

Published April, 2004

The Clock's Ticking

Manufacturers improve performance with real-time information To improve performance, first identify the right combination of measurements, then couple those to the business financial metrics, and finally put that information in front of every employee - in real time.

Jane Gerold, Editorial Director

Error-free production

The need for 100 percent accuracy and 100 percent quality convinced Dana Corp. to implement a real-time information management system. Dana's Commercial Vehicle Systems Group plant in Humboldt, Tenn., manufactures steer axles and drive axles for heavy commercial vehicles such as semis and trucks. Plant Manager Bill Mossing discusses how real-time management software from I/Gear, in Louisville, Ky., drives quality throughout assembly.

"We assemble steer axles in both just-in-time and just-in-sequence order, according to the way an original equipment truck manufacturer would build its vehicles," says Mossing. "For example, a truck manufacturer sends us an electronic Sequence Build Schedule a few days before the order is to be assembled. We pull this information into our Assembly Fail Safe (AFS) system, which is based on I/Gear manufacturing management software, and assemble the gear systems in the exact same order that the trucks will roll down the assembly line at the truck plant."

What this means is that every other steer axle could be a different part number, with different requirements, depending on what truck is being built. The AFS system gives Dana the ability to assemble in sequence, without errors, in a "build-to-order" unit lot size of one.

Oracle Manufacturing Resource Planning (MRP) software downloads the schedule and parts bill of material to the I/Gear system, which directs traffic and ensures that the operators are assembling the correct parts to the steer axles. I/Gear acts as the data transport utility to manage transactions using common data links, such as OPC and Oracle native.

On any given day, the Dana plant produces more than 500 steer axles representing hundreds of different part numbers. Each steer axle contains up to 20 different major components. As the axle moves to an assembly station on the line, it is locked in place, and parts information is read from a bar code label. Parts data is displayed on a thin-client computer monitor located at each station, which prompts the operator to select the appropriate parts and assemble them to the axle. In order to unlock the assembly from the station, the operator must scan the barcode numbers for the selected parts to ensure that the axle is assembled correctly.

“One of the nice features of the system is that it captures cycle times and production numbers for the assembly lines. It also provides exception reports with the capability to send a real-time e-mail notification for corrective action,” says Mossing.

In addition to ensuring quality, the I/Gear system adds value by providing an audit trail and error-proofing solution, according to Joe Brangers, technical leader at Dana’s system integrator, Advanced Production Systems (APS), based in Louisville, Ky. Brangers says APS is working with several other Dana plants to incorporate a new system—called the GearBox—that combines I/Gear DTU software with hardware from Wago GmbH, a German manufacturer of controllers and input/output (I/O) solutions.

GearBox uses the Wago Programmable Fieldbus Controller to collect and buffer data between the plant-floor PLCs and enterprise business software. Brangers says the advantages of GearBox are twofold: it is optimized for fast deployment, and it helps lower costs. “With GearBox, we can solve plant-floor problems very quickly, and we have reduced our development and deployment time by 20 percent to 25 percent.”

For manufacturers ready to improve performance by integrating real-time production data into their business systems, ARC’s Hill has this advice. First, develop a consensus on the KPIs and targets that are unique to your business objectives. Second, measure them, using the appropriate infrastructure and real-time data. And finally, distribute this information to all decision-makers in the enterprise, from the operators, who have their hands on the controls, to the top-level executives.

Advanced Production Systems, Inc.
www.teamaps.com

ARC Advisory Group, Inc.
www.arcweb.com

Dana Corp.
www.dana.com

I/Gear, Inc.
www.igearonline.com

Microsoft Corp.
www.microsoft.com

Oracle Corp.
www.oracle.com

WAGO Corp.
www.wago.com