

“The TPM experience really opened our eyes. Not only did it meet our initial hope, but it produced many side benefits that were not even anticipated.”

**--Mike Bell
Vice President of Manufacturing**

Bell estimates that the implementation of Lean and TPM is directly linked to some \$500,000 in sales to date that the company would not otherwise have gained, and a cost savings in the areas of labor, materials and other overhead of some \$45,000.

More business and reduced costs frees up money for investments in new equipment.

“We are purchasing four new machines this year and are looking at both short- and long-term needs and developing a strategy that will replace old machines on a continuous basis,” Bell added.

Bell estimates that implementing Lean and TPM in its facilities is enabling Standard Furniture to invest some \$300,000 in new equipment this year; \$15,000 in new operating software; about \$10,000 in employee training and development; and more than \$20,000 in other business development areas.

“I can’t tell you that a commitment to a process like this is painless,” Bell said. “It’s not, and the process of continuous improvement is never ending. It reveals a lot of challenges and issues that otherwise go unnoticed, and some of those revelations are daunting.”

But Bell argues that the benefits and the gain outweigh the pain.

“Without a doubt, this process has had a direct result on our performance and our bottom line,” Bell said. “Standard Furniture is more competitive and more efficient. We are excited about what the implementation of

TPM Event Benefits at a Glance

Improved operator - maintenance equipment knowledge and work area cleanliness; Prevented contamination into cabinets

Applied numerous maintenance and operator visual controls

Removed obsolete equipment; Improved accessibility

Productivity enhancements performed

Listed planned maintenance tasks with frequency and performance times

Identified the required Critical Spare Parts

Created operator walk-around diagrams and instructions

Teams modified equipment and made it more “user friendly”

Planned maintenance tasks performed (tune up)

Lean and TPM has done for us in the short term and we are even more ex-

cited about what it will do for us three to five years from now.”

Auburn Technical Assistance Center was established in 1976 and is an affiliate of the Alabama Technology Network and an Economic Development Administration University Center. As an arm of the Auburn University College of Business Outreach program, ATAC provides business and technical assistance, customized training, and consultation in implementing value-added strategies to manufacturers and other businesses, not-for-profit organizations and government agencies in Alabama and the Southeast.

Auburn Technical Assistance Center

147 Lowder Business Building

Auburn, AL 36849

1-800-446-0386

(334) 844-4659

www.auburn.edu/atac



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An ATAC Client Success Story



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Standard Furniture -- an Alabama-based manufacturer of designer home furnishings -- believes that staying competitive requires a long-term commitment to continuous improvement. The company launched a Lean Manufacturing program in its Bay Minette and Frisco City plants about three years ago. The firm recently expanded its Lean philosophy to include Total Productive Maintenance (TPM) on a company-wide basis. The Auburn Technical Assistance Center has partnered with Standard Furniture to assist the company in its training and implementation of Lean and TPM.



For Alabama-based furniture manufacturer, Lean-TPM journey is worth the long-term commitment

Staying competitive in today’s manufacturing arena requires innovative thinking and action. Standard Furniture – an Alabama-based manufacturer of designer home furnishings, including the Kathy Ireland™ HOME by Standard brand – subscribes to the philosophy that the strategy for success involves long-term commitment to a continuous improvement journey and the formation of partnerships with entities that can help make that journey more comfortable and profitable.

Since about 2001, one of those partners has been the Auburn Technical Assistance Center (ATAC). ATAC is an arm of the Auburn University College of Business Outreach program, an affiliate of the Alabama Technology Network (ATN) and an Economic Development Administration University Center.

Founded as a family-owned business in 1946, Standard Furniture now employs 1,700 at its two manufacturing plants in Bay Minette and Frisco City, Ala. The company engaged ATAC about three years ago to provide Lean Manufacturing training for management and supervisory personnel at its Bay Minette facility.

“Our management realized that to compete in the global economy, we had to address the Lean concept to

eliminate waste in our processes and to improve quality and efficiency,” said Mike Bell, vice president of manufacturing. “We had no one in house who could provide this training, so we looked to the state’s colleges.”

The company found ATAC, and has expanded its implementation of Lean to include Total Productive Maintenance (TPM), which applies the waste elimination philosophy basic to Lean, to the upkeep and maintenance of manufacturing equipment and machinery.

“Lean only works if it is perpetuated throughout the organization and in every area of its operation,” adds Bell. “Once we began to train our employees in Lean, we quickly discovered that those concepts also needed to be applied to the maintenance of our production equipment.”

