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Editorial

Special Issue on Applied Engineering to Lean Manufacturing and Production Systems 2020

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At the end of 2018, a call for papers was made for the Special Issue called "Applied Engineering to Lean Manufacturing Production Systems", whose objective was to bring together different articles with industrial applications of the different lean manufacturing (LM) tool theories for problem-solving and case studies that improve the indices of the production systems. This was because LM is a set of tools that is applied to reduce waste in production processes, improve their management and increase productivity, always adding value for the final customer.

Eight scientific articles were collected in that first call for papers, some of which have been widely cited by other research papers, indicating their academic acceptance, quality and scientific level. For this reason, it was decided that we would make a new call for papers in 2020, entitled "Applied Engineering to Lean Manufacturing Production Systems 2020". On this occasion, seven research articles reporting various LM applications in production processes were collected from authors that were affiliated with academic institutions in Croatia, Mexico, Colombia, Canada, Germany, and China.

Tošanović and Štefanić [1] combined a pull production system using a bottleneck analysis to increase the productivity, where they integrated variables such as the number of Kanban cards, the variations in the quality of the specifications and the processing time. Through simulation, they could generate regression models linking the variables that were analyzed with productivity, finding a direct relationship with the bottlenecks. In addition, Lagarda-Leyva [2] used the system dynamics methodology to improve the decision-making process in a recently created marketing company, where he sought to know the variables that affected the products on the shelf. Based on a Value Stream Mapping analysis and the modeling of the variables of interest, he concluded that dry and cold products should be separated to preserve their safety.

García Aguirre, et al. [3] integrated a Failure Mode and Effect Analysis (FMEA), Pythagorean Fuzzy Sets (PFS) and a Dimensional Analysis (DA) to identify the risks in a decision-making process, reporting a real case study in which they perform a sensitivity analysis. Also, Torres, et al. [4] performed a human reliability analysis in a labor-intensive assembly company, using SHERPA and HEART techniques to identify the most error-prone operations.

Li, et al. [5] proposed a multiproduct production system effectiveness index (MPSE) to improve the Overall Equipment Effectiveness (OEE) in a multiproduct manufacturing company, which is based on a metaheuristic analysis and improves the measurement process of the indicators. Also, Shan, et al. [6] proposed a Gaussian quadratic control to solve low-frequency vibration problems, and they reported that 95% vibration suppression is achieved and the amplitude is reduced from ± 20 μm to ± 1 μm.

Finally, Lagarda-Leyva, et al. [7] proposed a graphical interface to facilitate the decision-making process in a supply chain for a distribution company. The objective

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was to control the variations in transportation times, delivery costs and distribution capacities of cold and dry food products. They simulated variations in the system dynamics and achieved a 56.49% decrease in the costs that are associated with distribution, representing 9.21% of the total costs.

This Special Issue has ended, and no more of the article that have been proposals can be received, although LM applications in different sectors continue to be carried out in a structured way, as waste elimination is one of the natural objectives of any company.

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