

Abstract

This paper deals with the joint production and maintenance scheduling problem according to a new bi-objective approach. This method allows the decision maker to find compromise solutions between the production objectives and maintenance ones. Reliability models are used to take into account the maintenance aspect of the problem. The aim is to simultaneously optimize two criteria: the minimization of the makespan for the production part and the minimization of the system unavailability for the maintenance side. Two decisions are taken at the same time: finding the best assignment of n jobs to m machines in order to minimize the makespan and deciding when to carry out the preventive maintenance actions in order to minimize the system unavailability. The maintenance actions numbers as well as the maintenance intervals are not fixed in advance. Two evolutionary genetic algorithms are compared to find an approximation of the Pareto-optimal front in the parallel machine case. On a large number of test instances (more than 5000), the obtained results are promising