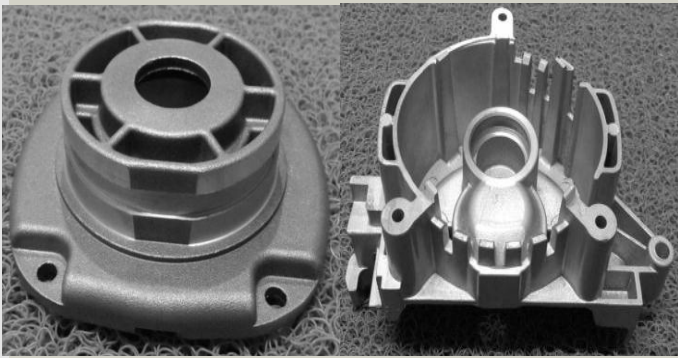# Profitability Improvement in an automobile parts manufacturing company



*The case study describes the methodology used to turn around an organization through the 'Wealth from Waste Cluster'*

*The cluster was structured to create business impact by deploying robust manufacturing systems and practices and enhancing the capability of team. Tools & Techniques were explained in a classroom session, along with other cluster members. The team had 15 days to implement the Learnings at the shop floor. This was reviewed by the anchor during a plant visit and inputs were given. The team took corrective action and presented progress to the anchor. This cycle was repeated for 12 months.*

## A.      Background

An automobile part manufacturing organization was caught up between tight delivery & cost targets and high expectations from customers and wanted institute's intervention to optimize utilization of its key manufacturing facilities and to sustain profit margin.

The organization is a three decade old company catering to industries engaged in the manufacturing of two wheelers, three wheelers, four wheelers and Electrical Motors. The company is having production facility in 2 locations with total capacity (in Tons of Metal) of 6000 MT (per annum). In addition to the production shops, its infrastructure also consists of a tool room facility for maintenance where regular preventive maintenance is carried out. It is an ISO TS 16949 certified company.

## B. Business challenges faced

- **T**he organization was under high pressure to meet delivery schedule on time.

- It was meeting the existing customer requirement at the cost of profitability due to internal inefficiency and plant utilizations.

- There was lack of business/process level MIS and structured review because of which monitoring productivity, quality & cost was difficult leading to poor accountability and people engagement across levels

- The organization was in a continuous expansion stage and was seeking a cultural change to address the issues of Productivity, Quality, Cost, Safety, Delivery and Morale

- All this led to sustainable profit margin becoming a critical issue

## C.  Approach to the challenges

- **OEE Data gathering and setting up systems to capture data**

**T**he first step was to understand the machine utilization at current level. Systems were set to gather data and assess losses or waste in the operations so that constraints within the production process could be identified. It was done through educating the entire team starting from CEO to supervisor level.

- **Setting targets (KPI's) and establishing visual management tools**

Next step was the implementation of organisation wide performance metrics (KPI's). Targets were fixed for each work station and to improve the production level through visual communication, charts and graphs near the work stations were established. It was continuously monitored as it was essential for the team to understand the impact of milestone plan v/s actual.  This brought in more accountability at operator level.

- **Capacity calculation through TAKT v/s Cycle time**

To understand the reason for not meeting customer's demand on time, a detailed analysis was made for each machine centers by taking cycle time and comparing with TAKT time. Also mapping of machine v/s product analysis was done. This analysis helped the team to optimize the cycle time in critical machines and also balance the machine with right product mix. This also helped the team to improve the plant capacity as well as to improve the quality issues.

> *"The cross functional team, **prioritised top 3 issues that were the major contributors** to effective utilization on machines"*

- **Formation of Cross Functional Team**

A cross functional team was formed involving the Managing Director, the production head and the shop floor personnel in charge of the respective processes. The team was made accountable for the achievement of the KPI and OEE targets within a specific time frame which was reviewed every fortnight by cluster anchor.

- **Prioritising key contributors to business loss**

After monitoring and analysing OEE data, the cross functional team, prioritised top 3 issues that were the major contributors to effective utilization of machines. They were:

  - High changeover or setting time
  - Machine downtime
  - Die related problems

- **Application of tools and techniques**

> *"Mapping of machine v/s product analysis helped the team to* **optimize the cycle time in critical machines"**

To eliminate or reduce the identified wastes , the following lean tools were used  - Structured Problem Solving Techniques, 5S, Visual Management, Root Cause Analysis, Zero Defect techniques, Continuous improvements, SMED, Flow Mgmt / Line Balancing.

For example, in SMED technique, the team was taught a structured way of analyzing the changeover in terms of external and internal elements, applying simplification, reengineering principles to reduce internal elemental time and housekeeping, visual management techniques to improve external elemental time. Flow management techniques were used to reduce material movement. Ergonomic improvements brought about a reduction in operator fatigue.

- **Periodic Review**

A system of daily, weekly meetings to review the improvement in activities at all levels was established. This was reviewed by top management every month towards targets set and the future actions were recorded in appropriate formats. The benefit of data gathering & monitoring was highlighted to the organisation and its employees. This improved communication among people and brought about an increase in engagement levels.

## D. Benefits observed

*At the end of the cluster, the organization's avg profitability per month improved 3 fold from previous year. This was a result of:*

1. OEE improvement to 77 % from 60 %

2. Tonnage improvements from 8.36 ton to 18.2 tons with reduced manpower from 288 to 248.

3. Production Capacity Enhancement per day increased by 22 %

4. Reduction in die changeover time from 3.5 hrs to 1.5 hrs

5. Decrease in rejection value by 40 %

### Profitability Improvement (in lacs)



### Reduction in die change over time



### Average manpower reduction (per tonne)



### Tonnage dispatched



# E. Conclusions, Recommendations for future growth & sustainability

The scope for productivity improvement is vast in the organization and the above results were achieved only in a few constraints machines which contribute to 60 % of the turnover. Hence it is suggested to apply the cluster Learnings in all other machines.

The organization must sustain the practice of 5S, House Keeping, Visual Management & Root Cause Analysis and Zero Defect technique.

An expansion of customer base or change in product mix is crucial for increase in the sales revenue and profitability.

There is further scope for reduction in set up time from 1.5 hrs to 1 hr and the team is advised to continue in this pursuit.

It is also advised to keep a keen focus on maintenance activity to further reduce machine down time and optimize material handling by having material accountability from purchase till dispatch.

An organization wide performance management system and employee engagement initiatives are suggested to take the organization to next level growth and profitability.