

SIC: Precision Engineering for Sustainability
Glasgow Caledonian University, Scotland 2nd-3rd September 2026

Wednesday 2nd September 2026

Time (BST)	Programme
08:15 – 09:00	Registration
09:00 – 09:10	Welcome address by meeting chair: Prof. Liam Blunt, University of Huddersfield, UK
09:10 – 09:20	Welcome address from local host: Prof. Mairi Watson, Glasgow Caledonian University, UK
09:20 – 09:50	Keynote 1: Small-Scale Renewables Incorporating Wind Turbine for Sustainable Communities: Empowering Local Energy Futures <i>Professor M. Emad Farrag, Glasgow Caledonian University, UK</i>
Chair: Mahmood Anwar	Session 1: Renewable Energy Generating Machines (Part 1)
09:50 – 10:05	S1.01 Precision Laser Powder Bed Fusion (LPBF) of Plasma Facing Components in Fusion Reactors <i>Liam Blunt, University of Huddersfield, UK</i> SUS26101
10:05 – 10:20	S1.02 Charge Capacity Analysis of Battery Energy Storage Systems for a Low-Speed Vertical Axis Wind Turbine in a Rural Community <i>Richard Danyi, Glasgow Caledonian University, UK</i> SUS26108
10:20 - 10:35	S1.03 Towards Edge-AI enabled real-time onboard defect detection for Unmanned Aerial Vehicle-based wind turbine blade inspection <i>Godwin Enemalii, Glasgow Caledonian University, UK</i> SUS26112
10:35 – 10:50	Discussion
10:50 – 11:20	Coffee & Networking
11:20 – 11:35	S1.04 A two-stage SCADA-based predictive maintenance framework for wind turbines: evaluation on the CARE benchmark dataset <i>Babakalli Alkali, Glasgow Caledonian University, UK</i> SUS26113
11:35 – 11:50	S1.05 A Diagnostic Post-Processing Framework for S809 Aerofoil Aerodynamics Aiding Wind Turbine Design: Quantifying Turbulence Model Fidelity <i>Akmal Nizam Mohammed, Universiti Tun Hussein Onn Malaysia, MY</i> SUS26114

11:50 – 12:05	S1.06 Towards Efficient Recycling of Wind Turbine Blades Through Large Scale Inspection, Data Fusion and Virtual Twin Generation <i>Adam Haynes, Manufacturing Technology Centre, UK</i> SUS26119
12:05 – 12:20	Discussion
12:20 – 12:35	IOP Journal: Special Issue presentation <i>Sophie Caldwell</i>
12:35 – 13:45	Lunch & Networking
13:45 – 14:15	Keynote 2: Laser as a digital key enabling tool for electric vehicle manufacturing <i>Prof. Ali Gökhan Demir, Politecnico Di Milano, Italy</i>
Chair: Krishna Kumar Saxena	Session 2: Net Zero Manufacturing (Invited talks)
14:15 – 14:30	S2.01 Integrating manufacturing and materials characterisation for waste reduction and value add <i>Asst. Prof. Alistair Spiedel, University of Nottingham, UK</i>
14:30 – 14:45	S2.02 Challenges and Approaches in the Forming of Metallic Bipolar Plates for PEM Fuel Cells <i>Dr Tim Herrig, RWTH Aachen, Germany</i> SUS26102
14:45 – 14:55	Discussion
15:00 – 15:30	Coffee & Networking
15:30 – 15:45	S2.03 Towards carbon and environmental performance evaluation of multiphysical manufacturing processes: Insights from hybrid laser-ECM as a use-case <i>Dr. ir. Muhammad Hazak Arshad, KU Leuven, Belgium</i> SUS26107
15:45 – 16:00	S2.04 Specialising in net-zero manufacturing for heat exchangers/diffusers <i>Dr. Ali Koruk, Bosal, Belgium</i>
16:00 – 16:15	S2.05 Air-to-Ground Robotic Metrology Networks for Sustainable Manufacturing in Extreme Environments <i>Yongjia Xu, University of Huddersfield, UK</i> SUS26116
16:15 – 16:30	Discussion
16:30 – 17:30	Laboratory tours of GCU
19:00 - 22:00	Networking dinner at The Bothy restaurant

