### May 24th

17:00-18:30  **Conference Registration at Hotel Commundo**
18:30-20:00  **Welcome Reception at Hotel Commundo Bistro**

### May 25th

08:00-09:00  **Conference Registration at Hotel Commundo**

#### Plenary: Opening Session  
**Room: V150**
09:00-10:00  **Keynotes Reimund Neugebauer; Thomas Bauernhansl; Engelbert Westkämper**

#### Session A 1: Challenges, Strategies - Changes Manufacturing  
**Room: A202**
10:30-11:00  **Ecosystems, business strategy and business models in the age of digitization: How the manufacturing industry is going to change its logic**  
*Dominik Paulus-Rohmer, Heike Schatton, Thomas Bauernhansl (Fraunhofer IPA, DE)*
11:00-11:30  **Study Based Analysis on the Current Digitalization Degree in the Manufacturing Industry in Germany**  
*Eva Bogner, Thomas Voelklein, Olaf Schroedel, Joerg Franke (Friedrich-Alexander-University of Erlangen-Nürnberg, DE)*
11:30-12:00  **Enablers for integration to enable more adaptable value chains**  
*Inger Gamme (Sintef Raufoss Manufacturing, NO)*

#### Session B 1: Industrie 4.0 - Infrastructural Frameworks  
**Room: A205**
10:30-11:00  **The Application Center Industrie 4.0 - Industry-driven manufacturing, research and development**  
*Martin Landherr, Ulrich Schneider, Thomas Bauernhansl (Fraunhofer IPA, DE)*
11:00-11:30  **CyProF – Insights from a Framework for Designing Cyber-Physical Systems in Production Environments**  
*Dennis Kolberg, Christoph Berger, Bogdan-Constantin Pirvu, Marco Franke, Joachim Michniewicz (German Research Center for Artificial Intelligence GmbH, DE)*
11:30-12:00  **A Framework for Information-driven Manufacturing**  
*Marko Friedemann, Thies Uwe Trapp, Johannes Stoldt, Tino Langer, Matthias Putz (Fraunhofer IWU, DE)*

#### Session C 1: Learning Teaching Factories - Learning Assistance  
**Room: A203**
10:30-11:00  **The Teaching Factory: A Manufacturing Education Paradigm**  
*George Chryssolouris, Dimitris Mavrikios, Loukas Rentzos (University of Patras, GR)*
11:00-11:30  **Learning and knowledge systems in product development environments**  
*Geir Ringen, Torgeir Weis, Emma Østerbø (SINTEF Raufoss Manufacturing, NO)*
11:30-12:00  **Optimized Adaptive Scheduling of a Manufacturing Process System with Multi-Skill Workforce and Multiple Machine Types: An Ontology-Based, Multi-Agent Reinforcement Learning Approach**  
*Shuhui Qu, Jie Wang, Shivani Govil, James Leckie (Stanford, US)*

#### Session E 1: Manufacturing Planning - Network  
**Room: A206**
10:30-11:00  **A Performance Measurement System For Global Manufacturing Networks**  
*Benedikt Sager, Sven Hawer, Gunther Reinhart (TU Munich, DE)*
11:00-11:30  Robustness- and complexity-oriented characterization of supply networks’ structures  
Judit Monostori (MTA SZTAKI, HU)

11:30-12:00  Multi-criterial selection of track and trace technologies for an anti-counterfeiting strategy  
Eugenia Gossen, Eberhard Abele, Martin Rauscher (TU Darmstadt, DE)

Session I 1: Modelling Simulation - Production-oriented Product Development  
Chairman: tbs  
Room: A215

10:30-11:00  A Meta-Model for Analyzing the Influence of Production-Related Business Processes  
Christopher Lock, Gunther Reinhart (TU Munich, DE)

11:00-11:30  Quantifying the degree of assembly-readiness of high-variant low-volume products during the new product development process  
Tobias Steinhaeusser, Gunther Reinhart (TU Munich, DE)

11:30-12:00  Increase of Capacity Flexibility in Manufacturing Systems by Substitution of Product Functions  
Philipp Holtewert, Thomas Bauernhansl (Fraunhofer IPA, DE)

