

Australia (AEDT)	India (IST)	Europe (CET)	USA (EST)	Hawa Mahal			
21:30				05:30			
				Arrival			
21:45				05:45			
				Opening Ceremony			
22:30				06:30			
				Keynote by Stephan Krinke & Sanjay Khare (Volkswagen) "Sustainability Strategy of Volkswagen Group and Decarbonisation" & "Sustainability Strategy Region India"			
23:10				07:10			
				Break			
Room				Amber Palace	Jai Mahal	City Palace	Jantar Mantar
23:15 - 00:15	17:45 - 18:45	13:15 - 14:15	07:15 - 08:15	Life Cycle Assessment - 1	Sustainability in Manufacturing - 1	Eco-Design	Digitalisation and Life Cycle Engineering - 1
Session Chair				Michael Zwicky Hauschild	Monica Sharma	Daniel Brissaud	Yasushi Umeda
23:15	17:45	13:15	07:15	Chinmaya Kumar Mahapatra: Influence of mechanical properties and CO2 emissions on the optimization of self-compacting based hybrid fiber reinforced concrete	Sepideh Moshrefi: Eco-efficiency limits of product technologies towards achieving science-based targets	Kazuki Kaneko: Conducting Personalization Design Workshops: Designing Personalization Procedures	Nicolas von Drachenfels: Scale-up of pilot line battery cell manufacturing models for Life Cycle Assessment
23:27	17:57	13:27	07:27	Babak Kianian: Analyzing the Environmental Consequences of Production Processes From a System of Systems Perspective: A Case of Gear Manufacturing in the Automotive Industry	Cadence Hsien: Self-Assessment and Improvement Tool for a Sustainability Excellence Framework in Singapore	Katsuhiko Saiga: A Sustainable Reverse Engineering Process	Rik Rasor: Towards collaborative lifecycle specification of digital twins in manufacturing value chains
23:39	18:09	13:39	07:39	Smita Raghuvanshi: Environmental impact of recycling spent lithium-ion batteries	Sota Onozuka: Quantitative Assessment Method for Supporting Scenario Workshops toward Sustainable Consumption and Production	Hiroyuki Hiraoka: Assembly model of mechanical products for their life cycle simulation	Thomas Groetsch: A modular LCA/LCC-modelling concept for evaluating material and process innovations in carbon fibre manufacturing
23:51	18:21	13:51	07:51	Walid Ijassi: Environmental Impact Allocation of Agri-food Co-products	Gajanand Gupta: Development of a Model for Total Productive Maintenance Barriers to Enhance the Life Cycle of Productive Equipment	Q&A	Shahjadi Hisan Farjana: Integrated LCA-MFA Framework for Gold Production from Primary and Secondary Sources
00:03	18:33	14:03	08:03	Q&A	Q&A	Q&A	Q&A
00:15	18:45	14:15	08:15	Break			
Room				Hawa Mahal			
00:20				08:20			
				Keynote by Anandi Iyer (Fraunhofer Office India) "The Changing Paradigm in the Innovation Ecosystems in India"			
00:50				08:50			
				Break			
Room				Amber Palace	Jai Mahal	City Palace	Jantar Mantar
00:55 - 01:55	19:25 - 20:25	14:55 - 15:55	08:55 - 09:55	Life Cycle Assessment - 2	Sustainability in Manufacturing - 2	Additive Manufacturing - 1	Digitalisation and Life Cycle Engineering - 2
Session Chair				Fu Zhao	Joost Dufflou	Mamilla Ravi Sankar	Vinay Chamola
00:55	19:25	14:55	08:55	Vikrant Bhakar: Analyzing the Environmental Burden of an Aquaponics System using LCA	Kuldip Singh Sangwan: Tallying the three dimensions of sustainability related to disposable clay cups	Gonçalo Cardeal: Additive manufacturing in the process industry: A process-based cost model to study life cycle cost and the viability of additive manufacturing spare parts	Fahmi Bellalouna: Case Study for an Operation-based Topology Optimization Using the Digital Twin Approach
01:07	19:37	15:07	09:07	Selin Erkiel-Arici: A Comparative LCA of Sorting, Collection and Transport Scenarios and Their Sensitivity to the Regional Variations	Abhijeet Digalwar: Evaluation of Factors for Sustainable Manufacturing of Electric Vehicles in India	Rajeev Agrawal: Environmental impacts assessment during sand casting of Aluminium LM04 product: A case of Indian additive manufacturing industry	William Z. Bernstein: Quantifying Life Cycle Inventories for Machining Processes at Detailed Design
