

8th Manufacturing Engineering Society International Conference

Madrid, June 19-20-21

PROGRAMME



Topics

Advances and Innovations

Moulding Processes
Forming Processes
Material Removal Processes
Non-Traditional Manufacturing Processes
Welding, Joining and Assembly Processes
Additive Manufacturing Processes
Equipment and Tooling: Tools, Rapid Tooling, Fixture and Clamping Systems
Emerging Manufacturing Processes

Trends in Manufacturing Systems

Integrated Development of Products and Processes
Design Thinking and Manufacturing Decision-Making
Adaptive and Intelligent Manufacturing Systems
Rapid Product Development and Manufacturing
Holonc Systems.
Energy Efficiency and Sustainability in Manufacturing
Zero-Defects and Zero-Accidents Approaches
Work Environments Adaptation in Evolving Production Systems

Future and Industry 4.0

Methodologies and Techniques for Moving from Current Manufacturing Production to Industry 4.0
Basic Technologies Needed for the Integration of 4.0 Systems
Services, Organization, Training, HR Management, Assets Management, etc. for Implementing Industry 4.0
Return on Equity (ROE) of Manufacturing in the Industry 4.0 Paradigm
End-to-End Digital Integration of Engineering Activities across the Entire Value Chain.
Vertical Integration and Networked Manufacturing Systems
Methods and Tools for Managing Manufacturing Complex Systems in Industry 4.0
Adaptation of Basic Technologies and Experience to the Specific Requirements of Manufacturing Engineering and Innovative Solutions for Industry 4.0
Sustainability of Manufacturing in Industry 4.0

Topics

Metrology, Tolerancing and Quality

Tolerancing
Inspection and Testing
Laser and Optical Measurement Systems
Industrial Quality
Monitoring, Sensing and Control for Manufacturing and Inspection
Virtual Metrology

Assisted Technologies

CAD/CAM/CAE/CAX/CIM
PDM-PLM
BPM, BPLM, BIM
Automation and Robot Applications in Manufacturing
Sensors, Actuators, Equipment Design, Tooling and Control/Automation for Enhancing
Manufacturing Processes

Manufacturing Engineering in Society

Training and Education in Manufacturing Engineering: Curricula and Professional
Development
Design of Manufacturing Engineering Learning Environments
New Trends and Training Strategies in Education in Manufacturing
History and Evolution of Manufacturing Technologies
Industrial Heritage in Manufacturing
Social Impact of Manufacturing
Occupational Health, Safety and Welfare in Manufacturing

PROGRAM SCHEDULE

Start time	Wednesday 19	Thursday 20	Friday 21	Start time	
9:00	DOCUMENTATION DELIVERY	SESSION 1D Advances and Innovations IV	SESSION 2D Metrology, Tolerancing & Quality I	SESSION 1H Trends in Manufacturing Systems III	SESSION 2H Metrology, Tolerancing & Quality III
10:00	OPENING CEREMONY				
10:45	COFFEE BREAK	COFFEE BREAK	COFFEE BREAK	10:45	
11:15	PLENARY CONFERENCE Prof. Hans Nørgaard Hansen	PLENARY CONFERENCE Prof. Richard Leach	PLENARY CONFERENCE Prof. Genserik Reniers	11:15	
12:00	SESSION 1A Advances and Innovations I	SESSION 2A Future and Industry 4.0	SESSION 1E Advances and Innovations V	SESSION 2E Metrology, Tolerancing & Quality II	CLAUSTRATION CEREMONY
13:30	POSTER & LUNCH		POSTER & LUNCH		
15:00	SESSION 1B Advances and Innovations II	SESSION 2B Assisted Technologies & Industry 4.0	SESSION 1F Advances and Innovations VI	SESSION 2F Manufacturing Engineering in Society	LUNCH
16:30	COFFEE BREAK		COFFEE BREAK		
16:45	SESSION 1C Advances and Innovations III	SESSION 2C Trends in Manufacturing Systems I	SESSION 1G Advances and Innovations VII	SESSION 2G Trends in Manufacturing Systems II	

Wednesday 19

9:00	Registration & collection of documentation
10:00	Conference Opening
10:45	Welcome Coffee
11:15	Plenary Conference: Digitalization and Industry 4.0 - a Danish perspective Prof. Hans Nørsgaard Hansen

Parallel Sessions Wed-19

	Sala 1	Sala 2
12:00	Session 1A Advances and Innovations I	Session 2A Future and Industry 4.0
	Chairs: J. Antonio García / Roque Calvo	Chairs: Hans Nørsgaard Hansen / Juan J. Aguilar
	<i>Determination of emissivity and temperature of tool rake face when cutting AISI 4140</i> Daniel Soler, P. X. Aristimuño, M. Saez-de-Buruaga, P. J. Arrazola	<i>Artificial Intelligence for advanced non-conventional machining processes</i> Jun Wang, José A. Sánchez, Jon A. Iturrioz, Izaro Ayesta
	<i>Development of a rotary two-colour pyrometer for thermal measurements in face grinding operations</i> Lander Urgoiti Elorriaga, José Antonio Sánchez Galíndez, David Barrenetxea, Iñigo Pombo Rodilla, Jorge Alvarez Ruiz	<i>Manufacturing of human knee by cryogenic machining: Walking towards cleaner processes</i> Octavio Pereira, Haizea González, Amaia Calleja, Adrián Rodríguez, Gorka Urbikaín, Luis Norberto López de Lacalle
	<i>Analyzing the effective length of I cross-section beams in connections with girder clamps for totally removable, reusable and reconfigurable...</i> Manuel Cabaleiro, Cristina González, Borja Conde	<i>Study of the application of a collaborative robot for machining tasks</i> Rodrigo Perez-Ubeda, Santiago C. Gutierrez, Ranko Zotovic, Joaquin Lluch-Cerezo
	<i>Effects of the Nozzle Tip Clogging and the Scanning Direction on the Deposition Process During Laser Metal Deposition of Alloy 718 Using a Four-Stream Discrete Nozzle</i> Teresa Artaza, Pedro Ramiro, Mikel Ortiz, Amaia Alberdi, Aitzol Lamikiz	<i>How does the interpolation scheme influence Fused Deposition Modeled performance?</i> Rubén Dorado-Vicente, Gustavo Medina-Sánchez, Alberto Garcia-Collado, Diego Carou, Mercedes Pérez
	<i>Dynamic methodology for the risk evaluation in industrial processes by using quality control charts</i> Martin Folch-Calvo, Francisco Brocal, Miguel A. Sebastián	<i>Industry 4.0 implications in metrology: an overview</i> Victor Alonso, Angel Dacal-Nieto, Luís Barreto, António Amaral, Eduardo Rivero
	<i>Analysis of helium used as protective gas in Laser Metal Deposition of Ti6Al4V highly reactive...</i> Jose E. Ruiz, Magdalena Cortina, Jon I. Arrizubieta, Jon Markaida, Eneko Ukar, Aitzol Lamikiz	<i>Creation of a micro cutting machine tool digital-twin using a collaborative cloud-based PLM Platf.</i> Luis López-Estrada, Marcelo Fajardo-Pruna, Santos Gualoto-Condor, José Ríos, Antonio Vizán

