

Leading through Lean Manufacturing: A Holistic Approach

Fabricated Metal manufacturers facing increased global pressure are stressed to find new efficiencies. Price sensitivity, volatile raw material cost, shorter product lifecycles, as well as adoption of quality and value added services continually erode already thin margins. At the same time, manufacturers are striving to become more customer-centric. Lean Manufacturing can aid manufacturers in addressing both the need for efficiency and customer centricity, which translates into competitive advantage.

Customer demand is driving production at an ever increasing pace with shortened lead times and lowered costs. To meet customer demands, manufacturers not only have to concentrate on taking out non-value added processes internally, they also need to ensure they know exactly what their customer wants and when they want it. To this end, manufacturers are widening the scope and focus of Lean Manufacturing to encompass all processes that contribute to the bottom line. Lean thinking is now increasingly being applied to all areas within the organization – from sales and marketing to engineering and production through to finance and post-sale service.

In practice, Lean principles strive to identify the “value” of processes and eliminate the “waste” or invaluable processes that the customer would perceive as something for which they are not willing to pay. There is no magic switch that companies flip when migrating to Lean techniques. Rather, the process is one of continuous improvement, as each value stream is defined and reworked for optimum efficiency and performance.

The following are the key principles of Lean Manufacturing:

- Value – specify value as defined by the customer
- Value stream – processes required to bring a product or service to the customer
- Flow – smooth progression of products or services
- Pull – each step produces a product or service when ordered by the next in-line customer
- Continuous improvement – a process by which activities create value and waste is eliminated

Key Functions That Support Lean Manufacturing

As mentioned previously, Lean must be “built into” an organization in a multi-disciplined fashion. There are a number of traditional business functions that must also adopt lean principles to support an organization’s overall Lean Manufacturing approach.

Customer Relationship Management (CRM)

In lean organizations, inefficiencies are not eliminated solely on the production floor. From initial prospect contact to customer account follow up, the sales and marketing processes are managed for optimum efficiencies and customer service. Manufacturers need to select a CRM solution that is built on solid manufacturing principles for sales and marketing. Whether doing simple account follow-up, defining marketing campaigns, reviewing sales analysis for the year, quoting a custom part on the road, or responding to customer inquiry over the Internet, an effective CRM module incorporates leading technology for optimum customer service and sales effectiveness.

Supplier Relationship Management (SRM)

SRM makes the entire purchasing process more cost-efficient, improves quality of purchases, and enables more strategic, prudent spending decisions. SRM incorporates supplier management with demand-based purchasing to enable purchasing agents to

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Epicor is a global leader delivering business software solutions to the manufacturing, distribution, retail, hospitality, and services industries. Founded in 1984, Epicor serves 20,000 customers in more than 150 countries, providing solutions in over 30 languages.

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minimize work in process expenditures while building key relationships with vendors. A primary component to minimizing wasteful inventory, SRM enhances visibility during the buy process and alerts users of changes in demand as they occur.

Product Lifecycle Management (PLM)

For companies that engineer, sell, and manufacture their own product lines, managing the large amount of information around the life of a product can be an overwhelming task with multiple databases and documents in various locations as well as tedious historical analysis surrounding the product lifecycle. Analyzing and streamlining this process has come to the forefront in terms of new technology offerings. Various CAD integration tools streamline the flow of information for engineers, sales, production, quality and management as they analyze and adapt new techniques for producing final products more effectively.

Work-Orderless Manufacturing (Kanban Flow)

Automation of replenishment based on demand is not a new concept to manufacturers. Inventory replenishment is a key concept that has been a core functional requirement in software systems since the 1970's. However, the concept of automating the replenishment and essentially pulling the product through production without human intervention is revolutionary.

Many manufacturers are not ready to give up the control to offer this "hands off" manufacturing planning; others are embracing this concept and are realizing increased profitability as a result. Many software solutions "bolt on" third-party "demand pull" or "work orderless" systems that have great functionality, but lack the tight integration to the core enterprise system that would make them effective tools.