Thursday 3rd September 2026

Time (BST)	Programme
08:30 – 09:00	Keynote 3: Creating A New Standard for Rapid Swap Battery Interfaces <i>Prof. Alex Slocum, MIT, MA</i>
09:00 – 09:30	Keynote 4: The Potential of Remanufacturing for the Sustainability Transition: Developments, Challenges and Prospects <i>Prof. Tim C. McAloone, DTU, DK</i>
Chair: Liam Blunt	Session 3: Circular economy (Design for (re-)manufacturing and recycling) Part 1
09:30 – 09:45	S3.01 Sustainable Extraction of Rare Earth Elements from Coal Fly Ash <i>Georgios Toupalas, MIT, US</i> SUS26105
09:45 – 10:00	S3.02 Manufacturing of a Titanium Alloy XCT Calibration Artefact <i>Joel Keen, University of Southampton, UK</i> SUS26111
10:00 – 10:10	Discussion
10:10 – 10:40	Coffee, Networking & Poster Session
10:10 – 10:40	P1. Surface and Cutting-Edge Characterisation for the Reconditioning of Worn Carbide Drilling Tools for Sustainable Manufacturing <i>Akash Meena, Technical University Denmark, DK</i> SUS126
10:10 – 10:40	P2. Effect of wire-substrate distance on melt pool morphology in coaxial wire laser directed energy deposition for remanufacturing <i>Akash Meena, Technical University Denmark, DK</i> SUS127
10:10 – 10:40	P3. Beyond the Process: Supply Chain Sustainability in Additive Manufacturing <i>Guido Tosello, Technical University of Denmark, DK</i> SUS128
10:10 – 10:40	P4. A Cradle-to-Gate LCA of Lead Shielding Units for the FCC-ee <i>Jasmin Mandix Madsen, CERN, CH</i> SUS129
Chair: Liam Blunt	Session 3: Circular economy (Design for (re-)manufacturing and recycling) Part 2
10:40 – 10:55	S3.03 First steps toward surface metrology as an enabler of sustainable wood manufacturing <i>Sabina Rebeggiani, Halmstad University, SE</i> SUS26118

10:55 – 11:10	S3.04 Advancing Circular Production of Precision Moulded Medical Devices with Recycled Polypropylene <i>Guido Tosello, Technical University of Denmark, DK</i> SUS26122
11:10 – 11:25	S3.05 Laser-directed energy deposition as a key enabling technology for remanufacturing- An overview of capabilities, process chain and qualification challenges <i>Akash Meena, Technical University of Denmark, DK</i> SUS26125
11:25 – 11:40	Discussion
Chair: Alex Slocum	Session 4: Manufacturing machine tool efficiency (Energy efficiency) Part 1
11:40 – 11:55	S4.01 Reducing the environmental impact of titanium turning through coolant channel geometry modification <i>Jindrich Sykora, University of West Bohemia, CZ</i> SUS26103
11:55 – 12:10	S4.02 Validation of an actuated graphite tool electrode system for sustainable sinking EDM processes <i>Sergio Lezama, IWF, Technische Universität Berlin, DE</i> SUS26104
12:10 – 12:25	S4.03 Performance of porous aerostatic gas bearings in deflection compensated paper roll <i>Jesper Riihola, Aalto University, FI</i> SUS26109
12:25 – 12:40	Discussion
12:40 – 13:30	Lunch & Networking
Chair: Alex Slocum	Session 4: Manufacturing machine tool efficiency (Energy efficiency) Part 2 cont.,
13:30 – 13:45	S4.04 Sustainable EDM Finishing through Wear Compensation: A Proof-of-Concept Study on Topography Smoothing of High-Energy Craters by Low-Energy Discharges <i>Leonard Günther, IWF, Technische Universität Berlin, DE</i> SUS26110
13:45 – 14:00	S4.05 Enhancing Heat Pump Efficiency by Additive Manufacturing of Leak-Tight Thin-Walled Heat Exchanger Structures <i>Janeek Fasselt, Fraunhofer-Institute for Production Systems and Design Technology IPK, DE</i> SUS26106
14:00 – 14:10	Discussion
Chair: Mahmood Anwar	Session 5: Renewable Energy Generating Machines (Part 2)

14:10 – 14:25	S5.01 A Lightweight Secure IoT Architecture for Wind Turbine Condition Monitoring Using AES-128-CBC and HMAC-SHA256 <i>Ahmed Solyman, Glasgow Caledonian University, UK</i> SUS26123
14:25 – 14:40	S5.02 Feasibility Analysis and Experimental Evaluation of 3D-Printed Structural and Aerodynamic UAV Components <i>Juan Manuel Parrilla Gutierrez, Glasgow Caledonian University, UK</i> SUS26121
14:40 – 14:55	S5.03 A Proposed Low-Cost UAV Framework for Visual Inspection and 3D Condition Monitoring of Wind Turbine Structures <i>Ahmed Solyman, Glasgow Caledonian University, UK</i> SUS26124
14:55 – 15:10	Discussion
15:10 – 15:20	Closing remarks by Prof. Liam Blunt