

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



23<sup>rd</sup> International Scientific Conference

# ENGINEERING FOR RURAL DEVELOPMENT

PROGRAMME



Jelgava, Latvia, May 22-24, 2024



**Wednesday, 22 May**

**16<sup>00</sup> – 17<sup>00</sup>** Registration of participants,  
Faculty of Engineering and Information Technologies, LBTU,  
5 J. Cakstes blvd., lobby

**Thursday, 23 May**

**9<sup>00</sup> – 10<sup>00</sup>** Registration of participants,  
Faculty of Engineering and Information Technologies, LBTU,  
5 J. Cakstes blvd., lobby

**10<sup>00</sup> – 10<sup>15</sup>** Welcome speech  
**Gatis Vitols**, *Faculty of Engineering and Information Technologies*, Dean  
**Aivars Aboltins**, *Conference programme committee*, Chairman  
5 J. Cakstes blvd., Room 238, to join using Zoom see Section 1 details

**10<sup>20</sup> – 13<sup>00</sup>** Work in sections

**13<sup>00</sup> – 14<sup>20</sup>** Photo, Lunch

**14<sup>20</sup> – 16<sup>00</sup>** Work in sections

**16<sup>00</sup> – 16<sup>30</sup>** Coffee break  
5 J. Cakstes blvd., Room 212

**16<sup>30</sup> – 18<sup>30</sup>** Work in sections

**19<sup>00</sup>** Conference dinner  
5 J. Cakstes blvd., Room 212

The conference will be held in hybrid (on-site and on-line) format.  
Sections may be attended and reports may be presented in both formats.

Regulations: presentation – 15 min  
discussion – 5 min  
EEST time used in all timetables

Conference language – **English**

**Friday, 24 May**

**8<sup>30</sup> – 18<sup>00</sup>** Social tour



WiFi internet access during the conference:  
network access using vouchers, ask at the registration table.

**PROGRAMME COMMITTEE**

***Chairman:***

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Mariusz Adamski, Bialystok University of Technology, Poland  
Zhayyt Algazy, Kazakh National Research Technical University, Kazakhstan  
Andres Annuk, Estonian University of Life Sciences, Estonia  
Atilgan Atilgan, Alanya Alaaddin Keykubat University, Turkey  
Marco Bietresato, University of Udine, Italy  
Milan Brozek, Czech University of Life Sciences Prague, Czech Republic  
Volodymyr Bulgakov, National University of Life and Environmental Sciences of Ukraine, Ukraine  
Lorant Denes David, Eszterházy Károly University, Hungary  
Jan Dizo, University of Zilina, Slovakia  
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Edwin Gevorkyan, University of Life Sciences in Lublin, Poland  
Semjons Ivanovs, Latvia University of Life Sciences and Technologies, Latvia  
Algirdas Jasinskis, Vytautas Magnus University, Lithuania  
Jan Radoslaw Kaminski, Warsaw University of Life Science, Poland  
Jozsef Kapozsta, Szent Istvan University, Hungary  
Pavel Kic, Czech University of Life Sciences Prague, Czech Republic  
Vitalijs Komasilovs, Latvia University of Life Sciences and Technologies, Latvia  
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Juri Olt, Estonian University of Life Sciences, Estonia  
Vitalijs Osadcuks, Latvia University of Life Sciences and Technologies, Latvia  
Andrea Pezzuolo, University of Padova, Italy  
Simon Popescu, Transylvania University of Brasov, Romania  
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George Srzednicki, University of New South Wales, Australia  
Aleksejs Zacepins, Latvia University of Life Sciences and Technologies, Latvia  
Wanhao Zhang, University College London, United Kingdom  
Yang Zhang, University of Sheffield, United Kingdom

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Janis Palabinskis, Latvia University of Life Sciences and Technologies, Latvia

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## Abstracted and indexed

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Conference homepage

ENGINEERING FOR RURAL DEVELOPMENT is available online at  
<https://www.tf.lbtu.lv/conference/>

## Organisations supporting conference

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Latvia University of Life Sciences and Technologies  
Faculty of Engineering and Information Technologies



Latvian Academy of Agricultural and  
Forestry Sciences, Unit of Engineering  
Sciences

<http://ilmza.lv/index.php/en/units/unit-of-engineering-sciences>

International Symposium on Hydrogen Energy,  
Renewable Energy and Materials  
<http://www.herem.org/>



**WEEDBOT**



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Nordic Association of Agricultural Science  
<https://nordicagriculture.eu/>



## Section 1: AGRICULTURAL MACHINERY

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5 J.Cakstes blvd., Room 238,

Join Zoom Meeting

<https://zoom.us/j/91330339528?pwd=M3Zkcng2eUJWb1RXWGRPQzFNWWpOQT09>

Meeting ID: 913 3033 9528

Passcode: 666qaNyXP

Chairman: Dr.sc.ing. **Ilmars Dukulis**,  
*Latvia University of Life Sciences and Technologies, Latvia*

Vice-chairman: Dr.sc.ing. **Antanas Jostas**,  
*Vytautas Magnus University, Lithuania*



