History of TPS and Origin of the LEAN Concept

by Samuel Leung

The term Lean Production System is always associated with the term TPS (Toyota Production System), which started its development at Toyota back in the 1940s.

If we go back in history we would find that the term, Lean, was first coined by John Krafcik in an article, "Triumph of the Lean Production System," published in the Sloan Management Review in the Fall of 1988. This article was based on Mr. Krafcik’s master’s thesis at the MIT Sloan School of Management.

Toyota Production System was the result of the studies and subsequent management tools developed by a task force headed by Mr. Taiichi Ohno. Mr. Taiichi was looking for ways to meet the productivity challenges that Toyota faced when the company first entered the automotive manufacturing industry in the mid 40s--Toyota’s productivity was behind Ford by a factor of ten.

At the time when Toyota started to enter the commercial passenger car market in 1947, Ford in US has already accumulated 40 years’ experiences in running mass volume production of automobiles through the moving assembly line manufacturing system pioneered developed by Mr. Henry Ford.

Mr. Ohno’s team started their mission by studying Mr. Ford’s literatures and Ford Motor’s methodology. They also incorporated the concept of in process Built In Quality Control, which was originated from Toyota’s experience in the textile manufacturing process. (Toyota had invented an automatic loom that would stop when there was a quality problem).

Ford’s Assembly Line

The team also traveled to US to visit Ford to study their manufacturing process. During this study trip, one day they visited a well established US supermarket. Mr. Ohno
observed that the supermarket only replenished stock on shelves when the quantity fell below a preset limit. Mr. Ohno found this as a very interesting stock control method. His team further studied and formalized the methodology into a system now well known as JIT system, which is part of the TPS system.

The Ford process and moving assembly line management methodologies formed the basis of Toyota’s plant reorganization blue print, Mr. Ohno and his team spent the next 25 years to merge the concept of Built In Quality Control and Just In Time inventory control into the moving assembly line system and developed a social-technical manufacturing system that is known as TPS today.

The concept of LEAN can be viewed as part of the tasks of the quality control system in the larger TPS operation. This management method draws upon the tools developed for Built In Quality Control and Continuous Quality Improvement process to achieve two main goals, namely,

1. Identifying the “waste” and the cause of “waste” in an operation
2. Develop processes to PREVENT “waste” from happening