

Latvia University of Life Sciences and Technologies
Faculty of Engineering
Latvian Academy of Agricultural and Forestry Sciences



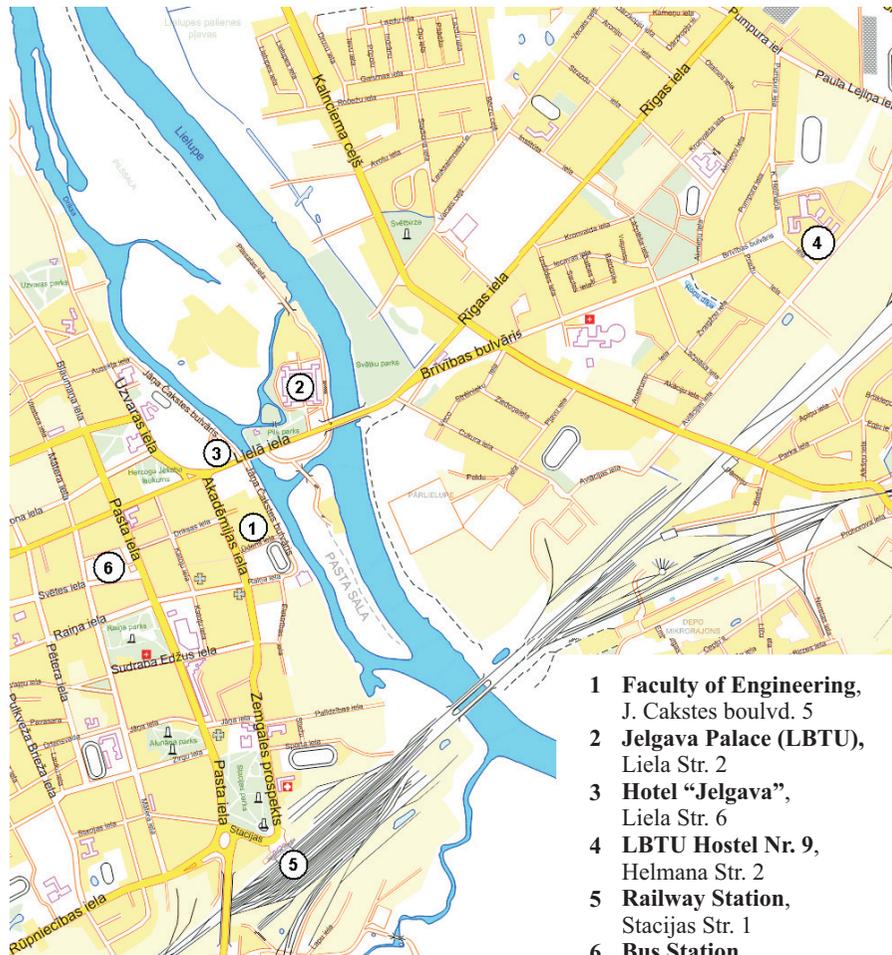
22nd International Scientific Conference

ENGINEERING FOR RURAL DEVELOPMENT

PROGRAMME



Jelgava, Latvia, May 24-26, 2023



- 1 Faculty of Engineering,
J. Cakstes boulv. 5
- 2 Jelgava Palace (LBTU),
Liela Str. 2
- 3 Hotel "Jelgava",
Liela Str. 6
- 4 LBTU Hostel Nr. 9,
Helmana Str. 2
- 5 Railway Station,
Stacijas Str. 1
- 6 Bus Station,
Pasta Str. 26

**Latvia University of Life Sciences and Technologies
Faculty of Engineering
Latvian Academy of Agricultural and Forestry Sciences**

**22nd International Scientific Conference
ENGINEERING FOR RURAL
DEVELOPMENT
PROGRAMME**

Jelgava, Latvia, May 24-26, 2023

Program Committee, Organising Committee

PROGRAM COMMITTEE

- Chairman:** Aivars Aboltins, *Latvia University of Life Sciences and Technologies, Latvia*
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Wanhao Zhang, *University College London, United Kingdom*
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Mareks Smits, Kaspars Vartukapeinis, Natalija Vronska, Olafs Vronskis

Timetable

Wednesday, May 24

16⁰⁰ – 17⁰⁰ Registration of participants,
Faculty of Engineering, LBTU, 5 J. Cakstes blvd., 2nd floor, Room 254

Thursday, May 25

9⁰⁰ – 10⁰⁰ Registration of participants,
Faculty of Engineering, LBTU, 5 J. Cakstes blvd., 2nd floor, Room 254

10⁰⁰ – 10³⁰ Welcome speech by LBTU and ERDev management, section Rooms
Vice rector of studies Aigars Laizans
Faculty of Engineering, dean Ilmars Dukulis
Chairman of program committee Aivars Aboltins

10⁴⁰ – 13⁰⁰ Work in sections

13⁰⁰ – 14²⁰ Photo, Lunch (except on-line Section 1, see details on Page 6)

14²⁰ – 16⁰⁰ Work in sections

16⁰⁰ – 16³⁰ Coffee break

16³⁰ – 18³⁰ Work in sections

19⁰⁰ Conference dinner
Faculty of Engineering, LBTU, 5 J. Cakstes blvd., 2nd floor, Room 254



presentation – 15 min
discussion – 5 min

EEST time used in all timetables

The conference is held in hybrid (on-site and on-line) format.

Section 1 is fully on-line; Sections 2-5 may be attended and reports may be presented in both formats.

