

LEAN TIMELINE

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Although the term Lean is very popular in manufacturing circles today, it has been with us for many years long before the Toyota Production System brought it to our attention in the 1950s. The importance of Lean cannot be overemphasized because it focuses on becoming more efficient in all of our manufacturing operations to stay even, or even beat some of the more progressive companies in the world.

This article will touch on some of the more important milestones in the long history of Lean.

Early Lean Developments

Eli Whitney, best known as the inventor of the cotton gin, revolutionized the cotton industry by saving cotton farmers hundreds of hours to separate the cottonseed from the raw cotton fibers. It automated the seed separation process and could produce up to fifty pounds of cleaned cotton daily, making cotton production profitable for the southern states.

He was also was the first to use the concept of interchangeable parts manufacture in 1799 to make 10,000 guns for the US army for \$13.40 each. This represented a new manufacturing concept that allowed manufacturers to mass-produce products, with interchangeable parts, at reasonable prices that consumers could afford.

The Next Hundred Years

- Manufacturers concentrated on improving individual technologies to make their manufacturing operations more efficient.
- Drawing Conventions were developed to be able to simplify the transfer of knowledge so the average worker could understand exactly what was required for each product.
- Many types of machine tools were developed for all types of businesses to improve their operations.
- There was no system for scheduling processes throughout the factory.

Work Standards (late 1800s)

Fredrick Taylor, an engineer and one of the intellectual leaders of the Efficiency Movement started looking at individual workers and their methods of doing their work. This resulted in Time Study and Standardized Work plan and he is sometimes called **The Father of Scientific Management**.

Process Charting (early 1900s)

Frank Gilbreth, a pioneer of scientific management and motion study, added Motion Study and Process Charting to the management process. He was an efficiency expert who focused on improving Industrial Management and teaching managers the best way to run their business. He studied the habits of people and was looking for ways that would help them improve their efficiency. His is one of the early records of Continuous Quality Improvement that is so important in today's world.

The Henry Ford Years (early 1900s)

Henry Ford, an early pioneer of the manufacturing assembly system, massed produced cars in the early 1900s. People, machine tools, processes, and products were assembled into an efficient manufacturing system to produce the Model T. Ford that was considered to be the first one to use Just-in-Time and Lean Manufacturing as means to improve production. Many companies in the world copies Ford's assembly line to improve their manufacturing processes.

Deming, Juran and Ishikawa (mid 1950s)

Deming, Juran, and Ishikawa all made major contributions to quality improvement through their work in Japan. Their work probably provided the fundamentals to the Toyota Production System. Dr. W. Edwards Deming's work concentrated on how management must learn how to reduce waste and improve quality, productivity, and the competitive position of the company through statistical control. Joseph Juran's work concentrated on quality management issues and how these must be resolved to improve manufacturing problems to make a company competitive throughout the world. Dr. Ishikawa's work in Japan concentrated on Quality Control systems to control the accuracy of modern day manufacturing processes.

The Toyota Production System

After WW 11, Taichii Ohno and Shigeo Shingo stared to introduce the Ford Production and Statistical Process Control at the TPS company. Some of these systems methods did not work well with Japanese workers. They found Japanese workers had more to contribute than just muscle power.

Shingo worked on reducing scrap and changeover setup times from hours to minutes and seconds. When word of their success spread, Americans to find out what was happening. They tried to duplicate a system they knew little about and most of their attempts failed.

World Class Manufacturing (the 1980s)

By the 1980s some US manufacturers, such as Omark Industries, General Electric, and Kawasaki were successful in implementing TPS methods. New terms such as World Class Manufacturing, Stockless Production, Continuous Flow Manufacturing and many others began to be common in US manufacturing. As US manufacturers gained more knowledge and experience, more succeeded at their changeover. American manufacturers became aware of the need for waste reduction, continuous improvement, error-proofing, and productivity improvement.

Lean Manufacturing (late 1900s – early 2000s)

Involves the reduction of all types of waste in any business and manufacturing operation. Wastes could occur in the management, clerical, sales, administration, and factory workers. The most common wastes are: Overproduction, Inventory, Transportation, Defects, Processing Waste, Operating Waste, and Idle Time Waste.

Reduction of any wastes will increase productivity, reduce costs and make the company more competitive on the world markets. It will increase the desirability of the company's products; the customer base will grow and require more workers to meet the demand.

Lean Summary

Today, most companies are looking for Lean companies to supply them with quality products, at competitive prices, and deliver the product at the time they require it. It seems as though these requirements are the price of doing business anywhere in the world today.