



C-III : Resistance Welding, Solid State Welding and Allied Joining Processes

Draft Agenda, Annual Assembly 2025

III-2308-2025

Author: Hee Seok Chang (Chair of C-III)

Comments: 23-25 June 2025, 08.00 to 18.00, Room "Scirocco" at Centro Congressi Porto Antico

Meeting to be held in person only, not hybrid

Attire: Business Suit is required

C-III National Delegate Members are asked to review all documents prior to the meeting

1. Agenda

Day 1 (23 June 2025, Monday)			
08.20	Plenary session with administrative issues	Chair	Chang
	1. Welcome and apologies		
	2. Approval of Agenda	III-2308-2025	Motion required
	3. Code of Conduct		information
	4. Antitrust Statement		information
	5. Confidentiality Statement		Information
	6. Approval of Minutes: C-III Intermediate Meeting 2025		Motion required
	7. Approval of Minutes: C-III AA Meeting 2024		Motion required
	8. Review of Terms of Reference	III-2375-2025	Information
	9. Roll Call of Delegates		
8.40	Report on WITW (Welding in the World)	Editor in Chief	Nobert Enainger
09.00	Opening Session: 4 Presentations	Chair	Chang
10.40	Sub-Commission III-A: 6 Presentations	Chair	Biro, Tumuluru
13.20	Sub-Commission III-B: 6 Presentations	Chair	Li, Pedro
16.00	Sub-Commission III-C: 5 Presentations	Chair	Santos, Li
Day 2 (24 June 2025, Tuesday)			
08.20	Sub-Commission III-C: 2 Presentations	Chair	Santos, Li
09.00	Sub-Commission III-B: 9 Presentations	Chair	Li, Pedro
13.20	Sub-Commission III-A: 12 Presentations	Chair	Biro, Tumuluru
Day 3 (25 June 2025, Wednesday)			
08.20	Sub-Commission III-B: 11 Presentations	Chair	Li, Pedro
13.20	Sub-Commission III-A: 6 Presentations	Chair	Biro, Tumuluru
	< 61 Presentations in Total>		
16.00	Commission Business	Chair	Chang
	1. Updates to Terms of References		
	2. Intermediate Meeting		
	3. Resolutions and Actions		
	4. Closing Remarks		
16.30	Adjournment		Motion required

2. Commission Leadership

Commission III — Resistance Welding, Solid State Welding and Allied Joining Processes			
Chair	Hee Seok CHANG	Korea	hs.chang@iiwelding.net
Vice Chair	Pedro VILAÇA	Finland	pedro.vilaca@aalto.fi
Sub-Commission III-A: Resistance Welding and Allied Processes			
Chair	Elliot BIRO	Canada	elliottbiro@iiwelding.net
Vice-Chair	Murali TUMULURU	USA	mtumuluru@gmail.com
Sub-Commission III-B: Friction Based Solid-State Processes			
Chair	Wenya LI	China	liwy@nwpu.edu.cn
Vice-Chair	Pedro VILAÇA	Finland	pedro.vilaca@aalto.fi
Sub-Commission III-C: Solid-State Additive Manufacturing			
Chair	Jorge F. Dos Santos	Germany	jorge.dos.santos@stirtec.at
Secretary			
Volunteer	Zygmunt Mikno	Poland	zygmunt.mikno@git.lukasiewicz.gov.pl

3. Terms of Reference

IIW Annual Report 2024

In 2024, Commission III accomplished two remarkable annual meetings. One is the Intermediate Meeting at the Edison Welding Institute: 27 presentations, 5 full-papers recommended for WITW publication, 39 in-person participants, 71 participants including online, and participants came from 16 countries. The other is record-breaking achievement, the IIW 77th Annual Assembly C-III meeting: 56 presentations, 16 full-papers recommend for WITW publication, 4 consecutive full day meeting for the first time of C-III history, 61 attendees on Sunday, 55 on Monday, 46 on Tuesday, 44 on Wednesday (206 man-days), participants came from 21 countries.

Commission III hosted C-III 2025 Intermediate Meeting at the Technische Universität Dresden, Germany with special topics: Application of Machine Learning and Artificial Intelligence applied to C-III Processes. Date: Feb. 11~13, 2025. In the technical visit, as an innovative approach of solid-state Additive Manufacturing, "3D-Printing of buildings combined with welding" (Technische Universität Dresden, Chair of Construction Machinery) were demonstrated: Live demonstration of 3D concrete printing with substrate.

During the last two years, 2023~2024, Commission III gave spur to the research on of solid-state additive manufacturing and launched a new working group, C-III-A-WGA1, to propose destructive weld strength test standards for cylindrical battery used in Electric Vehicle. Also, Commission III put effort into the invitation of new C-III members.

Terms of Reference (III-2375-2025)

Scope and objectives

Commission III offers an international platform for the dissemination, transfer and exchange of state-of-the-art knowledge on resistance, solid state and allied joining processes. Furthermore, within the scope of these activities, Commission III aims to identify and address the role to be played by the above-mentioned processes in future industrial and societal needs as well as the related scientific challenges. This is achieved through a number of Commission and Working Group meetings, conducted worldwide, where actual research results are presented and discussed.

