

UNIDO - ACMA

Partnership Programme, India

Case Study #9:

Emdet Jamshedpur Pvt. Ltd.



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“The UNIDO-ACMA Programme has changed Emdet's perception about production practices and the value of employee involvement, and set path to become a company with best manufacturing practices.”

Navjot Singh, Managing Director

OVERVIEW

Company: Emdet Jamshedpur Pvt. Ltd.

Location: Jamshedpur

Programme period: Feb. 2008 – July 2010

Number of employees: 152

Core products and processes: Rubber hose, silicone hose, assembly hose, crimping hose, engine mounting, bush, bellow, spring hose & all types of extruded, molded, metal bonded components.

Average annual turnover: INR 148 million (USD 3.29 million)

Value of exports: -

Tier: 1

KEY CHALLENGES FACED

- » Un-organized work place
- » Low productivity levels
- » In-adequate safety measures
- » Remaining quality issues

ASPIRATIONS AND AIMS

- » To increase employees' involvement into improvement processes
- » To add new OEM customers in the domestic market
- » To penetrate export market for rubber products
- » To achieve zero accidents

BACKGROUND OF EMDET

Emdet was established in 1978, mainly to manufacture and supply automotive rubber components for commercial and heavy vehicle manufacturers (OEMs). At inception, the company occupied an area of 5,000 square feet, had a turnover of INR 0.5 million and employed 20 workers. By 1990, the turnover reached INR 6.5 million and the number of employees increased to 60. At present, Emdet operates two facilities in Jamshedpur and supplies to M/s Tata Motors Ltd. Jamshedpur, Pune, Lucknow, spare parts division, M/s Eicher Motors Ltd., and M/s Ashok Leyland and is the main Tier-1 supplier to other OEM vendors. The turnover of Emdet crossed INR 148 million (USD 3.29 million) during the period 2008/09.

Excellent product quality paved the way for Emdet's rapid growth, which was marked by the upgradation of “Man, Machine, Method and Manufacturing” facilities, the achievement of ISO 9002, ISO 9001, QS 9000 as well as ISO/TS 16949 certifications, as well as the involvement in new product development for its clients.

Emdet joined the UNIDO-ACMA Programme in February 2008 with the primary objectives to improve productivity and house keeping, as well as to enhance safety at work and reduce wastage. Emdet's goal was to achieve 100% employee involvement, zero breakdowns, and zero accidents, and to create cultural change through across the board.

VISION STATEMENT

To manufacture and supply high quality products consistently, on time, and at competitive price to its customers.

MISSION STATEMENT

To follow world class manufacturing practices and work continuously to reduce cost through productivity improvement and by lowering rejection trends.

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EMDET'S JOURNEY TROUGH THE PROGRAMME

Daily cleaning of workplaces & machines (10 minutes)



Kaizen Gallery



When Emdet joined Programme in 2008 it formed part of a cluster of six companies located in the industrial estate of Adityapur, Jamshedpur. Mr. T. K. Chanda – the assigned counsellor for this cluster – motivated assisted Emdet in developing an action plan and motivated everyone to follow the roadmap in order to develop into a world class organization. To start improvement activities, the company was divided into smaller zones, which were further split up into smaller sections. A zone leader and a deputy leader were appointed for each zone and their photographs were displayed clearly to create the notion of accountability for those individuals and the members of each zone. In each sub-division the key focus areas included safety, 5S (workplace management), 3M (wastes), kaizen, employee involvement, absenteeism, poka-yoke and a concept called “model machine”, and the counsellor imparted class room training to educate the zone members in each of these fields.

In addition, monthly review meetings (MRM) were organized hosting all companies that formed part of the cluster to jointly evaluate performance and tracking pre-identified key indicators. Each MRM was held at the premises of a host company (cluster members), where the other firms' representatives presented their results achieved, the challenges faced and their individual experiences with the programme. Each participant delivered a 20-minutes presentation, highlighting the key achievements and pointing out scope for improvement. At each group meeting, every company identified goals for the next MRM.

Emdet understood that in order to compete globally and to survive in the marketplace it would need not only to deliver quality products, but at the same time work on organizational and employee related issues and foster an environment of continuous improvement. Throughout the UNIDO-ACMA Programme, Emdet's performance was evaluated according to 15 key process performance indicators defined jointly with the counsellor.

