ICWAM

Program

2ND INTERNATIONAL CONGRESS ON WELDING, ADDITIVE MANUFACTURING AND ASSOCIATED NON-DESTRUCTIVE TESTING

JUNE 5, 6 & 7 - 2019

METZ CONGRÈS Robert Schuman, FRANCE

3 days of conferences, exhibition & industrial visits

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Confédération Française pour les Essais Non Destructifs

DAY ONE

DAY 1 - Wednesday 5th June, 2019 - CONFERENCES & EXHIBITION

	Time		Room 1 (R1)	Room 2 (R2)	Room 3 (R3)
OPENING SESSION (S0)	08:30	09:30	**WELCOME COFFEE & REGISTRATION - METZ CONGRÈS Robert Schuman (Reception Hall)**		
	09:30	09:50	**WELCOME - S0-R1-W - CONGRESS OPENING A. CHEHAIBOU - General Manager (INSTITUT DE SOUDURE, France) P. MAGNIN - Chairman of ICWAM 2019 (STELIA AEROSPACE, France)**		
	09:50	10:20	**KEYNOTE 1 - S0-R1-K1 - "How modern NDT help to understand the welding processes applied in Greek and Roman large bronze statuary" by B. MILLE (MUSEE DU LOUVRE, France), introduced by F. CHAMPIGNY (COFREND)**		
	10:20	10:50	**KEYNOTE 2 - S0-R1-K2 - "A review of new techniques for the manufacturing, welding and non-destructive testing of thermoplastic composites of tomorrow" by J-P. CAUCHOIS (INSTITUT DE SOUDURE, France), introduced by F.REUX (JEC GROUP)**		
	10:50	11:20	**COFFEE BREAK - Exhibit Hall (Hall 2.1)**		
	11:20	11:50	**KEYNOTE 3 (IIW JAEGER LECTURE) - S0-R1-K3 - IIW presentation by S. EGERLAND (FRONIUS, Austria), introducing the IIW Jaeger Lecture : "A review of Wire based DED Additive Manufacturing, recent advances and future developments" by S. WILLIAMS (CRANFIELD UNIVERSITY, United Kingdom)**		
	11:50	12:30	**REGIONAL CEREMONY - S0-R1-G - Welcome from Institutional and Regional partners**		
	12:30	13:30	**LUNCH - Exhibit hall (Hall 2.1)**		
SESSION 1 (S1)			WIRE-BASED ADDITIVE MANUFACTURING: EQUIPMENT AND CONSUMABLES	POWDER BED ADDITIVE MANUFACTURING: METALLURGY, MICROSTRUCTURES & PROPERTIES	COMPOSITE ADDITIVE MANUFACTURING
	13:30	13:50	S1-R1-01	S1-R2-01	S1-R3-01
	13:50	14:10	S1-R1-02	S1-R2-02	S1-R3-02
	14:10	14:30	S1-R1-03	S1-R2-03	S1-R3-03
	14:30	14:50	S1-R1-04	S1-R2-04	S1-R3-04
	14:50	15:10	S1-R1-05	S1-R2-05	S1-R3-05
	15:10	15:30	S1-R1-06	S1-R2-06	S1-R3-06
	15:30	16:00	**COFFEE BREAK - Exhibit hall (Hall 2.1)**		
SESSION 2 (S2)			NON-DESTRUCTIVE TESTING: TOMOGRAPHY AND ASSOCIATED TECHNIQUES	WELDING AND LASER PROCESSES	NON-DESTRUCTIVE TESTING & MONITORING IN COMPOSITE MANUFACTURING PROCESSES
	16:00	16:20	S2-R1-01	S2-R2-01	S2-R3-01
	16:20	16:40	S2-R1-02	S2-R2-02	S2-R3-02
	16:40	17:00	S2-R1-03	S2-R2-03	S2-R3-03
	17:00	17:20	S2-R1-04	S2-R2-04	S2-R3-04
	17:20	17:40	S2-R1-05	S2-R2-05	S2-R3-05
	17:40	18:00	S2-R1-06	S2-R2-06	S2-R3-06
	18:00	18:20		S2-R2-07	S2-R3-07
	18:20	20:00	**FREE TIME**		
	20:00	23:30	**GALA DINNER & AWARDS CEREMONY - METZ CONGRÈS Robert Schuman (Hall 2.2)**		

DAY TWO

DAY 2 – Thursday 6th June, 2019 - CONFERENCES & EXHIBITION

	Time		Room 1 (R1)	Room 2 (R2)	Room 3 (R3)	Room 4 (R4)
	8:00	8:30	**REGISTRATION - METZ CONGRÈS Robert Schuman (Reception Hall)**			
			WIRE-BASED ADDITIVE MANUFACTURING: PROCESSES [PART 1]	MONITORING IN METALS MANUFACTURING PROCESSES	FRICTION STIR WELDING	SIMULATION & MODELLING [PART 1]
SESSION 3 (S3)	8:30	8:50	S3-R1-01	S3-R2-01	S3-R3-01	S3-R4-01
	8:50	9:10	S3-R1-02	S3-R2-02	S3-R3-02	S3-R4-02
	9:10	9:30	S3-R1-03	S3-R2-03	S3-R3-03	S3-R4-03
	9:30	9:50	S3-R1-04	S3-R2-04	S3-R3-04	S3-R4-04
	9:50	10:10	S3-R1-05	S3-R2-05	S3-R3-05	S3-R4-05
	10:10	10:30	S3-R1-06	S3-R2-06	S3-R3-06	S3-R4-06
	10:30	11:00	**COFFEE BREAK - Exhibit hall (Hall 2.1)**			
			WIRE-BASED ADDITIVE MANUFACTURING: PROCESSES [PART 2]	ALTERNATIVE ROUTES FOR METAL PROCESSING AND ASSEMBLY		SIMULATION & MODELLING [PART 2]
SESSION 4 (S4)	11:00	11:20	S4-R1-01	S4-R2-01	-	S4-R4-01
	11:20	11:40	S4-R1-02	S4-R2-02	-	S4-R4-02
	11:40	12:00	S4-R1-03	S4-R2-03	-	S4-R4-03
	12:00	12:20	S4-R1-04	S4-R2-04	-	S4-R4-04
	12:20	13:30	**LUNCH - Exhibit hall (Hall 2.1)**			
			WIRE-BASED ADDITIVE MANUFACTURING: TOWARDS INDUSTRIALIZATION	NON-DESTRUCTIVE TESTING: VOLUMETRIC METHODS	INNOVATIVE PROCESSING IN COMPOSITES	MATERIALS AND CHARACTERIZATION
SESSION 5 (S5)	13:30	13:50	S5-R1-01	S5-R2-01	S5-R3-01	S5-R4-01
	13:50	14:10	S5-R1-02	S5-R2-02	S5-R3-02	S5-R4-02
	14:10	14:30	S5-R1-03	S5-R2-03	S5-R3-03	S5-R4-03
	14:30	14:50	S5-R1-04	S5-R2-04	S5-R3-04	S5-R4-04
	14:50	15:10	S5-R1-05	S5-R2-05	S5-R3-05	S5-R4-05
	15:10	15:30	S5-R1-06	S5-R2-06	S5-R3-06	S5-R4-06
	15:30	16:00	**COFFEE BREAK - Exhibit hall (Hall 2.1)**			
CLOSING SESSION 6 (S6)	16:00	18:20	**PLENARY SESSION ON INDUSTRY 4.0 - S6-R1-P&R - "WELDING, ADDITIVE MANUFACTURING & NDT IN INDUSTRY 4.0" introduced by AIF: Alliance pour l'Industrie du Futur, the French Initiative for Industry 4.0 with the points of views and visions of key partners and stakeholders (ARCELORMITTAL, ESI GROUP, EWF, HZG, INORI, KUKA, OSAKA UNIVERSITY) followed by a roundtable with the audience**			

DAY THREE

DAY 3 – Friday 7th June, 2019 - VISITS

	Time		Visit 1	Visit 2	Visit 3
INDUSTRIAL VISITS	7:30	7:45	**INDUSTRIAL VISITS: MEETING POINT APPOINTMENT METZ CONGRÈS Robert Schuman**		
			7:45 Tour #1	7:30 Tour #2	7:45 Tour #3
			Metal tour - theme 1	Metal tour - theme 2	Composite tour
			Institut de Soudure industrial R&D center (Yutz) & ArcelorMittal Maizières Research (Maizières)	PSA Peugeot Citroën & CEA Tech (Trémery) & Institut de Soudure Industrial R&D center (Yutz)	Composite park (Porcelette): Composite Integrity & IRT M2P & Institut de Soudure Composite Technology Platform (Saint-Avold)
		13:00	**LUNCH - Distribution of lunch bag**		
GUIDED TOUR		10:00	**GUIDED TOUR : MEETING POINT APPOINTMENT METZ CONGRÈS Robert Schuman**		
	10:00	12:30	Metz tour with a guide Discover the essential sights of Metz		
		12:30	**LUNCH - Distribution of lunch bag**		

Note: the following program is based on information available at printing time of the present booklet. Slight changes may occur by the conference time.

