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## **Value Genetic Algorithm: A Lean Manufacturing Approach That Optimizes Activities That Add and Non-Add Value for Job Scheduling**

**R. Baeza**

Affiliation Research Professor Department Industrial Engineering  
Instituto Tecnológico Superior del Sur de Guanajuato  
Av. Educación Superior #2000. C.P 38980  
Uriangato, Guanajuato: México.

Corresponding author's Email: [yinculacion@itsur.edu.mx](mailto:yinculacion@itsur.edu.mx)

**Abstract:** In this paper a value genetic algorithm (VGA) is developed for scheduling orders as an alternative solution for any industrial enterprise. The evaluation function is used to optimize the activities that add and non-add value. VGA uses the basic parameters of the value stream mapping: cycle time, inventory, number of machines, available time and efficiency as feedback data for evaluation function. VGA uses tournament selection, single-point crossover and mutation is performed with low probability. The parameters, individuals number, genes number and generations limit are determined randomly for a sensitivity analysis. Validation was performed in a SMEs textile company in southern Guanajuato. A robust range for programming jobs [5, 5000] is used. The algorithm converges less than one hundredth generation for orders under 100 jobs and more than a hundredth generation for higher orders of 100 jobs. As a conclusion, the results are discussed and future researches are presented.

*Keywords:* Genetic Algorithm, Orders Sequences, Lean Manufacturing