



Design a supply chain to enable a great factory, then plan it with ION, the toolset for managing a lean material process.

By Dave Pytel, Founding Partner FlowVision. LLC.

To be a high volume manufacturer in the United States, you have to be lean. One might think that **The Husqvarna Group**, specifically the plant in Nashville, Arkansas, called on **FlowVision, LLC** to streamline manufacturing to stay alive in the highly competitive worldwide markets. This was not the case for Nashville. We came upon a well-oiled machine on the production floor. Floor kanban systems, a clean and well-organized environment, and lines that hummed to a 15 second beat were all in place and working well.

In short, we were not here to fix the machine, but to help them figure out how to feed the machine in a way that kept the production floor running smoothly, but also, and this was the key reason for our visit, to ensure that their customers had what they wanted, when they wanted it.

The Husqvarna Nashville plant makes chain saws, blowers, trimmers, and other related products. Many of the products are seasonal, and the plant services a wide variety of customer segments. A large volume, but relatively low number of configurations go to the big box stores like Lowe's and Walmart. A much higher variety of products go through the dealer network, typically at lower volumes. In addition, this plant exports a large amount of items to other countries, a testament to the efficiency of this plant, and to the management team led by Tony Cochran (General Manager), and Steve Harvill (Plant Manager).



Getting back to feeding that machine, the production floor, we started with finished goods. Tony would agree that we wished we would have started with raw material first, starting at the roots of the tree instead of the fruit, but that didn't come into scope until later. For finished goods, we had a simple

distribution model, sending goods from Nashville to a warehouse in Shreveport, and our first task was to put this part of the supply chain on a pull system, with shipments driving what we build instead of a forecast that is always never quite right. Perhaps you can relate?

This is where we brought in ION, a tool developed by FlowVision when Excel just couldn't keep up anymore, and when our customers expressed a need for a single planning solution for managing a pull process. ION is a cloud-based software solution that ties in all of the usual ERP system data, plus historical consumption data, forecasts, sales order data, and a host of other elements. In

the end, it delivers the correct inventory sizing based upon real data, statistical analysis via our patented “lead time based” algorithms that truly consider all aspects of how an item should be managed.

Our ION implementation for finished goods gave Husqvarna Nashville a clear trigger to build the right product, at the right time, taking into account seasonality, promotions, and lead time expectations from customers (which varied by product). With ION, they can dial in a service level, see the inventory impact of that service level with easy simulations, and make the same decision every factory manager has to make to balance inventory and service level, but with information, not guesses.

Finished goods went great, with immediate improvements in customer service levels, but it quickly became clear that though we could tell the machine what to build via ION, that didn't mean there would always be raw material and subassemblies available to build the products we needed. Call it ION, phase 2.

We put the raw material on a pull system as well, using ION to create orders to bring in our parts. Each part gets a full analysis in ION, every week, to determine the correct inventory needed to handle both normal usage, plus all of the variability we have seen the past, just like we did for finished goods. We also took into account package sizes, minimum order quantities, and many other attributes.

“ION gives us a more intelligent, algorithm-based demand forecast, where previously we just did everything on spread- sheets,” Wolowiecki says.

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As we wrapped up our raw material work, management asked for even more savings in finished goods inventory. The worst inventory you can have is in finished goods. It has the most overhead, is not flexible (versus parts that can be used on many finished goods items), and is owned by you; whereas raw material might be owned by you and/or your suppliers. The approach we took was to look at the current factory lead time (from the time the warehouse signals for more, to the time they receive it) and

put together a plan to cut this lead time by 33%. Lead time and inventory go hand in hand.

When you go after finished goods lead time reductions, you have to dig deep and see what is linked to a “fixed” production plan. We have designed supply chains for our customers who quote their customers response times of months, and others with lead times of hours. When we looked at Husqvarna Nashville, we found that a two week “frozen” build plan was being used by many upstream processes. We planned to cut this “frozen” build plan by a week, so there was lots of work to do. “Frozen” gets noted as such because even though the goal was to lock that build plan, it never really worked, which is true of most factories. They constantly had to change that schedule in the two week window, scrambling, expediting, and spending money and resources to get it done. Our plan was to DESIGN the process to support more real time changes, and cut that “Frozen” build plan to one week, ensuring that all supporting processes were in synch.

This took us to subassemblies and JIT (Just in Time) parts. We had left JIT parts alone up until now, as well as subassemblies built at Husqvarna plants nearby, but now that needed to change. These items could be built to order in a two-week period, but most could not be ready in a week, so we put another ROP (Reorder point) or Kanban system in place with ION. The key to shortening your lead time to customers is to have all the parts you need in place BEFORE you get the order. Forecast and MRP try to do this, but accuracy issues become customer delivery issues. A true pull system, with inventory sized in a data-based manner, will allow you to dial in your inventory to meet any desired customer service level.

At this point, Husqvarna Nashville has an end-to-end pull system in place, all managed by ION, with a shorter lead time, thus less inventory. They even have the ability to build some items to order, with no warehouse inventory. By putting subassemblies and raw material on a pull process, the factory is ready to build any product, anytime, in a way that will meet their customers’ needs with minimal inventory.

The Husqvarna Nashville plant is an outstanding example of how a supply chain design, managed with a highly flexible and integrated tool, ION can reshape a fulfillment process to meet any business need.

FlowVision is a relatively inexpensive solution for factory layout, scheduling tools and internet solutions. We have used them in all capacities. They have the in-house expertise to provide hands on changes to your factory and/or distribution. They are not conference room consultants. I spent some time at Goodyear and now at Husqvarna doing turn-arounds. In both cases they helped us raise our operational DNA with software, tools and training.

The results include better factory flow driving productivity improvements. Automatic replenishment of Raw and Finished Goods with cloud based applications. The nice part is you can carve out a small project for them and see what you like.

Jack Fish
COO Husqvarna Americas