



Training made possible through the South Bend Pathways On Demand Workforce Development Program

PNEUMATICS (LEVEL 1)

Class Dates*: Sept. 13 - 15

**Subject to change*

Learn about the fundamentals and principles of pneumatics in this Level 1 course. Participants will obtain a strong foundation in compressed air production and pneumatic systems, including basic pneumatic components, basic fluid power principles, air compression, preparation, and distribution. This course also focuses on construction, operation, and specific use of pneumatic components, such as compressors, air motors, flow controls, directional valves, actuators, aftercoolers, and dryers. Includes hands-on exercises.

Course Outline - Three (3) Days:

Safety Guidelines

- Personal protective equipment (PPE)
- Pressure Vessels
- Hoses and Fittings
- Lockout/Tagout

Theory and Principles

- Advantages of pneumatic systems
- Producing linear and rotary motion
- Principles and properties
- Gas laws
- Definitions and units of measurement

Symbols and Intro to Circuits

Air Production

- Compressor types and functions
- Unloading methods

Air Preparation/Treatment

- Pressure regulators
- Dryers
- Filtration
- Lubrication
- Filter/Regulator/Lubricator (FRL) Combinations

Prerequisites:

- None

LEARNING OBJECTIVES:

- Recognize compressed air safety practices
- List the advantages and disadvantages of pneumatic systems
- Explain the relationship between gauge and absolute pressures
- Identify schematic symbols and be able to read a basic circuit
- Explain the fundamental construction and operation of compressors
- Explain the effect of contaminants in compressed air systems
- Demonstrate where to locate filters
- Explain how pneumatic filters are rated
- Discuss the purpose of a pressure regulator
- Illustrate how an air lubricator works
- Recognize the need to monitor compressor oil level and condition
- Distinguish between venting and non-venting regulators
- Describe the fundamental construction and operation of cylinders
- Explain how to replace seals and packing in cylinders
- Identify symptoms of leaking seals in air cylinders
- Explain the fundamental construction and operation of directional and flow control valves