

# CIRP 2017 Program

## P1: Plenary Lecture 1

March 8 (Wed)

Room A · B · C 9:00-9:30

- P1 An Integrated Framework for Life Cycle Engineering  
Michael Z. Hauschild, Christoph Herrmann, Sami Kara

## P2: Plenary Lecture 2

March 8 (Wed)

Room A · B · C 9:30-10:00

- P2 The EU Circular Economy Package – Life Cycle Thinking to Life Cycle Law?  
Richard Hughes

## A11: Design for Life Cycle (1)

March 8 (Wed)

Room A 10:30-12:30

- A11-1 Assessment of End-of-Life Strategies for Automation Technology Components  
Mercedes Barkmeyer, Alexander Kaluza, Nico Pastewski, Sebastian Thiede, Christoph Herrmann
- A11-2 Toolbox for Increasing Resource Efficiency in the European Metal Mechanic Sector  
Stefan Blume, Denis Kurle, Christoph Herrmann, Sebastian Thiede
- A11-3 Mapping and Integrating Value Creation Factors with Life-Cycle Stages for Sustainable Manufacturing  
P. Bilge, S. Emec, G. Seliger, I.S. Jawahir
- A11-4 Product Life Cycle Planning for Sustainable Manufacturing: Translating Theory into Business Opportunities  
W. Haanstra, M.E. Toxopeus, M.R. van Gerrevink
- A11-5 A Case Study on Industrial Collaboration to Close Material Loops for a Domestic Boiler  
M.E. Toxopeus, W. Haanstra, M.R. van Gerrevink, R. van der Meide
- A11-6 Parallel Design of a Product and Internet of Things (IoT) Architecture to Minimize the Cost of Utilizing Big Data (BD) for Sustainable Value Creation  
Ryan Bradley, I.S. Jawahir, Niko Murrell, Julie Whitney

## A12: Life Cycle Simulation & Management

March 8 (Wed)

Room A 13:30-15:30

- A12-1 Complexity in a Life Cycle Perspective  
Christoph J. Velte, Anja Wilfahrt, Robert Müller, Rolf Steinhilper
- A12-2 A Functional Approach to Life Cycle Simulation for System of Systems  
Kazune Kawakami, Shinichi Fukushige, Hideki Kobayashi
- A12-3 Life Cycle Simulation of Mechanical Parts with Part Agents Considering User Behavior  
Yumihito Yokoki, Hiroyuki Hiraoka
- A12-4 Procedure Model for Efficient Simulation Studies which Consider the Flows of Materials and Energy Simultaneously  
Johannes Stoldt, Matthias Putz
- A12-5 System Lifecycle Management - An Approach for Developing Cybertronic Systems in Consideration of Sustainability Aspects  
Martin Eigner, Thomas Dickopf, Hristo Apostolov
- A12-6 Life Cycle Engineering and Management – Fostering the Management-Oriented of Life Cycle Engineering Activities  
U. Götze, P. Peças, A. Schmidt, C. Symmank, E. Henriques, I. Ribeiro, M. Schüller

## A13: Design for Life Cycle (2)

March 8 (Wed)

Room A 16:00-18:20

- A13-1 Design for Changeability: Incorporating Change Propagation Analysis in Modular Product Platform Design  
Guenther Schuh, Michael Riesener, Stefan Breunig
- A13-2 Using Design Requirements for Environmental Assessment of Products: A Historical Based Method  
Darian Visotsky, Apurva Patel, Joshua Summers
- A13-3 Sustainable Life Cycle Design Using Constraint Satisfaction Problems and Quality Function Deployment  
Alexandre Popoff, Dominique Millet
- A13-4 Product Redesign for Improved Value Recovery via Disassembly Bottleneck Identification and Removal  
Liang Cong, Fu Zhao, John W. Sutherland

- A13-5** Ecodesign and Energy Labelling: The Role of Virtual Prototyping  
Daniele Landi, Andrea Capitanelli, Michele Germani
- A13-6** In Pursuit of Personalization Design  
Kazuki Kaneko, Yusuke Kishita, Yasushi Umeda
- A13-7** Evaluation of Design Alternatives of Sensor Embedded End-of-Life Products in Multiple Periods  
Aditi D. Joshi, Surendra M. Gupta, Aya Ishigaki