WIRE-BASED ADDITIVE MANUFACTURING: EQUIPMENT AND CONSUMABLES

DAY 1 - 5th June 2019

Code	Theme	Time		Room
S1-R1-O1	Optimization of Filler Metals for WAAM of Ni-Base Components F. Stahl[1] [1] Deutsche Nickel GmbH, Schwerte, Germany	13:30	13:50	ROOM 1 (R1)
S1-R1-O2	Properties and characterization of solid wires specifically designed and produced for wire arc additive manufacturing F. Ciccomascolo[1], A. Nouzille[2], M. Schmitz-Niederau[3] [1] Voestalpine Böhler Welding Italia, Milan, Italia [2] Voestalpine Böhler Welding, Voisins-le-Bretonneux, France [3] Voestalpine Böhler Welding Germany, Hamm, Germany	13:50	14:10	
S1-R1-O3	Robotic Additive Manufacture using Wire Arc Welding Processes S. Pan[1], J. Norrish[1] [1] University of Wollongong, Australia	14:10	14:30	
S1-R1-O4	Development of a high performance, direction-independent TIG hot-wire process for the arc-based additive manufacturing of large scale structures E. Spaniol[1], T. Ungethüm[1], M. Hertel[1], U. Füssel[1] [1] TU-Dresden, Faculty of Mechanical Science and Engineering, Institute of Manufacturing Technology, Chair of Joining Technology and Assembly	14:30	14:50	
S1-R1-O5	Multifunctionnal cells robots expected by Industry 4.0 B. Rivalier[1], P. Verlet[1] [1] VLM Robotics, Lacanau de Mios, France	14:50	15:10	
S1-R1-O6	Laser deposition welding with centric material feed and circular direct diode modules S. Ulrich[1], M.Güpner[2], J.Bliedtner[2], M. Schnick[3] [1] Guenter Koehler Institute of Joining and Material Testing, Jena, Germany [2] Ernst-Abbe-Hochschule, Jena, Germany [3] Oscar PLT GmbH, Klipphausen, Germany	15:10	15:30	

POWDER BED ADDITIVE MANUFACTURING: METALLURGY, MICROSTRUCTURES & PROPERTIES

DAY 1 - 5th June 2019

Code	Theme	Time		Room
S1-R2-O1	Hybrid manufacturing with 316L and aluminium powder characterisation, system-level tool and mechanical characterisations N. Maillol[1], J. Bajolet[1], M. Soulier[2], D. Vincent[2], P.Penchev[3], A. Mehmeti[3], D. Busquets Mataix[4], A.Tommasi[5] [1] IPC - Centre Technique Industriel de la Plasturgie et des Composites, Bellignat, France [2] CEA – Commissariat à l'énergie atomique et aux énergies alternatives, Grenoble, France [3] Department of Mechanical Engineering, School of Engineering, University of Birmingham, Edgbaston Birmingham, UK [4] Universidad Politécnica de Valencia, Valencia, Spain [5] Gemmate Technologies s.r.l., Buttigliera Alta, Italy	13:30	13:50	ROOM 2 (R2)
S1-R2-O2	Single-step Fabricate of Microstructurally Functionally Graded Ti6Al4V by Laser Powder Bed Fusion Additive Manufacturing Y. Geng[1], N. M. Harrison[1,2,3,4] [1] Mechanical Engineering, College of Engineering & Informatics, Galway, Ireland [2] I-Form Advanced Manufacturing Research Centre, Ireland [3] Ryan Institute for Environmental, Marine and Energy Research, Galway, Ireland [4] IComp Irish Composites Centre, Ireland	13:50	14:10	

POWDER BED ADDITIVE MANUFACTURING: METALLURGY, MICROSTRUCTURES & PROPERTIES

DAY 1 - 5th June 2019

Code	Theme	Time		Room
S1-R2-O3	Influence of gas atmosphere during the Laser Powder Bed Fusion of an Inconel 625 alloy S. Traoré[1,2], M. Schneider[2], I. Koutiri[2], F. Coste[2], C. Charpentier[1], P. Lefebvre[1], P. Peyre[2] [1] Air Liquide Paris R&D Center, Les Loges-en-Josas, France [2] PIMM Laboratory, UMR 8006 ENSAM – CNRS – CNAM, Paris, France	14:10	14:30	ROOM 2 (R2)
S1-R2-O4	Influence of contour and hatching areas on the high cycle fatigue endurance of 316L LPBF parts O. Andreau[1,2], E. Pessard[3], I. Koutiri[2], N. Saintier[4], J-D. Penot[1], C. Dupuy[2], P. Peyre[2] [1] CEA Saclay DIGITEO, Gif-Sur-Yvette, France [2] Arts et Métiers ParisTech, CER Paris - Laboratoire PIMM, Paris, France [3] Arts et Métiers ParisTech, CER Angers - Laboratoire LAMPA, Angers, France [4] Arts et Métiers ParisTech, CER Bordeaux - Laboratoire I2M, Gradignan, France	14:30	14:50	
S1-R2-O5	Location and Thickness Dependency of E-PBF Manufactured Alloy 718 on the Microstructural Characteristics P. Karimi[1], E. Sadeghi[1], P. Harlin[2], J. Andersson[1] [1] Department of Engineering Science, University West, Trollhättan, Sweden [2] Sandvik Materials Technology, 811 81 Sandviken, Sweden	14:50	15:10	
S1-R2-O6	Discontinuities in Additive Manufactured Components - Influence on the Mechanical Strengths C. Weidig[1], C. Straube[1] [1] ifw Jena – Günter-Köhler-Institut für Fügetechnik und Werkstoffprüfung GmbH, Materials Testing Laboratory, Jena, Germany	15:10	15:30	

COMPOSITE ADDITIVE MANUFACTURING

DAY 1 - 5th June 2019

Code	Theme	Time		Room
S1-R3-O1	Overview of the global composites market 2018-2023 F. Reux[1] [1] JEC Composites, 25 boulevard de l'Amiral Bruix, 75116 Paris, France	13:30	13:50	ROOM 3 (R3)
S1-R3-O2	Additive Manufacturing for aerospace: current works in modeling, materials development and processing for composite parts manufacturing, and remaining challenges. A review by Safran Composites. A. N. Piccirelli[1] [1] Safran Composites, Safran Tech, Itteville, France	13:50	14:10	
S1-R3-O3	Kepstan the high performance polymer for the production of plastic and composite parts by additive manufacturing M.Glotin[1], G. de Crevoisier[1] [1] ARKEMA, Colombes, France	14:10	14:30	
S1-R3-O4	Structural composite parts in additive manufacturing conception, modelling and manufacturing T. Joffre[1], J. Bajolet[1] [1] IPC - Centre Technique Industriel de la Plasturgie et des Composites, Bellignat, France	14:30	14:50	
S1-R3-O5	Additive Manufacturing of Plastic Products with Functional Properties M. Iurzhenko[1,2], O. Masiuchok[1], Y. Mamunya[2], R. Kolisnyk[1], M. Korab[1], S. Pruvost[3] [1] Plastics Welding Department, E.O.Paton Electric Welding Institute of the National Academy of Sciences of Ukraine, Kiev, Ukraine [2] Institute of Macromolecular Chemistry of the National Academy of Sciences of Ukraine, Kiev, Ukraine [3] IMP@INSA, UMR CNRS 5223, Villeurbanne, France	14:50	15:10	
S1-R3-O6	Improved CO2 footprint and cost structure in manufacturing of high performance thermoplastic composites using 3D printing M. Eichenhofer[1], G. Carolina[1] [1] 9T Labs, Zurich, Switzerland	15:10	15:30	