12:00-13:30  Lunch at Hotel Commundo Restaurant

Session A 2: Challenges, Strategies - Manufacturing, Strategies  
Chairman: tbs  
Room: A202

13:30-14:00  Efficiency potentials and the extended regional infrastructure: requirements for a management model  
Benjamin Kuch (University of Stuttgart, DE)

14:00-14:30  Risk efficient migration strategies in global production network  
Emanuel Moser, Nicole Stricker, Gisela Lanza (Karlsruher Institute of Technology, DE)

Session B 2: Industrie 4.0 - Complexity by Digitization  
Chairman: tbs  
Room: A205

13:30-14:00  Determination of the optimal degree of autonomy in a cyber-physical production system  
Norbert Gronau, Hanna Theuer (University of Potsdam, DE)

14:00-14:30  Advanced complexity management strategic recommendations of handling the “Industrie 4.0” complexity for small and medium enterprises  
Jens Michael Jäger, Oliver Schöllhammer, Michael Lickefett, Thomas Bauernhansl (Fraunhofer IPA, DE)

14:30-15:00  A Novel Methodology for Manufacturing Firms Value Modeling and Mapping to Improve Operational Performance in the Industry 4.0 era  
Flavio Tonelli, Melissa Demartini, Andrea Lolelo, Chiara Testa (University of Genoa, IT)

Session C 2: Learning Teaching Factories - Knowledge Work in Future Manufacturing  
Chairman: tbs  
Room: A203

13:30-14:00  Analysis of critical factors for automatic measurement of OEE  
Richard Hedman, Mukun Subramaniyan, Peter Almström (Chalmers University of Technology, SE)

14:00-14:30  A Virtual Reality Application to Attract Young Talents to Manufacturing  
Antoniou Stratos, Loukas Rentzos, Dimitris Mavrikios, Konstantinos Georgoulas, Dimitris Mourtzis, George Chryssolouris (LMS, GR)

14:30-15:00  The Lean Brain Theory. Brain-like Lean Manufacturing Systems  
Javier Villalba-Diez, Joaquin Ordieres-Meré, Susana Rubio-Valdehita (Universidad Politécnica de Madrid, ES)

Session E 2: Manufacturing Planning - Network  
Chairman: tbs  
Room: A206

13:30-14:00  Towards the Investigation of Production Order Interdependency Effects on Logistics Performance  
Victor Vican, Julia Bendul (Jacobs University of Bremen, DE)

14:00-14:30  Integrated production and transportation scheduling for multi-objective green supply chain network design  
Yoshitaka Tanimizu, Katuhumi Amano (Osaka Prefecture University, JP)

14:30-15:00  Controlling Myopic Behavior in Distributed Production Systems— A Design Framework  
Henning Blunck, Julia Christine Bendul (Jacobs University of Bremen, DE)
Session I 2: Modelling Simulation - Risk- and Time-oriented Optimisation  
Chairman: tbs  
Room: A215

13:30-14:00 Monetary Quantification of Supply Risks of Manufacturing Enterprises - Discrete Event Simulation Based Approach  
Johann Philipp von Cube, Lasse Härtel, Robert Schmitt, Christophe Ponsard, Philippe Massonet, Renaud De Landtsheer, Gustavo Ospina, Stephan Printz, Sabina Jeschke (Fraunhofer IPT, DE)

14:00-14:30 Model-Based Decision Support in Supply Chains – Requirements for Monetary Supply Risk Quantification  
Johann Philipp von Cube, Lasse Härtel, Robert Schmitt (Fraunhofer IPT, DE)

14:30-15:00 Simulation-based Flexible Layout Planning Considering Stochastic Effects  
Dávid Gyulai, Ádám Szaller, Zsolt János Viharos (MTA SZTAKI, HU)

15:00-15:30 Coffee Break

Session D 1: Manufacturing Engineering - Lean  
Chairman: tbs  
Room: A202

15:30-16:00 Resilience of productions systems by adapting temporal or spatial organization  
Matthias Heinicke, Ulf Bergmann (Otto von Guericke University of Magdeburg, DE)

16:00-16:30 Drivers and Barriers of Lean Implementation in the Greek Manufacturing Sector  
Konstantinos Salonitis, Christos Tsinopoulos (Cranfield University, UK)