Conference language – **English**

Friday, May 26

8¹⁵ – 16³⁰ Social tour. Start from Faculty of Engineering, LLU, 5 J. Cakstes blvd.
Places to visit: peat extraction site and production "Laflora",
boardwalk in the Great Kemeru moor, Lunch at the cafe "Laci".



WiFi internet access during the conference (5 J. Cakstes blvd.)
Network access using vouchers, ask at the registration table.

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<http://www.herem.org/>



WEEDBOT



Weedbot - High precision laser weeding
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Notes

Section 1: Agricultural machinery

On-line section

Chairman:

Dr.sc.ing. **Adolfs Rucins**,

Latvia University of Life Sciences and Technologies, Latvia

Vice-chairman:

Dr.sc.ing. **Semjons Ivanovs**,

Latvia University of Life Sciences and Technologies, Latvia



<https://us06web.zoom.us/j/6423594492?pwd=cXB2N1Y0V2ZaaytHb05BOHArVnZkdz09>

- 10:40 [TF127] STUDIES OF PERFORMANCE PARAMETERS IN MILKING ROBOTS AFTER SOFTWARE IMPROVEMENT
Maris Mangalis, Juris Priekulis, Mara Mangale
Latvia University of Life Sciences and Technologies, Latvia
- 11:00 [TF002] PRODUCTIVITY OF NEW HARVESTER PROTOTYPE IN WILLOW PLANTATIONS WITH DIFFERENT GROWING STOCK
Andis Lazdins, Kristaps Makovskis, Agris Zimelis, Igors Gusarevs, Germans Gusarevs
Latvian State Forest Research Institute "Silava", Latvia; Orvi Ltd., Latvia
- 11:20 [TF204] PROBLEMS OF STANDARDISING ILLUMINATION FOR PLANTS IN GREENHOUSES AND GREEN STRUCTURES
Tetiana Tkachenko, Viktor Mileikovskiy, Anna Moskvitina, Iryna Peftieva, Viktoriia Konovaliuk, Adam Ujma
Kyiv National University of Construction and Architecture, Ukraine; Czestochowa University of Technology, Poland
- 11:40 [TF037] KINEMATIC ANALYSIS OF PARALLEL TRANSFER MECHANISM
Eriks Kronbergs, Mareks Smits
Latvia University of Life Sciences and Technologies, Latvia
- 12:00 [TF021] INFLUENCE OF TRACTOR SLIPPAGE ON CROP YIELD
Vidas Damanauskas, Algirdas Janulevicius
Lithuanian Research Centre for Agriculture and Forestry, Lithuania; Vytautas Magnus University, Lithuania
- 12:20 [TF179] EXPERIMENTAL STUDIES OF VIBRATION LOAD OF SYNCHRONOUS THREADED CONNECTIONS OF GRAIN HARVESTER COMBINES
Yaroslav Myhailovych, Ivan Rogovskii, Mykola Korobko, Liudmyla Berezova
National University of Life and Environmental Sciences of Ukraine, Ukraine

Section 1: Agricultural machinery

- 12:40 [TF108] THEORETICAL DETERMINATION OF ABSOLUTE SPEED OF MINERAL FERTILISER PARTICLES FROM CENTRIFUGAL SPREADING DISC
Volodymyr Bulgakov, Semjons Ivanovs, Ivan Holovach, Oleg Adamchuk, Aivars Aboltins, Yevhen Ihnatiev, Svitlana Polishchuk
National University of Life and Environmental Sciences of Ukraine, Ukraine; Latvia University of Life Sciences and Technologies, Latvia; Institute for Agricultural Engineering and Electrification, Ukraine; Dmytro Motornyi Tavria State Agrotechnological University, Ukraine; National Scientific Center "Institute of Agriculture" of the National Academy of Agrarian Sciences of Ukraine, Ukraine
- 13:00 LUNCH
- 14:00 [TF109] COMPUTER INVESTIGATION OF MINERAL FERTILISER PARTICLE MOVEMENT ALONG CENTRIFUGAL SPREADER DISC INCLINED UNDER ANGLE TO HORIZONTAL PLANE
Volodymyr Bulgakov, Adolfs Rucins, Ivan Holovach, Oleg Adamchuk, Aivars Aboltins, Hrihorii Zabolotnyi, Larysa Kolomyets, Svitlana Polishchuk
National University of Life and Environmental Sciences of Ukraine, Ukraine; Latvia University of Life Sciences and Technologies, Latvia; Institute for Agricultural Engineering and Electrification, Ukraine; Vinnytsia National Agrarian University, Ukraine; National Scientific Center "Institute of Agriculture" of the National Academy of Agrarian Sciences of Ukraine, Ukraine
- 14:20 [TF110] RESEARCH IN MINERAL FERTILISER PARTICLE THROWING DISTANCE FROM NEW CENTRIFUGAL FERTILIZER SPREADER WORKING TOOL
Volodymyr Bulgakov, Ivan Holovach, Oleg Adamchuk, Adolfs Rucins, Aivars Aboltins
National University of Life and Environmental Sciences of Ukraine, Ukraine; Institute for Agricultural Engineering and Electrification, Ukraine; Latvia University of Life Sciences and Technologies, Latvia
- 14:40 [TF120] USAGE OF CFD FOR RESEARCH ON LATERAL VENTILATION SYSTEM IN POULTRY HOUSE
Viktor Trokhaniak, Semjons Ivanovs, Yuri Nasieka, Oleh Chernysh, Aivars Aboltins, Yevhen Ihnatiev, Oleksandr Synyavskiy
National University of Life and Environmental Sciences of Ukraine, Ukraine; Latvia University of Life Sciences and Technologies, Latvia; V.Ye. Lashkaryov Institute of Semiconductor Physics of NAS of Ukraine, Ukraine; Dmytro Motornyi Tavria State Agrotechnological University, Ukraine
- 15:00 [TF121] STUDY OF PASSIVE STEERING OF WIDE SPAN VEHICLES WITH POWER-DRIVEN STEERING METHOD
Valerii Adamchuk, Volodymyr Bulgakov, Semjons Ivanovs, Adolfs Rucins, Ivan Beloev, Volodymyr Kuvachov, Viktor Kaminskii, Oleh Chernysh
Institute of Mechanics and Automation of Agricultural Production of the National Academy of Agrarian Sciences of Ukraine, Ukraine; National University of Life and Environmental Sciences of Ukraine, Ukraine; Latvia University of Life Sciences and Technologies, Latvia; "Angel Kanchev" University of Ruse, Bulgaria; Dmytro Motornyi Tavria State Agrotechnological University, Ukraine; National Scientific Center "Institute of Agriculture" of the National Academy of Agrarian Sciences of Ukraine, Ukraine

