Modern Industrial Pneumatics – Fundamentals

P111

Designed as a general introduction to the subject of pneumatics, the course aims to familiarise delegates with the design, construction and operation of pneumatic components. This includes the interpretation of circuit diagrams and symbols as well as the construction of control systems.

The course covers the use of compressed air for pneumatic control and as a signalling medium. A complete overview is given, covering compressors, storage, dryers and distribution as well as the design, construction and operation of a range of actuators, valves and ancillary equipment. The relevant ISO symbols are introduced and included in the circuit diagrams.

Practical sessions give delegates the opportunity to put theory into practice. Working from the diagrams they have produced, delegates have to select the correct components from a range of equipment and build the circuits, making the necessary adjustments for pressure, flow and sequence.

A strong emphasis is placed on safety and appropriate working practices throughout the course, especially during the practical sessions.

Target group

All personnel involved with the design, installation, maintenance, operation and servicing of industrial pneumatic equipment and basic control systems.

Previous knowledge

General engineering background.

Syllabus

- Advantages and disadvantages of air
- Theory of air and gas laws
- The service unit
- Single acting cylinders
- Directional and solenoid operated valves
- Valve port labelling
- Double acting cylinders
- Component layout
- Speed control including flow control valves, quick exhaust valves
- SI units and conversions
- Overview of compressors, dryers and distribution
- ISO symbols
- Direct and indirect control
- Circuit diagram layout
- Logic valves including shuttle valves and two pressure valves
- Timing valves

Training outcomes

On completion of this course, participants will be able to:

1. Understand the units and measurement scales associated with compressed air systems
2. Recognise pneumatic symbols drawn to the relevant standards (ISO 1219)
3. Understand the functioning of standard pneumatic cylinders and valves
4. Read pneumatic circuit diagrams
5. Construct simple pneumatic controls
6. Understand safe practice

N.B. Course contents are only a guide and will be covered as far as time permits.

Course duration

Courses take place over three days and are available in-house or at one of our national training centres. Practical exercises are used throughout the whole course. Candidates will also use FluidSIM, a Festo software package for the design and simulation of fluid power circuits.
To download a free demonstration of FluidSIM visit www.fluidsim.com