان الهندسية

Technological Training Programs



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On behalf of Noaman Engineering, I would like to introduce you to our training courses.

All of our courses cover **Theoretical, Practical, and software implementation** and are conducted in our training center at our headquarters or in house according to your requirements.

Please kindly find below the training core programs as follows,

1) Basic/ Advanced Pneumatics and Electro-pneumatics

Designed to give the participant the base of the theory of automation, on which the participant would build sufficient knowledge necessary for more advanced courses.

Course summary

The course starts from the first principals of automation with compressed air, viewing compressed airlines, dryers, ISO standards in pneumatics, single actuator pneumatic automation, multiple actuator pneumatic automation, the problem of signal overlap and solutions. The course covers also the same logic sequence of built up information in the electro-pneumatic section.

Target Group

All who are involved in design, implementation and maintenance of pneumatic systems

Previous Knowledge

General engineering background

Syllabus

- Introduction to Physical concepts of Air.
- Air Generation and Distribution.
- Characteristics and applications of Pneumatics
- Components of Pneumatic systems- cutaway models to be showed
- Symbols and standards in Pneumatics
- Methods for the development of pneumatic systems
- Development of single actuator circuits including direct and indirect control, logic gates, memory, speed, time delay and quick exhaust valves
- Development of multiple actuator circuits covering coordinated motion, signal overlap and its solution As idle rollers, cascade systems and shift registers (*Pneumatic PLC*)
- Development of single actuator control in electro pneumatics including direct and indirect control
- Development of multiple actuator control in electro pneumatics covering coordinated motion, signal overlap and solutions.



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2) Introduction to Programmable Logic controllers

Designed to give delegates an introduction to PLC controlled systems, the course aims to familiarize them with the associated equipment and terminology, as well as the writing and implementation of simple programs.

Course summary

The course covers writing programs on a PC, downloading to a PLC, connecting the relevant hardware devices and running the program. Operation is monitored and faults identified on-line. Programs are written in both ladder Diagram and Statement list format and particular attention is paid to documentation.

Target Group

All who require knowledge of the construction and operation of a PLC system, including the writing and implementation of simple control programs.

Previous Knowledge

General engineering background and course no.1 remain as a prerequisite.

Syllabus

Components of PLC control systems
Inputs and outputs
Signal processing
Central processing unit
Logic functions
Programming languages; ladder Diagram, statement list
Program documentation
Sequential control
Flags
Online monitoring
Timers
Faultfinding

Course duration

4 days



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3) Programming of Programmable logic controllers

Designed to further develop delegates programming skills, the course aims to improve their ability to convert control tasks to fully operational systems.

Course Summary

The course continues on from course no.2, with the development of more complex control problems. Additional functions such as timers and counters are used with sequential and conditional programs plus manual/auto and reset control functions. In addition, the course utilizes the benefit of Ethernet technology in the communication between two PLC's (as if Master/ Slave or Expansion of I/O) and for the sake of online monitoring of machine behavior via the internet. (IP – Server application)

Target Group

All involved with programming of a PLC System.

Protocol

Ethernet - Profibus

Previous Knowledge

A general engineering background and course no.2 remain as prerequisites.

Syllabus

Review of PLC structure, ladder logic, Statement list, Flags.

Sequence programs

Scanning programs

Timers

Counters

Registers

Sequences with repeat patterns

Multi tasking

Online monitoring

Course duration

3 days.



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4) Mechatronics

The course covers the control of pneumatic actuators using pneumatic and electrical signaling devices together with the use of PLC's. The construction and operation of valves and sensors is investigated and used in the conjunction of control circuits. Solutions to control problems are written in ladder Diagram and statement list format.

Target Group

All involved in the design, assembly or maintenance of controls containing pneumatic, electro pneumatic and PLC equipment

Previous Knowledge

General engineering background and course no. 3 remains as a prerequisite.