NON-DESTRUCTIVE TESTING: TOMOGRAPHY & ASSOCIATED TECHNIQUES

DAY 1 - 5th June 2019

Code	Theme	Time		Room
S2-R1-O1	From Powder to Promises F. Thibault[1] [1] Carl Zeiss SAS, Industrial Quality Solutions, Marly le Roi, France	16:00	16:20	ROOM 1 (R1)
S2-R1-O2	Evaluation of the CT measurement accuracy of additive manufactured parts M. Costin[1], C. Vienne[1], J-D. Penot[1], S. Brzuchacz[2], M. Giacomobono[2], E. Fargier[3], A-F.Obaton[3], C. Yardin[3] [1] CEA, LIST, Gif-sur-Yvette, France [2] CETIM - Technical Center for Mechanical Industry, Senlis, France [3] LNE, Laboratoire National de Métrologie et d'Essais, Paris, France	16:20	16:40	
S2-R1-O3	X-ray and Computed tomography as a tool for quality assurance, process optimization and metrology inspections in the field of additive manufacturing P. Desoete[1] [1] Yxlon International GmbH, Hamburg, Germany	16:40	17:00	
S2-R1-O4	Improving XCT inspection of AM dense parts through scattering correction C. Vienne[1], M. Costin[1], A. Touron[1], J. Escoda[1] [1] CEA, LIST, Gif-sur-Yvette, France	17:00	17:20	
S2-R1-O5	Influence of resolution on the X-ray CT based measurements of metallic AM lattice structures J.S. Rathore[1], C. Vienne[2], Y. Quinsat[3], C. Tournier[1,3] [1] Institut de Recherche Technologique SystemX, Palaiseau, France [2] CEA, LIST, Gif-sur-Yvette, France [3] LURPA, ENS Paris-Saclay, Université Paris-Sud, Université Paris-Saclay, Cachan, France	17:20	17:40	
S2-R1-O6	Advanced X-ray Computed Tomography in Additive Manufacturing G. Zacher[1], T. Hemberger[1], M.Gieseke[2] [1] GE Measurement & Control, Wunstorf, Germany [2] Baker Hughes, a GE company, Celle, Germany	17:40	18:00	

WELDING AND LASER PROCESSES

DAY 1 - 5th June 2019

Code	Theme	Time		Room
S2-R2-O1	Flexible Automatic Robot Programming for Welding J. Norrish[1], N. Larkin[1], A. Short[1], S. Van Duin[1] [1] University of Wollongong, Australia	16:00	16:20	ROOM 2 (R2)
S2-R2-O2	Comparison between continuous and pulsed TIG welding on hot cracking susceptibility of IN718 L. Vázquez[1], N. Ruiz[1], F. Santos[2], A. Magaña[2], P. Rodríguez[3], P. Álvarez[1] [1] IK4-LORTEK, Technological Centre, Ordizia, Spain [2] IK4-AZTERLAN, Technological Centre, Durango, Spain [3] EIPC S.L., Eibar, Spain	16:20	16:40	
S2-R2-O3	Tracking weld metal cracking in laser-beam welded dissimilar joints between cast and LMD-produced Stellite 31 and Nimonic 75 M. Dahmen[1], S. Richter[2] [1] Fraunhofer Institute for Laser Technology, Aachen, Germany [2] Central Facility for Electron Microscopy, RWTH Aachen, Aachen, Germany	16:40	17:00	

WELDING AND LASER PROCESSES

DAY 1 - 5th June 2019

Code	Theme	Time		Room
S2-R2-O4	Additive Manufacturing of powdery Ni-based Superalloys for Advanced Applications C. Wilsnack[1], J. Moritz[1], M. Haack[1], M. Riede[1], E. López[1], F. Brückner[1], C. Leyens[1] [1]Fraunhofer Institut für Werkstoff und Strahltechnik, Winterbergstraße 28, 01277 Dresden, Germany	17:00	17:20	ROOM 2 (R2)
S2-R2-O5	Process-adapted shielding gas nozzle for laser beam welding S. Ulrich[1], S. Lorenz[1] [1] Guenter Koehler Institute of Joining and Material Testing, Jena, Germany	17:20	17:40	
S2-R2-O6	Thermo-mechanical analysis of Laser Welding of Type 316L(N) Stainless Steel Plate M. Ragavendran[1], M. Vasudevan[2], [1] Homi Bhabha National Institute, Indira Gandhi Centre for Atomic Research, Kalpakkam, Tamil Nadu, India [2] Advanced Welding Processes & Modeling Section, Materials Development and Technology Division, Metallurgy and Materials Group, Indira Gandhi Centre for Atomic Research, Kalpakkam, Tamil Nadu, India	17:40	18:00	
S2-R2-O7	Laser attachment welding of CRA liner to backing carbon steel E. Heier[1] [1] TechnipFMC Norway, Lysaker, Norway	18:00	18:20	

NON-DESTRUCTIVE TESTING & MONITORING IN COMPOSITE MANUFACTURING PROCESSES

DAY 1 - 5th June 2019

Code	Theme	Time		Room
S2-R3-O1	An introduction of monitoring activities at ICC's, with examples of applications in X-ray measuring, HP-RTM pressure monitoring, etc. K. Uzawa[1] [1]Innovative Composite Center (ICC) at Kanazawa Institute of Technology, Japan	16:00	16:20	ROOM 3 (R3)
S2-R3-O2	Non-destructive testing of bonding quality in CFRP composite laminates by measurements of local vibration nonlinearity I. Solodov[1], D. Segur[2], M. Kreutzbruck[1] [1] IKT, Institut für Kunststofftechnik der Universität Stuttgart, Stuttgart, Germany [2] CEA LIST, Toulouse, France	16:20	16:40	
S2-R3-O3	Towards in-situ monitoring of composite additive manufacturing: reflections based on experiences gained from H2E and Hypactor projects S. Yaacoubi[1], F. Dahmene[1], M. El Mountassir[1], D. Chauveau[2] [1] Institut de Soudure, Yutz, France [2] Institut de Soudure, Villepinte, France	16:40	17:00	
S2-R3-O4	A Mobile NDT System for Fast Detection of Impact Damage in FRP Based on Ultrasonic Thermography M.Rahammer[1], N. Holtmann[2], J. Rittmann[1], M. Kreutzbruck[1] [1] IKT, Institut für Kunststofftechnik der Universität Stuttgart, Stuttgart, Germany [2] edevis GmbH, Stuttgart, Germany	17:00	17:20	
S2-R3-O5	Printed electronics for the functionalization of composite parts M. Schwander[1], L. Tenchine[1], P. Francescato[1] [1] IPC – Centre Technique Industriel de la Plasturgie et des Composites, Bellignat, France	17:20	17:40	

NON-DESTRUCTIVE TESTING & MONITORING IN COMPOSITE MANUFACTURING PROCESSES

DAY 1 - 5th June 2019

Code	Theme	Time		Room
S2-R3-O6	Instrumented Thermoforming Tool, made by Stratoconception process: an additive manufacturing technology enabling the parts functionalization C. Pelaingre[1], Manuel Fendler[2], C.Barlier[1] [1] CIRTES, Voie de l'Innovation, Saint-Dié-des-Vosges, France [2] CeaTech Grand Est, Metz Technopole, Rue Marconi, Metz, France	17:40	18:00	ROOM 3 (R3)
S2-R3-O7	TBC	18:00	18:20	

