General program

CMES 2023 Conference Programme

Thursday, November 23rd

10.00	Tour bus departure from Lublin University of Technology to Puławy
12.30	Registration
13.00 – 13.30	Opening of the conference at Hotel Prima Nova
13.45 – 14.15	Plenary Lecture: „*What do a vacuum cleaner, Hussarya and train travel have in common?*"
14.30 – 15.30	Lunch
15.40 – 16.40	Panel discussion: "*ChatGPT - opportunities, threats, or maybe nonsense*"
16.50 – 17.20	Plenary Lecture: "*Embracing the Future with Digital Mission Engineering (DME)*"
17.20 – 17.50	Plenary Lecture: "*Non-destructive building moisture testing system based on electrical tomography and neural networks*"
17.50 – 18.00	Group photo
18.00 – 19.00	Poster session I
20.00	Gala Dinner

Friday, November 24th

8.30	Registration
9.00 – 9.30	Plenary Lecture: „*Laser micro-texturing as a key technology for development of a new TBCs generation – a numerical and experimental approach*"
9.45 – 10.30	Application of Industry 4.0: – *How the CosmoEye system meets the needs of manufacturing companie;* – *Digital - precision and intelligent agricultural machinery and equipment as a response to climate challenges.*
10.30 – 11.00	Coffee break

11.00 – 12.30	Session I
12.45 – 13.45	Session II
13.45 – 14.45	Lunch
14.45 – 15.45	Session III
15.45 – 16.00	Coffee break
16.00 – 17.00	Session IV
17.00 – 17.15	Coffee break
17.15 – 19.00	Poster session II
19.30	Dinner

Saturday, November 25th

9.00 – 10.00	Poster session III
10.10 – 10.30	Tour bus travel to Dęblin
10.30 – 13.30	Visiting the Polish Air Force University and Air Force Museum in Dęblin
13.30 – 14.00	Tour bus travel to Puławy
14.00 – 15.00	Lunch
15.00 – 16.00	Summary and conference closure
16.30	Tour bus departure to Lublin

Technical Program

Thursday, November 23rd, 2023	
10.00	**Tour bus departure from Lublin University of Technology to Puławy** **(meeting at Lublin University of Technology, ul. Nadbystrzycka 36D)**
12.30	**Registration**
13.00-13.30	**Opening of Conference and Welcome Speeches –** conference room at Hotel Prima Nova
13.45–14.15	**Plenary Lecture**: *What do a vacuum cleaner, Hussarya and train travel have in common? – Adam Piechna, PhD*
14.30–15.30	*Lunch*
15.40–16.40	**Panel Discussion – "ChatGPT - opportunities, threats, or maybe nonsense"** *Marcin Badurowicz, PhD Eng. – Moderator* • Tomasz Rymarczyk, PhD DSc. Eng. – Director of the Research and Development Center Netrix S.A • Dariusz Majerek, PhD – *Lublin University of Technology* • Grzegorz Kłosowski, PhD Eng. – *Lublin University of Technology* • Bartosz Przysucha, PhD – *Lublin University of Technology*
16.50–17.20	**Plenary Lecture**: *Embracing the Future with Digital Mission Engineering (DME),* *– Przemysław Turos, Topologic Consulting*
17.20–17.50	**Plenary Lecture**: *Non-destructive building moisture testing system based on electrical tomography and neural networks – Monika Kulisz, PhD Eng.*
17.50 – 18.00	**Group photo**
18.00–19.00	**Poster session I** Chairs: Dariusz Majerek, PhD, Marcin Badurowicz, PhD Eng.

P-1	Piotr Kościuk <u>Magdalena Piłat-Rożek</u> Jacek Zaburko Kostiantyn Sokolchuk <u>Grzegorz Łagód</u>	Application of open source geo-informatics technologies for the analysis of stormwater drainage basin areas
P-2	<u>Aleksandra Kozłowska</u> Magdalena Piłat-Rożek Edyta Wojtaś <u>Grzegorz Łagód</u>	Application of entropy based analysis for evaluation of algal community structure influenced by stormwater system
P – 3	<u>Bartosz Wieczorek</u> Piotr Kaczmarzyk Łukasz Warguła Marcin Giedrowicz Damian Bąk Łukasz Gierz Grigor Stambolov Boris Kostov	Research on the distribution of axial excitation of mobile overpressure fans in the aspect of stability safety of the load-bearing frame
P – 4	<u>Aleksandra Szaja</u> Agnieszka Montusiewicz Magdalena Lebiocka	An application of orifice hydrodynamic cavitation reactor for tertiary treatment of wastewater treatment plant effluents

