



45<sup>th</sup> CIRP Conference on Manufacturing Systems  
 16-18 May 2012, ATHENS, GREECE  
[http://www.lms.mech.upatras.gr/CIRP\\_CMS2012/](http://www.lms.mech.upatras.gr/CIRP_CMS2012/)

**Organized by:**  
 Laboratory for Manufacturing Systems and Automation (LMS)  
 Director: Prof. George Chryssolouris



## Conference Programme

| <b>Tuesday, 15 May, 2012</b>  |   |   |   |  |
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| 17:00–19:00   | <b>Onsite Registration</b>  |   |   |  |
| 19:00–20:00   | <b>Reception at “The MARGI” Hotel</b>   |   |   |  |
| <b>Day 1: Wednesday, 16 May, 2012</b>   |   |   |   |  |
| 08:30-09:30   | <b>Onsite Registration</b>  |   |   |  |
| 09:30–10:00   | <b>Opening Ceremony</b><br>Welcome by Prof. G. Chryssolouris<br>CIRP President Address by Prof. A. Nee<br>Conference Planning by Prof. D. Mourtzis                |   |   |  |
| 10:00–10:30   | <b>Plenary Session</b><br><b>Keynote Paper: Manufacturing Skills and Competences for the Factories of the Future</b><br>G. Chryssolouris                          |   |   |  |
| 10:30–11:00   | <b>Coffee Break</b>   |   |   |  |
| 11:00–12:30   | <b>Manufacturing Systems Design</b>   | <b>Manufacturing Processes</b>  | <b>Manufacturing Systems Planning &amp; Control</b>   | <b>Manufacturing Equipment Automation</b>  |
|   | <b>Session A1</b>   | <b>Session B1</b>   | <b>Session C1</b>   | <b>Session D1</b>  |
|   | <b>P01: Assessing Lean Systems Using Variability Mapping</b><br>A. Deif   | <b>P17: Analysis of Micro Burr Formation in Austenitic Stainless Steel X5CrNi18-10</b><br>D. Biermann, M. Steiner   | <b>P04: Model of a decision support system for a least-cost and harmonized capacity adjustment in the short- and medium-term planning horizon</b><br>C. Morawetz, W. Sihn | <b>P24: Automated Driving by standardizing and scaling the manufacturing strategy</b><br>Z. Yang, P. Sachnik, D. Opritescu, R. Golle, W. Volk, H. Hoffmann, F. Schmiedl, M. Ritter, P. Gritzmann |
|   | <b>P03: A Simulation-Based Evaluation of Selective and Adaptive Production Systems (SAPS) Supporting Quality Strategy in Production</b><br>J. Kayasa, C. Herrmann | <b>P15: Reduction of Burr Formation in Drilling using Cryogenic Process Cooling</b><br>D. Biermann, H. Hartmann   | <b>P11: Operational planning of maintenance measures by means of event-driven simulation</b><br>B. Denkena, S. Kroening, K. Doreth  | <b>P25: Online Evaluation Method of Machining Precision Based on Built-in Signal Testing Technology</b><br>F. Zhao, X. Mei, Z. Du, T. Tao, G. Jiang  |
| <b>P36: A web-based platform for customer integration in the decentralized manufacturing of personalized products</b><br>D. Mourtzis, M. Doukas | <b>P34: Numerical Study on Shear Flow in Sliding Bearing with Partial Slip Surface</b><br>Q. Lin, Z. Wei, Y. Tang   | <b>P27: A Reference Model For Collaborative Capacity Planning Between Automotive And Semiconductor Industry</b><br>M. Zapp, C. Forster, A. Verl, T. Bauernhansl | <b>P02: Defining Manufacturing Performance Indicators using Semantic Ontology Representation</b><br>G. Pintzos, M. Matsas, G. Chryssolouris                               |  |

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| 12:30–14:00 | <b>Lunch Break</b>   |  |   |  |
|             | <b>Session A2</b>  | <b>Session B2</b>  | <b>Session C2</b>   | <b>Session D2</b>  |
