



VI INTERNATIONAL SCIENTIFIC CONFERENCE

INDUSTRY 4.0

08 – 11.DECEMBER 2021, BOROVS, BULGARIA



V INTERNATIONAL SCIENTIFIC CONFERENCE

MATHEMATICAL MODELING

08 – 11.DECEMBER 2021, BOROVS, BULGARIA

PROGRAM

ORGANIZER

SCIENTIFIC-TECHNICAL UNION OF MECHANICAL ENGINEERING, BULGARIA

CONFERENCE SECRETARIATE

Scientific-Technical Union of Mechanical Engineering

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TIME SCHEDULE

03.12.2021 - Friday

	PUBLICATION OF ALL REPORTS	
17:00	PROCEEDING "International Scientific Conference " INDUSTRY 4.0 ", ISSN 2535-0153 (Print), ISSN 2535-0161 (Online)	industry-4.eu/winter/proceedings.html
17:00	PROCEEDING „International Scientific Conference „ MATHEMATICAL MODELING ” - ISSN 2535-0978 (Print), ISSN 2603-3003 (Online)	http://mathmodel.eu/Proceedings.html

06.12.2021 - Monday

REGISTRATION	16:00-20:00	IN FRONT OF CONFERENCE HALL 1
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07.12.2021 - Tuesday

REGISTRATION	08:00-18:00	IN FRONT OF CONFERENCE HALL 1
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CONFERENCE “ CONFSEC 2021 ”	10:00-18:00	CONFERENCE HALL 1
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08.12.2021 - Wednesday

REGISTRATION	16:00-20:00	IN FRONT OF CONFERENCE HALL 1
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09.12.2021 - Thursday

REGISTRATION	08:00-10:00	IN FRONT OF CONFERENCE HALL 1
OPENING OF THE CONFERENCES	10:00-10:15	HALL 1
PLENARY SESSION	10:15-12:30	HALL 1
COLLECTIVE PICTURES OF THE PARTICIPANTS	12:30-12:45	IN FRONT OF HOTEL “ELA”
LUNCH	12:45-14:00	RESTAURANT OF HOTEL “ELA”
International Scientific Conference “ INDUSTRY 4.0 ” Oral SESSION	14:00-16:00	HALL 1
COFFEE BREAK	16:00-16:30	RESTAURANT OF HOTEL “ELA”
International Scientific Conference “ MATHMODEL 2021 ” Oral SESSION	16:30-17:30	HALL 1
COCKTAIL “WELCOME”	19:00-24:00	RESTAURANT OF HOTEL “ELA”

10.12.2021- Friday

CLOSING OF THE CONFERENCES - WINE AND CHEESE PARTY	10:00	LOBBY BAR OF HOTEL “ELA”
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*time for presentation 10-12 minutes,
questions after each presentation*

09.12.2021

10:00-10:15 OPENING OF THE CONFERENCE “INDUSTRY-4.0” and THE INTERNATIONAL SCIENTIFIC CONFERENCE "MATHMODEL 2021", HALL 1

CHAIRMAN: Prof. DSc. GEORGI POPOV (BG)

09.12.2021 10:15 – 18:00	<u>PERSONAL PARTICIPATION</u>	CONFERENCE HALL
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	ORAL PRESENTATIONS	“INDUSTRY-4.0” "MATHMODEL 2021"
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10:15-12:30 PLENARY SESSION HALL 1

CHAIRPERSON: Prof. DSc. IDILIYA BATCHKOVA (BG)

