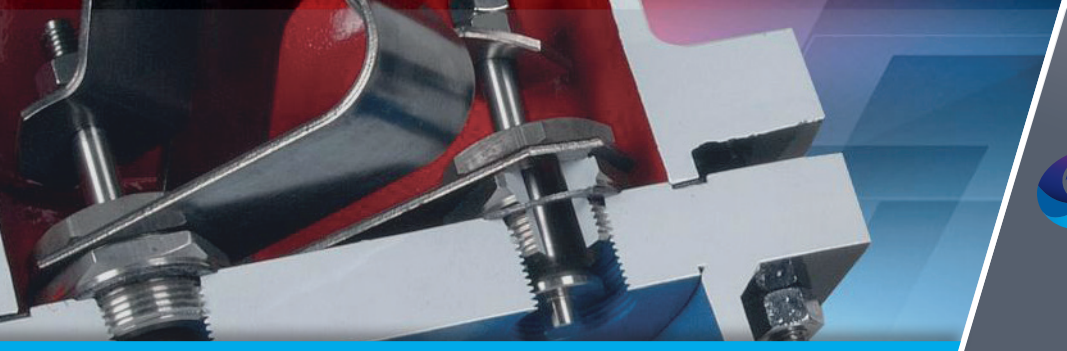

DELIVER RESULTS IN PRODUCTIVITY.

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# RICHARDS INDUSTRIES

## +50% OEE IN 12 MONTHS AND 257% ROI IN 5 MONTHS

RICHARDS INDUSTRIES

**AT A GLANCE**

Name: Richards Industries
Industry: Metal
Location: Cincinnati, OH

**Benefit for Richards Industries**

- 50% in productivity overall improvements
- real time visibility
- 257% ROI in 5 months 10 machines
- 183% ROI in 7 months 31 machines

Plant Engineering PRODUCT of the YEAR Winner 2015

## *Overview*

Richards Industries is the parent company of six distinct industrial product lines: regulators and control valves from Jordan Valve; sanitary regulators and control valves from Steriflow Valve; ball valves and automated products from Marwin Valve; high pressure - extreme low flow regulators from LowFlow Valve; instrument valves and manifolds from Hex Valve; steam traps and steam specialty equipment from Bestobell Steam Traps. Richards meets customer needs with a wide range of new and proven manufacturing technologies. Complete in-house CNC machining, painting, assembly and testing, along with material traceability and extensive quality procedures assures that Richards Industries products exceed expectations.

Richards Industries focuses on new product development, process improvements, lead time reduction, on-time shipments and quality. Using proven techniques such as Lean Manufacturing Richards is dedicated to finding ways to improve manufacturing processes, existing products, creating new products, reaching new markets and responding faster to customers.

Key markets include chemical, petrochemical, pharmaceutical and food processing industries. Other sectors include paper products, tire and rubber, machinery and electrical equipment, transportation equipment and energy industries.

## *MANAGING PEAKS & VALLEYS*

The American economy is undoubtedly one of the largest in the world. Although there is an assortment of factors that kindle its growth, the contribution of energy must not be overlooked. Energy consumption is closely associated with economic growth and manufacturing activity. The unprecedented decline of crude oil, the key source of energy, has created opportunities and threats for American manufacturing. As spending on energy remains a key determinant of standard of living and a crucial component of manufacturing expenses, the impact on the bottom line for publically traded and smaller privately owned businesses is noticable. While smaller firms are much more susceptible to these factors many firms in related industries experience less robust business given the current circumstances faced in the energy sector.

Richards Industries' business has been slowed by the Oil and Gas reductions but has continuously invested in new product development, process improvements, lead time reduction, on-time shipments and quality. By using proven techniques, such as Lean Manufacturing methodologies, productivity is expected to pick-up with increased sales per employee and per hour worked.

The company is dedicated to finding ways to improve manufacturing processes, existing products, creating new products, reaching new markets and responding faster to customers. Richards global network of representatives and distributors is their own and their customers' most valuable resource. With over two hundred representatives throughout the world, there is a local representative who will provide hands-on assistance with any application.

# RICHARDS INDUSTRIES

## 5% OVERALL PRODUCTIVITY IMPROVEMENT
## 257% ROI IN 5 MONTHS

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Richards Industries practices Lean Management philosophies for almost two decades. Investment in training and technology is key to retain talent and control cost.

