Rockwell Automation | PLEX

CASE STUDY

AMERICAN AXLE & MANUFACTURING

American Axle & Manufacturing (AAM) is a leading global tier 1 automotive supplier. AAM designs, engineers and manufactures systems and technologies that are making the next generation of vehicles smarter, lighter, safer and more efficient. Headquartered in Detroit, AAM has over 25,000 associates operating at nearly 90 facilities in 17 countries to support our customers on global and regional platforms with a focus on quality, operational excellence and technology leadership.

Industry:
Automotive

Location:
Detroit, MI

Results

5% increase in manufacturing output with the ability to measure how equipment is delivering end products.

5-10% improvement in inventory turns with a positive impact on cash flow.

Managers can plan, forecast, and order materials in line with a 16-week window (a result of materials lead times).

American Axle & Manufacturing (AAM) is a multi-billion dollar, tier 1 supplier to the automotive industry, with more than 30 locations, nearly 13,000 associates, and more than 100 customers, including General Motors, Fiat Chrysler Automobiles, Ford Motor Company, and Honda.

Business Challenges

1. American Axle & Manufacturing lacked real-time visibility into manufacturing operations across the entire company.

2. The company's two main divisions had separate ERP systems, with no easy way to consolidate data to get an actual view of performance.

3. Corporate management needed access to operational data for each division for a comprehensive view of how the business was performing.

The Challenge

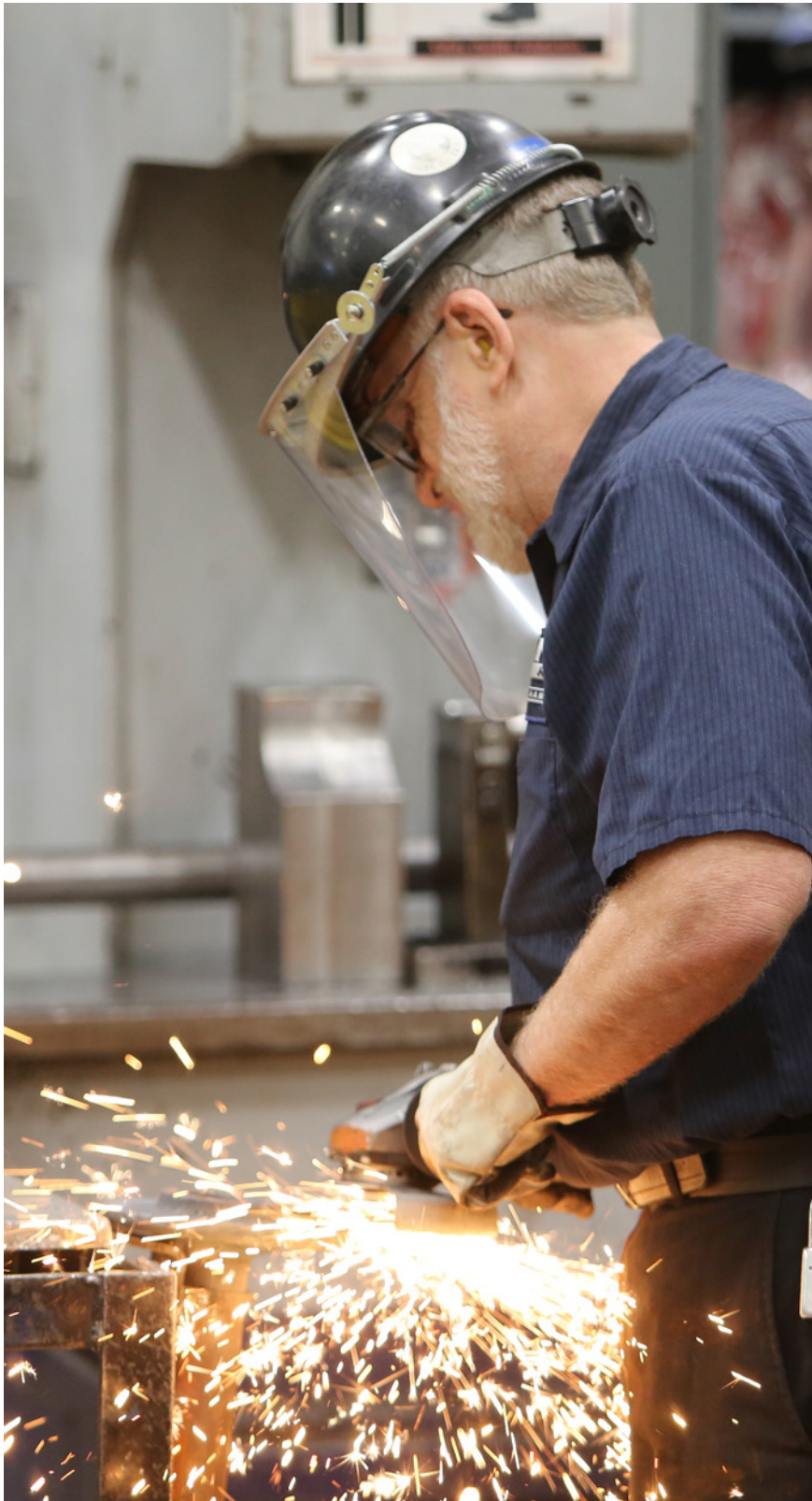
AAM's core brand values are to strive for operational excellence, quality, and technology leadership in the processes and systems it uses and the products it delivers.

