

International Conference on Sustainable Design and Manufacturing,

Cardiff, 28-30 April 2014

Provisional Conference Programme

Monday 28 April 2014 Afternoon

13:00 – 16:00 Industrial visits to Tata and Renishaw, departure from Mercure Cardiff Holland House Hotel

13:00 – 16:00 Horizon 2020 Workshop, Swalec Stadium Cardiff

18:00 – 19:30 Registration, Committee Rooms Glamorgan Building, Cathays Park

19:00 – 20:00 Welcome Reception, Committee Rooms Glamorgan Building, Cathays Park

All plenary and parallel sessions will be held at the Mercure Cardiff Holland House Hotel.

Tuesday 29 April 2014 Morning

07:45 – 08:30 Registration

08:30 – 9:00 Caernarfon Suite

Welcome Professor Karen Holford, Pro Vice-Chancellor College of Physical Sciences, Cardiff University

09:00 – 10:00 Caernarfon Suite

Plenary Session 1. Chair: Professor Karen Holford, Cardiff University

Keynote 1. Open Innovation in the Real World, How it Works in Practice, Rob Rolley, Director of Research and Development at General Dynamics UK

Parallel Sessions

10:30 – 12:30 Caernarfon Suite

G01 Sustainable Products and Processes, Chair: Dr David Bould, Swansea University

SDM14-068 CFD Based Design and Analysis of Micro-Structured Surfaces with Application to Drag and Noise Reduction, Chen, Cheng, Ding, Zhao

SDM14-048 GE Jet Engine Bracket Challenge: A Case Study in Sustainable Design, Morgan, Bould, Gil, Levatti, Sienz

SDM14-053 Is There a Relationship Between Product Shape Complexity and Energy Consumption in EBM? Baumers, Ashcroft, Hague, Tuck, Wildman

SDM14-052 An Exploration of Core Misalignment, Shifting and Deflection Phenomena Through Thickness Measurements on Thin-Walled Injection Moulded Bins, Huszar, Arnold, Belblidia, Bould, Sienz

SDM14-003 Facilitating Waste Paper Recycling and Remanufacturing via a Cost Modelling Approach, Cheung, Hasan, Pachisia

SDM14-028 Crumpling Feasibility of Flexible Paper Sheets; Application to Packaging in the Food Industry, Rohmer, Merat

SDM14-038 Exploring Sustainable Design Using Image Schemas, Asikhia, Hicks, Setchi, Walters

10:30 – 12:30 Pembroke Suite

G02 Sustainable Manufacturing Systems and Enterprises, Chair: Daniel Eyers, Cardiff University

SDM14-070 Industrial Perceptions of Manufacturing Operations Simulation, Soroka, Bennett, Higgins, Prickett

SDM14-081 A Simulation Study on Improving Throughout in a Crankshaft Line Considering Limited Budget, Moon, Shin, Song, Wang

SDM14-004 Profit Sharing Method and Virtual Factory System to Decide Parts Layout in Parts Storage Racks, Yamamoto, Fukuta, Nakamura, Yamada, Yamauchi

SDM14-029 The Dimensions of Sustainability: Concepts and Strategies in the Textile and Clothing Supply Chain in Brazil, Bertotto, Pohlmann, Silva

SDM14-040 An Assessment of Sustainable Manufacturing Practices in Mauritius, Hurreeram, Callychurn, Toolsy

SDM14-069 Towards Revitalizing Welsh Manufacturing: The Role of Welsh Universities, Egbunike, Biggs

10:30 – 12:30 Caerphilly Suite

G03 Decision Support Tools for Sustainability, Chair: Dr Ying Liu, Cardiff University

SDM14-006 A Tool for Manufacturers to Find Opportunity in the Circular Economy - www.circulareconomytoolkit.org, Evans, Bocken

SDM14-079 Measures and Concept for Realizing Sustainability in Manufacturing Industry, Koho, Heilala, Tapaninaho, Torvinen

SDM14-064 A Framework for Material Flow Assessment in Manufacturing, Gould, Colwill

SDM14-065 Development of the Sustainable Design Index and Associated Algorithm for Furniture Design Based on the Materials Costing Data and Dynamics, Zhao, Cheng