Section 1: **Agricultural machinery**

- 15:20 [TF111] INFLUENCE OF TRACTOR HITCH LINKAGE SYSTEM ON PLOWING UNIT PERFORMANCE
Volodymyr Bulgakov, Semjons Ivanovs, Valerii Adamchuk, Volodymyr Nadykto, Anatoliy Zaryshnyak, Vadym Yaremenko, Liudmyla Krasiuk
National University of Life and Environmental Sciences of Ukraine, Ukraine; Latvia University of Life Sciences and Technologies, Latvia; Institute of Mechanics and Automation of Agricultural Production of the National Academy of Agrarian Sciences of Ukraine, Ukraine; Dmytro Motornyi Tavria State Agrotechnological University, Ukraine; National Scientific Center "Institute of Agriculture" of the National Academy of Agrarian Sciences of Ukraine, Ukraine
- 15:40 [TF118] EXPERIMENTAL RESEARCH ON PERFORMANCE OF FLEXIBLE SCREW CONVEYOR WHEN TRANSPORTING AGRICULTURAL MATERIALS
Volodymyr Bulgakov, Semjons Ivanovs, Ivan Beloev, Oleksandra Trokhaniak, Aivars Aboltins, Mykola Tkachenko, Adolfs Rucins
National University of Life and Environmental Sciences of Ukraine, Ukraine; Latvia University of Life Sciences and Technologies, Latvia; "Angel Kanchev" University of Ruse, Bulgaria; National Scientific Center "Institute of Agriculture" of the National Academy of Agrarian Sciences of Ukraine, Ukraine
- 16:00 COFFEE BREAK
- 16:30 [TF119] STUDY ON POWER PARAMETERS OF MOVING GRAIN MATERIALS WITH PNEUMATIC SCREW CONVEYOR
Volodymyr Bulgakov, Semjons Ivanovs, Ivan Beloev, Oleksandra Trokhaniak, Aivars Aboltins, Hryhorij Kaletnik
National University of Life and Environmental Sciences of Ukraine, Ukraine; Latvia University of Life Sciences and Technologies, Latvia; "Angel Kanchev" University of Ruse, Bulgaria; Vinnytsia National Agrarian University, Ukraine
- 16:50 [TF116] INVESTIGATION OF FRONT PLOUGH FUNCTIONING STABILITY CONDITIONS WITHOUT SUPPORT WHEEL
Volodymyr Bulgakov, Semjons Ivanovs, Volodymyr Nadykto, Gennadii Petrov
National University of Life and Environmental Sciences of Ukraine, Ukraine; Latvia University of Life Sciences and Technologies, Latvia; Dmytro Motornyi Tavria State Agrotechnological University, Ukraine
- 17:10 [TF115] EXPERIMENTAL RESEARCH ON QUALITY FUNCTIONING OF HAULM RESIDUE REMOVER FROM SUGAR BEET EPICOTYL
Volodymyr Bulgakov, Myroslav Budzanivskyy, Martin Zach, Maros Korenko, Ivan Beloev, Dana Orszaghova, Petr Dostal, Semjons Ivanovs
National University of Life and Environmental Sciences of Ukraine, Ukraine; Institute of Mechanics and Automation of Agricultural Production of the National Academy of Agrarian Sciences of Ukraine, Ukraine; Mendel University in Brno, Czech Republic; Slovak University of Agriculture in Nitra, Slovakia; "Angel Kanchev" University of Ruse, Bulgaria; Latvia University of Life Sciences and Technologies, Latvia

