

Review of TQM Application on wastage reduction in FIBC Manufacturing

¹Maulik Umeshkumar Sheth, ²Asst. Prof. Kaushal Barot

¹M.Tech Student, ²Assistant Professor

¹Dept. of Production Engineering,

¹Parul University, Vadodara, India

Abstract- This paper depicts a review on minimizing the wastage of a FIBC manufacturing process and using TQM as a measure. The aim of this paper is to show how using TQM techniques can influence in the reduction of wastage. This paper magnificently shows the applicability of TQM in manufacturing industry. This article clarifies the step – by – step tactic of Quality Circle implementation In a manufacturing process for refining quality level. The company manufactures FIBC Bags which consist of different processes like extrusion, weaving, lamination, cutting, printing, & Bag-making, where it receiving high rejection of fabrics from these departments . So During this study the analysis were done on all possible process which is used to target the highly intensive area from where the rejection was come higher. And conclusions were made by the application Of Lean Quality Circle methodology resulted in to the reduction of wastage comes from Bag-making department.

IndexTerms - Total Quality Management (TQM), Flexible intermediate bulk cargo bags/containers (FIBC)), Quality Circle,.

I. INTRODUCTION

In today's ever growing competition in manufacturing industry, getting maximum output with minimum wastage can change the dynamics of any manufacturing company. Acquiring superior quality is the benchmark for every manufacturing industry. To reduce the wastage it is essential to change the work practice. The Lean TQM approach & specifically the quality circle seem very helpful to change the working environment. A Flexible intermediate bulk container is a type of Bags that is used to store food grade items, flammable products, Chemical etc. It produces as a woven bags made up from Polypropylene, Ultra violet, Milky white, master batch, co-polymer etc. The production of FIBC is carried various processes like as Tapeline bobbin making, Warping, Fabric making looms, Lamination, Cutting, Accessories making, Assembling of cut pieces & accessories. The various types of FIBC are manufactures currently like as Conductive FIBCs, FIBC with Baffles, and FIBC with liners Cross Corner FIBCs etc. In this FIBC manufacturing the rejection is one of major issue due to which rework is to be done several times. Due to this on time delivery is not possible some times. So for elimination of rejection during FIBC manufacturing by using Total Quality Management (Quality Circle) on time delivery shall be possible. This literature review has been done to understand application and effectiveness of Lean TQM methodology in manufacturing fields in order to apply them for reduction of rejection.

II. LITERATURE REVIEW

Young Hoon Kwak et al. [1] conducted analyses on the statistical features of six sigma must accompaniment business viewpoints and challenges to the organization to Implement six sigma projects successfully. Numerous approaches to six sigma have been smeared to increase the overall performance of different business sectors However, integrating the data-driven, structured six sigma processes into organizations still has scope for improvement. Cultural ups and downs require time and commitment before they are strongly implanted in to

the organization. Effective six sigma principles and performs are more likely to succeed by refining the organizational culture continuously.

Parthasarathy Garre et al. [2] conducted analyses in work steps were occupied to increase the productivity of the pressure vessel manufacturing unit by generating a better organized system by executing 5s which diminishes the motions and wait and also provided a healthier working Environment. All the wastes were identified and categorized according to the lean methodology and suitable tools were used to reduce them. The layout reconfiguration condensed the transport time and promoted the unbroken flow. The comprehensive fixture was replaced by a segmental fixture which condensed the time consumed on indexing and fastening. Work standards were distinct to improve the effectiveness of the manufacturing process by generating a standard operating procedure.

Roger G. Schroeder, et al. [3] conducted analyses showed that, the tools and techniques in Six Sigma were strikingly similar to prior approaches to quality management; it provided an organizational structure not previously seen. This emergent structure for quality management helped organizations more rigorously control process improvement activities, while at the same time creating a context that enables problem exploration between disparate organizational members. Although Six Sigma provides benefits over prior approaches to quality management, it also creates new challenges for researchers and practitioners.

Bianca Cirjaliu et al.[4] conducted analyses shows the alterations between lean theory and lean practice, the personnel needs for response and direct participation in the firm, stress reduction in lean manufacturing over reporting all confusions, the inside association between employees and managers. All this together characterize an ergonomically viewpoint through Lean Manufacturing. This paper illustrates a complete literature review of the last era regarding the conceivable impact, both positive and negative, of Lean Manufacturing on the work-related ergonomics.