WIRE-BASED ADDITIVE MANUFACTURING: PROCESSES [PART 1]

DAY 2 - 6th June 2019

Code	Theme	Time		Room
S3-R1-O1	Influence of heat treatment on properties of maraging steel weld cladded using GMAW Wire and Arc Additive Manufacturing M. Lindič[1], N. Mole[1], A. Nagode[2], D. Klobčar[1] [1] Faculty of Mechanical Engineering, University of Ljubljana, Ljubljana, Slovenia [2] Faculty of Natural Sciences and Engineeing, University of Ljubljana, Ljubljana, Slovenia	08:30	08:50	ROOM 1 (R1)
S3-R1-O2	Improvement of the near net shape of WAAM structures by gas optimization and automated cooling concepts S. Eichler[1,2], A. Elaldi[1], E. Siewert[1], J.Schein[2] [1] Linde AG, Unterschleissheim, Germany [2] Institut for Plasma Technologies, Bundeswehr University Munich, Neubiberg, Germany	08:50	09:10	
S3-R1-O3	Investigating the effect of additional wires on cooling rates and mechanical properties during additive multi wire GMA welding U. Reisgen[1], R. Sharma[1], L. Oster[1] [1] Welding and joining institute (ISF) of the RWTH Aachen, Aachen, Germany	09:10	09:30	
S3-R1-O4	Influence of interpass cooling conditions on microstructure and tensile properties of Ti-6Al-4V parts manufactured by CMT-WAAM L. Vázquez[1], N. Rodríguez[1], I. Rodríguez[1], E. Alberdi[1], P. Álvarez[1] [1] IK4-LORTEK, Technological Centre, Ordizia, Spain	09:30	09:50	
S3-R1-O5	Modulation of work piece properties in wire arc additive manufacturing P. Henckell[1], Y. Ali[1], J. Reimann[1], J.P. Bergmann[1] [1] Technische Universität Ilmenau, Department of Production Technology, Ilmenau, Germany	09:50	10:10	
S3-R1-O6	Implementation of temperature sensor for controlling the WAAM of small shell parts N. Kozamernik[1], D.Bračun[1], D. Klobčar[1] [1] Faculty of Mechanical Engineering, University of Ljubljana, Ljubljana, Slovenia	10:10	10:30	

MONITORING IN METALS MANUFACTURING PROCESSES

DAY 2 - 6th June 2019

Code	Theme	Time		Room
S3-R2-O1	New approach for the monitoring of Wire and Arc Additive Manufacturing (WAAM) components production using Ultrasonic Testing (UT) methods Ana Beatriz Lopez[1], José Pedro Sousa[2], Telmo G. Santos[3], Luísa Quintino[1] [1] IDMEC, Instituto Superior Técnico, Universidade de Lisboa, Lisboa, Portugal [2] Instituto de Soldadura e Qualidade (ISQ), Nondestructive Testing Laboratory, Oeiras, Portugal [3] UNIDEMI, Department of Mechanical and Industrial Engineering, NOVA School of Science and Technology, NOVA University Lisbon, 2829-516 Caparica, Portugal	08:30	08:50	ROOM 2 (R2)
S3-R2-O2	Thermography and optical emission spectroscopy: Simultaneous temperature measurement during the laser metal deposition process S.J. Altenburg[1], G. Pignatelli[1], C. Maierhofer[1], A. Straße[1], I.B. Gornushkin[1], A. Gumenyuk[1] [1] Bundesanstalt für Materialforschung und -prüfung, Berlin, Germany	08:50	09:10	
S3-R2-O3	Development of In-situ Monitoring System Using Laser Ultrasonic for WAAM S.Asai[1], K.Nomura[1], S.Otaki[1], T.Matsuida[1], R.Kita[1], T.Becke[2] [1] Division of Materials and Manufacturing Science, Graduate School of Engineering, Osaka University, Osaka, Japan [2] Technische Universitaet Berlin, Berlin, Germany	09:10	09:30	
S3-R2-O4	Electrode misalignment detection based on magnetic fields in Resistance Spot Welding D. Ibanez[1], E. Magraner[2], J. Soret[1], J. Martos[1] [1] Universitat de Vàlencia, València, Spain [2] Ford Valencia, València, Spain	09:30	09:50	
S3-R2-O5	Electromagnetic Testing for Additive Manufacturing H. Ehlers[1], M. Pelkner[1] [1] Bundesanstalt für Materialforschung und –prüfung (BAM)	09:50	10:10	
S3-R2-O6	Detection of subsurface porosities under rough surface in laser metal deposition samples using laser ultrasonics system C. Millon[1], J. Laurent[1], A. Vanhoye[1], A-F. Obaton[2] [1] CEA LIST, Saclay, France [2] LNE, Paris, France	10:10	10:30	

FRICTION STIR WELDING

DAY 2 - 6th June 2019

Code	Theme	Time		Room
S3-R3-O1	Industrialization of FSW process for next generation launchers P.Champion[1], S.Libner[2] [1] Ariane Group, Les Mureaux, France [2] RJ Industrie, Lussat, France	08:30	08:50	ROOM 3 (R3)
S3-R3-O2	Friction Stir Welding force and torque evolution during butt welding of two sheets with gaps S. Zimmer-chevret[1], L. Langlois[1], Q. Yao[2], Y. Huang[2], A. Ben Attar[3], N. Jemal[1] [1] Arts et Métiers Paris Tech Metz, France [2] Tsinghua University, Beijing, Chine [3] Institut de Soudure, Goin, France	08:50	09:10	
S3-R3-O3	FSW, beginning of serial production: challenges, examples and solutions for manufacturers A. Lozach[1], W. Fauveau[2] [1] CALIP Group, R&D, 11, rue Georges Lemesle, Argences, France [2] CALIP Group, Commercial, 11, rue Georges Lemesle, Argences, France	09:10	09:30	

FRICTION STIR WELDING

DAY 2 - 6th June 2019

Code	Theme	Time		Room
S3-R3-O4	FSW head for CNC machine tool: advantages, limitations and applications G. Sevestre[1], L. Dubourg[2], Y. Macé[3] [1] STIRWELD, Saint-Grégoire, France [2] Institut Maupertuis, Bruz, France [3] ENS Rennes, Bruz, France	09:30	09:50	ROOM 3 (R3)
S3-R3-O5	Evaluation of friction-stir welded thick preforms for Aeronautics applications H. Robe[1], A. Ben Attar[1], D. Chartier[2] [1] Institut de Soudure, Goin, France [2] STELIA Aerospace, Toulouse, France	09:50	10:10	
S3-R3-O6	Modeling of FSW process and prediction of distortions TBC[1], TBC[2] [1] Dassault Aviation [2] ESI Group	10:10	10:30	

SIMULATION AND MODELLING [PART 1]

DAY 2 - 6th June 2019

Code	Theme	Time		Room
S3-R4-O1	Support Strategy Optimization through Numerical Part Scale Manufacturability Predictions O. Desmaison[1], P-A. Pires[1] [1] ESI Group	08:30	08:50	ROOM 4 (R4)
S3-R4-O2	Process Simulation for Additive Manufacturing for Defence Industry Application F. Galliano MBDA, Bourges, France	08:50	09:10	
S3-R4-O3	Fast estimation of large component distortion in DED processes F. Poulhaon[1], P. Joyot[2], P. Michaud[1] [1] ESTIA Institute of Technology, Bidart, France [2] Université de Bordeaux, ESTIA Institute of Technology, I2M, UMR 5295, Bidart, France	09:10	09:30	
S3-R4-O4	3D simulations of powder spreading in Laser Beam Melting (LBM) process: influence of material and process parameters K. Marchais[1,2], J. Girardot[1], I. Iordanoff[1], C. Metton[2] [1] Arts et Métiers ParisTech, CNRS, I2M, Talence, France [2] Safran, site de Paris-Saclay, Chateaufort, Magny-les-Hameaux, France	09:30	09:50	
S3-R4-O5	A kinematic simulation software for additive manufacturing metal deposition processes T-Q. Duong[1], N. Ferrier[1], S. Lavernhe[2], C. Tournier[1,2] [1] Institut de Recherche Technologique SystemX, Palaiseau, France [2] LURPA, ENS Paris-Saclay, Univ. Paris-Sud, Université Paris-Saclay, Cachan, France	09:50	10:10	
S3-R4-O6	A Methodology for Image-based Crystal Plasticity Finite Element Modelling of Microstructure-sensitive Fatigue Behaviour Y. Tu[1,2,3], S.B. Leen[1,2,3,4,5], N. M. Harrison[1,2,3,4,5] [1] Mechanical Engineering, National University of Ireland, Galway, Ireland [2] I-Form Advanced Manufacturing Research Centre, Ireland [3] Ryan Institute for Environmental, Marine and Energy Research, Galway, Ireland [4] IComp Irish Composites Centre, Ireland [5] Centre for Marine and Renewable Energy Ireland (MaREI), Galway Ireland	10:10	10:30	

