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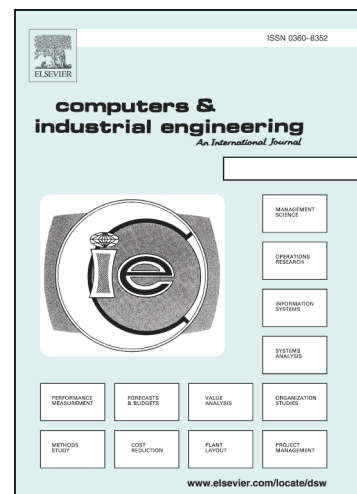
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An analysis of formulations for the capacitated lot sizing problem with setup crossover

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Abstract

The lot sizing problem with setup crossover is an extension of the standard big bucket capacitated lot sizing problem (CLSP). The general idea is that the first setup operation of each planning period can already start in the previous period, if not all the capacity is used in that previous period. This provides more flexibility in the planning and increases the possibility of finding feasible and better solutions compared to the standard assumption. Two different formulations have been presented in the literature to model a setup crossover. Since these formulations have not been compared directly to each other, we present a computational study to determine which is the best formulation. Furthermore, we explore ideas indicating that in one of the formulations from the literature it is not necessary to impose binary conditions on the crossover variables and we propose symmetry breaking constraints for both formulations from the literature. Finally, we quantify the value of this type of flexibility in a computational experiment and analyse which factors influence this value.

Keywords: Production, Mathematical Formulations, Lot Sizing, Setup Crossover, Symmetry Breaking.

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