

ELECTRO-PNEUMATICS

This training course has been developed by OakCAD/NCT to meet the growing need for technician engineers to update or upgrade their knowledge and skills in electro-pneumatics.

This is a unit from our **Certificate in Engineering Maintenance**. The units and the complete qualification are certificated by **EAL**, as a Certificate of Verified Achievement, and have achieved the Quality Award from **unionlearn**.

EAL (Excellence, Achievement & Learning Limited) is a major UK engineering awarding body and the **unionlearn** Quality Award is developmental and aims to support providers to reach the highest possible standards of working with the unions.

The course content has been developed in consultation with several of our large pharmaceutical and manufacturing clients over many years and can be provided as a tutor lead delivered course, as a distance learning course or flexibly, combining both methods.

This course is in modular form with each module individually assessed and consists of:

- 1 Course notes
- 2 Worked examples
- 3 Trainee self-assessments
- 4 Module assessments

On completion of all modules, there is an end of course and practical assessment.

Companies who are considering the development of their own Apprenticeship Scheme may wish to include this EAL accredited & certificated qualification into their plans.

If required OakCAD can also help develop an effective company scheme.

STUDY TIME

This course has been set at a level equivalent to Level 3 and it is expected that it will take you 20 - 30 hours of delivered time or approximately 60 hours of self-study time (distance learning).

COURSE FEE

The current level of course fees for distance learning courses is displayed on the NCT web site.

For delivered courses, please contact OakCAD.

REQUIREMENTS

To undertake this course, you should have good basic engineering and mathematical knowledge. OakCAD/NCT is able to advise you as to whether you have the necessary background knowledge and experience to undertake this course.

INDUSTRY

Although written for the pharmaceutical industry it is also appropriate for the Petro- chemical industry, Food Manufacture or any industry using automatic production lines and processes or having a modern maintenance requirement.

ELECTRO-PNEUMATICS

OPEN LOOP & CLOSED LOOP CONTROL

SIGNALS

Analogue Digital Binary

PRINCIPLES OF ELECTRICAL ENGINEERING

Voltage Current Types of Current Ohm's Law
Effects of & Hazards Associated with Current

ELECTRICAL & ELECTRO-PNEUMATIC COMPONENTS

SIGNAL INPUT DEVICES

Mechanical Electrical Electronic
Manual Push Button Toggle Lever Limit Switch Reed (Proximity) Switch

SENSORS

Inductive Capacitive, Optical)

SIGNAL PROCESSING DEVICES

Relays Contactors Solenoids

DIRECTIONAL CONTROL VALVES

2/2 way 3/2 way 4/2 way 5/2 way 4/3 way 5/3 way
Solenoid/Spring Solenoid/Solenoid Pilot Control/Manual Override

ELECTRO-PNEUMATIC CONVERTERS & PNEUMATIC-ELECTRO CONVERTERS

PNEUMATIC & HYDRAULIC SYMBOLS TO ISO 1219-1/ BS 2917

ELECTRICAL CIRCUIT SYMBOLS TO ISO/DIN/BS

WIRING DIAGRAMS

DIN Format Ladder Format

Design of Circuit Diagrams

BASIC ELECTRO-PNEUMATIC CIRCUITS

Control of Single Acting Cylinder Circuits Control of Double Acting Cylinder Circuits
Series Circuits (AND) Parallel Circuits (OR) Semi-Automatic Circuits
Latching Circuits Timing Circuits

CONSTRUCTION, COMMISSIONING & RE-COMMISSIONING OF CIRCUITS

Contamination Control & Filtration in Pneumatic Circuits Safe Methods of Working

IN-COURSE & PRACTICAL EXERCISES and ASSESSMENT