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**ALGORITHMS FOR SINGLE ITEM CONSTANT
CAPACITY LOTSIZING PROBLEMS**

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Abstract

The main result of this paper is to provide an $O(n^3)$ algorithm for the single item constant capacity lot sizing problem with backlogging and a general number of installable batches, i.e. in each time period t we may install up to m_t multiples of the batch capacity, where the m_t are given and are time-dependent. This generalizes earlier results [12, 16] as we consider backlogging and a general number of installable batches.

We also give faster algorithms for three special cases of this general problem. When backlogging is not allowed and the costs satisfy the Wagner-Whitin property the problem is solvable in $O(n^2 \log n)$ time. In the discrete case it is possible to solve the problem with and without backlogging in $O(n^2)$ and $O(n \log n)$ time respectively.

Keywords: lot sizing, complexity, constant capacity, backlogging.

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