01:19	19:49	15:19	09:19	Damien Evrad: Comparison of the environmental impacts of online and classical conferences: the case of LCE 2020 and perspectives regarding the planetary boundaries	Rajesh Mishra: Business Sustainability in Post COVID-19 Era by Integrated LSS-AM Model in Manufacturing: A Structural Equation Modeling	Rishi Kumar: Development of a Decision Support System for 3D Printing Process based on Cyber Physical Production System	Shinsuke Kondoh: Adaptive decision-making method of life cycle options by using process data collected over multiple life cycle stages
01:31	20:01	15:31	09:31	Suyash Garg: Sustainability assessment of methods to prevent progressive collapse of RC flat slab buildings	Q&A	Mathias Wiese: Modeling energy and resource efficiency in direct manufacturing with multi jet fusion (MJF) and selective laser sintering (SLS)	Maximilian Rolinck: A concept to implement Blockchain-Based LCA in the context of Aircraft MRO
01:43	20:13	15:43	09:43	Q&A	Q&A	Q&A	Q&A
01:55	20:25	15:55	09:55	Break			
Room				Amber Palace	Jai Mahal	City Palace	Jantar Mantar
02:00 - 03:00	20:30 - 21:30	16:00 - 17:00	10:00 - 11:00	Life Cycle Assessment - 3	Sustainability in Manufacturing - 3	Additive Manufacturing - 2	Digitalisation and Life Cycle Engineering - 3
Session Chair				Chris Yuan	Jaiprakash Bhamu	Tim Abraham	Felipe Cerdas
02:00	20:30	16:00	10:00	Johanna Hagen: Framework for the Life Cycle Assessment of non-permanent process units in volatile chemical recycling process chains	Rajesh Mishra: Sustainable Production System Critical Success Factors: an Interpretive Structural Modelling approach	Alessio Vita: Environmental and buckling performance analysis of 3D printed composite isogrid structures	Satyendra Kumar Sharma: Modelling Supply Chain Agility Antecedents Using Fuzzy DEMATEL
02:12	20:42	16:12	10:12	Claudio Favi: LCA of laser surface activation and traditional pre-treatments for adhesive bonding of engineering polymers	Manish Kumar: Towards an interdisciplinary framework for effective sustainability assessment in manufacturing	Kira Kristin Wehner: Reducing Lifecycle Costs due to Profile Scanning of the Powder Bed in Metal Printing	Antal Der: Factory life cycle evaluation through integrated analysis of factory elements
02:24	20:54	16:24	10:24	Q&A	Matthias Rapp: Inversible entropy to account for environmental impacts and sustainability	Svenja Ehmsen: Process Chain Analysis of Direct Energy Deposition: Energy flows and their influencing factors	Giácomo Parolin: A tool for aircraft eco-design based on streamlined Life Cycle Assessment and Uncertainty Analysis
02:36	21:06	16:36	10:36	Q&A	Q&A	Dennis Ochs: Sustainable Aspects of a Metal Printing Process Chain with Laser Powder Bed Fusion (LPBF)	Nikolas Dilger: Definition and Reference Framework for Life Cycle Technologies in Life Cycle Engineering - a Case Study on All Solid State Batteries
02:48	21:18	16:48	10:48	Q&A	Q&A	Q&A	Q&A

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21:30	16:00	11:30	05:30	Arrival			
22:00	16:30	12:00	06:00	Keynote by Prabodha Acharya "Sustainability approach and initiatives at JSW"			
22:30	17:00	12:30	06:30	Break			
Room				Amber Palace	Jal Mahal	City Palace	Jantar Mantar
22:35 - 23:35	17:05 - 18:05	12:35 - 13:35	06:35 - 07:35	Life Cycle Assessment - 4	Sector Coupling and Industrial Symbiosis	Energy Efficiency and Flexibility in Manufacturing - 1	Digitalisation and Life Cycle Engineering - 4
Session Chair				Stefan Salhofer	Sami Kara	Wen Li	Tomohiko Sakao
22:35	17:05	12:35	06:35	Núria Boix Rodríguez: Environmental implication of personal protection equipment in the pandemic era: LCA comparison of face masks typologies	Erika Pierri: Enhancing Energy Flexibility through the Integration of Variable Renewable Energy in the Process Industry	Jacob Wessel: Integrated Material-Energy-Quality Assessment for Lithium-ion Battery Cell Manufacturing	Johannes Mayer: A concept for low-emission production using Distributed Ledger Technology
