

Lean Manufacturing Techniques Produce Results At Ingersoll-Rand's Hussmann Corp.

By Ashley Stirrup, CEO, Ultriva, Inc.

Lean techniques reduce inventory, eliminate stock-outs and cut freight/material handling costs.

Sept. 13, 2006 — Creating the refrigeration systems for the supermarkets, convenience and specialty stores, commercial/industrial applications and food service applications is a complicated manufacturing process, and one that is at the core of the business of Hussmann Corporation, an Ingersoll-Rand company.

The diverse nature of the product and its manufacturing process at one Hussmann facility required raw materials purchased by Hussmann to be sent to an outside processor, which created challenges for inventory management and control. Those challenges resulted in regular stock-outs and were negatively impacting on-time deliveries to customers.

To address these issues, Hussmann's commitment to lean manufacturing led it to explore the application of kanban principles well beyond its own facilities. By implementing electronic kanban, which automates and enhances the manual kanban manufacturing approach pioneered by Toyota, Hussmann gained visibility into its inventory levels at its outside processor. Additionally, this pull-based system reduced inventory, ended stock-outs, reduced lead-times and opened up floor space previously used for inventory storage.

Company Profile

An Ingersoll-Rand company, Hussmann manufactures, sells, installs and services its merchandising equipment and refrigeration systems to customers in over 80 countries. The company manufactures and sells refrigerated display cases, other refrigerated and non-refrigerated systems including beverage coolers, walk-in storage coolers and air handlers. Hussmann serves several key markets involved in the food industry, including supermarkets, convenience and specialty stores, foodservice and commercial and industrial applications (which include cold storage warehouses and processing plants).

The Challenge

The more than one million-square-foot Hussmann facility at Bridgeton, Mo., faced problems with inventory management and control. With approximately 25 production lines and several work centers, including Coil & Tube, Lighting, Pace & Wedge (for custom work), Minster, and Welding, Hussmann targeted several areas for improvement.

Hussmann was experiencing one to five stock-outs per week in its high-volume sheet metal operations. Every refrigeration system produced had slightly different dimensions requiring a wide variety of steel sheets, which in turn were used to create the casings. These stock-outs were having a significant negative impact on on-time deliveries.

Hussmann was purchasing steel coils from one supplier, storing the coils on site and then shipping them to an outside processor to slit the steel into various cut sheet sizes. Correctly determining when to order more steel coils, when to ship the steel coils from Hussmann to their outside processor and when and what steel sheets to order was a very complex, manual process. The limited visibility into its outside processor's inventory levels forced Hussmann to rely on frequent calls and emails that were prone to inaccurate data.

The Solution

Hussmann implemented a combination of lean scheduling and electronic kanban applications. With the lean scheduling product, Hussmann's production forecasts were used to automatically calculate Hussmann's steel sheet requirements and then send the appropriate orders to Hussmann's

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outside processor. Hussmann also set up electronic kanban between the outside processor and Hussmann's steel provider, giving Hussmann real-time visibility into the outside processor's steel coil inventory. Re-order signals are now automatically generated as material is consumed. Through these automatic signals, Hussmann's steel supplier receives order signals much more quickly than before when planners had to manually calculate their steel requirements. Since re-ordering now happens more quickly and accurately, stock-out situations have been eliminated.

With these improvements in visibility and ordering, Hussmann eliminated its inventory of steel coils, freeing up a substantial amount of inventory floor space. In all, Hussmann's implementation of lean scheduling and electronic kanban has resulted in more than \$1 million in inventory reductions.

Sheet Metal Results

The successful implementation of software applications within its steel operations resulted in the following benefits for Hussmann:

- No stock-outs in the 12 months following implementation compared to one to five per week prior to Ultriva deployment.
- Shorter supplier lead times and smaller lot sizes drove the Sheet Metal operations inventory reduction, where inventory was reduced by \$300,000 and necessary floor space for inventory was reduced by 20%.
- Significantly reduced material handling costs through shipping efficiency improvements.

Additional Details To The More Than \$1 Million In Overall Inventory Reduction At The Plant Include:

- In the Coils & Tubes Workcenter, Hussmann realized savings of \$150,000 in inventory and eliminated stock-outs, which used to occur four to five times a week.
- Lead times were reduced with several suppliers. In one example, lead time was reduced from 15 to five days.
- Supplier replenishment became more predictable and efficient, reducing expediting charges significantly.
- Tedious weekend audits of the manual kanban system were also no longer necessary after implementing Ultriva Electronic Kanban.
- Barcode scanning and COPICS ERP integration eliminated time consuming and error prone data entry, which was replaced with a single scan, saving •5 minutes per item.
- Improved inventory visibility within COPICS lead to the elimination of tedious manual stock checks.

Ashley Stirrup is the CEO of Ultriva, Inc., a provider of lean manufacturing software that drives lean processes across the supply chain -- from suppliers to customers. The company's flagship product is Ultriva Electronic Kanban. Ultriva's products are in use in more than 80 plants worldwide, incorporating more than 1,000 suppliers and reducing manufacturing costs. More info: www.ultriva.com.