The subject matter addressed by Commission III covers the development of new processes to their industrial application, including, among others, process control and monitoring, microstructure evolution, mechanical and physical properties, cracking phenomena, prototyping and service performance.

*Dissemination and transfer of knowledge are achieved by the preparation of industrial standards in cooperation with WG-STAND and by publishing relevant scientific results in *Welding in the World*.*

Key Objectives and deliverables

Key objectives of Commission III are:

- *Attract high impact researchers working in the fields of resistance, solid state and allied joining processes to participate in Commission III meetings*
- *Support and encourage the continuous increase of the scientific quality of the contributions presented at Commission III Meetings.*
- *Support and encourage the participation of young professionals in Commission III activities.*
- *Support and encourage the publication of high-quality manuscripts in *Welding in the World**
- *Address “emerging topics” by creating Working Groups as focal points for experts and interested members, with the objectives to spread knowledge and elevate the state-of-art in the subject matters in question.*
- *Attract new members by ensuring:*
 - *A high “value-for-money” (i.e. high rate of return in terms of knowledge gained by the invested resource / time and money) for the participation in the Commission meetings.*
 - *A professional organization of Commission meetings.*
 - *The participation of high impact authors.*
 - *Inviting presentation of high scientific level.*
 - *Offering a balanced program addressing the interests of the industrial and academic communities.*
 - *By prioritizing the publication of manuscripts in *Welding in the World* prepared by Commission members.*

Envisaged deliverables in Commission III are:

- *State of the art (Review) manuscripts originated primarily by the Working Groups for publication in *Welding in the World*.*
- *Globally relevant International Standards and Best Practice Documents*

4. Appendix

Agenda of C-III 2025 Annual Assembly Meeting

IIW Doc. III-2308-25

Author: Hee Seok CHANG

COMMISSION



International Institute of Welding

A world of joining experience
Commission III

Chair: Prof. Dr. Hee Seok Chang (Republic of Korea)

Vice-Chair: Prof. Pedro Vilaça (Finland)

Sub-Commission III-A: Resistance Welding and Allied Processes

Chair: Prof. Elliot Biro (Canada), Dr. Murali Tumuluru (USA)

Sub-Commission III-B: Friction Based Processes

Chair: Prof. Wenya Li (China), Prof. Pedro Vilaça (Finland)

Sub-Commission III-C: Solid-State Additive Manufacturing

Chair: Prof. Dr. Jorge F. Dos Santos (Germany)

Secretaty: Dr. Zygmunt Mikno (Poland)

Commission III 2025 Annual Assembly Meeting PROGRAMME

Congress Date: June 23-25, 2025

Congress Venue: Room "Scirocco"

Centro Congressi Porto Antico

Via Magazzini del Cotone, 59

16128 Genoa , Italy

Monday, 23rd June 2025

Time Slots		Title, Authors and Delegation	IIW Document Number III-xxxx-25
Central European Summer Time (CEST)			
8:00	8:20	Registration and Check in	M denotes full paper
8:20	8:40	Plenary session dealing with administrative issues of Commission III Welcome and Introduction, Report on Intermediate Meeting 2025	2308
8:40	9:00	Report on WITW(Welding in the World) by Prof. Norbert Enainger, Editor in Chief Prof. Dr. Norbert Enzinger, Institute of Materials Science, Joining and Forming, Graz University of Technology, Austria Email: Norbert.Enzinger@tugraz.at	
Opening Session of IIW Commission III Resistance Welding and Allied Processes Chair: Prof. Dr. Hee Seok Chang (Republic of Korea)			
9:00	9:20	Invited Speech C-III-A : AI-Enhanced Digital Twin Framework for Virtual Quality Assessment in High-Stack Resistance Spot Welding of AHSS for BEV Structures Ahmad Aminzadeh* *, Hasan Habib*, Melika Nooranfar*, Mohammad Shojaee*, Reza Bakhtiani*, Tarek Belgasam*, Elliot Biro* 1 Department of Mechanical and Mechatronics Engineering, University of Waterloo, Canada 2 Honda Development & Manufacturing of America, 21001 State Route 739, Raymond, OH 43067, USA * Corresponding author: ahmad.aminzadeh@uwaterloo.ca	2341
9:20	9:40	Invited Speech C-III-B : In-situ surface defect identification in friction stir welding using convolutional neural network L. Naveen*, Mattias Igestrand, Vivek Patel, Joel Andersson Department of Mechanical Engineering, University West, Trollhättan, Sweden *corresponding author: naveen.loganathan@hv.se	2327
9:40	10:00	Invited Speech C-III-C : Particle-based off-axis feeding friction stir additive manufacturing Wancheng Lyu * , Xunzhong Guo, Yizhou Shen College of Materials Science and Technology, Nanjing University of Aeronautics and Astronautics, Nanjing 211100, P.R. China * corresponding author: chengwan.lv@nuaa.edu.cn	2343