13:00 **Poster and Lunch**

Parallel Sessions – Wed 19

	Sala 1	Sala 2
15:00	Session 1B Advances and Innovations II	Session 2B Assisted Technologies and Industry 4.0
	Chairs: Angelos P. Markopoulos / Lorenzo Sevilla	Chairs: Santiago Ferrándiz / Jorge Salguero
	<i>Wire Arc Additive Manufacturing of Mn4Ni2CrMo Steel: Comparison of Mechanical and Metallographic Properties of PAW and GMAW</i> Teresa Artaza, Maialen Murua, Alfredo Suárez, Iván Tabernero, Aitzol Lamikiz, Jose Carlos Garcia	<i>Small and Medium Enterprises and Industry 4.0: Current Models' ineptitude and the proposal of a methodology to successfully implement industry 4.0 in small and medium enterprises</i> Afonso Amaral, Diogo Jorge, Paulo Peças
	<i>Electrochemical micromachining of Stainless Steel</i> Pablo Rodríguez, Daniel Hidalgo, Julio E. Labarga	<i>Lean methods digitization towards Lean 4.0</i> Maria Faustino, Diogo Jorge, Bruno Rocha, Afonso Amaral, Paulo Peças
	<i>An Experimental Investigation of Machining Aluminum Alloy Al5052 with EDM</i> Angelos P. Markopoulou, Emmanouil L. Papazoglou, Platon Svarniasa, Panagiotis Karmiris-Obratański	<i>Improvement of the food hygiene and safety production process of a Not-for-profit organization using Business Process Model and Notation (BPMN)</i> Nuno Lopes, Gilberto Santos, Patricia Martins
	<i>Numerical Simulation of Machining Using a Coupled FEM-CFD Approach</i> Angelos Markopoulos, Nikolaos Karkalos, Polychronis Kanellos	<i>Analysis of Different Tool Path Strategies for Free Form Machining with Computer Aided Surface Milling Operations</i> Carlos Vila, César Ayabaca, Santiago C. Gutiérrez, Amparo Meseguer, Xin Yang
	<i>Cutting parameters influence on total run-out of dry machined UNS A97075 alloy parts</i> Sergio Martín Béjar, Francisco Javier Trujillo Vilches, Carolina Bermudo Gamboa, Lorenzo Sevilla Hurtado	<i>The load of sustainability for Additive Manufacturing processes</i> Fabio Fruggiero, Alfredo Lambiase, Marcello Fera, Roberto Macchiaroli
	<i>Cutting speed and feed-rate influence on fatigue behavior of dry machined UNS A97075 alloy</i> Sergio Martín Béjar, Carolina Bermudo Gamboa, Francisco Javier Trujillo Vilches, Manuel Herrera Fernández, Lorenzo Sevilla Hurtado	

16:30 **Coffee Break**

Parallel Sessions – Wed 19

	Sala 1	Sala 2
16:45	Session 1C Advances and Innovations III	Session 2C Trends in Manufacturing Systems I
	Chairs: Enrique Ares / José A. Yagüe	Chairs: José A. Sánchez / M. Rosario Domingo
	<i>Case Study: Modeling of the cycle time reduction in a B-Pillar hot stamping operation using conformal cooling</i> Jon Iñaki Arrizubieta, Magdalena Cortina, Marta Ostolaza, Jose Exequiel Ruiz, Aitzol Lamikiz	<i>Operational risk categorization in project-based organizations: A theoretical perspective from a project portfolio risk lens</i> Camilo Mican, Gabriela Fernandes, Madalena Araújo, Enrique Ares
	<i>Reinforced photocurable materials for an Additive Manufacturing process based on Mask Image Projection</i> Jordi Bonada, Elena Xuriguera, Asier Muguruza, Joana Gonçalves, Pol Barcelona, Josep M. Pons, Joaquim Minguella, Roger Uceda	<i>Comparative study of Sustainability Metrics for Face Milling AISI 1045 in different Machining Centers</i> César Ayabaca, Carlos Vila, José V. Abellan-Nebot
	<i>Metal additive manufactured parts through Direct Ink Writing process</i> Jordi Bonada, Elena Xuriguera, Laura Calvo, Louison Poudelet, Roger Cardona, José A. Padilla, María Niubó, Felip Fenollosa	<i>Feature in product engineering with single and variant design approaches. A comparative review</i> Fernando Romero, Emilio M. Sanfilippo, Pedro Rosado, Stefano Borgo, Sergio Benavent
	<i>Low frequency vibration assisted drilling of PC1000 polycarbonate</i> Unai Alonso, Borja Goirigolzarri, Txomin Ostra, Luis N. Lopez de Lacalle	<i>Limits and hurdles of Reverse Engineering for the replication of parts by Additive Manufacturing</i> Aingeru Elizondo and Felix Reinert
		<i>Sustainability Assessment Methodology (SAM) to improve decision-making in manufacturing companies</i> Mahdi Naderi, Gustavo Peláez Lourido, Jose Enrique Ares Gomez, Antonio Fernandez Ulloa
20:30	Conference Welcome Cocktail at the Terraza Palacio Cibeles Plaza Cibeles, 1 (Madrid City Hall building) - 6th floor - 28014 Madrid (The conference participants are responsible for their own transport)	