	Jan Skrzypiec	
P – 5	Katarzyna Kurek <u>Maria Skublewska-Paszkowska</u> Mariusz Dzienkowski Pawel Powroznik	The impact of applying universal design principles on the usability of online accommodation booking websites
P – 6	Sylwester Korga <u>Kamil Żyła</u> Jerzy Józwik Jarosław Pytka Kamil Cybul	Prediction tools as an element aiding decision processes at an airport – The case of Facebook Prophet library
P – 7	<u>Kamil Żyła</u> Kinga Chwaleba Dominik Choma	Accessibility assessment of visual programming tools for novice programmers - The case of App Inventor, Scratch and StarLogo
P – 8	Arsen Plaksyvyi <u>Maria Skublewska-Paszkowska</u> Pawel Powroźnik	A comparative analysis of image segmentation using classical and deep learning approach
P – 9	<u>Weronika Henzler</u> Natalia Fedec Julia Wójtowicz Nikola Woźniak Klaudia Tarach Mirosław Szala	Influence of deposition parameters on properties of coatings made by plasma-powder PTA method
P – 10	<u>Olga A. Orynycz</u> Karol Tucki Antoni Świć Andrzej Wasiak Remigiusz Mruk Akadiusz Gola	Analysis of the possibility of using neural networks to monitor the technical efficiency of diesel engines during operation
P – 11	<u>Edyta Łukasik</u> Wiktor Flis	Efficiency comparison of networks in handwritten Latin characters recognition with diacritics
P – 12	<u>Tomasz Seredyn</u> Małgorzata Skawińska	Computational analysis of PEM fuel cell under different operating conditions
P – 13	Marcin Dziadosz <u>Dariusz Majerek</u> Marcin Dudziński <u>Grzegorz Łagód</u>	Application of deep learning neural networks for automatic image analysis in microscopic studies of activated sludge
P – 14	<u>Jacek Janiszewski</u> Andrzej Komorek Mieczysław Bakuła Rafał Bieńczak Bartosz Pękala	The influence of pressure in the infusion method upon mechanical properties of polymer composites
P – 15	Mariusz Walczak	Surface characteristics and corrosion resistance of 316L stainless steel after different shot peening parameters

P – 16	Maria Skublewska-Paszkowska Pawel Powroźnik Marcin Barszcz Krzysztof Dziedzic	Dual attention graph convolutional neural network to support mocap data animation
20.00	*Gala Dinner at the Hotel Restaurant*	

Friday, November 24th, 2023	
8.30	Registration
09.00 – 9.30	**Plenary Lecture**: *Laser micro-texturing as a key technology for development of a new TBCs generation – a numerical and experimental approach – Leszek Łatka PhD DSc. Eng.*
9.45 – 10.30	Application of Industry 4.0: − *How the CosmoEye system meets the needs of manufacturing companies – Wojciech Danilczuk PhD Eng.* − *Digital - precision and intelligent agricultural machinery and equipment as a response to climate challenges – Łukasz Kopiński PhD Eng.*
10.30– 11.00	Coffee break
11.00 – 12.30	**Session I "Computer simulations of processes and phenomena and analysis of engineering processes"** Chairs: Arkadiusz Gola, PhD DSc. Eng., Leszek Łatka, PhD DSc. Eng.

PR – 1	<u>Jakub Pizoń</u> Łukasz Wójcik Arkadiusz Gola Łukasz Kański Izabela Nielsen	Autonomous mobile robot implementation strategy to support intralogistics auxiliary processes using modern technologies of Logistics 4.0 – case study
PR – 2	<u>Tomasz Nowicki</u> Robert Piekarski	Investigation on the limits of type 1 diabetes therapy automation using insulin pumps
PR – 3	<u>Pawel Czekalowski</u> Wit Stryczniewicz	Computational and experimental investigation of inert gas flow field in DMLM printer build chamber
PR – 4	Izabela Kopeć <u>Mateusz Kawałko</u>	Analysis of the impact of trailing-edge wing flaps on the aerodynamic characteristics and performance of the Tecnam P-2008JC aircraft
PR – 5	Adrian Bochen <u>Bartłomiej Ambrożkiewicz</u>	The influence of light Intensity on the operation of vision system in collaborative robot
PR – 6	<u>Magdalena Matysiak</u> Jarosław Zubrzycki Magdalena Przybylska-Fronc	Analysis of the applicability of thermal imaging measurements for early detection of arteriovenous malformations
12.45-13.45	**Session II "Application of computer programs in technology"** Chairs: Monika Kulisz, PhD Eng., Michał Awtoniuk, PhD	
PR – 7	<u>Paweł Kuraś</u> Dominik Strzałka Bartosz Kowal Jiří Mazurek	REDUCE: A Python module for reducing inconsistency in multiplicative pairwise comparisons
PR – 8	<u>Ireneusz Dominik</u> Stanisław Flaga	Implementation of Type-2 Fuzzy Controller in Matlab Software
PR – 9	<u>Michał Grabowski</u> Małgorzata Plechawska-Wójcik	Comparison of software development solution implementations in Lightning Flow Builder and Apex programming language in Salesforce technology

