

Scientific Programme

74th CIRP General Assembly

17–23 August 2025

Stockholm, Sweden



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Welcome

Dear Colleagues and Guests,

Welcome to the 74th CIRP General Assembly in Stockholm, Sweden, on 17–23 August 2025, marking the city's third time hosting after 1957 and 1972.

This distinguished annual event brings together approximately 700 experts from academia and industry in the field of production engineering. Founded in 1951 and with around 500 members worldwide, the International Academy for Production Engineering (CIRP – College International pour la Recherche en Productique) aims to address issues related to modern production science and technology through international scientific cooperation.

Stockholm has a long history, with its Old Town dating back to the 13th century. Today, Stockholm is one of the most connected cities in the world, one of the five fastest-growing cities in Europe, home of the Nobel Prize, and where innovation and creativity thrive. The city is Sweden's largest municipality and home to over 980,000 people.

The General Assembly encompasses various aspects of production engineering through its Scientific Technical Committees (STCs), ranging from design methodologies and tools to machines, production processes, lifecycle engineering and assembly, precision and metrology, surfaces, and production systems and organisations.

Join us in Stockholm, a place where people and ideas merge to create growth and prosperity. We eagerly anticipate the opportunity to meet you in Stockholm.

Lihui Wang
Chair of Swedish National Organising Committee

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CIRP Board and Council

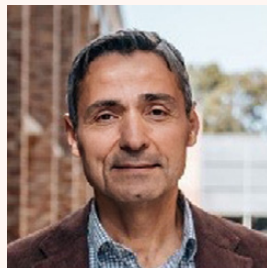
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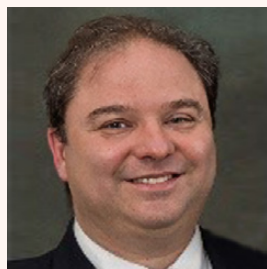
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CIRP Novel Topics	T. Tolio (Editor-in-Chief)		

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Venue Floor Plan KCC

All parallel sessions and committee meetings are held at Kista Convention Centre (KCC), unless otherwise specified.

For directions and more information about the venue, please visit the CIRP website:



cirp2025.org



Scientific Programme Part I Overview

		CIRP 2025 Programme – PART I														
Sunday, 17 Aug 2025		Monday, 18 Aug 2025				Tuesday, 19 Aug 2025					Wednesday, 20 Aug 2025					
Room →	E1	M1	M6	M7	M8	M1	M2	M6	M7	M8	M1	M2	M6	M7	M8	
08:00–08:30		Registration				Registration					Registration					
08:30–09:00												M-6	F Kn			
09:00–09:30		Opening Ceremony → [Stockholm Concert Hall]				E-5	S Kn	O-4	C-5	A-1	E-19	M-7	F-1	P Kn	Dn-1	
09:30–10:00						E-6	CMAG	O-5	C-6	A-2	E-20	M-8	F-2	P-5	Dn-2	
10:00–10:30	Board Meeting	Coffee Break				Coffee Break					Coffee Break					
10:30–11:00																
11:00–11:30																
11:30–12:00																
12:00–12:30		Bus Transportation → KCC				Lunch			Corporate Members Lunch		Lunch					
12:30–13:00		Lunch														
13:00–13:30						E-10	S-1	O-9	C Kn	A-6	G-3	M-12	F-6	P-9	Dn-6	
13:30–14:00		Membership Committees (Credentials & Nominations)	STC E Keynote → [M2]				E-11	S-2	O-10	C-10	A-7	G-4	M-13	F-7	P-10	Dn-7
14:00–14:30	STC M Keynote → [M2]				E-12	S-3	O-11	C-11	A-8	G-5	M-14	F-8	P-11	Dn-8		
14:30–15:00	STC Dn Keynote → [M2]				E-13	S-4	O-12	C-12	A-9	G-6	M-15	F-9	P-12	Dn-9		
15:00–15:30	Coffee Break				Coffee Break					Coffee Break						
15:30–16:00	E-1	O Kn	C-1	P-1											E-14	S-5
16:00–16:30	Registration	Council Meeting	E-2	O-1	C-2	P-2	E-15	S-6	M-2	C-14	A-11	G-8	M-17	F-11	P-14	Dn-11
16:30–17:00			E-3	O-2	C-3	P-3	E-16	S-7	M-3		A-12	G-9	M-18	F-12	P-15	Dn-12
17:00–17:30			E-4	O-3	C-4	P-4	E-17	S-8	M-4		A-13	G-10	M-19	F-13		
17:30–18:00			Presentation of 75th General Assembly in Turin → [M2]				E-18		M-5							
18:00–18:30		Welcome Reception → [KCC]				Assembly Dinner (19:30–23:30) → [Stockholm City Hall]										
18:30–19:00																
19:00–19:30																
19:30–20:00																
20:00–20:30																
		KCC: Kista Convention Centre [E1, M1, M2, M6, M7, M8]: Meeting Rooms at KCC														

KCC: Kista Convention Centre

[E1, M1, M2, M6, M7, M8]: Meeting Rooms at KCC

Assembly Dinner (19:30–23:30)
→ [Stockholm City Hall]

STC A	Life-Cycle Engineering and Assembly
STC C	Cutting
STC Dn	Design

STC F	Forming
STC E	Electro-Physical, Chemical, Laser, and related Additive Manufacturing Processes