| 14:00–15:30 | <b>P73: A case study on reuse of manufacturing knowledge within the defence industry with a comparison to automotive and aerospace practices</b><br>L. Krogstie, P. Andersson                                      | <b>P16: Size Effects in Micro Drilling Ferritic-Pearlitic Carbon Steels</b><br>M. Abouridouane, F. Klocke, D. Lung, O. Adams   | <b>P14: Optimal Process Shift Design in Selective and Adaptive Production Systems</b><br>M. Colledani, D. Ebrahimi  | <b>P54: Collaborative Factory Planning in Virtual Reality</b><br>N. Menck, X. Yang, C. Weidig, P. Winkes, C. Lauer, H. Hagen, B. Hamann, J.C. Aurich |
|             | <b>P19: The State of the Art and Prospects for the Future of Learning Factories</b><br>U. Wagner, T. AlGeddawy, H. ElMaraghy, E. Müller  | <b>P35: Numerical Simulation and Experimental Study on the Resist Filling Behaviour in UV-nanoimprint Lithography</b><br>J. Du, Z. Wei, Y. Tang  | <b>P28: Benchmarking of Methods and Instruments for Self-Optimization in Future Production Systems</b><br>C. Wagels, R. Schmitt   | <b>P18: Realistic Machine Simulation with Virtual Reality</b><br>R. Neugebauer, P. Klimant, M. Witt  |
|             | <b>P108: Developing Competencies for Continuous Improvement Processes on the Shop Floor through Learning Factories – conceptual design and empirical validation</b><br>J. Cachay, E. Abele                         | <b>P21: An Initial Study of the Effect of Using Liquid Nitrogen Coolant on the Surface Roughness of Inconel 718 Nickel-Based Alloy in CNC Milling</b><br>A. Shokrani, V. Dhokia, R. Imani-Asrai, S.T. Newman | <b>P93: A Model of Collaborative Enterprise Networks</b><br>H. Baum, J. Schuetze  | <b>P32: Design and Development of an in situ Machining Simulation System using Augmented Reality Technology</b><br>J. Zhang, S.K. Ong, A.Y.C. Nee    |
| 15:30–16:00 | <b>Coffee Break</b>  |  |   |  |
|             | <b>Session A3</b>  | <b>Session B3</b>  | <b>Session C3</b>   | <b>Session D3</b>  |
| 16:00–18:00 | <b>P71: Information Requirements for Motivated Alignment of Manufacturing Operations to Energy Availability</b><br>M. Grismajer, G. Seliger  | <b>P42: Thermal Aspects in Deep Hole Drilling of Aluminium Cast Alloy using Twist Drills and MQL</b><br>D. Biermann, I. Iovkov, H. Blum, A. Rademacher, K. Taebi, F.T. Suttmeier, N. Klein                   | <b>P29: Changeability in Structure Planning of Automotive Manufacturing</b><br>C. Loeffler, E. Westkaemper, K. Unger  | <b>P40: Development of 5-axis Control CAM System for Multi-tasking Machine Tools</b><br>K. Nakamoto, K. Kubota, T. Ishida, Y. Takeuchi               |
|             | <b>P09: An integrated setup planning and pallet configuration approach for highly automated production systems with energy modelling of manufacturing operations</b><br>S. Pellegrinelli, A. Valente, L.M. Tosatti | <b>P97: Knowledge Integration in a Collaborative Machining Process Planning Environment</b><br>M. Helguson, V. Kalhori   | <b>P37: Ontology based Intelligent assistance system to support manufacturing activities in a distributed manufacturing environment</b><br>S. Minhas, C. Juzek, U. Berger | <b>P55: Design methodology for mechatronic active fixtures with movable clamps</b><br>T.N. Papastathis, O.J. Bakker, S.M. Ratchev, A.A. Popov        |