Section 1: **Agricultural machinery**

- 17:30 [TF162] SYNTHESIS OF TILLAGE MACHINES AND EXPERIMENTAL RESEARCH ON AGRO TECHNOLOGICAL INDICATORS FOR TILLAGE QUALITY
Volodymyr Bulgakov, Semjons Ivanovs, Hristo Beloev, Oleksandra Trokhaniak, Mykola Klendii, Anatoliy Bondarchuk, Adolfs Rucins
National University of Life and Environmental Sciences of Ukraine, Ukraine; Latvia University of Life Sciences and Technologies, Latvia; "Angel Kanchev" University of Ruse, Bulgaria; Separated Subdivision of the National University of Life and Environmental Sciences of Ukraine "Nizhin Agrotechnical Institute", Ukraine; National Scientific Center "Institute of Agriculture" of the National Academy of Agrarian Sciences of Ukraine, Ukraine
- 17:50 [TF163] TREATMENT QUALITY ASSESSMENT OF SUNFLOWER INTER-ROW WIDTHS WITH ASYMMETRIC JOINING OF CULTIVATOR TO TRACTOR
Volodymyr Bulgakov, Semjons Ivanovs, Valerii Adamchuk, Volodymyr Nadykto, Volodymyr Kyurchev, Vadym Yaremenko, Liudmyla Krasiuk
National University of Life and Environmental Sciences of Ukraine, Ukraine; Latvia University of Life Sciences and Technologies, Latvia; Institute of Mechanics and Automation of Agricultural Production of the National Academy of Agrarian Sciences of Ukraine, Ukraine; Dmytro Motornyi Tavria State Agrotechnological University, Ukraine; National Scientific Center "Institute of Agriculture" of the National Academy of Agrarian Sciences of Ukraine, Ukraine
- 18:10 [TF164] RESEARCH ON GAS DYNAMIC FLOWS IN POULTRY HOUSE LATERAL VENTILATION SYSTEM USING CFD MODELLING
Volodymyr Bulgakov, Aivars Aboltins, Viktor Trokhaniak, Hristo Beloev, Oleksandra Trokhaniak, Ivan Holovach, Oleksandr Synyavskiy
National University of Life and Environmental Sciences of Ukraine, Ukraine; Latvia University of Life Sciences and Technologies, Latvia; "Angel Kanchev" University of Ruse, Bulgaria

Section 2: Material science and GHG emissions

Venue: 5 J.Cakstes blvd., Room 312

Chairman:

Dr.sc.ing. **Aivars Kakitis**,

Latvia University of Life Sciences and Technologies, Latvia

Vice-chairman:

PhD. **Mirosław Rucki**,

Kazimierz Pulaski University of Technology and Humanities in Radom, Poland



<https://us06web.zoom.us/j/8171687053?pwd=ZGZZUm5XYk0xMjVMWHd5akxPOG1CUT09>

- 10:40 [TF058] STUDY OF FLEXURAL AND YIELD STRENGTH OF GYPSUM COMPOSITE BOARDS
Martins Irbe, Janis Viba, Marina Cerpinska, Vitalijs Beresnevics, Kristaps Spade
Riga Technical University, Latvia
- 11:00 [TF106] SENSITIVITY SPREAD OF PIEZO ELECTRIC FILMS USED AS SENSORS FOR MACHINE AND STRUCTURAL MONITORING
Aleksejs Safonovs, Aleksey Mironov, Pavel Doronkin, Vitalijs Kuzmickis
Riga Technical University, Latvia; SIA "D un D centrs", Latvia
- 11:20 [TF080] INFLUENCE OF TECHNOLOGICAL FACTORS ON FORMATION PROCESS OF BIMETALLIC CASTINGS
Yevhenii Aftandiliants, Svyatoslav Gnyloskurenko, Helena Meniailo, Valerii Khrychikov
National University of Life and Environmental Sciences of Ukraine, Ukraine; Physico-technological Institute of Metals and Alloys, Ukraine; Ukrainian State University of Science and Technologies, Ukraine
- 11:40 [TF054] STUDY IN DURABILITY OF CR2O3-BASED CERAMIC CUTTING TOOLS
Zbigniew Siemiatkowski, Dmitrij Morozow, Mirosław Rucki, Mykola Prokopiv, Volodymyr Nerubatskyi, Ludmila Voloshina, Edvin Hevorkian
Kazimierz Pulaski University of Technology and Humanities in Radom, Poland; Vilnius Gediminas Technical University, Lithuania; V.Bakul Institute for Superhard Materials NAS, Ukraine; Ukrainian State University of Railway Transport, Ukraine
- 12:00 [TF035] EFFECT OF 10% NaCl ON BASIC CARBON STRUCTURAL P235TR2 STEEL AT 100C
Tomasz Lipinski, Jacek Pietraszak
University of Warmia and Mazury in Olsztyn, Poland; Cracow University of Technology, Poland
- 12:20 [TF034] MODIFICATION OF ALSI7MG ALLOY WITH SR AND SB
Tomasz Lipinski, Jacek Pietraszak
University of Warmia and Mazury in Olsztyn, Poland; Cracow University of Technology, Poland

