## Contents – Part I

### Smart Manufacturing System Characterization

<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strategizing for Production Innovation</td>
<td>3</td>
</tr>
<tr>
<td><em>David Romero, Lisa Larsson, Anna Öhrwall Rönnbäck, and Johan Stahre</em></td>
<td></td>
</tr>
<tr>
<td>A Maturity Model for Assessing the Digital Readiness of Manufacturing Companies</td>
<td>13</td>
</tr>
<tr>
<td><em>Anna De Carolis, Marco Macchi, Elisa Negri, and Sergio Terzi</em></td>
<td></td>
</tr>
<tr>
<td>Improvement Strategies for Manufacturers Using the MESA MOM Capability Maturity Model</td>
<td>21</td>
</tr>
<tr>
<td><em>Quanri Li, Michael Brundage, Boonserm (Serm) Kulvatunyou, Dennis Brandl, and Sang Do Noh</em></td>
<td></td>
</tr>
<tr>
<td>Auto-configurable Event-Driven Architecture for Smart Manufacturing</td>
<td>30</td>
</tr>
<tr>
<td><em>Hui Cao and Xing Yang</em></td>
<td></td>
</tr>
<tr>
<td>Industry 4.0: Evolution of the Research at the APMS Conference</td>
<td>39</td>
</tr>
<tr>
<td><em>Walter C. Satyro, Jose B. Sacomano, Márcia Terra da Silva, Rodrigo Franco Gonçalves, Jose Celso Contador, and Gregor von Cieminski</em></td>
<td></td>
</tr>
<tr>
<td>Production Internet - Functional Perspective</td>
<td>48</td>
</tr>
<tr>
<td><em>Stanislaw Strzelczak</em></td>
<td></td>
</tr>
<tr>
<td>Repair Crew Scheduling Considering Variable Disaster Aspects</td>
<td>57</td>
</tr>
<tr>
<td><em>Sungwoo Kim, Youngsoo Park, Kihyun Lee, and Ilkyeong Moon</em></td>
<td></td>
</tr>
</tbody>
</table>

### Product and Asset Life Cycle Management in Smart Factories of Industry 4.0

<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>An Approach to Development of System Architecture in Large Collaborative Projects</td>
<td>67</td>
</tr>
<tr>
<td><em>Gökan May, Dimosthenis Ioannidis, Ifigeneia N. Metaxa, Dimitrios Tzovaras, and Dimitris Kiritsis</em></td>
<td></td>
</tr>
<tr>
<td>Improved Life Cycle Management by Product Communication</td>
<td>76</td>
</tr>
<tr>
<td><em>Marit Moe Bjørnbø and Kjersti Øverbø Schulte</em></td>
<td></td>
</tr>
</tbody>
</table>
Cross-Correlation Method for Orchestration of Preventive Maintenance Interventions

Luca Fumagalli, Marco Macchi, Irene Roda, and Alice Giacomin

84

System-Oriented Reliability-Based Methodology for Optimal Joint Maintenance and Production Planning

I. Roda, M. Macchi, C. Parmigiani, and A.A. Arata

92

Dispositioning Strategies of Maintenance Tasks in Offshore Wind Farms

Felix Optehostert, Daniela Müller, and Philipp Jussen

101

Cyber-Physical (IIoT) Technology Deployments in Smart Manufacturing Systems

Advances in Internet of Things (IoT) in Manufacturing

Rakshith Badarinath and Vittaldas V. Prabhu

111

The Transition Towards Industry 4.0: Business Opportunities and Expected Impacts for Suppliers and Manufacturers

Chiara Cimini, Roberto Pinto, Giuditta Pezzotta, and Paolo Gaiardelli

119

Exploiting Lean Benefits Through Smart Manufacturing: A Comprehensive Perspective

Elisa Mora, Paolo Gaiardelli, Barbara Resta, and Daryl Powell

127

Implementation of Industry 4.0 Technologies: What Can We Learn from the Past?

