Automotive Parts Supplier Launches IoT Initiative in Six-Week Sprints Powered by PTC IoT Manufacturing Solutions

The Customer

HIROTEC AMERICA is part of the HIROTEC Group Companies, a $1.6 billion corporation with over 60 years of mass production experience and engineering discipline. With 26 facilities in nine countries around the world, HIROTEC Group is globally recognized as a premier automation manufacturing equipment and parts supplier.

For over 50 years, top vehicle producers like General Motors and Mazda have used HIROTEC's proven, high-quality industrial manufacturing concepts and systems. The parts and tooling supplier designs and builds roughly 7 million doors and 1.5 million exhaust systems a year, making it one of the largest private production companies in today's global automotive market.

"HIROTEC is a leading tier-one component and tooling supplier for the Automotive Industry, giving us a very unique perspective on how both sides of the industry operate," said Justin Hester, Senior Researcher, HIROTEC. "We've used this insight to benefit both our business and our customers by designing and building a wide array of state-of-the-art solutions that are based on proven concepts. In our dedication to our customers' success, we pride ourselves on our ability to supply the highest-quality automotive equipment and services to customers around the world."

The Challenge

Operational downtime is a significant issue facing Original Equipment Manufacturers (OEMs). In most cases, the machinery involved runs without condition-based monitoring—essentially operating until a failure occurs. At that time, appropriate personnel are contacted to assess the situation and make the repairs as expeditiously as possible to prevent dramatically delaying production schedules. Outside factors like weather or traffic patterns might also add to possible downtime scenarios and lead to organizational inefficiencies and/or misallocation of resources.

HIROTEC sought to eliminate this trend of reactive maintenance and lost opportunities by utilizing the information and systems it had on hand to gain deeper insight into its operations and processes. The automotive supplier had long collected industrial data from sensors and machines across customer production facilities and its own systems to support its decisions and track business progress. However, volumes of this data were manually separated and stored across multiple sources—making it inaccessible to collective and systematic analysis. In order to improve quality, reduce downtime, and optimize production schedules, HIROTEC needed to implement a modern, automated solution that could gather maintenance and operational information into one source and offer actionable recommendations to its quality professionals.

"A lack of data was never an issue for us," said Hester. "As one of the largest automotive manufacturing suppliers in the world, we collect volumes of datasets on a daily basis. The problem we were faced with was transitioning from a data-heavy organization to a data-smart organization. We realized that in order to bolster profits from untapped machine-generated information, we needed to look towards modern solutions that automated the process and enabled timely, data-driven decisions."

Organization:

HIROTEC AMERICA is part of the HIROTEC Group Companies that have worldwide sales in excess of 1.6 billion dollars and 26 facilities across 9 countries. For over 30 years, HIROTEC AMERICA has been providing innovative and highly flexible closure manufacturing solutions.

Solution:

- ThingWorx® IoT Platform
- KEPServerEX®
  - IoT Gateway Advanced Plug-In
  - Manufacturing Suite

The Approach

Recognizing the need for connectivity, data access, and scalability, executives at HIROTEC worked to develop a competitive strategy to capitalize on the potential benefits of the Internet of Things (IoT). The initiative began with identifying the fundamental technologies that would fuel the IoT effort.

After evaluating several traditional IoT offerings from traditional industrial automation vendors, HIROTEC found that many solutions were restricted to a single business aspect, protocol, or standard. Not wanting to waste time and effort integrating multiple solutions across several business functions, HIROTEC finally turned to the ThingWorx IoT Platform and Kepware's KEPServerEX—both solutions from PTC—to enable company-wide device-to-cloud connectivity through one overarching toolset. Working together to deploy a single source of smart solutions for the IoT, the ThingWorx platform would be able to provide analytical insight into HIROTEC's data through industrial data streamed from the IoT Gateway for KEPServerEX, an advanced plug-in capable of pushing information from KEPServerEX into Big Data and analytic software applications.

To support the company's long-term IoT vision, HIROTEC collaborated with representatives at PTC to build an IoT framework supported by short, six-week Agile sprints. Where a full IoT implementation may have taken years to generate a proof of concept, the Scrum model provided company executives with visible and quantifiable progress in just weeks.

Organization Impact & Benefits

- Improved visibility into the processes of the CNC shop and gained deeper insight into operations
- Added the ability to leverage real-time data from the shop floor and tie it to the scheduling ERP system, optimizing the scheduling of parts to CNC modules
- Increased productivity and ROI by gaining greater insight into asset and resource allocation
- Improved collaboration between Operations and Information Technology (IT) departments, reducing downtime and enabling more efficient responses to IT jobs
- Reduced costs, effort, and development time by selecting proven, interoperable technologies
- Provided quick proof-of-concept into the value of IoT via short, six-week Agile sprints

"We see and speak with many manufacturing organizations, and it is clear they are interested in the Internet of Things. They see the potential and would like to do something with the technology. Despite the desire that exists, many remain frozen because the prospect of a full-blown implementation is so daunting and uncertain," said Hester. "This is why we advocate so strongly for the short-sprint model we have adopted at HIROTEC. We don't want to boil the ocean; we want to start with low-hanging, solvable problems and build out our case and experience."

