

ISIEA 2023

2nd International Symposium on
Industrial Engineering and Automation
ISIEA 2023

Towards a Smart, Resilient and Sustainable Industry

22nd – 23rd June 2023,
Bozen-Bolzano, Italy

PROGRAMME

PROGRAMME ISIEA

Thursday 22.06.2023

Main unibz Campus – Piazza Università 1

08.30 09.00	Registration <i>Foyer (in front of D1.02, D1.03)</i>		
09.00 09.30	Welcome session <i>Room D1.02 – Aula Prof. Giustino Tonon</i>		
09.30 10.15	Keynote speech “Sustainable production with focus on E-Mobility” Franz Haas <i>Room D1.02 – Aula Prof. Giustino Tonon</i> Chair: Dominik Matt		
10.15 10.45	Coffee Break <i>Foyer (in front of D1.02, D1.03)</i>		
10.45 12.15	Parallel sessions		
	<i>Room D0.02</i> Numerical Approaches and Digitalization in Mechanical Engineering Chair: <i>Lorenzo Maccioni</i>	<i>Room D1.02</i> Smart sustainable manufacturing – part A Chair: <i>Concetta Semeraro</i>	<i>Room D1.03</i> Sustainable Operations and Supply Chains – Part A Chair: <i>Markku Kuula</i>
	120 – Digitisation for sustainable water supply systems: the case of optimal pressure management Kostner, Michael K.; Zanfei, Ariele; Menapace, Andrea; Alberizzi, Jacopo C.; Renzi, Massimiliano; Larcher, Michele; Righetti, Maurizio	111 – Arduino-based Machine Learning Approach for CNC Machine Predictive Maintenance Biyrouiti, Sama; Alzeir, Ayah; Jammal, Hanan; Omar, Omar Hassan; Semeraro, Concetta	125 – Modularity effect on the manufacturing lead time of assembly processes Modrak, Vladimir; Soltysova, Zuzana; Pitel, Jan
	154 – A combined analytical-numerical approach to evaluate the efficiency of cycloidal speed reducers Fraccaroli, Lorenzo; Pagliari, Lorenzo; Concli, Franco	113 – Grey Relational Analysis vs. Response Surface Methodology for the prediction of the best joint strength in hybrid welding of TWIP/DP steels Contuzzi, Nicola; Casalino, Giuseppe; Russo Spena, Pasquale	147 – Decertification: evidence from Italian SMEs Marcuzzi, Irene; Podrecca, Matteo; Orzes, Guido; Sartor, Marco

	161 – Numerical investigation of the mechanical performance of multilayer composite laminates under low velocity impact loading condition Taghizadeh, Seyedahmad; Concli, Franco	124 – Demonstrating the potentials of Digital Twin in Manufacturing: an Axiomatic Design-based application for Engineering Education Nezzi, Chiara; De Marchi, Matteo; Aruväli, Tanel; Cochran, David S.; Rauch, Erwin	166 – Effectiveness of firm-level sustainability policies: a systematic literature review Zecchillo, Nunzia; Molinaro, Margherita; Orzes, Guido
	162 – A finite element level-set approach for optimizing the topology of complete disc replacement in the lumbar spine Gandhi Ragul; Concli Franco; Maccioni Lorenzo	126 – Industry 4.0 technologies and sustainable development goals (SDGs): covered publications and ranking Alhammadi, Abrar; Semeraro, Concetta; Obaideen, Khaled; Alsyouf, Imad	168 – Global Reporting Initiative: systematic literature review and research directions Bais, Beatrice; Orzes, Guido; Nassimbeni, Guido