Omid Maghazei and Torbjörn Netland

135

The IoT Technological Maturity Assessment Scorecard: A Case Study of Norwegian Manufacturing Companies

Bjørn Jæger and Lise Lillebrygfield Halse

143

Optimal Scheduling for Automated Guided Vehicles (AGV) in Blocking Job-Shops

Jens Heger and Thomas Voss

151

Deployment Architecture for Energy and Resource Efficient Cyber Physical Systems

Claudio Palasciano, Bastian Thiede, Marco Taisch, and Christoph Herrmann

159

Optimization of Production-Oriented Logistics Processes Through Camera-Based Identification and Localization for Cyber-Physical Systems

Marcus Lewin, Helmut Weber, and Alexander Fay

168
Automaton-on-Tag: An Approach for an RFID-Driven Production Control with Mealy Machines Stored on an RFID Tag .......................... 177
Timo Busert, Aljosha Köcher, Robert Julius, and Alexander Fay

The Role of ICT-Based Information Systems in Knowledge Transfer Within Multinational Companies ........................................... 185
Levente Szász, Maike Scherrer, Patricia Deflorin, Kozeta Sevrani, Betim Cico, Adrian Besimi, Kreshnik Vukatana, and Béla Rácz

Conceptual Development Process of Mass-customizable Data Analytics Services for Manufacturing SMEs ........................................... 194
Hyunseop Park, Bongjun Ji, Minchul Lee, Junhyuk Choi, Jeesu Lee, Seung Hwan Bang, and Hyunbo Cho

A Thesaurus-Guided Framework for Visualization of Unstructured Manufacturing Capability Data ........................................... 202
Farhad Ameri and William Bernstein

Virtual Load Machine as Test Environment for Industrial Storage Applications ................................................................. 213
Darian Andreas Schaab, Fabian Zimmermann, Sebastian Weckmann, and Alexander Sauer

The Influence of Big Data on Production and Logistics: A Theoretical Discussion ................................................................. 221
Susanne Altendorfer-Kaiser

Multi-Disciplinary Collaboration in the Development of Smart Product-Service Solutions

Identifying Key Aspects of Success for Product Service Systems ............ 231
Nathaniel Smith and Thorsten Wuest

Prerequisites for the Successful Launch of Enterprise Social Networks ........ 239
Günter Schuh and Marcel Schwartz

Getting Ready for the Fourth Industrial Revolution: Innovation in Small and Medium Sized Companies ................................. 247
Lise Lillebrygfjeld Halse and Eli Fyhn Ullern

Effects of Environmental Dynamicity on Requirements Engineering for Complex Systems ................................................... 255
Stefan Wiesner, Marco Seregni, Mike Freitag, Jannicke Baalsrud Hauge, Annalaura Silvestro, and Klaus-Dieter Thoben
Sustainable Human Integration in Cyber-Physical Systems: The Operator 4.0

Social Factory Architecture: Social Networking Services and Production Scenarios Through the Social Internet of Things, Services and People for the Social Operator 4.0 .................................................. 265

David Romero, Thorsten Wuest, Johan Stahre, and Dominic Gorecky

Impact of Technology on Work: Technical Functionalities that Give Rise to New Job Designs in Industry 4.0. .............................................. 274

S. Waschull, J.A.C. Bokhorst, and J.C. Wortmann

Jobs and Skills in Industry 4.0: An Exploratory Research. ....................... 282

Marta Pinzone, Paola Fantini, Stefano Perini, Stefano Garavaglia, Marco Taisch, and Giovanni Miragliotta

Skills and Education for Additive Manufacturing: A Review of Emerging Issues. .................................................. 289

Mélanie Despeisse and Tim Minshall

The Effect of Industry 4.0 Concepts and E-learning on Manufacturing Firm Performance: Evidence from Transitional Economy ...................... 298

Bojan Lalic, Vidosav Majstorovic, Ugljesa Marjanovic, Milan Delić, and Nemanja Tasic

Towards a Semantically-Enriched Framework for Human Resource Management .......................................................... 306

D. Arena, K. Ziazios, I.N. Metaxa, S. Parcharidis, S. Zikos, A. Tsolakis, S. Krinidis, D. Ioannidis, D. Tzovaras, and D. Kiritsis

An Ontology-Based Model for Training Evaluation and Skill Classification in an Industry 4.0 Environment ................................................. 314

Stefano Perini, Damiano Arena, Dimitris Kiritsis, and Marco Taisch

Towards Industry 4.0: Increased Need for Situational Awareness on the Shop Floor .......................................................... 322

Marta Lall, Hans Torvatn, and Eva Amdahl Seim

Virtual Reality for the Training of Operators in Industry 4.0. ...................... 330

