

INDUSTRIAL MAINTENANCE: HYDRAULIC SYSTEMS TECHNICIAN

Levels 1-4

Learners on this pathway gain skills in automation technology, blueprints and engineering drawings, hydraulics theory and systems and metal forming. This pathway employs four levels covering 12 areas of expertise through 65 courses. It will take learners 78 hours to complete this pathway.

Level 1 provides learners with an understanding of the main components and application of automation in manufacturing. Level 2 involves the use of blueprints and engineering drawings and gives learners the ability to explain the principles of geometric dimensioning and tolerancing and describe the use of fasteners and their necessary tools. Level 3 introduces learners to the theory of hydraulics and involves discussion of the fluids used and the components of a hydraulic system. Level 4 gives learners the ability to describe the process of metalworking, explain the differences between rolling, forging and extruding metal and describe bar and wire drawing and sheet metal forming.

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

- understand the role and importance of automated processes
- list the main areas of an engineering drawing
- recognize the codes that identify fasteners
- compare a hydraulic and pneumatic system
- understand the skills needed to be successful in metalworking

Total # of Modules: 65

Total Hours: 78



HYDRAULIC 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 Hydraulics

- 3.1 Introduction to Hydraulics
- 3.2 Hydraulic Theory
- 3.3 Hydraulic Fluids
- 3.4 Hydraulic Systems

Components of a Hydraulic System

- 3.5 Hydraulic Actuators
- 3.6 Classification of Hydraulic Valves
- 3.7 Hydraulic Piping and Instrumentation
- 3.8 Hydroelectric Symbolology and Circuits

Level 4

Introduction to Metal Forming

- 4.1 Introduction to Metalworking Processes
- 4.2 Introduction to Bulk Metal Forming
- 4.3 Introduction to Rolling
- 4.4 Introduction to Forging
- 4.5 Introduction to Extruding
- 4.6 Introduction to Bar and Wire Drawing
- 4.7 Introduction to Sheet Metal Forming