Implementation of Lean Techniques in Automotive Air Filter Manufacturing Line

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Abstract:
Lean is the term used to describe the production system developed by the Toyota Company to achieve more with less resource, by continuous elimination of waste. Lead time reduction is a challenge to every manufacturing industry. The project was carried out at MANN- HUMMEL Bosch India Ltd. The company manufactures air filters, fuel filters for the automotives and was not able to meet the customer demand as the lead time in Air filters Line was high compared to the other stream lines. The company also planned to supply round air filters for Volvo trucks, but the company was having manufacturing line that can produce rectangular filters only. Hence the project was selected in Air filter line to reduce lead time and also to implement mixed model production.

The project focuses on data collection in the present line using seven QC tools and analyses on data collected were carried out using value stream mapping. The non value added activities found in the line was reduced using the lean techniques like TPM, 5S and work balancing. The current product process flow and the new product process flow were studied considering the Group Technology method and a suitable layout with efficient space utilisation and effective material handling was selected. This selected layout was validated and recommended for implementation.

The outcome of the project was the lead time in the air filter line was reduced to 399 s from 544 s and through this the company was able to meet the customer demand and was able to fill the backlogs. The investment on new line was eliminated and two special purpose machines for glue bonding and ink jet printing were planned in the modified layout to accommodate mixed model production. The resource efficiencies were increased from 12.5% to 25%.

**Breakdowns in Carrousel Unit**

**Reduction in breakdown**

**Carousel unit Cycle time**

**Takt Time in AFL**

**Cycle time reduction**

**Project outcome**