This article first appeared in the August 2016 issue of Industrial Automation Asia (www.iaasiaonline.com)

ARTICLE TAG Wireless, Pressure Gauge, Process

WIRELESS PRESSURE GAUGES

IAA INTERVIEWED BILL ZHOU, MARKETING DIRECTOR, ROSEMOUNT ASIA PACIFIC, EMERSON, ON THE COMPANY'S WIRELESS PRESSURE GAUGE SOLUTION. BY ***MARK JOHNSTON***

Being able to read gauge values without having to step foot in the plant environment really helps plants to reduce the safety risks to their personnel. This is possible with the wireless pressure gauge.

IAA: Late last year, Emerson introduced the world's first WirelessHART pressure gauge. What are the implications of such a development?

Bill Zhou (BZ): One of the pain points from our customers who operate refinery or chemical processing plants is the unreliability of the traditional mechanical pressure gauge. Mechanical gauges often have a much shorter lifespan compared to a pressure transmitter and could be a safety risk in high pressure applications. This leads to higher costs associated with frequent replacement of gauges or procuring more durable gauges that can withstand harsher environments.

At the root of the problem is the traditional Bourdon tube technology that is prevalent in all mechanical gauges. The company's design of the Rosemount Wireless Pressure Gauge aims at improving reliability and safety issues by eliminating the Bourdon tube and replacing it with our proven solid state pressure sensor. The solid-state pressure sensor is based on the piezoresistive measuring principle and has been employed successfully in pressure transmitters for many decades. As a result of this robust sensor design, the Rosemount Wireless Pressure Gauge is able to handle high vibration environments of up to 3G and withstand up to 11,000 psi of burst pressure.

Another challenge that our customers are facing is that the safety of plant personnel may be at risk due to manual rounds which are needed to read and record gauge values. Since the wireless pressure gauge provides an output based on the IEC 62591 standard (WirelessHART), pressure readings, ambient temperature, and even device health status can be sent back to the operating room via wireless.

Being able to read gauge values without having to step foot in the plant environment really helps plants to reduce the safety risks to their personnel.

IAA: What are some of the challenges associated with pressure gauge development and where do you see the technology of pressure gauge measurement, especially wireless going in the future?

BZ: Plants that adopt this technology will benefit from having a much more reliable gauge measurement while also being able to wirelessly collect data from the field. In the future, we believe that wireless

technology for field devices will become more ubiquitous as plants apply strategies to improve plant performance through more actionable information.

IAA: What were the trade-offs in developing a wireless pressure gauge?

BZ: The main trade-off in developing this wireless pressure gauge is the battery life versus update rate. The Rosemount Wireless Pressure Gauge has a battery life of 10 years at an update rate of once per minute.

IAA: Does the wireless pressure gauge make possible new applications or use cases that perhaps were not possible previously or difficult to execute?

BZ: The new wireless pressure gauge opens up the opportunity for more wide spread plant pressure information. Just as in many parts of the industry, more knowledge of the facility allows operators to be able to make better business decisions. The new wireless pressure gauge makes it possible to now gather the data of gauges more reliably and dependably than traditional operator rounds by automating the reporting. Now while on rounds personnel can focus on identifying any problems, knowing that the data reporting will be done in a trusted way.

Also another application that the wireless pressure gauge opens up is ensuring that operators are getting the correct pressure information from the pressure gauge. Traditionally, Bourdon tube gauges can fail by having the gearing mechanism break and thus the needle may be left indicating the incorrect pressure. Operators today often will go and tap the gauge to see that the needle bounces back to the same value to try to make sure the gauge is reading a correct value. However, this could be problematic. With the new wireless pressure gauge, the built in status indication blinks notifying you of proper operation as well as if maintenance is required.

IAA: Who are you targeting primarily with the wireless pressure gauge?

BZ: Mechanical pressure gauges are everywhere. However, we have found that the more challenging cases have been gauges installed in processing plants that have pulsations in the process. We are primarily targeting plant operators and maintenance professionals who want to gather more information, replace gauges that often fail, and reduce the amount of potential safety incidents related to manual round.