Embedded Kanban functionality is tightly integrated with the core enterprise application and offers the functionality required to manage several types of systems for Kanban Control, including Manufacturing Real-Time Kanbans, Manufacturing Flow Kanbans,

Purchase Real Time Kanbans, and Stock Replenishment Kanbans. Essentially, as inventory levels or order demand requires additional product, Kanbans are automatically requested. Kanban Request components manage the stocking and order demand for parts flagged as needing Kanban Control. Additionally, user-definable rules enable parts to be flagged for Kanban Control at the part, warehouse, or individual bin or cell location level.

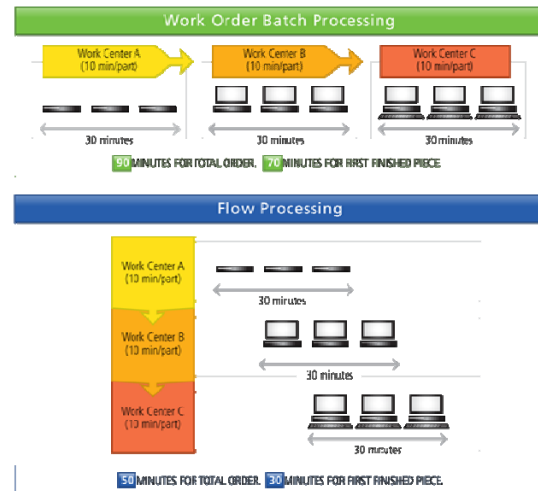


Fig 1: Kanban Flow

Real-Time Manufacturing Kanban

Real-Time Manufacturing Kanbans eliminate the need for work orders or jobs and reduce the amount of on-hand inventories as parts are electronically triggered for replenishment as needed. Instead of planning for each individual order that is processed, parts or components are pulled through production as inventory stocking levels or cell stocking levels fall below minimums. Visually the cell is queued to produce based on the Kanban quantity to take the on-hand back to the maximum quantity for the part at its warehouse, individual bin or cell location.

Manufacturing Flow Kanban

Differing from Real-Time Manufacturing Kanbans, Manufacturing Flow Kanbans look at future demand to dynamically calculate future Stock Replenishment Kanbans. This gives downstream cells and suppliers



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visibility of future demand. As Kanbans are acted on, the downstream demand requirement is dynamically updated. Thus, ensuring all cells and suppliers have real-time up-to-date visibility of future demand.

Real-Time Stock Replenishment Kanban

Much like Real-Time Manufacturing Kanbans, Real-Time Stock Replenishment Kanbans move inventory around the company as it is needed in a particular manufacturing cell, shipping area, customer consignment location or any other location in the company. This automatic triggering of stocked inventory enables manufacturers to use Material Request Queue's to tell material handlers where the stocked inventory is required so that it can be moved as needed.

Real-Time Purchase Kanban

Used to replenish directly from the end supplier, Real-Time Purchase Kanbans tell purchasing that a stock replenishment is required and can automatically send an email to the supplier requesting additional inventory against an open purchase contract, detailing the location that the material will be received - directly to the main stores or directly to the production floor if needed. Real-Time Purchase Kanban functionality automates the replenishment of material from vendor stores and provides for visibility of current supply requests.

Whether "pulling" or "pushing," the manufacturer has choice in system implementation at the part and location level.

Support for Hybrid Approaches to Lean Manufacturing

It's important to note that manufacturers looking to get lean will not migrate their factories and supply chains overnight. Rather, a phased approach to Lean allows manufacturers to track material requirements, and Kanban in a mixed environment. By offering manufacturers the capability to choose how the part will be managed at the part location level, manufacturers can more easily migrate to Lean, while synchronizing MRP planning and Kanban execution.

Leveraging Technology to Support Lean

Businesses that focus on their customers and business relationships to stay competitive will benefit from solutions that enable manufacturers to more easily deploy business information across an entire supply chain of business partners. This sharing of information electronically, and via many different device options, allows manufacturers to stay in synch with key relationships and share information for improved response to changing requirements and demands. This leads to more efficient operations and stronger business relationships with key customers.

Technology provides the edge to streamline process flow, reduce waste in the enterprise, and to meet the challenges of today's market place. For lean manufacturers, the end of the road has always been just the beginning. With lean thinking moving to the enterprise, manufacturers have a whole new set of challenges—and opportunities.



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