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Sysmac NJ Controller monitors production line in real time: Omron & Honda open up a new world of diagnostic possibilities

March 17, 2014

The groundbreaking capabilities of the new Omron Sysmac NJ controller—strategically built and optimized to run on the ultra-fast EtherCAT communications protocol—are quickly making it a game changer for manufacturing operations of all kinds.

Recently, a Honda executive worked with Omron on a revolutionary concept to expand the NJ's capabilities even further—an effort he believes will thoroughly transform the way manufacturers perform predictive/preventive maintenance.

"When the Omron team first showed me their new NJ technology, I was very impressed with its capabilities and potential," explained Hugo Beltran, Associate Chief Engineer of Honda North America Services. "In fact, I don't think anyone has yet scratched the surface of all that it can do."

Seeing the processing speed and real-time communications capabilities of the system, Beltran wondered if it could be put to work to help him with one of his key operational challenges: predicting and preventing the component failures that can cause costly, unplanned downtime.

"Currently, we work to reduce the threat of failures on the line by monitoring variables such as torque and velocity manually, taking a periodic snapshot, usually on a monthly basis," he explained. "It's helpful, but it doesn't do much to tell me what's going on the other 29 days."

Since changes in these variables and/or the relationships between them could point to an imminent and expensive failure in a critical component, he wondered, could the Omron Sysmac NJ system help Honda monitor these and similar operational variables accurately, continually, and in *real time*?

This would help Honda predict when a part might fail so they could replace it preventively under controlled conditions during regular maintenance rather than waiting for a catastrophic failure. In addition, it would also help them more quickly diagnose the source of a failure when it did occur, so that repairs could be implemented even faster.



Improving these vital metrics—Mean Time Between Failures (MTBF) and Mean Time to Repair (MTTR)—would go a long way toward helping Honda reduce costly downtime.

Omron—a worldwide strategic partner of Honda North America Services for more than 30 years—responded quickly to the challenge. The Omron team successfully programmed customized advanced diagnostic capabilities into Honda's Sysmac NJ system, including real-time monitoring of variables including speed, torque, vibration, motor temperature, fan speed, and capacitor conditions on the servo drives to monitor end of life (EOL) status.

"This type of real-time operational information used to be hidden and unobtainable; the power of the Sysmac system allows it to be brought to light and put to effective use to help operators reduce downtime and increase productivity on the line," explained Omron Field Sales Manager Michael Sayre, Beltran's main contact on the effort.

Sayre noted that users can set high and low limits, and program warning alarms—or even automatically stop the line entirely—if and when a variable or variable ratio reaches a pre-selected point. In addition, he said, Omron took the opportunity to add step-by-step repair procedures to the Honda system, making these instructions easily viewable on-screen.

"This was done to help Honda reduce their MTTR even further. Their employees don't have to go scrambling for the manual anymore when there's a repair issue—everything they need is right on the HMI, helping them get up and running faster," Sayre said.

After proving out the technology on a test basis, Beltran is looking forward to applying it to a new, advanced Honda engine line in the coming months.

"Omron has long been an important strategic partner for us," said Beltran. "As far as I can tell, no other automation supplier can deliver anywhere near the results and level of capability that we have experienced. I think the Sysmac NJ will thoroughly transform the way industry performs predictive maintenance."

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