

The total size of the worldwide pressure transmitter market is about one-third the size of the worldwide flowmeter market. At more than \$1 billion, the pressure transmitter market is about twice the size of the largest flowmeter category in terms of revenues. But annual sales do not tell the whole story. The size of the installed base is a major reason why the pressure transmitter market will continue to hold its own within the instrumentation world.

Pressure transmitters have been around for more than 100 years, and this has resulted in a very large installed base for pressure within the process industries. Because of the tendency to "replace like with like," many end-users can be counted on to continue to rely on pressure transmitters to make differential pressure (DP) flow measurements. This means they will continue to order new pressure transmitters to replace DP flowmeters even where alternative technologies are available. And in the case of gauge and absolute pressure transmitters, which form a large part of the total market, there is no alternative technology available as there is in the case of DP flow. Pressure is a highly critical measurement, and end-users have a continuing need to make this measurement. While there are a variety of level technologies available, end-users will also continue to select pressure transmitters to make level measurements as well.

Rapid Growth in China

While little new plant construction is occurring in the United States, new plants are being built in many other

countries, especially in China. To meet the demands of its very large and growing population, China has to invest heavily in plant construction. This includes chemical, pharmaceutical, power, water and wastewater treatment, food processing, and other process plants. These plants will require multiple measurements, including pressure, temperature, and flow, as well as control systems. While penetrating the Chinese market is not always easy, there is a great deal of growth potential here. Companies that have a broad instrumentation line, as well as the ability to deliver control systems, have a competitive advantage in China.

Plant construction is also occurring in many other regions of the world, including the Middle East, Africa, and Latin America. While some new plants are being built in Europe and the United States, the pace of new construction in these regions has slowed over the past several years due to the economic downturn. Plant upgrades remain a source of pressure transmitter sales in these regions, while larger orders can be expected to come from developing nations. However, with an improving economy in the United States, Europe, and Japan, there comes hope for more pressure transmitter business in these regions as well.

Technology Upgrades

Upgrades of pressure gauges, switches, and transducers to pressure transmitters is another source of business for suppliers in this market. While users who perform these upgrades may not always choose the most advanced pres-

sure transmitters, some companies are performing these upgrades to get better reliability and to achieve automation within their plants. Pressure transmitters offer a more reliable measurement and signal and fit in better in an automated environment than do gauges, switches, and transducers. They also have the capability of doing historical tracking of data where this capability may not have existed before. While pressure transmitters have not typically been widely used outside the process industries, replacing less sophisticated instrumentation gives pressure transmitter suppliers the potential for expanding into non-process industries as well, such as automotive and semiconductor.

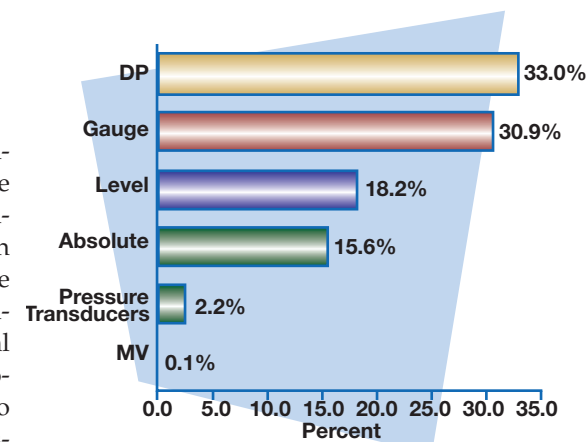
Advanced Features

Over the past several years, pressure transmitter suppliers have released a number of new products with advanced features. These features promise higher accuracy, greater reliability, enhanced self-diagnostics, and more

advanced communication protocols. The promise of greater reliability is perhaps the strongest driving force behind the pressure transmitter market. While some products may have a higher initial purchase price, end-users cite a number of reasons for shifting to higher performing products. These include the need to conform to regulatory requirements, the need for reliability, a desire to stan-

dardize pressure products, and the need to do custody transfer.