Henrik Schroeder, Axel Friedewald, Chris Kahlefeldt, and Hermann Lödding

Productivity Strategies Using Digital Information Systems in Production Environments .................................................. 338

Marc-André Weber, Tim Jeske, Frank Lennings, and Sascha Stowasser
Analysis of the Potential Benefits of Digital Assembly Instructions for Single and Small Batch Production

Günther Schuh, Bastian Franzkoch, Jan-Philipp Prote, Melanie Luckert, Frederick Sauermann, and Felix Basse

Integrated Production and Maintenance Scheduling Through Machine Monitoring and Augmented Reality: An Industry 4.0 Approach

Dimitris Mourtzis, Ekaterini Vlachou, Vasilios Zogopoulos, and Xanthi Fotini

Recipe-Based Engineering and Operator Support for Flexible Configuration of High-Mix Assembly

Jack P.C. Verhoosel and Michael A. van Bekkum

Evaluation of Functioning of an Innovating Enterprise Considering the Social Dimension

Stanisław Marciniak

Intelligent Diagnostics and Maintenance Solutions

On the Advancement of Maintenance Management Towards Smart Maintenance in Manufacturing

Marco Macchi, Irene Roda, and Luca Fumagalli

New Threats for Old Manufacturing Problems: Secure IoT-Enabled Monitoring of Legacy Production Machinery

Stefano Tedeschi, Christos Emmanouilidis, Michael Farnsworth, Jörn Mehnen, and Rajkumar Roy

Condition-Based Predictive Maintenance in the Frame of Industry 4.0

Alexandros Bousdekis and Gregoris Mentzas

A Review of Current Machine Learning Techniques Used in Manufacturing Diagnosis

Toyosi Toriola Ademujimi, Michael P. Brundage, and Vittaldas V. Prabhu

A Framework for Integrated Proactive Maintenance Decision Making and Supplier Selection

Alexandros Bousdekis, Nikos Papageorgiou, Babis Magoutas, Dimitris Apostolou, and Gregoris Mentzas

Toward Semi-autonomous Information: Extraction for Unstructured Maintenance Data in Root Cause Analysis

Michael Sharp, Thurston Sexton, and Michael P. Brundage
<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Balancing a Mixed-Model Assembly System in the Footwear Industry</td>
<td>527</td>
</tr>
<tr>
<td><em>Parisa Sadeghi, Rui Diogo Rebelo, and José Soeiro Ferreira</em></td>
<td></td>
</tr>
<tr>
<td>Analyzing the Impact of Different Order Policies on the Supply Chain</td>
<td>536</td>
</tr>
<tr>
<td><em>Volker Stich, Daniel Pause, and Matthias Blum</em></td>
<td></td>
</tr>
<tr>
<td>Passenger Transport Drawbacks: An Analysis of Its “Disutilities”</td>
<td>545</td>
</tr>
<tr>
<td>Applying the AHP Approach in a Case Study in Tokyo, Japan</td>
<td></td>
</tr>
<tr>
<td><em>Helcio Raymundo and João Gilberto Mendes Reis</em></td>
<td></td>
</tr>
<tr>
<td>The Impact of Organizational Culture on Performance Measurement</td>
<td>553</td>
</tr>
<tr>
<td>System Design, Implementation and Use</td>
<td></td>
</tr>
<tr>
<td>Evidence from Moroccan SMEs</td>
<td></td>
</tr>
<tr>
<td><em>Meriam Jardioui, Patrizia Garengo, and Semma El Alami</em></td>
<td></td>
</tr>
<tr>
<td><strong>Author Index</strong></td>
<td>561</td>
</tr>
</tbody>
</table>
Contents – Part II

Supply Chain Design

A System Maturity Model for Supply Chain Management ................. 3
    Shigeki Umeda

The Link Between Supply Chain Design Decision-Making
and Supply Chain Complexity: An Embedded Case Study ................. 11
    Jesper Asmussen, Jesper Kristensen, and Brian Vejrum Wærens

Reframing the Outsourcing Process ............................................. 20
    Børge Sjobakk and Gaute Knutstad

A Production Transfer Risk Assessment Framework ....................... 29
    Maria Flavia Mogos, Børge Sjobakk, and Erlend Alfnes