Thursday 20

Parallel Sessions – Thu 20

	Sala 1	Sala 2
9:00	<p>Session 1D Advances and Innovations IV</p> <p>Chairs: Carlos Vila / Eduardo Cuesta</p> <p><i>Experimental study of the compression behavior of mask image projection based on stereolithography manufactured parts</i> Miquel Casafont, Josep M. Pons, Jordi Bonada, María M. Pastor, Frederic Marimon, Francesc Roure</p> <p><i>Study of the influence of cutting parameters on surface quality in AWJM machining of thermoplastic matrix composites</i> Fermín Bañón, Alejandro Sambruno, Raúl Ruiz-García, Jorge Salguero, Pedro F. Mayuet</p> <p><i>Innovation of robotic hand with two thumbs</i> Horacio León, Itzerai Rodriguez, Yanelly Muciño</p> <p><i>Experimental study of laser dissimilar joining for Usibor 2000 and Al-T7075 with Tepex 102</i> Eneko Ukar, Iñaki Arrizubieta, Maite Andres, Mercedes Ferros, Fernando Liébana</p> <p><i>Tool wear and induced damage in CFRP drilling with step and double point angle drill bits</i> Juan Fernández-Pérez, José L. Cantero, José Díaz-Álvarez, María H. Miguelez</p>	<p>Session 2D Metrology Tolerancing and Quality I</p> <p>Chairs: Emilio Prieto / Piera Maresca</p> <p><i>Effectiveness of centering devices of geomatics instruments</i> José Manuel Quintero Echeverri, Jesús De Vicente Y Oliva, Teresa Fernández Pareja</p> <p><i>Metrological strategies for reconstruction of ancient machines</i> María Ana Sáenz Nuño, Francisco Nieto Fuentes, Eusebio Huélamo Martínez</p> <p><i>Design and development of a calibration artefact for length measurement system</i> Francisco J. Brosted, Raquel Acero, Sergio Aguado, Marta Herrer, José J. Aguilar, Jorge Santolaria</p> <p><i>A Survey of Bidimensional Wavelet Filtering in Surface Texture Characterization</i> Kevin Lucas, Alfredo Sanz-Lobera, Pablo Antón-Acedos, Aitor Amatriain</p> <p><i>Enhancement of Sensor-less Cutting Force Estimation by Tuning of Observer Parameters from Cutting Test</i> Shuntaro Yamato, Yasuhiro Imabeppu, Naruhiro Irino, Norikazu Suzuki, Yasuhiro Kakinuma</p> <p><i>Positioning uncertainty of the control system for the planar motion of a nanopositioning platform</i> Lucía Díaz-Pérez, Marta Torralba, José Antonio Albajez, José A. Yagüe-Fabra</p>
10:45	Coffee Break	
11:15	<p>Plenary Conference: Estimating uncertainty for 3D point cloud measurement Prof. Richard Leach</p>	

Parallel Sessions – Thu 20

	Sala 1	Sala 2
12:00	Session 1E Advances and Innovations V	Session 2E Metrology Tolerancing and Quality II
	Chairs: Enrico Savio / José M. Arenas	Chairs: Richard Leach / Jesús Caja
	<p><i>Integrated volumetric error mapping for large machine tools: An opportunity for more accurate and geometry connected machines</i> Unai Mutilba, Fernando Egaña, Gorka Kortaberria, Eneko Gomez-Acedo, Aitor Olarra, José Antonio Yagüe-Fabra</p> <p><i>Influence of infill and nozzle diameter on porosity of FDM printed parts with rectilinear grid pattern</i> Irene Buj-Corral, Ali Bagheri, Alejandro Domínguez-Fernández, Ramón Casado-López</p> <p><i>Foreseeing new multi-material AM concepts meeting mimicking requirements with living tissues</i> Felip Fenollosa, Joan R. Gomà, Irene Buj-Corralb, Aitor Tejo, Joaquim Minguella-Canela, Roger Uceda, Arnau Valls, Marta Ayats</p> <p><i>Blisk blades manufacturing technologies analysis</i> Amaia Calleja, Haizea González, Roberto Polvorosa, Gaizka Gómez, Izaro Ayesta, Michael Bartond, Luís N. López de Lacalle</p> <p><i>Experimental analysis of the residual stresses during finishing turning of Inconel 718</i> Antonio Díaz-Álvarez, Jose Díaz-Álvarez, Henar Miguélez, Jose Luis Cantero</p>	<p><i>A new approach to the comparison of length standards proposed to provide traceability to the Laser Tracker equipment in the Centro Español de Metrología (CEM)</i> Esteban Vargas Vargas, Teresa Fernández Pareja, Emilio Prieto Esteban, Jesús Velasco Gómez</p> <p><i>Developing new transfer standards for ensuring torque traceability in wind power generation</i> Raquel María Lorente-Pedreille, Miguel A. Sebastián, María Nieves Medina-Martín, María Ana Sáenz-Nuño</p> <p><i>Incorporation of form deviations into the matrix transformation method for tolerance analysis in assemblies</i> Julio Serrano-Mira, Pedro Rosado-Castellano, Fernando Romero-Subirón, Gracia M. Bruscas-Bellido, José V. Abellán-Nebot</p> <p><i>Algorithm for geometrical and metrological characterization of gears with low module and high number of theets: low-cost gears</i> Víctor Cuevas Cano, Jesús De Vicente Y Oliva, Jesús Caja García, Piera Maresca</p> <p><i>Experimental analysis of the surface roughness in the coefficient of friction test</i> Roque Calvo, Roberto D'Amato, Emilio Gomez, Alessandro Ruggiero</p> <p><i>Characterization of vegetable oil as cutting fluid</i> Roberto D'Amato, Chen Wang, Roque Calvo, Petr Valášek, Alessandro Ruggiero</p>
13:30	Poster and Lunch	