## **B11: Remanufacturing (1)**

**March 8 (Wed)**

**Room B 10:30-12:30**

- B11-1** A Collaborative End of Life Platform to Favour the Reuse of Electronic Components  
Marco Marconi, Claudio Favi, Michele Germani, Marco Mandolini, Marco Mengarelli
- B11-2** Uncertainty Analysis of Global Reuse Monitoring  
Kohei Endo, Masaaki Fuse
- B11-3** Combined Two-Dimensional Non-Renewable Warranty Policy Analysis for Remanufactured Products  
Ammar Y. Alqahtani, Surendra M. Gupta, Tetsuo Yamada
- B11-4** Pricing Decision Models for Remanufactured Short-Life Cycle Technology Products with Generation Consideration  
Liangchuan Zhou, Surendra M. Gupta, Yuki Kinoshita, Tetsuo Yamada
- B11-5** New Opportunities and Incentives for Remanufacturing by 2020's Car Service Trends  
Rolf Steinhilber, Alexander Nagel
- B11-6** A Comparison of Best Practices of Public and Private Support Incentives for the Remanufacturing Industry  
T. Guidat, J. Seidel, H. Kohl, G. Seliger

## **B12: Remanufacturing (2)**

**March 8 (Wed)**

**Room B 13:30-15:30**

- B12-1** Quantifying the Cannibalization Effect of Hybrid Manufacturing/Remanufacturing System in Closed-Loop Supply Chain  
Takumi Nanasawa, Yasutaka Kainuma
- B12-2** Optimization of Reconditioning Scheme for Remanufacturing of Used Parts Based on Failure Features  
Yanhong Wang, Zhigang Jiang, Jing Wang, Yanan Wang, I.S. Jawahir
- B12-3** A Design Method of Predecisional Remanufacturing Based on Structural Similarity  
Qingdi Ke, Yan Lv, Shouxu Song
- B12-4** Decision Making System for Designing Products and Production Systems for Remanufacturing Activities  
Hanna Nurul Ismail, Peggy Zwolinski, Guillaume Mandil, Daniel Brissaud
- B12-5** Optimal Disassembly Scheduling with a Genetic Algorithm  
Hideyuki Nonomiya, Yoshitaka Tanimizu
- B12-6** The Advantages of Remanufacturing from the Perspective of Eco-Efficiency Analysis: A Case Study  
Feri Afrinaldi, Zhichao Liu, Taufik, Hong-Chao Zhang, Alizar Hasan

## **B13: Planning & Evaluation of Sustainable Production Systems**

**March 8 (Wed)**

**Room B 16:00-18:20**

- B13-1** Production Flow Analysis through Environmental Value Stream Mapping: A Case Study of Cover Glass Manufacturing Facility  
Yuchu Huang, Masayoshi Tomizuka
- B13-2** Using Graph-Based Visualizations to Explore Key Performance Indicator Relationships for Manufacturing Production Systems  
Michael P. Brundage, William Z. Bernstein, KC Morris, John A. Horsta
- B13-3** Sustainability Performance Indicators at Shop Floor Level in Large Manufacturing Companies  
Mats Zackrisson, Martin Kurdve, Sasha Shahbazi, Magnus Wiktorsson, Mats Winroth, Anna Landström, Peter Almström, Carin Andersson, Christina Windmark, Anna Ericson Öberg, Andreas Myrelid
- B13-4** Adoption of Integrated Lean-Green-Agile Strategies for Modern Manufacturing Systems  
Varinder Kumar Mittal, Rahul Sindhwani, Vivek Kalsariya, Faizan Salroo, Kuldip Singh Sangwan, Punj Lata Singh
- B13-5** Agile Factory Planning – An Approach to Improve Competitiveness of Existing Factories  
Uwe Dombrowski, Stefan Ernst
- B13-6** Utilizing Gaming Technology for Simulation of Urban Production  
Max Juraschek, Christoph Herrmann, Sebastian Thiede
- B13-7** A Generic Sankey Tool for Evaluating Energy Value Stream in Manufacturing Systems  
Wen Li, Sebastian Thiede, Sami Kara, Christoph Herrmann

## C11: CPS for Manufacturing

March 8 (Wed)

