

This paper presents an algorithm based on Ant Colony Optimization paradigm to solve the joint production and maintenance scheduling problem. This approach is developed to deal with the model previously proposed in [3] for the parallel machine case. This model is formulated according to a bi-objective approach to find trade-off solutions between both objectives of production and maintenance. Reliability models are used to take in to account the maintenance aspect. To improve the quality of solutions found in our previous study, an algorithm based on Multi-Objective Ant Colony Optimization (MOACO) approach is developed. The goal is to simultaneously determine the best assignment of production tasks to machines as well as preventive maintenance (PM) periods of the production system, satisfying at best both objectives of production and maintenance. The experimental results show that the proposed method out performs two well-known Multi-Objective Genetic Algorithms (MOGAs): SPEA 2 and NSGAII