STC G	Abrasive Process
STC M	Machines
STC O	Production Systems and Organizations

STC P	Precision Engineering & Metrology
STC S	Surfaces
CMAG	

Scientific Programme Part I

Sunday 17 August

10:00 – 12:00 Board Meeting

14:00 – 16:30 Membership Committees

16:30 – 20:30 Registration

16:30 – 18:30 Council Meeting

19:00 – 20:30 Welcome Reception

● **Sunday** 17 Aug 2025

Programme

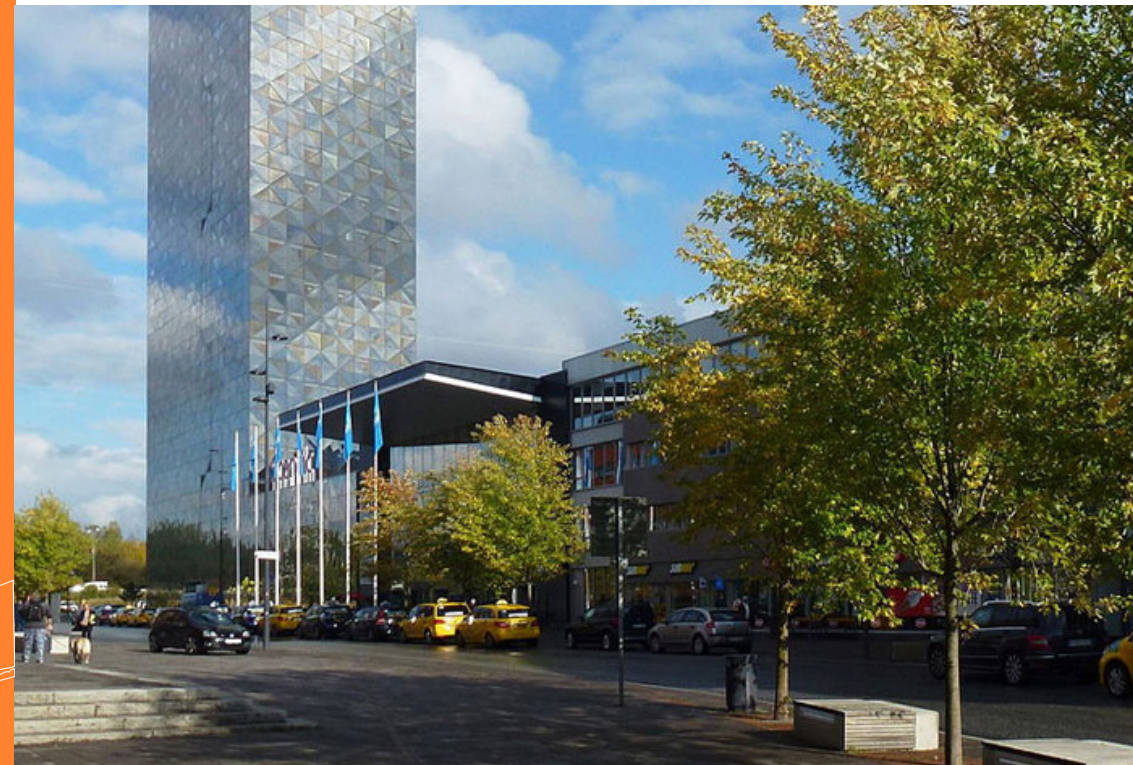
10:00–12:00	Board Meeting
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14:00–16:30	Membership Committees Credentials & Nominations
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16:30–20:30	Registration (Kista Convention Centre)
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16:30–18:30	Council Meeting
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19:00 – 20:30	Welcome Reception (Kista Convention Centre)
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Scientific Programme Part I

Monday 18 August

09:00 – 10:30 Opening Ceremony

11:00 – 12:00 Keynote Session 1

14:00 – 15:30 Keynote Session 2

16:00 – 18:00 Parallel Paper Sessions

**18:00 – 19:00 Presentation of 75th General
Assembly in Turin, Italy**

● **Monday** 18 Aug 2025

Programme

08:00–09:00	Registration
09:00–10:30	Opening Ceremony at Stockholm Concert Hall
10:30–11:00	Coffee break
11:00–11:30	Cross STC Keynote (Concert Hall) Production technologies and systems for electric mobility Jürgen Fleischer (1), Darek Ceglarek (1), Jörg Franke (2), Christoph Herrmann (2)
11:30–12:00	STC A Keynote (Concert Hall) Human-centric assembly in smart factories Lihui Wang (1), Robert X Gao (1), Jörg Krüger (1), József Váncza (1)
12:00–13:00	Bus Transportation to Kista Convention Centre
12:30–14:00	Lunch
14:00–14:30	STC E Keynote (Room M2) Metal multi-material additive manufacturing: overcoming barriers to implementation Adam Thomas Clare (1), Peer Woizeschke, Behzad Rankouhi, Frank Pfefferkorn (1), Dominic Bartels, Michael Schmidt (1), Wessel Wits (2)
14:30–15:00	STC M Keynote (Room M2) Fixtures and workpiece clamping systems in machining Hans-Christian Moehring (2), Dirk Biermann (1), Friedrich Bleicher (1), Shreyes Melkote (1), Gregor Kappmeyer (3)
15:00–15:30	STC Dn Keynote (Room M2) Developing and leveraging digital twins in engineering design Nabil Anwer (1), Rainer Stark (1), Fei Tao (2), John Ahmet Erkoyuncu (2)
15:30–16:00	Coffee break

Monday 18 Aug 2025

Room: M1		STC E
16:00–16:30	E-1	Electrochemical finishing of internal channels in additively manufactured components using in-situ channel-conformal sacrificial tool electrodes <i>Xiaoming Duan, Kun Zhang, Xiaodong Yang, Masanori Kunieda (1)</i>
16:30–17:00	E-2	Segmented 5-axis flank milling: a fast electrical discharge milling strategy for diffuser-shaped film cooling holes <i>Bin Li, Zhuohang Yao, Huanyu Lu, Qiang Gao, Juncheng Lu, Xuecheng Xi, Wansheng Zhao (2)</i>
17:00–17:30	E-3	Mitigating thermal damages in the electrochemical discharge machining of carbon fiber-reinforced polymer <i>Murali Sundaram, Yu-Jen Chen, K.P. Rajurkar (1)</i>
17:30–18:00	E-4	Spatially resolved Wire EDM discharge analysis for dynamic part strength evaluation <i>Andreas Klink (2), Lukas Welschhof, Kai Osswald, Tim Herrig</i>
Room: M6		STC O
16:00–16:30	O-Kn	Future-proof production scheduling and control <i>Marcello Urgo (2), Gisela Lanza (1), Rok Vrabac (2), David Gyulai</i>
16:30–17:00	O-1	Adaptive production control for agile disassembly systems in remanufacturing <i>Marco Wurster, Fabian Erlenbusch, Finn Bail, Gisela Lanza (1), Nicole Stricker</i>
17:00–17:30	O-2	Optimal control of remanufacturing systems with uncertainty in quality identification <i>Maria Chiara Magnanini, Tullio Tolio (1)</i>
17:30–18:00	O-3	Predictive maintenance optimization for manufacturing systems considering perfect and imperfect inspections: application to injection molding machine <i>Duc-Hanh Dinh, Phuc Do, Benoit Iung (1), Tao Quang Bang</i>