Room C 10:30-12:30

- C11-1 The Digital Twin: Realizing the Cyber-Physical Production System for Industry 4.0  
Thomas H.-J. Uhlemann, Christian Lehmann, Rolf Steinhilper
- C11-2 Methodology for Monitoring Manufacturing Environment by Using Wireless Sensor Networks (WSN) and the Internet of Things (IoT)  
Wen Li, Sami Kara
- C11-3 Web-Based Component Data for the Commissioning of Machine Tools  
Benedikt Klee, Joerg Bauer, Hanqiu Jiang, Juergen Fleischer
- C11-4 A Software Tool for the Analysis and Management of Resource Consumptions and Environmental Impacts of Manufacturing Plants  
Claudio Favi, Michele Germani, Marco Mandolini, Marco Marconi
- C11-5 Operation Mode Study in Cloud Manufacturing Ecosystem  
Shengkai Chen, Shuiliang Fang, Tao Peng, Renzhong Tang
- C11-6 Industrial Symbiosis: Exploring Big-Data Approach for Waste Stream Discovery  
Bin Song, Zhiqian Yeo, Paul Kohls, Christoph Herrmann

## C12: Sustainable Production Processes (1)

March 8 (Wed)

Room C 13:30-15:30

- C12-1 Energy and Cost Estimation of a Feature-Based Machining Operation on HRSA  
A. E. Bonilla Hernández, Tomas Beno, Claes Fredriksson
- C12-2 Parameter Optimization Model of Milling Machine Processing for High Efficiency and Low Carbon  
Xing-Shuo Xu, Fang-Yi Li, Li-Rong Zhou, Lin Kong
- C12-3 Optimization of Machining Parameters for Improving Energy Efficiency Using Integrated Response Surface Methodology and Genetic Algorithm Approach  
Kuldip Singh Sangwan, Girish Kant
- C12-4 Energy-Efficient Cutting Parameters Determination for NC Machining with Specified Machining Accuracy  
Dawei Liu, Wei Wang, Lihui Wang
- C12-5 Multi-Objective Tool Sequence Optimization in 2.5D Pocket CNC Milling for Minimizing Energy Consumption and Machining Cost  
Lei Wu, Congbo Li, Ying Tang, Qian Yi
- C12-6 Embodied Energy in Dry Cutting under Consumption of Tool and Materials  
Z.Y. Liu, Y.B. Guo, H.J. Cao, G.Y. Zhao, Z.Q. Liu

## C13: Sustainable Production Processes (2)

March 8 (Wed)

Room C 16:00-18:20

- C13-1 Functional and Environmental Evaluation of Alternative Disinfection Methods for Cutting Fluids  
Nadine Madanchi, Sebastian Thiede, Christoph Herrmann
- C13-2 Energy Efficient Cutting Fluid Supply: The Impact of Nozzle Design  
Nadine Madanchi, Marius Winter, Sebastian Thiede, Christoph Herrmann
- C13-3 Quantifying the Uncertainty Associated with the Material Properties of a Natural Fiber  
Sweety Shahinur, AMM Sharif Ullah
- C13-4 An Improved Energy Matching Method to Utilize the Potential Energy of Large-Sized Hydraulic Press at Multi-System Level  
Lei Li, Haihong Huang, Xinyu Li, Zhifeng Liu
- C13-5 Substitution of Coolant by Using a Closed Internally Cooled Milling Tool  
E. Uhlmann, H. Riemer, D. Schröter, F. Sammler, S. Richarz
- C13-6 Qualification of Aqueous Part Cleaning Machines for the Use of Waste Heat in Industrial Production Companies  
Felix Junge, Eberhard Abele, Florian Vogel
- C13-7 Highly Iterative Product Development within the Tool and Die Making Industry  
Günther Schuh, Michael Salmen, Thomas Kuhlmann, Jan Wiese

## A21: Local Oriented Manufacturing

March 9 (Thu)

Room A 8:40-10:00

- A21-1 Supporting Design for Local Oriented Manufacturing in Developing Countries  
Tomoyuki Tamura, Yasushi Umeda, Yusuke Kishita
- A21-2 A Visualization System of Design Information for Locally-Oriented Sustainable Product  
Yuya Sugita, Shinichi Fukusige, Hideki Kobayashi
- A21-3 Lessons Learnt from Designing PSS for Base of Pyramid  
Ana Marzal López, Frazer Musonda, Tomohiko Sakao, Noara Kebir
- A21-4 Developing Sustainable Innovative Products for the Bottom of the Pyramid by Biomimetic Design Concepts  
Jahau Lewis Chen, Chang-Lin Lee

