

Automotive Parts Supplier Launches IoT Initiative in Scalable Sprints Powered by PTC IoT Manufacturing Solutions



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Justin Hester
Manager – IT Laboratory

The Customer

HIROTEC Group Companies is a \$1.6 billion corporation with over 60 years of mass production experience and engineering discipline. With 26 facilities in eight countries around the world, HIROTEC 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 1.8 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, Manager – IT Laboratory, 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 automotive suppliers, because 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 dramatic delays in production schedules.

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 track business progress. However, this data was manually separated and stored across multiple sources—making it inaccessible to collect and review for 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. “The problem we were faced with was transitioning from a data-heavy organization to a data-smart organization. We realized that in order to improve insights from untapped machine-generated information, we needed to look towards modern solutions that automated the process and enabled timely, data-driven decisions. We say that we have to get the right data to the right person at the right time.”

The Approach

Recognizing the need for connectivity, data access and scalability, HIROTEC worked to develop a comprehensive 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 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 turned to the ThingWorx® Industrial Innovation Platform and Kepware’s KEPServerEX®—both solutions from PTC—to enable company-wide connectivity through one overarching toolset. Working together to deploy a single source of smart solutions for HIROTEC’s digital transformation, the ThingWorx Platform would be able to provide analytical insight into HIROTEC’s data through KEPServerEX, which is capable of pushing information from industrial devices 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, agile sprints. Where a full global IoT implementation may have taken years to generate a proof of concept, the Scrum model would provide company executives with visible and quantifiable progress in just weeks.

“We meet 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

Organization:

The HIROTEC Group Companies have worldwide sales in excess of 1.6 billion dollars with 26 facilities across 8 countries. For over 30 years, HIROTEC AMERICA has been providing innovative and highly flexible closure manufacturing solutions.

Solution:

- ThingWorx® Industrial Innovation Platform
 - ThingWorx Analytics
 - ThingWorx Studio
- KEPServerEX®
 - Manufacturing Suite

uncertain,” said Hester. “This is why we strongly advocate 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.”

Creating A Proof Of Concept – The Results

HIROTEC’s North American HQ in Auburn Hills, Michigan was chosen as the initial test bed for the first small sprint because of the unique data types generated among its eight Computer Numerical Control (CNC) machines. The ThingWorx Platform provides analytics and the ability to rapidly develop role-based applications for data visualizations, where KEPServerEX collects data from the CNC machines and streams it in real-time. The solution gave 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 adapting to our business processes and developing the right IoT strategy for our teams. Kepware’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.”

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

The company 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—empowering the groups to contribute at a more strategic level. Not only did the development of cross-functional teams improve communications across the entire business, but the added perspective helped promote quicker and more efficient responses.

“With data-centric knowledge generated from ThingWorx and KEPServerEX, we can now make smarter and timelier decisions that not only impact our organization, but also help us identify how we can operate more efficiently and profitably across all of our facilities,” said Hester.

Organization Impact & Benefits

- Improved visibility into production processes and gained deeper insight into operations
- Added the ability to leverage real-time data from the shop floor
- Increased productivity and ROI by gaining greater insight into asset and resource allocation
- Improved collaboration between Operations and Information Technology (IT) departments
- 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, enabling expansion to other facilities