22:47	17:17	12:47	06:47	Alexander Barke: Life cycle sustainability assessment of potential battery systems for electric-powered aircraft	Damien Evrard: Proposal for a procedure to design multipurpose urban factories	Shanmuka Srinivas: Sustainable Machining of Cf/SiC Ceramic Matrix Composite using Green Cutting Fluids	Christian Ortmeier: Framework for the integration of Process Mining into Life Cycle Assessment
22:59	17:29	12:59	06:59	Di He: Primary Energy Demand and Greenhouse Gas Emissions of vehicle lightweighting with recycled carbon fibre	Michael Hertwig: Symbiotic loss-free industrial production in ultra-efficient urban industrial parks	Yiming Wang: Environmental Impact Minimization via Production Planning for Aluminum Billet Molding Process	Sebastian Lawrenz: A Life Cycle Oriented Data-driven Architecture for an Advanced Circular Economy
23:11	17:41	13:11	07:11	Timm Grünebaum: Life cycle assessment for milling of Ti- and Ni-based alloy aero engine components	Christoph Imdahl: Potentials of Hydrogen Technologies for Sustainable Factory Systems	Hailham Alswat: The International Dimension of Electrical Energy Derived Emissions for Machine Tools	Moritz Glatt: Edge-based Digital Twin to trace and ensure sustainability in cross-company production networks
23:23	17:53	13:23	07:23	Q&A	Q&A	Q&A	Q&A
23:35	18:05	13:35	07:35	Break			
Room				Amber Palace	Jal Mahal	City Palace	Jantar Mantar
23:40 - 00:40	18:10 - 19:10	13:40 - 14:40	07:40 - 08:40	Circular Economy - 1	Industry 4.0 - 1	Energy Efficiency and Flexibility in Manufacturing - 2	Digitalisation and Life Cycle Engineering - 5
Session chair				Eric Sundin	Stefan Blume	Julian Praß	Steven Skerlos
23:40	18:10	13:40	07:40	Jayakrishna Kandasamy: A framework to assess circularity across product-life cycle stages - A case study	Johannes Sossenheimer: Hybrid virtual energy metering points - a low-cost, near real-time energy monitoring approach for production machines without PLC data connection	Girish Kant Garg: Modelling of Variable Energy Consumption for CNC Machine Tools	Akshay Patidar: Prioritizing drivers to creating traceability in the food supply chain
23:52	18:22	13:52	07:52	Johan Vogt Duberg: Assessing an EEE manufacturer's economic benefit with remanufacturing	Dhiraj Sangwan: Development of a Machine Learning based model for Damage Detection, Localization and Quantification to extend Structure Life	Navneel Khanna: Energy Consumption and Lifecycle Assessment Comparison of Cutting Fluids for Drilling Titanium Alloy	Jerome Kaspar: GreenTrail - A Sustainable Mobility Concept Advisor (SMCA) Tool
00:04	18:34	14:04	08:04	Jelena Kurilova-Palisaitiene: On Remanufacturing Readiness Level - An introduction to a RemometerTM	Fahmi Bellalouna: The Augmented Reality Technology as Enabler for the Digitization of Industrial Business Processes: Case Studies	Marcus Vogt: Model-based energy analysis of a dry room HVAC system in battery cell production	Tomohiko Sakao: AI-LCE: Adaptive and Intelligent Life Cycle Engineering by applying digitalization and AI methods - An emerging paradigm shift in Life Cycle Engineering
00:16	18:46	14:16	08:16	Mohammad Abdelbaky: Comparing the environmental performance of industrial recycling routes for lithium nickel-cobalt-manganese oxide 111 vehicle batteries	Rishi Kumar: A Machine Vision-based Cyber-Physical Production System for Energy Efficiency and Enhanced Teaching-Learning Using a Learning Factory	Vincenzo Lunetta: A comparative LCA method for environmentally friendly manufacturing: Additive manufacturing versus Machining case	Q&A
00:28	18:58	14:28	08:28	Q&A	Q&A	Q&A	Q&A
Room				Hawa Mahal			
00:40	19:10	14:40	08:40	Yoga Break			
01:00	19:30	15:00	09:00	Keynote by Sebastian Thiede "Digital technologies, methods and tools towards sustainable manufacturing: does Industry 4.0 support to reach environmental targets?"			
