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What Lean Looks Like

A lean manufacturing consultant lists ways that lean shops look and operate differently.

Article From: [MMSOnline.com](#), Preston J. McCreary, Partner
Posted on: 7/22/2009

How do you know if your manufacturing facility is truly "lean"? Succeeding at lean entails establishing a lean culture in which the tools for becoming more lean are pervasive throughout the organization. More important than implementing 5S or putting together a few U-shaped cells is Lean Flow—a continuous effort to eliminate the waste in all aspects of the business. Use the following list to measure how well this culture and practice have taken hold in your own facility. You know your shop is lean when....

Incoming inspection of supplier components is minimal or non-existent.

QA primarily audits processes and does not try to "inspect in" quality.

The actual Lean Flow performance is:

- Inventory turns greater than 10
- Lead-time equal to or less than 3 times total work content time
- On-time delivery better than 95%
- Productivity gains from Lean Flow implementation greater than 10%, and continuing to provide lower labor costs going forward

Products move through machine cells, not through groups of functionally arranged machining processes, so that:

- Manufacturing is designed around cells based on families of products
- Cells include a mix of different types of machines
- Cells allow for people to run multiple machines of mixed types to reduce labor cost
- Standardized work practices are defined for each operation, along with quality tasks, tools required, materials and safety procedures

Cells are designed using a takt-based mathematical process that calculates the appropriate number of

- Machine resources
- People resources
- Operations/workstations
- Products/components in work-in-process (WIP) inventory

Batch processes (heat treat, painting, plating, degreasing, etc.) or unique processes not included in a cell are still included in the Lean Flow design of the factory. The processes

- Have defined WIP inventory queues that meet all of the in-process kanban requirements, and are less than 1/3 of prior normal operating WIP levels
- Use the same tools of standardized work, sequencing, quality, high performance preventative maintenance (HPPM), and continuous improvement

Your machine shop has more machines than pieces in process.

Everyone realizes that to be a Lean Flow plant, it must look like a Lean Flow plant.

This means:

- Signs to define cells
- Locations on the floor, and work benches zoned and identified, for the materials that should be stored in each location
- 5S a clear priority throughout the plant and the entire company
- Visual work instructions in place and being used
- Materials presented and replenished using kanban

Inventory queues, or WIP inventory, are

- Mathematically designed to achieve a response time and WIP inventory target
- Under first-in first-out (FIFO) control
- A link between processes
- Not violated
- Easily visualized and constantly monitored

Associates are trained to be flexible and operate multiple types of equipment, so that product always progresses through cell operations and toward the customer. This means:

- A training and certification program exists to allow associates to run multiple types of machines
- Cross-training is a daily or weekly activity to enable associates to have skills and

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flexibility to move to where work needs to be performed

- Process instructions are visually-based, not text-based, and focus on quality
- Process documentation of standardized work identifies quality and ties it to the task; work that is identified as waste is highlighted for future potential elimination
- Associates can perform the standardized work, as well as two types of quality work: check and double-check
- Associates in the factory and the offices understand, can explain to visitors, and communicate using Lean Flow terms

Repetitive office processes (A/R, A/P, Purchasing, etc.) are defined, documented, executed and measured with the same focus on lead time, quality and productivity as are the factory processes.

The shop is not using just one tool from the Lean Flow toolbox, but using many of the tools together to achieve lean manufacturing's benefits.

Demand is not scheduled by MRP using a forecast as a driver. Demand is triggered by the consumption of finished goods inventory needing to be replenished, so that drivers include:

- Actual customer orders
- A signal for manufactured components from a supermarket or assembly process in order to replenish a consumption-driven kanban

Management/supervisors/planners and support personnel are organized around cells or groups of cells, not around functional process groups ("departments").

Manufacturing software does not drive how the plant needs to be operated. Instead, the factory operates using the best methodologies to reduce lead-time, reduce cost and improve on-time delivery.

Continuous improvement drives additional performance improvements after the initial Lean Flow implementation and focuses on the waste identified by the associates.

Communication is constantly improved, and is viewed as a priority, so that:

- Cells have communication boards to provide feedback on cell performance for key performance indicators
- Meetings within a cell or group of cells are held daily to discuss performance, issues that need to be resolved, and to allow associates' problem-solving participation
- Communication by top management is frequent, regular, personal, visible and focused on business issues at the plant level



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