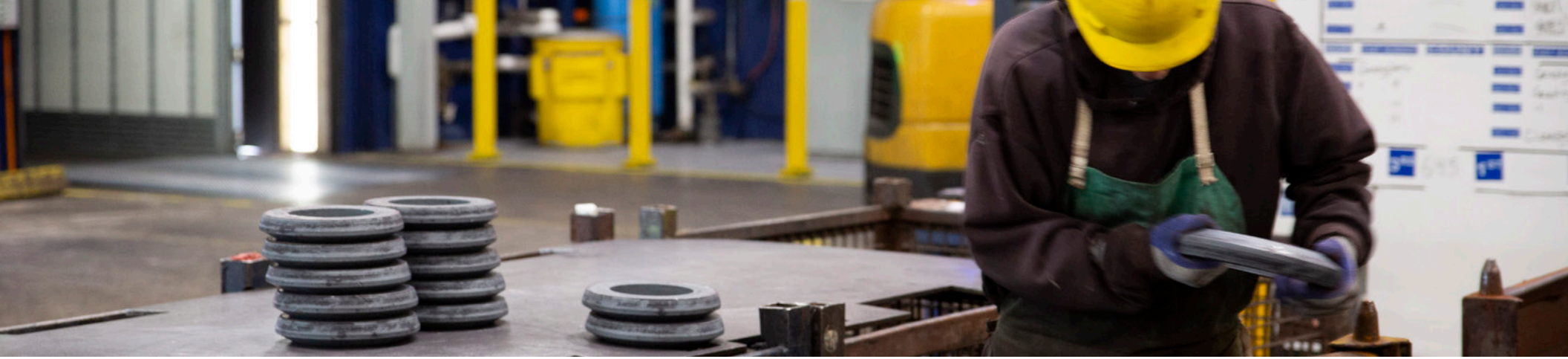
The organization comprises two main divisions: driveline and metal forming products business unit (MFPBU). The management team of MFPBU was finding it challenging to gain real insights into how the business was performing, how to drive quality, better plan capacity, and how to get a real-time understanding of its financial status. Each of MFPBU's seven operations had its own ERP, a partial ERP, or none at all. To gain the insight and understanding to run business more efficiently, MFPBU needed to consolidate operational data.

Michael Trathen, Senior Manager Lean Systems at AAM explains:

"We wanted one business system for all of the operations in our metal forming group. Having developed the original version of Plex as the core manufacturing execution system (MES) at our forging facility in Oxford, Michigan, we wanted to explore how the Plex Smart Manufacturing Platform could be deployed across our entire business unit. We were looking for a comprehensive solution to help us streamline and formalize our business processes, including hire-to-retire, procure-to-pay, order-to-cash, record-to-report, and product lifecycle activities."