Section 2: Material science and GHG emissions

- 12:40 [TF014] FABRICATION AND MECHANICAL PROPERTIES OF POLYMER COMPOSITE NANOFIBER MATS
Jaymin-Vrajlal Sanchaniya, Sai-Pavan Kanukuntla, Kagan-Berkay Senyurt
Riga Technical University, Latvia
- 13:00 LUNCH
- 14:20 [TF143] REINFORCEMENT IMPACT ON STATE OF CRACKS IN CONCRETE SLABS
Volodymyr Bulgakov, Oleksii Kutsenko, Anastasiya Kutsenko, Aivars Aboltins, Semjons Ivanovs
National University of Life and Environmental Sciences of Ukraine, Ukraine; Taras Shevchenko National University of Kyiv, Ukraine; Latvia University of Life Sciences and Technologies, Latvia
- 14:40 [TF203] ASSESSMENT OF ENERGY AND ENVIRONMENTAL IMPACT IN PRECISION SEEDING TECHNOLOGICAL PROCESSES
Egidijus Sarauskis, Marius Kazlauskas, Indre Bruciene, Vilma Naujokiene, Sidona Buragiene, Kestutis Romaneckas, Dainius Steponavicius, Abdul Mounem Mouazen
Vytautas Magnus University, Lithuania; Ghent University, Belgium
- 15:00 [TF067] FAILURE ANALYSIS OF RUBBER-CORD COUPLINGS OF ER2 SERIES ELECTRIC TRAINS
Dmitrijs Gorbacovs, Pavels Gavrilovs, Janis Eiduks, Guntis Strautmanis
Riga Technical University, Latvia
- 15:20 [TF016] ANALYSIS AND INVESTIGATION ON DEFECTS - DELAMINATION AND SPALLING OF METAL ON ROLLING SURFACE OF RAIL HEAD UNDER CODE X 10.1
Viktors Ivanovs, Pavels Gavrilovs
Riga Technical University, Latvia
- 15:40 [TF074] AVIATION ACCIDENT - FIRE MODELLING USING PROGRAMME PATHFINDER IN RIGA AIRPORT LIABILITY AREA
Mihails Urbans, Jelena Pundure, Rihards Veiss
Riga Technical University, Latvia
- 16:00 COFFEE BREAK
- 16:30 [TF051] COMPARISON OF PHYSICAL MECHANICAL PROPERTIES OF GRANULATED FERTILIZER PRODUCED FROM COMPOSTED CATTLE AND DRIED COW, PIG AND POULTRY MANURE
Ramunas Mieldazys, Egle Jotautiene, Aloyzas Gaudutis, Algirdas Jasinskas
Vytautas Magnus University, Lithuania
- 16:50 [TF038] POTENTIAL ROLE OF TREE INTRODUCTION IN AGRICULTURAL LAND TO REDUCE GREENHOUSE GAS EMISSIONS
Andis Bardulis, Dana Purvina, Arta Bardule, Andis Lazdins
Latvian State Forest Research Institute "Silava", Latvia

Section 2: Material science and GHG emissions

- 17:10 [TF185] SUSTAINABLE CONSUMPTION AND WASTE MANAGEMENT
Santa Bormane, Biruta Sloka, Daina Skiltere
Riga Stradins University, Latvia; University of Latvia, Latvia
- 17:30 [TF161] EFFICIENT ENERGY RECOVERY FROM TEXTILE WASTE AND BIOMASS MIXTURE
Janis Kramens, Edgars Vigants, Sai-Pavan Kanukuntla, Dmitri Goljandin
Riga Technical University, Latvia; Tallinn University of Technology, Estonia
- 17:50 [TF071] DATA CORRELATION OF MERCURY IN EGGSHELLS AND EGG SHELL MEMBRANES OF WILD BIRDS
Anda Abola, Antonija Rimsa, Maris Strazds, Rita Veilande, Gita Revalde
Institute of Atomic Physics and Spectroscopy, Latvia; Institute of Biology, University of Latvia, Latvia; Almaty University of Power Engineering and Telecommunication, Kazakhstan; Riga Technical University, Latvia
- 18:10 [TF048] RESEARCH IN VEHICLE EXHAUST GAS COMPLIANCE WITH EURO STANDARD
Vida Jokubyniene, Jurate Liebuviene
Klaipeda State University of Applied Sciences, Lithuania

Section 3: Modelling and simulation

Venue: 5 J.Cakstes blvd., Room 215

Chairman:

Dr.sc.ing. **Aivars Aboltins**,
Latvia University of Life Sciences and Technologies, Latvia

Vice-chairman:

Dr.math. **Svetlana Atslega**,
Latvia University of Life Sciences and Technologies, Latvia



<https://us06web.zoom.us/j/7270687094?pwd=UDRONVZaNGQ2RENCQnlkWWZjRXVhZz09>

- 10:40 [TF065] STUDY OF BIOMASS PELLET NETWORK MODEL FOR HEAT AND MASS TRANSPORT IN POROUS MEDIA THROUGH GAS CHANNELS
Laura Leja, Uldis Strautins
University of Latvia, Latvia; Institute of Mathematics and Computer Science, University of Latvia, Latvia
- 11:00 [TF039] ON MODELLING OF THREE DIMENSIONAL FLOW IN EXTRACTION OF BIOLOGICALLY ACTIVE SUBSTANCES FROM PLANTS
Uldis Strautins, Maksims Marinaki
Institute of Mathematics and Computer Science, University of Latvia, Latvia
- 11:20 [TF032] SHAPE OPTIMIZATION OF VENTILATION ELEMENTS FOR PROTECTIVE CLOTHING BY USING METAMODELING APPROACH
Alexander Janushevskis, Sanjay-Rajni Vejanand, Agris Gulevskis
Riga Technical University, Latvia; Ekasol, Latvia
- 11:40 [TF007] ON MATHEMATICAL MODELS OF ARTIFICIAL NEURAL NETWORKS
Inna Samuilik, Felix Sadyrbaev, Svetlana Atslega
Riga Technical University, Latvia; Institute of Mathematics and Computer Science, University of Latvia, Latvia; Latvia University of Life Sciences and Technologies, Latvia
- 12:00 [TF157] NUMERICAL ANALYSIS FOR SYSTEM OF PARABOLIC EQUATIONS WITH PERIODIC FUNCTIONS
Harijs Kalis, Ilmars Kangro, Aivars Aboltins
Institute of Mathematics and Computer Science, University of Latvia, Latvia; Rezekne Academy of Technologies, Latvia; Latvia University of Life Sciences and Technologies, Latvia
- 12:20 [TF030] ASSESSMENT OF DERAILMENT QUOTIENT OF LOCOMOTIVE BOGIE
Vadym Ishchuk, Jan Dizo, Miroslav Blatnický, Sebastian Solcansky
University of Zilina, Slovakia
- 12:40 [TF144] MECHANICAL BEHAVIOR OF I-BEAMS REINFORCED BY UNIDIRECTIONAL CARBON FIBRE, UNIDIRECTIONAL GLASS FIBER AND CARBON FIBRE LAMINATES
Ilgar Jafarli, Umesh-Haribhai Vavaliya
Riga Technical University, Latvia

