
The Lean Philosophy of PRMS

A White Paper



Hunter Business Group Inc.

Success in Implementations



The Lean Philosophy of PRMS

A White Paper

Propelling Lean Manufacturing Initiatives Using PRMS

Hunter Business Group has worked with a number of companies in implementing Lean Manufacturing. Contrary to common opinion, ERP systems such as PRMS can be used to compliment Lean Manufacturing initiatives. For those pursuing Lean Manufacturing implementations, we would like to share practical experiences on Lean implementation using PRMS and describe PRMS' features that support Lean initiatives.

Lean manufacturing, is a 'way of thinking' that requires the application of just enough resources to a situation to achieve the desired outcomes of **Best Quality**, **Lowest Cost**, **Shortest Lead Time**, all by eliminating waste. Increased competition, shrinking demand and the volatility of the stock market recently have raised pressure on organizations to meet conflicting objectives of high service levels and boosting profitability. Lean Manufacturing, when implemented successfully, is a philosophy that enables companies to achieve these objectives. As with many such 'way of thinking' concepts, (Business Process Re-engineering, Continuous Improvement, ERP, and E-commerce) successful implementation requires clarity, focus, and a structured approach.

Lean Manufacturing Characteristics

Lean Organizations are different from their traditional counterparts in that production schedules are based on actual orders as opposed to forecasts. The production cycle times of such organizations are significantly shorter primarily because of small manufacturing lot sizes, quick changeovers, high production flexibility, and preventative maintenance initiatives. Ensuring quality at source also allows these organizations to save on repair costs and production times, which more than offset the preventative costs of such initiatives.

The plant layout in these organizations is cellular, or product flow based, as opposed to department / function based, and the workers are multi-skilled, capable of working on different machines / lines simultaneously and are empowered to implement improvement initiatives.

The Toyota Production System (TPS) defines four key components of a Lean Manufacturing environment: Just In Time Production, Operational Stability, Built in Quality (Jidoka), and Waste Elimination (Muda).

Just in Time Production

Just in Time (JIT) involves making the right product at the right time. This is best achieved by having a continuous flow manufacturing process triggered by actual customer orders. Each process treats its downstream process as a customer and only transfers good quality product downstream when demand, in the form of signals, exists.

Operational Stability

Operational stability ensures there are no surprises in the production process. Standardization of work and implementing Total Productive Maintenance are key steps to achieving operational stability. In addition, robust products and processes and involving suppliers to facilitate on time delivery lead to a stable operating environment.

Built in Quality (Jidoka)

Critical Success Factors are to separate man from machine enabling workers to work on multiple machines simultaneously and to implement systems that identify and resolve bottleneck situations. 'Stop line' systems when issues arise, having a multi-skilled crew focusing on problem areas, error proofing equipment, and implementing visual control techniques are some of the tools used.

Waste Elimination (Muda)

Waste exists in the form of time and material. Changeover times, material transit times, wait times, and down times are examples of where time can be reduced. Poor product and engineering design, overproduction and poor quality are examples of where material losses can be reduced. Eliminating waste not only enables better-cost management and profitability, but also gears production to meet any increases and changes in customer demand.

Implementing Lean Manufacturing

Not all the principles described above can be uniformly applied to all companies due to differing strategies and operating environments. Key to successful implementation is the selection of appropriate tools. These must then be developed and taught to maximize the impact of the Lean philosophy. Additionally, implementation must follow a structured methodology and should leverage existing software systems.

Hunter Business Group Inc. (HBG) has executed and is currently implementing these concepts in various degrees in companies using PRMS, such as Klein Tools, Baxter Healthcare and Selkirk Inc.