Design of Hybrid Multimodal Logistic Hub Network
with Postponement Strategy ....................................................... 40
    Imane Essaadi, Bernard Grabot, and Pierre Feniès

Collaborative Process Planning on Route Market Platform .............. 49
    Keisuke Beppu, Hajime Mizuyama, and Tomomi Nonaka

Continuous vs Step Change Production Process Improvement as Enablers
for Product Redesign and New Market Opportunities .................... 57
    Geir Ringen and Kjersti Øverbø Schulte

Cluster Competitiveness Analysis: A Brazilian Case .................... 65
    Elizangela Maria Menegassi de Lima, Isabela Romanha de Alcantara,
    Jose Benedito Sacomano, and Ana Paula de Lima da Silva

Goal Programming for Supply Chain Optimization
with Insufficient Capacity .......................................................... 73
    Mohan Chiriki, Yooneun Lee, and Vittaldas V. Prabhu

Production Management in Food Supply Chains

Neural Network System to Forecast the Soybean Exportation
on Brazilian Port of Santos .......................................................... 83
    Emerson Rodolfo Abraham, João Gilberto Mendes dos Reis,
    Adriane Paulieli Colossetti, Aguinaldo Eduardo de Souza,
    and Rodrigo Carlo Toloi
###XX Contents – Part II

<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business Games Based on Simulation and Decision-Making in Logistics Processes</td>
<td>91</td>
</tr>
<tr>
<td>Marco Aurelio Butzke, Anete Alberton, Jeancarlo Visentainer, Solimar Garcia, and Irenilza de Alencar Nääs</td>
<td></td>
</tr>
<tr>
<td>Managing Enterprise Resource System (ERP) and Balanced Scorecard (BSC) in Food Industry in Brazil - Food and Beverage Products: A Multiple Case Study</td>
<td>99</td>
</tr>
<tr>
<td>Celso Affonso Couto, Marcos de Oliveira Morais, Antonio Sergio Brejão, Oduvaldo Vendrametto, and Pedro Luiz de Oliveira Costa Neto</td>
<td></td>
</tr>
<tr>
<td>Brazilian Corn Exports: An Analysis of Cargo Flow in Santos and Paranagua Port</td>
<td>105</td>
</tr>
<tr>
<td>Aguinaldo Eduardo de Souza, João Gilberto Mendes dos Reis, Emerson Rodolfo Abraham, and Sivanilza Teixeira Machado</td>
<td></td>
</tr>
<tr>
<td>Inventory Allocation of Perishables: Guidelines</td>
<td>113</td>
</tr>
<tr>
<td>Kasper Kiil, Hans-Henrik Hvolby, Heidi C. Dreyer, and Jan Ola Strandhagen</td>
<td></td>
</tr>
<tr>
<td>Challenges and Opportunities in ‘Last Mile’ Logistics for On-Line Food Retail</td>
<td>122</td>
</tr>
<tr>
<td>Jacques Trienekens, Hans-Henrik Hvolby, and Paul Turner</td>
<td></td>
</tr>
<tr>
<td>Replenishment Planning of Fresh Meat Products: Case Study from a Danish Wholesaler</td>
<td>130</td>
</tr>
<tr>
<td>Flemming Max Møller Christensen, Iskra Dukovska-Popovska, and Kenn Steger-Jensen</td>
<td></td>
</tr>
<tr>
<td>Differentiated Demand and Supply Chain Planning of Fresh Meat Products: Linking to Animals’ Lifetime</td>
<td>139</td>
</tr>
<tr>
<td>Flemming Max Møller Christensen, Iskra Dukovska-Popovska, and Kenn Steger-Jensen</td>
<td></td>
</tr>
<tr>
<td>Scheduling Fresh Food Production Networks</td>
<td>148</td>
</tr>
<tr>
<td>Quan Yu, Taravatsadat Nehzati, Carl Philip T. Hedenstierna, and Jan Ola Strandhagen</td>
<td></td>
</tr>
</tbody>
</table>

**Factory Planning**

<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Case Studies of Participatory Design: Comparison of Methodologies in Factory Planning</td>
<td>159</td>
</tr>
<tr>
<td>Mandy Tawalbeh, Ralph Riedel, Samuel Horler, and Egon Müller</td>
<td></td>
</tr>
</tbody>
</table>
A Robust Facility Layout Planning Method Considering Temporal Efficiency ........................................ 168
  Eiji Morinaga, Komei Iwasaki, Hidefumi Wakamatsu, and Eiji Arai