16:30-17:00 Manufacturing system lean improvement design using discrete event simulation  
Konstantinos Salonitis, Oleoghe Omogbai (Cranfield University, UK)

17:00-17:30 Lean Automation System Responding to the Changing Market  
Yasuhiko Yamazaki, Shozo Takata, Hisashi Onari, Fumio Kojima, Shigeya Kato

Session B 3: Industrie 4.0 - Cyber-physical Integration  
Chairman: tbs  
Room: A205

15:30-16:00 Industrie 4.0: Using cyber-physical systems for value-stream based production evaluation  
Erdal Tantik, Reiner Anderl (TU Darmstadt, DE)

16:00-16:30 Towards a Rule-Based Manufacturing Integration Assistant  
Matthias Wieland, Pascal Hirmer, Frank Steinme, Christoph Gröger, Bernhard Mitschang, Eike Rehder, Dominik Lucke, Omar Abdul-Rahman, Thomas Bauernhansl (University of Stuttgart, DE)

16:30-17:00 Software Defined Manufacturing: A Vision of Flexible Cloud Manufacturing for Industry 4.0  
John Lane Thames, Dirk Schaefer (Tripwire, Inc., US)

17:00-17:30 Agile Service-oriented Analysis and Design of Industrial Internet Applications  
Thomas Usländer (Fraunhofer IOSB, DE)

Session H 1: Assembly - Assembly System, Flexibility  
Chairman: tbs  
Room: A203

15:30-16:00 Modularity as Key Enabler for Scalability of Final Assembly Units in the Automotive Sector  
Jakob Weber, Markus Stäbler, Sebastian Thielen, Kristin Paetzold (Daimler AG, DE)

16:00-16:30 Manufacturing System Flexibility: Sequence Flexibility Assessment  
Meriem Lafou, Luc Mathieu, Stephane Pois, Marc Alochet (ENS CACHAN, FR)

16:30-17:00 A Comparison of the Manufacturing Resilience between Fixed Automation Systems and Mobile Robots in Large Structure Assembly  
Spartak Ljasenko, Niels Lohse, Laura Justham (Loughborough University, UK)

17:00-17:30 Autoclave cycle optimization for resource efficient composite parts manufacturing  
L. Nelea, A. Caggiano, R. Teti (Dept. of Chemical, Materials and Industrial Production Engineering, University of Naples Federico II, Italy)

Session E 3: Manufacturing Planning - Maintenance & Commissioning  
Chairman: tbs  
Room: A206

15:30-16:00 Situation based Methodology for Planning the Commissioning of Special Machinery using Bayesian Networks  
Sebastian Poeschl, Frank Wirth, Thomas Bauernhansl (University of Stuttgart, DE)

16:00-16:30 Condition-based Maintenance: Model vs. Statistics A Performance Comparison  
Marc Engeler, Daniel Treyer, David Zogg, Andreas Kunz, Konrad Wegener (ETH Zurich, CH)
May 26th

**Session D 2: Manufacturing Engineering - Virtual Reality**
Chairman: tbs  
**Room: A202**

08:30-09:00  **Recognition of one class of quadrics from 3D point clouds**  
Zivana Jakovlijevic, Veljko Markovic, Radovan Puzovic, Vidosav Majstorovic (University of Belgrade, RS)

09:00-09:30  **Improving manufacturing process change by 3D visualization support: A pilot study on truck production**  
Liang Gong, Jonatan Berglund, Zhiping Wang, Jon Larborn, Anders Skoogh, Björn Johansson (Chalmers University of Technology, SE)

09:30-10:00  **Virtual reality based time and motion study with support for real walking**  
Andreas Kunz, Markus Zank, Thomas Nescher, Konrad Wegener (ETH Zurich, CH)

**Session B 4: Industrie 4.0 - IT Interfaces**
Chairman: tbs  
**Room: A205**

08:30-09:00  **A Computational Framework for Cloud-Based Machine Prognosis**  
Peng Wang, Robert Gao, Dazhong Wu2, Janis Terpenny (Case Western Reserve University, US)

