Implementing Flexible Manufacturing Systems

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Implementing Flexible Manufacturing Systems

Nigel R. Greenwood

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*To my mother,
and in fond memory of my father*

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Foreword

All too occasionally an internationally regarded expert finds the time and motivation to fill a glaring gap in the texts written on his subject. The author must be very highly committed to his task, since the effort involved is substantial and brings an additional 'avoidable' workload to an already busy lifestyle.

I believe we are fortunate in that this book is the product of such a rare event.

The subject of Flexible Manufacturing Systems (FMS) could not be more apposite to the future of manufacturing industry. FMS theory and practice is in my view quite simply the single most generic and practicable perspective from which to view the next two decades of manufacturing systems development. Despite its central importance, however, the subject has not seen the adequate publication of much needed quality texts.

Perhaps the particular breadth and depth of understanding required to write convincingly in this area has deterred otherwise eager technical journalists. Whatever the reason for the dearth of quality books on FMS, I am delighted to see this thoughtfully prepared volume arriving to fill the void. The successive chapters deal evenly and objectively with concepts, pros and cons, and go on to provide an excellent narrative of guidance for system designers and implementors, as well as those charged with relevant management decision-making.

Dr Greenwood's text clearly contains much of his accumulated knowledge on the subject of FMS and is immediately recognisable as an authoritative statement. I hope and believe that the distinction will not prevent the book from gaining the very wide audience that it and the subject of FMS truly deserve.

Keith Rathmill

Preface

The purpose of this book is to provide both an introduction to the concept of flexible manufacturing and guidance for those embarking on, or considering embarking on, the implementation of such a project.

It should be appreciated that this book is about manufacturing strategies, rather than automation. It is not an attempt to answer all the questions likely to confront the enthusiastic FMS designer. This would be too bold an objective. Instead it is an attempt to raise the major issues. There is much expertise and literature available to answer application-specific questions, and a comprehensive bibliography is included in References and Recommended Reading at the end of the book.

The firm belief of the author is that flexible manufacturing systems, in one form or another, represent how the majority of manufacturing will be carried out in the future. Soon, a production engineer will not be considered experienced without some exposure to FMS. However, while technology has advanced to the point where the technical risks associated with FMS have been substantially reduced, it is still not easy to implement such systems successfully. This is due to the influence of a variety of factors, many of which are discussed.

It is hoped that through this book the reader will be led to consider issues which might otherwise have been overlooked. The potential benefits which can be reaped as a result of implementing an FMS successfully are immense. However, when embarking on an FMS project, one should not:

- (1) Underestimate the long-term impact of installing the system.
- (2) Underestimate the difficulty of finding the right people and technology to implement the system successfully.
- (3) Underestimate the training and safety implications.
- (4) Be constrained by traditional approaches to manufacturing when designing the system.
- (5) Underestimate the amount of work.
- (6) Be hasty in choosing one's consultants and suppliers.

It has been said that life is not really full of problems, merely challenges. If this is the case, then FMS is one of the most exciting and potentially rewarding challenges facing manufacturing system engineers.

I hope that both managers and students interested in flexible manufacturing will find this book of value, not necessarily because it answers all the questions, but because it is a legitimate attempt to raise what generally appear to be the most important questions.

Nigel R. Greenwood

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