Parallel Sessions – Thu 20

	Sala 1	Sala 2
15:00	Session 1F Advances and Innovations VI Chairs: Shuntaro Yamato / Joaquín Barreiro	Session 2F Manufacturing Engineering in Society Chairs: V. Jesús Seguí / Joaquim Miguella
	<p><i>Abrasive tool behavior comparing lubri-cooling techniques for Super Abrasive Machining full-slotting in Inconel®718</i></p> <p>Haizea González, Pablo Fernández-Lucio, Octavio Pereira, Amaia Calleja, Asier Fernández-Valdivielso, Luis N. López de Lacalle</p>	<p><i>Indoor Air Quality: is there a Problem with Additive Manufacturing?</i></p> <p>Laura Bravia, Federica Murmura, Gilberto Santos</p>
	<p><i>Analysis of the wear flat of CBN wheels on the grinding performance by means of process modelling</i></p> <p>Naiara Ortega Ortega, Gorka Vidal, Hector Bravo, Soraya Plaza, Juan Luis Osa</p>	<p><i>Analysis of technological capabilities of AWJM in the microdrilling of composites used for the aeronautical engineering</i></p> <p>Alejandro Sambruno, Fermin Bañon, Fatima Benyahya, Moises Batista, Pedro F. Mayuet</p>
	<p><i>Wire electrical discharge machining (EDM) setup parameters influence in functional surface roughness</i></p> <p>Roque Calvo, Manuel Daniel</p>	<p><i>Design and Development of Low Cost Prosthesis</i></p> <p>Beatriz Quiralte Moreno, María Ana Sáenz-Nuño, Noelia Díez Sánchez</p>
	<p><i>Influence of geometric imperfections and internal damage patterns of thin-walled laminates on failure in Compression-After-Impact testing</i></p> <p>Aurelio José Olivares-Ferrer, Markus Linke, Juan Antonio García-Manrique</p>	<p><i>Maintenance cost influence in a comminution layout design</i></p> <p>Ignacio Ortiz-Landazuri Suárez and M. José Oliveros Colay</p>
	<p><i>Process window of tube-end inversion: experimentation and numerical analysis</i></p> <p>João P. Magrinho, Gabriel Centeno, M. Beatriz Silva, Domingo Morales-Palma, Carpóforo Vallengano, Paulo A. F. Martins</p>	<p><i>Effects of manufacturing parameters on fatigue performance of Timberfill parts through fused filament fabrication</i></p> <p>Mohammad Damous Zandi, Jordi Lluma_Fuentes, Ramon Jerez_Mesa, J. Antonio Travieso_Rodriguez</p>
		<p><i>Analysis of the contribution of the Segovia Mint factory (CECA) to the history of manufacturing</i></p> <p>Francisco Luis García Ahumada, Cristina González Gaya</p>
16:30	<p>Visit to the Centro Español de Metrología (CEM) C/ Alfar 2 – 28760 Tres Cantos – Madrid (A bus will pick up the conference participants interested to know the CEM facilities. Departure and arrival at ETSIDI-UPM)</p>	
16:30	<p>Coffee Break</p>	

Parallel Sessions – Thu 20

	Sala 1	Sala 2
16:45	Session 1G Advances and Innovations VII	Session 2G Trends in Manufacturing Systems II
	Chairs: Yasuhiro Kakinuma / Manuel Estrems	Chairs: Franck Girot / M ^a Luisa Garcia-Romeu
	<i>Modelling of tubular adhesively-bonded joints by the Extended Finite Element Method</i> Serjio Eusébio and Raul Campilho	<i>Integrated product and processes development in design: A case study.</i> Maria João Félix, Sílvio Silva, Gilberto Santos, Manuel Doiro, José Carlos Sá
	<i>Impact modelling of single-lap bonded joints by cohesive zone models</i> Duarte Machado, Raul Campilho, Mónica Cardoso	<i>The contribution of design to the integrated development of products and processes, in the modernization of Portuguese smes.</i> Maria João Félix, Sílvia Gonçalves, Genett Jimenez, Gilberto Santos
	<i>Reverse shoulder arthroplasty: methodology improvement through personalized modelling techniques and FDM technology</i> Laura Piles, Miguel J. Reig, V. Jesús Seguí, Rafael Pla	<i>iLeanDMAIC – A methodology for implementing the lean tools</i> Catarina Ferreira, José C. Sá, Luís P. Ferreira, Manuel P. Lopes, Teresa Pereira, Francisco J. G. Silva
	<i>Reverse engineering applied to biomodelling and pathological bone manufacturing using FDM technology</i> Laura Piles, Miguel J. Reig, Vte. Jesús Seguí, Rafael Pla, Fernando Martínez, José Miguel Seguí	<i>Considerations for the Development of a Human Reliability Analysis (HRA) Model Oriented to the Maintenance Work Safety</i> Francisco L. Orzáez, Rosario Domingo, Marta M. Marín
	<i>On the development of an haptic tool based autonomous polishing system</i> Daniel Afonso and Ricardo Guincho	<i>Hardening Characterization of Cold Forging Steel by means of Compression and Torsion Tests</i> Lander Galdos, Biotza Zubia, Joseba Mendiguren, Nagore Otegi, Eneko Saenz De Argandoña
21:00	Gala Dinner at the El Mirador del Olivar Restaurant Avda. de Dublín s/n – 28042 Madrid (Campo de las Naciones) Buses will depart at 20:15 from ETSIDI (Ronda de Valencia, 3 – Madrid)	