09:00-09:30  **OPC UA & Industrie 4.0 - enabling technology with high diversity and variability**  
Miriam Schleipen, Syed-Shiraz Gilani, Tino Bischoff, Julius Pfrommer (Fraunhofer IOSB, DE)

09:30-10:00  **A systematic approach to OPC UA information model design**  
Florian Pauker, Thomas Frühwirth, Burkhard Kittl, Wolfgang Kastner (TU Vienna, AT)

**Session H 2: Assembly - Assembly in Automotive**
Chairman: tbs  
**Room: A203**

08:30-09:00  **Planning of workstations in a modular automotive assembly system**  
Wolfgang Kern, Fabian Rusitschka, Thomas Bauernhansl (University of Stuttgart, DE)

09:00-09:00  **Complexity-focused planning and operating of mixed-model assembly lines in automotive manufacturing**  
Stefan Keckl, Antoin Abou-Haydar, Engelbert Westkämper (University of Stuttgart, DE)

09:30-10:00  **Method for a cross-architecture assembly line planning in the automotive industry with focus on modularized, order flexible, economical and adaptable assembly processes**  
Christian Küber, Engelbert Westkämper, Bernd Keller, Hans-Friedrich Jacobi (University of Stuttgart/Daimler AG, DE)

**Session E 4: Manufacturing Planning - PPC**
Chairman: tbs  
**Room: A206**

08:30-09:00  **Employing order allocation flexibility in cyber-physical production systems**  
Dennis Horst kemper, Bernd Hellingrath (University of Münster, DE)
09:00-09:30  Adaptive Job-Shop Control using Resource Accounts  
Michael Niehues, Peter Sellmaier, Tobias Steinhaeusser, Gunther Reinhart (TU Munich, DE)

09:30-10:00  A heuristic optimisation approach for the scheduling of integrated manufacturing and distribution systems  
Jens Ehnh, Michael Freitag, Enzo Morosini Frazzon (BIBA, DE)

Session G 1: Technical Intelligence - Reconfigurability  
Chairman: tbs  
Room: A215

08:30-09:00  Agent-based control system methodology for Reconfigurable Bending Press Machine  
Olukorede Tijani Adenuga, Khumbulani Mpofu, Michael Kanisuru Adeyeri (Tshwane University of Technology, ZA)

09:00-09:30  Vacuum Assisted Multipoint Moulding – A Reconfigurable Tooling Technology for Producing Spatially Curved Single-Item CFRP Panels  
Matthias Wimmer, Mario Lušić, Christoph Maurer (Munich University of Applied Sciences, DE)

09:30-10:00  Computational Design Synthesis of reconfigurable cellular manufacturing systems: a design engineering model  
Johannes Unglert, Juan Jauregui-Becker, Sipke Hoekstra (University of Twente, NL)

10:00-10:30  Coffee Break

Session D 3: Manufacturing Engineering - Product Features  
Chairman: tbs  
Room: A202

10:30-11:00  Consistency check of the functional solution model in special purpose machinery  
Tobias Helbig, Johannes Hoos, Engelbert Westkämper (University of Stuttgart, DE)

11:00-11:30  A framework for value-optimized design of product features  
Payam Amini, Björn Falk, Robert Schmit (RWTH Aachen, DE)

11:30-12:00  Systematic Improvement of Supplier Integration within the Product Development Process  
Uwe Dombrowski, Alexander Karl (TU Braunschweig, DE)

Session B 5: Industrie 4.0 - Socio-technical Aspects  
Chairman: tbs  
Room: A205

10:30-11:00  A Model based Visualization Framework for Cross Discipline Collaboration in Industry 4.0 Scenarios  
Johannes Herter, Jivka Ovtcharova (UNITY AG, DE)

11:00-11:30  Future trends in human work area design for cyber-physical production systems(CPPS)  
Becker Till, Hendrik Stern (University of Bremen, DE)

11:30-12:00  A Modular Framework for Socio-CPS-Based Condition Monitoring  
Hans Fleischmann, Johannes Kohl, Jörg Franke (Friedrich-Alexander-University of Erlangen-Nürnberg, DE)

Session H 3: Assembly - Evaluation of Assembly Systems  
Chairman: tbs  
Room: A203

