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2015 OUTLOOK

Motion Control Systems 2015 Innovation Outlook

Control systems underpin innovation in industries ranging from manufacturing to medical devices. Boston Engineering spotlights three trends shaping new motion control product development requirements in 2015 and beyond.

1) Are you Capitalizing on Sensorless Motor Control?

Many companies during the past few years have been hesitant to deploy sensorless motor control systems due to complexity and cost hurdles. However, continued technology advances and market drivers are making this technology pivotal to innovative product design.

Sensorless motor control uses motor voltage and current measurements to estimate unmeasured motor variables, such as rotor position, and eliminates the need for encoders or hall sensors.

Although this approach typically requires additional processing power, its advantages can be significant compared to sensored motors. Applications for sensorless motor control that we're seeing include:

- Providing high reliability for an aerospace application to withstand extreme environmental conditions
- Reducing cost and extending product life for medical devices subject to rigorous infection control measures including sterilization
- Reducing system size and power requirements for products and appliances

In light of enhanced capabilities and reduced barriers to adoption, sensorless motor control may be a required capability for many OEMs in the future.

2) Are you Prepared for Higher Motor Efficiency Standards in 2016?

Electricity is the fastest-growing type of energy delivered worldwide, and the U.S. Energy Information Administration (EIA) projects that it will continue to outpace other forms of energy production through 2040.

The biggest user category may surprise you. According to the International Energy Agency (IEA), electric motors and the systems they drive account for more than 40% of global electricity consumption.

In response, the U.S. Department of Energy (DOE) announced higher efficiency standards for electric-powered motors that will take effect mid-year 2016. The new electric motor standards have a broader scope than previous regulatory changes and will likely impact more manufacturers than previous mandates.

Companies that take a big-picture approach have an opportunity to fulfill DOE mandates and to solve additional business needs by considering the following:

- **Focus on the entire motor system**: The U.S. DOE estimates nearly three-quarters of total potential motor system energy savings are related to control and performance

operations such as motor control speed and system load management.

- **Build in new features**: In many cases, the benefits of adding new capabilities during a mandated product update significantly outweigh short-term costs. Incremental enhancements can also provide additional value to clients and differentiate products further.

Given the expanding life of many motors, product investments today can pay long-term dividends in the future.

3) Are You Enhancing Your Control Systems with Industrial Internet Capabilities?

Machine-to-machine (M2M) and Internet of Things (IoT) technologies create a competitive environment that requires companies to develop products that succeed as standalone offerings and are also indispensable in your clients' broader networked ecosystem. Products that fail to succeed on both fronts are vulnerable to being replaced.

Advances in technology are enabling companies to deliver greater value to their clients while increasing product margins. Some industrial OEMs are adding real-time monitoring capabilities to their products, which enable field service to monitor and manage products proactively, and reduce unscheduled downtime.

Alternatively, OEMs can also use IoT to develop a subscription-based service that streams product performance to clients who want to manage their systems internally.

Industrial companies are yielding dividends from their IoT investments. MMG Mining reports that instrumenting every asset in its mine to optimize performance increased the company's bottom line by $1 billion.

As companies develop and advance their IoT strategies, it is important to consider how products that once stood alone can add value in their clients' connected Industrial Internet.

About Boston Engineering

Boston Engineering improves the way that people work and live through product innovation and novel engineering. We manage the entire product development process — from ideation to supply chain development. Certified for ISO 9001 and ISO 13485, our industry expertise includes consumer products, defense & security, medical devices, robotics, and industrial & commercial products. We are also the Northeast's largest PTC software reseller.

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