12.15 13.15	Lunch <i>Room F6</i>
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	Keynote speech “Loacker’s choices between technology and sustainability” Andreas Loacker <i>Room D1.02 – Aula Prof. Giustino Tonon</i> <i>Chair: Dominik Matt</i>
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	Parallel sessions		
	<i>Room D0.02</i> Virtual and Augmented Reality <i>Chair: Federico Morosi</i>	<i>Room D1.02</i> Smart Sustainable Manufacturing – part B <i>Chair: Michele Dassisti</i>	<i>Room D1.03</i> Beyond Industry 4.0 <i>Chair: Marco Sartor</i>
14.00 15.30	115 – A Framework for Digital Factory Planning and validation with Virtual and Augmented Reality: An automotive case study Angeli, Nicolò; Revolti, Andrea; Petitti, Italo; Fraccaroli, Daniel; Dallasega, Patrick	140 – Assessing the implementation of a smart cart in a supermarket using a simulation model Aydin, Ridvan; Jaweesh, Mohammad Braa; AlHunaiyyan, Abdulaziz; Mansour, Myriam	132 – Toward homecare logistics 5.0: a systematic literature review Piffari, Claudia; Lagorio, Alexandra; Pinto, Roberto
	118 – Projected augmented reality for industrial design: challenges and opportunities Morosi, Federico; Caruso, Giandomenico; Becattini, Niccolò; Cascini, Gaetano	142 – The human factor and the resilience of manufacturing processes: A case study of pharmaceutical process toward Industry 5.0 Rubini, Ramona; Cassandro, Rocco; Caggiano, Mariateresa; Semeraro, Concetta; Li, Zhaojun Steven; Dassisti, Michele	139 – Industry 5.0. The road to sustainability Ruiz-de-la-Torre-Acha, Aitor; Guevara-Ramirez, Wilmer; Río-Belver, Rosa María; Borregan-Alvarado, Jon

	123 – Training support with Augmented Reality for Machine Setup: A Case Study in the Process Industry	143 – Implementation of Model-Based Definition-Case of Manufacturing Industry in Finland	148 – Collective System Design and Industry 5.0: building community, resilience, and sustainability at Purdue University Fort Wayne
	Revolti, Andrea; Gualtieri, Luca; Odorizzi, Renzo; Tosi, Paolo; Dallasega, Patrick	Uski, Pekka; Ellman, Asko	Cochran, David S.; Borbieva, Noor O.
	163 – Development of an AR-based Application for Training of Warehouse Operators	164 – Assessing the effect of infill strategies on hardness properties of cuboidal parts printed with wire and arc additive manufacturing	169 – Interdisciplinary research projects: Six lessons from a family business-Industry 4.0 project
	Grandi, Fabio; Prati, Elisa; Mangia, Giancarlo; Peruzzini, Margherita	Kuosmanen, Jari; Azadikhah, Aaron; Panicker, Suraj; Mokhtarian, Hossein; Wu, Di; Dhalpe, Akshay; Queguineur, Antoine; Coatanea, Eric	Mismetti, Marco; Appleton, Samuel; Rondi, Emanuela; Orzes, Guido; De Massis, Alfredo; Matt, Dominik

15.30 16.00	Coffee Break Foyer (in front of D1.02, D1.03)		
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Parallel sessions			
	<i>Room D0.02</i> Sustainable and User-centric Design	<i>Room D1.02</i> Digital Twins and AI applications	<i>Room D1.03</i> Healthcare 5.0
	<i>Chair: Laura Ruiz-Pastor</i>	<i>Chair: Giulia Bruno</i>	<i>Chair: Elena Pessot</i>
	131 – A systematic review of factors considered in sustainable product design	114 – Digital twin application for dynamic task allocation	102 – Role of standards and conformity in the Indian healthcare sector
	Mengistu, Azemeraw Tadesse; Panizzolo, Roberto; Biazzo, Stefano	Bruno, Giulia; Aliev, Khurshid	Nand, Alka; Goyal, Preeti; Bhattacharya, Ananya; Sohal, Amrik
	133 – Design of smart home product service systems (SH-PSS)	117 – A genetic algorithm approach for medical resident scheduling in Austria	103 – The efficiency of Italian hospitals using Data Envelopment Analysis (DEA) and Classification Tree
	Ganvir, Leeladhar; Kalita, Pratul	Dummer, Wolfgang; Gaal, Alexander; Sobottka, Thomas; Ansari, Fazel	Amlashi, Shahram Taherzadeh; Gitto, Simone
	137 – Fluency of stimuli comparing two different representation forms: Image and Real product	136 – A Digital Twin-based approach for Emotion Recognition in Human-Robot Collaboration	107 – A process-based taxonomy of medical devices for clinical pathways design and innovation
	Berni, Aurora; Borgianni, Yuri; Carbon, Claus Christian	Baratta, Alessio; Longo, Francesco; Mirabelli, Giovanni; Padovano, Antonio; Solina, Vittorio	Vannelli, Sara; Visintin, Filippo
16.00 17.45			