SDM14-032 The Importance of Understanding the Business Context when Planning Eco-design Activities, Buckingham, Dekoninck

SDM14-033 Parallel Computing for Supporting Complex Energy Simulation and Optimisation, Petri, Jayan, Li, Rezgui, Yang, Yuce

Tuesday 29 April 2014 Afternoon

13:30 – 14:30 Caernafon Suite

Plenary Session 2. Chair: Professor Mohamed Naim, Cardiff University

Keynote 2. High Value Manufacturing Catapult - Collaborative Success, Dick Elsy, Chief Executive, High Value Manufacturing Catapult, UK

Parallel Sessions

14:30 – 16:30 Caernarfon Suite

IS04 Towards Zero-Defect Manufacturing, Chair: Dr Atanas Ivanov

SDM14-020 Knowledge Management and Knowledge Discovery for Process Improvement and Sustainable Manufacturing: a Foundry Case Study, Giannetti, Bould, Gethin, Ransing, Ransing, Sienz

SDM14-098 Manufacturing Lead-Time Reduction Towards Zero Defect Manufacturing, Jaff, Ivanov

SDM14-072 Adaptive Process Control Strategy for a Two-Step Bending Process, Dallinger, d'Ippolito, Havinga, Hora, Roux, van den Boogaard

SDM14-041 Effect of Degassing Electrolyte on Polarisation Curve Shape with the Aim to Apply Knowledge to Electrochemical Machining, Leese, Ivanov

SDM14-062 Tool Wear Monitoring and Prediction for a Medical Application in Micro Milling Process; PART I: Experimental Analysis and Characterization of Tool Wear for a Titanium Materials, Barceló, Georgiadis, Guimarães, Wagner

SDM14-044 Error Detection and Correction Methodology for Laser Milling Processes on Biocompatible Ceramic Materials, Llanos, Agirre, Urreta

SDM14-058 KNOWNET Framework- Architecture of a Social Supplier Network, Grant, Zlatanov

SDM14-056 A Generic System Architecture for Simulation Based Intelligent Multi-Stage Multi-Process Machining System to Achieve Zero-Defect Manufacturing Arif, Akten, Bufardi, Nenad, Perez, Xirouchakis

14:30 – 16:30 Pembroke Suite

IS13: Knowledge Management & the Learning Organisation, Chair: Dr Susan Grant

SDM14-061 Open Innovation Models for Knowledge Driven Food and Packaging Manufacturing, Makatsoris, Baurley, Feng Qin, Green, Rodden, Tsimiklis

SDM14-102 An Overview of Social Network Analysis and Knowledge Networks, Mula, Capó, Capó-Vicedo, Grant

SDM14-090 Social Network Software in Enterprise Supply Chains, Zlatanov, Grant

SDM14-013 Knowledge Management and the Development of Maritime Research Institutes, Lirn, Huang, Shang

SDM14-104 The Use of Virtual Environments for Knowledge Sharing in Education and Industry, Gustafson-Pearce, Grant

SDM14-118 The Impact of Saudi Arabia's Culture on Employee Knowledge Sharing, and Motivational Rewards within the Public and Private Sectors: the Case of Saudi Arabian Airlines, Alsharif

SDM14-063 Barriers to Community of Practices Among Design Engineers, Zaglago, Chapman, Hanifa

14:30 – 16:30 Caerphilly Suite

IS03 Sustainability metrics for complex industrial problems, Chairs: Dr Luisa Huatucó, Prof. Jairo Montoya-Torres and Prof. Angel Juan

SDM14-087 Green logistics: Reducing Air Pollutant Emissions by using Horizontal Cooperation in Road Transportation, Juan, Faulin, Perez-Bernabeu, Belloso, Barrios

SDM14-084 Natural Disasters: Opportunity Utilization and Crisis Alleviation within a Development of Strategic Management Model, Aiemwongnukul

SDM14-022 A Literature Review of Disruption and Sustainability in Supply Chains, ShakirUllah, Huaccho Huatuco, Burgess

SDM14-082 The Resilience Assessment of Supply Networks: A Case Study from the Indonesian Fertilizer Industry, Utami, Holt, McKay

