



TenStep Supplemental Paper

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Lean Efforts via Kaizen

Celestica's Monterrey, Mexico facility became the first Electronics Manufacturing Services (EMS) Company to be recognized with the Shingo 'Business Prize'. Shingo prize, the Nobel Prize of Manufacturing is not just a dream that came true for Celestica. It is in fact the outcome of outstanding efforts put-forth by all the employees to transform Celestica into a world class manufacturing facility. This, it could do so by successfully implementing Kaizen and Lean principles.

Profile

Headquartered in Toronto, Canada, Celestica has over 40 manufacturing and design facilities worldwide. It operates a sophisticated global network with manufacturing operations in Asia, Europe and America, providing a broad range of integrated services to leading original equipment manufacturers (OEMs) across industries.

Celestica manufactures complex printed circuit assemblies such as motherboards and communication and networking cards. These cards and motherboards are used in PCs, servers, workstations, and communications devices. Some of the popular customers of Celestica include Dell, IBM, Lucent and Cisco Systems among others.

Need for a change

EMS industries were slow in catching up with the Lean principles when compared to automotive industries and Celestica was no different from its peers. However, increased competition resulting from globalization and downturn in the electronics market compelled Celestica to change its operational model.

In order to tackle the downturn in the technology industry and meet customer demands, Celestica decided to shift high-volume manufacturing from North America to other lower cost areas. At Celestica's Monterrey, Mexico facility, a new operating model was incorporated, which was largely high-mix, low-volume (HMLV) manufacturing and system assembly. However, this transformation meant the site would have to efficiently manage its operations so as to accommodate new product volumes and variations apart from ensuring customer satisfaction.

Targets

In the process of satisfying customer demands, Celestica had to struggle with quick-turn style of low manufacturing. Celestica realized that in order to satisfy its customers' demands it has to reduce wastes generated from its manufacturing operations. This was possible by improving production efficiency, streamlining changeover processes and improving the quality of its products.

A lean team was constituted at Celestica, which comprised of five members. This team incorporated all the concepts and principles of quality improvement including Six Sigma, Kaizen, pull system manufacturing, value stream mapping and 5S among others. The



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ultimate goal of the lean team was to remove wastes from manufacturing processes and also eliminate non-value added processes.

Tools of improvement

The Celestica Business System (CBS) serves as the basis for Celestica's ongoing efforts to simplify internal processes and reduce operational inefficiencies through the elimination of non-value-added activities. In order to improve communication among all employees and improve material handling operations, a cellular layout was designed. This layout also facilitated uninterrupted operations. Six Sigma projects and Kanban programs were initiated to reduce process variations and handle material replenishment tasks. Training programs were also initiated which included operators and senior managers.

Implementation

The lean team modified the line configuration system so as to reduce the distance between line members. This saved travel time from one point to another. The team was able to reduce the line set up time by stocking material replenishment systems beside the production line. This also resulted in easy accessibility of required parts.

As a consequence of reduced line set up times, operators find it easy to switch over from one product to another. This led to elimination of overproduction, which in turn indicates elimination of wastes.

Pull system manufacturing

Pull system manufacturing is a method of controlling the flow of production based on a customer's demand. They are customer order-driven production schedules based on actual demand and consumption rather than forecasting. Color-coded cards are used at the facility in order to represent production status or signal parts requirement. This has helped the operators in maintaining production levels of different products. Pull manufacturing system has also helped operators in minimizing work in process (WIP) inventory and augmenting productivity.

Visual management system

Visual management system (VMS) boards were used across the plant in order to ensure that all employees have access to vital information like production status and availability of materials. These boards also display information regarding product sequencing and 5S compliance rates.

Results

Within a year, the lean and quality transformation program in Monterrey, Mexico facility resulted in improved efficiencies and significantly increased customer satisfaction rates. Some of the major achievements of the program include scrap reduction by nearly 65%, equipment utilization by 33%, and lead-time by 71% among others.

Lean Efforts via Kaizen-II will detail one of the Kaizen events at Celestica's Toronto facility and analyze the overall benefits that the company reaped.