PROCEEDINGS OF SPIE
SPIE—The International Society for Optical Engineering

Environmentally Conscious Manufacturing II

Surendra M. Gupta
Chair/Editor

28–29 October 2001
Newton, USA

Sponsored and Published by
SPIE—The International Society for Optical Engineering

Volume 4569

Please use the following format to cite material from this book:

Author(s), "Title of paper," in *Environmentally Conscious Manufacturing II*, Surendra M. Gupta, Editor, Proceedings of SPIE Vol. 4569, page numbers (2002).

ISSN 0277-786X
ISBN 0-8194-4297-6

Published by
SPIE—The International Society for Optical Engineering
P.O. Box 10, Bellingham, Washington 98227-0010 USA
Telephone 1 360/676-3290 (Pacific Time) • Fax 1 360/647-1445
http://www.spie.org/

Printed in the United States of America.

Contents

Conference Committee

Conference Chair

Surendra M. Gupta, Northeastern University (USA)

Program Committee

Belarmino Adenso-Diaz, Universidad de Oviedo (Spain)
Venkat Allada, University of Missouri/Rolla (USA)
Ad J. de Ron, Technische Universiteit Eindhoven (Netherlands)
Simme Douwe P. Flapper, Technische Universiteit Eindhoven (Netherlands)
V. Daniel R. Guide Jr., Duquesne University (USA)
Askiner Gungor, Pamukkale University (Turkey)
G. Patrick Johnson, National Science Foundation (USA)
Sagar V. Kamarthi, Northeastern University (USA)
A. J. D. Lambert, Technische Universiteit Eindhoven (Netherlands)
Kenichi Nakashima, Osaka Institute of Technology (Japan)
Joseph Sarkis, Clark University (USA)
Pitipong Veerakamolmal, IBM Corporation (USA)
Ibrahim Zeid, Northeastern University (USA)

Session Chairs

1 Reverse Logistics
Ibrahim Zeid, Northeastern University (USA)

2 Disassembly and Design
Surendra M. Gupta, Northeastern University (USA)

3 Disassembly
Surendra M. Gupta, Northeastern University (USA)

4 Design for Environment
Surendra M. Gupta, Northeastern University (USA)

5 Electronics Commerce and Management Issues
Joseph Sarkis, Clark University (USA)

6 Life Cycle Assessment and Remanufacturing
Surendra M. Gupta, Northeastern University (USA)

Introduction

The Second International Conference on Environmentally Conscious Manufacturing (ECM) took place in Newton, Massachusetts, USA during October 28-29, 2001. Unfortunately, just weeks before the conference a significant number of papers were withdrawn due to a fear of flying and uncertainties affected by the violent events perpetrated in New York City and Washington, D.C. on September 11, 2001. The civilized world is still shell-shocked over the incidents and is finding ways to adjust to it. It was, however, essential for us to move on and continue with our work as planned.

ECM is concerned with developing methods for manufacturing new products from conceptual design to final delivery and ultimately to the end-of-life disposal so that all the environmental standards and requirements are satisfied. In recent years, environmental awareness and recycling regulations have been putting pressure on many manufacturers and consumers, forcing them to produce and dispose of products in an environmentally responsible manner. This has created a need to design products that are friendly towards the environment, develop models for disassembly process planning, develop algorithms, heuristics and software to support disassembly planning as well as address other issues such as the logistic and economic viability of disassembly, recycling and remanufacturing.

This volume is a compilation of the papers selected for the conference. The papers included here represent the wide variety of fronts where research activity is taking place in the general area of ECM. Based on the quality and variety of papers included in this volume, it is clear that the conference was a success, despite the recent acts of terrorism.

Both academicians and the industrial community in the United States and abroad participated in this very timely conference. The conference provided a forum for the latest developments in the field of ECM. I hope that this volume will inspire further research in ECM and motivate new researchers to develop interest in this all too important field of study.

The conference and this volume would not have been possible without the devotion and commitment of the authors. They have been very patient in preparing their manuscripts. I would also like to express my appreciation for having been given the opportunity to organize and chair this conference. I especially want to thank the SPIE staff for providing seamless support in unraveling all of the obstacles that arose in putting the conference and this volume together.

Surendra M. Gupta