

Lean Manufacturing

A corporation is a living organism; it has to continue to shed its skin. Methods have to change. Focus has to change. Values have to change. The sum total of those changes is transformation.

~Andrew Grove~

As it is stated above that “The sum total of those changes is transformation”, it is worth mentioning here that the transformation or revolution has great significance in the current global market. Many companies are struggling to survive in today's highly competitive international economy. Due to a vast market completion, psychological and technological changes in international market, every businessman who wishes to make a mark in the market, has to improve things time to time and make healthy changes in all respect. “Lean Manufacturing” is also an important methodology to reduce costs, eliminate waste, increase productivity, maintain high levels of quality and still make a profit. It is a tool or technique used for transformation in the whole system to do better and to sustain in the competitive world.

Implementing lean manufacturing in the industry and proper application of its principles can help any company survive in even difficult financial times. It is a system that can be used not only in production areas but any other area that you are looking to streamline, but is necessarily requires top-down commitment and bottom-up involvement in a company. Because there is not a single step task, everyone in the firm has to be engaged and involved in the process because Lean is a method that improves processes through continuous improvement and elimination of waste. And there are two main foundations or pillars which represent "Just-in-time production" and "Automation with a human touch".

Just-in-time production means only product required is produced. Automation with a human touch signifies that machines are equipped in such a way that they can detect small errors when processing and have the ability to stop the process. Joining these two pillars and applying Lean principles can greatly improve efficiency as well as quality. A key aspect of this system is maintaining quality in the overall process and not letting any defect pass on to the customer. Through application of this fundamental rule, problems are highlighted immediately and addressed just as quickly.

The ultimate goal of lean is to increase cash flow and operating profits by reducing inventory, delivery time, cycle time, and set-up time, Improving quality, Increasing overall customer satisfaction, Improving employee involvement, morale, and company culture. Through these measures and techniques, a lean organization can eliminate waste or non-value creating activities. It is important to mention that it begins with the “Customer” because customer is the definer of value. Once value is clearly defined, then value streams can be clearly identified, after using value stream, chalk out a plan to successfully implement the Lean Manufacturing System by using the following tools;

- **5S:** It is a system for organizing the workplace and it helps to create a culture of continuous improvement at every level as well as in administrative processes in the office. It includes “Sort, Set in order, Shine, Standardized and Sustain”.
- **Quick Changeover:** A system for reducing setup or changeover time and this allows organizations to produce smaller batch size.

- **TPM:** Total Productive Maintenance is a system of maintaining and improving the integrity of production and quality systems through the machines, equipment, processes, and employees that add business value to an organization.
- **Manufacturing Cells: Cellular Manufacturing/**Manufacturing Cells are effective systems for manufacturing or assembling product using one-piece flow¹. Instead of moving product from area of the factory to another in batch-and-queue, cellular manufacturing makes for much shortened lead times and makes one-piece flow possible.

Lean Manufacturing system creates a culture of continuous improvement. Lean organizations achieve following benefits by eliminating waste or non-value creating activities using above mentioned set of tools and principles:

- **Quality Improvement** – Lean environment is geared towards improving quality of products and services by creating a culture of continuous improvements. As quality issues arise, problem solving techniques are used to root cause the problem. This not only strengthen the process but also prevent recurrence and as a result quality of product is improved.
- **Improvement in Visual Management²** – Another benefit of lean manufacturing is management by sight. Visual control is a business management technique employed in many places where information is communicated by using visual signals instead of texts or other written instructions. The design is deliberate in allowing quick recognition of the information being communicated, in order to increase efficiency and clarity. If done accurately, plant will be set up and one can evaluate an entire area with a visual scan. Any abnormalities will stand out and be easy to identify as a problem.
- **Efficiency Enhancement** – Balancing in work categories will ensure each person in the process is working in the most efficient manner. Standardized work will ensure that they are doing it correctly following the same method every time in the process. This leads to repeatability and increased efficiencies in all respect.
- **Manpower reductions** – One of the major benefits of lean is getting more done with limited people. With standardized work and increased efficiencies, the ability to do the job with less people becomes a very real possibility of an organization to make the flow of work more effective and smooth.
- **Entire Company Involvement** – Lean is meant to involve the whole company from top to bottom. It is not intended to be put into action in only one area. It is a management philosophy which should include every part of the organization. This helps to promote the concept that everyone in the company is part of the team.
- **Problem Elimination** – Lean manufacturing is all about attacking an issue and continuously investigating it until it has been eliminated from the process. Root cause of problems are identified and tried to be eradicated from every step, so that the value addition would be possible.

¹ Sometimes referred to as “single-piece flow” or “continuous flow,” one-piece flow is a key concept within the Toyota Production System. Achieving one-piece flow helps manufacturers achieve true just-in-time manufacturing. That is, the right parts can be made available when they are needed in the quantity they are needed. In the simplest of terms, one-piece flow means that parts are moved through operations from step to step with no work-in-process (WIP) in between either one piece at a time or a small batch at a time. This system works best in combination with a cellular layout in which all necessary equipment is located within a cell in the sequence in which it is used.

- **Reduced Space** – As a result of waste reduction process, space will be created. Reduction of finished and raw inventory will save space vertically in your racking as well as horizontally across your floor.
- **Safer Work Environment** – Visual management and 5S will help identify when things are out of place. When unnecessary elements are removed from the operation, the workplace becomes much more organized. And an organized work environment is a safe work environment.
- **Improved employee morale** – This is a benefit that may not be realized during the initial stages of implementation of Lean Manufacturing system. But once it starts to get accepted and utilized by the employees their morale would be boosted. Employee involvement and empowerment will make all members of your company feel like a contributing part of the team. And the reduction of uncertainty in the workplace, as a result of lean, will reduce stress in your team members.
- **Positive Financial impact of Lean** - While many accountants see stock as an asset to the business but at times it becomes a major hindrance to business. Stock costs money to store and to move and it uses your cash to maintain it. One of the major aims of Lean is to eliminate the stock in your processes. This in turn releases cash back into your hands to use within the business (Remember; Cash is King!) Removing inventory also frees up space and removes the need for excessive amounts of handling equipment as well as removing the opportunity for handling damage and even for products becoming obsolete.

- **Lean Improves Your Profits** - Most companies work on the following formula;

“Selling price = Profit + Costs”

But if the selling price is too high your customers will not buy from you, the selling price is in reality something that is fixed by the market, not by you. If you don't offer your product or service at the right selling price you will not retain or gain customers.

One should work on the following;

“Profit = Selling price – Costs”

Lean works to drive down your costs; therefore the more you save the higher your profits. Every penny that you save is added directly to your profit.

Companies that implement Lean typically make significant cost savings that have a very real impact on the companies' profitability.

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