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Optimization approaches for solving production scheduling problem: A brief overview and a case study for hybrid flow shop using genetic algorithms

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ABSTRACT

The aim of this paper is to investigate scheduling problems in manufacturing. After a brief introduction to the modelling approach to the scheduling problem, the study focuses on the optimization approach to the scheduling problem. Firstly, the different optimization approaches are categorised and their respective advantages and disadvantages are shown. This is followed by a detailed analysis of the characteristics and applicability of each of the commonly used optimization approaches. Finally, a case study is presented. A mathematical model is developed with the objective of minimising the maximum completion time for a mixed flow shop scheduling problem, and a genetic algorithm is used to solve the problem. The validity of the model is verified through the case study, which can provide a reasonable scheduling solution for actual manufacturing. This provides a reference for the selection and use of methods for solving scheduling problems in practical production.

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