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|                                      | <p><b>P26: Multiple-attribute decision making for an energy efficient facility layout design</b><br/>L. Yang, J. Deuse</p> <p><b>P47: Distributed Optimization of Energy Portfolio and Production Planning for Multiple Companies under Resource Constraints</b><br/>T. Nishi, E. Sekiya, S. Yin</p>  | <p><b>P56: Carbon Emission Assessment to Support the Planning and Operation of Low-Carbon Production System</b><br/>X. Shi, H. Meier</p> <p><b>P61: Suitability of the ISO 10303-207 Standard for Product Modelling of Line Linked Micro Parts</b><br/>K. Tracht, F. Weikert, T. Hanke</p>   | <p><b>P43: Game Theoretic Approach for Global Manufacturing Planning under Risk and Uncertainty</b><br/>S. Yin, T. Nishi</p> <p><b>P53: Throughput time characteristics of rush orders and their impact on standard orders</b><br/>D. Trzyna, A. Kuyumcu, H. Lödding</p>  | <p><b>P60: Robot Path Correction Using Stereo Vision System</b><br/>G. Michalos, S. Makris, A. Eytan, S. Matthaiakis, G. Chryssolouris</p> <p><b>P75: High Speed Vision based automatic Inspection and Path Planning for Processing conveyed Objects</b><br/>M. Weyrich, Y. Wang, J. Winkel, M. Laurowski</p>  |
| <b>Day 2: Thursday, 17 May, 2012</b> |   |  |   |  |
| 08:30–09:00                          | <p><b>Plenary Session</b><br/> <b>Keynote Paper P23: Method to Determine and Quantify Changes in Value Chains Caused by E-mobility</b><br/> W. Sihm, D. Palm, H. Gommel, W. Tober, C. Bauer</p>   |  |   |  |
|                                      | <b>Session A4</b>   | <b>Session B4</b>  | <b>Session C4</b>   | <b>Session D4</b>  |
| 09:00–10:30                          | <p><b>P12: Automatic simulation model generation based on PLC code and MES stored data</b><br/>G. Popovics, A. Pfeiffer, B. Kádár, Z. Vén, L. Kemeny, L. Monostori</p> <p><b>P31: Simulation Methods for Changeable Manufacturing</b><br/>A. Seleim, A. Azab, T. AlGeddawy</p> <p><b>P41: Development of PSS Design Support System: Knowledge-based Design Support and Qualitative Evaluation</b><br/>F. Akasaka, Y. Nemoto, R. Chiba, Y. Shimomura</p> | <p><b>P06: Analysis of Machine Influence on Process Stability in Sheet-Bulk Metal Forming</b><br/>B.A. Behrens, R. Krimm, T. Matthias, V. Salfeld</p> <p><b>P63: Effect of Cutting Conditions on Machinability of Superalloy Inconel 718 during High Speed Turning with Coated and Uncoated PCBN Tools</b><br/>V. Bushlya, J. Zhou, J.E. Staehl</p> <p><b>P78: Reliable Copper Spot Welding with IR Laser Radiation through Short Prepulsing</b><br/>A. Moalem, P. von Witzendorff, U. Stute, L. Overmeyer</p> | <p><b>P08: Implementation of a comprehensive production planning approach in special purpose vehicle production</b><br/>S. Auer, W. Mayrhofer, W. Sihm</p> <p><b>P87: User friendly framework for measuring product and process novelty in the early stages of product development</b><br/>G. Ringen, H. Holtskog, K. Martinsen</p> <p><b>P44: Strategic planning of global changeable production networks</b><br/>G. Lanza, R. Moser</p> | <p><b>P33: Robot Path and End-effector Orientation Planning using Augmented Reality</b><br/>H.C. Fang, S.K. Ong, A.Y.C. Nee</p> <p><b>P62: Evaluating changeability corridors for sustainable business resilience</b><br/>T. Bauernhansl, J. Mandel, S. Diermann</p> <p><b>P79: Gathering alternative solutions for new requirements in manufacturing company: Collaborative Process with Data Visualization and Interaction Support</b><br/>S. Sadeghi, C. Masclet, F. Noel</p> |

