

ME491 Assignment 2



Topic: BOEING Lean Manufacturing

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Q1) Explain when and why Boeing starts implementing the lean concepts?

In world war II the Boeing company built the B-17 Flying fortress for the U.S army. The demand for the planes were huge so the company had to utilize its full potential to meet the demand. U shaped lines and knitting were used. Movements were decreased drastically among different sectors. As a result, the manufacturing output was increased as 12 planes per day. But as war ended so was the efficiency of the company. Now the company had faced a lot of losses as demand for low cost and good quality planes started to take place. By looking to its competitor Airbus, the Boeing company had to change its manufacturing processes as they were using the old technology.

Lean manufacturing has aided the Boeing to reduce the cost, use of raw material, energy and improve the quality. Lean was implemented by the Boeing in the early 1993.

"The commercial centre is requesting lower costs for our items," said Ross Bogue, Commercial Airplanes VP of assembling, "and costs should be underneath cost to maintain a solid business. Airbus decreases value focuses to pursue piece of the pie to give occupations, innovation, an assessment base, and the wide range of various qualities they are reacting to in Europe."

"The Lean way of thinking dates to the 1950s, when the Toyota Motor Company in Japan spearheaded a progressive method of creating vehicles. Creation leader Taiichi Ohno fostered a coordinated interaction that productively oversaw gear, materials, and its labour force all through the creation cycle. Disregarding the mass auto-creation procedures of Detroit, Toyota figured out how to convey more solid, more excellent items quicker — and at a lower cost — while reacting deftly to client interest".

The assembling cycle was obsolete. The floor design resembled the parking garage. Planes were docked some to one side and some to one side. Each plane was encircled by the inclines and laborers needed to go in and out to discover parts and supplement them. In this manner often was squandered and would bring about low creation. This method of assembling was old way.

Now to compete with its competitor Airbus, the Boeing had to look for new processes to reduce the cost and improve quality. So, in early 1993, the Boeing started implementing the lean techniques. As a result, the manufacturing processes was increases up to 60% and the inventory space was decreased up to 50%, providing more space to the extra resource. Thus, resource production was increased up to 30% to 50%.

The Boeing continuously invest in the lean as they believe that it helps in improving customer responsiveness time, quality improvement, reduce cost and improve operational performance.

Q2) How Boeing is implementing the Kaizen concepts in their manufacturing?

Kaizen is continuously improvement process. In other words, it's a pull system strategy where every process is based on the demand. The upstream will provide the resource when there is a demand from the downstream. In this way inventory levels remain low and effective.

Kaizen is a compound of two Japanese words that together decipher as "great change" or "improvement." However, Kaizen has come to signify "constant improvement" through its relationship with lean standards. Kaizen has its beginnings in post-World War II Japanese quality circles. These circles or gatherings of workers zeroed in on forestalling surrenders at Toyota and were grown incompletely because of American administration and efficiency advisors who visited the country, particularly W. Edwards Deming, who contended that quality control ought to be put all the more straightforwardly in the possession of line workers. Kaizen was brought toward the West and promoted by Masaaki Imai through his book Kaizen: The Key to Japan's Competitive Success in 1986.

Initially firms would accumulate the resources in their inventory to be used when they are needed. In this way inventory would remain full. This would result in cost to maintain extra resources. Japanese were the first to implement kaizen concept to meet the demand when there is a demand. In this way they not only remove waste from the products but also reduce the cost and improve the quality. Later, this technique was called Toyota production system or lean.

In the past U.S companies had radically changed their manufacturing processes to improve the competitiveness. Techniques like Total quality management, Lean manufacturing, just in time etc were implemented. All these techniques aim for the reduction in cost and improve quality.

Similarly, the Boeing company started to implement Kaizen approach to meet the demand when there is demand. Kaizen approach efficiently reduce the inventory space and thus reduce the cost drastically.

Boeing used the kaizen approach in different departments. To compete in this competitive environment, Boeing had to come with new idea to accommodate low cost and meet customer demand. So, Boeing implement the kaizen concept to remain stable in the market. Kaizen approach is the continuously improvement un the processes. In other words, to make the product when there is a demand. In this way all the processes will be utilized efficiently and will be cost effective.

In design they move from the traditional approach like mock-up to access the manufacturing production time to the Computer-aided design (CAD). As a result of this technique, most of the time was prevented which ultimately results in making more money.

Also, in the production processes the JIT practice is implemented. It helps in scheduling the orders of the parts or in other words Time-phasing orders. In this way it helps in ordering the parts when they are needed. As a result, they keep the inventory low, thus the cost of keeping the goods also decreases.

In order survive in this competitive environment, Boeing changes their manufacturing techniques to avoid any waste and to manufacture quality products with less cost and to increase the customer responsiveness. Boeing implements the kaizen concept to achieve above goals.

Q3) Explain Boeing 5s implementation?

5s focuses on the 5 Japanese words seiri, seiton, seiso, seiketsu and shitsuke. After the Ethiopian carrier smashed features spread like a hotcake, most of the aircrafts zeroed in on their security conventions including the Boeing organization. "Lean assembling is a workplace technique that enhances usefulness and guarantees a compelling operational flow. The five S's of lean assembling are the centre principles whereupon the idea was established and base on the objective of waste decrease."

Airforce authorities will watch out for the Boeing fabricating conventions to acquire their trust with respect to wellbeing. By executing the 5s, the Boeing would acquire the trust of the flying corps and the clients regarding the security. Following are the 5s, which are the 5 Japanese words:

Sort (seiri):

Sort means taking all the items that are unnecessary. So, the items which are not used, will be removed from the working station. In this way most of the time will be saved. As humans are prone to error, so to save time unnecessary items will be shortlisted from the table.

The Boeing also implement this technique to save time and to avoid mistake.

Set in Order (Seiri):

This Japanese word aims towards set in order, which means that all the items must be arranged in a proper manner. Lines are drawn to flow the process easily without any confusion. Tiger lines, margin

line, headlines etc are drawn for different purposes. In this way most the person will know where he/she can get the item. In this way most of the time will be saved and thus contributes for the company profit.

Shine (seiso):

This Japanese word means to make the working place neat and clean. By doing so the working staff will feel energetic while doing work. Everything will be organized. This will give pride for the workers and they will execute their tasks more easily and error-free.

Standardize(seiketsu):

Standardize means to fulfil the above-mentioned objectives daily. By doing so it will ensure that all steps are followed consistently without any error.

Sustain (shitsuke):

This Japanese word means sustain. This is the hardest part of the 5s technique. As humans are difficult when it comes to change. To make it habit, they must execute the above-mentioned habits daily. So that it becomes their habit.

Boeing centres around the 5's and carry out them in their own warehouses. "FOD is truly about each individual," says Roper. "Everybody in the workforce, following those techniques and bringing a culture of order for security." Boeing would do well to execute workplace guidelines around the 5S model, guaranteeing that the advancement made following such a shift is supported in the long haul—something the Air Force has expressed it will hold under cautious perception for quite a long time to come."

When it comes to the airline, the Boeing is in the lead due to the implementation of the above-mentioned processes. The Boeing not only provide quality products but also in cheap price to expand its market. It is all possible by carving ways using lean manufacturing processes.