



Book | © 2024

Automation and Innovation with Computational Techniques for Futuristic Smart, Safe and Sustainable Manufacturing Processes

[Home](#) > [Book](#)

Editors: [Arturo Realyvásquez Vargas](#), [Suchismita Satapathy](#), [Jorge Luis García Alcaraz](#)

Consists of advances in data intelligence and its applications in sustainable computing

Explains the real-life problems that manufacturing industries face due to lack of safety and sustainability practices

Describes a collection of the best ergonomic practices applied by manufacturing or service managers

456 Accesses

Sections

[Table of contents](#)

[About this book](#)

[Keywords](#)

[Editors and Affiliations](#)

[About the editors](#)

[Bibliographic Information](#)

[Publish with us](#)

This is a preview of subscription content, [log in via an institution](#) to check for access.

Table of contents (14 chapters)

Search within book

Front Matter

[PDF](#) ↓

Pages i-xxvi

Sustainability in Manufacturing

Front Matter

[PDF](#) ↓

Pages 1-1

[Innovation, Safe and Smart Sustainable Manufacturing—A Bibliometric Review](#)

Jorge Luis García-Alcaraz, Arturo Realyvásquez Vargas,
Suchismita Satapathy

Pages 3-36

[Review of the Challenges in Implementing Industry 4.0 Technologies in the Context of Sustainable Supply Chains](#)

José Sánchez Velasco, Karina Cecilia Arredondo-Soto,
Marco A. Miranda-Ackerman

Pages 37-65

[Impact of Human Error Prevention and Automation on Social Sustainability](#)

Jorge Luis García Alcaraz, José Roberto Díaz Reza, Arturo Realyvásquez Vargas, S. Hooman Mousavi

Pages 67-89

[The Barriers Related to Smart Manufacturing Systems and an Application for the Selection of Innovation Management Model: The Case of Samsun Province](#)

Ahmet Aytekin, Selçuk Korucuk, Çağlar Karamaşa

Pages 91-110

[Predictor Model for Six Sigma Deployment and Its Sustainable Benefits](#)

Aída López-Guerrero, Jesús Andrés Henández-Gómez,
Karla Isabel Velázquez-Victorica, Mydory Oyuky
Nakasima-López, Luz del Consuelo Olivares-Fong

Pages 111-137

Ergonomics and Safety

Front Matter

[PDF](#) ↓

Pages 139-139

[Assessment and Evaluation of the Effects of Hazardous Noise Produced by the Manufacturing Industry on the Workers](#)

Tushar Kanta Mahapatra, Suchismita Satapathy

Pages 141-161

[Assessment of Industrial Workers' Discomfort Level by Simulation Annealing](#)

Hullash Chauhan, Suchismita Satapathy

Pages 163-190

[Using the WASPAS and SA Techniques to Analyze Risks in a Noisy Environment Qualitatively—A Case Study of Different Manufacturing Industries Near Bhubaneswar](#)

Tushar Kanta Mahapatra, Suchismita Satapathy

Pages 191-213

[Need of Ergonomics for Autonomous Vehicles](#)

Debesh Mishra

Pages 215-235

[Design and Simulation of a Mechanical Device to Reduce the Ergonomic Postural Risk Levels of Workers During the Installation of Panelled Walls](#)

Román Eduardo Méndez, Berthana M. Salas-Domínguez

Pages 237-271

[Identification and Classification of Design Attributes for a Product to Verify Ergonomic Factors in Office Chairs](#)

Gabriela Pérez Potter, Aide Aracely Maldonado Macías,
Juan Luis Hernández Arellano, César Omar Balderrama
Armendáriz

Pages 273-297

Computational Techniques

Front Matter

[PDF](#) ↓

Pages 299-299

[Food Safety and Tractability with IoT](#)

Mohd Al Awadh, Suchismita Satapathy, Meghana Mishra
Pages 301-314

[System Dynamic: An Intelligent Decision-Support System for Manufacturing Safety Intervention Program Management](#)

Abiola O. Ajayeoba, Kazeem A. Adebisi, Wasiu A. Raheem,
Moses O. Fajobi, Adekunle I. Musa
Pages 315-337

[University-Industry Technology Transfer in Developing Countries for Smart Cities](#)

Roberto Frías-Castillo, Julieta Flores-Amador, Roberto
Romero-López, Pilar Pérez-Hernández
Pages 339-359