10:00	10:20	Frequency-Based Thermographic Inspection for Defect Detection Manuela De Maddis* 1, Valentino Razza 2, Luca Santoro 2 1 - Department of Management and Production Engineering, Politecnico di Torino * corresponding author: manuela.demaddis@polito.it 2 - Department of Mechanical and Aerospace Engineering, Politecnico di Torino	2350
10:20	10:40	coffee break	
Sub-Commission III-A : Resistance Welding and Allied Processes Chair: Prof. Elliot Biro (Canada) and Dr. Murali Tumuluru (USA)			
10:40	11:00	Resistance spot welding of die-cast and wrought aluminum alloys: The effect of heat field manipulation on weld spot quality when joining EN AC-42500 to EN AW-5083 Maïke Epperlein*, Dr.-Ing. Alexander Schiebahn, Univ.-Prof. Dr.-Ing. Uwe Reisgen RWTH Aachen University, Welding and Joining Institute (ISF), Germany *corresponding author: maïke.epperlein@isf.rwth-aachen.de	2314
11:00	11:20	Optimization of Pulse Current Conditions for Enhancing Mechanical Properties in Dissimilar Resistance Spot Welding between Al-Si coated 22MnB5 Hot Stamping Steel and SUS201 Sangbyuk Lee 1, Juyeong Lee 1, Taehwan Ko 1, Jaegyu Jung 2 and Seung Hwan Lee 1 * 1 School of Mechanical engineering, Hanyang University, Republic of Korea * corresponding author: seunghlee@hanyang.ac.kr 2 Body Materials Development Team, Hyundai Motor Company, Hwaseong, 18280, Republic of Korea	2324
11:20	11:40	Effect of the Interlocked Element Structure on REW Joining Properties of Aluminium sheet / Steel sheet Wook Jin OH* 1, Hyeon Jung RYU 2, Chang Wook LEE 2, Ji Hong YOO 1, Min Soo KIM 1, Choon Soo LEE 1 1 AVP Division, Hyundai Motor Company, Hwaseong, 18280, Korea * corresponding author: owj0710@hyundai.com 2 Manufacturing Solution Division, Hyundai Motor Company, Ulsang, 18280, Korea	2325
11:40	12:00	Predictive Fracture Mode Model for the Torsion Test of Spot Welds Christian Mathiszik*, Johannes Koal, Hans Christian Schmale * corresponding author : christian.mathiszik@tu-dresden.de Technische Universität Dresden, Institute of Manufacturing Science and Engineering, Chair of Joining Technology and Assembly, Dresden, Germany	2349
12:00	12:20	Resistance Welding of Big Copper Components Martin Baumgarten * , Johannes Koal, Jörg Zschetzsch, Hans Christian Schmale Chair of Joining Technology and Assembly, Technische Universität Dresden, Institut für Fertigungstechnik Professur für Fügetechnik und Montage 01062 Dresden * corresponding author : martin.baumgarten@tu-dresden.de	2358
12:20	13:20	Lunch Break	

13:20	13:40	Method to systematically investigate the effect of tramp elements in resistance spot welding L. L. Arbinger ^{1,2} *, R. Sierlinger ² , N. Enzinger ¹ 1 Graz University of Technology, IMAT Institute of Materials Science, Joining and Forming 2 Voestalpine Steel division * corresponding author: L.Aringer@voestalpine.com	2370
Sub-Com. III-B (Solid-State Friction Based Processes) Chair: Prof. Wenya Li (China), Prof. Vilaça Pedro(Finland)			
13:40	14:00	Optimizing and development of friction stir welding using AI-supported prediction method and digital twin technology R. Delir Nazarlou* 1□, Rijul Pathak 2, Ole Schmidt 3, Christopher Köpp 3, Elmar Münchinger 2, Christoph Schilling 3, S. Salim 1, M. Wiegand 1, S. Böhm 1 1 University of Kassel, Department of Cutting and Joining Manufacturing Processes, Kassel-Germany 2 Lauterbach Verfahrenstechnik GmbH, Karlsruhe-Germany 3 RRS Schilling GmbH, Schwarzenbek-Germany * corresponding author: ramin.delir@uni-kassel.de	2319
14:00	14:20	Effect of Pin Length and Tool Offset Conditions on Friction Stir Welded 6082-T6 Al Alloy using Multi-Pin Tools S. Salim, R. Delir Nazarlou, M. Wiegand, S. Böhm University of Kassel, Department of Cutting and Joining Manufacturing Processes, Kassel, Germany * corresponding author: s.salim@uni-kassel.de	2320
14:20	14:40	Machine learning-based process design of ultrasonic-assisted friction stir channeling for cast aluminum alloys Yuming Xie*, Shengnan Hu * corresponding author: ymxie@hit.edu.cn State Key Laboratory of Precision Welding & Joining of Materials and Structures, Harbin Institute of Technology, Harbin 150001, China	2334
14:40	15:00	Application and Development of Inertial Friction Welding Technology in the Manufacturing of Aircraft Engine High-Pressure Turbine Disk-Shaft Assemblies Qin Feng ^{1,2} , Zhou Jun ^{1,2} , Zhang Chunbo ^{1,2} , Liang Wu ^{1,2} , Wu Yanquan ^{1,2} , Li Rui ^{1,2} 1 Harbin Welding Institute Co., Ltd, Harbin 150028, China * corresponding author : banchunqiu@163.com 2 Heilongjiang Key Laboratory of Advanced Friction Welding Technology and Equipment, Harbin, 150028, China	2359
15:00	15:20	Analysis of the microstructures and properties of GH4151 super alloy inertia friction welded joints for aircraft engine applications Yuan Mingqiang ^{1,2} , Zhou Jun ^{1,2} , Zhang Chunbo ^{1,2} , Liang Wu ^{1,2} , Huang Caiyan ^{1,2} , Qin Feng ^{1,2} , 1 Harbin Welding Institute Co., Ltd, Harbin 150028, China * corresponding author: 1334484223@qq.com 2 Heilongjiang Key Laboratory of Advanced Friction Welding Technology and Equipment, Harbin, 150028, China	2360