Edward D. Arnheiter et al. [5] conducted analyses on lean Six Sigma (LSS) organization would exploit on the strengths of both lean management and Six Sigma. It would incorporate an overriding philosophy that seeks to maximize the value-added content of all operations. It would constantly evaluate all incentive systems in place to ensure that they result in global optimization instead of local optimization. It would incorporate a management decision-making process that bases every decision on its relative impact on the customer.

Roy Andersson et al.[6] piloted comparison on the different quality management concepts, TQM and six sigma show many correspondences, while the lean concept is somewhat different compared to the preceding two. However, it is the authors' endorsement that there is a proportion to gain if organisations are capable to syndicate these three concepts. Indeed, the concepts are complementary; particularly six sigma and lean are outstanding road-maps, which might be used one by one or combined, in order to reinforce the standards of TQM within an organisation.

Smetskowska et al. [7] conducted analyses showed in improving production process, increase profitability of that company, and increase the effectiveness at production process.

S.Muthu et al. [8] conducted analyses that had been connected to the reduction of printing line defects in shock absorber through six sigma DMAIC phase here Pareto Chart, VOB & Project charter were used for analysis. The main objective to identify to find out the root causes that eliminates the variation and embarks the customer satisfaction, quality and market share of the shock absorber manufacturing process, the variation phases of these papers to identify peel off and blisters were the two fold responses that impact the quality in the pretreatment process.

Mudhafar Alefari et al. [9] conducted analyses in the paper, the prominence of top management and leadership in the introduction and implementation of lean manufacturing has been conferred. Based on a review undertaken within the UK manufacturing sector, top management has been emphasized as the key success factor, particularly for SMEs.

Carmen cunha et al. [10] conducted analysis used the DMAIC project to improve warranty billings operation in a Portuguese car dealer .here DMAIC cycle were used for this work the main objective to find out a defective part in an audit and generated with a more controlled cash flow. this case study made clears that the company currents metrics only attended financial budget concerns and were not able to establish where and why money was being lost or missing .so that we put in evidence to show that how the proposed metrics allowed to seek for improvement of the billing process in a continuous cycle, thus turning the cash flow under tighter control and decreasing the loss of money and in parallel accomplish value of car brands.

Bianca Cirjaliu et al.[11] conducted analyses shows the differences between lean theory and lean practice, the employees needs for feedback and direct involvement in the company, stress reduction in lean manufacturing through reporting all misunderstandings, the inside collaboration between employees and managers. All this together represent an ergonomically perspective through Lean Manufacturing. This paper illustrates a comprehensive literature review of the last decade regarding the possible impact, both positive and

negative, of Lean Manufacturing on the occupational ergonomics.

Vinícius Veloso de Melo et al. [12] conducted analysis about Kaizen Programming it is a hybrid algorithm that uses a collaborative problem solving approach where partial solutions compose a complete solution. KP can use global optimization procedures, statistics, and ML. The fractional way out are formed by the experts that create ideas (fractional solutions) based on the present standard (finest set of partial solutions), which is better-quality over the cycles. Philosophies are evaluated by their involvement to help to resolve the problem, and the most significant ones are nominated for the next improvement cycle.

DMGMORI Co et al. [13] Conducted analysis shown (1) Smart manufacturing enables us to efficiently manage the quality of machine tools before shipment in the factory. (2) Remote monitoring enables us to efficiently perform maintenance work for customers' machines after shipment. (3) Sensing enables us to improve functions of preventive maintenance.

Lubica Simanova et al. [14] concluded specific proposal of the application and execution six sigma in nominated process of the furniture manufacturing .here SIPOC, Brain storming, histogram and affinity diagram were used in this analysis. The main objective to ensure the greater effectiveness and efficiency of process & also to improve the quality as well as to eliminate or reduces the causes of problems. After improving here we found that the level of quality assurance and improvements of product and services is much done in the furniture manufacturing company.

Sahno Jevgeni et al. [15] improved in frame work continuous improvement of production processes and product through put here DMAIC and FMEA were used. Here the main objective to reducing the no of failures in the constraint facilities reduction in production lead time also on other hand it increases product throughput.

III. RESEARCH GAP

From the study of research papers it is observed that the lean tools are very useful for reducing the defectives. Moreover the Lack of motivation in employees and proper training of work and awareness of value added and non-value added activities and another thing is the impact onto the productivity & higher rejection. Lean tools are mainly reported to have been implemented to incorporate design improvements to avert the in-service failures of the products or improve the manufacturing process to avoid production defects.

CONCLUSION

The following major conclusions are drawn from the review of application of lean tools is to improving manufacturing and maintenance fields:

- Most work targets reduction of rejection during manufacturing.
- These tools also help in improve the manufacturing process.

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