FactoryPhysics®
Strategy. Execution. Profit.

When Inventory is Not Waste
April 4, 2007
The Manufacturer
By Alan Earls
http://www.themanufacturer.com/us/content/5379/When_inventory_is_not_waste?zhl=true

Some lean companies don't buy the argument that less inventory is more, finds Alan R. Earls

Unlike some buzzwords, lean manufacturing is just what it sounds like: lean. Practitioners have invented all kinds of ways to ensure leanness, but some veterans of this organizational diet have discovered disturbing side effects—their corporate anorexia may have made them look svelte but not necessarily beautiful in the eyes of customers.

Take the example of the Industrial Controls Division of Moog, Inc., which found that, along with its many clear benefits, lean had also produced an embarrassing tendency to miss customer due dates. At the time, the manufacturing process was a combined fabrication/assembly operation in a configure-to-order environment. But poor customer service remained a persistent challenge.

About six years ago, Moog Operations Manager George Cameron and his team recognized that their business model would work far better if they had more stock and could use that stock and key subassemblies so that final assembly could be accomplished quickly, to fill an order. At the same time, Cameron took a course associated with Factory Physics Inc., a consultancy started by Mark Spearman, which took a similarly realistic view of the need for more inventory in some parts of the lean process.

Working with Spearman, Moog first focused on the critical challenge of on-time delivery, which was costing the company valued customers. The concept was to insulate fabrication from assembly and test by putting an inventory/order interface between the two. Fabrication would make the component parts to stock. Assembly and test would build subassemblies from the components in stock based on customer orders. This would reduce the lead time to the customer to the cycle time in assembly and test. The model was first piloted in the torque motor subassembly cell. Variability in supply and demand was buffered with an inventory of about 180 part numbers in the cell that were used to create over 1,000 unique torque motors. As the process became more stable, Cameron's team started to lower inventory levels and change to a FIFO (first in, first out) process. The next step was to move back to parts supply to further reduce buffers as variability was reduced.

Rethinking lean parameters
Spearman says the importance of inventory can be derived from understanding that the value stream has "two essential components—demand from the customer side and transformation on the supplier side." Spearman says that any source of variability in

demand or transformation generates inefficiencies that can only be addressed in one of three ways: through inventory, by maintaining stock; through time, by making the customer wait; or through providing extra capacity. "Those are the buffers in the process," he explains.

Deciding how to optimize the whole process, keeping in mind these three buffers, depends on the requirements of a particular business. "If you are making commodity goods, you may need to maintain more finished goods inventory, while if you are making custom goods, you may have none," says Spearman.

Moog set inventory levels in its work cell to cover demand and supply variability, using a Factory Physics® tool to quantify the tradeoffs between fill rate, inventory investment, and number of setups in the cell. Moog continued to work through different parts of the product line over a period of several months until delivery times improved and the process became stable.

In the end, Cameron and his team found they had to control only about 150 part numbers, from which a far larger number of end-products could be created. Since going through the process, Cameron says cycle time has dropped from two weeks to about two days, and instead of delivering late, they are often able to deliver ahead of schedule. "A nice bonus was discovering that we also got a 7 percent cost savings, because there was less confusion in the process," he adds.

Just in time—for the customer

At Hoffman, part of the Pentair Technical Products Group that manufactures industrial enclosures, Director of Lean Enterprise Michelle Massimino has overseen a similar transition. "When I came here from my auto industry background, I saw the distribution area and was shocked by the volume of inventory," she says. However, over time Massimino has not only learned to appreciate that inventory, she has also helped ensure that it contributes to the company's results.

Hoffman's President Del Nickel is known as a great lean evangelist, and lean has been part of the culture for more than a decade. Last year alone, employees participated in more than 300 kaizen events. Still, with more and more Hoffman customers asking for non-standard products and more reliable delivery dates, Hoffman found there was no substitute for inventory. In fact, inventory is the key to Hoffman's just-in-time service: the company says it can guarantee that the product quantities and configurations it requires will be available almost as soon as they're ordered. Even Hoffman's custom, assemble-to-order products are built and shipped within 10 working days.

Massimino has helped refine the process and says the company started with "basic stability tools" and then moved through a 5S approach. "We then tried to design in a pull flow so that we would stop creating excess inventory and focus on satisfying customer needs." Now, instead of inventory as a safety blanket, "We have implemented a way for material and information to flow in a raw material supermarket," she says.

Nowadays, Hoffman has a warehouse with an ample stock of "A items"—high-volume products that turn frequently. Indeed, of the 9,000 SKUs in its catalog, Hoffman stocks about two-thirds of them. But it's not dead inventory. "Our inventory turns are about 26," says Massimino. And the rest of the product line can be made to order rapidly. "Inventory isn't the enemy if you turn it fast enough," she adds.

Mark L. Spearman is President of Factory Physics Inc., a management consulting company that provides a scientific framework, software, and training to optimize performance of manufacturing supply chains. Factory Physics principles and applications provide executives and managers the practical science to cut through complexity, reduce conflict and establish predictive control and direct accountability to accelerate performance of manufacturing supply chains.

For more information or comments, contact:
Ed Pound
Factory Physics Inc.
+1 (979) 846.7828 ext. 151
Email: pound@factoryphysics.com