01.	ADAPTIVE SYSTEM FOR SUPPORTING OPTIMISATION OF MANUFACTURING PRODUCTS PROCESSES	Prof. Danuta Szeliga AGH University of Science and Technology, Krakow	PL 64
02.	IMPROVING THE CORROSION RESISTANCE OF CARBON STEEL CYLINDRICAL PIPE BY NANO-MATERIALS COATING, PART -2	¹ Prof. Salloom A. Al-Juboori, and Dana Alshamaileh, M.Sc ¹ Professor in Mechanical Engineering, B.Sc, M.Sc, PhD, Leeds University, U.K ¹ Engineering Faculty /Mutah University / AlKark/ Jordan,	JO/UK 09
03.	NEW INTEGRATED SYSTEM WITH “CIRCLE ECONOMY” IMPACT	Prof. DSc.Tanya Tsoncheva*, Prof. Dr. Nartzislav Petrov Institute of Organic Chemistry with Centre of Phytochemistry, Bulgarian Academy of Science, Sofia	BG 12
04.	POSSIBILITIES OF APPLICATION OF STOCHASTIC MODELS TO SIMULATION OF INDUSTRIAL PROCESSES IN METALLURGY	Prof. Maciej Pietrzyk AGH University of Science and Technology, Krakow	PL 59
05.	A PREDICTIVE MAINTENANCE APPLICATION FOR BAND SAW MACHINES	Mahmut Berkan Alisinoglu ^{a)} , Kadir Cavdar ^{b)} ^{a)} Beka-Mak R&D Center, Bursa, Turkey ^{b)} Bursa Uludag University, Department of Mechanical Engineering, Bursa	TR 06
06.	CYBERSECURITY OF OPC UA BASED CYBER-PHYSICAL SYSTEMS	Dr. Eng. Ivanova T.A., Eng. Belev Y. A., Prof. Dr. Batchkova I. A. Dept. of Industrial Automation, University of Chemical Technology and Metallurgy Bul. Kl. Ohridski 8, Sofia	BG 79
07.	APPLICATION OF ARTIFICIAL LOCUST SWARM ROUTING ALGORITHM FOR VFR FLIGHTS PLANNING	Assoc. Prof. Vladyslav Aliksieiev PhD. ^{1,2} , Assoc. Prof. Halyna Ivasyk PhD. ¹ , Assoc. Prof. Ivanna Andrusiak PhD. ¹ ¹ Lviv Polytechnic National University, Lviv, Ukraine ² RocketRoute Ltd, Farnborough, Hampshire, UK	UA/UK 12

12:30– 12:45	COLLECTIVE PICTURES OF THE PARTICIPANTS	IN FRONT OF HOTEL “ELA”
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12:45– 14:00	LUNCH	THE RESTAURANT OF HOTEL "ELA"
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*time for presentation 10-12 minutes,
questions after each presentation*

International Scientific Conference “INDUSTRY 4.0”

SESSION:

TECHNOLOGICAL BASIS OF “INDUSTRY 4.0” DOMINANT TECHNOLOGIES IN “INDUSTRY 4.0”

14:00 – 16:00 HALL 1

CHAIRPERSON: Prof. Dr. GALINA NIKOLCHEVA (BG)

08.	MRI COMPATIBLE ROBOTIC DEVICE FOR FUS THERAPY OF CANINE AND FELINE MAMMARY TUMOURS	Dr. Marinos Giannakou, ^{1a} Mr. Nikolas Evripidou, ^{2b} Ms. Anastasia Antoniou ^{2c} , Dr. Christakis Damianou ^{2d} MEDSONIC LTD, Limassol, Cyprus ¹ Department of Electrical Engineering, Computer Engineering and Informatics, Cyprus University of Technology, Cyprus ²	CY 07
09.	INFLUENCE OF FILTERING SIZE ON RESULTS IN INTERPRETATION OF HOPKINSON-KOLSKY BAR SIGNALS	Rumen Krastev, Tatiana Simeonova, Vasil Kavardjiov Institute of Mechanics - Bulgarian Academy of Science, Sofia	BG 23
10.	CONSISTENT PRESENTATION OF THE BEAM DEFLECTION THEORY INCLUDING SHEAR CORRECTION	Rumen Krastev Institute of Mechanics - Bulgarian Academy of Sciences	BG 24
11.	APPLICATION OF NUMERICAL SIMULATIONS AND FAST IMAGE RECOGNITION BASED ON CONVOLUTION NEURAL NETWORKS IN LADLE TRACKING SYSTEM	Piotr Hajder, Lukasz Rauch, Andrzej Opaliński, Monika Pernach AGH University of Science and Technology, Krakow	PL 41
12.	CYBER-PHYSICAL PRODUCTION SYSTEMS IN METAL FORMING INDUSTRY	PhD student Jan Dudek AGH University of Science and Technology, Krakow	PL 42
13.	RFID PRACTICES AS A PREREQUISITE FOR SMART WAREHOUSING	Nikolay Dragomirov University of National and World Economy, Sofia	BG 31
14.	NANOSIZED ZNO AND ZNO@ZEOLITE COMPOSITE PREPARED VIA SONICATION METHOD	Gospodinka Gicheva, Neli Mintcheva, Marinela Panayotova University of Mining and Geology “St. Ivan Rilski”, Sofia	BG 28