10:30-11:00  Hybrid multi-optimization method for solving simultaneously the line balancing, equipment and buffer sizing problem for hybrid assembly systems  
Jonathan Oesterle, Thomas Bauernhansl, Lionel Amodeo (Fraunhofer IPA, DE)

11:00-11:30  Linear Constraint Programming for Cost-Optimized Configuration of Modular Assembly Systems  
Paul Danny Anandan, Vikrant Hiwarkar, Mohamed Sayed, Pedro Ferreira, Niels Lohse (Loughborough University, UK)

11:30-12:00  Hydrogen fuel cell pick and place assembly systems: Heuristic evaluation of reconfigurability and suitability  
Mussawar Ahmad, Bugra Alkan, Bilal Ahmad, Daniel Vera, James Meredith, Axel Bindel, Robert Harrison (University of Warwick, UK)

Session E 5: Manufacturing Planning - PPC  
Chairman: tbs  
Room: A206

10:30-11:00  Event-driven production planning and control based on individual customer orders  
Georg Kasakow, Nicole Menck, Jan C. Aurich (TU Kaiserslautern, DE)

11:00-11:30  Simulative Assessment of Agent based Production Planning and Control Strategies  
Denis Kurle, Stefan Blume, Tobias Zurawski, Sebastian Thiede (TU Braunschweig, DE)
11:30-12:00 Simulation-based Production Planning and Execution Control for Reconfigurable Assembly Cells  
Dávid Gyulai, András Pfeiffer, Botond Kádár, László Monostori (MTA SZTAKI, HU)

**Session G 2: Technical Intelligence - Manufacturing Data and Control**  
Chairman: tbs  
Room: A215

10:30-11:00 Model for Cutting Tools Usage Tracking by On-line Data Capturing and Analysis  
Jürgen Lenz, Dominik Brenner, Engelbert Westkämper (University of Stuttgart, DE)

11:00-11:30 System of high-performance cutting with enhanced combined effect of cooling and lubrication medium based on Ranque-Hilsch Effect  
Alexander Naumov, Alexey Vereschaka, Andre Batako, Anatoly Vereschaka (MSTU STANKIN, RU)

11:30-12:00 Trajectory Planning for Reconfigurable Industrial Robots Designed to Operate in a High Precision Manufacturing Industry  
Oliver Avram, Anna Valente (SUPSI, CH)

12:00-13:30 Lunch at Hotel Commundo Restaurant

**Session D 4: Manufacturing Engineering - Early Phases**  
Chairman: tbs  
Room: A202

13:30-14:00 Approach for an integrated planning of manufacturing systems based on early phases of product development  
Chantal Fiona Desirée Steimer, Marcel Cadet, Jan C. Aurich, Nicole Stephan (University of Kaiserslautern, DE)

14:00-14:30 Assessment of Aero Engine Assemblability during Preliminary Design  
Jochen Rendle, Stephan Staudacher (University of Stuttgart, DE)

14:30-15:00 Assessing the Impact of Changes and their Knock-on Effects in Manufacturing Systems  
Christian Plehn (TU Munich, DE)

**Session J 1: Zero Defect Quality - Quality Prediction**  
Chairman: tbs  
Room: A205

13:30-14:00 Augmenting milling process data for shape error prediction  
Berend Denkena, Marc-André Dittrich, Florian Uhlich (Leibniz University of Hannover, DE)

14:00-14:30 Analytical approach for the examination of the feasibility of rework in flow assembly lines  
Wolf Tönnes (University of Stuttgart, DE)

14:30-15:00 A Data-Based Approach for Quality Regulation  
Quoc Hao Ngo, Robert Schmitt (RWTH Aachen, DE)

**Session H 4: Assembly - Assistance Systems**  
Chairman: tbs  
Room: A203

13:30-14:00 Static versus dynamic provision of worker information in manual assembly: a comparative study using eye tracking to investigate the impact on productivity and added value based on industrial case examples  
Mario Lušić, Christian Fischer, Konrad Schmutzer Braz, Marina Alam, Rüdiger Hornfeck, Jörg Franke (TU Nürnberg, DE / Friedrich-Alexander-University of Erlangen-Nuremberg, DE)

14:00-14:30 Usage Frequency and User-Friendliness of Mobile Devices in Assembly  
Susanne Vernim, Gunther Reinhart (TU Munich, DE)