13:00

LUNCH

Section 3: Modelling and simulation

- 14:20 [TF140] DIGITAL TWIN MODELLING FOR SMART FRUIT-GROWING: ECO-CYBER-PHYSICAL SYSTEM 4 + 1 ARCHITECTURE
Sergejs Kodors, Imants Zaremba, Ginta Majore, Edgars Rubauskis, Lienite Litavniece
Rezekne Academy of Technologies, Latvia; Vidzeme University of Applied Sciences, Latvia; SLA "EcoIGM", Latvia; Institute of Horticulture (LatHort), Latvia
- 14:40 [TF009] VEHICLE SLALOM PASSAGE ANALYSIS
Miroslav Blatnický, Denis Molnar, Jan Dizo, Vadym Ishchuk
University of Zilina, Slovakia
- 15:00 [TF025] COMPARISON OF SELECTED OUTPUTS OF RAIL VEHICLE BOGIE VARIANT SOLUTIONS
Jan Dizo, Miroslav Blatnický, Vadym Ishchuk, Sebastian Solcansky
University of Zilina, Slovakia
- 15:20 [TF178] ANALYSIS OF CRITICAL RADIUS OF INSULATION FOR HORIZONTAL PIPES
Daria Vakulenko, Viktor Mileikovskiy, Tetiana Tkachenko, Adam Ujma, Viktoriia Konovaliuk
Kyiv National University of Construction and Architecture, Ukraine; Czestochowa University of Technology, Poland
- 15:40 [TF091] FRICTION PROPERTIES OF REED STALKS
Olafs Vronskis, Aivars Kakitis
Latvia University of Life Sciences and Technologies, Latvia
- 16:00 COFFEE BREAK
- 16:30 [TF210] EFFICIENCY OF AUTONOMOUS SMOKE DETECTORS DEPENDING ON OPERATION TIME PERIOD
Irita Slavinska, Vladimirs Jemeljanovs, Maris Ziemelis
Riga Technical University, Latvia
- 16:50 [TF200] ESTIMATION OF EVAPOTRANSPIRATION EMPIRICAL COEFFICIENTS OF SCOTS PINE (PINUS SYLVESTRIS) UNDER CLIMATE CHANGE CONDITIONS
Andrzej Zyromski, Marcin Wdowikowski, Bartosz Kazmierczak
Wroclaw University of Environmental and Life Sciences, Poland; Wroclaw University of Science and Technology, Poland
- 17:10 [TF194] ACCESSIBILITY OF ACTIVE LEISURE AREAS AND SOCIAL INCLUSION IN CONTEXT OF URBAN PLANNING
Ilze Janpavle, Una Ile
Latvia University of Life Sciences and Technologies, Latvia
- 17:30 [TF044] UNIFIED EVALUATION CRITERIA SYSTEM FOR SELECTION OF MOST PREFERABLE MODE, ROUTE AND MEANS OF TRANSPORTATION FOR OVERSIZED AND SUPER HEAVY CARGOES
Ricardas Malkus, Jurate Liebuviene, Vida Jokubyniene
Klaipeda State University of Applied Sciences, Lithuania

Section 4: Renewable and conventional energy

Venue: 5 J.Cakstes blvd., Room 314

Chairman:

Dr.sc.ing. **Dainis Berjoza,**

Latvia University of Life Sciences and Technologies, Latvia

Vice-chairman:

Dr.sc.ing. **Marco Bietresato,**

University of Udine, Italy



<https://us06web.zoom.us/j/4451047445?pwd=WDdxNERnMTNqeTB2bWdkSm1Cbkh3dz09>

- 10:40 [TF026] EXPERIMENTAL STUDY OF GASIFICATION RATE OF FAST-GROWING WILLOW BIOMASS
Algirdas Jasinskas, Savelii Kukharets, Olena Sukmaniuk, Vladyslav Kovalchuk
Vytautas Magnus University, Lithuania; Polissia National University, Ukraine
- 11:00 [TF124] METHANE PRODUCTION FROM BRIQUETTES OF BIRCH SAWDUST
Vilis Dubrovskis, Dagnis Dubrovskis
Latvia University of Life Sciences and Technologies, Latvia
- 11:20 [TF184] RESEARCH ON YIELD OF BIOGAS DURING METHANE FERMENTATION OF COW MANURE WITH ADDITION OF GRANULATED STRAW WITH SLAKED LIME
Timur Valiev, Viktor Polishchuk
National University of Life and Environmental Sciences of Ukraine, Ukraine
- 11:40 [TF081] BIOGAS POTENTIAL FROM CO-FERMENTATION OF FOOD LEFTOVERS AND LIGNOCELLULOSIC BIOMASS AT MESOPHILIC TEMPERATURES
Indulis Straume, Imants Plume, Vilis Dubrovskis, Viktors Dreimanis, Eriks Zukovskis
Latvia University of Life Sciences and Technologies, Latvia
- 12:00 [TF150] ANALYSIS OF FACTORS INFLUENCING ENERGY EFFICIENCY OF BIOGAS PLANTS
Lauris Plume, Imants Plume
Latvia University of Life Sciences and Technologies, Latvia
- 12:20 [TF131] ENERGY BALANCE ANALYSIS OF SOLAR-POWERED CATAMARAN
Dainis Berjoza, Inara Jurgena, Janis Laceklis-Bertmanis
Latvia University of Life Sciences and Technologies, Latvia
- 12:40 [TF012] CO-FIRING AND MICROWAVE PRE-TREATMENT OF LIGNOCELLULOSIC PELLETS FOR CONTROL OF THERMOCHEMICAL CONVERSION OF BIOMASS MIXTURES AND SUSTAINABLE ENERGY PRODUCTION
Raimonds Valdmanis, Viesturs Sints, Maija Zake
Institute of Physics, University of Latvia, Latvia
- 13:00 LUNCH