	138 – Analyzing characteristics of smart home product service system through Kano Model Approach Ganvir, Leeladhar; Kalita, Pratul; Jansari, Sachin	144 – Real-time color detection for automated production lines using CNN-based machine learning Shaloo, Masoud; Princz, Gábor; Erol, Selim	108 – Towards a knowledge-based Decision Support System for the management of Type 2 diabetic patients Spoladore, Daniele; Stella, Francesco; Tosi, Martina; Lorenzini, Erna Cecilia
	153 – User experience-based perception of the advantages of an adaptable product through a promotional video visualization Royo, Marta; Chulvi, Vicente; Mulet, Elena; Ruiz-Pastor, Laura; Bort-Martínez, Marina		145 – Covid-19 pandemic impacts and long-term supply strategies of pharmaceutical manufacturers Pessot, Elena; Albini, Teresa

19.30	Gala Dinner at Mareccio Castle <i>Mareccio Castle</i> <i>Claudia-de'-Medici-StraÙe 12, Bozen</i> <i>Via Claudia de Medici, 12, Bolzano</i>
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Friday 23.06.2023

Main unibz Campus – Piazza Università 1

				Parallel sessions		
<i>Room D0.02</i>		<i>Room D1.02</i>		<i>Room D1.03</i>		
<i>Progresses in Mechanical Engineering</i>		<i>Circular Economy across Industries</i>		<i>Industry 4.0: strategy and organization</i>		
<i>Chair: Antonio Piccininni</i>		<i>Chair: Rainer Pamminger</i>		<i>Chair: Albachiara Boffelli</i>		
104 – A FEM-based Study on the Impact of the Shot Peening Process on the Fatigue Performances of Mechanical Components		110 – From waste to resource: a patent classification analysis for end of life mosquito nets alternative uses identification		105 – Exploring the Link between Strategy and Smart Manufacturing Adoption: A Study in the Automotive Industry		
Concli, Franco		Melani, Marco; Furferi, Rocco; Rotini, Federico; Barbieri, Luca		Arcidiacono, Francesco; Ancarani, Alessandro; Di Mauro, Carmela; Schupp, Florian		
135 – Graded lattice structures for biodegradable temporary implants: computational evaluation with two unit cell types		116 – Is digitalization making agroindustry more circular? A SWOT-AHP analysis		106 – The role of the human resources in the digitalization of the automotive industry: a case study-based investigation		
Nogueira, Pedro; Magrinho, João P. G.; Silva, M. Beatriz; Moita de Deus, Augusto; Vaz, M. Fátima		Agnusdei, Leonardo; Krstic, Mladen; Miglietta, Pier Paolo		Csiki, Ottó; Szász, Levente; Rácz, Béla-Gergely; Demeter, Krisztina; Losonci, Dávid		
152 – Estimation of hydraulic power losses in a double-row tapered roller bearing via computational fluid dynamics		129 – A bibliometric analysis of the impact of Industry 4.0 technologies on the Circular Economy		146 – Knowledge-based maintenance management system of compressed air system		
Maccioni, Lorenzo; Concli, Franco		Das, Suman Kumar; Bressanelli, Gianmarco; Saccani, Nicola		Isik, Birkan		
157 – Numerical Analysis of the Impact of Shot Peening on the Tooth Root Strength of AISi10Mg Gears using Critical Plane Multiaxial Fatigue Criteria		141 – Pilot scale tannin extraction from chestnut wood waste using hydrodynamic cavitation		155 – Industry 4.0 and Policies: A classification		
Pagliari, Lorenzo; Fraccaroli, Lorenzo; Concli, Franco		Meneguzzo, Francesco; Albanese, Lorenzo; Faraloni, Cecilia; Meneguzzo, Cosimo; Tagliavento, Luca; Zabini, Federica		Culot, Giovanna; Podrecca, Matteo; Marcuzzi, Irene; Nassimbeni, Guido		
165 – Additive manufacturing for soft electromagnetic robots: experimental study to reduce vibration		156 – Environmental assessment of the introduction of digital technologies in the building industry: a literature study		159 – Manufacturing Execution System in Industry 4.0 era: from implementation to impacts on job design		
Pavone, Antonio; Stano, Gianni; Percoco, Gianluca		Öztürk, Ece; Borgianni, Yuri; Ince, Ceren		Colombo, Jacopo; Boffelli, Albachiara; Kalchschmidt, Matteo		