15:20	15:40	Feasibility research on metal-polymer composite panels with integrated channels for thermal management systems using hybrid friction stir joining/channelling Arménio N. Correia a,*, Virginia Infante b, Daniel F.O. Braga c, Ricardo Baptista d, Pedro Vilaça e a Instituto Superior Técnico, Universidade de Lisboa, Portugal b LAETA, IDMEC, Instituto Superior Técnico, Universidade de Lisboa, Portugal c INEGI, Faculdade de Engenharia da Universidade do Porto, Portugal d UnIRE, ISEL - Instituto Superior de Engenharia de Lisboa, Instituto Politécnico de Lisboa, Portugal e Department of Energy and Mechanical Engineering, School of Engineering, Aalto University, Finland * corresponding author: armenio.correia@tecnico.ulisboa.pt	2361
15:40	16:00	coffee break	
Sub-Com. III-C (Solid-State Additive Manufacturing) Chair: Dr. Jorge F. dos Santos (Germany), Prof. Wenya Li (China)			
16:00	16:20	Friction stir processing of wire arc additively manufactured Al-Zn-Mg-Cu alloy reinforced with high-entropy alloy particles: Microstructure and mechanical properties He Shan*, Tao Yuan, Shujun Chen a. Institute of Intelligent Forming Equipment and System, College of Mechanical & Energy Engineering, Beijing University of Technology, Beijing 100124, People's Republic of China * corresponding author: shanhe@bjut.edu.cn	2321
16:20	16:40	Wire-based friction stir additive manufacturing of AZ31B magnesium alloy Xiuwen Sun, Xiangchen Meng, Yongxian Huang* * corresponding author: yxhuang@hit.edu.cn State Key Laboratory of Precision Welding & Joining of Materials and Structures, Harbin Institute of Technology, Harbin 150001, China	2335
16:40	17:00	Microstructure evolution and properties of 2024 aluminum alloy fabricated by additive friction stir deposition Wenya Li 1, *, Mingtao Zhang 1, Tao Jiang 1, Xiangnan Feng 1, Zhonggang Sun 2, Liangchao Ma 3 1 Shaanxi Key Laboratory of Friction Welding Technologies, State Key Laboratory of Solidification Processing, Northwestern Polytechnical University, Xi'an 710072, China 2 College of Materials Science and Engineering and Tech Institute for Advanced Materials, Nanjing Tech University, Nanjing 211816, China 3 Ningbo Branch of Chinese Academy of Ordnance Science, Ningbo 315103, China	2315
17:00	17:20	Screw-fed powder-based additive friction stir deposition Mingtao Zhang a, Tao Jiang a, Zhonggang Sun b, Shengqiang Feng c, Liangchao Ma c, Weibing Wang d, Yu Su a, Yaxin Xu a, Wenya Li* a a Shaanxi Key Laboratory of Friction Welding Technologies, State Key Laboratory of Solidification Processing, Northwestern Polytechnical University, Xi'an, 710072, China *corresponding author: liwy@nwpu.edu.cn (WY Li) b College of Materials Science and Engineering and Tech Institute for Advanced Materials, Nanjing Tech University, Nanjing, 211816, China c Ningbo Branch of Chinese Academy of Ordnance Science, Ningbo, 315048, China d Beijing Solidwel Intelligent Technology Co., Ltd, Beijing, 100190, China	2342

17:20	17:40	Microstructural evolution and mechanical properties of AFSD-fabricated 6061 aluminum alloy during varied solution treatment Tao Jiang a, Mingtao Zhang a, Liubing Chen b, Yunfei Xie a, Zhonggang Sun b*, Wenya Li a* a State Key Laboratory of Solidification Processing, Shaanxi Key Laboratory of Friction Welding Technologies, School of Materials Science and Engineering, Northwestern Polytechnical University, Xi'an 710072, Shaanxi, PR China b College of Materials Science and Engineering and Tech Institute for Advanced Materials, Nanjing Tech University, Nanjing, 211816, China * corresponding author: liwy@nwpu.edu.cn (Wenya Li), sunzgg@njtech.edu.cn (Zhonggang Sun).	2346
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Adjournment – Continues on 24th June