16:00 – 16:30	COFFEE BREAK - THE RESTAURANT OF HOTEL "ELA"
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International Scientific Conference "MATHMODEL 2021"

16:30 – 17:30 HALL 1

CHAIRPERSON: Assoc. Prof. VLADYSLAV ALIEKSIEIEV, PhD (UA)

15.	SMOLUCHOWSKI'S COAGULATION EQUATION WITH INJECTIONS: APPLICATIONS TO CLUSTERING OF NANO-PARTICLES	Dmitri V. Alexandrov ^{1*} , Ilya O. Starodumov ¹ , Sergei Fedotov ² , Alexander A. Ivanov ¹ , Irina V. Alexandrova ¹ , Eugenia V. Makoveeva ¹ Ural Federal University, Ekaterinburg, Russian Federation ¹ The University of Manchester, Manchester, UK ²	RU/UK 08
16.	MODELING TRANSIENT SIGNALS IN POWER LINES	Assist.Prof. Rustem Khuziashev, assist.Prof. Igor Kuzmin, stud. Ildar Minaev Kazan state power engineering university, Kazan,	RU 14
17.	A NEW APPROACH TO MODELING AND SIMULATION OF INDUSTRIAL PROCESSES	Christo Boyadjiev Institute of Chemical Engineering, Bulgarian Academy of Sciences	BG 20

*time for presentation 10-12 minutes,
questions after each presentation*

	POSTER PRESENTATIONS	“INDUSTRY-4.0”	
18.	ROBOTIC DEVICE FOR VETERINARY APPLICATIONS OF MRGFUS	Dr. Marinos Giannakou, ^{1a} Mr. Nikolas Evripidou, ^{2b} Ms. Anastasia Antoniou ^{2c} , Dr. Christakis Damianou ^{2d*} MEDSONIC LTD, Limassol, Cyprus ¹ Department of Electrical Engineering, Computer Engineering and Informatics, Cyprus University of Technology, Cyprus ²	CY 08
19.	BREAST MIMICKING AGAR/WOOD POWDER MATERIAL FOR MRGFUS APPLICATIONS	Ms. Andria Filippou ^{1a} , Dr. Marinos Giannakou, ^{2b} Mr. Nikolas Evripidou, ^{1c} , Dr. Christakis Damianou ^{1d} Department of Electrical Engineering, Computer Engineering and Informatics, Cyprus University of Technology, Limassol, Cyprus ¹ MEDSONIC LTD, Limassol, Cyprus ²	CY 11
20.	CIRCULAR ECONOMY IN METALLURGICAL WASTE: APPLICATION OF METALLURGICAL WASTE FROM FERRO-NICKEL PRODUCTION INTO ECO-FRIENDLY COMPOSITES	Prof. Phd. Eng . Perica Paunović, Prof. Phd. Eng . Anita Grozdanov, B.Sc. Student Andrea Petanova, B.Sc. Student Marija Katerina Paunović, B.Sc. Student Radica Piponska Faculty of Technology and Metallurgy, Ss Cyril and Methodius University in Skopje	NM 32
21.	TECHNOLOGY FOR PRODUCTION OF TECHNICAL PRODUCTS WITH FIXED THICKNESS AND MADE OF QUARTZ CERAMICS BY MEANS OF A MOULDING MATRIX WITH A SILICONE INSERT	Gabriel Peev, Lyuben Lakov, Gergana Mutafchieva*, Mihaela Aleksandrova Bulgarian Academy of Sciences, Institute of Metal Science, Equipment, and Technologies with Center for Hydro- and Aerodynamics “Acad. A. Balevski”,	BG 74
22.	PHYSICOCHEMICAL AND TECHNOLOGICAL RESEARCHES OF MARLS FROM THE AREA OF THE VILLAGE LOVETS RELATED TO THE PRODUCTION OF THE NEW "YELLOW PAVING STONES"	Lyuben Lakov, Gergana Mutafchieva*, Gabriel Peev, Mihaela Aleksandrova, Bojidar Jivov Bulgarian Academy of Sciences , Institute of Metal Science, Equipment, and Technologies with Center for Hydro- and Aerodynamics “Acad. A. Balevski”,	BG 75
23.	TECHNOLOGICAL FEATURES IN THE PRODUCTION OF COMPACTS FROM ALUMINUM ALLOYS	Assoc. Prof. PhD. Angel Velikov, Senior assistant, PhD. Tsvetan Tochev, Senior assistant, PhD Veselin Petkov Institute of Metal Science, Equipment and Technologies “Akad. A. Balevski”	BG 72
24.	DEVELOPMENT OF TECHNOLOGY FOR PRODUCTION OF POROUS CASTINGS FROM ALUMINUM AND ALUMINUM ALLOY A356	A. Velikov, B. Krastev, R. Dimitrova, V. Petkov, S. Stanev, V. Manolov Institute of Metal Science, Equipment and Technologies with Centre of Hydroaerodynamics “Acad. A. Balevski”-	BG 73
25.	I4.0 COMPONENT MODELS BASED ON IEC/EN 62264	Plamen Vasilev, Vasil Metodiev Industrial Automation Dept., University of Chemical Technologies and Metallurgy Sofia	BG 78
26.	APPROACHES TO SUPPORT LEARNING IN TODAY’S WORKPLACE	Ileana Hamburg IAT, Westfälische Hochschule Gelsenkirchen	DE 04
27.	SOME ROBOTICS CONCEPTS FOR THE INDUSTRY 4.0 APPLICATIONS	Nataša Popović ¹ , Božidar Popović ¹ University of East Sarajevo, Republic of Srpska,	BA 21
28.	COMPARATIVE ANALYSIS OF HYDRAULIC SYSTEMS WITH ADAPTATION TO THE LOAD OF MOBILE MACHINES	Ph. D. in Eng. Assoc. Prof. Stasenکو Dmitriy ¹ , Chief Designer Hinzburh Aleksander ² , Khazeyeu Yahor ³ Pavel Sukhoi State Technical University of Gomel, Gomel, Republic of Belarus ^{1,3} OJSC “Gomel Special Design and Technical Bureau of Hydro-Pneumatic Automation”, Gomel, Republic of Belarus ²	BY 56