09.00
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10.45

10.45 11.15	Coffee Break <i>Foyer (in front of D1.02, D1.03)</i>		
11.15 12:00	Keynote speech		
	<p>“The Circular Economy MAY help build resilience and sustainability. But it won’t be easy”</p> <p><i>Joseph Sarkis</i></p> <p><i>Room D1.02 – Aula Prof. Giustino Tonon</i></p> <p><i>Chair: Guido Orzes</i></p>		
12:00 12.45	Keynote speech		
	<p>“Xtreme purchasing – the future?”</p> <p><i>Florian Schupp</i></p> <p><i>Room D1.02 – Aula Prof. Giustino Tonon</i></p> <p><i>Chair: Margherita Molinaro</i></p>		
12:45 13:45	Lunch <i>Room F6</i>		
13.45 15.15	Parallel sessions		
	<i>Room D0.02</i>	<i>Room D1.02</i>	<i>Room D1.03</i>
	<i>Biomanufacturing 4.0</i>	<i>Artificial Intelligence in Mechanical Engineering</i>	<i>Sustainable Operations and Supply Chains - Part B</i>
	<i>Chair: Paola Ginestra</i>	<i>Chair: Eric Coatanea</i>	<i>Chair: Matteo Podrecca</i>
	<p>127 – Assessing the viscosity of alginate – cellulose-based hydrogels: a comparison among different type of solutes, mediums culture, and gelatin influence</p> <p>Sughi, Sabrina; Seiti, Miriam; Ginestra, Paola Serena; Gaudenzi, Giulia</p>	<p>119 – An expert system for automated quality control: a case study in a mechatronic manufacturing company</p> <p>Scarton, Giorgio; Trono, Francesco; Trevisan, Caterina; Formentini, Marco</p>	<p>112 – Decarbonizing Industrial Logistics through a GIS-based Approach for identifying Pareto-optimal combined Road-Rail Transport Routes</p> <p>Miklautsch, Philipp; Woschank, Manuel</p>
	<p>128 – Evaluation of Bioprinting Process by RSM Training</p> <p>Gaudenzi, Giulia; Mazzoldi, Elena; Ginestra, Paola; Piccininni, Antonio</p>	<p>121 – Data-Driven Support Vector Machine to Predict Thin-Walled Tube Energy Absorbers Behavior</p> <p>Ghasemi, Mostafa; Silani Mohammad; Yaghoubi, Vahid; Concli, Franco</p>	<p>134 – Servitization opportunities for improving sustainability in the steel industry</p> <p>Galimberti, Mattia; Cimini, Chiara; Cavalieri, Sergio</p>

	<p>122 – Optimization of the FRESH 3D printing method applied to alginate – cellulose-based hydrogels</p> <p>Seiti, Miriam; Rovetta, Rosaria; Ferraro, Rosalba Monica; Ferraris, Eleonora; Ceretti, Elisabetta</p>	<p>151 – Differentiating additive and traditional manufacturing processes through unsupervised learning and image processing</p> <p>Ördek, Baris; Borgianni, Yuri</p>	<p>167 – The ABC of ecological sustainability in C-parts management. A maturity model for the evaluation of sustainability in C-parts management</p> <p>Burkart, Christian; Kampel, Iljana; Brunner, Uwe; Dirnberger, Johannes</p>
	<p>160 – Mechanical behavior of novel bio composite sandwich structures under quasi-static compressive loading condition</p> <p>Taghizadeh, Seyedahmad; Niknejad, Abbas; Concli, Franco</p>	<p>158 – Advances in machine learning techniques used in fatigue life prediction of welded structures.</p> <p>Gbagba, Sadiq; Concli, Franco</p>	
<p>15.15 15.45</p>	<p>Closing session and awards <i>Room D1.02 – Aula Prof. Giustino Tonon</i></p>		
<p>16.00 21.00</p>	<p>Social excursion and aperitif (not included in the Conference fee)</p>		

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