## Manufacturing 4.0

Old-fashioned methods to collect production and machine data, which are time consuming and potentially poised to human error, become obsolete with modern Shop Floor Management technology. Its purpose is to measure and visualize the performance of machines and assets ideally web-based and in real time. In result this leads to a transparent factory in which errors and waste can be eliminated immediately because production can be virtually mirrored on any connected device. This system allows companies like Richards Industries to analyze the performance, availability and quality of assets and optimize them instantly in a real world setting.

***"With the use of FORCAM's Industrial IOT technology, we increased productivity by***

***>50%***

***within 12 months."***

**Bill Metz,** Vice President Manufacturing Richards Industries

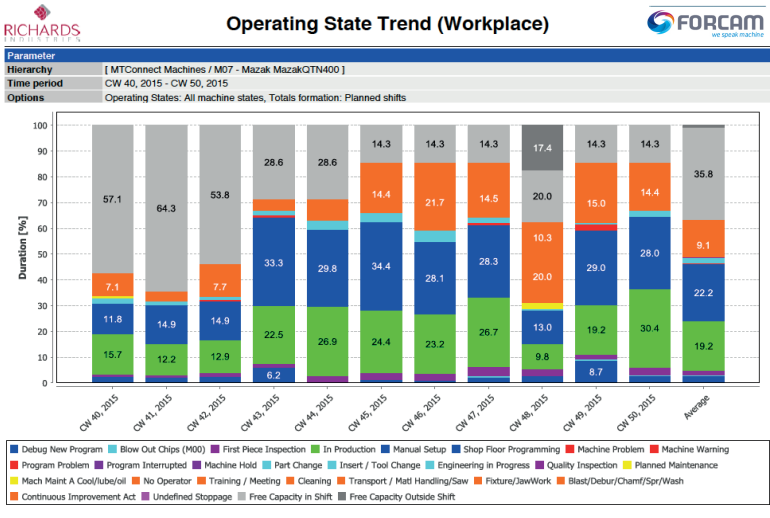
## 2-Phase Project

**Phase 1: Machine Data Collection (MDC), Visualization, Reporting, and Alerts**

As technological advances accelerate, markets expand, and economies become increasingly knowledge-based, it is imperative that businesses become adept at collecting, analyzing, and making decisions based on data.

Richards Industries headquartered in Cincinnati started by implementing the FORCAM FORCE™ Shop Floor Management tool, which included setting up real time machine data collection, web visualization and alerting. This first phase included a 10-machine pilot helping operators to become familiar with the user interface and data in the FORCAM FORCE™ product suite. Phase 1 was rolled out to the remaining machine park of an additional 21 machines 5 months after the deployment of the pilot in late 2015.

**Phase 2: Order Data Management (ODM) with Personnel Data and Product Data Management (PDM) with DNC**




Richards' computer numerical controlled (CNC) machine tools like simple lathes and Multi-Axis machines with live tooling among others are equipped with a screen and keyboard for writing and editing NC programs at the machine that connect to the in-house ERP system MAPICS.

Phase 2 facilitated access, editing, and loading of operating instructions and also encouraged the collection of processing information and control of processing quality. Records of tool use can be used to predict tool wear and generate replacement schedules before a substandard part is produced. The potential for boosting productivity lies in networking machines to capture production data for evaluation. MTConnect-based machines are connected to the existing Ethernet network. PDM-DNC enables Richards to produce complex products and spread product data into the entire Product Lifecycle Management (PLM) launch-process.

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***Best Place to Work - Cincy Magazine 2015***

***Richards Industries applies continuous improvement to stay among the best places to work in the Cincinnati region for the past nine years.***

***"We continually work at creating the best environment for our employees. Each year we just keep getting better."***

**Cheryl Neiheisel,**
Vice President Human Resources
Richards Industries

This significantly enhances the effectiveness of the launch process and lowers the risk of human error during program transfer. Automatic reports enable the company to receive data on product costs, operating states, and time.

PDM is FORCAM's technology tool within the PLM process that is responsible for the management and publication of the product data.

