

## Improvements to Material Handling Reap Rewards of Efficiency

A tool box manufacturer is implementing Lean Manufacturing to leverage their production capabilities. They have implemented Lean Enterprise/Six Sigma programs along with other initiatives in certain areas. Also, the company recently made significant improvements in manufacturing automation by investing in upgraded fabrication machinery. Now they would like to improve overall efficiency.

The company wanted to further maximize their production capacity, but variances in their material handling process created inefficiencies that delayed work orders, and caused late customer orders.

Business Engineering was engaged to review the material handling process and to make recommendations for improvement. The BE team focused on motion and transportation wastes evident in the forklift utilization. Forklifts were being used to replenish parts and supplies

**“In contrast (to lean delivery), the traditional system makes material handlers rush around the facility delivering parts based on urgent need, much like a taxi driver driving around looking for fares and moving only one passenger at a time.”**

*- Chris Harris and Rick Harris  
in the Lean Directions newsletter, published by the  
Society of Manufacturing Engineers.*

to the component fabrication lines. The forklift routing was random, not driven by priority, and continuously changing. Demand for parts was driven by Kanbans, work orders and “hot lists.” This mix created chaos at the intersection of operator, CNC machine and available work space. The material handlers on the forklifts tried their best to keep machines busy with little consideration given to the next required work order. Whatever raw materials were closest were delivered to the machine. A busy operator must mean that all is well! This created more “hot lists”, which consumed the time and attention of the team leads.



The first thing the BE team did to implement lean concepts was to analyze the triggers for forklift movement. After that, the focus became what the “next” work order required and its connection to raw material movement. Then the individual machine layouts were checked for staging space, current piece-part movement and finished WIP staging for pick up. The BE team also noted the following opportunities for improvement:

- a) Increase operator efficiency with ample staging spaces, resulting in no waiting for next parts.
- b) Reduce non-value added handling and movement as raw material was moved once based on master scheduling, not just to convenient drop spots.
- c) Decrease set up times and higher schedule attainment in fabrication and welding as the right parts were available with fewer disruptions for “hot list” parts.
- d) Reduce the volume of “lost” raw material and WIP as the flow was standardized. This created a flow of materials that went from next staging, current run, finished WIP staging, to assembly.
- e) More time for proactive planning by team leads.

## The Recommendations

The Business Engineering team recommended sequencing all orders for the day at the beginning of the shift. The forklift driver would pick them in sequence, focusing on the new parts for the next order. In the meantime, a white board with an LED counter would show the amount of time left before the next order needed to be filled, creating a lean visual indicator for the material handler to use for planning routes.

## Results

- Each reviewed machine has shown a 5-30% capacity improvement.
- Material handling time associated with those machines was reduced by 50%.
- **CREATIVITY BEFORE CAPITAL!** Collectively, the fabrication department saw 15% efficiency gains with little spending.

The operations team was impressed with the new lean process, and workers on the forklifts and production line are embracing the new system. The next step the BE team envisions is to establish dedicated “milk truck” routes for the material handlers, and to standardize the work.