Tuesday, 24th June 2025

Time Slots	Title, Authors and Delegation		IIW Document Number III-xxxx-25
Central European Summer Time (CEST)			
8:00	8:20	Registration and Check in	M denotes full paper
Sub-Com. III-C (Solid-State Additive Manufacturing) Chair: Dr. Jorge F. dos Santos (Germany), Prof. Wenya Li (China)			
8:20	8:40	Joule Metal Deposition – Process Features and Stability of arcless wire melting J. Kaars*, F. Jurke, A. Haelsig, J. Hensel Chemnitz University of Technology, Chemnitz, Germany * corresponding author: jonny.kaars@mb.tu-chemnitz.de	2328
8:40	9:00	The Novel Additive Friction Stir Deposition Method for Carbon Steel Fuyuki ISHIDA*, Takayuki YAMASHITA, Abhishek SHARMA, Masayoshi KAMAI, Yoshiaki MORISADA, Hidetoshi FUJII The University of Osaka, Japan * corresponding author : u121303f@ecs.osaka-u.ac.jp	2366
Sub-Com. III-B (Solid-State Friction Based Processes) Chair: Prof. Wenya Li (China), Prof. Vilaça Pedro (Finland)			

9:00	9:20	Strengthening solid-state bonding of friction self-piercing riveted AA7075-T6 with customized rivet structures Bowen Zhang (presenter), Yunwu Ma*, and Yongbing Li *corresponding author: myw3337@sjtu.edu.cn State Key Laboratory of Mechanical System and Vibration, School of Mechanical Engineering, Shanghai Jiao Tong University, Shanghai, 200240, P.R. China Shanghai Key Laboratory of Digital Manufacture for Thin-walled Structures, School of Mechanical Engineering, Shanghai Jiao Tong University, Shanghai, 200240, P.R. China	2333
9:20	9:40	Development of Single Class Friction Self-Piercing Riveting Technique Towards Lightweight Multi-Material Vehicles Yong Chae Lim* 1, Jiheon Jun 1, TianZhao Wang 1, Yiyu Wang 1, Abdul Sayeed Khan 1, Eric Boettcher 2, Zhili Feng 1 1 Materials Science and Technology Division, Oak Ridge National Laboratory, USA 2 Honda Development & Manufacturing of America, LLC * corresponding author : limy@ornl.gov, junj@ornl.gov, wangt2@ornl.gov, wangy4@ornl.gov, fengz@ornl.gov	2316
9:40	10:00	High cycle fatigue performance at 650°C and corresponding fracture behavior of GH4169 joint produced by linear friction welding Guo Z 1, He X 1, Jun T 2, Li J 2, Li W 1, Ma S*1, Xu R 1, Yang X 1, Zhao W 1 1 Northwestern Polytechnical university, Xi'an, China 2 AVIC Manufacturing Technology Institute, Beijing, China * corresponding author: mastiong@163.com	2309
10:00	10:20	Detection of Geometric- and Weight-Related Wear of Sonotrode and Anvil Using Stripe Light Projection Ehlich, K*, Hasieber, M., Bergmann, J.P. Production Technology Group, Technische Universität Ilmenau, D-98693 Ilmenau, Germany * corresponding author: kai.ehlich@tu-ilmenau.de	2329 M
10:20	10:40	coffee break	
10:40	11:00	Flexible ultrasonic-enhanced friction stir welding (FLEX-USE-FSW) Marat Rebrin*, Research Assistant, Chemnitz University of Technology Institute of Materials Science and Engineering Chair of Composites and Material Compounds D-09107 Chemnitz, Germany * corresponding author: marat.rebrin@mb.tu-chemnitz.de	2338 M
11:00	11:20	Influence of Contamination and Passivation on the Ultrasonic Welding Performance of Stranded Wires Dmitrii Ozherekov* (speaker, corresponding author), dmitrii.ozherkov@mb.tu-chemnitz.de, Chemnitz University of Technology, Chemnitz, Germany Jiyong Kim, jiyong.kim@iap.fraunhofer.de, Fraunhofer Institute for Applied Polymer Research IAP, Potsdam, Germany Guntram Wagner, guntram.wagner@mb.tu-chemnitz.de, Chemnitz University of Technology, Chemnitz, Germany	2345 M

11:20	11:40	Development of a process monitoring method for ultrasonic metal welding of automotive wires based only on machine sensor data Andreas Gester *1, Anja Tetzner 2, Guntram Wagner 1, Peter Gluchowski 2 1 Chair of Composites and Material Compounds, Chemnitz University of Technology, Chemnitz, Germany 2 Professorship of Business Information Systems II, Chemnitz University of Technology, Chemnitz, Germany * corresponding author: andreas.gester@mb.tu-chemnitz.de	2351
11:40	12:00	Process optimisation of refill friction stir spot welded wrought aluminium to copper joints for hybrid busbar applications Felix Schindler* a, Sebastian Fritsche a, Thomas Weinberger b, Sergio de Traglia Amancio-Filho a a Graz University of Technology, Institute of Materials Science, Joining and Forming, Graz, AT b Stirtec GmbH, Kalsdorf bei Graz, AT * corresponding author: felix.schindler@student.tugraz.at	2344
12:00	12:20	Effects of Nb and Si addition on the microstructure and mechanical properties in friction welded joint of non-quenched and tempered steels Bongjun Kim 1, Joonoh Moon 1,*, Jun-Yun Kang 2, Jungwon Lee 3, Yonghyun Kim 3 1 Department of Materials Convergence and System Engineering, Changwon National University, Changwon, Republic of Korea 2 Extreme Materials Research Institute, Korea Institute of Materials Science, Changwon, Republic of Korea 3 DY Power, Changwon, Republic of Korea *corresponding author: mjo99@changwon.ac.kr	2317
12:20	13:20	Lunch Break	
Sub-Commission III-A : Resistance Welding and Allied Processes Chair: Prof. Elliot Biro (Canada) and Dr. Murali Tumuluru (USA)			
13:20	13:40	Resistance projection welding using wire mesh inserts: Influence of material and wire mesh geometry Rene Gravera*, Nima Eslamib, Alexander Hamsc, Dennis Lauterbachd, Stefan Böhme Volkswagen AG, Wolfsburg, Germany a,b,c,d, University Kassel, Kassel, Germany * corresponding author: rene.graver@volkswagen.de	2311
13:40	14:00	Optimizing Resistance Spot Welding (RSW) of Aluminum Alloys by generating Big Data for AI Analysis using an Automated Robotic Laboratory Cell A. Fezer*, M. Werz and S. Weihe * corresponding author: andreas.fezer@mpa.uni-stuttgart.de Materials Testing Institute (MPA), University of Stuttgart, Pfaffenwaldring 32, 70569 Stuttgart, Germany	2312