[Back to top](#) ↑

About this book

This book explores sustainability and innovation in manufacturing, encompassing three distinct parts. The first section delves into Sustainability in Manufacturing, where it analyzes topics like intelligent manufacturing, Industry 4.0 challenges, structural equation modeling for social sustainability, barriers to intelligent manufacturing systems, and critical success factors in Six Sigma deployment. The second part of the book, comprising Chapters 6-11, focuses on Ergonomics and Safety in manufacturing, examining cases related to health issues caused by factors like noise, high-temperature working conditions, ergonomic posture, and design attributes for ergonomic products. Lastly, Part III, consisting of Chapters 12-14, explores computational techniques applied in manufacturing,

addressing issues such as vegetable waste in India, technology transfer models for university-industry collaboration, and the application of System Dynamics in safety management systems. Together, these chapters provide a comprehensive overview of sustainability, ergonomics, safety, and computational techniques in the manufacturing industry.

[Back to top ↑](#)

Keywords

Sustainability and Safety

Computational Techniques and Manufacturing

Industrial Optimization

Safety in Industrial Processes

Innovation & Data Management

Ergonomic Design with IoT and A.I.

Innovation and Robotics

[Back to top ↑](#)

Editors and Affiliations

**Departamento de Ingeniería Industrial,
Tecnológico Nacional de México/I.T.**

Tijuana, Tijuana, Mexico

Arturo Realyvásquez Vargas

KIIT University, Bhubaneswar, India

Suchismita Satapathy

**Universidad Autónoma de Ciudad Juárez,
Ciudad Juárez, Mexico**

Jorge Luis García Alcaraz

[Back to top ↑](#)

About the editors

Arturo Realyvásquez Vargas is a full-time professor from the Department of Industrial Engineering at Tecnológico Nacional de Mexico/Instituto Tecnológico de Tijuana in Mexico. He received a master's degree in Industrial Engineering and a Ph.D. in Engineering Sciences from the Autonomous University of Ciudad Juarez in Mexico. In addition, he also holds a PhD in Innovation in Product Engineering and Industrial Process at the University of La Rioja (Spain). His main research areas are related to the optimization of industrial processes, lean manufacturing, and ergonomics. He is an active member of the Society of Ergonomists of Mexico Civil Association (Sociedad de Ergonomistas de México, SEMAC) and the Network of Optimization of Industrial Processes (Red de Optimización de Procesos Industriales, ROPRIN). Currently, he is a national researcher recognized by the National Council of Science & Technology of Mexico (CONACYT) as level I.

Suchismita Satapathy is an associate professor in the School of Mechanical Sciences, KIIT University, Bhubaneswar, India. Her areas of interest include production operation management, operation research, acoustics, sustainability, and supply chain management.

Jorge Luis García Alcaraz is a full-time researcher at the Industrial Engineering and Manufacturing Department at the Autonomous University of Ciudad Juarez in Mexico. He received an M.Sc. in Industrial Engineering from the Colima Technological Institute (Mexico), a

Ph.D. in Industrial Engineering Sciences from Ciudad Juárez Technological Institute (Mexico), a Ph.D. in Innovation in Product Engineering and Industrial Process from University of La Rioja (Spain), a Ph.D. in Sciences and Industrial Technologies from the Public University of Navarre (Spain), and a Postdoc in Manufacturing Process from University of La Rioja (Spain). His main research areas are related to the multicriteria decision-making process and techniques applied to lean manufacturing, production process, and supply chain modeling. He is a founding member of the Mexican Society of Operation Research and an active member of the Mexican Academy of Industrial Engineering.

[Back to top](#) ↑

Bibliographic Information

Book Title	Editors	DOI
Automation and Innovation with Computational Techniques for Futuristic Smart, Safe and Sustainable Manufacturing Processes	Arturo Realyvásquez Vargas, Suchismita Satapathy, Jorge Luis García Alcaraz	https://doi.org/10.1007/978-3-031-46708-0
Publisher	eBook Packages	Copyright Information
Springer Cham	Engineering , Engineering (R0)	The Editor(s) (if applicable) and The Author(s), under exclusive license to Springer Nature Switzerland AG 2024

Hardcover ISBN	Softcover ISBN	eBook ISBN
978-3-031-46707-3	978-3-031-46710-3	978-3-031-46708-0
Published: 23 November 2023	Due: 07 December 2024	Published: 22 November 2023

Edition Number	Number of Pages	Number of Illustrations
1	XXVI, 359	15 b/w illustrations, 102 illustrations in colour

Topics

[Industrial and Production Engineering](#)

[Back to top ↑](#)

Publish with us

[Policies and ethics](#)

[Back to top ↑](#)