14:30-15:00 Towards feature-based human-robot assembly process planning  
Csaba Kardos, András Kovács, József Váncza (MTA SZTAKI, HU)

**Session E 6: Manufacturing Planning - PPC**  
Chairman: tbs  
Room: A206

13:30-14:00 A New Model for Sustainable Changeability and Production Planning  
Shima Ghanei, Tarek AlGeddawy (University of Minnesota Duluth, US)

14:00-14:30 A research on optimization method for integrating component selection and production scheduling under mass customization  
Shota Suginouchi, Toshiya Kaihara, Daisuke Kokuryo, Swee Kuik (Kobe University, JP)

14:30-15:00 Customer-oriented Production System for Supplier Companies in CTO  
Patrick Dallasega, Peter Rally, Erwin Rauch, Dominik Tobias Matt (Free University of Bozen-Bolzano, IT)
Session G 3: Technical Intelligence - Robotic Task Planning
Chairman: tbs
Room: A215

13:30-14:00 Intelligent tools for predictive process control
Hans-Christian Möhring, Quang Phuc Nguyen, Andreas Kuhlmann, Christoph Lerez, Le Trung Nguyen, Sandra Misch (University of Magdeburg, DE)

14:00-14:30 Detection of workpiece shape deviations for tool path adaptation in robotic deburring systems
Alexander Kuss, Drust Manuel, Verl Alexander (Fraunhofer IPA, DE)

14:30-15:00 On a human and dual-arm robot task planning method
Panagiota Tsarouchi, Sotiris Makris, George Chryssoulakis (LMS, GR)

15:00-15:30 Coffee Break

Session D 5: Manufacturing Engineering - Tools & Methods
Chairman: tbs
Room: A202

15:30-16:00 The use of engineering tools and methods in maintenance organisations: mapping the current state in the manufacturing industry
Jon Bokrantz, Anders Skoogh, Torbjörn Ylipää (Chalmers University of Technology, SE)

16:00-16:30 E-catalogue library of machines for constructing virtual printed-circuit assembly lines
Michiko Matsuda, Sota Matsumoto, Naoaki Noyama, Yasuhiro Sudo, Fumihiko Kimura (Kanagawa Institute of Technology, JP)

16:30-17:00 Quality Management for Battery Production: A Quality Gate Concept
Joscha Schnell, Gunther Reinhart (TU Munich, DE)

Session J 2: Zero Defect Quality - Virtual Optimisation
Chairman: tbs
Room: A205

15:30-16:00 Virtual optimisation of CAI process parameters for the sculptured surface inspection
Tatjana Sibilija, Srdjan Zivkovic, Nikolaos Fountas, Vidosav Majstorovic, Jelena Macuzic, Nikolaos Vaxevanidis (Metropolitan University, RS)

16:00-16:30 Virtual metrology concept for predicting defect levels in semiconductor manufacturing
Asad Arsalan Ul Haq, Dragan Djurdjanovic (The University of Texas at Austin, US)

16:30-17:00 Method for classification of battery separator defects
Josef Huber, Christoph Tammer, Stefan Krotl, Severin Waidmann, Xuezi Hao, Christian Seidel, Gunther Reinhart (Fraunhofer IWU, DE)

17:00-17:30 Development of Simulation System for Compliance Function and Measurement of Residual Stress for Al 2124-T851 plate
Huang Xiaoming, Sun Jie, Li Jianfeng, Zhou chang'an (Shandong University, CN)

Session K 1: Lean, Clean, Green - Lean
Chairman: tbs
Room: A203

15:30-16:00 Barriers to lean implementation: perception of top managers, middle managers and workers
Eirin Lodgaard, Jonas A. Ingvaldsen, Inger Gamme, Silje Aschehoug (Sintef Raufoss manufacturing, NO)

16:00-16:30 Link mechanisms within the Lean Enterprise
Uwe Dombrowski, Philipp Krenkel, David Ebentreich (TU Braunschweig, DE)

16:30-17:00 Impact analyses of lean production systems
Uwe Dombrowski, David Ebentreich, Philipp Krenkel (TU Braunschweig, DE)