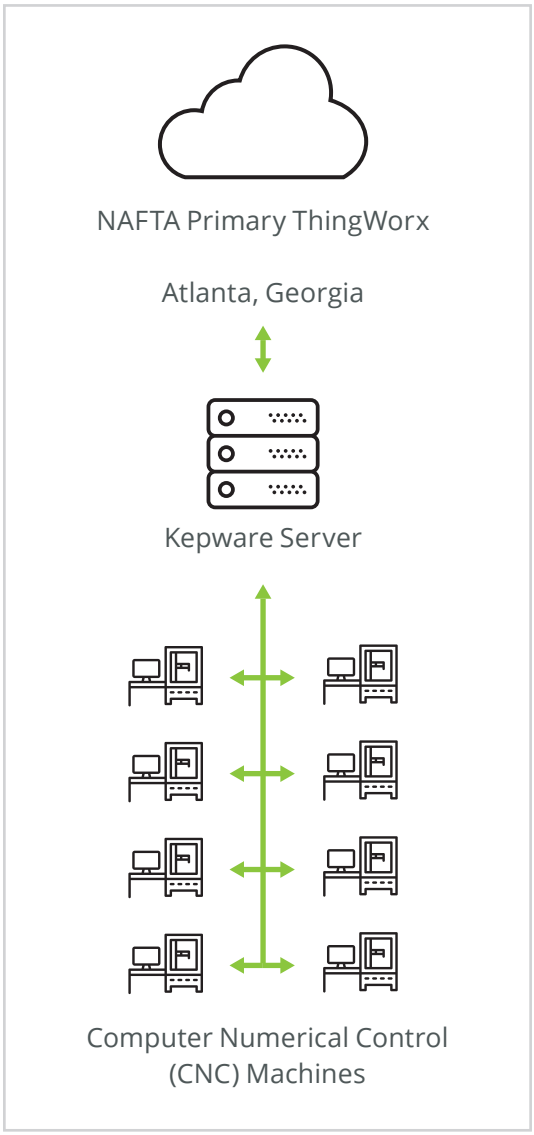
HIROTEC's North American shop in Detroit, Michigan was chosen as the test bed for the first small sprint because of the unique data types generated among its eight Computer Numerical Control (CNC) machines. ThingWorx IoT Platform provides analytics and the ability to rapidly develop role-based applications for data visualizations, where the Kepware's IoT Gateway for KEPServerEX collects data from the CNC machines and streams it in real-time to the Cloud. . This solution gives HIROTEC labor-free access to a customized visualization of both the operations and conditions of its industrial devices and systems.

"When first embarking on our IoT journey, HIROTEC's core objective was to remain flexible in our ability to connect things," said Hester. "The offerings and expertise by PTC have enabled us to stay true to our goal by effortlessly adapting to our business processes and developing the right IoT strategy for our teams. The IoT Gateway's ability to seamlessly put data into ThingWorx to generate real-time insight into operations fuels our sprint framework and allows us to stay nimble in our decision making."

The Results

Since implementing the ThingWorx IoT Platform and Kepware's IoT Gateway, HIROTEC has gained increased visibility into the processes of its CNC shop and deeper insight into operations. The company realized early on that having access to CNC machine uptime data significantly impacted the shop's scheduling process, which was previously set on conjecture and after-the- fact analysis. Manufacturing leadership can now leverage real-time data from the shop floor and tie it to the scheduling ERP system, optimizing the scheduling of parts to CNC modules.

This process also provides greater insight into asset and resource allocation by automatically formulating smarter questions about current needs and priorities and determining the most effective course of action. Because of this, HIROTEC has improved productivity across the shop and increased its ROI.



The company has also improved collaboration between its Operations and Information Technology (IT) departments. By working daily with Research & Development engineers, IT teams quickly gained access to corporate roadmaps and strategic goals, and were empowered to contribute at a more strategic level. Not only has the development of cross-functional teams improved communications across the entire business, but the added perspective helps promote quicker and more efficient responses to IT jobs.

HIROTEC anticipates its IoT efforts to impact every aspect of its business—from Operations and IT to financial forecasting, customer relations, and sales. As it moves forward with sprint projects, HIROTEC will continue to see what is useful about the varied sets of contextualized data and use it to create common business processes and analyses. The auto parts supplier eventually plans to use this insight to create an IoT- ready production line and enable remote equipment monitoring and management from a centralized dashboard to promote predictive and proactive maintenance.

"In just six short weeks, we've gained more visibility into our operations than ever before, reinforcing our investment and belief in the power of the IoT," said Hester. "With data-centric knowledge generated from ThingWorx and KEPServerEX, we can now make smarter and timelier decisions that not only impact our CNC shop, but also help us identify how we can operate more efficiently and profitably across all of our facilities."

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