Lean Thoughts

Inspired People | *Robust Processes* | *Lean Operations*

March 15, 2004

For all Consortium events – Contact Richard for more information.. For other events – contact directly

Important Consortium Dates to add to your calendar

The Team Time schedule has been established for the coming year. Team Time will start at 1:00pm at the host company. This will allow for folks to work with peers in the host site to collaborate, facilitate and implement ideas to advance the implementation of manufacturing excellence. *Participants should be prepared to work on the shop floor and come equipped with proper PPE.* The host site will advise 1 week in advance Team Time Projects. Part of the Team Time activity will include a plant tour.

- ☐ **April 08, Team Time,Kraft Foods,** contact Mariela Castano, Mariela.castano@Kraft.com
- ☐ **May 13, Team Time,Stackpole AGD,** contact Cindy Grolleman, cindyg@stackpole.ca
- ☐ **May 18 - 21, AME Pacific Rim Conf.,Melbourne Australia, info at www.x2xconference.com** contact ame@pams.org.au for dialogue
- ☐ **June 10, Team Time,Stackpole CSD,** contact Gerry Ward, gerryw@stackpole.ca
- ☐ **July 08, Team Time,Eaton Cutler-Hammer** contact Joe Fisher, JoeRFisher@eaton.com
- ☐ **August 13, Team Time,Messier-Dowty.** contact Richard Evans, Richard.Evans@Messier-Dowty.on.ca
- ☐ **September 09, Team Time,CGL Manufacturing** contact Dave Desker, daved@cglmfg.com
- ☐ **October 14, Team Time, CTS Corp.** contact Bob Garces,. Bob.Garces@ac.ctscorp.com
- ☐ **October 18-22, AME Annual Conference, Cincinnati.** contact www.ame.org for details
- ☐ **November 06, Consortium ShareShowcase,Eaton Cutler-Hammer** contact Joe Fisher, JoeRFisher@eaton.com
- ☐ **November 11, Team Time,Morrison Lamthe.** contact Tony Vita, tvita@morrisonlamthe.com
- ☐ **December 09, Team Time,Inscape.** contact Joe Cyr, jcyr@inscapesolutions.com
- ☐ **January 06, Team Time,Alumabrite Inc.,** contact Richard Kunst, Richard.Kunst@Kromet.com
- ☐ **February 10, Team Time,Kromet International.** contact Richard Kunst, Richard.Kunst@Kromet.com

A Message from Jim

Dear Richard,

I was out on tour this past week, listening to companies' stories as they try to achieve a "lean" transformation. And I was struck, as I often am, by confusing terminology. The companies I visited thought they were "adding value" but I mostly watched them adding cost. So let me try to clarify things.

I always use the term "creating value" rather than the more familiar "adding value" because the former is the voice of the customer while the latter is the voice of the accountant. Companies add up their costs - both bought-in materials and internal spending on capital and labor plus their margins - then subtract the cost of their purchased items to determine how much "value" they have "added". The problem is that this leaves out the customer, the only one who can determine value. Often, what a company really means by "adding value" is "adding cost". Whether the extra cost creates any value is known only to the customer, and many managers never ask!

A quick example, in case I haven't been clear: Let's suppose a company buys some nuts and some bolts and assembles them into a simple product. These purchased items clearly are costs. Then lets suppose the company uses a lot of labor to store these parts, take them to the point of assembly, assemble them, rework the defective items, store the assembled goods, hunt for missing items, and then ship them. Finally, let's suppose that the bought-in items cost 50 units and the selling price for the finished product is 100 units. Clearly the company must have "added" 50 units of "value". Right? Wrong!

From the customer's standpoint this company may only have added fifty units of "cost" including its margin, and created very little value. The reason is simply that most of the steps consuming the resources - storing the parts, hunting for them, reworking them - added cost but no value from the perspective of the customer. Customers actually would have thought the product was more valuable (and been willing to pay more) if these steps had been left out and the product had been delivered faster!

Because products come as a bundle of value and costly waste and because the firms in most industries currently mix the two, customers often have no choice but to purchase the waste along with the value. But what if some lean thinking firm in your industry separates value from waste and eliminates the waste? If that isn't your firm, watch out!

Words aren't a substitute for action, but the wrong words often get in the way of the right actions if managers can't tell the difference between value and cost. So I hope lean thinkers will sharpen their language to focus on actually creating value, often by eliminating unnecessary costs.

Best regards,

Jim

Jim Womack President and Founder LEI

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5 Steps to Implementing a Lean Material Handling System

In a traditional material handling system, large quantities of purchased parts arrive at the receiving dock, typically on pallets or in boxes, and are delivered directly to the production floor by fork truck in an unorganized manner. Therefore, the shop floor becomes a mini-warehouse with multiple storage locations and that is when material control is jeopardized.

The result for companies trying to implement lean production is confusion, stock-outs, and difficulty sustaining continuous flow cells. Common problems that we see with such traditional systems include difficulty knowing how many purchased parts are on the floor, cells running out of parts, and operators unable to sustain takt time because they have to go searching for parts. The solution is to replace traditional material-handling systems for purchased parts with lean systems based on five key implementation steps:

1. Develop a plan for every part (PFEP). This spreadsheet or database fosters accurate and controlled inventory reduction and is the foundation for the continuous improvement of the material-handling system. This is the first step because you will use this data in other steps, such as setting up the purchased parts market and establishing pull signals. To create the PFEP, you'll need to gather essential information on every part number entering the plant, such as the part's specifications, supplier, location of supplier, rate of usage, storage locations, point of use, container size, as well as other key data.