PR – 10	Stanisław Skulimowski Jerzy Montusiewicz Marcin Badurowicz	Enhancing the efficiency of the Levenshtein distance based heuristic method of arranging 2D apictorial elements for industrial applications
13.45 – 14.45	**Lunch**	
14.45 – 15.45	**Session III "Material properties and structure research methods"** Chairs: Dariusz Fydrych, PhD DSc. Eng., Michał Bembenek, PhD DSc. Eng.	
PR – 11	Kazimierz Drozd Iryna Boretska	Tests of the adjustable support system in order to eliminate the causes of operational damage
PR – 12	Łukasz Gierz Weronika Kruszelnicka Wiktor Łykowski Mikołaj Steike	Effects of thickness of the corn seed coat on the strength of processed biological materials
PR – 13	Serhii Kharchenko Sylwester Samborski Farida Kharchenko Jakub Paśnik Izabela Korzec Andrzej Mitura Łukasz Kłoda	Numerical study of the natural oscillations of perforated vibrating surfaces with holes of complex geometry
PR – 14	Wojciech Łapa Marcin Winnicki Leszek Łatka	Infrared sintering of various nanosilver inks in aerosol jet printing
15.45– 16.00	**Coffee break**	
16.00-17.00	**Session IV "Finite Element Method (FEM) and Computational Fluid Dynamics (CFD)"** Chairs: Katarzyna Falkowicz, PhD Eng., Radosław Kiciński, PhD Eng.	
PR – 15	Quirino Estrada Jarosław Zubrzycki Elva Reynoso-Jardón Dariusz Szwedowicz Alejandro Rodriguez-Mendez Magdalena Marchewka Julio Vergara-Vazquez Aztlán Bastarrachea Jesús Silva	Numerical study of the energy absorption performance of 3D printed sandwich structures
PR – 16	Jan Górecki Tymoteusz Lindner Krzysztof Walesa	Evaluation of density fields of numerical analysis output of solid carbon dioxide extrusion process
PR – 17	Robert Szczepaniak Janusz Terpiłowski Grzegorz Woroniak	The possibility of using the Finite Element Method for determining thermal diffusivity on the example of nickel using the classic and the modified pulse method
PR – 18	Konrad Pietrykowski Paweł Magryta Idzi Pędzisz	CFD studies of a wind vertical axis turbine with a variable swept area

17.00– 17.15	**Coffee break**	
17.15 – 19.00	**Poster session II** Chairs: Łukasz Gierz, PhD DSc. Eng., Zbigniew Czyż, PhD Eng.	
P – 17	<u>Tomasz Zientarski</u> Marek Miłosz Tomasz Nowicki Adam Kiersztyn Piotr Wójcicki Dariusz Gutek	Simulation model of a patient with type 1 diabetes using fuzzification
P – 18	<u>Bogdan Szturomski</u> Radosław Kiciński Stanisław Milewski	Accelerations caused by underwater explosions on the naval gun foundation
P – 19	<u>Michał Bembenek</u> Volodymyr Tsyganov Nataliia Sakhniuk Olha Lazarieva Ryszard Machnik Liubomyr Ropyak	Tribology characteristics of heatproof alloys at a dynamic pin ladening in the variable temperature field
P – 20	<u>Leszek Łatka</u> Ewa Jonda <u>Tomasz Kiełczawa</u>	The influence of the laser cutting process parameters on the quality of the cut edge
P – 21	<u>Tomasz Miłek</u>	Experimental determination of material boundary conditions for computer simulation of sheet metal deep drawing processes
P – 22	Klaudia Słomczyńska <u>Paweł Mirek</u> Marcin Panowski	Analysis of the potential for reducing the energy consumption of a vegetable sprouts production using Flownex Simulation Software
P – 23	Zbigniew Czyż <u>Paweł Karpiński</u> Krzysztof Skiba Szymon Bartkowski	Numerical calculations of water drop using a firefighting aircraft
P – 24	<u>Radosław Kiciński</u>	Estimating the size of a crater after an underwater explosion
P – 25	Robert Szczepaniak <u>Robert Bąbel</u> Grzegorz Kowaleczko Wit Stryczniewicz	Computational fluid dynamics analysis of an influence of icing on airfoil aerodynamic characteristics
P – 26	<u>Agnieszka Bojanowska</u> <u>Monika Kulisz</u>	Using fuzzy logic to make decisions based on data from Customer Relationship Management systems
P – 27	<u>Mirosław Szala</u> Mariusz Walczak Małgorzata Grądzka-Dahlke Dariusz Perkowski Marzena Tokarewicz	Cavitation erosion of NiCoCrAlFeTi high-entropy alloys containing different additions of titanium