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| 10:30–11:00 | <b>Coffee Break</b>  |   |   |   |
|             | <b>Session A5</b>  | <b>Session B5</b>   | <b>Session C5</b>   | <b>Session D5</b>   |
|             | <p><b>P98: Matching Demand and System Structure in Reconfigurable Assembly Systems</b><br/>D. Gyulai, Z. Vén, A. Pfeiffer, J. Váncza, L. Monostori</p>                               | <p><b>P57: Preliminary Study on Chemical Figuring and Finishing of Sintered SiC Substrate Using Atmospheric Pressure Plasma</b><br/>K. Yamamura, Y. Yamamoto, H. Deng</p> | <p><b>P50: Design and planning of decentralized production networks under high product variety demand</b><br/>D. Mourtzis, M. Doukas, F. Psarommatis</p>  | <p><b>P106: Optimal Design of Machine Tool Bed by Load Bearing Topology Identification with Weight Distribution Criterion</b><br/>B.T. Li, J. Hong, Z.L. Wang, W.W. Wu, Y.B. Chen</p> |
| 11:00–12:30 | <p><b>P67: Testing Complexity Index - A Method for Measuring Perceived Production Complexity</b><br/>S. Mattsson, P. Gullander, U. Harlin, G. Bäckstrand, Å. Fasth, A. Davidsson</p> | <p><b>P104: Forming Process Integrated Induction Brazing</b><br/>J. Avemann, R. Willy, G. Zhao, P. Groche</p>   | <p><b>P65: An evolutionary approach for global production network optimization</b><br/>G. Schuh, T. Potente, D. Kupke, R. Varandani, C. Hausberg</p>  | <p><b>P13: A Cost Model for Determining an Optimal Automation Level in Discrete Batch Manufacturing</b><br/>J.E. Staehl, P. Gabrielson, C. Stael, C. Andersson</p>                    |
|             | <p><b>P39: Structural Complexity Assessment: A Design and Management Tool for Supply Chain Optimization</b><br/>V. Modrák, P. Semanco</p>  | <p><b>P80: Investigation of the material removal efficiency during Femtosecond Laser machining</b><br/>P. Stavropoulos, K. Efthymiou, G. Chryssolouris</p>                | <p><b>P48: Computational Evaluation of Order Selection Methods in Dynamic Supply Chains</b><br/>Y. Tanimizu, B. Orita, Y. Shimizu, C. Ozawa, Y. Maeda, K. Iwamura, N. Sugimura</p>                            | <p><b>P59: Cooperating robots for reconfigurable assembly operations, review and technological challenges</b><br/>S. Makris, G. Michalos, A. Eytan, G. Chryssolouris</p>              |
| 12:30–14:00 | <b>Lunch Break</b>   |   |   |   |
|             | <b>Session A6</b>  | <b>Session B6</b>   | <b>Session C6</b>   | <b>Session D6</b>   |
|             | <p><b>P46: Intelligent management of manufacturing knowledge: Foundations, motivation scenario and roadmap</b><br/>M. Landherr, C. Constantinescu</p>                                | <p><b>P81: An Empirical Study of the Energy Consumption in Automotive Assembly</b><br/>A. Fysikopoulos, D. Anagnostakis, K. Salonitis, G. Chryssolouris</p>               | <p><b>P77: Hybrid Production Strategy between Make-to-Order and Make-to-Stock – A Case Study at a Manufacturer of Agricultural Machinery with Volatile and Seasonal Demand</b><br/>J. Koeber, G. Heinecke</p> | <p><b>P45: A function based approach on designing intelligent flexible automated manufacturing environments</b><br/>M.S. Essers, T.H.J. Vaneker</p>                                   |