14:00	14:20	Reevaluating RSW Acceptance Criteria: Strength Performance in Dissimilar High Stacking Ratio Joints with Inadequate Nugget Penetration H. Habib *1, M. Nooranfar 1, M. Shojaei 1, R. Bakhtiari 1, A. Aminzadeh 1, T. M. Belgasam 2, E. Biro 1 1 Centre for Advanced Materials Joining (CAMJ), Department of Mechanical & Mechatronics Engineering, University of Waterloo, Waterloo, Canada 2 Honda Development & Manufacturing of America, 21001 State Route 739 Raymond, OH 43067, USA * corresponding author E-mail address: h6habib@uwaterloo.ca	2330 M
14:20	14:40	Computational Simulation of Weld Bonding Process for 22MnB5 Steel Henry Leon, Kaue Riffel, Antonio J. Ramirez, Rakhi Bawa* Welding Engineering Department, The Ohio State University, Columbus, Ohio, USA * corresponding author: bawa.23@buckeyemail.osu.edu	2340
14:40	15:00	Real-time nugget growth prediction of resistance spot welding using collaborative simulation and temporal neural networks Yu-Jun Xia* 1, Qiang Song 1, Ke-Ke Yang 2, Yong-Bing Li 1. * corresponding author: xyjdbgt6509@sjtu.edu.cn 1 Shanghai Key Laboratory of Digital Manufacture for Thin-Walled Structures, School of Mechanical Engineering, Shanghai Jiao Tong University, 800 Dongchuan Road, Shanghai 200240, China. 2 Laboratory for Material and Joining Technology (LWF), Paderborn University, 33098 Paderborn, Germany	2356
15:00	15:20	Residual Stress Formation of Resistance Spot Welds in High-Strength Steel Sheets Takumi MIZUTANI*, Manabu FUKUMOTO, Hideki UEDA, Tooru OKADA, Hiroki FUJIMOTO Nippon Steel Corporation, 20-1 Shintomi, Futtsu-shi, Chiba, 293-8511, Japan * corresponding author : mizutani.cf3.takumi@jp.nipponsteel.com	2368
15:20	15:40	coffee break	
15:40	16:00	Investigating Zn diffusion during Liquid Metal Embrittlement of Resistance Spot Welded TWIP steel Gautham Mahadevan*, Virginia Bertolo a, Soheil Sabooni c, Vera Popovich a, Leo A.I. Kestens a,b and Marcel Hermans a a Department of Materials Science and Engineering, Delft University of Technology, Mekelweg 2, 2628 CD Delft, The Netherlands b Department of Electromechanics, Systems and Metals Engineering, Ghent University, Technologiepark 46, 9052 Gent, Belgium c Tata Steel Nederland Technology B.V., P.O. Box 1000, 1970 CA IJmuiden, The Netherlands * corresponding author. E-mail address: g.mahadevan@tudelft.nl (Gautham Mahadevan)	2313 M
16:00	16:20	High Cycle Fatigue Testing of Lap Shear RSW Joints from Various High Strength Steel Sheets Sahm Alden Abd Al Al * , Ákos Meilinger, Marcell Gáspár, János Lukács Institute of Materials Science and Technology, Faculty of Mechanical Engineering and Informatics, University of Miskolc, 3515, Miskolc, Hungary * corresponding author: sahm.alden@uni-miskolc.hu	2322 M