Section 4: Renewable and conventional energy

- 14:20 [TF010] EFFECT OF HVO CNG DUAL-FUEL OPERATION MODE ON EMISSIONS AND PERFORMANCE OF CI ENGINE
Ales Dittrich, Radek Prochazka, Josef Popelka, Dong Nguyen Phu
Technical University at Liberec, Czech Republic
- 14:40 [TF175] CLEAN ENERGY AND HYDROGEN PERSPECTIVES IN RURAL REGIONS OF KAZAKHSTAN
Vladislav Zavadskiy, Gita Revalde
Almaty University of Power Engineering and Telecommunication, Kazakhstan; Riga Technical University, Latvia
- 15:00 [TF103] PROPOSAL FOR METHODOLOGY TO ANALYSE OPERABILITY OF WINE PRODUCTION PLANT IN TERMS OF POWER DEMAND
Marco Bietresato, Gellio Ciotti, Alessandro Zironi, Roberto Zironi, Rino Gubiani
Universita degli Studi di Udine, Italy
- 15:20 [TF069] CONSTRUCTION INDUSTRIES WASTE CIRCULATION PROBLEMS IN LATVIA
Sandra Gusta, Mareks Pavars, Kaspars Grabens
Latvia University of Life Sciences and Technologies, Latvia
- 15:40 [TF112] WATER MANAGEMENT EFFECT ON TROPICAL FRUITS: CASE STUDY OF ALANYA, TÜRKIYE
Firat Arslan, Sinan Kartal
Alanya Alaaddin Keykubat University, Turkey
- 16:00 COFFEE BREAK
- 16:30 [TF177] AGROCENOSSES AIR IMPROVEMENT FOR LONGER AND HEALTHIER PEOPLE LIFE
Tetiana Tkachenko, Viktor Mileikovskiy, Ihor Satin, Adam Ujma
Kyiv National University of Construction and Architecture, Ukraine; Scientific-Research and Design-Technological Institute of Urban Economy, Ukraine; Czestochowa University of Technology, Poland
- 16:50 [TF129] DEVELOPMENT OF TECHNOLOGICAL PROCESS SOLUTIONS IN MODULAR SYSTEM OF SOLAR ELECTRICITY AND HEAT SUPPLY FOR GREENHOUSES
Agris Auce, Indulis Arnis Horns, Semjons Ivanovs, Aivars Jermuss, Ugis Grinbergs, Adolfs Rucins
University of Latvia, Latvia; Latvia University of Life Sciences and Technologies, Latvia; Institute of Mathematics and Computer Science, University of Latvia, Latvia

Section 5: Engineering economics and engineering education

Venue: 5 J.Cakstes blvd., Room 336

Chairman:

Dr.sc.ing. **Baiba Briede,**

Latvia University of Life Sciences and Technologies, Latvia

Vice-chairman:

Dr.sc.ing. **Natalija Vronska,**

Latvia University of Life Sciences and Technologies, Latvia



<https://us06web.zoom.us/j/9063981927?pwd=RGZwNVQ3bWptWkpoUi9iZlFIFdVR2Zz09>

- 10:40 [TF135] PROGRAMMING OF PEDAGOGICAL TECHNOLOGY FOR FORMATION OF PROFESSIONAL COMPETENCE STUDYING SPECIAL DISCIPLINES IN AGRICULTURAL ENGINEERING SCIENCES
Stanislav Nikolaenko, Oksana Bulgakova, Iryna Yasinetska, Lesya Zbaravska, Ilmars Dukulis, Nataliia Shynkaruk, Adolfs Rucins
National University of Life and Environmental Sciences of Ukraine, Ukraine; Podillia State University, Ukraine; Latvia University of Life Sciences and Technologies, Latvia
- 11:00 [TF139] MODERNIZATION OF CONTENT OF LECTURE COURSE IN PHYSICS TO TRAIN FUTURE AGRICULTURAL ENGINEERS
Oksana Bulgakova, Lesya Zbaravska, Sergii Slobodian, Nataliia Shynkaruk, Ilmars Dukulis
National University of Life and Environmental Sciences of Ukraine, Ukraine; Podillia State University, Ukraine; Latvia University of Life Sciences and Technologies, Latvia
- 11:20 [TF137] DEVELOPMENT OF INTEGRATIVE-TRANSPARENT EDUCATIONAL ENVIRONMENT TRAINING ENGINEERS OF AGRICULTURAL PRODUCTION
Stanislav Nikolaenko, Oksana Bulgakova, Iryna Yasinetska, Lesya Zbaravska, Ilmars Dukulis
National University of Life and Environmental Sciences of Ukraine, Ukraine; Podillia State University, Ukraine; Latvia University of Life Sciences and Technologies, Latvia
- 11:40 [TF134] CONTENT OF PROFESSIONALLY ORIENTED TRAINING IN COURSE OF PHYSICS FOR STUDENTS OF AGRICULTURAL ENGINEERING SPECIALTIES
Oksana Bulgakova, Lesya Zbaravska, Ilmars Dukulis, Adolfs Rucins
National University of Life and Environmental Sciences of Ukraine, Ukraine; Podillia State University, Ukraine; Latvia University of Life Sciences and Technologies, Latvia
- 12:00 [TF133] RESEARCH ON INTER-DISCIPLINARY LINKS TRAINING ENGINEERS-DESIGNERS FOR AGRICULTURAL MACHINERY AT AGRICULTURAL UNIVERSITIES
Stanislav Nikolaenko, Oksana Bulgakova, Lesya Zbaravska, Adolfs Rucins, Ilmars Dukulis
National University of Life and Environmental Sciences of Ukraine, Ukraine; Podillia State University, Ukraine; Latvia University of Life Sciences and Technologies, Latvia

