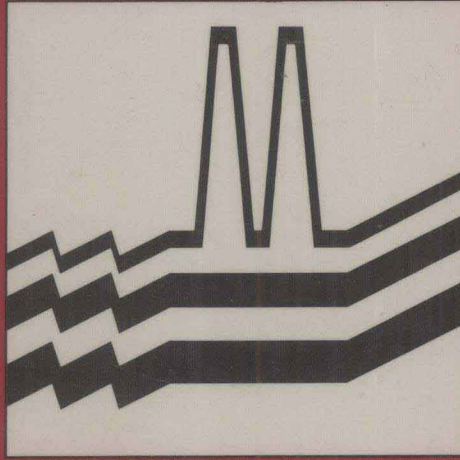


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Computer-Aided Process Planning

Hsu-Pin Wang
Jian-kang Li

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Advances in Industrial Engineering, 13

Computer-Aided Process Planning

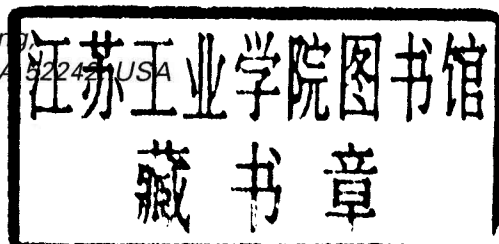
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ELSEVIER

Amsterdam-Oxford-New York-Tokyo 1991

ELSEVIER SCIENCE PUBLISHERS B.V.
Sara Burgerhartstraat 25
P.O. Box 1991, 1000 BZ Amsterdam, The Netherlands

Distributors for the United States and Canada:

ELSEVIER SCIENCE PUBLISHING COMPANY, INC.
655 Avenue of the Americas
New York, NY 10010, USA

ISBN: 0 444 88631 1 (Vol. 13)
ISBN: 0 444 42428 8 (Series)

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Printed in The Netherlands

Advances in Industrial Engineering, 13

Computer-Aided Process Planning

Advances in Industrial Engineering

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TO
THE PROCESS PLANNING COMMUNITY

PREFACE

Modern manufacturing is characterized by low-volume, high-variety production, and close-tolerance, high-quality products. In response to the ever-increasing competition in the global market, major efforts have been devoted to the research and development of various technologies to improve productivity and quality. Computer-Integrated Manufacturing is recognized as a most effective tool to increase manufacturing competitiveness. This book discusses the fundamental knowledge of Computer-Aided Process Planning, the key to the Integrated Manufacturing.

Computer-Aided Process Planning, like many other manufacturing technologies, is making a transition from pure empirical studies to the development of formal theories and mathematical models, on which effective tools are built to solve day-to-day problems. In recent years, the demand for integrated, more effective Computer-Aided Process Planning systems has drastically increased. It is evidenced by a significant increase of related publications, workshops and seminars on the subject matter. A large number of engineers and academic researchers are practicing and studying Computer-Aided Process Planning.

This book is intended to provide a rigorous basis for the understanding of process planning and the development of effective and efficient Computer-Aided Process Planning systems. It is also intended to provide an up-to-date insight into the current issues and directions in Computer-Aided Process Planning. The book introduces and discusses various topics related to Computer-Aided Process Planning. These topics include Group Technology, process planning algorithms, artificial intelligence, and assembly process planning. Most importantly, in order to provide a solid foundation for discussion and development, basic theories and principles for process planning are comprehensively and thoroughly studied and presented in the book.

This book has been written for those who wish to understand the theory of process planning, and to obtain the knowledge about the state-of-the-art developments of Computer-Aided Process Planning. As a reference, discussions are provided on approaches, methodologies, and tools, which can be applied to day-to-day process

planning operations. As a text, fundamental knowledge about process planning and Computer-Aided Process Planning is presented.

In the end, the authors wish to thank the following individuals, who made this book a reality: Professors Ted Chang, Paul Cohen, Inyong Ham and Richard A. Wysk, leading scholars of Computer-Aided Process Planning; Abhijit Deshmukh, Anand Gramopadhye, Gerald M. Knapp, Prasad Prabhu, Hui Shen, Haiping Xu, Jingfan Yung, and Chun Zhang contributing their research results to this book. The authors were benefited from numerous discussions with engineers at Bell Aerospace, CAM-I, Caterpillar, Chrysler, Deere, Ford, GM, Milacron, and Sierra Research. Margaret Coerl, Shyanglin Lee, Thu-Hua Liu and Chun Zhang helped the authors tremendously in preparing the final manuscript. The authors would like to thank Professor Gavriel Salvendy, the Advances in Industrial Engineering Series Editor, for inviting them to write this book. Last but not the least, the authors would like to thank their families, for enduring the long hours the authors spent on this book. Without their understanding and support, this book would not be a reality.

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