ARTICLE

Problem Solving: Finding a Permanent Solution

Distributor of medical products leverages kaizen tools to balance work and improve productivity by 20%

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Executive Summary

At the client's request TBM conducted a facility-wide diagnostic of all product lines and work centers to identify opportunities for improvement. We then developed an operational improvement plan that would directly support the company's business strategy.

This case study provides an overview of the company's first kaizen event, which demonstrated the effectiveness of the lean methodology and problem-solving tools, as well as the potential for improvement. We targeted one specific assembly line because: 1) each work center required a high level of manual labor content, and 2) because the product was a high potential growth category for the company.

The results of this change effort included safety improvements, better quality, higher on-time delivery and a 20% improvement in productivity.

Every business has recurring issues that undermine performance despite managers' best efforts to find solutions. Many of these issues cross functional boundaries, which is why it can be so hard to implement sustainable solutions.

To address one such issue—and introduce an effective problem-solving methodology—TBM Consulting Group facilitated the first kaizen breakthrough event for a medical device supplier. Over the course of a week, a cross-functional team worked together to dramatically improve productivity on one product line.

First Define the Problem

Kaizen is a Japanese term from kai (change) and zen (good) that is usually translated as "change for the better." A kaizen event is a focused team exercise, often spanning 4-5 days, that pulls together people from different departments to resolve a nagging issue with a high potential payback. In addition to finding creative and effective solutions, the approach improves long-term performance by addressing many of the "soft" issues that can undermine any change initiative.

Before the exercise, business leaders review and pledge their support of the kaizen event charter, which outlines the problem and target deliverables. The charter identifies the executive sponsor and team members, the anticipated investment (mostly the team's time) and the intended payback. In this case the charter noted how operators at some workstations were waiting around while others were working furiously to keep up. Smoothing the work requirements at each station on the line would make sure no one was overburdened or idle. By rebalancing the work and eliminating wait time, the charter estimated that productivity could be improved by 10% or more.

Kaizen Breakthrough Methodology

Kaizen Breakthrouh Event

TEAM-BASED ENERGY AND CREATIVITY DRIVES IMMEDIATE PROCESS IMPROVEMENT

Lean Training	Discovery	Implementation	Validation	Celebration
Conceptual Training: • LeanSigma Transformation • Lean Production System • Standard Operations • Kaizen Breakthrough Methodology	• Analyze Current Work Processes • Team Formulates Process Improvement • Hands-On Workplace Improvement • One-Piece Flow Implementation • Team Leader Meeting	• Continue Workplace Improvement • Conduct 5S • Determine Material Replenishment System • Conduct Point Kaizen • Team Leader Meeting	• Refine Improvements • Establish Standard Operations • Teach All Operators New Procedures • Run Full Production With Improvements • Re-Time Cycle Times and Validate Results • Determine monetary gains	• Review Key Learning • Establish 30-Day Homework • Prepare Presentation • Present Results and Future Challenges • Recognition and Celebration

The first day of a kaizen event typically consists of training. Completely removed from their day-to-day job responsibilities, the team learns about general lean concepts and the specific problem-solving tools that they will need to address the targeted issue.

In this case the 11 kaizen team members learned about the kaizen methodology, the seven wastes and how a lean production system can pull together a range of problem-solving methods. Specifically, they learned about standard work, which codifies the current best practice for completing a job. Once communicated and established, standard work immediately improves consistency and quality. It establishes more predictable times for task completion, which can then be balanced against other steps in the process and aligned with takt time (the customer demand rate). Standard work also increases employee accountability and establishes a baseline for future improvement.

The second day of a kaizen event is focused on "discovery." The kaizen team members on this project talked to the people on the line and observed the current assembly process. Their goal was to understand how the work was currently being done.

On Tuesday afternoon the team summarized their observations from the shop floor. They identified the need for standard work center layouts and what the ideal number of operators should be for the 225 SKUs produced on the line. They then developed an action plan for the next few days. All of the proposed changes had to maintain or improve safety and quality, in addition to reducing delivery times and reducing costs. Contrary to the tradeoff mindset of many business managers, the kaizen approach often demonstrates how all of these performance dimensions can be improved simultaneously.

Making Changes that Stick

The kaizen team spent the third day developing standard work center layouts, primarily for the packaging area. Team members worked with day-shift operators and an industrial engineer to document best practices. Because more time was required to complete standard work every SKU group, these efforts continued after the kaizen event week. Other day-three activities included workflow tests and a review of operator training materials.

The following day was mostly spent on the shop floor. Led by the plant manager, the kaizen team and line operators tested seven different scenarios for "balancing" the work. Almost two dozen employees were involved in a series of experiments to find out which scenario performed best. After each test the plant manager challenged the group to make sure everyone was comfortable with the changes and the results, and that there were no compromises in safety or quality.

Having identified the best solution, on the final day of the kaizen event the team documented the improved performance and presented the results to plant leadership. For the company's first kaizen effort, the results are impressive:

- **Safety:** Eight safety issues (mostly electrical) were identified and remedied over the course of the week.
- **Quality:** The kaizen team added a "touch for quality" step in the load area. In the new, re-balanced standard work documents for the line, an operator in the load area now has specific instructions to double verify that each tray is loaded correctly.
- **Delivery:** The more balanced workload on the line improved schedule achievement and customer reliability. Standard work also reduced setup times.
- **Cost:** At the same output level the rebalanced line now requires two less operators, going from an average of 10 to an average of 8 people, a 20% improvement in productivity.

This was the first of several planned kaizen weeks identified during our diagnostic that TBM helped facilitate for this medical distributor. In conjunction with more traditional improvement projects, these events drove significant process and performance improvements. They also helped develop the skills and mindset for building a strong continuous improvement culture at the company.

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