*time for presentation 10-12 minutes,
questions after each presentation*

	POSTER PRESENTATIONS	“MATHMODEL 2021”	
29.	FOUR MODELS OF THE UPPER HUMAN LIMB IN SAGITTAL PLANE WITH DIFFERENT NUMBER OF MONO- AND BI- ARTICULAR MUSCLES – OPTIMIZATION TASK AND SENSITIVITY ANALYSIS	Prof. Rositsa Raikova ¹ , Assoc.Prof. Zdravka Ivanova ² , Assoc. Prof. Silvija Angelova ¹ Institute of Biophysics and Biomedical Engineering, Bulgarian Academy of Sciences, Sofia ¹ Sofia University, Faculty of Mathematics and Informatics, Sofia ²	BG 05
30.	TEMPERATURE FIELD IN A LAYERED PLATE WITH LOCAL HEATING	Prof. D.Sc Vasyl Havrysh PhD. ^{1,2} , Assoc. Prof. Liubov Koliassa PhD. ^{1,3} , Assoc. Prof. Svitlana Vozna PhD. ^{1,4} ¹ Lviv Polytechnic National University, Lviv,	UA 11
31.	FORMULATION OF AXISYMMETRIC BOUNDARY VALUE PROBLEMS OF THE LINEAR THEORY OF ELASTICITY FOR CANONICAL BODIES IN HARMONIC POTENTIALS	Assoc.Prof. Viktor Pabyrivskyi PhD. ^{1,2} , Assoc.Prof. Nelya Pabyrivska PhD. ^{1,3} , Assoc.Prof. Galyna Beregova PhD. ^{1,4} , ¹ Lviv Polytechnic National University, Lviv,	UA 16
32.	MATHEMATICAL MODELING OF THE CRYSTALLIZATION OF AN ALUMINUM ALLOY POROUS CAST	A. Velikov, B. Krastev, S. Popov, G. Evt. Georgiev, S. Stanev, V. Manolov Institute of Metal Science, Equipment and Technologies with Hydro- and Aerodynamics Centre "Acad. A. Balevski", BSA	BG 25

19:00 – 24:00	“WELCOME” COCKTAIL	THE RESTAURANT OF HOTEL "ELA"
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CORRESPONDENT PARTICIPATION

