Productivity Improvement in Engineering Industry (Assembly Lines)

Case Study
INDIA

About Client

Client is a world-leading provider of sustainable productivity solutions. Client serves customers in more than 180 countries with products and services focused on productivity, energy efficiency, safety and ergonomics. Client has leading positions in Compressor Technique, Industrial Technique, Mining and Rock Excavation Technique, Construction Techniques.
Objectives

- Improve throughput/capacity from 2 units/shift to 3 units/shift
- Reduce labor costs
- Eliminate non-value adding activities
- Reduce operator fatigue
- Increase manpower productivity
- Improve material velocity
- Establish Standard Operating Procedures
- Recommend line improvements

Analysis

In discussion with client, following key improvement areas agreed and finalized:

- Assembly line was unable to meet increased market demand
- Rising issues of product quality
- No standard operating procedure in place
- Imbalanced operations creating Muda, Mura, Muri
- Work station design issues

Approach

- Define standard times (fair day’s work) by conducting time and motion study for the ongoing process
- Consider all the factors such as environmental conditions, difficulties encountered, nature of task, as per ILO (International Labor Organization) standards.
- Study all the wastes (Muda, Mura and Muri) in the process and find ways to eliminate them
- Apply lean tools such as line balancing, SMED, 5S (+ safety) and 2 Bin system to eliminate waste
- Work station design to eliminate operator fatigue
**Project Implementation**

**Time and Motion study**

Selection and preparation of operator fit to conduct the operation. Carry out the process and list all work elements. Break all elements in sub elements. Video shoot the entire operation. Calculated cycle time by applying performance and allowance factors.

**Eliminate Non Value Adding (NVA) activity**

- Study all activities to find out non-value adding activities (NVA) e.g. excess operator walking, tool search time, material availability, setup change time, etc.
- Eliminate all NVAs by using tools such as SMED, Kanban, 5S, 2 Bin system, Layout design, Incentive scheme, logistics management

**Line Balancing**

Find out TAKT time for assembly line based on customer demand. Perform line balancing based on TAKT time calculation.

**Workstation Design**

Design the workstation to eliminate fatigue and improve ergonomics for operator efficiency improvement.

**Results Delivered**

- Productivity improved from 2 compressors per shift to 3 compressors per shift
- Work content reduced by 40%
- Total labor cost reduced by 50%
- Productivity improved by 50%
- Designed total 10 work station layout as per ergonomic design

**Sustenance**

Implemented results shall be sustained over a period using Systematic Audit & Improvement Loop (SAIL) & Daily Work Management (DWM)

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