- 10:20 TF021 IMPROVEMENT OF OCCUPATIONAL SAFETY AND HEALTH MANAGEMENT SYSTEM IN UKRAINE IN VIEW OF RELEVANT DECLARED INITIATIVES OF EUROPEAN UNION  
**Oleksandr Voinalovych, Oleg Hnatiuk, Vasyl Khmelovskyi, Mykhailo Motruch**  
*National University of Life and Environmental Sciences of Ukraine, Ukraine; State service on labour issues, Ukraine*
- 10:40 TF044 RESEARCH IN PROCESSES AND MACHINES FOR LOCAL STRIP APPLICATION OF MOISTURE-HOLDING ORGANIC FERTILIZERS  
**Volodymyr Didukh, Igor Tsiz, Vasyl Satsiuk, Roman Khlopetscyi**  
*Lutsk National Technical University, Ukraine*
- 11:00 TF049 INVESTIGATION ON ENVIRONMENTALLY FRIENDLY WHEAT HARVEST TECHNOLOGY  
**Egle Jotautiene, Antanas Juostas, Atilgan Atilgan**  
*Vytautas Magnus University, Lithuania; Alanya Alaaddin Keykubat University, Turkey*
- 11:20 TF057 STRENGTH ANALYSIS OF SUBSOILER TOOTH  
**Jacek Caban, Aleksander Nieoczym, Leszek Krzywonos**  
*Lublin University of Technology, Poland*
- 11:40 TF163 INFLUENCE OF DISC CULTIVATOR DESIGN ON SOIL PARTICLE DISPLACEMENT  
**Frantisek Horejs, Martin Cisler, Libor Matyas, Michal Strnad**  
*Czech University of Life Sciences Prague, Czech Republic*
- 12:00 TF165 INFLUENCE OF ORGANIC FERTILIZERS ON SOIL EROSION PARAMETERS IN MAIZE CROP  
**Martin Cisler, Frantisek Horejs, Michal Strnad, Libor Matyas**  
*Czech University of Life Sciences Prague, Czech Republic*
- 12:20 TF173 COMPARISON OF FUEL CONSUMPTION IN BROCCOLI PRODUCTION  
**Michal Strnad, Libor Matyas, Martin Cisler, Petr Novak**  
*Czech University of Life Sciences Prague, Czech Republic*
- 12:40 TF062 TIGHTNESS MONITORING CAMERA FOR CRITICAL PARTS OF RURAL TECHNOLOGICAL AND SCIENTIFIC EQUIPMENT  
**Daria Vakulenko, Tetiana Tkachenko, Viktor Mileikovskiy, Viktoriia Konovaliuk, Oleksandr Liubarets**  
*Kyiv National University of Construction and Architecture, Ukraine*
- 13:00 *PHOTO, LUNCH*
- 14:20 TF195 AGROENGINEERING STUDIES OF TILLAGE AND HARVESTING PARAMETERS IN SOYBEAN CULTIVATION  
**Ivan Rogovskii, Igor Sivak, Ruslan Shatrov, Oleksandr Nadtochiy**  
*National University of Life and Environmental Sciences of Ukraine, Ukraine*

