Kiwiplan

# Robust Inventory Management – Using Continuous Improvement Methods

- In today's Production Environment customers want all things—price, quality, service, and on-time delivery.
- In today's Production Environment customers and competition are pressuring you to supply product at a lower and lower cost.

These truisms have companies scrambling to implement known methodologies to improve margins. The push is on to implement Just-In-Time (JIT) manufacturing and the Lean system of continuous improvement (CI) manufacturing throughout all manufacturing requirements—including inventory and warehouse management!

Implementing these methodologies addresses long-standing industry-wide problems. Let’s elaborate . . . Has your plant ever experienced the:

- financial impact of an inventory write-off?
- embarrassment of telling your customer that you can’t deliver on time because you have to re-make the order?
- wasted time searching for inventory you know you have (but can’t find)?
- loss of sales when you’re out of stock?

## Inventory and your *lean* initiatives

Since the introduction of the *lean system*, the objective for inventory management has been to minimize stock on hand, if not to fully eliminate it. True to *lean* principles, eliminating waste at every turn in the manufacturing process improves quality while reducing production time and costs.

Excess inventory is one of the “seven wastes” in the *lean* philosophy. Inefficiency occurs when a plant maintains more on-hand inventory than is minimally required to produce products in the immediate time frame—paper, work in process, and finished goods. Rather than the batched, push-production system where large inventories are maintained for the *potential* of future sales or supply chain problems, *lean* methods employ a pull-production system where orders are **pulled** from customers and raw material as inventory is maintained only long enough to be swept into production—just in time (JIT), so to speak.

Manufacturers today are seeking to be more productive and less wasteful with regards to inventory management. The premise is that by decreasing randomness in the manufacturing process, you also decrease inventory. My company, Kiwiplan, embraces this line of thinking, and therefore, has made it the core of our manufacturing execution systems' (MES) products

## The necessity of a production control system to reduce waste

From this thinking has emerged the notion of total integration and planning with a production control system (PCS). Here concepts such as system flow, quality of performance, labor productivity, purchasing and materials management, inventory, and shipping are completely integrated in terms of procedure and communication. With the real-time data available through a PCS, plant departments are integrated and coordinated toward the goal of decreasing randomness in the production process.

With a robust PCS software package, *lean* inventory management is facilitated in all aspects of the operation and should include the important functions of *cycle counting*, *turnaround/turnover, and supply & demand*. In essence, building and utilizing successful CI manufacturing today depends on this sort of inventory management and efficiency tool.

For *cycle counting*, inventory managers can run inventory audit lists tagged to any period of time to determine reasons for discrepancies in inventory numbers. As for *turnaround/turnover*, inventory management through a PCS can eliminate waste by reducing on-hand inventory and thus increasing turns, the desired result of a *lean system*.

Regarding *supply and demand chains*, inventory management through PCS software is able to review key time-critical data to balance the time phasing requirements of materials, components, and tooling. That is to say, the automated robust PCS manufacturing solution positions inventory managers to make informed decisions concerning demand chains and supply chains. This is especially true for plants using the newly emerging vendor-managed inventory systems (VMI) that are increasingly seen as the logical extension of *lean* manufacturing methods and JIT inventory management.

*The cycle counting*, *turnaround/turnover, and supply & demand* aspects of inventory management are vital elements of any robust PCS software package seeking the *leaning* of manufacturing operations. With the knowledge gained through the real-time data available in a PCS, inventory management becomes a central point of analysis for finding additional efficiencies in the system flow. The resultant efficiencies in manufacturing eliminate waste in the process. By offering the user a complete inventory management package interconnected with all areas in the production process, integrated PCS software builds a CI environment that enhances both productivity and profits.

## Addressing the waste in inventory through JIT Scheduling

Going hand-in-hand with maintaining JIT inventory levels is JIT scheduling. By striving to reduce inventory to the lowest possible working levels, a plant must constantly be adjusting its schedule of ordering, manufacturing, and delivering. In doing so, communication both up and down the supply chain is critical. Frequent orders are placed for paper supplies, and small production runs are constantly being initiated. In order to achieve this breakneck pace of order/production schedules, a firm must constantly be making small changes to production and recognize the incredible importance of *kanbans (signaling systems).* .

## What makes the Modern JIT system work?

Possibly the single piece of JIT most relevant to a study of supply chain management are the partnerships essential to making JIT truly work. A plant cannot implement a JIT system by itself; it must have the cooperation of its entire supply chain. The supply chain must include suppliers, customers, and <u>every department</u> within the company. The sheer amount of information needed for a JIT system to operate well demands that the information flow of the PCS coupled with an up-to-date Order Entry and financial system stretches throughout the supply chain, almost to the point at which an entire supply chain operates as one entity. Examples of these kinds of partnerships are everywhere in today's business world; we only need to look at some of the world's hugely successful companies, Toyota, Dell, Caterpillar, Boeing, and General Electric.