Friday 21

Parallel Sessions – Fri 21

	Sala 1	Sala 2
9:00	<p>Session 1H Trends in Manufacturing Systems III</p> <p>Chairs: Genserik Reniers / Cristina Gonzalez</p> <p><i>Person-Based Design: A Human-Centered Approach for Lean Factory Design</i> Francisco Gil Vilda, José Antonio Yagüe Fabra, Albert Sunyer Torrents</p> <p><i>Improvement of Productivity and Quality in the Value Chain through Lean Manufacturing – a case study</i> Genett Jimenez, Gilberto Santos, José Carlos Sá, Sandy Ricardo, Jose Pulido, Ana Pizarro, Hugo Hernández</p> <p><i>Experimental analysis of alternative production flow controls for high variety product manufacturing</i> Ana Arteaga and Roque Calvo</p> <p><i>Order processing improvement in military logistics by Value Stream Analysis lean methodology</i> Raquel Acero, Marta Torralba, Roberto Pérez-Moya, José Antonio Pozo</p> <p><i>An experimental study on interference friction welding process</i> Deep Barua, Torgeir Welo, Geir Ringen, Jyhwen Wang</p> <p><i>Operational effects on the stiffness of combined roller and plain bearings</i> Julian Sinz, Maximilian Knoll, Peter Groche</p> <p><i>Good Practices and Trends in Reverse Logistics in the plastic products manufacturing industry</i> Genett Jimenez, Gilberto Santos, María Félix, Hugo Hernández, Carlos Rondón</p>	<p>Session 2H Metrology Tolerancing and Quality III</p> <p>Chairs: Aitzol Lamikiz / Irene Buj</p> <p><i>A proposal for the measurement of Inconel 718 components by means of computerized tomography</i> Soraya Plaza, Naiara Ortega, Rikardo Minguez, Lander Barrenetxea, Alicia Gonzalez</p> <p><i>Development of the new 10 kN-m torque standard machine at CEM</i> Nieves Medina, Jorge Luis Robles, Jose Ángel Robles, Jesús Ángel Trujillo</p> <p><i>Surface Characterization of Fabricated Tungsten Alloy MicroTool by Wire Electric Discharge Grinding (WEDG)</i> Prem S. Satsangi and Manoj Kumar</p> <p><i>Study and comparison of the different costs' schema associated to geometry, material and processing between 3D printing, injection molding and machining manufacturing technologies</i> Joaquim Minguella-Canela, Sergio Morales Planas, Joan R. Gomà Ayats, M. Antonia de los Santos</p> <p><i>Influence of the scanning strategy parameters upon the quality of the SLM parts</i> Sara Giganto, Pablo Zapico, M^a Ángeles Castro-Sastre, Susana Martínez-Pellitero, Paola Leo, Patrizia Perulli</p> <p><i>Capability of conoscopic holography for digitizing and measuring of layer thickness on PLA parts built by FFF</i> Gonzalo Valiño, José Carlos Rico, Pedro Fernández, Braulio José Álvarez, Yeraí Fernández</p>

10:45 Coffee Break

- 11:15 Plenary Conference:
Operational safety economics: a topic deserving more attention by
academia and industry
Prof. Genserink Reniers
- 12:00 Closing Ceremony
- 12:15 TPF Awards
- 12:45 Manufacturing Engineering Society Assembly
- 14:30 Lunch

Keynote Speakers



Prof. Hans Nørgaard Hansen
Technical University of Denmark

Hans Nørgaard Hansen is professor of Micro Manufacturing at the Department of Mechanical Engineering of which he is also the head. His main research area is micro manufacturing. This includes the entire value chain from design of micro mechanical systems over manufacturing process chains to quality assurance and metrology. The integration of single processes into coherent process chains and production systems including the necessary quality assurance activities is the ultimate goal of the research. Hans is a Fellow of the International Academy of Production Research (CIRP) and currently the vice-president elect, The International Society for Nanomanufacturing (currently president) and the Danish Academy of Technical Sciences. He is member of the European Society for Precision Engineering and nanotechnology (euspen) and he acted as president for euspen 2015-2017. His keynote presentation will deal with Digitalization and Industry 4.0 in a Danish context.



Prof. Richard Leach
University of Nottingham

Richard is currently a professor in metrology at the University of Nottingham and prior to this spent 25 years at the National Physical Laboratory. Richard's research is dominated by what he calls "information-rich metrology": the enhancement of manufacturing metrology with a priori information, often utilizing concepts from artificial intelligence. His current interests are the dimensional measurement of precision and additive manufactured structures. Richard is on the Council of the European Society of Precision Engineering and Nanotechnology and European Editor-in-Chief for Precision Engineering. He has over 400 publications including five textbooks. Richard is a Fellow of the Institute of Physics, the Institution of Engineering & Technology, the Institute of Measurement & Control, the International Society of Nanomanufacturing and a Sustaining Member of the American Society of Precision Engineering. He is a visiting professor at Loughborough University and the Harbin Institute of Technology.



Prof. Genserik Reniers
Delft University of Technology

Genserik Reniers, a Master of Science in chemical engineering, is Full Professor at the Safety and Security Science Group of the Delft University of Technology, in the Netherlands, where he teaches Risk Analysis and Risk Management. At the University of Antwerp in Belgium, he is a Full professor lecturing amongst others in chemistry, organic chemistry, and Technological Risk Management. At the Brussels campus of the KU Leuven, Belgium, he lectures as a Professor, amongst others, in Engineering Risk Management. His main research interests concern the collaboration surrounding safety and security topics and socio-economic optimization within the chemical industry. Amongst many other academic achievements and output, he has published 150+ scientific papers in high-quality academic journals, and has (co-)authored and (co-)edited some 35 books. He serves as an Editor of the Journal of Loss Prevention in the Process Industries and as an Associate Editor of the Journal 'Safety Science'.