Monday 18 Aug 2025

Room: M7		STC C
16:00–16:30	C-1	Towards understanding the surface strengthening mechanism in negative rake angle cutting of additively manufactured stainless steel <i>Tingyue Bai, Chao Wang, Guangyuan Yu, Maxim Kolmanovskiy, Jannis Saelzer, Toru Kizaki (2), Dirk Biermann (1), Zhenglong Fang</i>
16:30–17:00	C-2	Directional-adaptive approach in machining of additively manufactured Inconel 718 <i>Amin Bagherzadeh, Ozkan Gokcekaya, Erhan Budak (1)</i>
17:00–17:30	C-3	Ultrasonic vibration-assisted machining of Invar 36 alloy manufactured by wire arc additive manufacturing <i>Ramazan Hakkı Namlu, Korcan Küçüköztas, Hakan Kalkan, Bilgin Kaftanoğlu (1)</i>
17:30–18:00	C-4	Sub-surface sinking effect of reinforcement particle in laser assisted machining of metal matrix composites <i>Omkar Mypati, Zhirong Liao (2), Shusong Zan, Rachid M'Saoubi (1), Dragos Axinte (1)</i>
Room: M8		STC P
16:00–16:30	P-1	Measurement of spindle-related geometric errors by multilateration <i>Kotaro Mori (2), Masahiro Shimoike, Keito Abe</i>
16:30–17:00	P-2	Traceability and uncertainty of defects automated measurements by CNN-powered Machine Vision Systems <i>Giacomo Maculotti, Lorenzo Giorio, Gianfranco Genta, Maurizio Galetto (2)</i>
17:00–17:30	P-3	Transferability of compliance error compensation parameters in articulated robots <i>Monica Katherine Gonzalez, Theodoros Laspas, Hung-Ching Lin, Kanako Harada, Andreas Archenti (2)</i>
17:30–18:00	P-4	Comparison of measuring methods for the dimension-over-balls parameter M_{dk} using modified gear standards <i>Anke Guenther (2), Gert Goch (1)</i>

Scientific Programme Part I

Tuesday 19 August

09:00 – 12:00 Parallel Paper Sessions

13:30 – 18:30 Parallel Paper Sessions

● Tuesday 19 Aug 2025

08:00–09:00 Registrations

Parallel Sessions

Room: M1 STC E

09:00–09:30 E-5 Removal mechanism of diamond/Al composites in Blasting Erosion Arc Machining
Lin Gu (2), Lijie Jiang, Kelin Li, Xiaoka Wang

09:30–10:00 E-6 Efficient processing with removal of modification in ultrashort pulse laser processing of diamond
Reina Yoshizaki, Shogo Kitamura, Yuta Teshima, Masayuki Nakao (1)

Room: M2 STC S

09:00–09:30 S-Kn Surface finishing by shape-adaptive processes
Jiawang Yan (1), Brigid Mullany (1), Anthony Beaucamp (2), Daniel Meyer (2), Naohiko Sugita (1)

09:30–10:00 CMAG Meeting

Room: M6 STC O

09:00–09:30 O-4 Bridging planning silos: A cross-functional decision support system for capacity, order, and supplier decisions in global production networks
Martin Benfer, Moritz Hörger / Harmut Weule (1)

09:30–10:00 O-5 Joint optimization of logistics operations and reliability-based replacement policies in a geographically distributed service parts logistic system
Po-Han Wang, Dragan Djurdjanovic (2)

Tuesday 19 Aug 2025

Room: M7	STC C
09:00–09:30	C-5 Sensorless in-process runout monitoring in milling via an industrial Edge device <i>Mohammadreza Chehrehzad, Ismail Lazoglu (1)</i>
09:30–10:00	C-6 An experimental methodology to improve the robotic drilling of aluminium alloys <i>François Ducobu (2), Thomas Beuscart, Valentin Dambly, Edouard Rivière-Lorphèvre, Gorka Ortiz-de-Zarate, Pedro-José Arrazola (1)</i>
Room: M8	STC A
09:00–09:30	A-1 An LLM-enabled human demonstration-assisted hybrid robot skill synthesis approach for Human-Robot collaborative assembly <i>Yue Yin, Ke Wan, Chengxi Li, Pai Zheng (2)</i>
09:30–10:00	A-2 Generative AI for automated task modelling and task allocation in human robot collaborative applications <i>Nikos Dimitropoulos, Michalis Kaipis, Stavros Giartzas, George Michalos (2)</i>
10:00–10:30 Coffee break	
Room: M1	STC E
10:30–11:00	E-7 Enhanced Magnet-aided Laser Induced Plasma Micromachining (E-MLIP) for expanded geometric capabilities <i>Rajiv Malhotra, Anandkumar Patel, Kiarash Naghavi Khanghah, Hongyi Xu / A. Donmez (1)</i>
11:00–11:30	E-8 Improvement of anodic oxide film characteristics of Al-Cu alloy by refinement of IMCs with large-area electron beam irradiation <i>Togo Shinonaga, Ayano Sebe, Masanori Taniguchi, Toshinori Fujii, Akira Okada (1)</i>
11:30–12:00	E-9 Mechanism and dynamics of transient and selective laser processing revealed through high-speed observation combined with precision timing control <i>Yusuke Ito, Guoqi Ren, Naohiko Sugita (1)</i>

Tuesday 19 Aug 2025

Room: M2	CMAG
10:30–12:00	CMAG Meeting
Room: M6	STC O
10:30–11:00	O-6 Simultaneous design of reconfigurable manufacturing systems and their production plans using hierarchical reinforcement learning <i>Soham S. Purohit, Anirudh Kanchi, Haochen Wu, Bogdan I. Epureanu (2)</i>
11:00–11:30	O-7 A large manufacturing decision model for human-centric decision-making <i>Xingyu Li, Aydin Nassehi (1), S. Jack Hu (1), Byung Gun Joung, Robert X. Gao (1)</i>
11:30–12:00	O-8 Factory layout planning using Quantum Annealing <i>Xiangqian Wu, Philipp Schworm, Matthias Klar, Jan C. Aurich (1)</i>
Room: M7	STC C
10:30–11:00	C-7 Physics-based modelling and validation of dynamically varying thermal and mechanical residual stress fields in finish machining of aerospace alloys <i>Julius Schoop, I.S. Jawahir (1)</i>
11:00–11:30	C-8 A physics-based flow stress model for cutting simulation of additively manufactured Alloy 718 <i>Amir Malakizadi, Rachid M'Saoubi (1)</i>
11:30–12:00	C-9 A novel approach to milling cutter temperature analysis with cutting fluid consideration <i>Thomas Bergs (2), Hui Liu</i>