Integrating a single ERP across such a large, geographically distributed organization, without interrupting production, losing data, or interrupting the workforce required help from fellow experts.





"The senior management team chose to partner with Baker Tilly, a global business consulting and accounting firm, because its team was extremely experienced in helping enterprise-size businesses, like ours, undertake deep and broad deployments of Plex and in driving the right business outcomes."

Integrating and Automating Operational Data

AAM, Baker Tilly, and the Plex product team worked through a proven methodology to design, implement, and train users on Plex. This plan included implementing Plex in parallel with AAM's corporate Oracle ERP system for enterprise-wide financial consolidation and performance management.

Peter Pearce, Principal for Baker Tilly Business and Technology Growth Strategies said:

"One of the biggest challenges for this business unit is that it is very numbers driven. A great deal of this reporting was done manually but what it required in order to make better, faster, more informed business decisions was an integrated and automated way to gather operational data.

This deployment was one of the broadest we have ever overseen, incorporating all the core Plex capabilities such as inventory control on the shop floor to quality management and manufacturing performance."

Baker Tilly spent a number of weeks developing a common model of deployment that was unique to AAM. This allowed AAM to roll-out Plex across the seven metal forming locations in a standardized way, mitigate risk, and "go live" as rapidly and efficiently as possible.

"This initial phase was a deeply immersive experience given that we included all process owners, allocating Plex modules to supervisors who would take responsibility for understanding the software's capabilities and how it could deliver value," explains Trathen. "Along the way we consulted with the Plex User Community and the team now sees them as a vital source of best practice on demand and an invaluable tool for continuous improvement."

Meeting Business Risk Head On

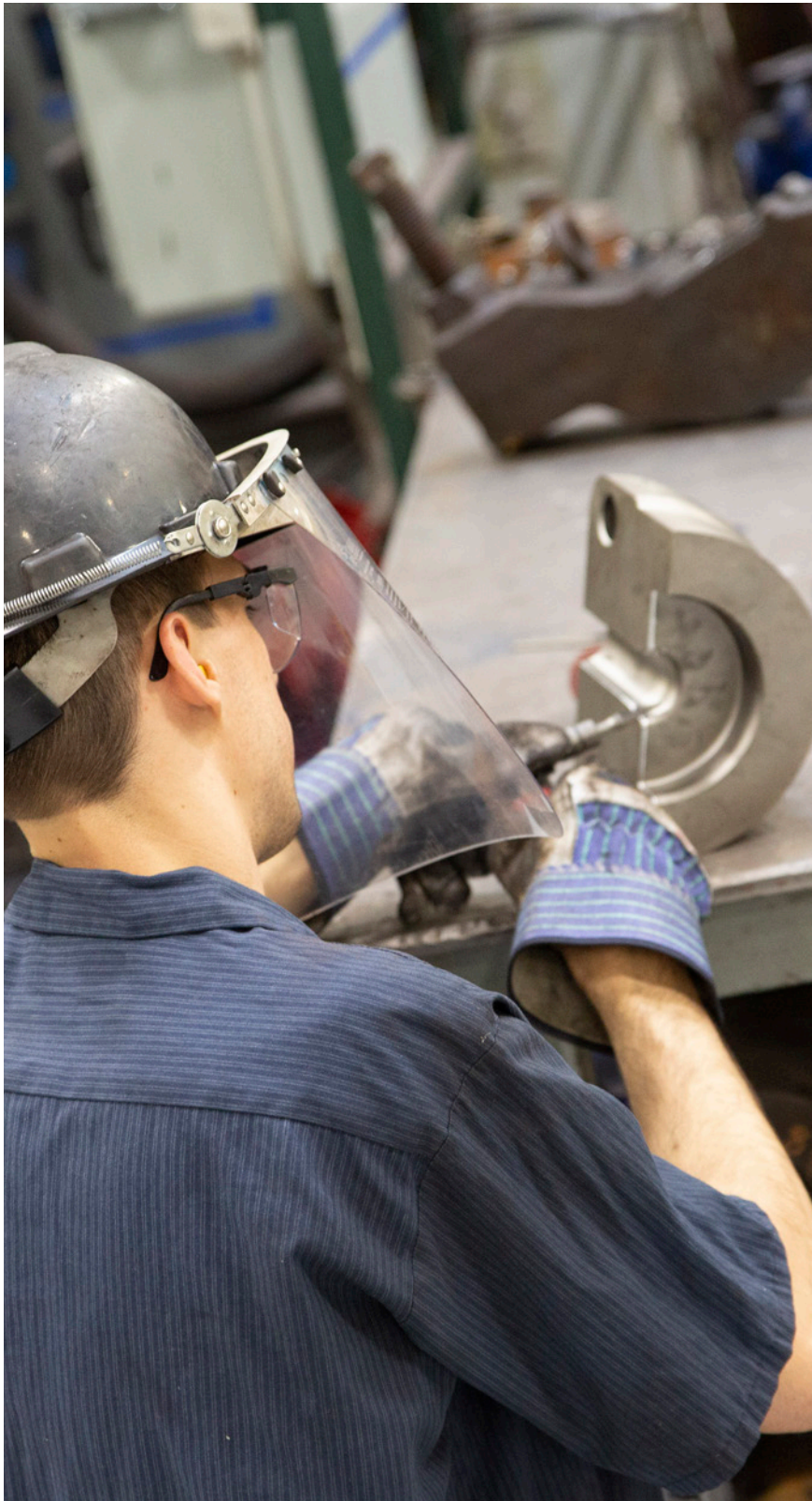
The team's priority was to roll-out all Plex's plant floor modules including engineering, quality, inventory, and production and then focus on the top floor modules such as accounting and supply chain.

