Growth prospects for I/P transducers
Their prospects in the process, HVAC and discrete industries

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What do I/P transducers in the process; heating, ventilation and air conditioning; and discrete industries have in common? They take a current (I) input signal and convert it to a pressure signal (P). I/P transducers are vitally important to running certain products that control on the basis of pressure. These include paint sprayers, air brakes, actuators in control valves and vents controlling air circulation in a room.

Process industries

In the process industries, the I/P transducer takes a current input, usually in the form of a 4-20 mA signal, and converts it to a pressure output, usually in the form of a 3-15 psi signal. The milliamp signal sent into an I/P transducer typically comes from a controller or distributed control system (DCS) that seeks to keep some process variable at a setpoint value. The I/P transducer output typically goes to an actuator controlling a valve, which moves the measured variable closer to the setpoint.
In many cases, companies use positioners to provide feedback about a valve's position. In some cases, the positioners are an integral part of the valve; some positioners integrate the I/P function into the positioner's mechanism. When the I/P function is integrated into a positioner, it is known as an electro-pneumatic positioner, or a smart (digital) positioner.

There are four possible situations for end-users of I/P transducers:

- I/P transducers used with no positioner. The signal from the I/P transducer goes to an actuator, which controls a valve.
- I/P transducer with a pneumatic positioner. A pneumatic positioner provides feedback about the valve position, but there is still a need for a standalone I/P transducer.
- An electro-pneumatic positioner. Here, the I/P function is integrated into a positioner. It converts a 4-20 mA signal from a controller into a pressure signal to a valve actuator, usually 3-15 psi. As a result, there is no need for a standalone I/P transducer.
- A smart (digital) positioner. In this case, the I/P function is integrated into the positioner. The input to the positioner is in the form of a HART or Fieldbus signal. The positioner output goes to an actuator, which controls the valve.

The most significant factor affecting the standalone I/P transducer is the market shift towards the use of smart positioners.Following are the advantages:

- They reduce the number of instruments by integrating the I/P transducer function into the positioner.
- They speak the language of HART or Fieldbus, and so they can be more easily integrated into newer smart field devices.
- They enable end-users to obtain diagnostic information about valves that would not otherwise be available. This may make it possible to determine in advance when a valve will fail.
- They provide a valve "signature," which furnishes additional diagnostic information.
- They are programmable remotely.

- Despite the market shift toward smart positioners, the following factors favor the continued use of I/P transducers within the process industries:

- Continued growth in the valve market. Many valves are still controlled pneumatically. As valve purchases continue to grow, the need for either standalone I/P transducers or positioners that incorporate I/P functionality will continue to expand.

- Growth in valve shipments are driven by growth in the chemical, refining, power and other process industries that support the expanding economies in the United States and Canada. As long as these economies continue to expand, these industries will continue to purchase valves and I/P transducers. Even during an economic slowdown, companies purchase valves and I/P transducers for replacement purposes and for plant upgrades.

- Process control companies are slow to make technology changes, and they often replace like with like. For this reason, end-users often order an I/P transducer for replacement purposes, even if another technology is available.

HVAC/energy management

Heating, ventilating and air conditioning (HVAC) and energy management are two industries that use I/P transducers to control the flow of air, heat and steam in building automation applications. The I/P transducers are used for modulating a process, rather than simply using an on/off or open/close control scheme. In air conditioning, I/P transducers might control a damper and louver, or be used to control the vent opening in a room.

The HVAC/energy management industries expect to show slow but steady expansion, along with increasing population and expanding economies over the next several years. There is no parallel to the smart positioner in the HVAC/energy management area that would take market share away from I/P transducers.

Discrete manufacturing

Three main discrete manufacturing industries that use I/P transducers are:

- Pulp and paper.

- Automotive.

- Semiconductor.

In the paper industry, I/P transducers are used for web tensioning—maintaining a certain tension level on the material being processed. The process of taking paper off a roll, processing it and rolling it up at the other end is called converting. In these applications, the I/P transducer may control air brakes. Other brake types used include magnetic partial and electric friction.

In the automotive industry, I/P transducers are used for a variety of applications, including paint sprayers and welding control. I/P transducers are also used in the semiconductor industry. They have some use in the medical industry as well.

In the discrete manufacturing area, I/P transducers are sometimes called regulators, but they still convert an electrical signal to a pressure output. Instead of valves, I/P transducers sometimes are used to control cylinders.

There is no parallel product to the smart positioner in the discrete manufacturing area that would take market share away from I/P transducers. In some cases, companies install feedback systems directly on cylinders to provide information about their position. But, this does not reduce the need for I/P transducers, since the I/P function is not integrated into the cylinder.