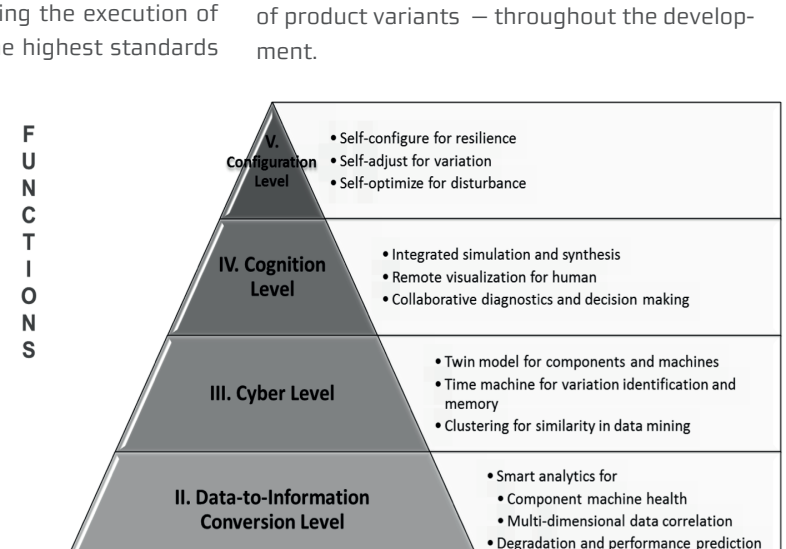
The management of version control ensures that everyone is on the same page and that there is no confusion during the execution of the processes and that the highest standards of quality controls are maintained. Product Data Management also serves as a central knowledge repository for process and product history, and promotes integration and data exchange among all business users who interact with products – including project managers, engineers, sales people, buyers, and quality assurance teams on Richards' shop floor.

Typical information managed in the PDM module include:

- ***Part number and description***
- ***Supplier/vendor***
- ***Vendor part number and description***
- ***Unit of measure and cost / price***
- ***Schematic or CAD drawing***
- ***Material data sheets***

Order Data Management gives a comprehensive overview of the orders in production, thus providing the shop floor with order related information to and from the ERP system. Managers, supervisors and workers are able to easily identify orders in production and status in the order queue.The central database also manages metadata including owner of a file and release status of the components.

The package controls check-in and check-out of the product data to multi-user; carry out engineering change management and release control on all versions/issues of components in a product; build and manipulate the product structure bill of materials (BOM) for assemblies; and assist in configurations management of product variants – throughout the development.




Phase 2 was rolled out to the remaining machine park of an additional 21 machines 5 months after the deployment of the pilot in late 2015.

## *MTConnect® & Productivity*

MTConnect® is a manufacturing industry standard to facilitate the organized retrieval of process information from numerically controlled machine tools. MTConnect® is a protocol similar to languages with vocabulary or a data dictionary.

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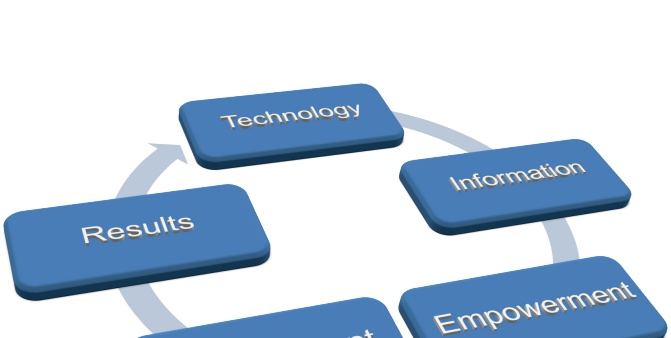
Multiple devices that all speak MTConnect® provide similar data tags which all mean the same thing. Richards Industries' Mazak QTN400 quick turn 400 lathe with live tooling is equipped with MTConnect®, which allows for an easy way to increase productivity. Enough information is provided through the production process to allow for the calculation of Overall Equipment Effectiveness (OEE) to evaluate how effectively a manufacturing operation is utilized.

Technology is empowering and motivating employees by aligning their efforts with the goals of the company. As competitive pressures, both internal and external, increase beyond local boundaries giving operators the authority to stop the line, call for assistance and to address quality issues which in change promote the employee's involvement in the production process.

Monitoring equipment with MTConnect® customers report 3 to 15% increase in utilization due to monitoring. Automated systems already have a high utilization and will see less improvement than perhaps a standalone machine. The most crucial action to achieve the most Return-On-Investment (ROI) is not not only collect machine data but to also act on the data to make real improvements.





## *Workforce Empowerment*

Empowerment of employees is a key strategy in next-generation leadership to affect engagement. The key to workforce engagement is information. And the key to information today is technology. Monitoring the shop floor with technology means that all operators become an integral part of the production process for the reason to detect errors and initiate correction of any deviation from the target to ensure a more efficient and leaner production process. Empowerment of these important employees is a key strategy for manufacturing businesses as these translate directly into bottom line business results. The key component to this strategy is engagement through the power of information. And the key to information is technology.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