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## Just-In-Time Remains Justifiable

Worried about how bird flu, hurricanes or civil unrest could impact a lean supply chain? Despite such inherent risks, the benefits of just-in-time manufacturing may still be too much to pass up.

Jonathan Katz

Executives at mattress maker Sealy Corp. learned the hard way in 2005 how much a natural disaster could disrupt a supply chain. That's when hurricanes Katrina and Rita battered the Gulf Coast and caused major damage to petrochemical processing facilities that supply Sealy with a raw material called toluene diisocyanate, or TDI, which is used to manufacture the polyurethane foam found in most of Sealy's bedding products.

This was bad news for a company that takes pride in its just-in-time (JIT) operations. In its company statement, Sealy notes that most bedding orders are shipped to warehouses within 72 hours of receipt. With a foam shortage at hand, the company issued a notice in October 2005 acknowledging production delays were imminent.

"The industry allocation of foam over the next several weeks will affect our just-in-time manufacturing output in the U.S. and Canada," said Michael Hoffman, now Sealy's executive vice president of operations for North America, in the October 2005 statement. "We're working in close partnership with our suppliers, customers and entire manufacturing system to minimize the disruption to our business."

Similar stories were reported shortly after the Sept. 11 terrorist attacks, and doomsday predictions of health epidemics, war and more hurricanes continue to keep many manufacturers on their toes.

But for the most part, analysts and manufacturers contend the benefits of JIT outweigh the risks.

"The risk is so small when you consider the gains and what it does for you as far as the bottom line," says Paul Adelberg, vice president of lean technology for swimming pool components manufacturer Hayward Industries Inc. Research published in the **IndustryWeek**/Manufacturing Performance Institute 2006 Census of Manufacturers supports Adelberg's contention, with 43.4% of 758 manufacturers responding saying they use JIT supplier deliveries to manage inventory.

Even so, a statistical profile of **IW**'s Best Plants finalists in 2006 shows manufacturer confidence in JIT could be waning. In 2006 **IW** Best Plants finalists said on average 49.6% of their key suppliers provide JIT delivery compared with 50.8% the previous year, 58.4% in 2004 and 77.2% in 2003.

This could be because manufacturers jump ship too quickly when problems arise with JIT. "It seems very common that people get on the bandwagon of some of these philosophies like JIT, and they give up as opposed to understanding that it's not something trendy to do," says Lisa Anderson, president and founder of business processes advisory firm LMA Consulting Group Inc.

Anderson and other industry experts say manufacturers can lessen the risks associated with JIT and make it more effective by forming strong partnerships with their suppliers and establishing backup plans for unforeseen circumstances.

## **Shape Up Or Ship Out**

The toughest challenge Hayward Industries has faced with JIT is getting suppliers on board, Adelberg says. Part of Hayward's transformation process included educational sessions with its vendors. The company dispatched work teams to its suppliers to help the vendors understand the JIT process and invited them into Hayward's own operations. Some of the suppliers signed on with TBM Consulting Group -- the same firm that Hayward hired to establish its lean operations -- to set up their own JIT processes, Adelberg says. It's similar to the approach popularized by Toyota Motor Corp., which has worked to improve its suppliers efficiency (see "[Learning From Toyota -- Again.](#)")

Without lean suppliers, manufacturers who demand JIT could face higher-priced goods, wiping out any cost savings achieved through reduced inventory. "If the supplier is also not lean in his operation, if he's not flexible at being able to make the short runs and quick setups, then he's just going to build the inventory, sit on it, and when our purchasing people call, they will ship it," Adelberg explains. "So you're kidding yourself -- it's not just-in-time. He's carrying more inventory, and at the end of the day we're going to end up paying more because he's sitting on and holding that inventory."

Some suppliers were receptive to Hayward's new approach and eager to embark on their own lean journeys, Adelberg says. The ones that were more resistant were let go.

