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Using the Simple Fixed Rate Approach to Solve Economic Lot Scheduling Problem under the Basic Period Approach

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Abstract : The Economic Lot Scheduling Problem (ELSP) is a valuable mathematical model that can support decision-makers to make scheduling decisions. The basic period approach is effective for solving the ELSP. The assumption for applying the basic period approach is that a product must use its maximum production rate to be produced. However, a product can lower its production rate to reduce the average total cost when a facility has extra idle time. The past researches discussed how a product adjusts its production rate under the common cycle approach. To the best of our knowledge, no studies have addressed how a product lowers its production rate under the basic period approach. This research is the first paper to discuss this topic. The research develops a simple fixed rate approach that adjusts the production rate of a product under the basic period approach to solve the ELSP. Our numerical example shows our approach can find a better solution than the traditional basic period approach. Our mathematical model that applies the fixed rate approach under the basic period approach can serve as a reference for other related researches.

Keywords : economic lot, basic period, genetic algorithm, fixed rate
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