CASE STUDY

Equipment Manufacturer Implements Labor Standards and Lean Initiatives

PROJECT SUMMARY

A top tier supplier of agricultural and construction equipment launched several new products without developing corresponding labor standards to support the production process. This presented two major challenges to the management staff. The first issue related to the incentive program in place for production personnel. Without appropriate labor standards there was no way to tie incentives to operator performance. As a result operators were receiving maximum incentives regardless of performance. This resulted in higher labor costs and effectively eliminated the motivational aspect of the incentive program since there was no way to gauge operator performance. The second major issue was that the absence of labor standards resulted in highly unpredictable production levels. As a result, production forecasts were frequently inaccurate, leading to late orders and excessive order backlogs. In addition to the above the manufacturer was planning to install new production lines to expand capacity and needed to develop a future state plant layout that included a consolidation of similar operations, improved traffic flow, and adequate storage space.

Figure: Example of Material Cart

SYSTEM DESCRIPTION

The manufacturing process was divided into stamping, welding, and assembly operations. Labor standards were absent in all three operational areas and work station design was not optimized in many cases.

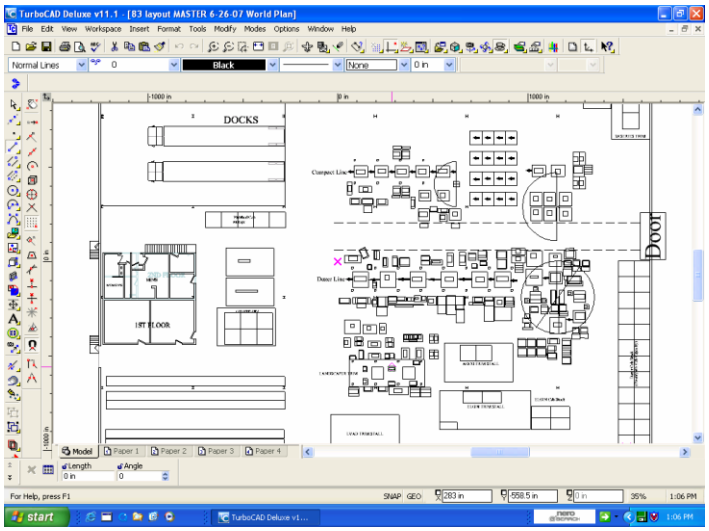

FIGURE: Future State Layout

OPPORTUNITY

A tour of the manufacturing facility revealed much opportunity for improvement using basic techniques of lean manufacturing. In addition to the lack of work standards there were numerous instances of parts and tools being stored on the floor, double-handling of material, and excessive line side stock. These conditions resulted in excessive operator walk time, poor ergonomic conditions, and potential safety hazards. Ultimately, these conditions lead to lower than expected throughput, highly variable production levels, low morale, and an ineffective incentive system.

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APPROACH

Labor standards were developed using a systematic approach consisting of four steps. The first step was the creation of a video recording of the process. This video could then be referenced as needed. The next step was to reference blue prints for welding specifications. The third step was to input all of the work elements into EASEworks® software. This software had been customized to contain predetermined times for most of the common elements performed and was used to record and calculate the labor standard. Finally, the fourth step was to create standard work instructions and process sheets for each job. After work standards were created work stations were reviewed for improvement opportunities and a proposed future state layout was created.

SOLUTION

Labor standards were developed in conjunction with the application of lean initiatives and process improvement efforts. While engineers were developing labor standards, waste, which was prevalent in the operations, began to surface. Process improvement techniques were then implemented with the intent of eliminating this waste and were directed in such a way as to produce the highest impact for the smallest investment. A proposed future state layout was also developed.

BENEFIT

Labor standards were developed for all operations and standard work instructions and process sheets were created. Work station design was also optimized to reduce walk time and improve ergonomic conditions. In order to eliminate excessive stock from work stations, improve part presentation to the operator, and reduce non-value-added walk time material carts were designed and implemented. These carts included small bins to store hardware, shelves for small to medium sized parts (especially heavy parts), tool holders, and swivel castors to enhance mobility and flexibility. Deployment of these carts facilitated a reduction in both walk times and the floor space required for material storage and a simplification of the inventory counting process. In addition to the material carts, tool rails were hung to better position tools for the operators, lighting was improved, additional air and electrical feeds were installed, and flow racks were put in place for large part storage. These improvements led directly to improved quality, increased throughput, decreased production variation, and a reduction in required floor space. A future state layout was also developed incorporating all of the improvements. The resulting layout allowed for consolidation of all assembly/trim operations to one area of the facility, provided aisles to facilitate improved traffic flow and afforded additional space for warehouse and finished goods storage.

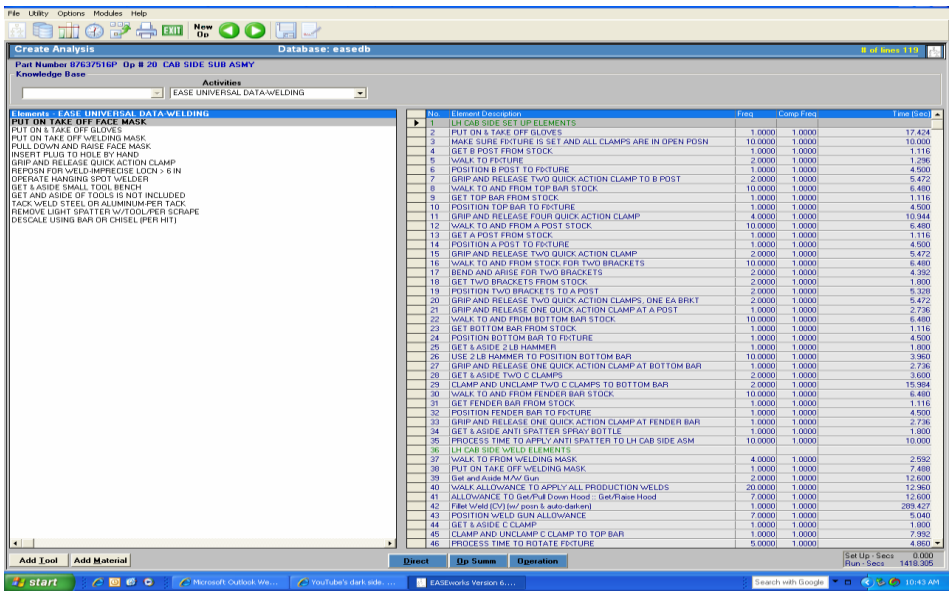

Figure: Example engineered labor standard developed in EASEworks®

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