16:20	16:40	Real Time Monitoring of Process Disturbances in Resistance Spot Welding based on simulation method Johannes Koal*, Martin Baumgarten, Sreeram Ramakrishnan * corresponding author: johannes.koal@tu-dresden.de Dresden University of Technology, Institute of Manufacturing Science and Engineering, Chair of Joining Technology and Assembly, Dresden, Germany	2355 M
16:40	17:00	Suppression of Welding Spatter during Resistance Spot Welding by using External Magnetic Field Muneyoshi Iyota*1, Toshinori Ogishi 1, Takahisa Shobu 2, Tomoki Matsuda 3, Yujiro Hayashi 4 and Tomokazu Sano 3 1 Osaka Institute of Technology 2 Japan Atomic Energy Agency 3 The University of Osaka 4 RIKEN * corresponding author: muneyoshi.iyota@oit.ac.jp	2365
17:00	17:20	In-situ solidification Induced softening Zone Evolution and Fracture Behavior in Resistance Spot Welded Hot-Stamped Steels Soomin Lee 1, Savyasachi Nellikode 1, Sunusi Marwana Manladan 2, Jeong-Hwan Jo 1, Sungi Hwang 1, Youngmin Lim 3, Wanee Yug 3, Yeong-Do Park 1 1 Department of Advanced Materials Engineering, Dong-Eui University, Busan 47340, Korea 2 Department of Mechanical Engineering, Bayero University, No 93 Daia, Kano, Nigeria 3 Automotive Body Application Engineering Team, Hyundai Steel Company, Korea * corresponding author ypark@deu.ac.kr	2352
17:20	17:40	Paint Baking response on Cross-Tension Strength and Fracture Behavior of 2.0GPa Hot-Stamped (HS) and Warm-Stamped (WS) Steels Savyasachi Nellikode 1, Mahfuzur Rahman 1, Jeong-Hwan Jo 1, Sunusi Marwana Manladan 2, Young-Kook Lee 3, Yeong-Do Park 1 1 Department of Advanced Materials Engineering, Dong-Eui University, Busan 47340, Korea 2 Department of Mechanical Engineering, Bayero University, No 93 Daia, Kano, Nigeria 3 Department of Materials Science and Engineering, Yonsei University, Seoul 03722, Korea * corresponding author ypark@deu.ac.kr	2353
Adjournment - Continues on 25th June			

Wednesday, 25th June 2025

Time Slots	Title, Authors and Delegation		IIW Document Number III-xxxx-25
Central European Summer Time (CEST)			
8:00	8:20	Registration and Check in	M denotes full paper
Sub-Com. III-B (Solid-State Friction Based Processes) Chair: Prof. Wenya Li (China), Prof. Vilaça Pedro (Finland)			

8:20	8:40	Characterization of double-side friction stir-based joining of aluminum alloy to structural polymer Prabilson Khadka, Timon Schapals, Pedro Vilaca* Department of Energy and Mechanical Engineering, School of Engineering, Aalto University, Finland * corresponding author: pedro.vilaca@aalto.fi; +358 50 3652110	2362
8:40	9:00	Static shoulder friction stir-based joining of structural polymer plate to a polymeric proton-exchange membrane Prabilson Khadka, Saad Ahmed, Henrique Mitsugui, Pedro Vilaca* Department of Energy and Mechanical Engineering, School of Engineering, Aalto University, Finland * corresponding author: pedro.vilaca@aalto.fi; +358 50 3652110	2363
9:00	9:20	Combined Strengthening Mechanisms of Solid-State Joining and Mechanical Interlocking in Refill Friction Stir Spot Welded Aluminum-Steel Joints Tong Shen ^{1,a} , Ting Chen ^{1,b} , Uceu Suhuddin ^{1,c} , Benjamin Klusemann ^{* 1,2,d} 1 Helmholtz-Zentrum Hereon, Institute of Material and Process Design, Solid State Materials Processing, Max-Planck-Str. 1, Geesthacht 21502, Germany 2 Leuphana University of Lüneburg, Institute for Production Technology and Systems, Universitätsallee 1, Lüneburg 21335, Germany a tong.shen@hereon.de, b ting.chen@hereon.de, c uceu.suhuddin@hereon.de, d benjamin.klusemann@hereon.de (*corresponding author)	2331
9:20	9:40	Numerical simulation on the material flow and intermixing behavior in friction stir welding of dissimilar materials Hao Su a, b, *, Wenzhuo Li a, b, Ji Chen a, ChuanSong Wu a a MOE Key Lab for Liquid-Solid Structure Evolution and Materials Processing, Institute of Materials Joining, Shandong University, Jinan 250061, China b Shenzhen Research Institute of Shandong University, A301 Virtual University Park in South District, Shenzhen 518100, China * corresponding author: suh@email.sdu.edu.cn	2347
9:40	10:00	Multiphase-field analysis of the formation and evolution of intermetallic compounds during dissimilar FSW of Al/Mg alloys Fengyuan Zhao, ChuanSong Wu * Institute of Materials Joining, Shandong University, Jinan, 250061, China * corresponding author: wucs@sdu.edu.cn	2348
10:00	10:20	A Novel Separation Technique Exploiting Cold Cracking of A Solid-State Joint Tomoki KOSAKA*, Tomoki Kosaka, Takayuki Yamashita, Abhishek Sharma, Takuya Miura, Yoshiaki Morisada, Kohsaku Ushioda, Hidetoshi Fujii Joining and Welding Research Institute, The University of Osaka, Osaka, Japan * corresponding author: u655156i@ecs.osaka-u.ac.jp	2369
10:20	10:40	coffee break	

