

Magna Automotive

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Nigel King
Senior Software Consultant
SDI Group

Logistics Boosted at Magna Automotive

Goals

- Magna Automotive was required to increase the number of panel variations to handle the requirements for both the outgoing and new vehicles, which meant an increase in the number of variances of around 17%.

Challenges

- The project had to be completed in a very short time frame.
- The plant could not be shutdown and production had to be maintained while the expansion was being undertaken.
- The new system had to show improvement in quality, throughput and space utilization.

Solutions and Products

- Wonderware InTouch HMI
- Wonderware System Platform

Results

- New personnel can operate the plant with very little training.
- On time delivery.
- Productivity for the existing workforce increased equivalent to a head count redeployment of 8%.
- The Automation and Control System was enhanced by improving stock control, production planning, and inspection of stock produced, as well as adding advanced, automated reporting capabilities.



Burton-on-Trent, United Kingdom – Magna Automotive is a major supplier of components to the automobile industry. Faced with increasing demand and the need to improve plant efficiency and product quality, the company decided to revamp their manufacturing facility in Burton-on-Trent.

This was a major task that had to be undertaken without any production interruptions. Magna Automotive selected the Wonderware System Platform because its capabilities provided the ideal solution to address the short project completion schedule and in-project continuous improvements.

The Magna Automotive facility is a part of the company's Interiors Division, supplying injection moulded internal door panels to a nearby car manufacturer. It provides parts for two different vehicle models, working on a just-in-time inventory strategy with a four-hour notice period for incoming orders.

The Situation - Increasing Capacity With Minimal Cost

The plant manufactures door panels for two vehicle models but there are a number of different variations because of different interior options that are offered to the consumer.

A planned model change scheduled for the first half of 2008 caused Magna Automotive to increase the number of panel variations to handle the requirements for both the outgoing and new vehicles. This meant a 17% increase in the number of variances.

As a result, additional space was needed at the Burton-on-Trent facility to accommodate the extra production equipment and Magna Automotive wanted to identify the most cost-effective solution that met production needs.

Seeking a Solution

SDI Group UK was invited by Magna Automotive to design the automated system for the storage and retrieval of the injection moulded interior car door panels manufactured at the production site. A turn-key solution was required to optimize the existing facility, thereby freeing up valuable space for new equipment, while avoiding any disruption to the ongoing operation.

The project's scope also included enhancing workforce productivity; maximizing capacity for future business wins; and increasing operational visibility and control. The solution would have to take into consideration the unique needs of a just-in-time inventory strategy within the automotive sector, which demands particularly high levels of accuracy, faster completion time and increased product quality.

The Solution - An Improved Control System Powered by Wonderware

An essential aspect of the solution was a sophisticated Warehouse Control System (WCS) installed with a Wonderware software solution. The WCS has enhanced the overall control of the manufacturing plant and increased the ability to better manage the site.



Wonderware software provides overall control at each stage of the production process from manufacture of parts, through to storage and then transfer to production areas and drop-off points. This comprehensive WCS not only had to control the automated storage and retrieval system, but also the entire life of each part from manufacture and production to the point of dispatch.

A key feature of the WCS is the easy to use touch screen operator interface using Wonderware InTouch HMI (Human Machine Interface). The operator screens were designed for ease of use and minimal operator input. This means that new operators can be introduced with very little training on the software required.

The software offers greater control over stock, operating an effective FIFO (first in first out) parts usage system, and also provides a complete audit trail for every part within the facility. The automated solution utilizes more than 3,500 sensor points, providing useful stock data and enabling the ability to monitor parts trolleys throughout the process. Data can be accessed and inputted via office-based computers or five touch screen monitors situated within the production facility.

Each operator station displays a live animated visualization of the control equipment with pan and zoom functionality. This provides detailed diagnostic information to engineers and operators right on the plant floor. Detail of stock holdings by part and by location with "drill down" comprehensive information is available to the plant personnel. The details and destination of all trolleys moving on the conveyor system are also displayed in real-time, as well as a history of the trolley's movement.

A remote Management PC also provides the same equipment visualization and stock information but with additional features for supervisors. These features include part definition creation/modification, part to storage lane allocation, user management, problem recovery and software application status display. The Wonderware Historian has enabled data to be stored and collated for reporting purposes, something that was previously processed manually.



The Core of the Solution - Wonderware System Platform

The Wonderware System Platform provides real-time automation supervision for the WCS.

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Wonderware System Platform was designed with real-world project experience in mind where objects can be designed and rigorously tested and deployed repeatedly in multiple instances across the application. The WCS uses Wonderware System Platform and six InTouch HMI nodes for visualization and supervisory control.

The system's natural connectivity takes care of communications to automation controllers (mainly Beckhoff PLCs) and external databases, while the Wonderware Historian provides history and trend information. When the production facility matures, it will provide detailed insight into operational performance and provide useful information for continual improvement programs.

"We needed confirmation of our decision making and approach with the new version of Wonderware System Platform. Wonderware United Kingdom support staff and consultants provided knowledgeable and helpful guidance in both the initial learning curve and during the project's execution," added King.

Return on Investment

SDI group delivered all of the requirements that were part of the project and this resulted in measurable business benefits that ensured early payback of the investment. The materials handling solution took just 10 months to be designed, installed and become fully operational. The project was completed within the required schedule with zero operational downtime. Increased productivity resulted by an increase in available workforce equivalent to a head count redeployment of 8%.

Implementation

Since the installation was completed within the required time frame, Magna Automotive was able to meet the delivery deadlines for new parts to its customer's car production lines. Zero downtime was achieved during the course of the design and build process, with no forced stoppages as a direct result of the project. This ensured that Magna Automotive was able to continue to serve its customer without disruption throughout the course of the installation.

Ongoing Benefit

Notwithstanding the 2009 economic situation, Magna Automotive now has a far more efficient production system which will provide business benefits long into the future. The utilization of the Wonderware System Platform will continue to provide measurable cost savings in operation and when inevitable changes to production occur.



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