Poster Sessions

<p><i>A comparative study of image processing thresholding algorithms on residual oxide scale detection in stainless steel production lines</i></p> <p>Juan Miguel Cañero-Nieto, José Francisco Solano-Martos, Francisco Martín-Fernández</p>	<p><i>A Step-by-step Procedure Towards a Software Measurement Standard in Surface Texture Evaluation</i></p> <p>Jesús Domínguez, Kevin Lucas, Alfredo Sanz-Lobera</p>
<p><i>A teaching methodology for the real-time assessment of students' competencies related to manufacturing subjects using technology based on electronic devices</i></p> <p>Alfonso G. González, David R. Salgado, Justo García Sanz-Calcedo, Cayetano Cruz García, Jorge Barrios Muriel, O. López Pérez, Fco. Javier Álvarez García</p>	<p><i>Additive manufacturing of PLA-based composites using FDM technique: Effect of the reinforcement on mechanical properties and dimensional accuracy</i></p> <p>Migel A. Caminero, Jesús M. Chacón, Pedro J. Núñez, Eustaquio García-Plaza, José M. Reverte, Jean P. Becar</p>
<p><i>Algorithm to optimize measurement system location in a machine tool verification</i></p> <p>Sergio Aguado Jimenez, Pablo Pérez Muñoz, José Antonio Albajez García, Jorge Santolaria Mazo, Jesús Velázquez Sancho</p>	<p><i>An analysis of the forces in the cryogenic peripheral milling of composites reinforced with carbon fiber</i></p> <p>Rosario Domingo, Beatriz de Agustina, Marta M. Marín</p>
<p><i>An approach for Surface Roughness Filtering as an alternative to ISO Standard</i></p> <p>Jorge Barrios-Muriel, David R. Salgado, Inocente Cambero, Fco. Javier Alonso, Alfonso González</p>	<p><i>An approach to the eco-efficient railway using ballast and ecological cement</i></p> <p>Santiago Yagüe García, Cristina Gonzalez Gaya, Juan Claver Gil</p>
<p><i>An exploratory study on the relationship of OEE variables and CO2 emissions</i></p> <p>Pilar Cercós, Luis Miguel Calvo, Rosario Domingo</p>	<p><i>Analysis of additive manufacturing contents in Mechanical Engineering degrees at Spanish universities</i></p> <p>M. Puerto Pérez-Pérez, Emilio Gómez, Miguel A. Sebastián</p>
<p><i>Analysis Of An Order Fulfilment Process At A Metalwork Company Using Different Lean Methodologies</i></p> <p>José António Dias, Luís Pinto Ferreira, Maria A. Gonçalves, Francisco J. G. Silva, Enrique Ares</p>	<p><i>Analysis of different camera calibration methods on a camera-projector measuring system</i></p> <p>Julieta Tiscareño Félix, José Antonio Albajez García, Jorge Santolaria Mazo</p>
<p><i>Analysis of mechanical and thermal properties of elastomers for manufacturing of components in the nuclear industry</i></p> <p>Álvaro Rodríguez-Prieto, Ana María Camacho, Miguel Ángel Sebastián, Ángel Yanguas-Gil</p>	<p><i>Analysis of microstructure and defects in 17-4 PH stainless steel sample manufactured by Selective Laser Melting</i></p> <p>Paola Leo, Sonia D'Ostuni, Patrizia Perulli, Maria A. Castro Sastre, Ana I. Fernández-Abia, Joaquin Barreiro</p>
<p><i>Analysis of the drilling of the UNS A92024 alloy by cooling provided by biodegradable and low-cost vortex tube</i></p> <p>Luis Roldán-Jiménez, Miguel Fosas de Pando, Severo R. Fernandez-Vidal</p>	<p><i>Analysis of the failure of H240LA steel sheets subjected to stretch-bending conditions</i></p> <p>Andres J. Martínez-Donaire, Luis H. Martínez-Palmeth, Marcos Borrego, Domingo Morales-Palma, Carpóforo Vallengano</p>
<p><i>Analysis of the influence of the variables of the Fused Deposition Modeling (FDM) process on the mechanical properties of a carbon fiber-reinforced polyamide</i></p> <p>Elena Verdejo de Toro, Juana Coello Sobrino, Alberto Matínez Martínez, Valentín Miguel Eguía</p>	<p><i>Analysis of the latest trends in hybrid components of lightweight materials for structural uses</i></p> <p>Eva María Rubio, David Blanco, Marta María Marín, Diego Carou Eva M. Rubio, David Blanco, Marta M. Marín, Diego Carou</p>

<p><i>Application of Computer Aided Design and Additive Manufacturing to the recovery of the Paddle Boat by Francesco Di Giorgio</i></p> <p>David Piñero, Ana Pilar. Valerga, F. Alejandro Ordoñez, Moises Batista</p>	<p><i>Approach to the design criteria for the integration of printed circuits with conductive inks in additive manufacturing processes</i></p> <p>Blas Puerto, Juan Claver, Ana María Camacho</p>
<p><i>Big Data and Advanced Analytics in Industry 4.0: a comparative analysis across the European Union</i></p> <p>Luca Greco, Piera Maresca, Jesús Caja</p>	<p><i>Bio-based resins reinforced with cotton waste processability study</i></p> <p>Sergi Montava, Santiago Ferrandiz Bou, Nestor Montañes Muñoz, Luis Quiles Cariiloo</p>
<p><i>Bio-inspired redesign of a hip prosthesis stem for improving geometrical optimization time</i></p> <p>Jaime Orellana, Teresa Palacios, Fernando Calle, José Ygnacio Pastor</p>	<p><i>Characterization of SLA test geometries under different manufacturing and curing conditions</i></p> <p>Daniel Vilà, Ines Ferrer Real, M^a Luisa Garcia-Romeu</p>
<p><i>Characterization of surface texture in electropolishing processes using 3D surface topography parameters</i></p> <p>Jorge Félix Molina Pardo, Elena María Beamud González, Eustaquio Garcia Plaza, Pedro José Núñez López</p>	<p><i>Comparative analysis of artificial intelligence techniques for material selection applied to manufacturing in Industry 4.0</i></p> <p>David Merayo Fernández, Alvaro Rodríguez-Prieto, Ana María Camacho</p>
<p><i>Comparative Study of Aluminum Alloy Casting obtained by Sand Casting Method and Additive Manufacturing Technology</i></p> <p>Pablo Rodríguez, Ana I. Fernández, María A. Castro, Pablo E. Robles, Joaquín Barreiro, Paola Leo</p>	<p><i>Compensation of geometrical errors in milling process</i></p> <p>J.P. Muñoz, J. Caja, P. Maresca, E. Gómez.</p>
<p><i>Custom Macro B high level CNC programming and a geometric modelling of a 5 axis specific problem example: a flexible solution in the watchmaking industry.</i></p> <p>Oscar Rodríguez-Alabanda, Pablo E. Romero Carrillo, Guillermo Guerrero-Vacas</p>	<p><i>Design as principal cause of failure in a plastic industrial conveyor belt</i></p> <p>Samuel Sanchez-Caballero, Bernardo A. Oliver, Miguel A. Peydro, Miguel A. Selles</p>
<p><i>Design, manufacturing and testing of hybrid adhesive joints with metallic pins to join steel with fiberglass reinforced composite</i></p> <p>José M. Arenas, Juan C. Suárez, Evgeny Gavrilenko, Cristina Alía</p>	<p><i>Development of a shape specification based on the waviness parameter of tapered roller bearing</i></p> <p>David Carrera, Ignacio Miguel, Emilio Padilla, Victor Zaera, Pedro Dubón, Sergio Santo Domingo, Juan José Aguilar Martín</p>
<p><i>Dimensional accuracy analysis of Direct Metal Printing machine focusing on roller positioning errors</i></p> <p>Eduardo Cuesta, Adrian Gesto, Braulio J. Alvarez, Susana Martinez-Pellitero, Pablo Zapico, Sara Giganto</p>	<p><i>Direct manufacturing of non-stick molds via single point incremental forming</i></p> <p>Oscar Rodriguez-Alabanda, Rafael Molleja Molleja, Guillermo Guerrero-Vaca, Pablo E. Romero</p>
<p><i>Early design of a French Horn's support for younger players (students from 7 to 12 years)</i></p> <p>M.Luisa Garcia-Romeu, Miriam Trias, Ines Ferrer Real, Jordi Albert, David Canet</p>	<p><i>Effect of orthogonal milling on martensite formation in AISI 304</i></p> <p>Óscar Martín, Pilar De Tiedra, Manuel San-Juan, Francisco Santos</p>
<p><i>Effects of Mathematical Models and Algorithms on Determination of Areal Step Height Measured by Confocal Microscopy</i></p> <p>Chen Wang, Jesus Caja, Roberto D'Amato, E. Gomez</p>	<p><i>Emergency response in the new occupational safety system and the other management systems</i></p> <p>Tatiana Karkoszka</p>