TOWARDS TOTAL EMPLOYEE INVOLVEMENT (TEI)

Increasing employees' involvement into improvement processes was one of the primary goals for Emdet. In order to achieve this, the following steps were taken:

- » Employee-wise kaizen bar chart displayed in a kaizen gallery and at the shop floor. This measure ensured that employees who provided improvement suggestions and were involved in their implementation were formally recognized and their photographs were displayed to spur motivation.
- » Class room training was imparted on the subjects 5S, safety, 3M, Kaizen, Model Machine, 7 QC (Quality Circle) tools to all employees.
- » A 10-minutes cleaning session per day was introduced for each workstation, which enabled workers to detect defects or irregularities of machines and equipment earlier and created a notion of responsibility and ownership. In addition, a 2S/Seiso calendar (cleaning guide) was set up.
- » During meetings samples of defective products were shown to the operator to enable him/her to take measures that avoid the same mistake again.

INITIATIVES TAKEN TO INCREASE PRODUCTIVITY AND FURTHER IMPROVE QUALITY

All the processes involved in the manufacturing of rubber parts (i.e. kneading, mixing, extrusion, knitting, vulcanizing, finishing, silicone, shot blasting, moulding, and welding operations) required skilled man power and good control over quality parameters.

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Controlling length variation in the stud



Before



After

The UNIDO-ACMA Programme helped Emdet to better utilize its technologies and testing concepts to monitor and refine product quality further. The company also adopted process-wise poka-yoke (mistake-proofing) to reduce non-conformity of products and customer end rejections.

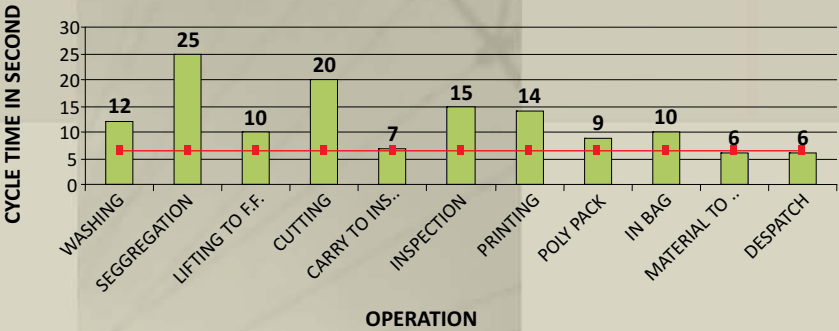
With a view to improve productivity and reduce the stress on a particular process, a special kaizen project was started, which resulted in the identification of various areas of improvement brought forward by employees. The results of this activity were presented at one of the MRMs and received very positive feedback from the other cluster companies.

Furthermore, autonomous maintenance (i.e. maintenance that is performed by the machine operator rather than the maintenance staff) was introduced and so-called “model machines” were created to achieve zero break downs.

Initially, Emdet also faced the challenge of having to deal with high Work in Process (WIP) between subsequent production stages. Some operators stood idle while others struggled to complete their task on schedule. This was a result of the uneven work load placed on operators. Supported by the counsellor, Emdet's management decided to change the production pattern from batch to single piece flow. Before, each batch was completed in one work station before the entire batch was moved to the next process. In single piece flow, parts are now manufactured one at a time, and flow throughout the manufacturing chain as single units.

A cycle time study, which was conducted at each stage of production, revealed a variance ranging from 6 seconds to 25 seconds. So, by performing load balancing in the process, a new line was formed. A one-line system of cutting, inspection, screen printing and packing was introduced, which reduced WIP from hundreds to 5 pieces. To cater to customer requirements of 4,000 units per day, two production lines were developed in accordance in line with the new single piece flow concept. As a result of these changes, the variability in the load times was reduced as shown in the charts below.