Approach for the Evaluation of Production Structures ...................... 176
  Ulf Bergmann and Matthias Heinicke

An Investigation on Implemented Actions to Improve Responsiveness in Manufacturing Firms ......................................... 184
  Alessia Napoleone, Marco Macchi, and Alessandro Pozzetti

Development Projects in SMEs: From Project Organization to Dynamic Resource Planning ................................ 193
  Bjørnar Henriksen, Carl Christian Røstad, and Moritz von Stietencron

**Industrial and Other Services**

Resource Planning for the Installation of Industrial Product Service Systems ............................................. 205
  Kosmas Alexopoulos, Spyros Koukas, Nikoletta Boli, and Dimitris Mourtzis

Morphology of Strategic Components for Data-Driven Industrial Services ............................................. 214
  Günther Schuh and Dominik Kolz

Support to the Public Services Mutation Through Continuous Improvement in a French Metropolis ................................. 222
  Gautier Aubourg, François Galasso, Bernard Grabot, and Jacques Lamothe

Service Innovation and Performance in Mexican Service SMEs ............... 230
  Gonzalo Maldonado-Guzman, Jose Arturo Garza-Reyes, Luis Rocha-Lona, and Vikas Kumar

**Operations Management in Engineer-to-Order Manufacturing**

Project Execution Strategy and Planning Challenges .......................... 243
  Kristina Kjersem, Gabriele H. Jünge, and Jan Emblemsvåg

A Three Steps Methodological Approach to Assess the Engineer-to-Order Operations Environment .................................. 251
  Aldo Duchi and Paul Schönsleben

Operating Curves Based Working Capital Management for Engineer to Order Manufacturers .................................. 259
  Dennis Schiemann, Sudharshan Santhanam, and Günther Schuh

Contents – Part II
<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resource and Information Sharing for the Installation Process of the Offshore Wind Energy</td>
<td>268</td>
</tr>
<tr>
<td>Thies Beinke, Abderrahim Ait Alla, and Michael Freitag</td>
<td></td>
</tr>
<tr>
<td><strong>Gamification of Complex Systems Design Development</strong></td>
<td></td>
</tr>
<tr>
<td>Using a Serious Game Development Approach in the Learning Experience of System Engineering Design</td>
<td>279</td>
</tr>
<tr>
<td>Marco Blokhuis and Nick Szirbik</td>
<td></td>
</tr>
<tr>
<td>A Generic Architecture for Quickly-Deployable, Flexible, Scenario-Oriented Serious Games</td>
<td>287</td>
</tr>
<tr>
<td>Jan Willem Veeningen, Nick B. Szirbik, and Marco P. Blokhuis</td>
<td></td>
</tr>
<tr>
<td>Transforming a Supply Chain Towards a Digital Business Ecosystem</td>
<td>295</td>
</tr>
<tr>
<td>Rita Lavikka, Antero Hirvensalo, Riitta Smeds, and Miia Jaatinen</td>
<td></td>
</tr>
<tr>
<td>Knowledge Fusion of Manufacturing Operations Data Using Representation Learning</td>
<td>302</td>
</tr>
<tr>
<td>Martin Ringsquandl, Steffen Lamparter, Raffaello Lepratti, and Peer Kröger</td>
<td></td>
</tr>
<tr>
<td>A Framework for Mathematical Analysis of Collaborative SCM in ColPMan Game</td>
<td>311</td>
</tr>
<tr>
<td>Tatsuki Furukawa, Tomomi Nonaka, and Hajime Mizuyama</td>
<td></td>
</tr>
<tr>
<td>Identifying Scenarios for Ambidextrous Learning in a Decoupling Thinking Context</td>
<td>320</td>
</tr>
<tr>
<td>Annika Engström and Joakim Wikner</td>
<td></td>
</tr>
<tr>
<td><strong>Lean and Green Manufacturing</strong></td>
<td></td>
</tr>
<tr>
<td>Lean Manufacturing and Environmental Performance – Exploring the Impact and Relationship</td>
<td>331</td>
</tr>
<tr>
<td>Simon Peter Nadeem, Jose Arturo Garza-Reyes, Sin-Ching Leung, Anass Cherrafi, Anthony I. Anosike, and Ming K. Lim</td>
<td></td>
</tr>
<tr>
<td>Industry 4.0 and Lean Management – Synergy or Contradiction?: A Systematic Interaction Approach to Determine the Compatibility of Industry 4.0 and Lean Management in Manufacturing Environment</td>
<td>341</td>
</tr>
<tr>
<td>Adam Sanders, Karthik R. K. Subramanian, Tobias Redlich, and Jens P. Wulfsberg</td>
<td></td>
</tr>
<tr>
<td>A Method of Multi-perspective Assessment of Lean Management</td>
<td>350</td>
</tr>
<tr>
<td>Andreas Mueller</td>
<td></td>
</tr>
</tbody>
</table>
Contents – Part II