Syllabus

Conditional and sequence control using pneumatic, electro pneumatic, PLC ladder and statement list.
Overcoming trapped signals
Cascade circuits
Use of flags
Time delay
System documentation.



5) Electrical Servo, Stepper – E Drives, and Servo Pneumatic Automation

Designed as a general introduction to the subject of electrical servo and stepper drives, the course aims to familiarize delegates with the design, construction and operation of both the drives/controllers and the motors. The course is outcome driven with each stage aiming to provide the delegate with a goal of achieving a specific outcome.

Course Summary

The course covers the use of servo, stepper motors, servo pneumatic technology, and controllers in industrial applications. Training is needed to master new drive technologies and to grasp the relationship between all of the drive technologies in the industrial arena. Understanding of the hardware, insight into the technologies and command of tools and methods can help us master the growing complexity in the world of industrial automation.

Practical sessions give the opportunity to put theory into practice. Working from the supporting theory, delegates have to select the correct parameters and connect the wiring for each technology to build a working electric linear drive.

Target Group

All involved with the design, installation and maintenance of industrial automation and motion controlled products.

Previous Knowledge

General engineering Background

Syllabus

Stepper and Servomotors
Stepper and servo drives/ controllers
Linear axes
Servo systems including servo pneumatic systems
Stepper systems
Electrical drive applications
Servo pneumatic application
Electrical stepper and servo pneumatic solutions.

Course duration

2 days



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6) Field bus Technology

Designed as a general introduction to the subject of field bus systems, the course aims to familiarize delegates with the terminology, configuration and operation of components used within typical field bus control systems. This includes the interpretation of control circuit sequences as well as the construction of control systems.

Course summary

The course covers the terminology used within Field bus technology, an overview of the various topology and addresses for the Fieldbus elements. A complete overview is given, covering input/output devices, valve configurations, and basic diagnostic techniques including online diagnosis.

Protocols

- Profibus with Siemens S7 as a master and FESTO CPX valve terminal as slave. (Simulated S7)
- CAN-bus FESTO with FESTO CPX-FEC as master and FESTO CPI as Slave.

Target Group

All involved with the design, installation and maintenance of industrial Fieldbus and AS-interface control systems.

Previous Knowledge

General engineering background and courses no.1,2, and 3 remain as a prerequisite.

Course Duration

3 days



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7) Valve Terminal technology

Designed to give a good understanding of the new technologies and benefits involved in mounting valves on a common terminal rail. The course aims to familiarize delegates with the terminology, configuration technology and operation of components used on valve terminals and valve islands. This includes the interpretation of control circuit symbols as well as the construction of pneumatic valves and possible configurations.

Course Summary

The course covers the terminology used within valve terminal and valve islands, an overview of the various addresses for the pneumatic valves, input/output devices, valve configurations and basic diagnostic techniques.

Practical sessions allow the delegates to configure a valve terminal block.

Target Group

All involved with the design, installation and maintenance of pneumatic control systems.

Previous Knowledge

General engineering background and course no.1, 2, 6 and 3

Course duration

2 days



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8) Process Control

Designed to give a good understanding of the new technologies and benefits involved in sizing, selection, and operation of control valves (Butterfly, Gate, Ball valves with actuators and positioners with analog or digital feedback) The course aims to familiarize delegates with the terminology, configuration technology and operation of components used in process automation.

Course Summary

The course covers the sizing and selection of control valves against velocity, media, pressure and flow rate concerns. In addition, the practical sessions involve practical hands on towards utilizing single and double acting actuators with different positioners and receiving feed back signal of control valve status.

The course can be combined towards operation of control valves by touch screen panels or by pushbuttons as per customer request. It also introduces possibilities of automating control valves via FESTO new PLC CECX with profibus master and slave modules.

Target Group

All involved with the design, installation and maintenance of process control valves.

Previous Knowledge

General engineering background.

Course duration

4-7 days

Kindly accept our best regards,

Noaman Engineering Co.

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All courses contents are subject to change without notification