01:30	20:00	15:30	09:30	Break			
Room				Amber Palace	Jal Mahal	City Palace	Jantar Mantar
01:35 - 02:35	20:05 - 21:05	15:35 - 16:35	09:35 - 10:35	Circular Economy - 2	Industry 4.0 - 2	Energy Efficiency and Flexibility in Manufacturing - 3	Recycling 4.0 - 1
Session Chair				Wim Dewulf	Lihui Wang	John Sutherland	Thomas Spengler
01:35	20:05	15:35	09:35	Jayakrishna Kandasamy: Application of multi grade fuzzy approach to compute the circularity index of manufacturing organizations	Theresa Riedelsheimer: Methodology to develop Digital Twins for energy efficient customizable IoT-Products	Xiaoyu Zhou: Techno-economic Assessment of a Novel SmCo Permanent Magnet Manufacturing Method	Marco Spallini: A quantitative framework for Industry 4.0 enabled Circular Economy
01:47	20:17	15:47	09:47	Atul Singh: E-waste Management for Environmental Sustainability: an Exploratory Study	Ilesanmi Daniyan: Artificial intelligence system for enhancing product's performance during its life cycle in a railcar industry	Sundeep Kumar: Developing a sustainability framework for Industry 4.0	Serkan Mutlu: A memetic algorithm for mixed-model two-sided disassembly line balancing problem
01:59	20:29	15:59	09:59	Christian Scheller: Effects of CO2-Penalty Costs on the Production and Recycling Planning of Lithium-Ion Batteries	Tomoaki Hiruta: Unsupervised Learning Based Diagnosis Model for Anomaly Detection of Motor Bearing with Current Data	Tufan Bera: Modelling of Energy Consumption for Milling of Circular Geometry	Hiroshi Komoto: Library of facility models for structural and graphical definition of recycling system simulation considering information flows
02:11	20:41	16:11	10:11	Thomas Maani: Potential for Nd and Dy Recovery from End-of-Life Products to Meet Future Electric Vehicle Demand in the U.S.	Benedikt Grosch: Multi-objective hybrid genetic algorithm for energy adaptive production scheduling in job shops	Daniel Gross: Energy Efficiency Assessment of Cryogenic Minimum Quantity Lubrication Cooling for Milling Operations	Jürgen Fleischer: Concepts and Requirements for Flexible Disassembly Systems for Drive Train Components of Electric Vehicles
02:23	20:53	16:23	10:23	Q&A	Q&A	Q&A	Q&A
Room				Platform: Wonder.me			
02:35	21:05	16:35	10:35	Social Event			

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21:30				16:00				11:30				05:30				Arrival																			
22:00				16:30				12:00				06:00				Keynote by Sami Kara & Michael Hauschild "Operationalisation of Life Cycle Engineering Towards Absolute Sustainability"																			
22:30				17:00				12:30				06:30				Break																			
Room				Amber Palace				Jal Mahal				City Palace				Jantar Mantar																			
22:35 - 23:35				17:05 - 18:05				12:35 - 13:35				06:35 - 07:35				Circular Economy - 3				Biologicalisation				Energy Efficiency and Flexibility in Manufacturing - 4				Recycling 4.0 - 2							
Session Chair				Christoph Herrmann				Smita Raghuvanshi				Gisela Lanza				Mark Mennenga																			
22:35				17:05				12:35				06:35				Vi Kle Soo: The Effects of Technological Changes on Material Circularity				Sam Brooks: Complexity of self-engineering systems across the life cycle - Biological and engineering systems				Thomas Kohne: Method for continuous evaluation of industrial heating network emissions				Gwendolyn Foo: Screw detection for disassembly of electronic waste using reasoning and re-training of a deep learning model							