(Continued Inside)



ATAC Engaged

Standard Furniture discussed this need with ATAC Lean Team members Hank Czarnecki and David Hicks and agreed to evaluate a TPM Kaizen (continuous improvement) event at its Frisco City facility. The company also agreed to open its training to Association for Manufacturing Excellence (AME) members who are maintenance personnel in other industries. In addition to Standard Furniture employees, maintenance technicians from industries in Decatur, Ala., Norcross, Ga. and Joppa, Md. also attended the January session.

TPM is a Lean-based system. It focuses on a life-cycle approach using teams to improve availability, performance and quality of critical machines.

"We agreed to try TPM using two of the most utilized machines at our Frisco City plant," Bell said.

For the TPM Kaizen, the company selected its Fletcher machine, which shapes the edge and lays an adhered finish to furniture pieces, and the Dovetail machine, which cuts joint grooves for the assembling of drawer parts.

"We really did not know what to expect, but we hoped that it would help us to improve the efficiency of those machines," Bell added. "We also were apprehensive about allowing outsiders to see our challenge areas."

But the result from that initial week of intense, hands-on training in January 2007 exceeded the company's expectations, according to Bell. The Kaizen event revealed



Leading Lean -- Standard Furniture began its continuous improvement program with management. The company sustains continuous improvement through management support. Its Frisco City plant manager Robby Garrett speaks to trainees about the importance of Lean and TPM during the January event.

the value-added benefits of the TPM system. Additionally, the perspectives provided by the external AME attendees proved helpful. The company almost immediately expanded TPM to its Bay Minette plant and is implementing it companywide following a planned and paced methodology.

"The TPM experience really opened our eyes," Bell adds. "Not only did it meet our initial hope, but it produced many side benefits that were not even anticipated."

Bell said the training improved quality by improving the performance of the machinery. It produced a stronger sense of ownership and pride among machine operators. Maintenance personnel now spend less time on routine equipment operating issues and more time on increasingly pressing and technical tasks. Machine operators and maintenance personnel are working effectively as a team.

TPM a Multi-Step Process

Training involves extensive classroom education through which participants learn the TPM philosophy and how to apply it. Trainees then move to the shop floor where activities involve intense hands-on cleaning and inspection of the equipment.

This stage is referred to as "Clean to Inspect," explains ATAC Lean Team member Terri Lawrence, who served as one of the training facilitators in the January session.

"Trainees deep clean the equipment," Lawrence said. "It is at this stage that they inspect the equipment and identify areas of opportunity for maintenance and other improvements and corrections," Lawrence said.

In the third step, corrections, improvements and maintenance issues are addressed. In the January TPM Kaizen, some 33 equipment opportunities were found and corrected on the Dovetail machine; 58 on the Fletcher.

These ranged from items as simple as cleaning and label-

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ing equipment and features; to making both simple and complex repairs; the installation of filters and grease fitting caps; the relocation of various components and controls to allow easier access, use and visual inspection; to the installation of tool shadow boards and other mechanisms for making needed tools available at the point of use, Lawrence said.

Steps four and five are the TPM sustaining steps, according to Lawrence. It is in these phases where operator check lists and maintenance schedules are developed. These lists are posted with the equipment in a prominent location. Operators review and follow the checklist at the beginning and end of each shift before starting up or shutting down a line to assure that issues such as fluid

levels, gauge readings, and component adjustments and tolerances are within the proper ranges.

Maintenance schedules list the critical equipment preventive maintenance activities and post the appropriate intervals for conducting each. These tasks range from intervals of a few minutes, to hours, weeks, monthly, quarterly or annual blocks. A Critical Spare Parts List also is part of the sustaining phases. Part names, part numbers, required lead times, costs and the name of the part supplier comprise the information contained on this list.

"We not only want to clean and repair as needed, but to improve and sustain the improvements in a continuous, visually controlled process," Lawrence adds.

are taking care of the operational maintenance issues that used to bog down our maintenance technicians."

Team Involvement is Key

Team involvement is a key concept of TPM. Implementation involves regular operator equipment checks that include such tasks as fluid level maintenance, lubrication, examination of tolerances, and the capability to make certain kinds of adjustments.

"The objective is to empower operators – who have the knowledge and familiarity from daily hands-on use of the equipment – to do more," said ATAC's Hicks, also a facilitator in the original TPM session in January. "This frees maintenance technicians to perform tasks that require specialized craft skills."

According to Bell, that objective not only is being met, but it has enabled the company to invest in new equipment and to manufacture parts that it otherwise would not have been able to produce.

"TPM has improved the performance of our existing machines to the point that we can manufacture more precisely," Bell said. "That improvement in performance has enabled us to manufacture some pieces that we avoided before, because of the precision required and the difficulty associated with making them."

Additionally, the company's bottom line is enhanced to a measurable degree.

(Continued)



Class Preparation -- ATAC Lean Team Instructor David Hicks, left, and TPM expert David Stendahl prepare for class.