● **Tuesday** 19 Aug 2025

Room: M8	STC A
10:30–11:00	A-3 Vision intelligence-conditioned reinforcement learning for precision assembly <i>Sichao Liu, Lihui Wang (1)</i>
11:00–11:30	A-4 Beyond proxies: a direct time-optimal approach to robot cell layout optimization <i>Jan Baumgärtner, Alexander Puchta, Jürgen Fleischer (1)</i>
11:30–12:00	A-5 Design and control of flexible handling systems based on mobile cooperative multi-robot-systems <i>Tobias Recker, Annika Raatz (2)</i>

..... **12:00–13:30 Lunch & Corporate Members Lunch**

Room: M1	STC E
13:30–14:00	E-10 Study on field emission characteristics of carbon nanotube arrays patterned via laser welding of dissimilar materials <i>Hung-Yin Tsai, Yi-Hung Chen, Kuan-Ching Wang, Paul W. Leu, Ming C. Leu (1)</i>
14:00–14:30	E-11 Polishing of fused silica by laser-enhanced plasma at the atomic and close-to-atomic scale <i>Peng Lyu, Jiyu Pan, Ze Liu, Fengzhou Fang (1)</i>
14:30–15:00	E-12 Printability assessment and modelling for process optimization of 3D Aerosol Jet® printed high aspect ratio microstructures <i>Elisabetta Ceretti (2), Mohit Sharma, Eleonora Ferraris (2), Paola Serena Ginestra, Miriam Seiti</i>
15:00–15:30	E-13 Effect of layer thickness in laser powder bed fusion of HWTS 50 hot work tool steel <i>Sasan Dadbakhsh, Sinesh Vadakkekara, Ashik Mansingh Anila, Lorena Emanuelli, Massimo Pellizzari, Faraz Deirmina / B. Lindström (1)</i>

● **Tuesday** 19 Aug 2025

Room: M2	STC S
13:30–14:00	S-1 Modulated-ellipse servo cutting of micro-structured surfaces with high-steep slopes <i>Zhanwen Sun, Suet To (2), Waisze Yip, Sujuan Wang, Shanshan Chen, Guanlong Chen</i>
14:00–14:30	S-2 Aliased beating helix induced by dual-frequency vibrations in turning <i>Monica Gil-Inchaurza, Xavier Beudaert (2), Maria Garcia, Jose Antonio Sanchez, Jokim Munoa (1)</i>
14:30–15:00	S-3 On-machine laser polishing of diamond turned metal surfaces <i>XinQuan Zhang (2), JinChi Wu, WenBin Zhong, WenHan Zeng, Zhe Zhang, MingJun Ren</i>
15:00–15:30	S-4 Investigation of hydrogen embrittlement prevention effect on electropolished 316L austenitic stainless steel <i>Sun-Ho Chang, Jun-Young Kim, Hyun-Taek Lee, Eun-Sang Lee / S.-H. Ahn (1)</i>
Room: M6	STC O
13:30–14:00	O-9 Economic valuation of flexibility in production capacity using real options valuation <i>Günther Schuh (1), Seth Schmitz, Calvin Kuhn, Tobias Simon</i>
14:00–14:30	O-10 Integrating digital factory twin and AI for monitoring manufacturing systems through synthetic data generation and vision transformers <i>Marcello Urgo (2), Walter Terkaj</i>
14:30–15:00	O-11 Multidimensional perceived quality: Extended level model and case study including sustainability as a quality dimension in the perception of plastic packaging <i>Jan A. Körkemeyer, Hanna Brings, Benjamin Montavon, Robert H. Schmitt (1)</i>
15:00–15:30	O-12 Advancing quality prediction in polymer PBF-LB: a hybrid AI and physics-guided approach <i>Matteo Calaon, Hao-Ping Yeh, Shuo Shan, Yang Zhang (2), Jesper Henri Hattel, Hans Nørgaard Hansen (1)</i>

Tuesday 19 Aug 2025

Room: M7	STC C
13:30–14:00	C-Kn Revisiting machinability assessment: Towards total machining performance <i>I.S. Jawahir (1), Helmi Attia (1), Martin Dix (3), Hassan Ghadbeigi, Zhirong Liao (2), Julius Schoop, Alborz Shokrani (2)</i>
14:00–14:30	C-10 Tool failure – a method for stress calculation of worn cutting tools <i>Benjamin Bergmann (2), Jan Schenzel, Malte Kraeft</i>
14:30–15:00	C-11 A novel multi-harmonic and phase-independent estimation of cutting force coefficients <i>Zekai Murat Kilic, Joshua Priest, Sabino Ayvar-Soberanis, Srichand Hinduja (1)</i>
15:00–15:30	C-12 Model for temperature evolution in CO2 jets by Background Oriented Schlieren method for applications in cryogenic-assisted machining <i>Koffi Samuel Koulekpa, Michael Deligant, Hélène Elias-Birembaux, Frédéric Rossi, Gérard Poulachon (1)</i>
Room: M8	STC A
13:30–14:00	A-6 Increasing object flexibility of vacuum gripper systems through a common grasp search <i>Rüdiger Daub, Paul Geng / G. Reinhart (1)</i>
14:00–14:30	A-7 Conceptualisation of a multimodal, non-intrusive, generative AI-based assistive system for assembly <i>Alessandro Simeone, Yuchen Fan, Dario Antonelli, Paolo C. Priarone (2), Luca Settineri (1)</i>
14:30–15:00	A-8 Constellation-based robotic visual servoing method for fault diagnosis of used printed circuit board assemblies <i>Bence Tipary, Gabor Erdos (2), Zsolt Kemény</i>
15:00–15:30	A-9 Random wavelet kernels for interpretable fault diagnosis in industrial systems <i>Haoxuan Deng, Samir Khan, John Ahmet Erkoyuncu (2)</i>