Other JIT concepts further illustrate what truly makes it worthwhile. By the 1980s the Japanese had achieved manufacturing greatness by practicing continuous improvement, in that a firm is constantly working to improve in every facet of its business functions. To do this, a firm must always increase quality and look for innovative ways to solve problems. All of these are cornerstones of a modern JIT system.

Lastly, gaining workforce commitment to a JIT lean manufacturing system is important. Without the dedication of the workforce, any endeavor is sure to fail. Workforce commitment can be achieved in several ways. A simple way is to cross train the workforce members outside of their normal business function and help increase an employee's problem solving ability. In doing so, a firm is empowering its workforce to think about their function in a new way while looking for ways to improve and giving them an overall view of the entire firm, not just their single job. When this is coupled with the support of management, an increase in resources to solve problems, and an increase in employee roles and responsibility, a workforce will feel empowered and work to make JIT a success for the business. Only then will the proper inventory needs of the plant be truly capable of coming under control and part of a *lean* moneymaking enterprise.

## Weaknesses of JIT

Just as JIT has many strong points, there are weaknesses as well. “In just-in-time, everything is very interdependent. Everyone relies on everybody else.” (Greenberg, 2002). Because of this strong interdependence with JIT, a weakness in the supply chain caused by a JIT weakness can be very costly to all linked in the chain.

Communication is king in a JIT-rich supply chain. There is a risk involved with JIT when there is a communication breakdown and the company cannot generate the correct inventory needed to keep the just-in-time system running smoothly.

## Inventory with JIT in practice and beyond

JIT is not the end of the evolution of just-in-time systems; it is actually just the beginning. A PCS is another result that spawns from the premise behind this next generation of JIT. The main difference between the two is that early JIT was not computer system based, and JIT using a PCS is based on an advanced philosophy which helps ensure the visibility of all functional areas within a company as well as within its supply chain.

JIT has an overall strategic focus to provide companies with an exceptional amount of savings. Coupled then with Lean Supply Chain Management, JIT provides improved customer satisfaction and supplier performance. Using such tools as extended value-stream mapping, pull, and supplier measurement and accountability systems will add to your margins.

Apply lean principles, use JIT production, and manage all through a PCS in order to reduce transportation and warehousing costs by as much as 25% and inventories at all levels by as much as 50%. Look towards the future; stand still and you will lose ground. Embrace methodologies to improve and gain total control of your enterprise will position you to thrive. The choice is yours!



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## Appendix I

| Minimal Requirements and Use of a Robust Inventory System<br><br>Robust Inventory system – one that is business rules defined, supported and enforced by plant management, and executed at the specified frequencies. |
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| <ul><li>Local plant management—Approve all items that are priced at and routed as warehouse items.</li><li>Track defined warehouse items daily.</li><li>Plant Management—Review the list of warehouse items regularly to add or remove items from the warehouse program.</li><li>Compare the order entry pattern for warehouse items to the call-off quantities to ensure that they are consistent.</li><li>Consider lead time (based on routing) when determining minimum stock levels.</li><li>Schedule and execute monthly stock takes to verify physical inventory.</li><li>Use automated inventory system to monitor inventory levels between physical inventories.</li><li>Do not book and produce stock orders more than two weeks in advance.</li><li>Do not book orders for stock items until the pallet count has dropped to the minimum stock levels.</li><li>Review and communicate progress in reducing inventory for target stock items daily with customer service.</li><li>Enter into the order entry system the defined minimum and maximum stock levels for target stock articles.</li><li>Define minimum and maximum stock levels for all new stock articles entered into order entry system before the first order is produced.</li></ul> |

- Management and Customer Service—Check the pallet count for target stock items daily.
- Update and review the inventory summary report weekly.
- Update pallet counts for target stock items daily.
- Customer Service and Sales—Follow up with each account having inventory older than 30 - 60 days old (account specific).
- Change due dates and order quantities for stock orders booked in error to prevent orders from being produced before minimum stock levels have been reached.
- Enter an accurate delivery date for the due date for all orders.
- Update local management on inventory reduction progress weekly.

## Appendix II

**Goals for management to minimize waste and reduce costs in warehouse and finished goods inventory.**

- Follow FIFO – First In and First Out.
- Minimize aged inventory.
- Reduce stock article pallet count by x number of pallets.
- Ensure delivery dates are accurate.
- Maintain and improve current on-time delivery rate.
- Reduce warehouse costs.



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