22:47				17:17				12:47				06:47				Magnus Schulz: Exploration of decision contexts for Circular Economy in automotive industry				Mart Wilcox: Integrating bio-inspiration in ecodesign				Leon Reuter: Measures for Energy-Efficient Process Chains				Sebastian Blankemeyer: Investigation of the potential for an automated disassembly process of BEV batteries							
22:59				17:29				12:59				06:59				Benjamin Heinbach: Design of a Methodological Framework for Adaptive Remanufacturing-based Business Models				Rohit Meshram: A comparative study on environmental impact analysis of synthetic and ESR flux used for refining of steel				Astrid Weyand: Method to increase resource efficiency in production with the use of MFCA				Marian Schlüter: AI-enhanced Identification, Inspection and Sorting for Reverse Logistics in Remanufacturing							
23:11				17:41				13:11				07:11				Carsten Fölling: Adaptive Remanufacturing - Methodology towards an intelligent maintenance strategy for production resources				Rohit Meshram: Environmental impacts of brass melting: An Indian case study				Q&A				Q&A							
23:23				17:53				13:23				07:23				Q&A				Q&A				Break											
23:35				18:05				13:35				07:35				Room				Amber Palace				Jal Mahal				City Palace				Jantar Mantar			
23:40 - 00:40				18:10 - 19:10				13:40 - 14:40				07:40 - 08:40				Circular Economy - 4				Industry 4.0 - 3				Energy Efficiency and Flexibility in Manufacturing - 5				Recycling 4.0 - 3							
Session Chair				Christian Thies				Sebastian Thiede				Paul Mativenga				Marco Taisch																			
23:40				18:10				13:40				07:40				Prashant Kumar: Identifying and Analyzing the Factors Affecting Disassembly of Products in Remanufacturing Organizations				Vedant Parwal: Machining Learning based Approach for Process Supervision to Predict Tool Wear during Machining				Raman Kumar: An Investigation of Energy Efficiency in Finish Turning of EN 353 Alloy Steel				Hendrik Poschmann: Fostering End-of-Life Utilization by Information-driven Robotic Disassembly							
23:52				18:22				13:52				07:52				Rajesh Mishra: Packaging Plastic Waste Management for a Circular Economy and Identifying a better Waste Collection System using Analytical Hierarchy Process (AHP)				Jaiprakash Bhamu: Analysis of Barriers to Industry 4.0 adoption in Manufacturing Organizations: an ISM Approach				Girish Kant Garg: Development of a Transient Energy Prediction Model for Machine Tools				Christian Scheller: Coordinated Planning in Closed-loop Supply Chains and its Implications on the Production and Recycling of Lithium-ion Batteries							
00:04				18:34				14:04				08:04				Michael Dielerle: Bridging product life cycle gaps in LCA & LCC towards a circular economy				Stefan Scharf: FOUNDRY 4.0: An innovative technology for sustainable and flexible process design in foundries				Eric Riedel: Industrial suitable and digitally recordable application of ultrasound for the environmentally friendly degassing of aluminium melts before tilt casting				Mathias Nippraschk: Is it all about Information? The role of the information gap between Stakeholders in the context of the circular economy							
00:16				18:46				14:16				08:16				Q&A				Benjamin Uhlig: Data-driven energy analysis of supermarkets: a multi-level approach for different stakeholders				Q&A				Q&A							
00:28				18:58				14:28				08:28				Q&A				Q&A				Break											
00:40				19:10				14:40				08:40				Room				Hawa Mahal				Closing Session											
00:45				19:15				14:45				08:45																							