SDM14-002 Sensitivity Analysis of an Eco-design House of Quality Model, Romli, Prickett, Setchi, Soe

SDM14-083 A Binary Particle Swarm Optimization (BPSO) Algorithm to Solve a Reverse Logistics Supply Chain Problem, Santibanez-Gonzalez, Montoya-Torres, Huaccho Huatuco

Tuesday 29 April 2014 Late Afternoon

Parallel Sessions

16:45 – 18:30 Caernarfon Suite

IS10 Eco- friendly and efficient Laser technologies for factories of the future, Chair: Dr. Samuel Bigot and

IS02 Sustainability and Intelligence in Engineering Ecosystems. Chair: Professor Kari Koskinen

SDM14-116 Laser Texturing of Imprinting Dies Using Nanosecond Pulses. Applications for Automotive Industry, Quintana, Matthews, Rodriguez

SDM14-120 Factors Influencing Laser Material Removal Process in Micro Cavity Manufacturing, Petkov

SDM14-097 Laser Transmission Welding of Polymers and Ceramics Demonstrated on PMMA and LTCC, Robert, Besser, Pfleging, Seifert, Torge

SDM14-077 Investigations on Repetition Rate and Laser Wavelength for Efficient Generation of Black Silicon Solar Cells, Schütz, Koch, Overmeyer, Suttman

SDM14-121 Engineering Intelligence Ecosystem Concept, Lanz, Aaltonen, Koskinen, Nykänen, Ranta

SDM14-093 Automatic Software Adaptation After Reconfiguring an Autonomous Manufacturing Systems, Telgen, Bakker, Meyer, Puik, van den Brink, van Moergestel

SDM14-099 Multidisciplinary Design of Power Inverter: Case Study, Siivo, Jortikka, Lohtander, Montonen, Paajanen, Varis

16:45 – 18:30 Pembroke Suite

IS08: Sustainable and Efficient Products and Processes, Chair: Ana Campos, Sebastian Scholze

SDM14-100 Platform Using Contextualized Energy Consumption Data to Provide Energy-Efficiency Related Decision Support for Manufacturing Industry, Große Hovest, Wolff, Nagorny, Nauber, Krone

SDM14-103 Eco Process Engineering System for Highly Customized Industrial Products, Processes and Services, Scholze, Grama, Kotte

SDM14-113 Product Concept Manufacturability and Sustainability Assessment with Eco Process Engineering System, Heilala, Ruusu, Montonen, Vatanen, Bermell-Garcia, Kavka

SDM14-114 The Use of Agile Practices and Semantic Enhanced SOA to Accelerate Innovation in Manufacturing SMEs, Elorriaga, García, López, Urosevic, Kotte, Reimer

SDM14-117 Context-Based Decision Support for Sustainable Optimization of Energy Consumption, Marques, Sucic, Vuk

SDM14-115 Self-Learning Production Systems: A New Production Paradigm, Di Orio, Cândido, Barata

16:45 – 18:30 Caerphilly Suite

IS12: Innovative Production Design, Chairs: Venus Lun, Prof Mohamed Naim

SDM14-018 The Role of Innovative Management on Firm Performance, Lun, Mohammed

SDM14-089 Exploring Environmental New Product Development through the Three Dimensional Concurrent Engineering Approach, Mombeshora, Cayzer, Dekoninck

SDM14-096 A Typology for the Management of Engineering Activities Based on the Decoupling Point Concept, Gosling, Hewlett, Naim

SDM14-105 Typology for Planning and Control? Combining Object Type, Mode Type, and Driver Type, Wikner, Noroozi

Conference dinner, 19:00 Custom House Penarth Marina

Wednesday 30 April 2014 Morning

09:00 – 10:00 Caernarfon Suite

Plenary Session 3. Chair: Professor Adrian Porch, Cardiff University

Keynote 3. Short-Termism... the Cancer of Sustainability? Geoff McFarland, Group Engineering Director, Renishaw plc, UK 09:00 Caernarfon Suite

Parallel Sessions

10:30 – 12:30 Caernarfon Suite

G01 Sustainable Products and Processes, Chair: Dr David Bould, Swansea University (Cont.)