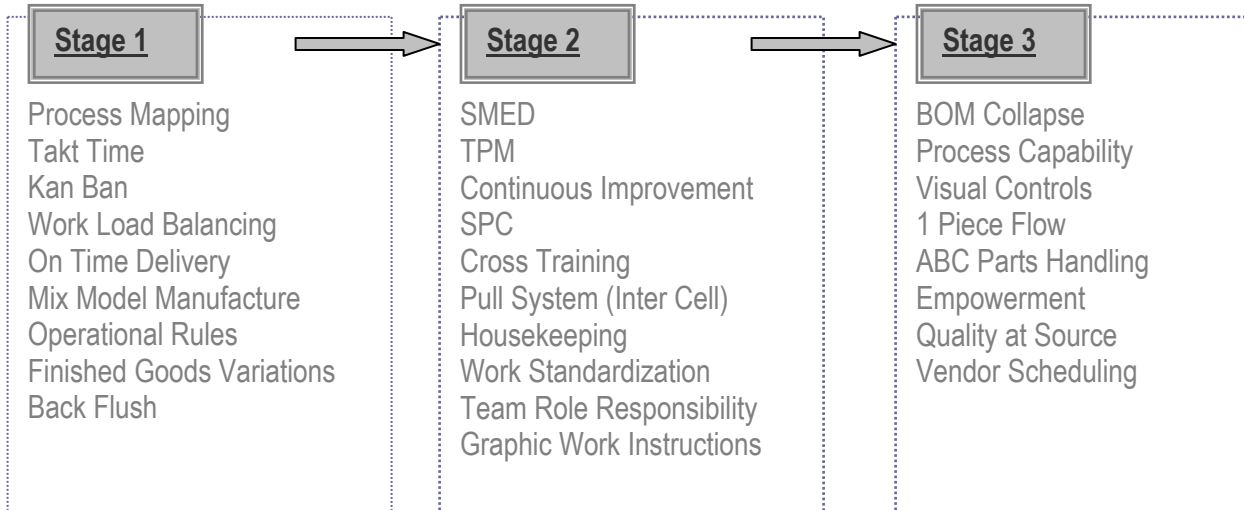
The Scope

The typical project scope was to reduce costs and increase manufacturing flexibility while maintaining the same service levels through the introduction of the following manufacturing concepts:

- A 'Pull' orientated manufacturing process. Production scheduling driven more by perceived product demand and less by the objective of maximizing production and labor efficiencies
- Flow Manufacturing – monitoring output of distinct production lines as opposed to distinct work centers. Repetitive concepts of orderless and flow orders to be given greater emphasis
- Kanban pull signals to streamline control of production execution on the shop floor
- Recognize process constraints of certain operations while fully exploiting the flexibility of others

The Methodology

The project was divided into attainable stages with each stage focusing on certain aspects of the Lean philosophy as listed below.



Implementation was driven by Hunter's patented **Process Alignment Methodology (PAM)** and a set of measures, used to evaluate improvements made during the project, were defined for each stage.

Process Alignment Methodology defines the business processes supporting the company's declared strategy, evaluates the performance of these processes and their required levels of compliance, and defines the configuration of the supporting technology in order to maximize the efficiency and effectiveness of the organization's operations. This methodology is applied to five major process areas: Demand Management, Customer Order Fulfillment, Manufacturing Planning, Manufacturing Execution, and Performance and Financial Reporting.

Results

Some of the benefits of applying Lean Manufacturing at the site were:

- ✓ Kanban implementation for high demand items using auto replenishment and orderless production
- ✓ Identification of bottlenecks and strategies for managing these bottlenecks
- ✓ Decreased production lead times through the use of staging
- ✓ Optimum production flexibility and efficiency by measuring and analyzing lot sizes and inventory buffers
- ✓ Reducing inventory by carefully managing safety stock levels, lot sizes and demand sourcing rules
- ✓ Yield analysis and improvements
- ✓ Reduced waste and improved flexibility through the redesign of Bill of Materials and the use of backflushing
- ✓ Reduced set up time through production scheduling based on product families
- ✓ Better production control and reduced material movement times by grouping similar processes together based on product families

PRMS and Lean Manufacturing

Master Production Scheduling

MPS, derived from forecasting, drives the manufacturing process. PRMS functionality allows users to implement a 'pull'-manufacturing environment through the use of Demand Source Rules and Time Frames. In addition, the combination of MPS along with Rough Cut Capacity will enable evaluation of capacity with respect to meeting customer requirements.

Repetitive / Process Manufacturing

The Repetitive/Process manufacturing option allows organizations to replicate cellular manufacturing layouts on the system through the use of Production Lines. By setting single pay points at the last routing step, production lines enable the redesign of Bills of Materials and simplify production scheduling, reporting and maintenance. Lines also allow multiple products with similar routings to be scheduled on the same line.

Production Scheduling

The scheduling workbench, through production rates enables lean scheduling by synchronizing the sales rate with the production rate. Defining Group Technology Codes in the Product Master enables Mix Model Scheduling, which is the scheduling of similar products simultaneously in order to minimize change over times. The scheduling workbench also allows the use of Lean Scheduling principles of forward scheduling and permits scheduling overlapping operations through the JIT and lead-time offset fields in the Product Master.