International Scientific Conference “INDUSTRY 4.0”

TECHNOLOGICAL BASIS OF “INDUSTRY 4.0”
DOMINANT TECHNOLOGIES IN “INDUSTRY 4.0”

09.12.2021 08:00 – 18:00 www.industry-4.eu

33.	SELECTED MANUFACTURING DIFFICULTIES ENCOUNTERED DURING SETUP OF MACHINING ON CNC MULTI-AXIS LINEAR AUTOMATIC LATHE AND ON CNC MULTI-SPINDLE TURNING CENTERS	PhD. Piotr Sender, Faculty of Mechanical Engineering and Shipbuilding, Institute of Machines and Materials Technology, Department of Machine Technology and Production Automation, Gdańsk	PL 03
34.	MOTORIZED LOW-COST 3D STRUCTURED LIGHT SCANNING SYSTEM FOR REVERSE ENGINEERING	PhD. Erald Piperi ^{1,*} , PhD. Ilo Bodi ¹ , Prof. Luigi Maria Galantucci ² , Accad. Jorgaq Kaçani ³ Polytechnic University of Tirana, Albania ¹ Politecnico di Bari, Italy ² Academy of Science, Albania ³	AL/IT 14
35.	IMPOSTATION OF AN EXPERIMENTAL DESIGN FOR STUDYING THE OPTIMIZATION OF ARTIFICIAL AGING PROCESS FOR THE ALUMINIUM ALLOYS	Irida Markja Faculty of Mechanical Engineering, Polytechnic University of Tirana	AL 15
36.	INFLUENCE OF THE TRANSFER FUNCTION OF THE DATA CLASSIFICATION PROCESS IN A TWO - LAYER NEURAL NETWORK	Bojan Vasovic ¹ , Ivan Garvanov ² ¹ Academy of Professional Studies Southern Serbia, Leskovac, Serbia ² University of Library Studies and Information Technologies, Sofia, Bulgaria	RS/BG 16

