ASPIRA

Action Brief

Six Sigma Case Study

A manufacturer had a contract to field retrofit a large number of it's machines for a particular customer. The field retrofits were running very late and over budget. Using six sigma methods, we were able to analyze the primary root causes of the problems and implement corrective actions. After our intervention, the field retrofits were completed ahead of schedule and under budget. Labor hours per site were reduced more than 21%, saving the manufacturer significant money and allowing them to retain a good relationship with their customer.

Step 1: Define

Problem Statement

Field retrofit for initial customer sites is exceeding the allowable time frame and the budgeted labor hours expected for project completion. No systematic data has been collected on time per task, but general perception is that the overage is inescapable and that the actual time required to perform the tasks was underestimated during the budgeting and planning process.

Business Case

Failure to complete all field retrofit activities within budgeted labor hours will result in increased labor costs above budget. Failure to complete all field retrofit activities within allotted schedule will result in increased costs due to contractual "lateness" penalties, additional labor costs above budget, and negative impact on the relationship and potential future business with this customer.

Key Measurements

The average total man-hours per unit was reported at 90.15 total man-hours, exceeding the original budgeted and contractually specified 72 man-hours per unit by 18.15 man-hours.

Step 2: Measure

Forms were developed and implemented to capture the average man-hours per task. Field Service Teams began reporting on time per task. Data was gathered and reviewed, as per graph shown in Figure 1.

Step 3: Analyze

The data was reviewed and analyzed. A Cause and Effect diagram was developed to identify potential causes of excessive time spent at each site (shown in Figure 2).

An on-site evaluation of tasks and job site conditions was conducted. Through a combination of reviewed data and on-site evaluation it was identified that although a documented

Figure 1: Baseline Time by Task

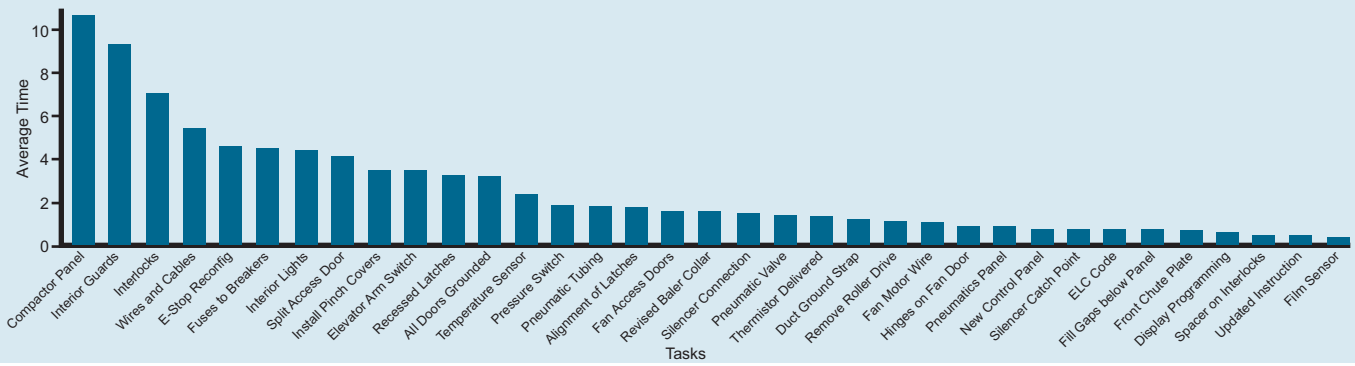
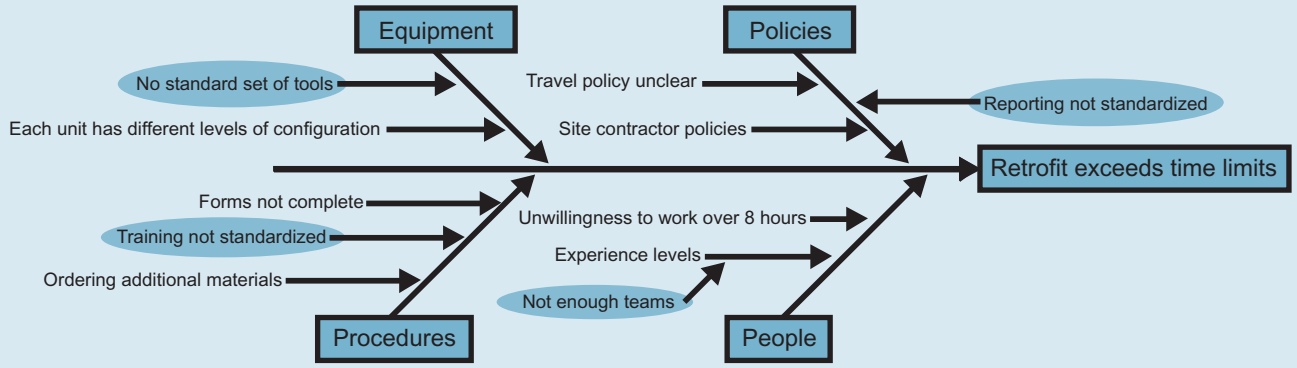