### **Inventory Management Meets Demanding Challenge**

***Technology plays a major role in sensing demand changes.***

**About 50% of companies say it takes them more than one month to sense changes in demand, according to an Aberdeen Group study. In addition, globalization is increasing lead times, meaning manufacturers need to improve their inventory-**

**planning strategies, according to the study. Companies say the top challenges associated with forecasting include aggregate forecasts that result in poor stock-keeping-unit-level forecast accuracy, low frequency of demand management forecasting and not enough external collaboration.**

**Companies that have been most successful in managing inventory are:**

- conducting multi-echelon inventory optimization -- 36%**
- utilizing an existing supply chain visibility system -- 27%**
- using a forecasting system that supports customer-level forecasting -- 27%**

**Aberdeen cites lubricants manufacturer Castrol Ltd. as a company that has achieved positive results with a multi-echelon inventory solution. Castrol was experiencing excess inventory of slow-moving products while fast-moving goods were out of stock. When the company implemented a multi-echelon inventory system, it reduced total network inventories by 35%. In addition, line fill rates are up 9% overall.**

## **Preparing For The Unpredictable**

In a sense, Hayward Industries is lucky. The pool components business is seasonal, so demand oftentimes is predictable. In other words, when summers are hot, so are sales. During such times, Hayward will carry some safety stock of its top-selling items in the event of an emergency, Adelberg says.

This is the typical approach manufacturers take when preparing for the unexpected, says Fariborz Ghadar, director for the Center for Global Business Studies at Penn State University's Smeal College of Business. Adding buffer

stock may stray somewhat from pure JIT, but it provides manufacturers with some leeway if something goes wrong, Ghadar says.

For other industries, though, demand fluctuations aren't as predictable, making JIT even more risky. This is when agreements with suppliers and transparency into their operations become critical. At General Motors Corp., for instance, suppliers must show the automaker a disaster-recovery plan before entering into an agreement, according to Lou Ann Lathrop, GM's engineering group manager, engine validation.

Extensive supplier networks also provide risk-reduction benefits. Check for suppliers that have operations in different locations, suggests LMA's Anderson. GM's Lathrop, who also serves as national director of the American Society for Quality, concurs, saying, "A lot of times suppliers have multiple plants and have the same footprint of manufacturing at different assembly plants, so if they needed to, they could switch their assembly to another plant because volume is so great there's usually capability somewhere else."

Some manufacturers, like Toyota, don't have to worry too much about delivery problems during crisis situations because their suppliers are nearby. Toyota opened a Tundra plant in San Antonio last fall in an industrial park that houses 21 of its suppliers.

Other companies are utilizing forecasting software in which users can plug in various disruptive scenarios, says Michael Newkirk, supply chain global industry marketing manager for business intelligence software provider SAS Institute Inc. "You have to have the ability to do scenario planning, so you can plug in variables and do those kinds of what-ifs, especially when you're dealing with suppliers," Newkirk says. Such Web-centric supplier networks also provide the opportunity to share with suppliers their performance, such as their delivery times and fill rates, Newkirk adds.

## Understanding Demand

Aside from acts of nature and war, manufacturers who want to be successful with JIT need to prepare for demand spikes. Ghadar cites as examples out-of-stock issues Nintendo and Sony Corp. had with their popular video-game systems after the past holiday season. (In fact, Sony wasn't expected to completely resolve shortage issues of its PlayStation 3 game console until late spring 2007, according to a Reuters report.) "Just-in-time is OK, but if all of a sudden there is a surge in demand, you may not have the flexibility available to meet the demand," Ghadar says.

Anderson says too many manufacturers develop a "vanilla" format of JIT, which means they assume sales will remain steady. Plants need to develop long-term capacity projections with their suppliers and customers to level out everyone's schedule, Anderson says.

Newkirk says ideally manufacturers would be able to overcome demand fluctuations by figuring out customer buying trends, what type of product mixes they're purchasing and when they're buying them. In the consumer products industry this might mean establishing a computerized system that captures customer data at the point of purchase that can be updated hourly.

"Demand sensing becomes very, very critical to businesses, and that's going to become a competitive differentiator in the future," Newkirk says. "Companies that are best at modeling their channels, sensing demand and eliminating lag time in transferring that information are going to be the winners."