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What is pneumatics?

September 26, 2012 By [Paul Heney](#)

Pneumatics is the technology of compressed air, but in some circles, it is more fashionable to refer to it as a type of automation control. Pressurized gas—generally air that may be either of the dry or lubricated type—is used to actuate an end effector and do work. End effectors can range from the common cylinder to more application-specific devices such as grippers or air springs. Vacuum systems, also in the pneumatic realm, use vacuum generators and cups to handle delicate operations, such as lifting and moving large sheets of glass or delicate objects such as eggs.

Engineers commonly use pneumatics in industries that include medical, packaging, material handling, entertainment and even robotics. And pneumatics can be useful in very specific applications where hazards are critical—for example, in a mine, where a stray spark could mean disaster and lost lives.

By its nature, air is easily compressible, and so pneumatic systems tend to absorb excessive shock, a feature useful in some applications. Most pneumatic systems operate at a pressure of about 100 psi, a small fraction of the 3,000 to 5000 psi that some hydraulic systems see. As such, pneumatics is generally used when much smaller loads are involved.

A pneumatic system generally uses an air compressor to reduce the volume of the air, thereby increasing the pressure of the gas. The pressurized gas travels through pneumatic hoses and is controlled by valves on the way to the actuator. The air supply itself must be filtered and monitored constantly in order to keep the system operating efficiently and the various components working properly. This also helps to ensure long system life.

In recent years, the control available within pneumatic systems (thanks to advanced electronics and componentry) has increased a great deal. Where once pneumatic systems could not compete with many comparable electronic automation systems, the technology today is seeing a renaissance of sorts.

More and more, pneumatics is being used in interesting ways that would have been unthinkable a decade or two ago. Creative applications from robotics to pneumatic muscles are consistently making the news, showing not only the creativity of the engineering community, but also the inherent flexibility and adaptability of this important technology.

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1- Match the word with its definition

a-End effector

b-hose

c- vacuum system

-It consists of vacuum pumps and tanks mounted on a skid or truck

- It is a peripheral device that attaches to a robot's wrist, allowing the robot to interact with its task

- It is a flexible tube for carrying a liquid, such as water, to a desired point

2- Is it true or false? Pneumatics cannot be used in a mine.

3- Is it true or false? Pneumatic systems don't absorb excessive shock

4- What is the acronym for pounds per square inch?

5- What is a synonym for "thereby" in the following sentence?

A pneumatic system generally uses an air compressor to reduce the volume of the air, **thereby** increasing the pressure of the gas.

a. as a result

b.in addition

c. however

6- How does a pneumatic system work?

7- An antonym for 'thinkable' in the following sentence is:

More and more, pneumatics is being used in interesting ways that would have been unthinkable a decade or two ago.

KEY

1:

a-End effector - It is a peripheral device that attaches to a robot's wrist, allowing the robot to interact with its task

b-hose-- It is a flexible tube for carrying a liquid, such as water, to a desired point.

c- vacuum system- It consists of vacuum pumps and tanks mounted on a skid or truck

2- F

3-F

4-PSI

5- AS A RESULT

6 - A pneumatic system generally uses an air compressor to reduce the volume of the air, thereby increasing the pressure of the gas. The pressurized gas travels through pneumatic hoses and is controlled by valves on the way to the actuator. The air supply itself must be filtered and monitored constantly in order to keep the system operating efficiently and the various components working properly. This also helps to ensure long system life.

8- unthinkable