WIRE-BASED ADDITIVE MANUFACTURING: PROCESSES [PART 2]

DAY 2 - 6th June 2019

Code	Theme	Time		Room
S4-R1-O1	Wire Laser Hybrid Additive Manufacture of Aluminium Zinc Alloys E. Eimer[1], W. Suder[1], S. Williams[1], J. Ding[1] [1] Welding Engineering and Laser Processing Centre, Cranfield University, Cranfield, UK	11:00	11:20	ROOM 1 (R1)
S4-R1-O2	Multimaterial design in additive manufacturing - feasibility validation M. Leicher[1], S. Kamper[1], K. Treutler[1], V. Wesling[1] [1] ISAF TU Clausthal	11:20	11:40	
S4-R1-O3	Effect of deposition strategies on residual stress distribution in wire arc additive manufacturing of aluminium alloy K.S. Derekar[1,2], B. Ahmad[1], X. Zhang[1], J. Lawrence[1], G. Melton[3], A. Addison[3], D. Griffiths[3] [1] Faculty of Engineering, Environment and Computing, Coventry University, Priory Street, Coventry, UK [2] National Structural Integrity Research Centre (NSIRC Ltd.) Great Abington, Cambridge, UK [3] TWI, Great Abington, Cambridge, UK	11:40	12:00	
S4-R1-O4	Metal additive manufacturing of large-scale parts L. Quintino[1,2], A. Cereja[1], E. Assunção[1], R. Bola[1], I. Pires[2], A. Lopez[2], J.Mason[3], N. Lantzounis[3], S.Wilkinson[3], D.Wimpenny[4], J.Jones[5], F.Martina[6], K.Winands[7], S.Gräefe[7] [1] European Federation for Welding, Joining and Cutting, Belgium [2] IDMEC, Instituto Superior Técnico (IST), Universidade de Lisboa, Lisboa, Portugal [3] Foster + Partners, London, UK [4] Manufacturing Technology Centre, Coventry, UK [5] Hybrid Manufacturing Technologies, Leicestershire, UK [6] Cranfield University, Bedfordshire, UK [7] Fraunhofer Institute for Production Technology, Aachen, Germany	12:00	12:20	

ALTERNATIVE ROUTES FOR METAL PROCESSING AND ASSEMBLY

DAY 2 - 6th June 2019

Code	Theme	Time		Room
S4-R2-O1	TBC	11:00	11:20	ROOM 2 (R2)
S4-R2-O2	Hot bonding characterization of bi-metal C4525CrMo4 by plane strain compression, setting up and drawing tests M. Enaim[1], L. Langlois[1], S. Zimmer-Chevret[1], R. Bigot[1], P. Krumpipe[2] [1] ENSAM, Design, Manufacturing and Control Laboratory, Metz, France [2] CETIM, Technical Center for Mechanical Industries, Saint-Étienne, France	11:20	11:40	
S4-R2-O3	ElectroSlag Remelting competitiveness as Additive Manufacturing Process G. Stovpchenko[1,2], L. Medovar[1,2], G. Polishko[2] [1] Engineering company "ELMET-ROLL", Kiev, Ukraine [2] E.O. Paton Electric Welding Institute of National Academy of Science of Ukraine, Kiev, Ukraine	11:40	12:00	
S4-R2-O4	Supersonic cryogenic nitrogen (N2) for dry surface Polishing and Smoothing of Additive Manufacturing Parts (N2PSAM) Y. Hajji[1,2,3], D. Entemeyer[2,3], A. Tazibt[1], T.Grosdidier[2,3] [1] CRITT TJFU, Laboratoire Jets Fluides et Matériaux - SURFO3M, F-55000, Bar le Duc, France [2] Université de Lorraine, CNRS, Arts et Métiers Paris Tech, Laboratoire d'Etude des Microstructures et de Mécanique des Matériaux (LEM3), Metz, F-57000, France [3] Université de Lorraine, Laboratoire d'Excellence Design of Alloy Metals for low-mAss Structures ('LabEx DAMAS'), Metz, France	12:00	12:20	

SIMULATION AND MODELLING [PART 2]

DAY 2 - 6th June 2019

Code	Theme	Time		Room
S4-R4-O1	Simulation for geometric control of direct energy deposition on a data-base-oriented tool path planning system for additive manufacturing T. Petrat[1], B. Graf[1], S. Mönchinger[2], M Rethmeier[1,2,3], R. Stark[1,3] [1] Fraunhofer Institut for Production Systems and Design Technology, Berlin, Germany [2] Federal Institute for Materials Research and Testing, Berlin, Germany [3] Technical University Berlin, Institute of Machine Tools and Factory Management, Berlin, Germany	11:00	11:20	ROOM 4 (R4)
S4-R4-O2	TBC	11:20	11:40	
S4-R4-O3	Numerical simulation of machining distortions due to material removal sequencing: an aeronautical case study H. Sallem[1], M. Geuffrard[1], N. Himbert[2], T. Caula[3], J-V. Lapeyre[2] [1] ESI Group, Lyon, France [2] Airbus Helicopters, Aéroport International Marseille-Provence, Marignane, France	11:40	12:00	
S4-R4-O4	Towards a model for predicting the macrostructure of multipass GTAW welds of austenitic stainless steel Q. Marsac[1,2], C. Gueudre[2], M.A. Ploix[2], G. Corneloup[2], F. Baque[1] [1] CEA Cadarache DEN/DTN/STCP/LISM, Saint Paul Lez Durance, France [2] Aix Marseille Université, CNRS, Centrale Marseille, LMA, UMR 7031, 4 impasse Nikola Tesla, CS 40006, 13453 Marseille Cedex 13, France	12:00	12:20	

WIRE-BASED ADDITIVE MANUFACTURING: TOWARDS INDUSTRIALIZATION

DAY 2 - 6th June 2019

Code	Theme	Time		Room
S5-R1-O1	Industrialization of the WAAM technology for Ariane Group applications P.Champion[1], J.Lemercier[1] [1]Ariane Group, Les Mureaux, France	13:30	13:50	ROOM 1 (R1)
S5-R1-O2	Evaluation of CMT® TWIN® process for high deposition rate in additive manufacturing of large size components in naval applications A.Queguineur[1], A. Lavergne[1], J. Marolleau[2], G. Rückert[1] [1] Naval Group Research/CESMAN, Bouguenais, France [2] Fronius France, Roissy CDG, France	13:50	14:10	
S5-R1-O3	Disruptive fuselage study by Topological Optimization & Additive Manufacturing D. Desgaches[1], F. David[2] [1] STELIA Aerospace, Toulouse, France [2] STELIA Aerospace, Saint Nazaire, France	14:10	14:30	
S5-R1-O4	3DMP: CNC-machine with integrated wire-based welding torch A. Riemann[1] [1] Gefertec GmbH, Berlin, Germany	14:30	14:50	
S5-R1-O5	Disruptive Metal Printing for Integrated Part and Product Creation by Wire+Arc Additive Manufacturing (WAAM) in the Oil and Gas Sector J. Gerard Rafferty[1], D. Gill[1], L. Pomie[2], R. Kapur[1] [1] TechnipFMC, Dunfermline, Scotland [2] TechnipFMC, Rueil, France	14:50	15:10	
S5-R1-O6	M3DP - Metallic 3D Printing with plasma and wire, a solution for large structural parts J.Niedermayer[1] [1] SBI Produktion Techn. Anlagen GmbH & Co KG, Gemeinde Hollabrunn, Austria	15:10	15:30	