15:30–16:00 Coffee break

Tuesday 19 Aug 2025

Room: M1	STC E
16:00–16:30	E-14 Laser powder directed energy deposition and substrate-free single layer powder bed fusion under micro- and lunar gravity conditions <i>Ludger Overmeyer (2), Marvin Raupert, Matthias Pusch, Tjorben Griemsmann, André Katterfeld, Christoph Lotz</i>
16:30–17:00	E-15 Circular manufacturing of binder jetting additive parts from Ti-6Al-4V machining chips <i>Debajyoti Bhaduri, Karan A. Baramate, Soumya Gangopadhyay, Thomas E. Davies / T.H.C. Childs (1)</i>
17:00–17:30	E-16 Laser powder bed fusion process parameters for the fabrication of unsupported overhang structures of metamaterial lattices <i>Wessel W. Wits (2), Camill de Vos, Maria Montero-Sistiaga, Marc de Smit</i>
17:30–18:00	E-17 Design and analyses of powder deposition, gas flow, and productivity for a rotary laser powder bed fusion system <i>Markus Bambach (2), Michael Robert Tucker</i>
18:00–18:30	E-18 Comparison of three hybrid metal additive-subtractive manufacturing processes <i>Christian Baumann, Manisha Yerranagu, Weijun Zhang, Aishwarya Deshpande, Severin Maier, Stefan Gössinger, Masakazu Soshi, Friedrich Bleicher (1), Frank E. Pfefferkorn (1)</i>
Room: M2	STC S
16:00–16:30	S-5 The role of PEEK viscoelasticity in chip formation, surface finish and geometrical accuracy <i>Rachele Bertolini, Anna Bottin, Caterina Zanella, Stefania Bruschi (1), Andrea Ghiotti (1), Enrico Savio (1)</i>
16:30–17:00	S-6 Fabrication of cell orientation control surface on Co–Cr alloy by polycrystalline diamond micromilling <i>Kazutoshi Katahira (2), Shinya Morita, Chikahiro Imashiro, Atsushi Ezura, Jun Komotori</i>

Tuesday 19 Aug 2025

17:00–17:30	S-7	Liquid-phase plasma machining with floating discharge tool <i>Wule Zhu (2), Fang Han, Jingyuan Wang, Weijian Zhang, Wei Gao, Cao-Yang Xue, Bing-Feng Ju</i>
17:30–18:00	S-8	A novel method for high-volume manufacturing of self-protective plastic surfaces to ensure durable anti-counterfeiting functionality <i>Marco Sorgato, Giacomo Baruffa, Keltoum Oubellaouch, Giulia Zaniboni, Giovanni Lucchetta (2)</i>
Room: M6 STC M		
16:00–16:30	M-1	Finding hidden spindle bearing defect periods using Ramanujan filter banks <i>Mohit Law (2)</i>
16:30–17:00	M-2	Automatic preload adjustment for ball screw drives by means of a spring-loaded mechanism <i>Alexander W. Verl (2), Oliver Jud</i>
17:00–17:30	M-3	Automated identification of joints dynamic parameters in moving industrial robots for milling applications <i>Jihyun Lee, Ali Khishtan / Simon S. Park (1)</i>
17:30–18:00	M-4	Thermal displacement reduction based on heat transfer characteristics under environmental temperature changes <i>Koji Ota, Daisuke Kono (2), Masahiko Mori (1)</i>
18:00–18:30	M-5	Material hybrid and sensor integrated lightweight machine tool components <i>Hans-Christian Moehring (2), Michelle Engert, Kim Torben Werkle</i>

Tuesday 19 Aug 2025

Room: M7 STC C		
16:00–16:30	C-13	Improving the cutting characteristics of pure tungsten using a halogenated cutting fluid <i>Kaveh Rahimzadeh Berenji, Shreyes N. Melkote (1)</i>
16:30–17:00	C-14	Improving cutting performance of nickel-based alloy by graphene modified diamond tools <i>Ni Chen, Huiwen Chen, Bo Yan, Zhiyuan Mao, Ahsan Imran, Guolong Zhao, Ning He / K.K.B. Hon (1)</i>
Room: M8 STC A		
16:00–16:30	A-10	Vision-based robotic disassembly of aircraft engines with YOLO-SAM: a novel method for task orientation estimation <i>Angelo Moroncelli, Sylvain Populus, Armand Rossi, Emanuele Carpanzano (1), Loris Roveda</i>
16:30–17:00	A-11	Sustainability of polycarbonate recycling via additive manufacturing <i>Nan Yu, Yifan Yuan, Zicheng Zhu, Ruslan Melentiev, Long Ye, James Tinkler, Lukas Raddatz, Stephen T. Newman (1)</i>
17:00–17:30	A-12	Impacts of circular economy strategies on product carbon footprint: a lithium-ion battery case <i>Haiwei Zhou, Wen Li, Sami Kara (1), Michael Zwicky Hauschild (1)</i>
17:30–18:00	A-13	A cradle-to-grave life-cycle-assessment of dry-processed Li-ion batteries for electric vehicles <i>Yu Gu, Runming Tao, Chris Yuan (2), Hongchao Zhang (1), Michael Hauschild (1)</i>

Scientific Programme Part I

Wednesday 20 August

08:30 – 12:00 Parallel Paper Sessions

13:30 – 18:00 Parallel Paper Sessions

19:30 – 23:30 Assembly Dinner (City Hall)

● Wednesday 20 Aug 2025

08:00–09:00 Registrations

Parallel Sessions

Room: M1 STC E

09:00–09:30 E-19 Accelerated degradation of 3D-printed PETG bone-tissue scaffolds via geometrical control
Hussein Mishbak, Mohamed H. Hassan, Evangelos Daskalakis, Abdalla M. Omar, Dino M. Freitas, Wajira Mirihanage, Paul Mativenga (2), Prasad Potluri, Paulo Bartolo (1)

09:30–10:00 E-20 Characterization of the high-pressure suspension jet for efficient cutting and abrasive circularity
Florian Morczinek, Martin Dix (3), Rafael Wertheim (1)

Room: M2 STC M

08:30–09:00 M-6 AI-based sensor layout for predicting thermal deformations of CFRP machine tools
Felix Finkeldey, Makoto Kato, Petra Wiederkehr (2), Yasuhiro Kakinuma (2)

09:00–09:30 M-7 Large-scale functional patterning using mobile robot swarms and ergodic control
Malachi Landis, Muye Jia, Annalisa T. Taylor, Todd D. Murphey, Ping Guo (2)

09:30–10:00 M-8 Cutting force reconstruction in milling by multi-sensor fusion with hybrid aid of process and data-driven models
Shuntaro Yamato / T. Moriwaki (1)