| 14:00–15:30 | <p><b>P51: Software evaluation criteria for rapid factory layout planning, design and Simulation</b><br/>N. Shariatzadeh, G. Sivard, D. Chen</p>                                     | <p><b>P86: Improved tribotesting for sheet metal forming</b><br/>L. Kirkhorn, K. Frogner, M. Andersson, J.E. Staehl</p>   | <p><b>P82: Efficient Scheduling Rule for Robotic Flexible Assembly Cells Based on Fuzzy Approach</b><br/>K. Abd, K. Abhary, R. Marian</p>   | <p><b>P84: Modelling and Theoretical Analysis of Membership-type Services in Manufacturing Industries</b><br/>K. Okuda, N. Nishino, K. Ueda</p>                                       |

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|                                    | <b>P52: Product Design Leverage on the Changeability of Production Systems</b><br>G. Schuh, J. Arnoscht, M. Völker  | <b>P90: Measurement of Cutting Edge Temperature in Drilling</b><br>T. Beno, U. Hulling   | <b>P89: Real-Virtual Fusion Production Scheduling Using Social Contract-based Approach – Effectiveness of Adjusting Virtual System Size</b><br>N. Fujii, Y. Qian, T. Kaihara  | <b>P07: CAx Process Chain for Two Robots Based Incremental Sheet Metal Forming</b><br>H. Meier, J. Zhu, B. Buff, R. Laurischkat   |
| 15:30–16:00                        | <b>Coffee Break</b>   |  |   |   |
|                                    | <b>Session A7</b>   | <b>Session B7</b>  | <b>Session C7</b>   | <b>Session D7</b>   |
| 16:00–17:00                        | <b>P91: Enterprise Strategic Flexibility</b><br>A. Arafa, W.H. ElMaraghy<br><br><b>P58: Organizational Comprehension of Manufacturing Strategy – A Case Study of a SMME</b><br>N. Edh, M. Winroth, K. Säfsten                                       | <b>P85: On the investigation of the structural behavior of robots while machining</b><br>C. Doukas, J. Pandremenos, P. Stavropoulos, P. Fotinopoulos, G. Chryssolouris<br><br><b>P49: Experimental Investigation of the Plasma Arc Cutting Process</b><br>K. Salonitis, S. Vatousianos | <b>P68: From task allocation towards resource allocation when optimising assembly systems</b><br>A. Fasth, J. Provost, M. Fabian, J. Stahre, B. Lennartson<br><br><b>P74: Knowledge Management in Lean Production Systems</b><br>U. Dombrowski, T. Mielke, C. Engel   | <b>P101: Personalised Trachea Stent Designer, a Knowledge Feature</b><br>D. Ugarte, A. Izaguirre, A. Rosell<br><br><b>P38: On a Predictive Maintenance Platform for Production Systems</b><br>K. Efthymiou, N. Papakostas, D. Mourtzis, G. Chryssolouris  |
| 20:30–23:00                        | <b>Banquet and Best Paper Award</b>   |  |   |   |
| <b>Day 3: Friday, 18 May, 2012</b> |   |  |   |   |
|                                    | <b>Session A8</b>   | <b>Session B8</b>  | <b>Session C8</b>   | <b>Session D8</b>   |
