

Pneumatic Specialist Certification

FOR MOBILE AND INDUSTRIAL MARKETS



What You Need to Know

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Pneumatic Specialist (PS) Certification defines professional standards for those designing systems and writing specifications, including sizing and selecting pneumatic components for mobile and industrial operating machinery. They provide pneumatic systems with schematics using standard fluid power symbols. Systems are designed to fluid power essential practices supported by the National and International Standards.

In-depth knowledge in the following areas is necessary to be successful in obtaining an PS Certification.

Understand The Functions Of Pneumatic Components In Circuits.

- Recognize pneumatic symbols
- Understand component functions in a pneumatic circuit
- Understand basic types and applications of actuators
- Understand the application of valves
- Understand speed control valves.
- Understand the characteristics of pressure regulators
- Identify the characteristics of air filter elements
- Understand the types and applications of compressors
- Understand supply side air preparation
- Predicts the operation of a pneumatic system
- Understand the dynamics of safely stopping and/or holding a load.
- Understand controlling noise and pollution
- Understand the application of connectors and conductors
- Understand the operation of a pneumatic system by tracing a malfunction to a faulty component

Analyze Loads and Motion

- Select the proper formulae to calculate force, torque and speed

- Apply the principle of levers to cylinders
- Size a cylinder to move loads with a friction factor (Coefficient of Friction).
- Size a cylinder to support jib boom loads
- Size a cylinder with the appropriate load/force ratio
- Size a cylinder for a load attached through a system of pulleys.

Select Components For Pneumatic Systems

- Size an air compressor based on demand considerations
- Calculate the cost of compressed air.
- Determine the location of various components in a circuit to achieve cylinder sequence functions
- Determine the locations for various components in a circuit to achieve a deceleration function
- Determine conductor sizes given pressure, flow demand, and line length
- Determine the appropriate solution to control air cylinder speed.
- Size air receivers.
- Understand safety considerations in the design of a pneumatic circuit.

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WHAT YOU NEED TO KNOW

- Select the appropriate vacuum generators.
- Size and select vacuum pads.
- Size an air motor
- Understand moisture control.
- Understand the application of cylinders
- Calculate the average air flow for a cylinder.
- Calculate peak flow.
- Calculate the oil flow rate and pressure from a pneumatic intensifier.
- Size a rotary actuator.
- Calculate the kinetic energy required to stop a load with a shock absorber
- Understanding critical flow velocity and sonic conductance.
- Calculate the Cv for an air valve from pressure, flow and temperature conditions.

Electropneumatic Control

- Understand Ohm's Law
- Understand and apply sensors and switches.
- Familiarization with ladder logic diagrams
- Analyze air logic control circuits for an output signal.
- Familiarization with digital communication technology
- Understand the principles of CAN-Bus
- Demonstrate an awareness of communication protocols utilized for electropneumatic automation systems.



The International Fluid Power Society (IFPS) believes that implementation of safe procedures is paramount in all fluid power systems, the electrical and electronic controls that guide them, and all associated technologies. The IFPS recommends that, in every circumstance, factory, piece of mobile equipment, or application

of any fluid power product or its controls, every employee and employer is responsible to know, understand, and practice the safety policies and procedures already in place. Consult manufacturer's safety specifications for each machine. Take the responsibility to improve the safety standards whenever an opportunity presents itself. No one knows the equipment better than the people who work with it daily – they are the most important ones to improve that equipment's safety.

Warning: Never operate any machinery unless you have read and understood the instructions in the operator's guide. Improper machinery operation is dangerous and could cause injury or death.