## A22: Environmental Performance Evaluation

March 9 (Thu)

Room A 10:50-12:30

- A22-1 Indicators for Environmental Sustainability  
Yan Dong, Michael Z Hauschild
- A22-2 Monitoring Environmental Performance during the Design Process of a Complex System  
N. Tchertchian, D. Millet
- A22-3 A User Oriented Framework to Support Environmental Performance Indicators Selection  
C. Heslouin, V. Perrot-Bernardet, A. Cornier, N. Perry
- A22-4 Integrating Environmental Impacts with SysML in MBSE Methods  
Sébastien Bougaina, Detlef Gerharda
- A22-5 A Feature-Based CAD-LCA Software Integration Approach for Eco-Design  
Zhaorui Chen, Jin Tao, Suiran Yu

## B21: PSS and Business Models

March 9 (Thu)

Room B 8:40-10:20

- B21-1 A Mapping Network Model Integrating Service to Warrant Function Availability of Complex Electro-Mechanical Products  
Fengtian Chang, Guanghui Zhou, Qi Lu
- B21-2 Evaluation of Variety-Induced Costs in Product-Service Systems (PSS)  
Guenther Schuh, Michael Riesener, Stefan Breunig, Jan Koch, Jan Kuntz
- B21-3 Towards a Sustainable Business Model for Plastic Shopping Bag Management in Sweden  
Jagdeep Singh, Tim Cooper
- B21-4 Closing the Loop for Packaging: Finding a Framework to Operationalize Circular Economy Strategies  
Monia Niero, Michael Z. Hauschild
- B21-5 Composites in a Circular Economy: A Study of United Kingdom and South Africa  
Paul T Mativenga, Al Amin Mohamed Sultan, John Agwa-Ejon, Charles Mbohwa

## B22: Maintenance

March 9 (Thu)

Room B 10:50-12:30

- B22-1 Continuous Improvement of Criteria for Condition-Based Maintenance by Means of Effects Evaluation of Treatments  
Akihiro Morimoto, Yusuke Sato, Shozo Takata
- B22-2 AR-Guided Product Disassembly for Maintenance and Remanufacturing  
M. M. L. Chang, S. K. Ong, A. Y. C. Nee
- B22-3 Immersive Augmented Reality Environment for the Teleoperation of Maintenance Robots  
A.W.W. Yew, S.K. Ong, A.Y.C. Nee
- B22-4 Life Cycle Management of Cutting Tools: Comprehensive Acquisition and Aggregation of Tool Life Data  
Dominik Brenner, Fabian Kleinert, Joachim Imiela, Engelbert Westkämper
- B22-5 A Data Driven Model for Predicting Tool Health Condition in High Speed Milling of Titanium Plates Using Real-Time SCADA  
Jinsong Bao, Yuan Guangchao, Xiaohu Zheng, Jianguo Zhang, Xia Ji, Jie Zhang

## C21: Energy Efficient Production (1)

March 9 (Thu)

Room C 8:40-10:20

- C21-1 Energy- and Labor-Aware Production Scheduling for Sustainable Manufacturing: A Case Study on Plastic Bottle Manufacturing  
Xu Gong, Marlies Van der Wee, Toon De Pessemer, Sofie Verbrugge, Didier Colle, Luc Martens, Wout Joseph
- C21-2 Shop-Floor Life Cycle Assessment  
Felipe Cerdas, Sebastian Thiede, Max Juraschek, Artem Turetskyy, Christoph Herrmann
- C21-3 Decision Support for Energy-Saving Idle Production Facility Operations in a Production Line Based on an M2M Environment  
Hironori Hibino, Kentaro Yanaga
- C21-4 The Automated Evaluation of the Energy Efficiency for Machining Applications Based on the Least Energy Demand  
S. Kreitlein, M. Scholz, J. Franke
- C21-5 Business Model for Energy Efficiency in Manufacturing  
Gökan May, Dimitris Kiritsis

## C22: Energy Efficient Production (2)

March 9 (Thu)