*time for presentation 10-12 minutes,
 questions after each presentation*

37.	DEVELOPMENT OF AN APPROACH FOR PARAMETRIC METASYNTHESIS OF ROAD PERFORMANCE INDICATORS FROM BULGARIA'S NATIONAL ROAD NETWORK ON THE BASIS OF SATELLITE DATA	Stoyanka Ivanova *, Evelina Ivanova University of Architecture, Civil Engineering and Geodesy, Sofia	BG 19
38.	TENSILE STRENGTH AND DIMENSIONAL VARIANCES IN PARTS MANUFACTURED BY SLA 3D PRINTING	Ognen Tuteski M.Sc., Atanas Kočov, PhD "Ss. Cyril and Methodius" University in Skopje	NM 20
39.	CAPABILITY OF MICRO-MILLING IN MACHINING OF DIFFICULT-TO-CUT MATERIALS	Branislav Sredanovic ^{1,*} , Djordje Cica ¹ , Stevo Borojevic ¹ , Sasa Tesic ¹ , Davorin Kramar ² University of Banjaluka, Faculty of Mechanical Engineering, Banja Luka, Bosnia and Herzegovina ¹ University of Ljubljana, Faculty of Mechanical Engineering, Ljubljana, Slovenia ²	BA/SJ 25
40.	SEQUENTIAL DEVELOPMENT OF INTEGRATED REMOTE-CONTROL SMART HOME/OFFICE SYSTEMS	Georgi Kolev University of Chemical Technology and Metallurgy	BG 40
41.	INVESTIGATION OF BENDING STRENGTH AND MODULUS OF ELASTICITY OF A NEW TYPE OF BLACK LOCUST PLYWOOD FOR CONSTRUCTION	Asen Hristov ^{1*} , Valerii Naidenov ¹ , Lilyana Koleva ² Institute of Mechanics, Bulgarian Academy of Sciences, Bulgaria ¹ University of Chemical Technology and Metallurgy, Bulgaria ²	BG 44
42.	ANALYSIS OF DEFECTS OBTAINED IN THE PRODUCTION OF STEEL AND STEEL PRODUCTS	Eng. Miglena Paneva ¹ , Eng. Petar Panev ¹ , Assoc. Prof. Lyuben Klochkov ² , Prof. Dimitar Karastoyanov ¹ Bulgarian Academy of Science, Sofia, Bulgaria ¹ Technical University Sofia, Bulgaria ²	BG 45
43.	METHODOLOGY FOR ANALYSIS OF A METAL TEST BODY THROUGH A SPECTRAL APPARATUS	Eng. Miglena Paneva ¹ , Eng. Petar Panev ¹ , Assoc. Prof. Lyuben Klochkov ² Bulgarian Academy of Science, Sofia, Bulgaria ¹ Technical University Sofia, Bulgaria ²	BG 46
44.	RECOVERY OF SULFUR DIOXIDE FROM FLUE GAS FOR SULPHURIC ACID PRODUCTION	Kamila Jóźwiak ^{1,*} , Krzysztof Czajka ¹ Wroclaw University of Science and Technology	PL 47
45.	OPTIMIZATION OF ELECTRON BEAM LITHOGRAPHY PROCESSING OF RESIST AR-N 7520	Elena Koleva ^{1,2*} , Ivan Kostic ³ , Lilyana Koleva ¹ , Katia Vutova ² , Irina Markova ¹ , Anna Bencurova ³ , Anna Konecnikova ³ , Robert Andok ³ University of Chemical Technology and Metallurgy, Bulgaria ¹ Institute of Electronics, Bulgarian Academy of Sciences, Bulgaria ² Institute of Informatics, Slovak Academy of Sciences, Slovak Republic ³	BG/SK 48
46.	ELECTRON BEAM MELTING AND REFINING OF COPPER	Asya Asenova-Robinsonova ¹ , Lilyana Koleva ^{1,*} , Elena Koleva ^{1,2,**} , Vania Vassileva ² , Katia Vutova ² University of Chemical Technology and Metallurgy, Bulgaria ¹ Institute of Electronics, Bulgarian Academy of Sciences, Bulgaria ²	BG 49