New Data, New Projects

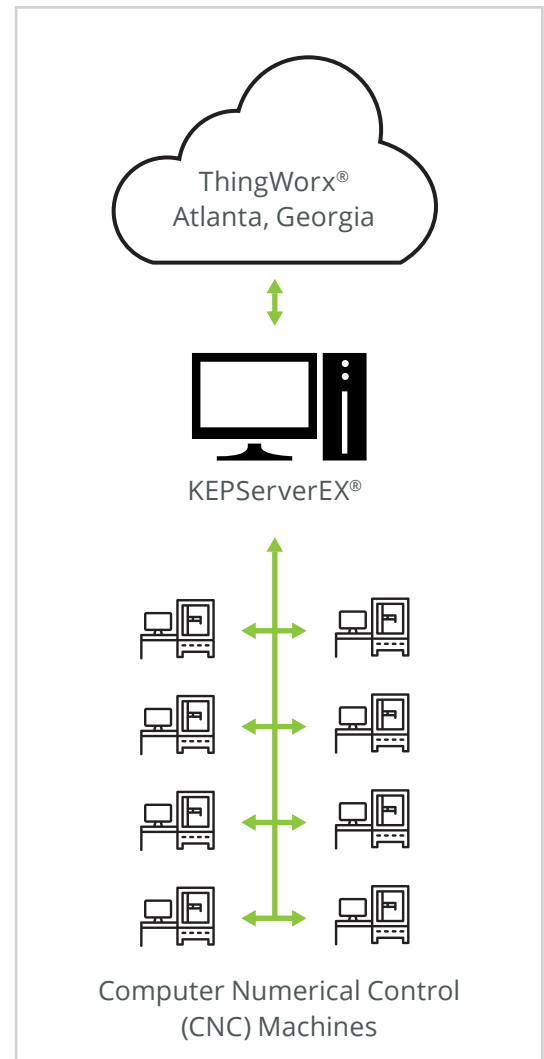
The success of the CNC facility gave HIROTEC a proof of concept (POC) for data visualization, allowing the company to pursue digital transformation across other parts of its business. Scaling their industrial IoT vision, HIROTEC's next goal was to enable fully-functioning smart factories. To do so, the company created the IT Laboratory within its Advanced Engineering Center division, a team whose sole mission is to drive the company's global digital transformation and integrate IT-based solutions into operations.

Directly following the original POC project at its CNC shop, HIROTEC's Advanced Engineering Center began leveraging ThingWorx and KEPServerEX to gain greater insight into the robotic inspections of exhaust systems. The platform gathers 465 data points from an exhaust system every 60 seconds. The data is presented via automatic paperless reports in a contextualized and actionable way, enabling the quick evaluation of the real-time and historical status of each inspected component.

Being able to remotely visualize data initiated a POC project on the same system for robotic failure prediction. Wanting to dig deeper into the operational data being collected, HIROTEC added ThingWorx Analytics functionality to the ThingWorx Platform during the first quarter of 2017. In just two weeks, HIROTEC's engineers were able to make a complete analysis of the data collected through the inspection system's robots, and test various models and methods for predicting potential robot motor and gearbox failures. Before PTC's manufacturing solutions, this analysis would not have been possible.

By demonstrating to stakeholders the possibilities of predictive analytics in manufacturing, the Advanced Engineering Center received buy-in to transfer the concept to larger projects. Scaling up from a small robotic inspection system, HIROTEC implemented PTC's manufacturing solutions across a complete door production line in Hiroshima, Japan. By leveraging a single platform, HIROTEC can gather 7,000 points of real-time and historical data every second.

"Our collaboration with PTC is unique to the industry. They aren't just a vendor—they are a true partner and driver of our growth. We are learning, adapting and scaling our services together, creating invaluable experiences that advance both organizations and their products. We couldn't think of a better company to evolve with," concluded Hester.



Kepware is a software development business of PTC Inc. located in Portland, Maine. Kepware provides a portfolio of software solutions to help businesses connect diverse automation devices and software applications and enable the Industrial Internet of Things. From plant floor to wellsite to windfarm, Kepware serves a wide range of customers in a variety of vertical markets including Manufacturing, Oil & Gas, Building Automation, Power & Utilities, and more. Established in 1995 and now distributed in more than 100 countries, Kepware's software solutions help thousands of businesses improve operations and decision making.

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J11821—Automotive Parts Supplier Launches IoT Initiative in Scalable Sprints Powered by PTC IoT Manufacturing Solutions—EN-0718