

# **Design of New Plant Layout Using Lean Tools by Eliminating Wastes in Material Flow Process**

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## **Abstract**

The Service Mold company examined in this study is leading aerospace parts manufacturing industry located in Windsor, Ontario. The company demanded a new plant layout for the better material movement to improve the actual productivity by eradicating all the wastes in the process with the help of lean tools. In this paper, the authors analyzed old layout which was in random shape and identified non-value added material movements. Authors prepared a new layout based on the present scenario from random layout to U shape layout by utilizing cellular manufacturing to minimize the travel distance of both employees and material. Tools like 5W1H, Value Stream Mapping (VSM), Cause and Effect Diagram and 5Why are used to find the root cause of the current obstacles. And Kaizen tool was used with Pareto chart to identify the primary reason for the problem. The future layout is expected to have better productivity in the company.

## **Keywords**

Manufacturing industry, Productivity and Layout design

## **Biographies**

**Sriram Srinivasan** is an Industrial Engineering Graduate student at University of Windsor. He earned his Bachelor's of Engineering Degree in Mechanical Engineering from Velammal College of Engineering and Technology, India. He has got two patents in his core field. One patent is for his project "Arduous Therapist" which provides passive exercise to the hands, fingers and wrists of stroke patients. Designing the work and design calculations for these mechanisms won him the promising innovator of the year award which was presented at 'i3' national fair in the year 2016. He also fabricated and patented a real time machine titled "Semi Automatic Flower Knotting Device" with Arduino and Mechanical Core Mechanisms. Programming the Arduino and assembling the device led him to secure the Gandhian Young Technological Innovation (GYTI) Award at Rashtrapati Bhavan, New Delhi. His research interests include manufacturing, optimization, reliability, scheduling, manufacturing, and lean. He worked as a Junior Operational Engineer at Thissan Industries, Chennai, where he taken care of machine utilization and downtime. He performed the sampling quality checks of incoming and outgoing materials. He supported his operational manager with the development of risk assessments, Failure Mode Effect Analysis (FMEA) and Quality procedures.

**Harita Zikre** is a graduate student in a mechanical department at University of Windsor. She specialized her study not only in Finite element analysis, multi-body dynamics but also in lean manufacturing and material science too. She completed her bachelors of technology from Navrachana University in mechanical field with particularized in

tribology, vibration engineering, composite manufacturing, machine design and manufacturing technologies. She had fabrication experience in TATA MOTORS, BANCO Industries and also in BOMBARDIER TRANSPORTATION with continuous improvement department. She published experimental research related to material science specifically in composite at one of the well-known journals. The paper briefly explained the comparison of homemade and natural fiber with respect to mechanical strength. She designed non-conventional wind turbine during her bachelor studies project. Later on, she proposed manufacturing assembly line for the turbine production in one of the companies by using lean tools for instance Value stream mapping (VSM), 5S and Kizen.