Section 5: Engineering economics and engineering education

- 12:20 [TF136] FORMATION OF INFORMATION-COMMUNICATION COMPETENCE OF FUTURE AGRICULTURAL ENGINEERING SPECIALISTS AT AGRICULTURAL INSTITUTIONS OF HIGHER EDUCATION
Oksana Bulgakova, Lesya Zbaravska, Sergii Hrushetskyi, Ilmars Dukulis
National University of Life and Environmental Sciences of Ukraine, Ukraine; Podillia State University, Ukraine; Latvia University of Life Sciences and Technologies, Latvia
- 12:40 [TF215] OVERCOMING MATHEMATICAL ANXIETY TO PROMOTE PROGRESS IN MATHEMATICS DURING UNDERGRADUATE ENGINEERING STUDIES AT UNIVERSITY
Eve Arevee, Anna Vintere
Estonian University of Life Sciences, Estonia; Latvia University of Life Sciences and Technologies, Latvia
- 13:00 LUNCH
- 14:20 [TF159] INTEGRATING INTERCULTURAL DIMENSION IN ESP COURSE FOR UNDERGRADUATE IT STUDENTS
Tatjana Sinkus, Inese Ozola
Latvia University of Life Sciences and Technologies, Latvia
- 14:40 [TF083] IMPROVEMENT OF COMPETENCE OF LABOUR PROTECTION SPECIALISTS ASSESSMENT OF COGNITIVE ERGONOMIC ASPECTS IN JSC LATVIAN STATE FORESTS (LVM) NURSERIES
Dace Brizga, Olga Miežite, Vija Ozolina, Linards Sisenis
Latvia University of Life Sciences and Technologies, Latvia
- 15:00 [TF088] IMPACT OF DIGITALISATION AND R&D ON THE ECONOMIES OF EU MEMBER STATES
Sandija Zeverte-Rivza, Peteris Rivza, Ina Gudele
Latvia University of Life Sciences and Technologies, Latvia; Celteh, Ltd, Latvia
- 15:20 [TF146] ON THE USE OF CRITERIA NPV AND IRR FOR CHOOSING AMONG INVESTMENT PROJECTS
Manfred Sneps-Snepe
Ventspils University of Applied Sciences, Latvia
- 15:40 [TF145] COMPARISON OF LINEAR AND NONLINEAR MODELS FOR FORECASTING OF FOOD COMMODITY PRICES IN LATVIA
Oksana Pavlenko, Andrejs Matvejevs
Riga Technical University, Latvia
- 16:00 COFFEE BREAK
- 16:30 [TF155] CHANGES IN USE OF PASSENGER RAILWAY TRANSPORT DUE TO COVID-19 PANDEMIC AND EXPECTED PROSPECTS IN LATVIA
Armands Veveris
Institute of Agricultural Resources and Economics, Latvia

Section 5: Engineering economics and engineering education

- 16:50 [TF085] OVERVIEW OF INNOVATIONS AND RECOMMENDATIONS FOR EFFICIENT OPERATION OF RES-BASED POWER PLANTS
Vytautas Adomavicius, Gintvile Simkoniene
Kaunas University of Technology, Lithuania; Lithuanian Maritime Academy, Lithuania
- 17:10 [TF082] OPPORTUNITIES FOR USE OF CRYPTO-ASSETS IN RENEWABLE ENERGY SECTOR WITHIN EUROPEAN UNION LEGAL FRAMEWORK
Anete Kalnina, Gunita Mazure
Latvia University of Life Sciences and Technologies, Latvia
- 17:30 [TF018] IDENTIFYING EXISTING PROPERTIES FOR REUSE INTO SOCIAL HOUSING
Rashmi Sanchaniya, Ineta Geipele
Riga Technical University, Latvia
- 17:50 [TF022] ECONOMICAL LINKAGES OF INDUSTRY “ELECTRICITY, GAS, STEAM AND AIR CONDITIONING SUPPLY” IN BALTIC STATES AND FINLAND
Andrejs Jaunzems, Ilze Balode
Ventspils University of Applied Sciences, Latvia

Social tour

Friday, May 26

8¹⁵ – 16³⁰ **Social tour.** Departure from 5 J. Cakstes blvd., main entrance.

Marshes are one of Latvia's natural treasures. Swamps in Latvia occupy 4.5% of the country's area. In total, 5,078 bogs are registered in Latvia, of which 75 are larger than 1,000 ha. The tour includes a visit to the "Laflora" peat production plant. The company will be able to view the peat production process, extraction and packaging. We will have lunch at the "Laci" cafe. After lunch, a visit to the Kemeru marsh is planned. During the tour, we will go on a 3.4 km long hike along the bog footbridges. There will be an opportunity to climb a small tower and photograph unique views.



Address of the Conference Committee

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