SDM14-021 Potential for Waste Reduction When Planing Wood, Axelsson, Fredriksson

SDM14-067 The Cork Vault Pavilion. The Design and Manufacturing of a Sustainable Construction, de Azambuja Varela, Paio, Sousa

SDM14-026 An Ultrasonic Piezoelectric Micro Power Generator for Public and Industrial Buildings Application, Daniel, Dr Mahmoud, Moglo

SDM14-047 Towards an Optimization Calculation for Preventative and Reactive Calibration Strategies, Shagluf, Fletcher, Longstaff, Parkinson

SDM14-042 An Integrated Approach in Designing Modularity for End-of-Life Vehicle Recovery, Johari, Abd Wahab, Ramli

SDM14-030 A Brief Overview on Product Design and Reuse: Concepts and Possibilities, Piccoli, Brandi, Pohlmann

SDM14-035 Investigating the Energy Consumption of Casting Process by Multiple Life Cycle Method, Zeng, Jolly, Salonitis

10:30 – 12:30 Pembroke Suite

IS06: Computational Modelling for Sustainable Manufacturing Processes, Chair: Dr. Mingming Tong

SDM14-037 Computational Methodology for Optimal Design of Additive Layer Manufactured Turbine Bracket, Levatti, Innocente, Morgan, Cherry, Lavery, Mehmood, Cameron, Sienz

SDM14-091 A Review of Computational Modelling of Additive Layer Manufacturing - Multi-Scale and Multi-Physics, Lavery, Brown, Sienz, Cherry, Fawzi, Belblidia

SDM14-107 An Experimental and CFD Investigation into the Mixing in a Closed System Stirred Vessel, Thompson, McBride, Wilson, Hassan, Plummer, Bould, Rolland, Lavery, Sienz

SDM14-108 A Methodology for Automated Pellet size Distribution in a Pellet Mill, James, Innocente, Cherry, Carswell, Holmes, Brown, Lavery

SDM14-110 The Development of a Sub-Atmospheric Two-Phase Thermosyphon Natural Gas Preheater using a Lumped Capacitance Model, Newton, Matallah, James, Cameron, Lavery, Sienz, Romocki

SDM14-095 Design for Reliability of Steering Power Module due to Design Consideration and Material Selection, Eckermann, Mehmood, Davies, Lavery, Brown, Sienz, Jones, Sommerfeld

10:30 – 12:30 Caerphilly Suite

G02. Sustainable Manufacturing Systems and Enterprises, Chair: Daniel Eyers, Cardiff University (Cont.)

SDM14-001 Product Change Management: Assessing the Challenges to Maintaining Design Integrity Throughout the Product Lifecycle, Morris, Halpern, Prickett, Setchi

SDM14-092 Feasibility of Using Duraform® Flex Lattice Structures and Additive Manufacturing for Optimising Bicycle Helmet Design Safety, Soe, Jones, Martin, Robinson, Theobald

SDM14-005 A Multi-Level Perspective Towards Energy Regime Transitions: A Wind Energy Diffusion Case Study, Bagherian, Lettice

SDM14-007 Eco-Efficiency Versus Eco-Effectiveness: A Case Study from the UK Exhibitions Industry, Charnley, Mills, Newton, Rowe, Tymms

SDM14-106 Challenges to Sustainable Manufacturing Resource Planning Implementation in SMEs: An exploratory Study, Marsh, Davies, Eyers, Lynch, Soroka

10:30 – 12:30 Cardiff Suite 5

IS07: Sustainable Supply Chains, Chair: Dr Anthony Soroka

SDM14-024 Case study of an Organisation Trying to Reimage its Place in the Supply Chain: Transformation Towards Industrial Sustainability, Fernando, Evans

SDM14-049 The Supply Chain as a Complex Evolving System, Lee, Barrett, Stephens

SDM14-051 Conceptualising a New Model for SSCM in the UK Defence Sector, Stephens, Barrett, Lee

SDM14-043 Green Logistics Solutions for the Route Design Problem, Molina, Eguia, Guerrero, Racero

