Deterministic Lotsizing Models for Production Planning
MARC SALOMON
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Lotsizing or batching problems are common in actual production situations; there is often a need to trade-off the lower set-up costs possible with long batches against the improved service and lower holding costs of short batches. When the manufacturing facility also has a restricted capacity then decisions on batch sizes cannot be made in isolation from scheduling questions concerning the order in which batches are processed. Such problems are called capacitated lotsizing problems and form the main emphasis of this monograph.

This book appears in the Springer Lecture Note Series, which aims to publish high level material quickly and informally, without the 'polished' nature of a conventional book. This volume is essentially Marc Salomon's PhD thesis, and such it has a relatively narrow focus. Although the author begins by referring to the wider Production and Operations Management field, the discussion of lotsizing in the context of MRP/JIT/OPT is not very deep. The author takes a theoretical approach – there is no mention of any applications in industry of the models discussed. Much of the book is concerned with finding optimal solutions, though in the final chapter some experiments are carried out using different heuristics (including tabu search and simulated annealing) for a multilevel lotsizing problem.

A variety of different capacitated lotsizing models have been suggested. First there are those in which time is split into a number of periods (we might think of weeks) and the variables to be determined are the amounts of the various products to be made in each period. The simplest way to do this has, for each product, a set-up cost or a set-up time which is incurred in any period in which that product is made. This model demotes the scheduling question to a lower level: once it is decided in which period a product is to be scheduled then the details of the schedule can be worked out later.

One way to achieve a more closely defined schedule is to use a smaller period length, such as a day or a shift. But that will usually make it necessary to model set-up costs differently, since with short periods it will often happen that a batch will run over into a second period. If a batch is already in process at the beginning of a shift then it will not be necessary to incur any set-up costs. Once one begins to consider small time periods it is natural to look at problems in which the time period is so small that we may assume that a machine only processes one product during any given period. Then we may model set-up costs as incurred only when the machine processes a different product to that processed in the previous period. It is these 'small time bucket' models to which most attention is given in this monograph.

This book provides a useful compendium of information about different lotsizing models and their solution methods. If nothing else, it emphasizes the sheer variety of different models which may be appropriate in different situations and shows how some can be solved quite easily while others are extremely hard.

E. J. ANDERSON

Knowledge-Based Manufacturing Management
ROGER KERR
Addison Wesley, Wokingham, 1991. xii + 460 pp. £27.85
ISBN 0 21 416622 0

This book sets out to give an introduction to the use of knowledge-based systems in manufacturing organizations. In the author's preface, its target audience is described as 'industrial and manufacturing engineers at postgraduate and professional level'. Interestingly, whoever has written the back cover material sees the market somewhat differently: 'industrial engineering students, manufacturing managers, DP professionals and AI researchers'.

The book is divided into five parts: basics, techniques, applications (two parts) and implementation considerations. The author takes a very broad approach to his subject so that, for example,