NON-DESTRUCTIVE TESTING: VOLUMETRIC METHODS

DAY 2 - 6th June 2019

Code	Theme	Time		Room
S5-R2-O1	Efficient volumetric non-destructive testing methods for additively manufactured parts A-F. Obaton[1], B. Butsch[2], E. Carcreff[3], N. Laroche[3], J. Tarr[4], A. Donmez[4] [1] Laboratoire national de métrologie et d'essais (LNE), Paris, France [2] The Modal Shop, Inc., Cincinnati, USA [3] The Phased Array Company (TPAC), Nantes, France [4] National Institute of Standards and Technology (NIST), Engineering Laboratory, Gaithersburg, USA	13:30	13:50	ROOM 2 (R2)
S5-R2-O2	Non-Destructive Testing Techniques for Inspection of Wire and Arc Additive Manufacturing A.B. Lopez[1], J. Bento[1], J.P. Sousa[2], T.G. Santos[3], L.Quintino[1] [1] IDMEC, Instituto Superior Técnico, Universidade de Lisboa, Lisboa, Portugal [2] Instituto de Soldadura e Qualidade (ISQ), Nondestructive Testing Laboratory, Oeiras, Portugal [3] UNIDEMI, Department of Mechanical and Industrial Engineering, NOVA School of Science and Technology, NOVA University Lisbon, Caparica, Portugal	13:50	14:10	
S5-R2-O3	Enhanced weld testing using real time TFM imaging O. Roy[1], A. Bergé[1], H. Voillaume[1] [1] Eddify Technologies, Les Ulis, France.	14:10	14:30	

NON-DESTRUCTIVE TESTING: VOLUMETRIC METHODS

DAY 2 - 6th June 2019

Code	Theme	Time		Room
S5-R2-O4	Progress in standardization dealing with TFM/FMC ultrasonic technique applied on welds. D. Chauveau[1], C. Wassink[2] [1] Institut de Soudure, Villepinte, France [2] EddyFi technologies, Zeist, Utrecht Province, Netherland	14:30	14:50	ROOM 2 (R2)
S5-R2-O5	Non-Destructive Testing by ultrasound for multi-pass austenitic welds. Influence of the uncertainty of elastic constants on the detection of a defect C. Gueudre[1], J. Mailhe[1], M.A. Ploix[1], G. Corneloup[1] [1] Aix Marseille Université, CNRS, Centrale Marseille, LMA, UMR 7031, Marseille, France	14:50	15:10	
S5-R2-O6	Automatic defect classification using eddy current data acquired through manual scanning N. Harish Chandra[1], A. Chong[1], J. Kanfoud[1], T. Hean Gan[1] [1] Brunel Innovation Centre, Brunel University London, Cambridge, UK	15:10	15:30	

INNOVATIVE PROCESSING IN COMPOSITES

DAY 2 - 6th June 2019

Code	Theme	Time		Room
S5-R3-O1	Virtual Additive Manufacturing for Thermoplastic Composite Material Focus on composite to metal bounding with COMMUNION project Y. Duplessis Kergomard[1], L. Dufort[1], C. Dedieu[1] [1] ESI Group	13:30	13:50	ROOM 3 (R3)
S5-R3-O2	Composite Wing Box by Liquid Resin Injection and HiTape® F. Jeanjean[1], G. Pichenot[2] [1] STELIA Aerospace, Colomiers, France [2] STELIA Aerospace, Méaulte, France	13:50	14:10	
S5-R3-O3	Photopolymerization for structural composites P. Carion[1], I. Balbzioui[3], A. Ibrahim[1], X. Allonas[1], C. Croutxe-Barghorn[1], D. Burr[2], G. Barbier[3], K. Gautier[3], G. L'Hostis[3] [1] Laboratoire de Photochimie et d'Ingenierie Macromoleculaires, Institut Jean-Baptiste Donnet, Mulhouse, France [2] EPPC, Institut Jean-Baptiste Donnet, Mulhouse, France [3] Laboratoire de Physique et Mécanique Textiles, ENSISA, Mulhouse, France	14:10	14:30	
S5-R3-O4	Rheological behaviour of thermoplastic composite substrates when heated and compressed to assemble them C. Binetruy, G. Sorba, A. Hautefeuille, S. Comas-Cardona, E. Syerko, A. Leygue Ecole Centrale de Nantes, Research Institute of Civil Engineering and Mechanics, UMR CNRS 6183, Nantes, France	14:30	14:50	
S5-R3-O5	Upcycling for thermoplastic composites: How to recycle with added value with ThermoPRIME® & Thermosaic® technologies C. Callens[1], F. Ruch[1], S. Thelier[1] [1] Cetim Grand Est, Mulhouse, France	14:50	15:10	
S5-R3-O6	Fast-Form : an industrial mean for composite parts manufacturing J. Hubert[1], M.Kowalski[2] [1] Pinette Emidecau Industries [2] IRT-M2P	15:10	15:30	

MATERIALS AND CHARACTERIZATION

DAY 2 - 6th June 2019

Code	Theme	Time		Room
S5-R4-O1	Influence of post-treatment on fatigue life of SLM 316L A. Damiens[1], H. Bonnefoy[1], I. Titeux-Peth[1] [1] Laboratoire d'Ingénierie et Science des Matériaux, Université de Reims-Champagne-Ardennes, France	13:30	13:50	ROOM 4 (R4)
S5-R4-O2	Effect of post-processing on properties of metal parts made by additive manufacturing N. Nutal[1], J.P. Collette[2], C. Georges[1], J. Magnien[3], C. Masse[4], L. Robert[4], L. Pambaguian[5] [1] Centre for Research in Metallurgy, Liège, Belgium [2] Walopt, Embourg, Belgium [3] Sirris, Seraing, Belgium [4] Thales Alenia Space, Toulouse, France [5] ESA, AZ Noordwijk, Netherlands	13:50	14:10	
S5-R4-O3	Development of a Direct Energy Deposition process for the repair of theoretically non-weldable nickel-based superalloys cast parts A. Doghri[1,2], F. Fournier Dit Chabert[2], M. Thomas[2], P. Laheurte[1] [1] LEM3, Université de Lorraine, Ile du Saulcy, Metz, France [2] ONERA, 29 avenue de la Division Leclerc, Châtillon, France	14:10	14:30	
S5-R4-O4	Fatigue failure analysis of welded Lean Duplex Stainless Steels used in domestic water storage tanks A. Elmoutaouakkil[1,2], J. Stolarz[1], A. Fraczkiewicz[1], A. Gay[2] [1] MINES Saint-Etienne, UMR 5307 CNRS/LGF/SMS, Saint-Etienne, France [2] BOSCH Thermotechnology, Saint-Thégonnec, France	14:30	14:50	
S5-R4-O5	Fabrication of SS316L to Ni80Cr20 graded structures by 3D plasma metal deposition K Hoefer[1], J. Rodriguez[2], A Haelsig[2], P. Mayr[2] [1] Chemnitz University of Technology – Chair of Welding Engineering, Reichenhainer Straße 70, 09126 Chemnitz, Germany [2] EIA University – Department of Mechanical Engineering, Envigado, Antioquia, Colombia	14:50	15:10	
S5-R4-O6	Investigation of the structure and properties of products obtained at 3D electron beam printer using titanium alloy wire D. Kovalchuk[1], A. Tunik[2], S.Stepanyuk[2], S.Grigorenko[2], G.Polishko[2], J. Khokhlova[2] [1] JSC «NVO» «Chervona Hvilya», Kiev, Ukraine [2] E.O. Paton Electric Welding Institute of the NAS of Ukraine, Kiev, Ukraine	15:10	15:30	