17:00-17:30 The Eco Lean method – A combined approach for low cost economic and ecologic optimization in the manufacturing industry
Robert Miehe, Ivan Bogdanov, Ralph Schneider, Marius Hirsch, Thomas Bauernhansl, Elzbieta Pawlik, Remigiusz Horbal (Fraunhofer IPA, DE)

Session E 7: Manufacturing Planning - Shop Floor
Chairman: tbs
Room: A206

15:30-16:00 Designing Manufacturing Dashboards on the Basis of a Key Performance Indicator Survey
Henri Tokola, Christoph Gröger, Eeva Järvenpää, Esko Niemi (Aalto University School of Engineering, FI)

16:00-16:30 Recording Shop Floor Management Competencies – A Guideline for a Systematic Competency Gap Analysis
Christian Hertle, Michael Tisch, Henning Kläs, Joachim Metternich, Eberhard Abele (TU Darmstadt, DE)
16:30-17:00  Global Truck Production - The Importance of Having a Robust Manufacturing Preparation Process  
(Volvo Group Trucks Operations, SE)

17:00-17:30  Energy consumption estimation for machining processes based on real-time shop floor monitoring via wireless sensor networks  
Dimitris Mourtzis, Ekaterini Vlachou, Nikolaos Milas, George Dimitrakopoulos (LMS, GR)

Session G 4: Technical Intelligence - Information Retrieval in Process Control  
Chairman: tbs  
Room: A215

15:30-16:00  Mode decoupled cutting force monitoring by applying multi encoder based disturbance observer  
Yuki Yamada, Yasuhiro Kakinuma (Keio University, JP)

16:00-16:30  Development of Turning Machine Operation Interface that Uses Haptic Device (Application to Complicated Cutting by Special Byte)  
Koichi Morishige, Miharu Nakada (The University of Electro-Communications, JP)

16:30-17:00  Burr minimisation in face milling with optimised tool path  
György Póka, István Németh, Gyula Mátéyási (Budapest University of Technology and Economics, HU)

17:00-17:30  Sensorless tool collision detection for multi-axis machine tools by integration of disturbance information  
Tetsuya Shigematsu, Ryo Koike, Yasuhiro Kakinuma, Tojiro Aoyama, Kouhei Ohnishi (Keio University, JP)

18:25-19:00  Shuttle transfer to Official Wagenhallen Dinner (meeting point: in front of Hotel Commundo)

19:00-23:00  Official Wagenhallen Dinner, Best Paper Award

23:00-23:30  Shuttle transfer to Hotel Commundo (meeting point: in front of Wagenhallen)

May 27th

Session L 1: Life Cycle Management and Services - Life Cycle Assessment  
Chairman: tbs  
Room: A202

08:30-09:00  Production support model to manage market demand volatility risks  
Anders Johansson, Lars Pejryd, Linn Gustavsson Christiernin (Scania, SE)

09:00-09:30  Resource optimized product design – Assessment of a product's life cycle resource efficiency by combining LCA and PLM in the product development  
Nathanael Ko, Roberta Graf, Tom Buchert, Marcus Kim, Daniel Wehner (Fraunhofer IBP, DE)

09:30-10:00  Maintenance decision support for manufacturing systems based on the minimization of the life cycle cost  
Alice Reina, Ádám Kocsis, Angelo Merlo, István Németh, Francesco Aggogeri (Mach4Lab, IT)

Session K 2: Lean, Clean, Green - Energy Consumption  
Chairman: tbs  
Room: A203

08:30-09:00  A calculation method of embodied carbon-energy for low-carbon products  
Qi Lu, Guanghui Zhou, Jiakai Zhu (Xi’an Jiaotong University, CN)

09:00-09:30  Understanding sustainability data through unit manufacturing process representations: a case study on stone production  
Laurie Rebouillat, Ilaria Giovanna Barletta, Björn Johansson, Mahesh Mani, William Bernstein, KC. Morris, Kevin Lyons (Chalmers University of Technology, SE)

09:30-10:00  Energy flexible machine tool components - an investigation of capabilities  
Richard Popp, Corinna Liebl, Michael Zaeh (TU Munich, DE)