| 08:30–10:30                        | <b>P64: A Case for Assisting ‘Product Family’ Manufacturing System Designers</b><br>E. Francalanza, J.C. Borg, C. Constantinescu<br><br><b>P66: A holistic view on design and development of manufacturing systems</b><br>H. Nylund, P.H. Andersson | <b>P83: Process Simulation Method for Product-Service Systems Design</b><br>K. Kimita, T. Tateyama, Y. Shimomura<br><br><b>P96: Social aspects of Process Monitoring in Manufacturing Systems</b><br>K. Martinsen, H. Holtskog, C.E. Larsson   | <b>P105: Exploring effects of sequencing modes towards logistics target achievement on the example of steel production</b><br>K. Windt, P. Nyhuis, O. Herr<br><br><b>P20: Agent Oriented Construction of A Digital Factory for Validation of A Production Scenario</b><br>M. Matsuda, K. Kashiwase, Y. Sudo | <b>P92: The integrated use of enterprise and system dynamics modelling techniques in Manufacturing Enterprises</b><br>K. Agyapong-Kodua, A. Marzano, S. Ratchev<br><br><b>P30: A Function Block Enabled Robotic Assembly Planning and Control System with Enhanced Adaptability</b><br>L. Wang, M. Givehchi, B. Schmidt, G. Adamson |

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|             | <p><b>P70: Methodology for the assessment of changeability of production systems based on ERP data</b><br/>G. Schuh, T. Potente, S. Fuchs, C. Hausberg</p> <p><b>P109: Manufacturing Complexity Review Challenges and Outlook</b><br/>K. Efthymiou, A. Pagoropoulos, N. Papakostas, D. Mourtzis, G. Chryssolouris</p>          | <p><b>P99: Collaborative Digital Data Management for Design and Production</b><br/>B.E. Biçici, C. Cangelir</p> <p><b>P05: 3D Nesting of Complex Shaped Objects</b><br/>D. Lutters, D.C. ten Dam, T. Faneker</p> | <p><b>P100: Manufacturing Execution Through e-FACTORY System</b><br/>A. Köksal, E. Tekin</p> <p><b>P10: Integral Analysis of Labor Productivity</b><br/>T. Czumanski, H. Loedding</p>  | <p><b>P95: Bionic Based Energy Efficient Machine Tool Design</b><br/>R. Neugebauer, M. Wabner, S. Ihlenfeldt, U. Friess, F. Schneider</p> <p><b>P94: Virtual Ergonomics and Time Optimization of a Railway Coach Assembly Line</b><br/>A. Marzano, K. Agyapong-Kodua, S. Ratchev</p>  |
| 10:30–11:00 | <b>Coffee Break</b>  |  |  |   |
|             | <b>Session A9</b>  | <b>Session B9</b>  | <b>Session C9</b>  | <b>Session D9</b>   |
| 11:00–12:30 | <p><b>P69: Method for Multi-Scale Modelling and Simulation of Assembly Systems</b><br/>M. Neumann, C. Constantinescu, E. Westkaemper</p> <p><b>P72: Intelligent Utilisation of Digital Databases for Assembly Time Determination in Early Phases of Product Emergence</b><br/>O. Erohin, P. Kuhlant, J. Schallow, J. Deuse</p> | <p><b>P107: Designing for Additive Manufacturing</b><br/>B. Vayre, F. Vignat, F. Villeneuve</p> <p><b>P76: Design Architectures in Biology</b><br/>J. Pandremenos, E. Vasiliadis, G. Chryssolouris</p>           | <p><b>P103: Planning of Reconfigurations on Manufacturing Resources</b><br/>F. Karl, G. Reinhart, M.F. Zaeh</p> <p><b>P102: Model for the valuation of a technology established in a manufacturing system</b><br/>G. Schuh, J. Schubert, M. Wellensiek</p> | <p><b>P22: Improvement potentials in Swedish electronics manufacturing industry – Analysis of five case studies</b><br/>R. Sundkvist, R. Hedman, P. Almström, A. Kinnander</p> <p><b>P88: Closed Loop Engineering – A relational model connecting activities of a product development process</b><br/>L. Krogstie, K. Martinsen</p> |
| 12:30–13:00 | <b>Closing of the 45<sup>th</sup> CIRP CMS 2012 in Plenary Session</b>   |  |  |   |
| 13:00–14:00 | <b>Quick Lunch</b>   |  |  |   |