"INDUSTRY 4.0" PLENARY SESSION

Code	Theme	Time		Room
Introduction	Industry 4.0: an introduction by Alliance Industrie du Futur (AIF) P. Darmayan UIMM (Union des Industries et Métiers de la Métallurgie), Paris, France			ROOM 1 (R1)
S6-R1-01	Robots for Industry 4.0: a focus on friction welding solutions E. Bergerot KUKA Automatisme Robotique SAS, Villebon sur Yvette, France			
S6-R1-02	The role of simulation towards Industry 4.0 transition A. Bougard ESI France, ESI Group,			
S6-R1-03	Development and Application of Hybrid Joining in Lightweight Integral Aircraft Structures J. Dos Santos Helmholtz-Zentrum Geesthacht GmbH, Institute of Materials Research, Materials Mechanics, Solid State Joining Processes, Geesthacht, Germany			
S6-R1-04	Multi-material joining processes developed for automotive industry -an introduction to Japanese lightweight car program Y. Hirata Cross-Boundary Innovation Program, Center for Advanced Structural and Functional Materials Design, Osaka University			
S6-R1-05	A flagship multi-partner initiative for additive manufacturing in France : "la Filière de Fabrication Additive Grand Est" C. Barlier[1], J-P.Gaufillet[2], A.Chehaibou[3] [1] INORI, Saint-Dié-les-Vosges, France [2] IREPA Laser, Illkirch-Graffenstaden, France [3] Institut de Soudure, Yutz, France			
S6-R1-06	Skills needs and upskilling addressing the European Metal AM Industry E. Assunção, L. Quintino, A. Almeida, R. Bola, A. Cereja, R. Silva EWF, European Federation for Welding, Joining and Cutting, TagusPark, Porto Salvo, Portugal			
S6-R1-07	Heavy Industry Spare Parts with Additive Manufacturing V. García Orgeira ArcelorMittal Global R&D, Avilés, Spain			
Roundtable	Conference moderation with all above speakers, replying to questions from the audience B.Kaici Institut de Soudure, Yutz, France			

POSTER SESSION

DAY 1 & DAY 2 - Wednesday 5th & Thursday 6th June, 2019

Code	Theme
POSTER 1	Comparison of the two wire-based AM processes: WLAM vs. WAAM L. Dubourg[1], D. Lemaitre[1] [1] Institut Maupertuis, Bruz, France
POSTER 2	New Invar filler metal for additive manufacturing P-L. Reydet[1], F. Jouvenceau[1] [1] APERAM ALLOYS, Avenue Jean Jaurès, Imphy, France
POSTER 3	Analysis of distortions during Wire Arc Additive Manufacturing (WAAM) L. Guilmois[1,2,3], P. Le Masson[2], P. Paillard[3] [1] IRT Jules Verne, Bouguenais, France [2] IRDL, Université Bretagne Sud, UMR CNRS 6027, Lorient, France [3] Institut des Matériaux Jean Rouxel (IMN), Université de Nantes, UMR 6502 CNRS, Nantes, France
POSTER 4	Microstructure and Properties of Novel Heat Resistant Al-Ce-Cu Alloy for Additive Manufacturing D.R. Manca[1], A.Yu. Churyumov[1], A.V. Pozdniakov[1], A.S. Prosviryakov[1], D.K. Ryabov[2], A. Yu. Krokhin[2], V.A. Korolev[3], D.K. Daubarayte[3] [1] National University of Science and Technology "MISiS", Moscow, Russian Federation [2] RUSAL Global Management B.V.,Moscow, Russian Federation [3] LLC «Light Materials and Technologies Institute» UC RUSAL, Moscow, Russian Federation
POSTER 5	Wire Additive Manufacturing development in ArcelorMittal N. Persem[1], P.Evrard[1] [1] ArcelorMittal R&D Bars & Wires, Maizières-Les-Metz, France
POSTER 6	Investigation of WAAM process parameters on ER100 properties C. Bourlet[1,2,3], S. Zimmer-Chevret[2], R. Pesci[3], F. Scandella[1], R. Bigot[2,4] [1] Institut de Soudure, Yutz, France [2] LCFC, ENSAM-Arts et Métiers ParisTech, Metz, France [3] LEM3 UMR CNRS 7239, Arts et Métiers ParisTech, Metz, France [4] MANOIR Industries, Bouzonville, France
POSTER 7	Thermomechanical model of Wire + Arc Additive Manufacturing process C. Cambon[1], I. Bendaoud[1], C. Bordreuil[1], S. Rouquette[1], F. Soulie[1] [1] LMGC, Université de Montpellier, CNRS, Montpellier, France
POSTER 8	Mechanical and microstructural properties of age hardening Al-Mg-Si alloy 6061 achieved by wire and arc additive manufacturing G.Doumenc [1,2,3], L.Couturier[2], P.Paillard[2], B.Courant[3], D.Gloaguen[3] [1] IRT Jules Verne, Technocampus Composite, Bouguenais, France [2] Institut des Matériaux Jean Rouxel (IMN), UMR CNRS 6502, Université de Nantes, Nantes, France [3] Institut de Recherche en Génie civil et Mécanique (GeM), UMR CNRS 6183, Université de Nantes, Saint-Nazaire, France
POSTER 9	Sector Skills Strategy in Additive Manufacturing E. Assunção[1], L. Quintino[1], A. Almeida[1], R. Bola[1], R. Silva[1] [1] EWF – European Federation for Welding, Joining and Cutting, Belgium
POSTER 10	ENCOMPASS R. Bola[1], E. Assunção[1] [1] European Federation for Welding, Joining and Cutting, Porto Salvo, Portugal

DAY 1 & DAY 2 - Wednesday 5th & Thursday 6th June, 2019

Code	Theme
POSTER 11	AMable – SME Support for Additively ManufactrurABLE product ideas U. Thombasen[1], E. Assunção[2] [1] Fraunhofer Institute for Laser Technology, Aachen, Germany [2] European Federation for Welding, Joining and Cutting, Porto Salvo, Portugal
POSTER 12	Method of characterization of 316L stainless steel powder for hot isostatic pressing (HIP) B. Fleischmann[1], Y. Danlos[1], O. Gyss[2], R. Bigot[2], J-P. Chateau-Cornu[3], L. Dembinski[1] [1] Laboratoire ICB-PMDM-LERMPS, Belfort, France [2] Manoir Bouzonville, Bouzonville, France [3] Laboratoire ICB-PMDM-IRM, Dijon, France
POSTER 13	Joining steel and aluminium parts using powder additive manufacturing process: coldspray L. Couturier[1], E. Aubignat[2], W. Knapp[1], P. Paillard[1] [1] Institut des Matériaux Jean Rouxel (IMN), Université de Nantes, CNRS, Nantes, France [2] Ouest Coating, Saint Nazaire, France
POSTER 14	Structure and properties of advance composite wire for welding and wire fed additive manufacturing G. Stovpchenko[1,2], G.Polishko[2], A.Kovalevsky[3] [1] Engineering company "ELMET-ROLL", Kiev, Ukraine [2] E.O. Paton Electric Welding Institute of National Academy of Science of Ukraine, Kiev, Ukraine [3] Technion Israel Institute of Technology, Haifa, Israel
POSTER 15	ElectroSlagRefining with Liquid Metal for Heavy Composite Rotor Manufacturing L. Medovar[1,2], G. Polishko[1], G. Stovpchenko[1,2], A. Tunik[1], A. Sybir[3] [1] E. O. Paton Electric Welding Institute, Kiev, Ukraine [2] Engineering company ELMET-ROLL, Kiev, Ukraine [3] National metallurgical academy of Ukraine, Dnipro, Ukraine
POSTER 16	Characterization of 3D printed moulds and cores for sand casting M. Hulin[1], H. Bonnefoy[1] [1] Laboratoire d'Ingénierie et Sciences des Matériaux Université de Reims Champagne-Ardenne, IFTS, Charleville-Mézières, France
POSTER 17	Development of the Dewelded and Rewelded Plastic Products M. Iurzhenko[1,2], R. Kolisnyk[1], Ye. Buinova[1], O. Masiuchok[1], V. Demchenko[1,2], M. Korab[1], S. Pruvost[3] [1] Plastics Welding Department, E.O.Paton Electric Welding Institute of the National Academy of Sciences of Ukraine, Kiev, Ukraine [2] Institute of Macromolecular Chemistry of the National Academy of Sciences of Ukraine, Kiev,Ukraine. [3] IMP@INSA, UMR CNRS 5223, Campus LyonTech, Villeurbanne, France
POSTER 18	Modelling and Experimental investigations in the application of the ACFM technique in a static magnetic field Shiva Majidnia[1], Giorgos Asfis[1], Kyriakos Berketis[2] [1] TWI Ltd, Cambridge, UK [2] SpectrumNDT, Piraeus, Greece
POSTER 19	FAFil project: Laser and Wire Additive Manufacturing Ivan Cazic[1,2], Maxime El Kandaoui[1], Benoît Appolaire[2], Julien Zollinger[2], Peter Plapper[3] [1] Institut de Soudure, Yutz, France [2] Institut Jean Lamour, Nancy, France [3] Faculty of Science, Luxembourg

