

INDUSTRIAL MAINTENANCE: PNEUMATIC SYSTEMS TECHNICIAN

Levels 1-3

Learners on this pathway receive training in the basics of automation and process control systems, the use of engineering drawings and blueprints, aerospace wiring and composite applications, geometric dimensioning and tolerancing, the use of fasteners and the function of pneumatic systems. This pathway employs three levels covering 12 areas of expertise through 61 courses. It will take learners 82 hours to complete this pathway.

Level 1 introduces learners to industrial automation and process control systems, along with the fundamentals of reading blueprints and the application of engineering drawings to the aerospace industry. Level 2 continues with advanced blueprint reading with emphasis on wire installation and composite engineering. This level also introduces the concept of geometric dimensioning and tolerancing and the definition and application of fasteners used in assemblies. Level 3 focuses on the use of industrial pneumatics, including basic theory, system design, gases used and the use of vacuums.

Among the objectives for this pathway, learners will be able to:

- understand the importance of automated processes
- identify different types of dimensions
- list the geometric characteristics controlled by geometric tolerances
- explain the importance of pneumatics in automation
- understand the physical laws that are used in vacuum technology

Total # of Modules: 61

Total Hours: 82



PNEUMATIC SYSTEMS TECHNICIAN

Level 1

Introduction to Industrial Automation

- 1.1 Introduction to Automation
- 1.2 Automated Process
- 1.3 Automated System

Process Control

- 1.4 Introduction to Process Controls
- 1.5 Process Control Systems
- 1.6 Set Point/Comparator
- 1.7 Controller (PID Control)
- 1.8 Multivariate Processes

Blueprint Reading Fundamentals

- 1.9 Introduction to Blueprints
- 1.10 Engineering Drawing Terminology
- 1.11 Engineering Drawing Views
- 1.12 Engineering Drawing Lines
- 1.13 Dimensions and Tolerances

Blueprints and Picture Sheets for Aerospace

- 1.14 Aerospace Introduction to Blueprints
- 1.15 Blueprint Terminology
- 1.16 Blueprint Views
- 1.17 Blueprint Lines
- 1.18 Blueprint Dimensions and Tolerances
- 1.19 Blueprint Symbols

Level 2

Advanced Blueprint Reading

- 2.1 Geometric Dimensions and Tolerances
- 2.2 Assemblies and Fits
- 2.3 Threads and Fasteners

Aerospace Wire Installation Drawings

- 2.4 Engineering Drawing Review
- 2.5 Wire Bundle Installation Paperwork
- 2.6 Electrical Production Illustrations

Composite Engineering Drawings and Instructions

- 2.7 Engineering Communication
- 2.8 Composite Engineering Drawings
- 2.9 Work Instructions

Geometric Dimensioning and Tolerancing

- 2.10 Introduction to GD&T
- 2.11 GD&T Terms and Symbols
- 2.12 Rules of GD&T
- 2.13 Geometric Tolerances
- 2.14 Datums
- 2.15 Form Tolerances
- 2.16 Profile Tolerances
- 2.17 Orientation Tolerances
- 2.18 Runout Tolerances
- 2.19 Location Tolerances

Fasteners

- 2.20 Temporary Fasteners
- 2.21 Rivets
- 2.22 Bolts, Screws, and Washers
- 2.23 Threaded Inserts
- 2.24 Hi-Loks
- 2.25 Lockbolts
- 2.26 Nut Plates
- 2.27 Blind Rivets
- 2.28 Identifying Fasteners
- 2.29 Fasteners and Fits
- 2.30 Securing and Lockwiring Fasteners
- 2.31 Torque Tools

Level 3

Introduction to Pneumatics

- 3.1 Introduction to Pneumatics
- 3.2 Pneumatic Systems
- 3.3 The Properties of Gases
- 3.4 Air Compression and Distribution - Part One
- 3.5 Air Compression and Distribution - Part Two

Components of a Pneumatic System

- 3.6 Compressed Air Treatment
- 3.7 Pneumatic Actuators
- 3.8 Directional Control Valves
- 3.9 Vacuum Technology
- 3.9 Measuring Pneumatic Variables

Pneumatic Applications

- 3.10 Pneumatic Applications