Figure 2: Cause and Effect Diagram



retrofit porcess existed, it was not being systematically followed. Different teams were performing the same tasks in different ways. Additionally, there were significant differences in efficiency between the most efficient and least efficient teams.

Step 4: Improve

Based on our analysis of the data collected, we identified that the original general perception that the tasks could not be completed more efficiently, and that this was basically a problem of under-budgeting, was in fact not accurate. We concluded that the single action which would deliver the largest impact in terms of man-hour reductions on site would be systematized training of the field technicians to ensure that they all followed the same, standardized, efficient process at each site.

Therefore, we arranged for all field service technicians to undergo standardized training at their in house facilities during the regularly scheduled seasonal shutdown of their customer's facilities. This training encompassed classroom training on system operation, retrofit tasks by task, reporting requirements, practical training on the in-house test unit, and additional training for industrial equipment certification.

The training conducted in house had a significant positive impact on the time to complete a unit. Pre-training and Post-training average times were compared, and of the 35 tasks reported, 26 (74.28%) of these had a reduction in the average time for completion following the in-house training conducted with the field service technicians.

Prior to conducting the training the average total man-hours per unit was reported at 90.15 total man-hours. Following training the total average man-hours per unit was reported at 70.87 (1.13 below the budgeted per unit hours), a reduction of 19.28 man-hours per unit, resulting in a 21.39% reduction in man-hours per unit.

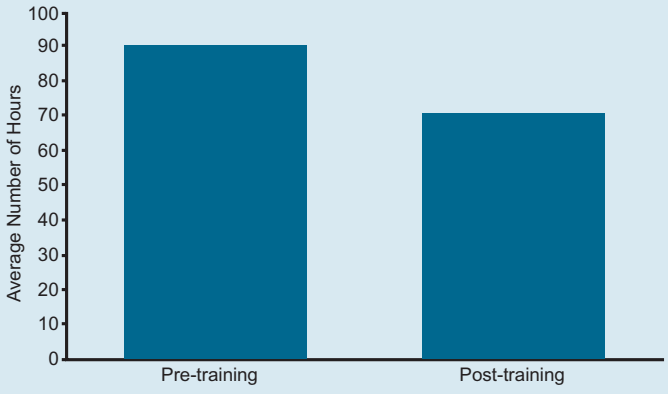
Step 5: Control

To ensure the gains in efficiencies made continued to be realized, we implemented controls to monitor continuing training and implementation. Each field technician was issued a checklist for each site, and was required to mark off each step as it was completed, including noting the time required to complete that step. These checklists were transmitted daily back to headquarters, and all data was summarized and monitored to ensure continued efficiency.

Conclusion

This manufacturer was able to successfully deliver on time and under budget for it's customer thanks to the six sigma analysis we performed and the steps we took to correct the largest source of inefficiency. It should be noted that multiple sources of inefficiency and non-value-added activities were identified in the course of this analysis; however the manufacturer was able to achieve their desired results and deliver their retrofits on time and under budget by taking corrective action on only the largest identified root cause.

Figure 3: Labor-Hour Decrease after Intervention



For more information contact us at:
Aspira Consulting • 2465 Citation Ct. Wexford, PA 15090 • phone: (412)567-4737
e-mail: info@aspiraconsulting.com • web: www.aspiraconsulting.com