AAM was concerned that changing from multiple systems to Plex and introducing a new ERP, where there was none before, was a complex operation and could expose the business to a certain degree of risk. Furthermore, AAM's metal forming unit is a high-revenue organization, whose customers would not tolerate downtime caused by a system failing to transition smoothly.

Trathen said:

"The AAM management team was very keen to understand our plans to mitigate risk during the Plex implementation. They established a steering committee that met on a monthly basis to review our project schedules and assess risk. We had Baker Tilly on board to help us assess and assuage risk at every step."

"In the next phase, we rigorously trained our users on Plex, bringing process owners in to deliver weekly workshops that walked all our associates through their new role-specific processes. We had a very high success rate with user adoption, not only because these sessions were extremely useful and efficient to on-board users and built their confidence, but also due to the intuitive and user-friendly design of Plex."



Creating a Single Version of the Truth

One of the original business drivers for Plex was the need for a single view of the truth using real-time data. At a corporate level, AAM was using Oracle as its ERP system, so a key task for AAM and Baker Tilly was to ensure that operational data could be consolidated back into the company's financial reporting system, Hyperion.

"We went through a significant data review," says Trathen, "where we assigned data to three different categories. The first was new data that would be manually keyed in or entered via the Plex upload tool. The second was data that was older than three years and which would be archived. Lastly, we had live data that needed to be moved in bulk to the Plex system. This final category went through a rigorous cleansing process to ensure that when we went live with Plex, we would be starting off with the latest and most accurate data pool."

"Now that Plex is live, we can send financial data once a month to AAM's Hyperion financial reporting system to map and consolidate. We tested this process and at go-live we had absolutely no issues, which was rewarding," Trathen concluded.

Real-World Results, Rapid ROI

When launch day came around it was a non-event, mainly because of all the testing and user training that had taken place. Once the shop floor processes were stable and embedded with users, the metal forming team turned its attention to corporate processes such as purchasing.

By the end of the implementation, almost all of the Plex modules were in use across all locations and the metal forming unit has not looked back:

Inventory Management
AAM has seen an improvement in inventory turns of between five to ten percent with a positive impact on cash flow.

> Having quality deeply embedded into every production activity is transforming our organization. **With Plex, quality checks are now completed at every stage, and the detail is exceptional.**

Michael Trathen
Senior Manager Lean Systems, AAM

OEE and Manufacturing Output
Plex allows AAM to analyze equipment efficiency and to determine the root cause of any downtime, using real-time information driving continuous improvements. “For example, Plex is allowing us to measure velocity of flow so that we know how effectively our equipment is delivering our end products. I’m delighted to say that we have already experienced a five percent increase in manufacturing output,” states Trathen.

