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Real-time Instrumentation – Smart to Intelligent

Demand for improved performance, easier maintenance, and minimised downtime has driven the evolution of process automation from simple pneumatics to sophisticated smart instrumentation. The increasing complexity of processes and the advancement of new technologies has seen the further development of smarter, more intelligent real-time instrumentation.

A smart instrument is that which is used to measure a single process variable, such as pressure, temperature, level, or flow, of an application. While it is generally a commercial or “off the shelf” instrument with generic fixed firmware by the manufacturer, it offers flexibility as its parameters can be set by users.

Leading the charge for improvements in smart instrumentation is the demand for high-quality, accurate, and instantly assessable data. A data-centric approach to process automation not only influences how data is obtained at an instrument level but also how an entire system behaves and interacts.

With data key to optimisation, more efficient and easier means of accessing data results in a greater understanding of current operations and as such aid with better-informed decision-making. Greater accessibility to information can lead to faster fault-finding and troubleshooting strategies, maximising uptime, and improving an operation’s bottom line.

A drawback of instrument technology has been the inability to effectively process data at volumes that don’t make it readily available. Innovative technologies using Artificial Intelligence (AI) have paved the way for a solution. Manufacturers are now making intelligent instruments and sensors with the flexibility to push data to asset management systems, distributed control systems (DCS), and cloud platforms.

In addition, algorithms created through AI, are deciphering data at larger volumes and at increasingly fast rates. This provides greater understanding and enables better decisions with the aim of increasing productivity. Scaling and diagnostics are now within reach for many operations. With information being valuable, smart instruments are increasingly vital in collecting data.

With any period of growth and innovation comes risks and concerns especially as complementary equipment and technology progress. For process automation and smart instruments, data infrastructure and security are a concern. As such, new ways of protecting data from outside attacks or corruption are becoming a priority with operations using external expertise.

Smart and Intelligent instruments while proving to be invaluable for data collection and transfer will continue to advance. In doing so, they will illustrate new ways of empowering decision-makers and consequently, optimising plant processes, minimising downtime, and improving profitability.

For more information on this topic, or how our sales team can support your intelligent instrumentation needs, contact us today! www.triplei.com.au/sales/

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