Result Sheet between Batch and single piece production



Load chart- Before

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Single piece flow concept introduced



Inspection done in lots



Before

Inspection done on line



After

Load chart- After



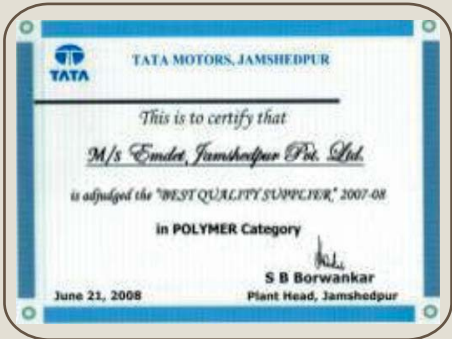
Finally, the machine set up as well as the die and tool change processes were analyzed to reduce machine down time. By bringing down die change over time in one molding machine, down time was significantly reduced. Tool changes can now be done faster, which further reduces WIP. Before this initiative, the change over time of die was 185 minutes, which could be reduced to 132 minutes (representing an improvement of 28%).

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OUTCOMES

Best Quality Supplier Achievement Certificate
from TML



Delivery Achievement Certificate from TML



New Product Development Award
from Eicher



KEY RESULTS

- » Customer returns reduced to zero
- » Accident severity and frequency reduced to zero
- » Labour productivity increased from 8.30 to 14.70.
- » Absenteeism reduced from 18.29 to 8.32%
- » Overall Equipment Effectiveness (OEE) increased from 53 to 76%
- » WIP reduced from 8 to 5 days

The company has experienced considerable benefits through this programme. The entire team is now more focused on quality and productivity issues and there is a system-driven approach to problem solving. Employees are more knowledgeable and motivated. Implementing kaizens and contributing to the continuous improvement of processes has become as part of the culture.

After having switched to single piece flow, the company achieved productivity considerable productivity enhancements of 104% and material movement was reduced from 106 to 35 feet. Emdet was able to achieve zero rejections at customer end, while eliminating watching/searching time for production tools by implementing a movable trolley. The required space in the working area was also reduced from 690 to 200 square ft, implying that the free space was available for other use, and WIP declined from 130 to 7 nos. In process rejection, though reduced by more than 50%, is still below the expectations.

Initiatives, such as installing a safety switch in mixing machine, and a cutting tool guard in hollow cutting machine resulted in zero accidents. Absenteeism could also be reduced from 18% to 8%. Overall, the company generated tangible benefits of INR 3.2 million (71,000 USD), which in itself is a remarkable achievement, and freed up financial resources for other purposes.

AWARDS AND RECOGNITION

The company received also the following awards: “Adherence to Delivery Schedule”, “Best Quality Supplier” from TML and “Fastest New Development Product” from VE Commercial Vehicle. Furthermore, Emdet was awarded best quality supplier in the polymer category on 21 June 2008 from the OEM customer TML Jamshedpur.

The above mentioned awards together with the overall quality and productivity improvements achieved throughout the programme allowed Emdet to win business by developing several new products (205 until the date this case study was written). Two new customers were also added, namely SFL Industries, Lucknow, and Suprabha Industries, Lucknow.

IMPROVEMENTS			
	Before	After	Change (%)
Scrap yard sq feet	60	2	+97%
Absenteeism in %	18.29	8.32	+54%
Customer returns	433	0	+100%
Accident severity ratio	42.3	0	+100%
OEE	53	76	+43%
In process rejection PPM	8267	3842	+53.5%
Productivity	8.3	14.7	+77%
WIP (days)	8	5	+38%
New customer added			2
New products added			205
Tangible savings in operating costs (USD / year)			71,000

Note: Positive trend mark will be '+' and negative trend mark will be '-'.

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FUTURE OUTLOOK

Front entrance of Company



THE SUSTAINABILITY CHALLENGE

In order to maintain the achievements made in the course of the past 22 months and continue improving, the following areas will be focused on in the future:

- » Maintain zero customer complaints, zero rejections, and zero accidents
- » Maintain a high level of employee involvement and motivation
- » Continue to conduct daily cleaning as per the cleaning guidelines
- » Monitor visual displays
- » Join another programme equivalent to UNIDO-ACMA Partnership Programme

FUTURE TARGETS

- » Growth target: INR 300 million by 2010-11 and INR 400 million by 2011-12
- » Achieve OEE of 95% by mid 2010
- » Sustain zero customer rejection ppm
- » Obtain 100% share of business (presently 60%) of Tata Motors Ltd. Jamshedpur by 2011

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