

A Brief Note on Acuator

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EDITORIAL NOTE

The actuator is the motor responsible for controlling or moving the system or mechanism. An actuator is a device that uses some form of energy to convert control signals into mechanical motion. From electric door locks on cars to spoilers on planes, actuators are everywhere. Industrial plants use actuators to operate valves, dampers, fluid couplings, and other equipment used to control industrial processes. Industrial actuators can use air, hydraulic fluid, or electricity for energy. These are called pneumatic, electro-hydraulic or electric actuators. An actuator is a part of a device or machine that helps you achieve physical movement by converting energy usually electric, pneumatic or hydraulic into mechanical force. In short, it is an integral part of any machine that allows movement. Actuators are usually used as a means of introducing motion in engineering. However, they can also be clipped to an option to prevent movement. Actuators can be used in many different applications. The three types of actuators commonly used are: pneumatic actuators, hydraulic actuators, and electric actuators.

Pneumatic actuators can be designed using cylinders, diaphragms or rotating blades. Compressed air acts on the piston or vane to move it in one direction. A reaction force consisting of a spring or a second volume of compressed air is applied to the other side of the piston or vane to reverse or maintain the position. For industrial control, pneumatic actuators require positioning electronics and instrument air

systems. Of the three types of actuators, the starting price of tires tends to be the lowest. However, due to the need to generate clean, dry compressed air, operating costs are high. The maintenance requirements are also the highest among the three actuators.

The electro-hydraulic actuator uses pressurized oil to operate the piston. The electric pump delivers fluid from the reservoir to both sides of the cylinder through the control valve. The high power density of the system allows high thrust and fast operating speeds. Electrohydraulic often has a higher starting price. Routine maintenance includes regular replacement of seals and sealing rings. Since the oil used in hydraulic equipment can cause fires, this type of actuator may not be suitable for certain industrial environments.

Electric actuators use electric motors and reduction gears to generate force or torque. A variety of techniques can be used to design electric actuators. The motor can use AC or DC power, and asynchronous squirrel cage or synchronous design. The gear system can include worms, spur gears, and Scotch yokes. Gear lubrication can include a gear box filled with heavy-duty oil or grease, which is coated on the surface of the gear. Various accessories can usually be used to monitor and report the status and operating conditions of the actuator. There are many types of electric actuators on the market, with different technologies, prices, performance and quality.

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