

Proceedings of the 1st Annual World Conference
of the Society for Industrial and Systems Engineering,
Washington, D.C, USA
September 16-18, 2012

Methodology to Redesign Material Supply Systems Through Lean Enterprise Tools

Hugo Carrillo¹, Víctor Avilés², Luis Flores³, and Vicente Figueroa⁴

¹Investigating Professor Department Industrial Engineering
Instituto Tecnológico de Celaya
Av. Tecnológico y A. García Cubas s/n C.P 38010
Celaya, Guanajuato: México.

²Continuous Improvement Leaders
GKN Driveline Planta Ensamble
Carretera Panamericana km 11, Col. El Pintor, C.P38260
Villagrán, Guanajuato: México. CP 36821

³Investigating Professor Department of Industrial Engineering
Instituto Tecnológico de Orizaba
Av. Oriente 9 No. 852 Col. Emiliano Zapata,
Orizaba, Veracruz: México. CP 94320

⁴Professor Department of Industrial Engineering
Av. Tecnológico y A. García Cubas s/n C.P 38010
Celaya, Guanajuato: México.

Corresponding author's Email: hugo.carrillo@itcelaya.edu.mx

Author Note: Dr. Hugo Carrillo Rodriguez, Investigator and Profesor of the Department of Industrial Engineering at the Institute of Technology of Celaya, is currently head of the simulation laboratory. His interest areas are: Simulation of Productive Processes, Integral Systems of Management, and Systems Optimization in Virtual Ambients.

Abstract: During the last five years the automotive industry has changed dramatically, the competition among manufacturers has led to different effects. For example, it has given the power to the consumer, so that he/she can choose from hundreds of options regarding price, size, or color, just to name a few. However, this advantage for the consumer has become a pressure effect on quality improvement, inventory control, development time and supplies to vehicle assembly plants throughout the value stream. These new demands or challenges in the sector have forced the supply companies to develop strategies for survival. The result of a study and its implementation will become a competitive advantage for the company, which may improve in one of the areas of greatest demand in the automotive sector: "The on-time delivery of materials in the value stream inside /outside of the assembly plants". In the development of this thesis it has been shown that the methodology which led to improve an indicator is based on three main steps: first, the survey and analysis of the current situation of the company, based on the business processes improvement technique (BPI); the second step based on that obtained through the value stream mapping (VSM) which are used to analyze wastes; and the third, the designing and implementing of material feeding and information system with the Lean enablers applied to improve the flow and materials involved in the system, resulting in a better on-time delivery of materials in the value stream. Benefits of implementing the model are the material flow increase, the system complexity and turnaround time reduction, which in productivity terms increase Overall Efficient Equipment (OEE), the financial terms and the working capital as well.

Key words: Business Processes Improvement (BPI), Value Stream Mapping (VSM), Lean Manufacturing