Session F 1: New Technologies - Additive Manufacturing  
Chairman: tbs  
Room: A206

08:30-09:00  Investigation of deviations caused by powder compaction during 3D printing  
Christoph Schmutzler, Clarissa Boeker, Michael F. Zaeh (TU Munich, DE)

09:00-09:30  Distributed Manufacturing of Spare Parts based on Additive Manufacturing: Use Cases and Technical Aspects  
Luiz Fernando Durão, Alexander Christ, Reiner Anderl, Klaus Schützer, Eduardo Zancul (University of São Paulo, BR)
09:30-10:00  A design framework to replace conventional manufacturing processes with additive manufacturing for structural components: A formula student case study  
Harry Bikas, John Stavridis, Panagiotis Stavropoulos, George Chryssolouris (LMS, GR)

Session G 5: Technical Intelligence - Systemic Comprehension  
Chairman: tbs  
Room: A215

08:30-09:00  A Framework for Integration of Additive Manufacturing Technologies in Production Networks  
Patrik Spalt, Thomas Bauernhansl (University of Stuttgart, DE)

09:00-09:30  Operation-oriented One-piece-flow Manufacturing: Autonomous and Smart Systems as Enabler for a Full-meshed Production Network  
Michael Scholz, Saskia Kolb, Jörg Franke (Friedrich-Alexander-University of Erlangen-Nürnberg, DE)

09:30-10:00  Dynamic Agent-based Bi-objective Robustness for Tardiness and Energy in a Dynamic Flexible Job Shop  
Abdulaziz Mathkar Alotaibi, Niels Lohse, Tuong Manh Vu (Loughborough University, UK)

10:00-10:30  Coffee Break

Session L 2: Life Cycle Management and Services - End-of-Life Consideration  
Chairman: tbs  
Room: A202

10:30-11:00  Management of social and ethical impacts from the product life cycle of high end wrought aluminum products  
Silje Helene Aschehoug, Kjersti Øverbø Schulte, Marit Moe Bjørnbet (SINTEF Raufoss Manufacturing, NO)

11:00-11:30  Disassembly Line Planning Through the Generation of End-of-Life Handling Information from Design Files  
George Pintzos, Markos Matsas, Nikolaos Papakostas, Dimitris Mourtzis (Lab for Manufacturing Systems and Automation (LMS, GR)

11:30-12:00  Method for assessing the total cost of ownership of industrial robots  
Steffen Andreas Landscheidt, Mirka Kans (Linnaeus University, SE)

Session K 3: Lean, Clean, Green- Energy Consumption  
Chairman: tbs  
Room: A203

10:30-11:00  Enabling Energy-Flexibility of Manufacturing Systems through New Approaches within Production Planning and Control  
Fabian Keller, Cedric Schultz, Stefan Braunreuther, Günther Reinhart (Fraunhofer IWU, DE)

11:00-11:30  Implementing Key Performance Indicators for Energy Efficiency in Manufacturing  
Christopher Schmidt, Wen Li, Sebastian Thiede, Bernard Kornfeld, Sami Kara, Christoph Herrmann (TU Braunschweig, DE)

11:30-12:00  The influence of raw material on the wood products manufacturing  
Roaa Salim, Jimmy Johansson (School of Engineering, Jönköping, SE)

Session F 2: New Technologies - Improving Manufacturing Processes  
Chairman: tbs  
Room: A206

10:30-11:00  Increasing cost and eco efficiency for selective tape placement and forming by adaptive process design  
Christian Brecher, Robert Schmitt, Florian Lindner, Tido Peters, Michael Emonts, Markus Große Böckmann (Fraunhofer IPT, DE)

11:00-11:30  Increasing productivity in grasping electrodes in lithium-ion battery manufacturing  
Robert Schroeder, Arne Glodde, Muhammed Aydemir, Günther Seliger (TU Berlin, DE)

11:30-12:00  Investigation on distortion mechanism and correcting load calculation method for aluminum beam structure by bilateral slid rolling process  
Laixiao Lu, Jie Sun (Shandong University, CN)

Plenary:  Future Perspectives for Adding Value  
Room: V150

12:00-12:30  Closing Session and Discussion

12:30-13:30  Lunch at Hotel Commundo Restaurant

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