VISITS 1 & 2: METAL TOUR - DAY 3 - 7th June 2019

Institut de Soudure industrial R&D center (Yutz)

The Institut de Soudure Group's main research center

As the **French Industrial Technical Centre** for joining and associated testing, Institut de Soudure provides knowledge, innovation and support for its members and to the profession as a whole.
In close relationship with industry, research activities are carried out in three sites in Lorraine (Yutz, Saint-Avold, Porcelette), in the East of France.
The industrial R&D Centre located in Yutz conducts R&D work from French Industrial clients and takes part in various National and European funded collaborative projects. The visit will introduce the three technological platforms dedicated to NDT, joining, and fatigue studies and services, in fracture mechanics and in corrosion.

The ArcelorMittal Maizières research campus

The ArcelorMittal group's largest research site

Tomorrow's steel products and solutions are created on this site, by means of sophisticated research facilities and equipment enabling replication or simulation of their production and processing.
The campus comprises 52,000 m² of offices, laboratories and pilot units spread over 24 hectares.
It incorporates two research centres (Process, Products), an operational support unit and, since 2018, the Bars & Wires research centre.
The Bars & Wires research centre is devoted to the development of long products destined primarily for the automotive market and additive manufacturing is a major focus.
Research and development are central to ArcelorMittal's strategy
They are the technological mainstay of the group, which is the leading innovator in the world of steel. ArcelorMittal employs more than 1500 researchers on 11 sites worldwide.

PSA Peugeot Citroën Trémery

Trémery-Metz, sites dedicated to the manufacture of engines and gearboxes

The Trémery-Metz manufacturing division has been located in Moselle for 50 years. Its close proximity to major motorways allows it to ship the thousands of engines and gearboxes it produces daily all across Europe.
The Trémery-Metz manufacturing division is the largest private employer in Lorraine with 3,700 employees. Vehicles of the Group's 5 brands, Peugeot, Citroën, DS Automobiles, Opel and Vauxhall, are equipped with the engines and gearboxes made in Lorraine. In 2018, the Trémery-Metz manufacturing division produced 1,750,000 engines and 982,000 gearboxes. Specialised for many years in the manufacture of Diesel engines, the Trémery site is now the most diverse engine production site for the PSA Group, and this year launched the assembly of e-GMP which equip the PSA Groups' new all-electric vehicles.

CEA Tech FFLOR Platform

Towards more flexible, more productive and safer factories

The factory of the future platform FFLOR (Future of Factory Lorraine) develops and tests technologies for the factory of the future in operational conditions:

- Human assistance: virtual reality, augmented reality, cobotics for load handling, human-robot collaboration
- Flexibility and agility in production: intelligent robotics and logistics, data processing, vision, Artificial Intelligence
- Connectivity and interoperability: assemble, connect and organise equipment and technological building blocks for the digital word

FFLOR is installed at the heart of the PSA Trémery site which has 3,400 employees. 20 manufacturing partners work on its projects. The basic application building blocks come from the market or from List technologies, the CEA Tech institute dedicated to manufacturing and to digital systems. They are tested by production workers, improved and integrated into the systems, with the goal of a quick industrial transfer. Safety and ergonomics are at the heart of every project so as to facilitate the adoption of these solutions in the field.

VISIT 3: COMPOSITE TOUR - DAY 3 - 7th June 2019

The Composite Tour will allow attendees to visit industrial facility, R&T center and discover the following topics:

- Process development and prototype production line
- Non Destructive Testing applied to Composite parts
- Specific characterization of dry reinforcements for Composite manufacturing
- Welding of thermoplastic composite components.

The first stop will at Composite Park (Porcelette) where 2 facilities will be visited:

IRT M2P prototype production hall:

This visit will focus on FAST RTM and FAST FORM platforms demonstrations. Both platforms aim to develop a fully automated production of composite parts with a target of 2 minutes cycle time for both preforming and injection.

Institut de Soudure Composite Facility

Following a presentation of the global opportunities dedicated to Composite parts inspections, a demonstration will be performed using a fully automated waterjet C-Scan.
Also, a demonstration of 3D permeability measurement using EASYPERM bench will be done.

Then, the second stop will be on the Composite R&T Platform of Institut de Soudure (Saint-Avold):

After a presentation introduction an overview of available technologies for thermoplastic composite welding, a live demonstration of welding will be performed on the fully automated welding platform. Thermoplastic composite welding is part of the strategic developments available for high performance matrix (PEKK…) and also middle range performance matrix (PA, PP…).

GUIDED TOUR

A guided tour is organized on Friday 7th June, 2019
Discover the essential sights of Metz

The Imperial quarter
Built around the train station, this picturesque quarter is a remarkable illustration of German urbanism at the beginning of the 20th century. Kaiser Wilhelm II took the decision to demolish the medieval ramparts, and build a "new town" to the south of the historic heart of the city on a greenfield site.
Inaugurated in 1908, the modern and monumental station looks like a neo-Romanesque church with a majestic belfry. Near to the station, the water tower resembles a donjon and supplied the steam trains with water. The neo-Romanesque style post office, in pink sandstone, emulates the castles of western Prussia. Avenue Foch was built on the old city ramparts and the Camoufle tower is testament to this. The prestigious avenue, with public buildings and private villas is an extraordinary encyclopaedia of historic and new styles.
Let's go on and discover **the Citadel's district** with the Law Courts, the French garden of Esplanade, Saint-Pierre-aux-Nonnains Church which was originally a Roman basilica, the Arsenal, a military building renovated in 1987 by the architect R. Boffil as a center for music, dance and contemporary creation, the Templars chapel from the 12th C, the Citadel food-store and the Governor's Palace.

In **place de la Comédie**, located in an island, you will discover the oldest theater (1752) of France still in activity and the temple neuf (New Protestant church) built by the Germans during the annexation (1871-1918) in grey stone and in a neo-Romanesque style.

St Etienne's Cathedral
Your visit ends with a visit of Saint Etienne's Cathedral, a jewel of Gothic art, built between 1220 and 1520 and uniting two churches under one roof. The architect Pierre Parrat completed this fusion and achieved the soaring 42 m high vaults. The imposing silhouette of St Etienne's Cathedral dominates the city. Magnificent stained-glass windows adorn the inside, examples from the 13th to the 20th century are by renowned artists, like Marc Chagall. With 6,500 m² of stained glass, the Cathedral is rightly nicknamed "God's Lantern".

Practical information
Meeting point: METZ CONGRÈS Robert Schuman (congress venue)
Departure of the visit at 10 am with 2 guides (French and English)
Return to METZ CONGRÈS Robert Schuman at 12:30 pm and distribution of lunch bag
For more information contact us at:
secretariat@icwam.com

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