● **Wednesday** 20 Aug 2025

Room: M6	STC F
08:30–09:00	F-Kn Cut the scrap: making more use of less metal <i>Julian Mark Allwood (1), Omer Music, Evripides G Loukaides, Markus Bambach (2)</i>
09:00–09:30	F-1 Exploring the feasibility of a closed-loop industrial symbiosis link through Friction Stir Extrusion-based Additive Manufacturing <i>Kirill Kalashnikov, Davide Campanella, Giuseppe Ingarao, Gianluca Buffa, Fabrizio Micari (1), Livan Fratini (1)</i>
09:30–10:00	F-2 Sub-Zero temperature blanking of non-oriented electrical steels <i>Enrico Simonetto, Stefania Bruschi (1), Andrea Ghiotti (1), Agnes Schrepfer, Wolfram Volk (1)</i>
Room: M7	STC P
09:00–09:30	P-Kn Dimensional metrology based on ultrashort pulse laser and optical frequency comb <i>Wei Gao (1), Seung-Woo Kim (1), Harald Bosse (3), Kaoru Minoshima</i>
09:30–10:00	P-5 Frequency-comb-referenced Terahertz Fabry-Pérot interferometry for monitoring semiconductor wafer thinning process with a nanometer precision <i>Guseon Kang, Jaeyoon Kim, Jun Hyung Park, Sukkyung Kang, Dong Geun Kim, Young-Jin Kim (2)</i>
Room: M8	STC Dn
09:00–09:30	Dn-1 Augmented geometry assurance digital twin with physics-based incremental learning <i>Roham Sadeghi Tabar, Rikard Söderberg (1), Dariusz Ceglarek (1), Pasquale Franciosa, Lars Lindkvist</i>
09:30–10:00	Dn-2 Enhancing tolerance stack-up analysis with variable-dependent admissible limits <i>Mattia Maltauro, Roberto Meneghello, Gianmaria Concheri / N. Anwer (1)</i>

10:00–10:30 Coffee break

● **Wednesday** 20 Aug 2025

Room: M1	STC G
10:30–11:00	G-Kn Advances in magnetic field-assisted finishing <i>Hitomi Yamaguchi (1), Fukuo Hashimoto (1), Eraldo da Silva (2), Chi Fai Cheung (1)</i>
11:00–11:30	G-1 Materials removal mechanism in laser-assisted grinding of SiC fibre reinforced Titanium alloy composite <i>Dongdong Xu, Tiancheng Ai, Zifu Shen, Shuan Ma, Md Saddam Hossen, Zhirong Liao (2)</i>
11:30–12:00	G-2 Consideration of thermally induced material modification depth for grinding process cycle design <i>Gerrit Kuhlmann, Lars Langenhorst, Tobias Hüsemann, Carsten Heinzl (2)</i>
Room: M2	STC M
10:30–11:00	M-9 Compensation of blank warpage in punching processes through an innovative adaptive control system for adjusting part holder forces <i>Mathias Liewald (2), Stephan Nießner</i>
11:00–11:30	M-10 Entangled chip removal utilizing mass-spring model with mobile manipulator <i>Ryuki Takahashi, Hayato Kimura, Yasuhiro Kakinuma (2)</i>
11:30–12:00	M-11 Low frequency feed modulation assisted milling for chatter avoidance <i>Yutaro Kawana, Seyed Mahmood Shantiaeezade, Burak Sencer (2), Ryosuke Ikeda, Norikazu Suzuki (2)</i>
Room: M6	STC F
10:30–11:00	F-3 Consideration of Bauschinger effect based on a reduced texture approach for improved springback prediction with computational efficiency <i>Donghwan Noh, Jeong Whan Yoon (2) / D.Y. Yang (1)</i>

Wednesday 20 Aug 2025

11:00–11:30	F-4	Mechanisms driving accelerated formability recovery in forming of ultra-thin titanium sheets with intermediate electropulsing treatment <i>Junying Min, Xianglu Zhang, Bo Chen, Xiaolong Ma / D. Banabic (1)</i>
11:30–12:00	F-5	Mold liners produced by incremental sheet forming <i>Putong Kang, Brett Wadman, Kornel Ehmann, Jian Cao (1)</i>
Room: M7 STC P		
10:30–11:00	P-6	Multiscale optical surface integrating multifocal imaging and wavelength filtering for compact snapshot spectral imaging <i>Xinquan Zhang (2), Yaoke Wang, Hao Wu, Limin Zhu, Ping Guo (2)</i>
11:00–11:30	P-7	A non-Michelson type three-axis grating interferometer using linear scale gratings <i>Ryo Sato, Yifan Hong, Hiraku Matsukuma, Wei Gao (1)</i>
11:30–12:00	P-8	Three-dimensional measurement of structures with smooth-steep-surfaces using autofluorescence confocal signal <i>Masaki Michihata, Motoya Yoshikawa, Shuzo Masui, Satoru Takahashi (1)</i>
Room: M8 STC Dn		
10:30–11:00	Dn-3	Design optimization of graded cellular structures for additive manufacturing via differentiable Voronoi diagram <i>Nanya Li, Changkun Sun, Hanlin Zheng, S.K. Ong (1)</i>
11:00–11:30	Dn-4	2D profile-based surface repair and 3D pattern generative design via material jetting <i>Pushkar Kamble, Hao Chen, Hanlin Liao, Yicha Zhang (2)</i>
11:30–12:00	Dn-5	Implicit geometry representation via neural operators on Riemannian manifolds for topology optimization <i>Qinglu Meng, Yingguang Li (2), Xu Liu, Gengxiang Chen, Yicheng Zhang, Lihui Wang (1)</i>

Wednesday 20 Aug 2025

12:00–13:30 Lunch

Room: M1 STC G		
13:30–14:00	G-3	Electromagnetic field-assisted ultra-precision grinding of single-crystal Ni-based superalloy <i>Te Zhao, Suet To (2), Tengfei Yin, Xiangqian Jiang (1)</i>
14:00–14:30	G-4	Kinetic analysis of workpiece rotation behavior during double-sided polishing <i>Urara Satake, Yuta Seguchi, Toshiyuki Enomoto (1)</i>
14:30–15:00	G-5	Atomic-level flat polishing of polycrystalline diamond by combining plasma modification and chemical mechanical polishing <i>Song Yuan, Benny C.F. Cheung (1), Alborz Shokrani (2), Zejin Zhan, Chunjin Wang</i>
15:00–15:30	G-6	High-efficiency modification mechanism of GaN(0001) in plasma-assisted polishing using hydrogen plasma <i>Tong Tao, Rongyan Sun, Yuji Ohkubo, Kazuya Yamamura (2)</i>
Room: M2 STC M		
13:30–14:00	M-12	A novel electromagnetic end-effector with adaptive force-stiffness coordinated control for robotic grinding with variable workpiece stiffness <i>Jixiang Yang, Xu Tang, Han Ding, Yuehong Yin (1)</i>
14:00–14:30	M-13	Increasing milling stability predictions accuracy considering speed dependent spindle behaviour with an automated measurement device <i>Omer Ozkirimli, Erdem Ozturk (2)</i>
14:30–15:00	M-14	Directional factor as the key factor for chatter free robotic milling of light alloys <i>Zoltan Dombovari, Iñaki Laka, Andras Bartfai, Ali Karaca, Erhan Budak (1), Gabor Stepan (1), Jokin Munoa (1)</i>
15:00–15:30	M-15	Cascaded FIR and half-sine filter-based smooth trajectory generation algorithm <i>Yusuf Altintas (1), Mobin Abdar Esfahani, Behnam Karimi, Owen Gatenby</i>

