Integrated Manufacture

Ingersoll Engineers

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(Edited by John Mortimer)

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This report is about integrated manufacture; no capital letters, no acronym. It is also about CIM – Computer Integrated Manufacture, the technology which enables integrated manufacture and profit to happen.

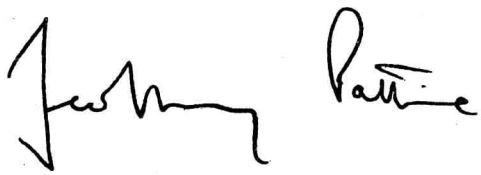
Preface

THERE is increasing awareness in UK industry of the benefits to be gained from application of information technology to integrate manufacturing activities.

The Government welcome this initiative and our Advanced Manufacturing Technology programmes offer a wide range of services to help companies with their AMT plans – demonstrations of AMT in use, training aids and grants towards obtaining consultants advice.

The aim of these activities is to ensure that all UK manufacturing companies are aware of the opportunities that are now available to improve their competitiveness by use of advanced manufacturing techniques.

I therefore welcome this report which I hope will make a significant contribution to encouraging moves to integrated manufacturing.



Geoffrey Pattie
Minister of State for Industry and Information Technology

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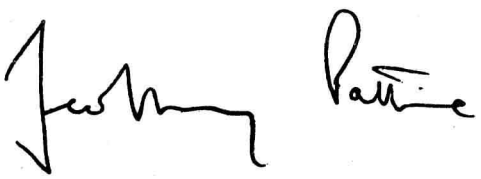

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Introduction

One of the greatest opportunities for gaining an international competitive edge lies in integrating the elements of product manufacturing to bring them closer to a continuous automated process. Improved integration raises manufacturing quality, quickens response to the market, and lowers unit costs. Improving integration in manufacture therefore makes good business sense.

Many companies have already seen the advantages that even partial integration can bring. Today the power of the computer will allow the process of integration to be taken much further. However, the computer in manufacturing integration is only an enabling technology; it is no substitute for correct organisation of the business in the first place.

Using computers to integrate manufacture – often called Computer Integrated Manufacture (CIM) – involves planning and linking a variety of operating and management systems together to perform as a team.

But the application of these concepts and elements demands fundamental changes in corporate management style to link various operating and management people together so they too will function as a team.

However, there are no 'ready-to-run' CIM packages available because the need of each company is different. Neither are companies in a position to implement complete CIM systems immediately. This must be done in phases. Some companies choose to start with computer-aided manufacturing integration while others prefer to integrate their business systems through the computer as the first step.

Computer-aided manufacturing integration is on the threshold of a breakthrough which will lead to widespread application by 1990. But even today managers need to know about integrated manufacture and how to prepare for it. They also need to make provisions for integrating the business information systems through the use of the computer so that eventually the total system and the management team will function effectively.

The steps to integrate manufacture to increase profitability are clear:

- ☐ Recognise the need
- ☐ Develop a strategic plan
- ☐ Simplify and communicate
- ☐ Integrate
- ☐ Apply hardware technology
- ☐ Computerise with software in stages

The current revolution in computer hardware and systems has the potential to cut the number of people on the factory floor. At present, however, industry is overwhelmed with software and the

need for programmers. The approaching software revolution will ease this situation in time to harness the powerful and inexpensive computing power, artificial intelligence and expert systems now being developed.

This report is written for those who endorse integrated manufacture and support CIM. Equally, it is for those who are suspicious of CIM; and for those who do not know what it is. The report draws upon the corporate experience of Ingersoll Engineers' staff as consultants to manufacturing industry; upon a survey of 16 companies which have applied elements of CIM in the USA, UK, France and Germany (see Appendix) and upon the experiences of Ingersoll Milling Machine Company which, in 1982, won the Society of Manufacturing Engineers Lead Award after 10 years of practical development of CIM in its plant at Rockford, Illinois. This award recognises leadership and excellence in the application and development of Computer Integrated Manufacture in the USA.

The report has three sections. Part One provides an understanding of integrated manufacture. Part Two provides an understanding of Computer Integrated Manufacture and its relationship to the existing functions within an emerging business. Part Three shows how to make integration work through management of the human element, and the creation of a strategy for development and implementation.

CIM in the context of integrated manufacture

INTEGRATED MANUFACTURE makes good business sense. But making it happen depends upon two important ingredients: people and computers. And the people whose function is to implement integrated manufacture need to understand the close but precise relationship between integrated manufacture and CIM – Computer Integrated Manufacture. Creating the right balance is crucial to a successful integration programme.