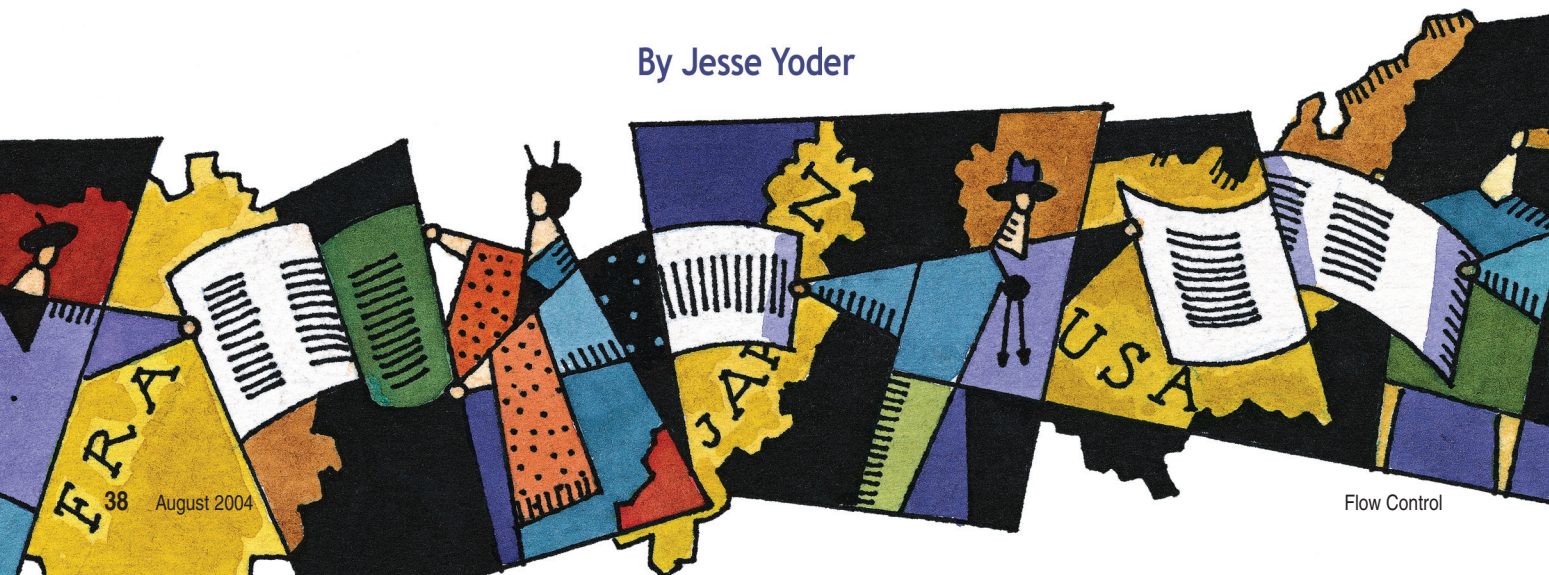
Some new transmitters also offer greater accuracy. End-users interviewed by Flow Research did not seem to feel the need for high accuracy as much as the need for reliability. However, higher accuracy provides a reason to shift to higher performance for those users who are motivated by regulations, a desire to standardize, or the need to do custody transfer. End-users seem to be willing to pay for higher performance, although this varies with application and features. Advanced communication protocols do not seem to be a major drawing card for end-users, however, some are contemplating an upgrade to HART.



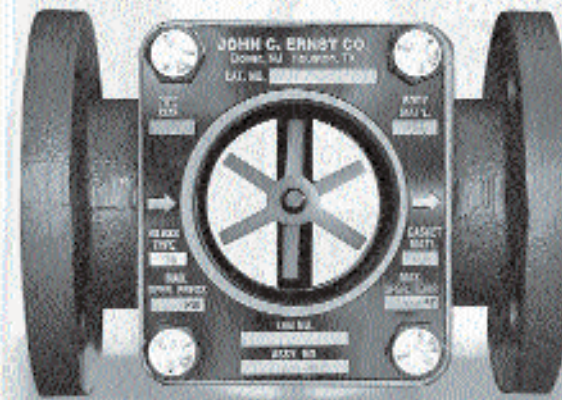
PRESSURE TRANSMITTER MARKET TRENDS

From Globalization to New Technology

By Jesse Yoder



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August 2004 39

Reliability Factor

While a number of factors are favorable to growth in the pressure transmitter market, other factors work against that growth. One such factor is the increased reliability of pressure transmitters. Pressure transmitter suppliers have made major strides in reliability, including stability, in the past few years. One of the key features of Emerson Rosemount's (www.rosemount.com) 3051S pressure transmitter is greater stability, along with higher accuracy. Honeywell (www.honeywell.com) is now selling pressure transmitters with a lifetime warranty. Other suppliers have also increased the reliability of their transmitters. While greater reliability is very positive for end-users, it also means that they will have to buy fewer pressure transmitters to replace those that fail. This will have a negative impact on total pressure transmitter sales over time.