Room C 10:50-12:30

- C22-1 Integration and Interaction of Energy Flexible Manufacturing Systems within a Smart Grid  
Fabian Keller, Cedric Schultz, Peter Simon, Stefan Braunreuther, Johannes Glasschröder, Gunther Reinhart
- C22-2 Economic Analysis of Decentralized, Electrical- and Thermal Renewable Energy Supply for Small and Medium-Sized Enterprises  
Agnes Pechmann, Maximilian Zarte
- C22-3 Decentral Energy Control in a Flexible Production to Balance Energy Supply and Demand  
Sebastian Weckmann, Timm Kuhlmann, Alexander Sauer
- C22-4 Augmenting Energy Flexibility in the Factory Environment  
Max Weeber, Christian Lehmann, Johannes Böhner, Rolf Steinhilper
- C22-5 Increasing Energy Efficiency in Production Environments through an Optimized, Hybrid Simulation-Based Planning of Production and Its Periphery  
Thomas Sobottka, Felix Kamhuber, Wilfried Sihh

## D22: Industrial Session (Organized Session)

March 9 (Thu)

Room D 10:50-12:10

- D22-1 Fatigue Crack Detection System Based on IoT and Statistical Analysis  
Shigeru Yasuda, Shinya Miyazaki
- D22-2 Innovative Changes for Track Maintenance by Using ICT  
Yasutaka Saito, Shigeru Motoyoshi, Toshiyuki Konishi, Kazushi Matsuura, Atsushi Yokoyama
- D22-3 Development of Sensing Interface for Preventive Maintenance of Machine Tools  
Makoto Fujishima, Masahiko Mori, Kimiyuki Nishimura, Masakazu Takayama, Yasutaka Kato
- D22-4 Remanufacturing of Automotive Parts in Japanese Market  
Akira Ikeda

### P3: Plenary Lecture 3

March 10 (Fri)

Room A • B • C 11:00-11:30

- P3 Revolutionizing Technology Adoption for the Remanufacturing Industry  
N.C.Y. Yeo, H. Pepin, S.S. Yang

### P4: Plenary Lecture 4

March 10 (Fri)

Room A • B • C 11:30-12:00

- P4 Development of 1/N Machines for Optimization of Life Cycle Cost Responding to Globally Varying Production Environment  
Yasuhiko Yamazaki

### P5: Plenary Lecture 5

March 10 (Fri)

Room A • B • C 12:00-12:30

- P5 IoT Utilization in KOMATSU  
Hisashi Asada

### A31: Monitoring of Production Systems

March 10 (Fri)

Room A 8:40-10:40

- A31-1 NILM Disaggregation Algorithm for Variable Speed Drives  
Christian Gebbe, Florian Göttl, Johannes Glasschröder, Gunther Reinhart
- A31-2 A Common Software Framework for Energy Data Based Monitoring and Controlling for Machine Power Peak Reduction and Workpiece Quality Improvements  
Christoph J. H. Bauerdick, Mark Helfert, Benjamin Menz, Eberhard Abele
- A31-3 Energy Efficiency in Machine Tool Operation by Online Energy Monitoring Capturing and Analysis  
Juergen Lenz, Jan Kotschenreuther, Engelbert Westkaemper
- A31-4 Energy Condition Perception and Big Data Analysis for Industrial Cloud Robotics  
Wei Xu, Quan Liu, Wenjun Xu, Zude Zhou, Duc Truong Pham, Ping Lou, Qingsong Ai, Xiaomei Zhang
- A31-5 Internet-of-Things Enabled Real-Time Monitoring of Energy Efficiency on Manufacturing Shop Floors  
Yee Shee Tan, Yen Ting Ng, Jonathan Sze, Choong Low
- A31-6 Internet of Things for Real-Time Waste Monitoring and Benchmarking: Waste Reduction in Manufacturing Shop Floor  
Yen Ting Ng, Yee Shee Tan, Jonathan Sze Choong Low

### A32: Sustainable Consumption and Production (Organized Session)

March 10 (Fri)

Room A 13:30-15:30

- A32-1 Demand Estimation of Consumer Durables in Southeast Asia in 2030: A Business-As-Usual Scenario  
Chuang Bao, Yusuke Kishita, Yasushi Umeda
- A32-2 Remanufacturing and Trade Regulation  
Michikazu Kojima
- A32-3 Remanufacturing and Refurbishing in Developed and Developing Countries in Asia – A Case Study in Photocopiers  
Koshi Kamigaki, Mitsutaka Matsumoto, Yun Arifatul Fatimah
- A32-4 Material Flows from Electronic Waste: Understanding the Shortages for Extended Producer Responsibility Implementation in Vietnam  
Duc-Quang Nguyen, Vinh-Hung Ha, Yamasue Eiji, Trung-Hai Huynh
- A32-5 Comparative Analysis of Average Time of Use of Home Appliances  
Jordi Cravioto, Reika Yasunaga, Eiji Yamasue
- A32-6 The Scientific Challenges for a Sustainable Consumption and Production Scenario: The Circular Reuse of Materials for the Upgrading and Repurposing of Components  
Daniel Brissaud, Peggy Zwolinski