2. Build the purchased-parts market. The market maintains controlled levels of purchased parts in a central location instead of storing them in scattered locations throughout the facility. Key pieces of information needed for creating the market include determining the maximum level of inventory to hold, the minimum inventory level, and how much space to provide in the market for racks or pallets, depending on the volume and size of parts. You should also establish rules for operating the market, such as an address system, procedures for reacting to overshipments from suppliers, procedures for reacting when the minimum inventory level is reached, and a method for loading and picking parts to maintain a first-in, first-out sequence.

3. Design delivery routes. A lean material-handling system should deliver materials from the purchased parts market to the operators' fingertips. This step involves identifying delivery aisles, selecting a conveyance method, such as tuggers, determining the stops and delivery points for the route, and creating correctly sized point-of-use gravity racks at delivery points. Gravity racks allow material handlers to slide new containers of parts to the fingertips of operators inside the cells. Handlers fill the racks from the outside, so they don't interrupt operators. Each part used in the cell has its own shelf. When a container is empty, the operator slides it down a return shelf for retrieval outside the cell.

A good way to prepare people for the change to lean delivery is to compare them to the operation of an efficient bus route. The lean system will drop off passengers (purchased parts) and pick up passengers (empty parts containers, pull signals, and ultimately, finished goods), at regular intervals. In contrast, the traditional system makes material handlers rush around the facility delivering parts based on urgent need, much like a taxi driver driving around looking for fares and moving only one passenger at a time.

4. Implement pull signals. Signals, such as the familiar kanban card, control the precise times and quantities of parts delivered to cells. You must precisely control the number of kanban circulating in the system. The first step is to determine how frequently to deliver material to cells, and whether the route is "coupled" or "decoupled." In a coupled route, the tugger driver loads carts in the market and drives them to the cells, and delivers them to the point of use. In a decoupled route, the work is divided between a market attendant who loads parts and the driver who delivers them. Decoupled routes require two sets of carts but they improve labor utilization, so routes can be longer and have more carts. The type of route affects the number of kanban needed for each part. Coupled routes require kanban equal to three times the delivery frequency. Decoupled routes need signals equal to four times the delivery frequency. The formula for figuring the total number of kanban for a decoupled route looks like this:

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(Hourly usage x 4 x route frequency)
Standard container quantity

Example: For Part #12345, the usage is 90 per hour, there is one cycle of the route, and a container holds 30 parts. (Always round up to the next whole number.)

(90 x 4 x 1)/30 = 12 kanban

5. Continuously improve the system. Experience has taught us that the best way to sustain and improve the system is to have daily monitoring of the system and periodic auditing. For instance, the production control supervisor should spend about an hour a day observing various elements of the routes and purchased-parts market. The material-handling team should meet daily to communicate problems and seek solutions. Key performance metrics focused on such factors as delivery, productivity, and safety should be established for the team. The daily monitoring must be supported by periodic audits done by overlapping levels of management to make sure that the new tools -- the PFEP, the purchased-parts market, the delivery routes, and the pull signals -- are being maintained and that standard work is being followed. Emphasize to people that processes, not individual employees, are being audited. Post results for everyone to see.

The best way to start the implementation is usually at one work cell. You can do one cell in a short period and really learn to understand the system, then scale up to the entire facility. Trying to implement the system in a whole facility at once can get bogged down.

Chris Harris and Rick Harris

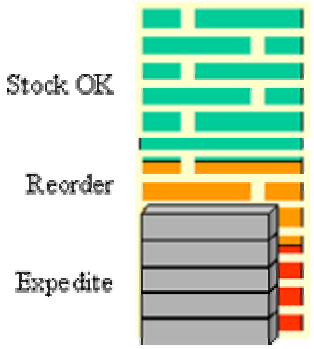
Rick Harris, Chris Harris, and Earl Wilson are co-authors of the new Workbook, "Making Materials Flow" from the Lean Enterprise Institute (LEI). You can reach them at http://www.harrisleansystems.com.

RED YELLOW GREEN Inventory Control

The following is an excerpt from the SME newsletter

Manage inventory where the color represents the remaining inventory, e.g. green = above reorder point, yellow = below reorder point, red = below safety stock (expediting needed).

A wall was color-coded to show reorder point and expediting levels. As the stock was used the colors were revealed. In this case, a machine shop was supplied with a variety of ornamental brass castings from a foundry about 50 miles away. There were constant shortages of machined components in the assembly shops that the machine shop supplied. The company had reached the finger pointing stage, where the assembly shop blamed poor delivery performance on the machine shop folk, who in turn blamed the casting shop. The colored wall system provided the answer. Each half day the machine shop would ring the foundry with the color of each of the buffer stocks, by reading the wall. No computer-based ROP, or MRP systems. (But a paintbrush was needed when resetting order levels.)



Simple Approach to Standardized Material Handling

Another trick to adopting engineered material handling is begin with some simple basic to ease into standardized work. Start with daily garbage pick-up. Have your operators place their full garbage containers on the main aisles and then have a material handler pick up the rubbish … just like at home .. simple, effective and a good foundation tool to build upon your next stage of material handling … *Richard*