Quality and Plant Efficiency
“Having quality deeply embedded into every production activity is transforming our organization,” Trathen said. “With Plex, quality checks are now completed at every stage, and the detail is exceptional. We’ve set the system up so that no one can move on to a new activity until the preceding quality check has been logged.”

“Another example of how quality is transforming our business is when you look at the tracking of heat values. All our products start life as a raw steel bar that requires a certain heat value to form it into the final product. With Plex, we can trace these heat codes right through from the mill that produced the source material, to individual containers and items. This level of quality control is very important to our customers,” Trathen added.

Compliance
AAM is obliged to comply with Sarbanes-Oxley regulations on security and role assignment. With Plex, operators can assign each person’s job role to a security group, evaluate any conflicts, and receive ideas on how to resolve them. Accurate segregation of duty reports can then be produced for audit purposes. The manufacturer is also required to show that each product has been assigned its appropriate tariff, which must all be harmonized in line with trade regulations. Plex now automates this process and the required reporting.

> Customers of AAM, who know Plex, now have great peace of mind knowing that all our core processes are managed by such a robust and integrated system for manufacturers.

Michael Trathen
Senior Manager Lean Systems, AAM

Workforce Efficiency
"One of the reasons we wanted Plex throughout our division was to move away from other offline management tools," states Trathen. "Via the Plex document management system we can share vital information across the organization, use the activity manager to track processes in real time, and make the improvements that our data tells us we need. Now people are spending more time on analysis and less on collecting data, which makes for a more efficient and effective workforce."

Faster Problem Solving
The business unit is also very focused on improving scrappage, tooling, and maintenance. Trathen believes they have already reduced waste by some two percent partly because the type and quality of data Plex collects makes it easier to solve challenges. "The ease of data availability makes for faster and better problem solving. Data is input at the source and can be accessed by supervisors at any time on many devices with connection to the internet, so problems can be solved even when decision-makers aren't on site," said Trathen.

Improved Business Planning and Decision Making
At the corporate level, data from Plex-managed processes is made available via EDI. Managers are then able to plan, forecast, and order materials in line with a 16-week window (a result of materials lead times). By understanding sales, materials orders, and job profitability while being able to forecast demand, the management team is better able to make and refine decisions based on realtime, accurate, and consolidated data.

Competitive Advantage and Customer Satisfaction
"Customers of AAM, who know Plex, now have great peace of mind knowing that all our core processes are managed by such a robust and integrated system for manufacturers," said Trathen. "I'm delighted to say that the BSI auditors rate all our plants very highly, especially in terms of the way we manage our internal processes."

IT Simplicity

The Plex cloud model has allowed AAM's Metal Forming Products Business Unit to retain a lean IT team that does not have to assume responsibility for developing the functionality of ERP software, nor does it have to buy and manage expensive hardware. "By running Plex we can target our IT resources at helping users get maximum value from the system, rather than taking care of its administration," said Trathen.

Building a Successful Future

AAM's Plex implementation has been such a huge success that new projects are being planned for the future. These include deploying Plex to a new business venture, undertaking further PLC integration, and enhancing the unit's purchasing and finance processes with Plex.

"What has impressed AAM the most about the Plex implementation is that we have managed to launch an enterprise-wide change process without suffering any downtime and while achieving continued sales growth," concludes Trathen. "This incredible commercial success and smooth deployment is testament to the ease with which Plex can be brought online in a large and complex organization."

ABOUT PLEX

Plex Systems, Inc., a Rockwell Automation company, is the leader in cloud-delivered smart manufacturing solutions, empowering the world's manufacturers to make awesome products. Our platform gives manufacturers the ability to connect, automate, track and analyze every aspect of their business to drive transformation. The Plex Smart Manufacturing Platform includes solutions for manufacturing execution (MES), ERP, quality, supply chain planning and management, Industrial IoT and analytics to connect people, systems, machines, and supply chains, enabling them to lead with precision, efficiency, and agility. Learn more at **www.plex.com**