

Lean Based Manufacturing to Increase the Productivity, Quality and reduce waste of Textile Industries

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Abstract

To increase the productivity of the industries we need to reduce the wastage of the manufacturing and time to manufacture the product. The lean is a method to reduce the wastage in all process of manufacturing, reducing cost and value added to the product. This paper proposes the lean principles to the textile industries to reduce the overall wastage of the industries and filters the hazardous materials from the wastes. All the operations are well schedule, timely and sequentially.

Keywords— Lean principles, Industrial wastes, Eco-efficiency.

I. INTRODUCTION

Lean production is the process of elimination the waste materials and non valuable process from the production which ensure the product quality. The textile industry exists more number of wastes so that there must introduce the Lean production method. This industry comprises two sector; textile sector and garment sector. The textile sector consists of spinning, weaving, knitting, printing and finishing. The textile sector involves manufacture of clothing and accessories. With the help of Lean production method the industry can provide a high quality product to their customer by satisfying their requirements. The basic thing of lean production is “doing more with fewer resources”. This method exceeds the number of protection within the given time. Commonly textile exist more amount of wastes, this will affect the environment. Industrial waste is defined as unwanted materials that exist during the production activities. Generally waste is overproduction, correction waiting and inventory of the manufacturing product.

II. LEAN PRINCIPLES

With the lean principles the production team can ensures the production process which is follows the overall organizational strategies by reviewing the process. The lean has five principles.

- Identify Customers and Specify Value
- Identify and Map the Value Stream

- Create Flow by Eliminating Waste
- Respond to Customer Pull
- Pursue Perfection

Lean Principles

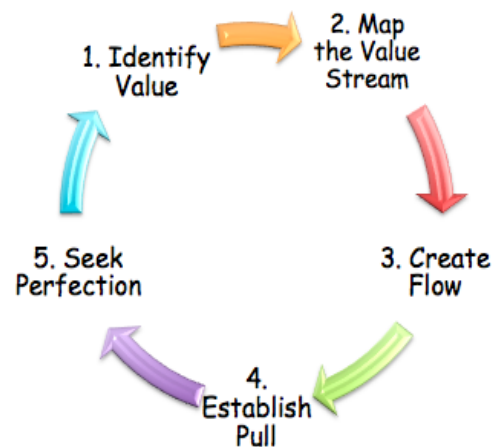


Fig.1 Lean Principles

A. Identifying Customers and Specify Values

In this stage clearly defining the values for the products that are satisfies the end user perspective and all the targeted waste materials are ready to remove. In this stage all the user requirements are analyzed thoroughly to add a value to their needs.

B. Identify and Map the Value Stream

Value stream is the set of activities among all part of organization to produce a value product and improve the product quality. In this step identifying what the customer wants and plan how to deliver the product as customer wants.

C. Create Flow by Eliminating Waste

After defining the values clearly and tailored with the manufacturing flow and the waste materials are removed from the flow step by step. This must be achieved without any interruption of delivery time of product.

D. Respond to Customer Pull

In this stage all the customer needs must understand thoroughly. And identify what they need? How their needs? When they needs? Your production planning is fully depends on customer demands.

E. Pursue Perfection

In this step all the process are assessed thoroughly whenever it is possible or at the end of each stage of production. Every assessment and every action must add a value to the products.

Lean principle needs a redefine because of some disadvantages in original Lean principles. The redefined lean principle uses 8P's approach. This approach overcomes the classical lean approach and can be suitable to the all industries and other disciplines. Some of the positive impacts of the reducing delivery time of product, increase simplicity, reduce resources, reduction of errors, reduce inventory and easy document management.



Fig.2 Redefined 8p's Lean principle

With the 8p's approach that extends the traditional thinking of lean principle in to modern methodology, it can be adoptable to all kinds of industries. The traditional principle almost focuses on the owner's ideas but in 8p approach concentrates on the management, customers, society and employee idea called purpose. The process based on the lean principle is categorized as Enabling process, Core process, Directional process. The management must provide a respect to the people of their industry is the real lean

policy. Pull based delivery, improvements and training are the main principles of lean production. Preventions in variations, rework, problems and quality failures are must considered for the before delivering the product to the customers.

III. IMPLEMENTING LEAN ON TEXTILE INDUSTRIES

Now days the range of textile industries is increased and also the wattages produced by the industries are also increased. Generally waste is defined as rubbish, garbage, trash and unwanted substances. These type of wastes are existed more amount from textile industries because of larger production process, each process exists some amount of wastage. It will affect the environment and living things, the textile wattages are more harmful to them.

The better solution to reduce the industrial waste is to adapting the Lean principles to manage the textile wastage. The lean principle is bitterly suited to manage the textile industries. Before initiating the production process there must be a definition for the purpose of production and plan to do the manufacturing process. Generally the textile industries wastages are generated from some of sources Textile manufacturers undertake a range of waste-generating activities such as washing/drying, warp preparation, weaving, dyeing, printing, finishing, quality and process control, and warehousing. First the waste materials are classified as biodegradable and non-biodegradable materials. A textile industry waste produces the green house gas so that it will affect the ozone layer. Reduce the input and disposal cost of waste materials. The management of the textile industries must provides a training and awareness about waste management to the employees. Monitor and bench mark the waste of industry. There are number benefits to the management and others by reducing the waste existence; increasing profitability, reducing the cost for investment, reducing environmental impact and increasing image on social.

IV. CONCLUSION

This paper proposes the Lean based waste management for the textile industries. Generally lean based production increases the profitability and reduces to spent money on production process. But the aim behind to introducing Lean in waste management is to reduce the waste existence of the textile industries. The lean principles are well suited for reducing and managing the industrial waste. As a future work the additional lean concepts and principles are considered to manage the industrial wastages.

REFERENCES

- [1] Womack, J., Jones, D. and Roos, D. (1990), *The Machine That Changed the World*, Rawson Associates, New York.
- [2] Womack, J. and Jones, D. (1996), *Lean Thinking: Banish Waste and Create Wealth in Your Corporation*, Simon & Schuster, NY.
- [3] Hines, P., Holweg, M. and Rich, N. (2004), Learning to evolve: A review of contemporary lean thinking, *Int. Journal of Operations & Production Management*, Vol. 24, No. 10, pp. 994-1011.
- [4] Holweg, M. (2007), "The genealogy of lean production", *Journal of Operations Management*, Vol. 25, No. 2, pp. 420-437.
- [5] Verma, A., Bao, H., Ghadmode, A. and Dhayagude, S. (2005), "Physical Simulations in Classroom as a Pedagogical Tool for Enhancing Manufacturing Instruction in Engineering Technology Programs" in *Proceedings of the 2005 American Society for Engineering Education Annual Conference & Exposition*, Paper No. 2005-220, 12pp.
- [6] Billington, P. (2004), "A Classroom Exercise to Illustrate Lean Manufacturing Pull Concepts", *Decision Sciences Journal of Innovative Education*, Vol. 2, No. 1, pp. 71-76.
- [7] Prusak, K. (2004), "Problem Definition and Problem Solving in Lean Manufacturing Environment", in *Proceedings of the 2004 American Society for Engineering Education Annual Conference & Exposition*, pp. 195-206.
- [8] Badurdeen, F., Marksberry, P., Hall, A. and Gregory, B. (2010), "Teaching Lean Manufacturing With Simulations and Games: A Survey and Future Directions", *Simulation & Gaming*, Vol. 41, No. 4, pp. 465-486.