

Streamlined Data Systems Accelerate Woodward's Digital Transformation



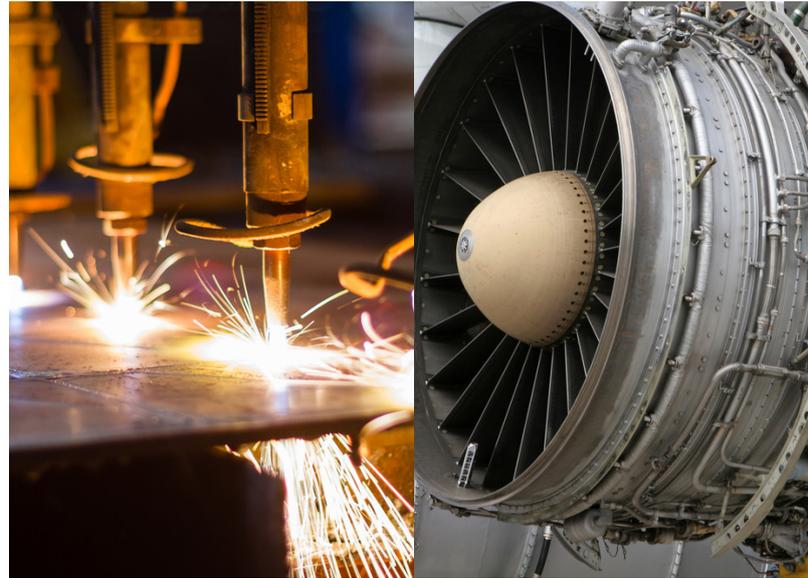
Woodward, Inc. is the world's oldest and largest independent designer, manufacturer, and service provider of control systems and control system components for the aerospace and industrial markets. Headquartered in Fort Collins, Colorado, with a global presence spanning the Americas, Europe, Asia and the Middle East, Woodward's systems and components optimize the performance of fixed wing and rotorcraft platforms in commercial, business and military aircraft, ground vehicles and other equipment. The company enhances global quality of life and sustainability using technology that optimizes energy use through improved efficiency and lower emissions.

The Challenge

The advent of the Industrial Internet of Things (IIoT) is creating new opportunities for manufacturers to improve processes and gather additional insights that were not previously available. Being able to remotely monitor every part of an industrial facility means being able to vastly improve operational efficiency and product quality. However, IIoT implementations are challenging for even the most resourceful of companies.

Like most manufacturers, Woodward had an abundance of operational machine data being aggregated from various systems such as Product Lifecycle Management (PLM), Enterprise Resource Planning (ERP) and Manufacturing Execution System (MES) but did not have the processes in place to make the insights actionable. Additionally, Woodward was looking for ways to improve employee performance, training and operations and wanted to provide workers with a set of user application screens that could execute work orders in a more streamlined fashion.

A frequent issue that Woodward faced was anytime a process error occurred and the PLM or ERP systems became out of sync, employees would have to spend valuable time working to resync databases across the organization, greatly impacting productivity.



In an effort to improve work and visual management in the operations environment, Woodward realized they needed to identify a solution that could not only automate manual tasks and data entry, but also present all manufacturing process data in one user interface. After the organization's experiences with MES offerings and understanding that these implementations can take multiple years and cost several million dollars, Woodward sought after a simpler and quicker solution for pooling and distributing data and a solution that could enable them to quickly train operators on new processes and easily shift resources around based on production needs. By investing in a single platform for design and planning, employees would be able to easily access work order and operational information, regardless of their department or location, and make sense of it in real-time to do their job more efficiently. A single platform approach also would facilitate greater flexibility in the workforce by making it easy for employees to shift from one type of production operation to another.

The Approach

Woodward turned to its existing partnerships and investments to bring modern technology to the factory without a complete digital disruption. They had already been leveraging Creo and Windchill PLM systems from PTC in their manufacturing facilities for years and concluded that building upon those fully-integrated solutions would be the most cost efficient and seamless next step.

Woodward had also previously utilized a MES system and had the resources and intelligence to implement this internally but realized that working with a trusted partner would be much more time and cost efficient. They decided to leverage PTC's ThingWorx Industrial Innovation Platform as a parallel layer to their existing environment. ThingWorx offers Industrial Connectivity powered by Kepware®, rapid application development capabilities, analytics, and support for on-premise or cloud deployments that make it simple to create a connected solution, deploy at scale, and realize the business value and impact rapidly.

The Solution

Leveraging the ThingWorx Industrial Innovation Platform as the technology layer, Woodward developed a Manufacturing Information System (MIS). MIS is a manufacturing solution that provides standard work and visual management in the operations environment. Woodward's MIS is completely integrated with their automated manufacturing equipment, such as National Instruments TestStand, torque wrenches, presses, laser markers, MWES/Manufacturing Operation Management (MOM) and Flexible Manufacturing System (FMS)/Makino, allowing for seamless communication between machines.

Woodward is also utilizing the MIS system for employee training and certification tracking to ensure all members are certified before allowing operations to be completed. Along those same lines, employees can now perform calibration tracking, which stops operations from being completed without calibrated tools. Additionally, the company can automate labor recording of standard times or actual times to ensure government compliance.

The automated data capabilities within the ThingWorx solution have given employees access to all information needed, including work instructions and inspection requirements, tailored to their unique business unit or geography. With increased visibility into all levels of the manufacturing process, Woodward employees can now make more informed business decisions based on the constant stream of information that's at their fingertips.



The ThingWorx platform has brought all our various systems together and makes the data from those actionable for our workers. Not only have we been able to improve the quality of our products, but we've drastically increased efficiency and productivity across all of our facilities as well."

Matt Cook
CIO, Woodward

As Woodward continues to benefit from the MIS system, they look to future projects with PTC and what other next generation technologies can do for their business. The company has begun investigating the impacts of augmented reality (AR) and have already begun to work with PTC to deploy pilot programs that will help empower workers, optimize manufacturing processes and improve accuracy and throughput. Woodward believes this technology will further reduce time to train employees on certain assembly and manufacturing processes.

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