		Wojciech J. Nowak Tadeusz Kubaszek Andrzej Gradzik	
	P – 28	Anna Skic Paweł Kołodziej Karolina Beer-Lech Kamil Drabik Kamil Skic Ricardo Branco	Analysis of the mechanical properties of quail femur under impact loading condition
	P – 29	Karolina Beer-Lech Paweł Kołodziej Anna Skic Ricardo Branco	Strength analysis aspects of psyllium husks/thermoplastic starch films under impact loading conditions
	P – 30	Joanna Masiewicz Paweł Przybyłek Martyna Roszowska - Jarosz Marcin Kostrzewa Wojciech Kucharczyk Mateusz Czyż	Impact damage tolerance of multilayer epoxy-glass composites with XPS core and polyurethane prepolymer modified matrix
	P – 31	Paweł Suchorab Dariusz Kowalski Małgorzata Iwanek Beata Kowalska Ewa Hołota	Quantitative and qualitative analysis of surface runoff from the exemplary rest area (RA)
19.30		**Dinner**	

Saturday, November 25th, 2023		
9.00 – 10.00	**Poster session III** Chairs: Wojciech Macek, PhD DSc. Eng., Mirosław Szala, PhD Eng.	
P – 32	Maciej Kowal	Effect of bond end shape on CFRP to steel joint strength under the fatigue load
P – 33	Aleksander Świetlicki Mariusz Walczak Mirosław Szala	Corrosion resistance of heat treated 17-4PH steel fabricated using DMLS technology
P – 34	Klaudia Tarach Julia Wójtowicz Nikola Woźniak Weronika Henzler Mirosław Szala	Modification of 42CrMo4 steel hardness via heat treatment
P – 35	Ewa Jonda Dariusz Fydrych Leszek Łatka	The use of cluster analysis to assess the wear resistance of cermet coatings sprayed by HVOF on magnesium alloy substrates
P – 36	Jacek Caban	Research of electrical parameters of start-up process of single-cylinder diesel engine
P – 37	Łukasz Warguła Dominik Wilczyński Bartosz Wieczorek Maciej Sydor Carla Nati Teijo Palander Łukasz Gierz	Characterizing sawdust fractional composition from oak parquet woodworking for briquette and pellet production
P – 38	Paweł Kołodziej Zbigniew Stropek Krzysztof Gołacki	Stress relaxation in sugar beet root under various mechanical load conditions
P – 39	Zbigniew Czyż	Aerodynamic performance of the XGyro hybrid unmanned aerial vehicle - a numerical investigation
P – 40	Justyna Kujawska Monika Kulisz Zulfiya Aubakirova Edyta Wojtaś	Prediction of river salinity with artificial neural networks
P – 41	Marcin Brzozowski Jarosław Zubrzycki Dariusz Wołos	Numerical study of the strength of the pylon designed for the unmanned helicopter
P – 42	Katarzyna Falkowicz	Failure study of compressed thin-walled plate element with mechanical couplings
P – 43	Michał Awtoniuk Robert Sałat Miłosz Worwa Bartosz Klimek Volodymyr Reshetiuk	Implementation of PID autotuning procedure based on doublet-pulse method in PLC controller

P – 44	<u>Marek Borowiec</u> Robert Szczepaniak José Machado	The influence of conditioning on dynamic behaviour of polymer composites
P – 45	Łukasz Omen <u>Robert Szczepaniak</u> Andrzej J. Panas	Investigation of carbon nanotube particles addition effect on the dispersed composite structure thermal diffusivity
10.10 – 10.30	Tour bus travel to Dęblin	
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