### A33: Lifetime (Organized Session)

March 10 (Fri)

Room A 16:00-17:40

- A33-1 Uncertainty in Lifespan Estimation and Its Potential Impacts on Our Social System  
Shinsuke Murakami, Haruhisa Yamamoto, Masahiro Oguchi



- A33-2** Lifetime Distribution of Buildings Decided by Economic Situation at Demolition: D-Based Lifetime Distribution  
Ichiro Daigo, Kohei Iwata, Masahiro Oguchi, Yoshikazu Goto
- A33-3** Lifetime Analysis for Electronic Devices in Vietnam  
Eiji Yamasue, Jordi Cravioto, Duc Quang Nguyen, Masahiro Oguchi, Ichiro Daigo
- A33-4** Towards a Circular Economy: Exploring Routes to Reuse for Discarded Electrical and Electronic Equipment.  
Christine Cole, Alex Gnanapragasam, Tim Cooper
- A33-5** Effect of a Reusable Unit's Physical Life Distribution on Reuse Efficiency in Environmentally Conscious Products  
Susumu Okumura, Yuya Sakaguchi, Yuji Hatanaka, Kazunori Ogohara

## **B31: Recycling**

**March 10 (Fri)**

**Room B 9:00-10:40**

- B31-1** Collaboration Platform for Enabling Industrial Symbiosis: Application of the By-Product Exchange Network Model  
Benjamin Raabe, Jonathan Sze Choong Low, Max Juraschek, Christoph Herrmann, Tobias Bestari Tjandra, Yen Ting Ng, Denis Kurle, Felipe Cerdas, Jannis Lueckenga, Zhiquan Yeo, Yee Shee Tan
- B31-2** Comparative Study of End-of-Life Vehicle Recycling in Australia and Belgium  
Vi Kie Soo, Jef Peeters, Paul Compston, Matthew Doolan, Joost R. Duflou
- B31-3** Development of Resource Efficiency Index for Electrical and Electronic Equipment  
Juntao Wang, Nozomu Mishima
- B31-4** A Process Demonstration Platform for Product Disassembly Skills Transfer  
Supachai Vongbunyong, Pakorn Vongseela, Jirad Sreerattana-aporn
- B31-5** Improving Mechanical Properties of Recycled Polypropylene-Based Composites Using Taguchi and ANOVA Techniques  
Yitao Zheng, Fu Gu, Yanru Ren, Philip Hall, Nicholas J Miles

## **B32: Remanufacturing (3)**

**March 10 (Fri)**

**Room B 13:30-15:30**

- B32-1** A Direct Material Reuse Approach Based on Additive and Subtractive Manufacturing Technologies for Manufacture of Parts from Existing Components  
Van Thao Le, Henri Paris, Guillaume Mandil, Daniel Brissaud
- B32-2** A Review on In-situ Monitoring and Adaptive Control Technology for Laser Cladding Remanufacturing  
Wei-Wei Liu, Zi-Jue Tang, Xu-Yang Liu, Hai-Jiang Wang, Hong-Chao Zhang
- B32-3** Environmental Load Reduction by Customization for Reuse with Additive Manufacturing  
Toshitake Tateno, Shinsuke Kondoh
- B32-4** Interlinking Multiple Decision Variables over Different Life Cycle Stages to Realize Effective Reuse and Recycling from a Strategic Viewpoint  
Shinsuke Kondoh, Hitoshi Komoto, Keiji Masui
- B32-5** Development of a Performance Measurement System for International Reverse Supply Chains  
Steffen Butzer, Sebastian Schötz, Matthias Petroschke, Rolf Steinhilper
- B32-6** Key Activities, Decision Variables and Performance Indicators of Reverse Logistics  
Kuldip Singh Sangwan