SDM14-078 Tidal Energy Supply Chains: Do You Want to Dip Your Toe in the Water? Mason-Jones, Davies, Mason-Jones, O'Doherty, O'Doherty, Thomas

SDM14-086 Supply Chain Paradox: Green-field Architecture for Sustainable Strategy Formulation, Rowlands, Radanliev, Thomas

Wednesday 30 April 2014 Afternoon

13:30 – 14:30 Caernarfon Suite

Plenary Session 4. Chair: Professor Hans Seinz, Swansea University

Keynote 4. The Fourth Industrial Revolution, Gary Toyne, Director, Siemens Industry Software, UK

Parallel Sessions

14:30 – 16:30 Caernarfon Suite

G01 Sustainable Products and Processes, Chair: Dr David Bould, Swansea University (Cont.)

SDM14-059 Hierarchy of Sustainable Design Factors within the Fast-Moving-Consumer-Goods sector, Park, Bolton, Charnley, Evans

SDM14-073 Studying Microstructure and Crystallinity of Polypropylene in an Injection Moulded Medical Bin Lid, Mehmood, Arnold, Bould, Lavery, Pittman, Sienz

SDM14-036 Subtractive Manufacturing for Variable-Stiffness Plywood Composite Structures, Greenberg, Koerner

SDM14-057 Using NDT Techniques to Detect and Characterise the Damage of End-Of-Life Components in Remanufacturing, Ocal, Xu

SDM14-111 Seam Separation Technology to Facilitate Re-use and Recycling of Textile Products, Durham, Hewitt, Rea, Russell

SDM14-046 Numerical Modelling of a Marine Vessel Engine Room with Field Measurements, Newton, Bould, Evans, Lavery, Lewis, Sienz

SDM14-010 Aerosol Cans Under Pressure and Buckling Loads, Belblidia, Bould, Croft, Hardy, Sienz

14:30 -16:30 Pembroke Suite

G03 Decision Support Tools for Sustainability, Chair: Dr Ying Liu, Cardiff University (Cont.)

SDM14-012 Using the Value Mapping Tool for Sustainable Business Thinking, Bocken, Rana, Short

SDM14-088 A Framework for Multi-Criteria Decision Support in Sustainable Through-Life Management of Industrial Assets, Niekamp, Bharadwaj, Chryssanthopoulos, Sadhukhan

SDM14-009 An Integrated Assessment Platform for Sustainability Performance in Value Networks: a Proposal and First Evidence from Industry, Holgado, Beer, Liyanage, Macchi

SDM14-023 Understanding Eco-Efficiency Through Environmental Performance Benchmarking - a Qualitative Approach, Litos, Evans

SDM14-017 Life Cycle Assessment for Eco-Packaging Design: a Hybrid Multi-Criteria Decision Analysis Approach, Wang, White

SDM14-066 Identification of Parameters for Environmental Impact Assessment of Product Packaging, Singh, Kumar, Rao

14:30 – 16:30 Caerphilly Suite

IS06: Computational Modelling for Sustainable Manufacturing Processes, Chairs: Dr Mingming Tong and Dr Nicholas Lavery (Cont.) and IS09: Sustainable Machining Technologies and Applications, Chair: Weidong Li

SDM14-109 Suitability of Multi-Layer Perceptron Neural Network Model for the Prediction of Roll Forces and Motor Powers in Industrial Hot Rolling of High Strength Steels, James, Gater, Lavery, Sienz

SDM14-094 Influences of a High Frequency Induction Current on the Uniformity of the Magnetic Field in an Electromagnetic Casting Mould, Zhang, Cameron, Sienz

SDM14-076 Development of an Innovative ERWC Approach to Sustainable Manufacturing with Application to Design of an Energy-Resource Efficient CNC Centreless Grinding, Ding, Cheng

SDM14-011 A Carbon Efficiency Method to Evaluate the Environmental Burden of a Workshop Based on Energy Footprint and Carbon Footprint, Zhang, Gu, Jiang, Li, Zhang

SDM14-019 A Systematic Review on Industrial Wireless Sensor Networks, Lu, Li

16:30 – 17:00

Awards and Closing