● **Wednesday** 20 Aug 2025

Room: M6		STC F
13:30–14:00	F-6	Hybrid modelling predicting forming behaviour with variations in AlMgSi1 alloys <i>Kristian Martinsen (3), Thawin Hart-Rawung, Jon Holmestad, Johan Andreas Stendal, Sverre Gulbrandsen-Dahl, Ole Runar Myhr / F. O. Rasch (1)</i>
14:00–14:30	F-7	Slipline solution to asperity deformation under combined high normal pressure and subsurface deformation <i>Chris V. Nielsen (2), Paulo A.F. Martins (1), Niels Bay (1)</i>
14:30–15:00	F-8	Hot extrusion of aluminium-polymer profiles with axially-graded cross-sections <i>Yannis P. Korkolis, Patrick Schindler, Enno Henn, Johannes Gebhard, Markus Stommel, A. Erman Tekkaya (1)</i>
15:00–15:30	F-9	Rotary tube flaring using a conical punch with grooves for high forming limit and productivity <i>Shohei Kajikawa, Kiwamu Uchida, Takashi Kuboki (1)</i>
Room: M7		STC P
13:30–14:00	P-9	Spectral imaging for 2-D wavelength mapping by chromatic phase retardation <i>Ki-Nam Joo, Seongwook Jang / S.-W. Kim (1)</i>
14:00–14:30	P-10	Local heat transfer detection via passive dual probe near-field microscopy <i>Yusuke Kajihara (2), Ryoko Sakuma, Yoshiki Nagai, Kuan-Ting Lin</i>
14:30–15:00	P-11	Investigation of the correlation between radiographic image quality and surface measurement quality of XCT using frequency response analysis <i>Xiao Chen, Shan Lou, Wenjuan Sun, Paul Scott, Xiangqian Jiang (1)</i>
15:00–15:30	P-12	Investigating the effects of machine learning generalisation for enhancing accuracy in fast X-ray computed tomography for industrial metrology <i>Filippo Zanini, Nicolò Bonato, Diego Pentucci, Simone Carmignato (1)</i>

● **Wednesday** 20 Aug 2025

Room: M8		STC Dn
13:30–14:00	Dn-6	Optimization of segment topology and surface form for efficient illumination with freeform lens arrays <i>Atsushi Sasaki, Okiharu Kirino, Kazunori Watanabe, Anthony Beaucamp (2)</i>
14:00–14:30	Dn-7	Bio-inspired multifunctional end effectors for In-space Servicing, Assembly and Manufacturing (ISAM) <i>Salil Bapat, Tanvi Arey, John Vickers, Ajay P. Malshe (1)</i>
14:30–15:00	Dn-8	Customization and personalization of large language models for engineering design <i>Zhoumingju Jiang, Ang Liu (2), Dawen Zhang, Xiwei Xu, Yun Dai</i>
15:00–15:30	Dn-9	Learning of design for environment with large language models: An interactive system using GPT-4 <i>Tatsunori Hara (2), Taisei Kawamura, Miwako Goto, Jun Ota</i>
15:30–16:00 Coffee break		
Room: M1		STC G
16:00–16:30	G-7	Robust estimation of chip clogging with supervised learning using tool surface image <i>Tatsuya Furuki, Koichi Nishigaki, Takashi Suda, Hirofumi Suzuki (1)</i>
16:30–17:00	G-8	Ultrasonic assisted abrasive nano-blasting <i>Ashwani Pratap, Wule Zhu (2), Mori Yuka, Anthony Beaucamp (2)</i>
17:00–17:30	G-9	Mitigation of Cu dishing in chemical mechanical polishing using micro-structured pads <i>Seulah Park, Sukkyung Kang, Dong Geun Kim, Sanha Kim (2)</i>
17:30–18:00	G-10	A glycerol-based slurry for Cs ₂ LiYCl ₆ crystal polishing <i>Jiang Guo, Ankang Yuan, Jing Li, Zhe Yang, Zili Zhang, Lin Li (1)</i>

● **Wednesday** 20 Aug 2025

Room: M2	STC M
16:00–16:30	M-16 Tool path generation for precision roughing of blisks via abrasive waterjet machining <i>Lutfi Taner Tunc (2)</i>
16:30–17:00	M-17 Feedrate optimization based on part-to-part learning in repeated machining <i>Cheng-Hao Chou, Chenhui Shao, Chinedum E. Okwudire (2)</i>
17:00–17:30	M-18 Interaction between forced and chatter vibrations through flank-workpiece interference <i>Takehiro Hayasaka (2), Hayato Murai, Kyungki Lee, Eiji Shamoto (1)</i>
17:30–18:00	M-19 Overcoming sparse run-to-failure data challenges in manufacturing: A contrastive mixer framework for remaining useful life prediction <i>Eunseob Kim, Hojun Lee, Yuseop Sim, Jiho Lee, Martin B.G. Jun / F. E. Pfefferkorn (1)</i>
Room: M6	STC F
16:00–16:30	F-10 Tailored multi-material systems with thickness distribution by orbital forming <i>Arnold Harms, Simon Wituschek, Michael Lechner, Marion Merklein (1)</i>
16:30–17:00	F-11 Advanced double-flush riveting for multistage forming tools <i>Carlos M.A. Silva, João P.M. Pragana, Rui F.V. Sampaio, Ivo M.F. Bragança, Paulo A.F. Martins (1)</i>
17:00–17:30	F-12 A new joint with versatile properties based on a Reuleaux triangle geometry <i>Christian Steinfelder, Clemens Acksteiner, Alexander Brosius (2)</i>
17:30–18:00	F-13 Towards large-scale production of improved magnetic flux guidance structures in non-grain-oriented electrical steel <i>Phillip Stöcks-Morgan, Tobias Neuwirth, Achref Douiri, Simon R. Sebold, Anders Kaestner, Christoph Hartmann, Nora Leuning, Michael Schulz, Wolfram Volk (1)</i>