47.	MULTICRITERIAL OPTIMIZATION STRATEGIES FOR ELECTRON BEAM GRAFTING OF CORN STARCH	Lilyana Koleva ^{1*} , Zlatina Petrova ¹ , Elena Koleva ^{1,2**} , Mirela Braşoveanu ³ , Monica R. Nemţanu ³ , Georgi Kolev ¹ University of Chemical Technology and Metallurgy, Bulgaria ¹ Institute of Electronics, Bulgarian Academy of Sciences, Bulgaria ² National Institute for Lasers, Plasma and Radiation Physics, Electron Accelerators Laboratory, Romania ³	BG/RO 50

*time for presentation 10-12 minutes,
questions after each presentation*

48.	COMPARATIVE ANALYSIS OF HYDRAULIC SYSTEMS WITH ADAPTATION TO THE LOAD OF MOBILE MACHINES	Ph.D. in Eng. Assoc. Prof. Stasenko Dmitriy ¹ , Chief Designer Hinzburh Aleksander ² , Khazeyeu Yahor ³ Pavel Sukhoi State Technical University of Gomel, Gomel, Republic of Belarus ^{1, 3} OJSC "Gomel Special Design and Technical Bureau of Hydro-Pneumatic Automation", Gomel, Republic of Belarus ²	BY 56
49.	IMPROVEMENT OF SIGNAL QUALITY IN CDMA SYSTEMS ON THE BASIS OF ANALYSIS OF CORRELATION PROPERTIES OF PSEUDO-RANDOM SEQUENCES	Gherman Sorochin, Tatiana Sestacova, Vladimir Jdanov Technical University Chisinau,	MD 57
50.	FABRICATION OF THE POROUS STRUCTURES WITH GRADIENT THICKNESS OF THE STRUTS, BY USING FDM 3D PRINTING WITH DYNAMICALLY CHANGED PARAMETERS DURING THE PRINTING	Nikola Palic [*] , Fatima Zivic, Vukasin Slavkovic, Nenad Grujovic ¹ Faculty of Engineering, University of Kragujevac	RS 62
51.	STERILE MANUFACTURING QUALITY CONTROL METHODS IN THE MEDICAL PRODUCTS INDUSTRY	Toma Stulgė, Rūta Rimašauskienė [*] Kaunas University of Technology, Faculty of Mechanical Engineering and Design, Kaunas	LT 63
52.	SET UP FOR REAL TIME CAPTURING OF WELDING PARAMETERS	Deyan Gradinarov Institute of Metal Science, Equipment and Technology with Hydroaerodynamic Center at Bulgarian Academy of Sciences	BG 67
53.	POINTS FOR REAL TIME TEMPERATURE CAPTURING IN WELDING PROCESS	Deyan Gradinarov Institute of Metal Science, Equipment and Technology with Hydroaerodynamic Center at Bulgarian Academy of Sciences	BG 68
54.	REAL TIME CAPTURING TEMPERATURE OF WELDING PROCESS	Deyan Gradinarov Institute of Metal Science, Equipment and Technology with Hydroaerodynamic Center at Bulgarian Academy of Sciences	BG 69
55.	REAL TIME CAPTURING WELDING PARAMETERS WITH TRACKING MODULE	Deyan Gradinarov, Yuri Bijev Institute of Metal Science, Equipment and Technology with Hydroaerodynamic Center at Bulgarian Academy of Sciences	BG 70
56.	EXPERIMENTAL ANALYSIS OF CREEP BEHAVIOUR OF SOLDER ALLOYS AT NEAR EUTECTIC POINT BY USING INDENTATION TEST	Irida Markja ^{1,*} , Klodian Dhoska ² , Dervish Elezi ³ , Heinrisch Oettel ⁴ ^{1,2,3} Faculty of Mechanical Engineering, Polytechnic University of Tirana, Albania ⁴ Faculty of Materials Science and Technology, Technische Universität Bergakademie Freiberg, Germany	AL/DE 77