The scheduling workbench also forecasts based on customer pull rather than driving up production efficiencies.

The definition of lot sizes and lot sizing rules in the product master maximizes flexibility while minimizing set up times.

Finally, production schedules also allows careful management of capacity so that the production agenda issued to the shop floor is in line with capacities, which is not the case in a work order based environment.

Manufacturing Execution

In material control the use of backflushing, rather than discrete issues, along with staging and automatic movement to the next staging location through the default warehouse field in the product master provides the advantages of reduced data entry, improved inventory accuracy, less material handling, elimination of paperwork, and reduced manufacturing lead times due to reduced material movement times.

Orderless production, set in the product master, reduces administrative tasks and freeing up time for value added activities.

Capacity Requirements Planning can be used to evaluate available capacity against requirements, within a short time frame and plan for temporary changes in work center capacity to meet requirements during periods of high demand.

Purchasing

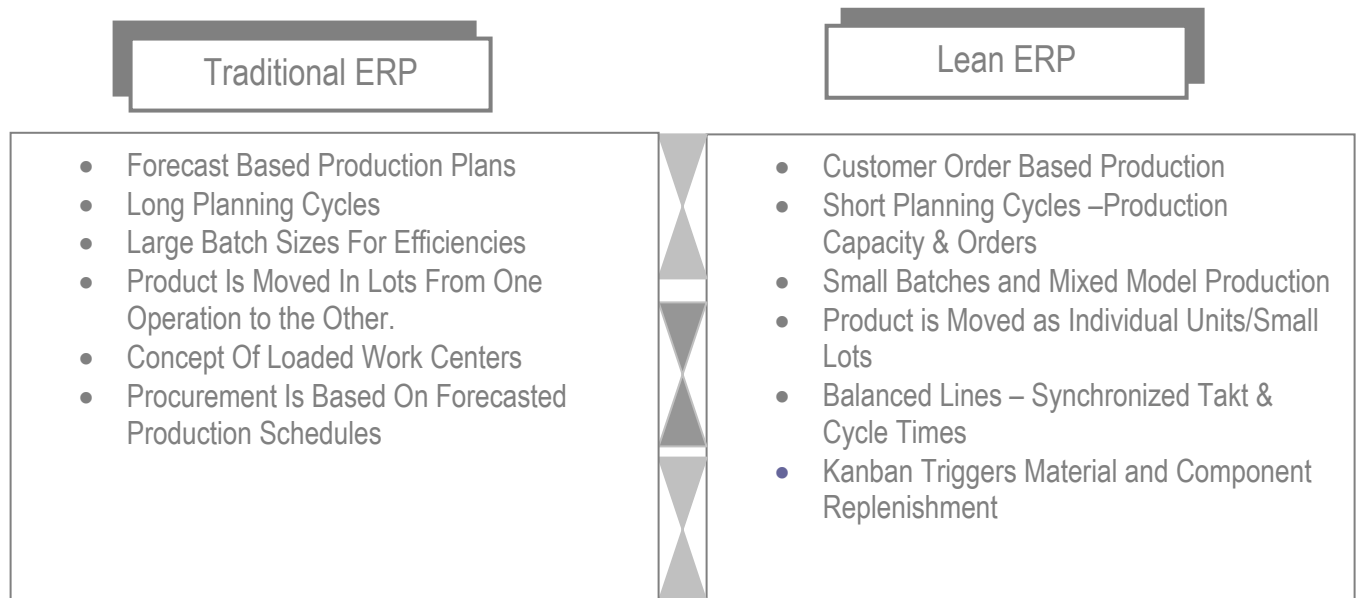
Setting up accurate lead times in the product master enables JIT scheduling for material availability and purchasing.

Reporting

PRMS enables the monitoring of actual down times, set up times, scrap levels, and actual production against demand. This can be used as a basis for continuous improvements to spot areas where changes can be made, to define attainable standards, and to monitor the effectiveness of initiatives.

The costing workbench enables monitoring actual against standard costs for material, labor and overheads and if set up correctly, will provide cost and usage variances to be used for defining improvements.

Traditional ERP VS Lean ERP



For learn more about how to improve your manufacturing processes by implementing Lean Manufacturing
Please call 1800-263-0193 or email hunter@ica.net

Hunter Business Group Inc.
Success in Implementations
www.hunter-inc.com