

CASE STUDY**Hand-Tool
Manufacturer
Profitably
Reshores Core
Product Line**

Redesigned Production Process and Supplier Collaboration Allow Pacific Handy Cutter to Cut Costs and Dramatically Reduce the Length and Complexity of its Supply Chain

Client

Manufacturer of box cutters used in grocery, retail and warehouse settings.

Challenge

Meeting customer delivery and pricing expectations for new S-8 series carton cutters.

Solution

Bring production of the safety cutter back from China to its U.S. facility, while reducing production costs through automation, lean work cells, and strategic sourcing.

Results

Expected annual revenue increase of least 10 percent, with the potential for 20 to 30 percent growth, lead times reduced by 45 to 60 days, 30 percent reduction in packaging costs.

Pacific Handy Cutter Inc. (PHC) followed a well-worn path in 2005 when it outsourced production of its S4 safety cutter to a contract manufacturer in Jiangsu Province, China. But when it came time to launch its next-generation S8-series carton cutters to replace the S4, PHC executives determined that manufacturing in the United States was a better choice. Rising labor costs, long lead times, and quality issues drove the decision to reshore.

“We wanted better control over the manufacturing process and believed we could produce the product faster here in the United States as opposed to all the back and forth we experienced with the Chinese manufacturer,” says Mark Marinovich, PHC’s President and CEO.

In addition to the cost savings, PHC is counting on revenue growth from increasing customer preference for U.S.-made hand tools. Marinovich says such sentiment could increase PHC’s revenues for the safety cutter line as much as 10 percent annually. And he sees a potential for 20 to 30 percent growth if PHC can add a few larger customers. “We’re able to produce a high-quality product—small hand tools suited for Asian production—here in the U.S. with the same goal I had when I entered the business 30 years ago: to increase profitability,” Marinovich says.

Based in Irvine, Calif., PHC manufactures cutting tools, including safety cutters, utility knives and hook knives. Private-equity group American Capital owns PHC. Its flagship product, the S4, is an ergonomically designed safety cutter used in grocery, retail, and warehouse settings.

To make the S8 product line at a lower cost than its Chinese supplier, PHC determined it needed a 3.5-second takt time with no more than two employees per work cell. The cutter currently produced in China requires about 12 employees.

PHC asked TBM to help identify opportunities to reach its reshored production goal. With the help of TBM, PHC designed automated machinery with unique material-delivery features along with a kanban replenishment system supported by a network of local suppliers.



A PHC kaizen team works together to design the automated work cell that will produce the new S8 cutter.

Local Supplier Engagement Crucial

Engaging suppliers, operators and the machine builders was key to the project's success, PHC Chief Financial Officer Joe Garavaglia says. Localization or regionalization of the supply base is necessary for PHC to make reshored production financially feasible, says Eduardo Spina, TBM Senior Management Consultant.

The company producing the automated machines for the S8 is located two miles away from PHC. The company's suppliers also are nearby. PHC's three parts suppliers are within a 25-mile radius, and its three packaging suppliers are about 10 miles away. The reshoring strategy should eliminate or significantly reduce logistics challenges and inventory shortages that PHC has experienced with its Chinese supplier.

In December, PHC nearly ran out of its flagship product during an eight-day strike at the ports of Long Beach and Los Angeles, Garavaglia says. Localizing production can mitigate similar supply chain disruptions, which cost U.S. industrial products companies \$2.2 billion in 2011, according to a PricewaterhouseCoopers study. Such delays are unacceptable for PHC's clients, which include major, high-volume retailers.

To help achieve its delivery goals, the company involved local suppliers and its machine builder in a four-day kaizen event that took place in early October.

Basic Automation Minimizes Operator Movements

PHC executives realized that assembly workers needed to multi-task to achieve the desired takt time using the one-piece-flow process aided by the machine automation. Spina and the PHC team came up with seven assembly-process options during the kaizen event.

They ultimately chose a model with two large irrigation tubes situated on each side of the operator to deliver parts directly to the point of assembly. This allows the operator to simultaneously grab the plastic cutter body with the right hand and the blade channel with the left hand and then connect the two parts. The parts then move clockwise through an automated assembly process to the next five stations before entering final assembly and packaging.

The process requires only two workers and a water spider to load the parts into the machine. During the test run, the company was able to meet its assembly goal of 3.5 seconds per product. At this rate, PHC expects to produce 7,714 cutters per day.

The company also made adjustments to cut packaging costs by 30 percent. PHC will use perforated bags on a roll that will be automatically heat-sealed and released into a 12-pack box. The perforated bags and heat-sealing process eliminate the need for glue or binding materials as well as secondary operations to fold and seal the packages, Garavaglia says.

New Marketing and Revenue Opportunities

PHC expects to begin S8 production by April 2013 and ramp up to more than 7,000 units a day once all customers are converted from the S4 to the S8. As production ramps up, PHC executives expect to win new business from companies that have committed to buying U.S.-made goods. For instance Wal-Mart, a former PHC customer, pledged in January to source \$50 billion over the next 10 years from U.S. suppliers. PHC hopes to win back that business plus more from customers who have large union workforces that prefer using "Made in America" products, Marinovich says. "We're at the cutting edge of a resurgence of 'made in the United States,'" Marinovich says. "We saw it happening and wanted to be a part of that."

HOW A REDESIGNED ASSEMBLY PROCESS WILL ENABLE PACIFIC HANDY CUTTER TO MAKE HIGHER QUALITY PRODUCTS IN THE UNITED STATES FOR LESS

Pacific Handy Cutter utilized three classic lean methods to cut production costs by a projected 30 percent and make it economically feasible to bring production of a core product family back to the United States from China.



1. Reduced labor from 12 people to 2 with a newly designed one-piece flow work cell



2. Reduced packaging costs by 30 percent per unit by using new technology that eliminates the need for glue or binding materials



3. Designed a kanban replenishment and fulfillment process with suppliers to minimize inventory facility in Kansas City, Mo.; Concordia, Mo.; and El Dorado, Ark.

Highlights	Future State	Benefit
Reshored manufacturing and assembly of new product series	Move production line from China to the U.S.	Mitigated supply chain disruptions by localizing production
# employees per work cell	Reduced from 12 employees to two	Labor savings
Suppliers	Parts and packaging suppliers located 10 to 25 miles away from PHC	Reduced freight costs and eliminated inventory shortages
Lead times	Reduced lead time by 45 days	Able to reliably meet major customers' delivery requirements
Packaging Costs	Implemented heat-sealing packaging technology	Cut packaging costs by 30 percent
Expected sales increase	+10 percent	More business from large retailers focused on "Made in the USA"

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