Replacement Technology

DP transmitters are a traditional technology method of measuring flow. While this gives DP a major advantage in terms of installed base, it also has resulted in the replacing of DP transmitters with primary elements by new-technology flowmeters. New-technology flowmeters include Coriolis, ultrasonic, magnetic, vortex, multivariable DP, and

thermal. Of these technologies, Coriolis, ultrasonic, and magnetic flowmeters are having the greatest impact on the DP flowmeter market. End-users are selecting new-technology meters because of their higher accuracy and reliability. This trend will continue for the foreseeable future.

Displacement of DP transmitters by other flow technologies occurs mainly for DP transmitters, as opposed to gauge, absolute, and level transmitters. However, this replacement effect will also occur for gauge and absolute pressure transmitters, in cases where they are used in flow applications. Multivariable DP transmitters are also reducing the demand for single-variable pressure transmitters.

High-Tier Products

One of the most important developments in the past few years has been the introduction of high-tier pressure transmitters that offer enhanced stability and greater accuracy. While some end-users will select the same type of transmitter for replacement purposes, a Flow Research survey of pressure transmitter users also reveals that in some cases they will upgrade existing products. One reason cited is the need for end-users to conform to existing regulatory requirements. Some end-users stated that they prefer to exceed existing requirements. Regulatory agencies cited as possibly requiring upgrades include the FAA

(www.faa.gov) and the EPA (www.epa.gov).

End-users also cited the need for greater reliability as a reason to upgrade their pressure transmitters. Increased reliability seems to be a more important consideration — even greater than accuracy — in choosing upgrades. With a number of suppliers now offering transmitters that have greater reliability and higher accuracy, many end-users will consider these new products when choosing to replace existing transmitters. This will have a positive effect on the pressure transmitter market, especially on revenues.

End-users also cited custody transfer as a reason to shift to higher performance. When end-users are making a pressure measurement that involves custody transfer, they have more reason to order high performance products. The need to do custody transfer is a major driving force in the flowmeter market, and it is also a reason users are shifting to higher performance in pressure transmitters.

Multivariable Transmitters

Bristol Babcock (www.bristolbabcock.com) introduced the first multivariable pressure transmitters in 1992. Since that time, other companies have followed suit, including Honeywell, Emerson Rosemount, Foxboro (www.foxboro.com), and ABB (www.abb.com). Multivariable transmitters measure more than one process variable in a single instrument. Typically, these transmitters measure pressure, differential pressure, and temperature. In some cases, they use these values to produce a mass flow measurement.

Multivariable transmitters can reduce the need to buy a separate flow computer to perform the flow calculation. In some cases, the multivariable transmitter measures one or two pressure values and temperature, then outputs these values to a flow computer that performs the flow calculation. In other cases, the computing power of the flow computer is brought on board the multivariable transmitter, which also performs the flow calculation. Emerson Rosemount has also introduced a multivariable transmitter that includes an integrated primary element, resulting in a full-fledged multivariable flowmeter. The trend towards multivariable transmitters can be expected to continue in the transmitter and flowmeter markets. These products typically sell for less than it would cost to buy the transmitters separately, with an average selling price in the range of \$2,000.

Pressure Transducers

In addition to the pressure transmitter market, there is also a very large market for pressure transducers. Transducers often have a voltage rather than a 4-20 mA or digital output, and they are lower in cost than pressure transmitters. They have traditionally been used outside the process industries, in industrial, automotive, HVAC, and other non-process markets. Pressure transmitters, by contrast, are mainly used in the process industries.

This appears to be changing. With pressure transmitters declining in cost, and advanced features being added even at the low end, expect pressure transmitters to be used more outside the process industries. Whether pressure

transducers will begin to penetrate the process industries, which often have enhanced safety requirements, remains to be seen. But the line between pressure transmitters and transducers blurs between low-end transmitters and high-end transducers. Some transducers have a 4-20 mA output, and some transmitters have a voltage output.

Even though the pressure transmitter market remains a market under pressure, the combination of large installed base and changing end-user needs means that this market will hold its own over the next several years. And as suppliers continue to innovate, end-users seem ready and willing to adopt the new and innovative products, especially ones that offer enhanced reliability and stability. **FC**

Jesse Yoder, Ph.D., is a regular contributor to *Flow Control*. The president of Flow Research Inc., Dr. Yoder has been a leading analyst in the process control industry since 1986. He has written over 60 market studies on industrial automation and process control and has published numerous journal articles. Dr. Yoder's latest study, *The World Market for Gas Flow Measurement*, covers eight of the most prominent flowmeter types in the gas measurement field. Dr. Yoder can be reached at jesse@flowresearch.com or 781 245-3200.



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