## **B33: Additive Manufacturing**

**March 10 (Fri)**

**Room B 16:00-17:40**

- B33-1** Environmental Impact of Additive Manufacturing Processes: Does Am Contribute to a More Sustainable Way of Part Manufacturing?  
Karel Kellens, Raya Mertens, Dimos Paraskevas, Wim Dewulf, Joost R. Duflou
- B33-2** Dynamical Fatigue Behavior of Additive Manufactured Products for a Fundamental Life Cycle Approach  
Eckart Uhlmann, Claudia Fleck, Georg Gerlitzky, Fabian Faltin
- B33-3** Sustainable Value Roadmapping Framework for Additive Manufacturing  
Mélanie Despeisse, Miying Yang, Steve Evans, Simon Ford, Tim Minshall
- B33-4** Energy Analysis of Bioplastics Processing  
Christine Schulze, Max Juraschek, Christoph Herrmann, Sebastian Thiede
- B33-5** The Influence of Scanning Pattern on the Part Properties in Powder Bed Fusion Processes: An Experimental Study  
Hong Zhang, Tao Peng, Shuangmei Xu

## C31: LCA (1)

March 10 (Fri)

Room C 9:00-10:40

- C31-1 International Survey of the Costs of Assessment for Environmental Product Declarations  
Tomohiro Tasaki, Koichi Shobatake, Kenichi Nakajima, Carl Dalhammar
- C31-2 Life Cycle Analysis of HDPE Pipe Manufacturing – A Case Study from an Indian Industry  
Kulip Singh Sangwan, Vikrant Bhakar
- C31-3 Concept of Integrated Life Cycle Assessment and Costing – Application to the Case of Designing a Hybrid Train  
Lilly Meynerts, Uwe Götze, Sören Claus, Paulo Peças, Inês Ribeiro
- C31-4 Investigation on the Comparative Life Cycle Assessment between Newly Manufacturing and Remanufacturing Turbochargers  
Wang Gao, Tao Li, Zijue Tang, Shitong Peng, Hong-chao Zhang
- C31-5 Improved Visualization in LCA through the Application of Cluster Heat Maps  
Felipe Cerdas, Alexander Kaluza, Selin Erkisi-Arici, Stefan Böhme, Christoph Herrmann

## C32: LCA (2)

March 10 (Fri)

Room C 13:30-15:10

- C32-1 Comparative LCA of Flocculation for the Harvesting of Microalgae for Biofuels Production  
Massimo Collotta, Pascale Champagne, Warren Mabee, Giuseppe Tomasoni, Gustavo B. Leite, Leonardo Busi, Marco Alberti
- C32-2 Waste Water Treatment Plant Life Cycle Assessment: Treatment Process to Reuse of Water  
Smita Raghuvanshi, Vikrant Bhakar, Chelikani Sowmya, K.S. Sangwan
- C32-3 Life Cycle Cost Analysis of Electrical Vehicles in Australia  
Sami Kara, Wen Li, Nikkita Sadjiva
- C32-4 Analysis of Material Based GHG Emissions and Costs for Assembly Products Using Asian Lifecycle Inventory Databases: Cell Phone Case Study  
Rena Kondo, Yuki Kinoshita, Tetsuo Yamada, Norihiro Itsubo, Masato Inoue
- C32-5 A Panoramic Analysis of Hydrogen Utilization Systems: Using an Input-Output Table for Next Generation Energy Systems  
Satoshi Nakano, Ayu Washizu,

## C33: Production Planning and Control

March 10 (Fri)

Room C 16:00-17:40

- C33-1 Simulation-Based Assessment of Segmentation and Control Strategies within Multi-Variant Productions  
Steffen Butzer, Sebastian Schötz, Andreas Kruse, Anna-Sophie Freytag, Rolf Steinhilper
- C33-2 Benefit Oriented Production Data Acquisition for the Production Planning and Control  
Christina Reuter, Felix Brambring, Thomas Hempel, Phil Kopp
- C33-3 Cycle-Oriented Evaluation of Production Technologies: Extending the Model of the Production Cycle  
Christian Dengler, Alexander Schönmann, Boris Lohmann, Gunther Reinhart
- C33-4 Generation of Planned Orders and Their Matching with Customer Orders in Multi-Variant Series Production  
Jens Buergin, Julian Beisecker, Sebastian Fischer, Bettina Geier, Hansjoerg Tutsch, Stefan Mercamp, Gisela Lanza
- C33-5 Ensuring Time-Saving and Effective Production Planning by Prioritizing Activities Based on Company-Specific Validation Success Rates  
Tobias Steinhäusser, Gunther Reinhart