

## Case Study

### THE TIMKEN COMPANY

- Low volume, high erratic demand environment
- Capital equipment intensive
- Low Cost and Global Manufacturing Requirements



***"WIP improvements have been extensive: work in process has been reduced by over 50 percent while lead times in some parts of the operations have gone from 14 days to 29 minutes!"***

*- Scott Pollock  
Director Small Bore Global Operations  
The Timken Company*

## **Business Objectives:**

The Timken Company manufactures Bearings and Steel for primarily four segments: Steel, Automotive, Industrial, and Rail sectors. The organization is over 100 yrs. old and has 28,000 associates worldwide contributing to \$3.8 billion (US) in annual sales.

The Small Bore Global Operations is a division within the Industrial sector and is responsible for manufacturing products globally for rail products and bearings up to 18 inches in diameter. The division is responsible for Timken revenue in excess of \$400 million (US).

A prime business objective for Timken is becoming more customer-centric. This corporate-wide initiative has meant working so closely with customers that Timken contributes strategically to their success. Their increased focus on customers and markets is helping identify new growth opportunities. Because customers recognize that the name "Timken" stands for quality and reliability, they have been able to penetrate new markets with more value-added products and services. In an era of supplier-customer partnerships, The Timken Company is a preferred partner.

This customer-centric focus has translated down to the plant operations as well. It has driven the concepts of "Lean" and "Flow" to a new level. It has become a mandate to eliminate waste, and through a combination of proper resource development, organization, and careful implementation Timken believes this culture can be applied successfully company wide.

## **The Business Challenges:**

While corporate initiatives are mandated, local plant challenges existed based on erratic demand. Customer on-time

delivery issues were constantly challenged in order to increase reliability of lead times. In order to address these constraints, excess inventory was used as a buffer to ensure customer delivery performance. This came at a price.

Management within the facilities targeted to improve on-time-delivery performance significantly and improve the reliability of lead-time quotes to outside engineers. Other performance targets were to improve operating efficiencies, and reduce inventory investment levels in both work-in-process (WIP) and finished goods.

Being in a low cost global market also has its own set of challenges implicitly imposed on the US-based operations. The manufacturing labor costs in the US tend to be higher than in other countries and is extenuated by the intensive capital equipment environment.

## **The FlowVision Solution:**

The Timken environment is characteristically "lean" challenged, due to the erratic demand from customers and what was viewed as a low volume environment. As a result, the management team felt that they would need to look elsewhere for the necessary skills to help train, analyze, design, and implement a pull-based solution in this environment.

"We felt that we did not have the necessary skill sets to develop and implement a pull system based on our environment and we needed FlowVision's expertise", said Scott Pollock, Director Small Bore Global Operations. Before committing to FlowVision though, Timken underwent the development of a complete business case with Return on investment, Net present value analysis, time line, and commitments to Key Performance Indicators.

After initial analysis and design, FlowVision showed Timken that almost 80 percent of the components could be repetitively scheduled based on certain parameters.

“More importantly, besides providing us with theory, they directly helped with building the system and establishing the new production lines. They have exceptional knowledge transfer capabilities. They translated that knowledge directly to our product sets and into our internal knowledge teams with their tool sets.” Pollock added.

## Implementation:

The implementation has gone well across one product line and has since been expanded to two additional line offerings. A word of advice from the Timken project team is not to under-estimate the move to Pull. Timken had 18 people committed almost full-time to the project for 6 months. The initial analysis, leading to design, test, and deployment takes a lot longer than expected based more on cultural and change management issues than any system implications.

***“The FlowVision approach, education, and techniques have made our jobs more effective by teaching us the mechanics of how to implement a pull system in our environment.”***

However, the Timken pragmatic approach to Pull paid off. They utilized well-trained teams taught by FlowVision that attacked each line of product one at a time, with a view to the entire Value Stream Map.

The production of Timken products was time consuming based on the initial process flow within the plant. Benefits in

lead-time were dramatically realized after Value Stream Mapping was performed and new plant layouts were deployed. Since the plant was now aligned into similar production lines from cellular based production.

## Results:

After implementing Lean, multiple goals have been achieved and most objectives were met. There was a 50 percent drop in work-in-process inventory levels, lead times dropped from 14 days to 29 minutes in some parts of the operation, based on plant and process re-design, and on-time delivery and lead time reliability in excess of 95% routinely. Timken has not yet achieved the desired goals in areas of productivity improvements and finished inventory levels. It was determined there were other factors that needed to be changed to begin major improvements in these areas. These are now underway.

The FlowVision approach, education, and techniques have made our jobs more effective by teaching us the mechanics of how to implement a pull system in our environment. They showed us how to analyze our components and determine where the repetitive processes and similar items existed. This enabled us to develop a Pull based system around these products while utilizing traditional MRP for the remaining twenty percent of our items.

What are the short- and long-term plans for Lean manufacturing at Timken? According to Scott Pollock, we continue to convert product families in manufacturing to pull systems and develop the expertise to attack the entire Value Stream Map.

One thing is for certain as we move to a customer-centric environment. That is “the journey to Lean is continuous.”

## **ABOUT FLOWVISION**

FlowVision is the leader in lean and flow manufacturing consulting that provides real world experience in lead-time reduction and supply chain management, resulting in significant financial benefits.

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