

## Situation

During their 15-year history, our client had grown to \$220 million in sales, which was generated by 1,600 associates with approximately 250 people in a wholly-owned subsidiary, and a collection of 200 to 300 home-based workers. Approximately 92 percent of the company's products were shipped to Honda, Chrysler and Toyota. At the time of our assignment, there were more than 3,000 active part numbers and between 3,500 and 4,000 inactive part numbers contained in the MAPICS system. The MAPICS capabilities were not fully utilized. Total raw material, WIP and finished goods inventories had been as high as \$22 million in recent months and are currently around \$13 million to \$14 million. Every year in the history of the company, there has been inventory shrinkage, which was approximately \$2 million the year before we arrived at the site. To try and identify the source of this problem, the company had elected to perform a physical inventory approximately once every quarter. The last three physical inventories had shown inventory gains of up to \$1.1 million.

## Approach

The work was completed through layered team-based activity including the following:

- Steering Team
- Joint Team
- Process Definition Team
- IT Strategy Team
- BOM/Routings Team
- Organization Definition Team
- Process Design and Pilot Implementation Team
- IT Implementation Team

The project was organized into three phases with monthly gate reviews by the Steering Team:

- Phase 1: Definition and Design (10 weeks)
- Phase 2: Pilot Implementation (10 weeks)
- Phase 3: Full Implementation (20 weeks)

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The solutions being derived to solve the inventory accuracy issue were based on lean manufacturing principles, and took a holistic view of the business in order to address the root cause of the problem. The primary approach was to eliminate non-value-added tasks and reduce inventory transactions. Pull systems and visual factory techniques are being employed.

## Results

As the project reached its second gate review, the strategy and definition phase was completed. Detailed design of the systems, processes, and procedures that were employed to solve the inventory accuracy problem was the next step. Implementation in a pilot area was completed by Week 20. Kanban was introduced and is being aggressively implemented to deal with the inventory management issues; accuracy is being dealt with as a separate entity. The project plan showed the full results would take approximately 12 months after the full implementation phase.

About halfway through the full implementation phase, the client requested that we focus completely on Inventory Accuracy rather than on the management issues. Six teams were created based on the initial analysis to resolve the root causes in the following areas: receiving/vendors, production reporting, scrap, cycle counting, transaction reporting (warehouse location accuracy), and bills-of-material accuracy. Parallel to the teams' efforts, we identified two areas – the stamping facility and the warehouse – that would accelerate the accuracy and assist the teams in their efforts. In doing so, heavy emphasis was placed on accurate initial counts, scale counting, vendor certification, and audits.

In doing detailed day-to-day transaction verification, we discovered that transaction reporting accuracy within the stamping facility was 99.1 percent accurate. However, this accuracy was at the container level not at the piece-part quantity level. Sixteen scales were installed at primary operations, so that 100 percent of all products leaving the facility were now scale-counted. Random audits were implemented on all receiving at all warehouses. This change assisted the receiving/vendors, transaction reporting, and production reporting teams in their efforts.

At the warehouse level, we developed a secondary bar-code scanning point using “smart labels” to verify that the production reporting was correctly done and that the back-flush took place, while at the same time routing product to specific warehouse locations. This was called the “Gatekeeper Plus.” This verification

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mirrored normal warehouse receiving functions, but had never been applied to internal production (this created a secure warehouse). This new process was done to consolidate multiple existing processes, eliminating an additional location accuracy issue. Upon completion of a physical inventory, using a double blind technique, accuracy of 97.3 percent was realized nine months after the start of the initial project.

The inventory analysis tools and project schedule that were used were left with the client to continue to improve their accuracy over time, and sustain the results achieved.

The level of support from the senior management was excellent. The desire to resolve this long-standing problem, without the need for a supporting business case, is quite unique.

The results were outstanding. A physical inventory was taken about six weeks after our handoff to their management team. The inventory accuracy was over 98 percent, warehouse locations accuracy improved over 40 percent, and the inventory shrink was only \$159,000 compared to \$1 million to \$2 million in prior years.

Our client's team presented to a major customer all the improvements made as it related to the customer's area. They decreased overall finished goods inventory by 33 percent and WIP by 35 percent. In addition, they had only 15 part number shortages to this customer in four months. He was very impressed with their system and how much they had improved since his last visit about nine months earlier. They received correspondence from him stating that he had put them on their supplier list for good improvements. He stated that they should expect to hear from some of the customer's other suppliers, so the suppliers can see our client's system and benchmark the improvements.