

Five-day Discovery Event and Kaizen saves a major railroad \$850,000 in parts and labor

An SBTI White Paper

Project Background

Our client, a major railroad in the continental US, has a remanufacturing facility in the southeast responsible for rebuilding rail installation and maintenance equipment used by the road crews. This project focused on the Jackson tamper machine. Historical data indicated an average cost of >\$300k per Jackson tamper in material costs and labor of 1,500 hours. The approved budget for 2007 would allow 12 tampers to be rebuilt. Proper staffing levels were also a question mark due to optimal manpower requirements not being known due to excessive rework and vendor quality issues. Customer (road crews) quality and dependability also needed to be improved.

Our client had a history of using additional manpower and inflated schedule to meet the demand. This led to excess cost via additional manpower and cycle time.

Discovery Mapping

Beginning with Value Stream Mapping, the team decided to Value Stream the 3 stations or “spots” used for the tamper assembly. With each map they discovered an imbalance of processing times and random railcar storages, marked as inventory, between the value added steps of their processes. The SBTI facilitators helped the client qualify the efficiency of the process by measuring the duration of time at

every value added and non-value added steps in the process. What we discovered is what SBTI calls “the delay ratio” of the process. Delay ratio is defined as (total value added time) divided by (total value added time + total non-value added time). The performance of these three tamper assembly spots had a delay ration in the 64% range. Meaning that about 36% of the time there were no value-added activities going on with a typical tamper assembly.

Analyze Phase

The investigation revealed that we did not have any standard work instructions in order to identify in detail the work to be performed at each spot! Without this information, assembly was loosely in the hands of the individual employee. This of course led to longer build times and inflated costs. Through employee interviews and process observation, we were able to identify not only work content at each station, but actual assembly times for the installed components. In addition, a content manual with part drawings and numbers was generated and distributed at each workstation to further assist the employees in the assembly of the tamper components. Non-value added elements were greatly reduced by generating a lost-time record. This was a repository of delay events identified by the line workers during the assembly process. By focusing on these non-value added activities, the business was able to quantify the cost and schedule delay of these delay events. As a result, key suppliers were identified that were contributing to these delays due to inferior quality of purchases components. These suppliers were brought in to discuss the issues and to formulate an improvement plan.

Reducing Causes of Variation

Armed with this delay information, the suppliers in question were asked to make a visit to the rebuild facility and discuss the issues found and to formulate an appropriate corrective action. As a result of this meeting, key items were identified and discussed that directly impacted the ability of the assembly team to efficiently assemble the tamper to the budget. After understanding the delay information and the root causes, we focused our attention on another key discovery. After identifying, measuring and documenting the standard work, we questioned the manpower requirements of the existing assembly process. By using line-leveling techniques, we were able to identify the exact number of employees needed at each of the three workstations. We were then able to re-deploy 3 resources to other areas of the business.

Conclusions and General Results

Using the Discovery Event® methodology, we were able to identify root- causes of variation and many non-value added steps. The tangible results of this discovery event were the identification of non-value added activities that were greatly reduced. Manpower was significantly reduced on the tamper assembly line. Standard work has become the norm. Due to the streamlined process, employees had a better understanding of job requirements and performed to budget. The team also drafted six projects or Kaizens that they believed were essential to realizing the “Discovered” opportunities on similar rebuild lines.

Specific savings deliverables from this event:

1. The tamper team was able to produce 15 tampers using the same budget
2. Reduced total hours/tamper from 1500 to 1286 average

3. Reduced total in-shop dwell by 12 days from assembly start to ship
4. Reduced total material requirements (including scrap and rework)
5. Reduced tamper headcount by three
6. Total cost savings of the above items resulted in three additional tampers at \$0 cost or $\$286\text{K} \times 3 = \858K of cost avoidance
7. 90-day warranty expectations were exceeded as a result of this event.