

## **Lean Manufacturing: Systematic Layout Planning Application to an Assembly Line Layout of a Welding Industry**

**Authors :** Fernando Augusto Ullmann Tobe, Moacyr Amaral Domingues, Figueiredo, Stephany Rie Yamamoto Gushiken

**Abstract :** The purpose of this paper is to present the process of elaborating the layout of an assembly line of a welding industry using the principles of lean manufacturing as the main driver. The objective of this paper is relevant since the current layout of the assembly line causes non-productive times for operators, being related to the lean waste of unnecessary movements. The methodology used for the project development was Project-based Learning (PBL), which is an active way of learning focused on real problems. The process of selecting the methodology for layout planning was developed considering three criteria to evaluate the most relevant one for this paper's goal. As a result of this evaluation, Systematic Layout Planning was selected, and three steps were added to it – Value Stream Mapping for the current situation and after layout changed and the definition of lean tools and layout type. This inclusion was to consider lean manufacturing in the layout redesign of the industry. The layout change resulted in an increase in the value-adding time of operations carried out in the sector, reduction in movement times between previous and final assemblies, and in cost savings regarding the man-hour value of the employees, which can be invested in productive hours instead of movement times.

**Keywords :** assembly line, layout, lean manufacturing, systematic layout planning

**Conference Title :** ICPEMS 2021 : International Conference on Production Engineering and Manufacturing Systems

**Conference Location :** Berlin, Germany

**Conference Dates :** May 20-21, 2021