Equipment Performance Improvement In Woven Fabrics Industry (via Planned Maintenance)

Case Study
East Africa

About Client

Based in East Africa, client is one of the largest manufacturers of block bottom bags used for packaging of cement and hydrated lime, with customers consists of variety of segments from large commercial farms to major cement manufacturers and a significant share of the East African market. The plant is in the heart of Copperbelt region of Zambia.

Major products include variety of laminated bags, PP woven bags, plain grain bags, jumbo bags, bailer twins.
Analysis

Faber Infinite identified significant opportunities and set targets to:

- Improve Overall Equipment Effectiveness (OEE)
- Reduce MTBF (Mean Time Between Failure)
- Reduce MTTR (Mean Time To Repair)
- Reduce wastage
- Improve Standardization
- Reducing Cost

Approach

Project Initiation

- Detailed equipment performance & maintenance data analysis of the current situation and challenges
- Equipment Failure evaluation to understand breakdown status
- Structured equipment ranking exercise to prioritize and finalize implementation plan
- Building Visual Information Management System for effective project roll out and communication
- Roll out Planned Maintenance (PM) pillar of Total Productive Maintenance (TPM)
- Set up regular PM audit mechanism for sustenance
**Project Implementation**

Team Faber Infinite, implemented the planned maintenance by undertaking the following 7 steps:

**Project charter**

Detailed analysis of the current challenges and prepared the implementation plan & objectives were set. Project team was formed, & scope was finalized.

**Evaluation of equipment performance**

Equipment evaluation was conducted for all equipment in which equipment ranking was ascertained, considering the average level of operation, failure frequency, downtime to repair MTTR, failure cost, repair cost, etc. Further analysis was conducted to understand the equipment failure or breakdown situation.

**Reverse deterioration and correction plan**

After equipment breakdown evaluation, a concrete plan was drawn to reverse the speedy deterioration by correcting the mistakes and improving the existing system.

**Build Visual ‘Information Management System’**

A robust visual information management system was set up under which Planned maintenance mechanism was set up on the Gemba depicting the PM activities, highlighting the PM schedules & PM activity load leveling.

**Build a ‘Periodic Maintenance System’**

Heijunka (load leveling) mechanism was established & implemented for smooth and effective allocation of PM tasks to maintenance crew by the head or leader.

**Build a ‘Predictive Maintenance System’**

Based on historical performance of equipment, scientific time based / condition-based maintenance plan was rolled out. This was achieved with the help of equipment performance & failure inputs from information management system.

**Evaluate the Planned Maintenance System**

PM evaluation framework was implemented under which PM activity to be performed on the machine including the time taken to complete the activity was rolled out, via regular PM audits.

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**Results Delivered**

**OEE (Overall Equipment Effectiveness) at Convertex**

- Improved by 20%

**OEE (Overall Equipment Effectiveness) at looms**

- Improved by 17%

**Productivity increased by 20%**

**Few other tangible benefits include:**

- Wastage at Convertex reduced by 50%
- Wastage at loom reduced by 52%
- Wastage at tape plant reduced by 20%

**Sustenance**

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