<p><i>Estimation of uncertainty in the position, velocity and acceleration of planar mechanisms</i></p> <p>Miguel Berzal, Juan L Castellano, Cintia Barajas, J. Caja</p>	<p><i>Evaluation of resin composites for dental restorations</i></p> <p>Teresa Palacios, Cristian Abad, Guillermo Pradríes, Jose Ygnacio Pastor</p>
<p><i>Evaluation of traceability in continuous 2D measurements employing machine vision systems</i></p> <p>Piera Maresca, Ángel André Duarte Ruggiero, Chen Wang, Jesús Caja García, Emilio Gómez</p>	<p><i>Experimental results and constitutive model of the mechanical behavior of Ti6Al4V alloy at high temp.</i></p> <p>Jorge Ayllón Perez, Valentín Miguel Eguía, Juana Coello Sobrino, Alberto Martínez Martínez</p>
<p><i>Failure Analysis of Bi-Material FFF Parts</i></p> <p>Pedro Fernández, Pelayo Fernández, Desiree Ávila, Natalia Beltrán, David Blanco</p>	<p><i>Feasibility of machining using low payload robots</i></p> <p>Erardo Leal-Muñoz, Eduardo Diez, Antonio Vizán</p>
<p><i>Improvement of Production Line in the Automotive Industry Through Lean Philosophy</i></p> <p>José Azevedo, José Carlos Sá, Luís P. Ferreira, Gilberto Santos, Fernando M. Cruz, Genett Jimenez, Francisco J. G. Silva</p>	<p><i>Improvement of Productivity in Hydraulic Systems with Servomechanisms</i></p> <p>Gerardo Espinosa-Garza and Imelda de Jesús Loera-Hernández</p>
<p><i>Improvement of the Productivity in the Process to Eliminate Paint in Glass Products</i></p> <p>Gerardo Espinosa Garza, Imelda de Jesús Loera-Hernández, Jacobo Tijerina Aguilera</p>	<p><i>Improving The Machining Process Of The Metalworking Industry Using The Lean Tool SMED</i></p> <p>Carlos Monteiro, Luís P. Ferreira, Nuno O. Fernandes, José C. Sá, M. T. Ribeiro, Francisco J. G. Silva</p>
<p><i>Improving The Order Fulfilment Process At A Metalwork Company</i></p> <p>José António Dias, Luís Pinto Ferreira, José Carlos Sá, Maria Teresa Ribeiro, Francisco J. G. Silva</p>	<p><i>Industrial product design: study of FDM technology for the manufacture of thermoformed prototypes</i></p> <p>Lucía Rodríguez-Parada, Pedro F. Mayuet, Antonio J. Gámez</p>
<p><i>Industry 4.0 implications in production and maintenance management: An overview</i></p> <p>Sergio Gallego García, Manuel García García</p>	<p><i>Infill optimization for pieces obtained by 3D printing</i></p> <p>Amabel García-Domínguez, Juan Claver, Miguel A. Sebastián</p>
<p><i>Influence of manufacturing parameters in the dimensional characteristics of ABS parts obtained by FDM using reverse engineering techniques</i></p> <p>Sebastián Mansilla Mora, Ana María Camacho López, Juan Claver Gil</p>	<p><i>Influence of process parameters of different additive manufacturing techniques on mechanical properties and safety of customised toys</i></p> <p>Asunción Martínez-García, Ignacio Sandoval-Pérez, Ana Ibáñez-García, Karina Pernías-Peco, Francisco J. Varela-Gandía, Josefa Galvañ-Gisbert</p>
<p><i>Influence of the Addition of 0.5 and 1% in Weight of Multi-Wall Carbon Nanotubes (MWCNTS) in Poly-Lactic Acid (PLA) For 3d Printing</i></p> <p>Christian Cobos, Andres Conejero, Octavio Fenollar, Santiago Ferrándiz</p>	<p><i>Integrated training for using different Coordinate Measuring Systems to support Digital Manufacturing</i></p> <p>Marco Menoncin, Enrico Savio, Michael Marxer, Nabil Anwer</p>
<p><i>Investigation of surface integrity induced on AZ31C magnesium alloy turned under cryogenic and dry cond.</i></p> <p>Mohd Danish, Turnad Lenggo Ginta, Ahmad Majdi Abdul Rani, Diego Carou, J. P. Davim, Saeed Rubaiee, Sami Ghazali</p>	<p><i>Lean Manufacturing and Industry 4.0: Opportunity or Threat?</i></p> <p>Marlene Brito, Ana Luísa Ramos, Paula Carneiro, Maria Antónia Gonçalves</p>