● **Wednesday** 20 Aug 2025

Room: M7	STC P
16:00–16:30	P-13 X-oscillation-coordinated fly-cutting of highly uniform microlens arrays <i>Zhiwei Zhu, Tianxiao Chang, Rongjing Zhou, Peng Huang / W.S. Lau (1)</i>
16:30–17:00	P-14 Ultra precision analytical toolpath calculation for aspherical mirror surface machining <i>Eloïse Jeanroy, Julien Chaves-Jacob, Jean-Marc Linares (1), Santiago Arroyave-Tobon, Stephan Imperiali</i>
17:00–17:30	P-15 In-process reconstruction of 3D surface profile for ultra-precision cutting of microstructured surfaces from cutting force monitoring and compensation <i>Liang An, Yuan-Liu Chen (2), Zhongwei Li, Genshen Liu</i>
Room: M8	STC Dn
16:00–16:30	Dn-10 Ecodesign of lithium-ion battery systems for e-mobility: a model-based LCA approach <i>Téo Lavis, Peggy Zwolinski, Daniel Brissaud (1), Rémy Panariello, Fabien Perdu</i>
16:30–17:00	Dn-11 Enabling sustainability-by-design with multi-disciplinary computer aided systems <i>Iñigo Flores Ituarte, Emanuele Pagone, Amirmohammad Daareyni, Samniroshan Thayapararajah, Guido Tosello (2)</i>
17:00–17:30	Dn-12 Sim2Know: new paradigm of digital twins to design and inform human-centric knowledge system <i>Bingbing Li, Haolin Fan, Zhen Fan, John Ahmet Erkoyuncu (2), Hong-Chao Zhang (1), Haihong Huang</i>

Scientific Programme Part II Overview

	CIRP 2025 Programme – PART II									
	Thursday, 21 August 2025				Friday, 22 August 2025				Saturday, 23 August 2025	
Room →	M1	M6	M7	M8	M1	M6	M7	M8	E1	M6
08:30–10:00	STC Dn	Terminology Committee	STC S	STC G	STC F	STC C	STC P	STC O		Liaison Committee Meeting
10:00–10:30	Coffee Break				Coffee Break				Coffee Break	
10:30–12:30	STC Dn	Communication Committee	STC S	STC G	STC F	STC C	STC P	STC O	Council Meeting	Research Affiliates Meeting
12:30–14:00	Lunch				Lunch				Lunch	
14:00–16:00	Ethics in Manufacturing CWG	Semiconductor and Microelectronic Manufacturing CWG		Manufacturing for Sustainability CWG	STC E	STC M		STC A	GENERAL MEETING <u>PART I</u> (14:00–14:45) → [M2] (for Fellows / Honorary / Emeritus)	
16:00–16:30	Coffee Break				Coffee Break				GENERAL MEETING <u>PART II</u> (14:45–16:15) → [M2] (for CIRP Members only)	
16:30–18:00	Cross STC Meeting → [M2] (for CIRP Members only)				STC E	STC M		STC A	[E1, M1, M2, M6, M7, M8]: Meeting Rooms at KCC	
20:00										
23:30										

STC A	Life-Cycle Engineering and Assembly	STC F	Forming	STC G	Abrasive Process	STC P	Precision Engineering & Metrology
STC C	Cutting	STC E	Electro-Physical, Chemical, Laser, and related Additive Manufacturing Processes	STC M	Machines	STC S	Surfaces
STC Dn	Design			STC O	Production Systems and Organizations	CMAG	

Scientific Programme Part II

Thursday 21 August

08:30–12:30 Parallel STC Meetings

M1 AM	STC-Dn Meeting: Design
M6 AM	Terminology Committee Meeting
M6 AM	Communication Committee Meeting
M7 AM	STC-S Meeting: Surfaces
M8 AM	STC-G Meeting: Abrasive Process

14:00–16:00 Parallel CWG Meetings

M1 PM	CWG Meeting: Ethics in Manufacturing
M6 PM	CWG Meeting: Semiconductor and Microelectronic Manufacturing
M8 PM	CWG Meeting: Manufacturing for Sustainability

16:30–18:00 Cross STC Meeting

M2 PM	Cross STC Meeting for CIRP members only
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Scientific Programme Part II

Friday 22 August

08:30–12:30 Parallel STC Meetings

M1 AM	STC-F Meeting: Forming
M6 AM	STC-C Meeting: Cutting
M7 AM	STC-P Meeting: Precision Engineering & Metrology
M8 AM	STC-O Meeting: Production Systems and Organizations

14:00–18:00 Parallel STC Meetings

M1 PM	STC-E Meeting: Electro-Physical, Chemical, Laser, and related Additive Manufacturing Processes
M6 PM	STC-M Meeting: Machines
M8 PM	STC-A Meeting: Life-Cycle Engineering and Assembly

Scientific Programme Part II

Saturday 23 August

Programme

08:30–10:00	Room: M6	Liaison Committee Meeting
10:30–12:30	Room: E1	Council Meeting
10:30–12:30	Room: M6	Research Affiliates Meeting
14:00–14:45	Room: M2	General Meeting Part I (for Fellows / Honorary / Emeritus only)
14:45–16:15	Room: M2	General Meeting Part II (for CIRP-members only)
20:00–23:30		Farewell Dinner at Münchenbryggeriet

Social Programme

17–23 August



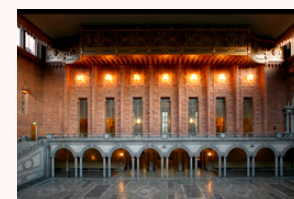
Welcome Reception

17 August 2025, 19:00–20:30
Kista Convention Centre (KCC)
Arne Beurlings Torg 5, 164 40 Kista
Dress code: informal



Opening Ceremony

18 August 2025, 9:00–12:00
Konserthuset Stockholm (Stockholm Concert Hall), Hötorget 8, 103 87 Stockholm
Dress code: formal



Assembly Dinner

20 August 2025, 19:30–23:30
Stockholm City Hall
Hantverkargatan 1, 111 52 Stockholm
Dress code: formal



Farewell Dinner

23 August 2025, 20:00–23:30
Münchenbryggeriet
Torkel Knutssonsgatan 2, 118 25 Stockholm
Dress code: semi-formal

Please visit our website for bus schedules to and from the various venues:
cirp2025.org/social-program



cirp2025.org

The background is a solid dark red color. It features several abstract shapes in a lighter shade of red. There are four circles in the top left quadrant, two circles in the middle left, and a large, complex organic shape in the bottom left. In the center, there is a large, symmetrical organic shape resembling a stylized 'X' or a four-lobed flower. To the right of this central shape, there are three circles arranged vertically. At the bottom, there are four circles: one on the left, one in the center, one on the right, and one on the far right.

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sustainable, cutting-edge
production engineering for
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