10:40	11:00	Creep-fatigue behavior of a friction stir welding 7050-T7451 aluminum alloy: Microstructure evolution and microscopic damage mechanisms Huan Wang , Weifeng Xu*, Yanfei Wang, Hongjian Lu Shaanxi Key Laboratory of Friction Welding Technologies, Northwestern Polytechnical University, Xi'an 710072, Shaanxi, China *corresponding author: xwf1982@nwpu.edu.cn	2354
11:00	11:20	Investigating the Process-Performance Relationship in Mg/Al Friction Stir Lap Welding Ming Zhai* a, ChuanSong Wu b * corresponding author: zhaiming1995@126.com a Metals and Chemistry Research Institute, China Academy of Railway Sciences Co., Ltd., Beijing, 100081, China b Institute of Materials Joining, Shandong University, Jinan, 250061, China	2357
11:20	11:40	Novel vase-shaped structure fabricated by progressive laser surface texturing for strengthening friction spot joints between aluminum alloy and PEEK Nannan Chen*, Feifei Xie, Ke Chen, Min Wang * corresponding author : cnsjtu@sjtu.edu.cn School of Materials Science and Engineering, Shanghai Jiao Tong University, 800 Dong Chuan Road, Shanghai 200240, PR China	2364
11:40	12:00	Microstructure Evolution And Its Effect On The Corrosion Of Dissimilar Aluminum Alloys Friction Stir Welding Joint Lu*,Weifeng Xu * corresponding author: hjlu@mail.nwpu.edu.cn Northwestern Polytechnical University, Xi'an 710072, Shaanxi, China	2310
12:00	12:20	Exploring The Low Cycle Fatigue Performance Of The AA7050-AA2024 Dissimilar Friction Stir Welding Joints: Role Of Microstructure Evolution On The Fatigue Damage Hongjian Lu, Weifeng Xu* * corresponding author: xwf1982@nwpu.edu.cn hjlu@mail.nwpu.edu.cn Northwestern Polytechnical University, Xi'an 710072, Shaanxi, China	2326
12:20	13:20	Lunch Break	
Sub-Commission III-A : Resistance Welding and Allied Processes Chair: Prof. Elliot Biro (Canada) and Dr. Murali Tumuluru (USA)			
13:20	13:40	Cold Spot Joining of Aluminum alloys Ryuta KASEBE*1, Yoshiaki MORISADA 1, Takayuki YAMASHITA 1, Abhishek SHARMA 1, Masayoshi KAMAI 1, Takaaki MIYAUCHI 2, Masaaki NAKAI 3, Kohsaku USHIODA 1, Hidetoshi FUJII 1 1 The University of Osaka, Japan * corresponding author : u542939d@ecs.osaka-u.ac.jp 2 DAIHEN Corporation, Japan 3 Institute of Science Tokyo, Japan	2367

13:40	14:00	Comparative study into the occurrence of liquid metal embrittlement inner cracks during resistance spot welding of two Zn-coated advanced high strength steels Yang Yu * corresponding author: yuyang_all@163.com Research Institute of Technology of Shougang Group Co., Ltd., Beijing, 100043 China	2323
14:00	14:20	Influence of liquid metal embrittlement on the failure behavior of resistance spot-welded joints with galvanized advanced high-strength steel: A component-level study under crash loading Keke Yang a,*, Matthias Sowada a, Viktoria Olfert a, Georg Seitz b, Vincent Schreiber c, Marcel Heitmann a, David Hein a, Max Biegler b, Sven Jüttner c, Michael Rethmeier e,d,b, Gerson Meschut a a Laboratory for Material and Joining Technology (LWF), Paderborn University, 33098, Paderborn, Germany b Fraunhofer Institute for Production Systems and Design Technology (IPK), 10587, Berlin, Germany c Institute of Materials and Joining Technology (IWF), Otto-von-Guericke University Magdeburg, 39106, Magdeburg, Germany d Federal Institute for Materials Research and Testing (BAM), 12205, Berlin, Germany e Institute for Machine Tools and Factory Management (IWF), Technical University of Berlin, 10623, Berlin, Germany	2332
14:20	14:40	Clarifying the impact of common welding process imperfections on LME inner cracks occurrence and a potential solution to eliminate them Outhmane Siar* * corresponding author: outhmane.siar@arcelormittal.com Automotive Products Properties / Welding , ArcelorMittal Maizières les Metz, Maizières Products Lab., France	2339
14:40	15:00	Developing a Methodology to Assess Liquid Metal Embrittlement Impact on the Fatigue Life of Resistance Spot Welds Moritz Ullrich* and Sven Jüttner * corresponding author: moritz.ullrich@ovgu.de Otto-von-Guericke-University Magdeburg, Institute for Materials, Technologies and Mechanics Universitätsplatz 2, 39106 Magdeburg, Germany	2337
15:00	15:20	coffee break	
15:20	15:40	Analysis of the influence of the nut projection height on the quality of resistance welded joints Zygmunt Mikno* a, Mariusz Stepień b, Wenqi Zhang c * corresponding author: zygmunt.mikno@git.lukasiewicz.gov.pl a. Lukasiewicz – GIT Center of Welding, ul. Bl. Czesława 16-18, 44-100 Gliwice, Poland b. Silesian University of Technology, ul. B. Krzywoustego 2, 44-100 Gliwice, Poland c. SWANTEC Software and Engineering ApS Diplomvej 373, 2800 Kgs. Lyngby, Denmark	2336
15:40	16:00	Meeting of Working Group, C-III-A-WGA1 (Destructive Test for Cylindrical EV Battery)	
16:00	16:30	List of Resolutions and Closure Commission III Chair: Prof. Hee Seok Chang	
Adjournment			