International Scientific Conference “INDUSTRY 4.0”

**BUSINESS & “INDUSTRY 4.0”
SOCIETY & „INDUSTRY 4.0”**

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57	DIGITALISATION OF PUBLIC SECTOR ACCOUNTING IN BULGARIA	Assoc. Prof. Iliyana Ankova, Ph.D. Sofia University St. Kliment Ohridski	BG 13
58.	INFLUENCE OF THE ELECTROMAGNETIC FIELD GENERATED BY A SMARTPHONE ON HUMAN BRAIN ACTIVITY	Magdalena Garvanova University of Library Studies and Information Technologies	BG 17
59.	HIGHER EDUCATION AND COVID 19 IN CONDITIONS OF EDUCATION 4.0	Assoc. Prof. Nadya Velinova-Sokolova, Ph.D. Sofia University “St.Kliment Ohridski”	BG 27

*time for presentation 10-12 minutes,
questions after each presentation*

60.	AN ASSESSMENT OF ENERGY EFFICIENCY MEASURES IN A PUBLIC BUILDING IN ALBANIA IN THE PROSPECT OF COST AND EMISSIONS REDUCTION	Edmond Zeneli*, Albert Shira, Flamur Bidaj, Artan Hoxha Polytechnic University of Tirana, Department of Energy Engineering	AL 34
61.	CHANGES IN THE NEED FOR DIGITIZATION DURING THE COVID-19 PANDEMIC	Ing. Kotianová Z., PhD. Faculty of Mechanical Engineering – Technical University of Košice	SK 35
62.	IMPROVEMENT OF THE PRODUCTION PROCESSES BASED ON THE LEAN METHODOLOGY	Bojan Jovanoski ¹ , Robert Minovski ¹ , Aleksandar Argilovski ¹ , Aleksandar Neveselov ¹ , Bojan Nestorovski ² Faculty of Mechanical Engineering, Skopje, North Macedonia ¹ SMELT-ING doo., Skopje, North Macedonia ²	NM 36
63.	MEASUREMENT OF WORKPLACE NOISE DURING MECHANICAL PROCESSING OF METALS AND RISK ASSESSMENT FOR WORKERS FROM ITS EFFECTS	Assoc. Prof. Dr. Eng. Dragomir Vasilev, Ch. Assistant Professor Milka Atanasova, PhD Technical University - Gabrovo	BG 37
64.	ENERGY ASSESSMENT OF A GRID CONNECTED PHOTOVOLTAIC THERMAL (PV/T) LIQUID COOLING SYSTEM	M.Sc. Shira A*, Dr.-Ing. Zeneli E., Assoc. Prof. Bidaj F. Dr. Hoxha, A. Faculty of Mechanical Engineering – Polytechnic University of Tirana	AL 38
65.	ARDUINO BASED BIRD EGG INCUBATOR	Georgi Filipov *, Lilyana Koleva University of Chemical Technology and Metallurgy – Sofia	BG 43
66.	WORLD TECHNOLOGY MARKET: FEATURES AND CURRENT TRENDS	Galyna Zhavoronkova, Vladimir Zhavoronkov, Natalia Kovalenko, Irina Panasiuk, National Aviation University, Kyiv, Ukraine	UA 51
67.	SMART SUSTAINABLE CITY	Umnije Aziri ^{1,*} , Atanas Kochov ² Zejnelabedin Aziri ³ Faculty of Design and Technologies of Furniture and Interior, St. Cyril and Methodius University, Skopje ¹ Faculty of Mechanical Engineering, St. Cyril and Methodius University, Skopje ² Faculty of Technological Sciences, Mother Teresa University, Skopje ³	NM 54
68.	IMPLEMENTATION OF SIMULATION TOOLS IN OPTIMIZATION OF TRAFFIC FLOWS – CASE STUDY CITY OF ZAGREB	Nikola Kožul ^{1,*} , Luka Novačko ² Ernst&Young Ltd., Zagreb, Croatia ¹ Faculty of Transport and Traffic Sciences, Zagreb, Croatia ²	HR 58
69.	TAX CHALLENGES OF HOME OFFICE REGIME FOLLOWING THE COVID-19 PANDEMIC	Jana Kubicová University of Economics in Bratislava,	SK 60
70.	SUPPLIER'S REVERSE LOGISTICS PROCESS MANAGEMENT	Karlo Ljubičić, Asst. Prof. Ivona Bajor, PhD University of Zagreb Faculty of Transport and Traffic Sciences	HR 61
71.	ANALYSIS OF THE ECO-INDICATORS FOR BULGARIA AND OPPORTUNITIES FOR THEIR IMPROVEMENT THROUGH THE SECTORS OF THE GREEN ECONOMY	Head Assistant Prof. Katina Valeva PhD ¹ , Prof. Valentina Alexieva-Nikolova PhD ² , University of Food Technology -Plovdiv	BG 65
72.	ECO INNOVATIONS - THE FOUNDATION OF SUSTAINABLE REGIONAL BIO-SECTOR	Prof. Alexieva-Nikolova V. PhD ¹ , Head Assistant Prof. Valeva K. PhD ² , University of Food Technology -Plovdiv,	BG 66

*time for presentation 10-12 minutes,
questions after each presentation*

CORRESPONDENT PARTICIPATION

International scientific conference “MATHMODEL 2021”

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73.	ADIABATICAL THERMODYNAMIC MANNER OF THE DESCRIPTION OF THE CARBON DIOXIDE POLLUTANT EXCESS OF EARTH'S ATMOSPHERE	Mihai Petrov (assistant) University "Pr. Assen Zlatarov", Burgas	BG 03
74.	STUDY OF THE MODEL FOR ESTIMATING THE DEGREE OF INFLUENCE OF DISTORTION ON IMAGE QUALITY WITH THE APPLICATION OF AN ENTROPIC MEASURE	Prof. DSc. David Asatryan ¹ , Prof. DSc. Mariam Haroutunian ^{1,*} , PhD Grigor Sazhumyan ¹ Institute for Informatics and Automation Problems of NAS, Yerevan,	AM 06
75.	APPLICATION OF ARTIFICIAL NEURAL NETWORKS FOR PREDICTION OF BUSINESS INDICATORS	Petar Halachev University of Chemical Technology and Metallurgy – Sofia	BG 07
76.	CALCULATING CURRENT-VOLTAGE CHARACTERISTICS OF LONG JOSEPHSON JUNCTION STACKS. REDUCING THE PROBLEM TO SOLVING A UNIQUE EQUATION	Svetlana Serdyukova Meshcheryakov Laboratory of Information Technologies, Joint Institute for Nuclear Research, Dubna,	RU 15
77.	AUTOMATED SYSTEM OF GETTING METER READINGS IN THE SPHERE OF COMMUNAL SERVICES	Assoc. Prof. Volodymyr Hladun PhD. ^{1,2} , Assoc. Prof. Bohdan Liubinsky PhD. ^{1,3} Assoc. Prof. Petro Topylko PhD. ^{1,4} ¹ Lviv Polytechnic National University, Lviv	UA 17
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