



### Case Study - Using BellHawk for Make-to-Order Vendor Managed Inventory

This application was with a packaging manufacturer that made and delivered custom corrugated cardboard boxes with foam inserts which were used to package electronic equipment. These boxes were made-to-order in relatively short runs on an as-needed basis for customers.

The major problems that this client faced was that every time their customers used up a supply of boxes, their customers' purchasing agent would go out to at least three possible suppliers for competitive bids. As the orders were relatively small, this resulted in:



1. A significant procurement cost for our client's customers and sales cost for our client.
2. Rock-bottom prices, with no allowance for quality, speed or reliability of delivery.
3. A very fluctuating demand for each product with very little opportunity to forecast demand.
4. Frequent stock-outs at their customers resulting in inability for their customers to ship their products due to lack of packaging.
5. Panic "fire drills" to deliver boxes when stock outs occurred, which disrupted an even flow of production and especially delivery truck scheduling.

This was exacerbated by the fact that many of their customers were contract and/or short-run manufacturers that needed a wide range of boxes with a fluctuating demand for each style of box depending on what orders they had in house. Also many of these manufacturers ran Lean operations and therefore did not want to carry large amounts of inventory of each type of box.

Equally our client did not want to stock a lot of different boxes in their warehouse because they had already ended up with many types of custom boxes in stock that their clients never reordered.

To solve this problem they introduced a pull-based vendor-managed-inventory system, based on the BellHawk software, for their customers. In this process, they agreed with their customer on a max and min inventory level for each type of box and then produced enough skids of boxes to bring the inventory up to the maximum level.

Each skid was given a peel-off "license-plate" tracking barcode label to identify the product and quantity in the skid. This tracking barcode was scanned:

1. At the end of the production line to record it into our client's warehouse.
2. When it was shipped to our client's customer.

Each time the customer's material handlers took a skid of boxes to their production floor they would peel off the tracking label and stick it to a sheet of paper on a clipboard.

Every night the customer's warehouse manager would pick up the clipboard and go to a special BellHawk web portal and scan the tracking barcodes on the sheet. He would then replace the sheet of barcodes with a clean sheet of paper and put the clip-board back by the racks that held the boxes ready for the next day.

This scanning was done using a low-cost corded scanner and a PC. The corded scanners were given to customers by our client, as a "gift", when they signed up for the Vendor Managed Inventory (VMI) service.

The BellHawk software tracked how many boxes of each type were at each customer site and incremented this quantity as new skids were delivered. It also decremented this quantity as skids were used. When the quantity of each type of box got below the minimum level at the customer site then BellHawk would generate a ship order to replenish the inventory.

If there were not enough boxes in stock in our client's warehouse then BellHawk would also automatically generate a production order to make the requisite number of skids of the needed boxes. Once made, then these would be delivered to replenish the customer's inventory.

The big benefits of this were:

1. It eliminated stock-outs at the customer's site.
2. It eliminated the need for customers to competitively bid each purchase of boxes. This eliminated a big overhead cost for customers and eliminated the cost for our client of repeatedly bidding small repeat orders of custom boxes.
3. It enabled our client to custom build products in a just-in-time fashion to meet actual customer demand rather than building to a forecast and then warehousing the surplus.
4. It enabled both our client and their customers to run much leaner inventories, with just enough on hand to cover replenishment and delivery times.
5. By eliminating "fire-drills" for stock outs, this resulted in much more efficient scheduling of delivery truck routes.

One expected benefit that did not emerge was that our client expected to be able to command a higher price as they had significantly reduced the procurement cost for their customers. This unexpected result could be because the procurement people did not see a reduction in demand for their services as an economic benefit. Also, because of personnel limitations, sales were still made at the purchasing agent level by the client's sales people rather than VMI being sold as an operational benefit to their customers' management teams, which would have been far more effective.

But, even so, providing this VMI service did enable our client to win a significant amount of new business and to ensure much better competitive "lock-in" for their products. It also made our client's operation more efficient with far less inventory of boxes made based on a forecast demand that never materialized.