Sustainability Strategies in Industrial Practice ........................................ 358
Silje Helene Aschehoug and Kjersti Øverbø Schulte

Introducing Buffer Management in a Manufacturing Planning and Control Framework .................................................. 366
Lisa Hedvall, Joakim Wikner, and Per Hilletofth

Bottleneck Prediction Using the Active Period Method in Combination with Buffer Inventories ........................................... 374
Christoph Roser, Kai Lorentzen, David Lenze, Jochen Deuse, Ferdinand Klenner, Ralph Richter, Jacqueline Schmitt, and Peter Willats

Relationship Between Variants and Inventory Under Consideration of the Replenishment Time ........................................... 382
Christoph Roser, Hauke Meier, and Masaru Nakano

Health Impact of Electric Vehicles Considering Environmental Leakage. The Case Study on Japan, China, UK and Poland .................. 390
Kamila Romejko and Masaru Nakano

A Multi-agent Approach to Implement a Reverse Production Virtual Market in Green Supply Chains ....................................... 399
Adriana Giret and Miguel A. Salido

Eco-Efficiency in Manufacturing Operations

Product Circularity Assessment Methodology ........................................ 411
Cecilia Maria Angioletti, Mélanie Despeisse, and Roberto Rocca

Teaching Energy Efficiency in Manufacturing Using Gamification: A Case Study ................................................................. 419
Mélanie Despeisse and Peter Lunt

Organizational Designs for Sharing Environmental Best Practice Between Manufacturing Sites .................................................. 427
Lampros Litos, Peter Lunt, Wen Liu, and Steve Evans

Simulation-Supported Verification of Methods for Controlling Disassembly Lines ................................................................. 435
Jan Hrdina and Gert Zülc

A Novel Knowledge Repository to Support Industrial Symbiosis ........ 443
Miriam Benedetti, Maria Holgado, and Steve Evans

Ecological Footprint in the Cotton Supply Chain: The Consumers’ View ................................................................. 452
Solimar Garcia, Alexandra Cordeiro, Fernando Gorni Neto, and Irenilza de Alencar Nääs
Green Distribution – A Comparative Study of Sea and Road Transport
Modes for a Norwegian Manufacturing Company ........................................ 460
  Espen Rød and Mikhail Shlopak

From SCM to Eco-Industrial Park Management: Modelling Eco-Industrial
Park’s Symbiosis with the SCOR Model ..................................................... 467
  Mathilde Le Tellier, Lamia Berrah, Benoit Stutz, Simon Barnabé,
  and Jean-François Audy

An Integrated Supply Chain Model with Excess Heat Recovery ............... 479
  Beatrice Marchi, Simone Zanoni, and Lucio Enrico Zavanella

Environmental KPI Selection Using Criteria Value and Demonstration. ...... 488
  Deogratias Kibira and Shaw Feng

Simulation Method for Evaluation of Productivity and Energy
Consumption Concerning Production Line for Injection
Molding Machines ................................................................. 496
  Rio Takasaki, Hironori Hibino, Kazuhide Kaifuku, and Keitaro Nishitani

Author Index ................................................................. 505
Advances in Production Management Systems. The Path to Intelligent, Collaborative and Sustainable Manufacturing
IFIP WG 5.7 International Conference, APMS 2017, Hamburg, Germany, September 3-7, 2017, Proceedings, Part I
Lödding, H.; Riedel, R.; Thoben, K.-D.; von Cieminski, G.; Kiritsis, D. (Eds.)
2017, XXIV, 564 p. 161 illus., Hardcover
ISBN: 978-3-319-66922-9