<p><i>Machining Operations for Components in Kitchen Furniture: A Comparison Between Two Management Systems</i></p> <p>Manuel Doiro, Francisco J. Fernández, María J. Félix, Gilberto Santos</p>	<p><i>Machining time estimation using the geometrics features of the 2.5D pocket contour</i></p> <p>Oscar Rodriguez-Alabanda, Guillermo Guerrero-Vacas, Pablo E. Romero</p>
<p><i>Maintenance of cast brass taps by pulsed Nd:YAG LASER welding</i></p> <p>António B. Pereira, Fábio A. O. Fernandes, Daniel G. Afonso, Ricardo J. Alves de Sousa</p>	<p><i>Manufacture of a new composite from renewable source using VARTM technique</i></p> <p>Diego Lascano, Javier Tormo, Sergi Montava, Teodomiro Boronat</p>
<p><i>Manufacturing Process Selection Integrated in the Design Process: University and Industry</i></p> <p>Pedro Hernández-Castellano, M. Dolores M-Rivero, María Dolores Marrero-Alemán, Luis Suárez-García</p>	<p><i>Manufacturing Process Selection Integrated in the Design Process: Test and Results</i></p> <p>M. Dolores M.-Rivero, Pedro Hernández-Castellano, M. Dolores Marrero-Alemán, Luis Suárez-García</p>
<p><i>Material flow analysis in indentation process by 3D Digital Image Correlation</i></p> <p>Carolina Bermudo Gamboa, Sergio Martín-Béjar, Francisco J. Trujillo, Germán Castillo, Lorenzo Sevilla</p>	<p><i>Method approach for plastic products multi-criteria design optimization, focused in high competitiveness markets</i></p> <p>Víctor J. Romero and Alberto Sanchez</p>
<p><i>Methodology for quantitative evaluation of university teaching. Application to the subject of Project Management</i></p> <p>Juan David Cano-Moreno, José M. Arenas, Victoria Sánchez, Manuel Islán, Julián Narbón</p>	<p><i>Methods for quantitative risks analysis of cost and deadline overruns in complex projects</i></p> <p>Paúl Urgilés, Juan Claver, Miguel Ángel Sebastián</p>
<p><i>Modal analysis applied to electric guitar manufacturing. Optimisation of characteristics</i></p> <p>Fernando J. Núñez Calzado, Santiago Gutierrez Rubert, Mario Lázaro Navarro, David Rossi Pérez</p>	<p><i>Model-based observer proposal for surface roughness monitoring</i></p> <p>Ruben Moliner-Heredia, José V. Abellán-Nebot, Ignacio Peñarrocha-Alós</p>
<p><i>Sound recordings of leading professors of Spanish Manufacturing Engineering. Analysis of contents</i></p> <p>Lorenzo Sevilla, Juan Claver, Miguel A. Sebastián</p>	<p><i>Study of Bending Test of Specimens Obtained Through FDM Processes of Additive Manufacturing</i></p> <p>Ignacio F. González Requena, Alberto González Rebenaque</p>
<p><i>Study of kerf features on CFRP/UNS A97075 stacks machined by AWJM</i></p> <p>Ruben Montaña-Vega, Raul Ruiz-Garcia, Juan Manuel Vazquez-Martinez, Pedro F. Mayuet</p>	<p><i>Study of samples geometry to analyze mechanical properties in Fused Deposition Modeling process (FDM)</i></p> <p>Joaquín Lluch-Cerezo, Rut Benavente, María D. Meseguer, Santiago C. Gutiérrez</p>
<p><i>Study of the effect of infill pattern on mechanical properties in fused deposition modelling</i></p> <p>Javier Tormo, Lourdes Sanchez Nacher, David Garcia Sanoguera, Teodomiro Boronat</p>	<p><i>Study on the use of alternative transmission mechanisms applied to additive manufacturing machines</i></p> <p>Severo R. Fernández-Vidal, Francisco J. Puerta, Álvaro Gómez, Ana Pilar Valerga</p>
<p><i>Superhydrophobic aluminum-magnesium surfaces obtained with cerium coatings</i></p> <p>Pedro Castilla Montilla, Oscar Rodríguez Alabanda, Pablo Romero Carrillo, Javier Montes Ruiz, Guillermo Guerrero Vacas</p>	<p><i>The Additive Manufacturing Operations Management Maturity: a Closed or an Open Issue?</i></p> <p>Pasquale Manco, Roberto Macchiaroli, Marcello Fera, Piera Maresca</p>



The new challenges of the manufacturing industry applying the norm ISO 45001:2018

José Francisco Solano-Martos, María José Cano Iglesias, Juan Miguel Cañero-Nieto

The Upper Bound Theorem in forging processes: Model of Triangular Rigid Zones on parts with horizontal symmetry

Francisco Martín, Juan Cañero, María Jesús Martín, Diego Maldonado

Trajectory generation in 5-axis milling of freeform surfaces using circular arc approximation and its influence in surface roughness

Manuel Estrems, Javier Castellote, Wilmer E. Cumbicus, Horacio Sánchez, Julio Carrero-Blanco, Óscar de Francisco, Mikel Arizmendi

Use of open manufacturing laboratories (Fab Labs) as a new trend in engineering education

Cristina Alía, Rosa Ocaña, Piera Maresca, Jesús Caja, Cristina Moremo, Julián Narbón

Using Lean Thinking Principles To Reduce Wastes In Reconfiguration Of Car Radio Final Assembly Lines

Miriam S. Oliveira, Hugo D. A. Moreira, Anabela C. Alves, Luís P. Ferreira

Variation propagation of bench vices in multi-stage machining processes

José V. Abellán-Nebota, Rubén Moliner-Heredia, Gracia M. Bruscas, Julio Serrano

Virtual Learning Platform for Laboratory Classes in Manufacturing Engineering

Piera Maresca, Jesús Caja García, Emilio Gómez García, Cintia Barajas Fernandez, Teresa Palacios García, Miguel Berzal Rubio