- 14:40 TF093 PRECISION AIR SEEDER FOR HEMP - CONTROL SYSTEM SIMULATION  
**Waldemar Samociuk, Pawel Staczek**  
*University of Life Sciences in Lublin, Poland; Lublin University of Technology, Poland*
- 15:00 TF058 PRELIMINARY STUDY OF THE STARTING SYSTEM THROUGH THE ELECTRICAL PARAMETERS OF THE START-UP PROCESS OF THE DIESEL ENGINE  
**Jacek Caban, Jaroslaw Senko, Tomasz Slowik, Szymon Dowkontt**  
*Lublin University of Technology, Poland; Warsaw University of Technology, Poland; University of Life Sciences in Lublin, Poland*
- 15:20 TF025 METHODOLOGY FOR THE FORMATION OF THE COMPANY'S LOGISTICS SERVICE SYSTEM  
**Oleg Zagurskiy, Liliya Savchenko, Alona Ohienko, Svetlana Zagurska, Oleksandr Domin**  
*National University of Life and Environmental Sciences of Ukraine, Ukraine; National Aviation University, Ukraine; Kyiv Regional In-Service Teacher Training Institute, Ukraine*
- 15:40 TF099 INVESTIGATION OF WIDE SPAN VEHICLE TECHNOLOGICAL PART MOVEMENT STABILITY  
**Volodymyr Bulgakov, Aivars Aboltins, Valerii Adamchuk, Volodymyr Kuvachov, Simone Pascuzzi, Volodymyr Kyurchev, Adolfs Rucins, Victor Nesvidomin**  
*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; University of Bari Aldo Moro, Italy*
- 16:00 COFFEE BREAK
- 16:30 TF098 INVESTIGATION OF WIDE SPAN VEHICLE TECHNOLOGICAL PART SUSPENSION SYSTEM COMPACTING IMPACT ON SOIL  
**Volodymyr Bulgakov, Aivars Aboltins, Valerii Adamchuk, Volodymyr Kuvachov, Volodymyr Kyurchev, Adolfs Rucins, Oleh Chernysh**  
*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*
- 16:50 TF135 INVESTIGATION AND SUBSTANTIATION OF MISCANTHUS RHIZOME DIGGER PIN GRID DESIGN PARAMETERS  
**Valerii Adamchuk, Viktor Prisyazhnyi, Volodymyr Bulgakov, Hryhorij Kaletnik, Viktor Mazur, Oleksandra Trokhanyak, Aivars Aboltins, Adolfs Rucins, Ivan Holovach**  
*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; Vinnytsia National Agrarian University, Ukraine; Latvia University of Life Sciences and Technologies, Latvia*
- 17:10 TF132 MATHEMATICAL MODEL OF MOVEMENT AND CLEANING BEETROOTS FROM SOIL LUMPS WITH SPIRAL SEPARATOR  
**Volodymyr Bulgakov, Ivan Holovach, Volodymyr Martyniuk, Oleksandra Trokhaniak, Aivars Aboltins, Adolfs Rucins, Yevhen Ihnatiev**  
*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*
- 17:30 TF137 THEORETICAL STUDY OF FLEXIBLE BLADE MOVEMENT IN CLEANING CARROT ROOT CROP HEADS WITHOUT EXTRACTING THEM FROM SOIL  
**Volodymyr Bulgakov, Ivan Holovach, Igor Savchenko, Petro Rykhlivskiy, Myroslav Budzanivskiy, Aivars Aboltins, Adolfs Rucins, Juri Olt, Yevhen Ihnatiev**  
*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; Latvia University of Life Sciences and Technologies, Latvia; Estonian University of Life Sciences, Estonia; Dmytro Motornyi Tavria State Agrotechnological University, Ukraine*
- 17:50 TF136 INVESTIGATION OF CONTACT STRESSES IN ENGAGEMENT ELEMENTS OF SCREW CONVEYOR SAFETY CLUTCH  
**Volodymyr Bulgakov, Oleksandra Trokhaniak, Aivars Aboltins, Adolfs Rucins, Mykola Tkachenko, Arlindo Almeida, Volodymyr Kuvachov**  
*National University of Life and Environmental Sciences of Ukraine, Ukraine; Latvia University of Life Sciences and Technologies, Latvia; National Scientific Center "Institute of Agriculture" of the National Academy of Agrarian Sciences of Ukraine, Ukraine; Polytechnic Institute of Bragança (ESAB/IPB), Mountain Research Center (CIMO), Portugal; Dmytro Motornyi Tavria State Agrotechnological University, Ukraine*

## Section 2: MATERIAL SCIENCE AND GHG EMISSION

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5 J.Cakstes blvd., Room 312,

Join Zoom Meeting

<https://zoom.us/j/97677102613?pwd=UE9WdTlkZEt6RINEQnoxcjBrMlVXdz09>

Meeting ID: 976 7710 2613

Passcode: Zh4ps9xis

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*Latvia University of Life Sciences and Technologies, Latvia*

Vice-chairman: Dr.sc.ing. **Egle Jotautiene**,  
*Vytautas Magnus University, Lithuania*



- 10:20 TF023 MAIZE-LEGUME INTERCROPPING EFFECT ON SOIL PROPERTIES AND CO<sub>2</sub> CONCENTRATION  
**Kestutis Romaneckas, Ausra Sinkeviciene, Austeja Svereikaite, Rasa Kimbirauskiene, Kristijonas Vitulskis, Jovita Balandaite, Ugnius Ginelevicius**  
*Vytautas Magnus University, Lithuania*
- 10:40 TF061 INFLUENCE OF K<sub>2</sub>ZRF<sub>6</sub> AND SiO<sub>2</sub> ON REFINING ABILITY OF FLUX FOR MANUFACTURING BIMETALLIC CASTINGS  
**Yevhenii Aftandiliants, Svyatoslav Gnyloskurenko, Helena Meniailo, Valerii Khrychikov, Viktor Lomakin**  
*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; Central Ukrainian National Technical University, Ukraine*
- 11:00 TF038 STUDY ON PROPERTIES OF ZIRCONIA REINFORCED REFRACTORY MATRIX COMPOSITES  
**Miroslaw Rucki, Edvin Hevorkian, Boranbay Ratov, Volodymyr Mechnik**  
*Casimir Pulaski Radom University, Poland; University of Life Sciences in Lublin, Poland; Kazakh National Technical University named after K.I. Satpayev, Kazakhstan; V.Bakul Institute for Superhard Materials NAS, Ukraine*
- 11:20 TF145 IDENTIFICATION PROCEDURE OF FUNCTIONALLY GRADED MATERIAL IN SANDWICH BEAM  
**Andrejs Kovalovs, Evgeny Barkanov, Oleksiy Vodka**  
*Riga Technical University, Latvia; NTU Kharkov Polytechnic Institute, Ukraine*
- 11:40 TF166 WHEAT STRAW AND SEAWEED FURCELLARIA LUMBRICALIS - DERIVED CARRAGEENAN BIOCOMPOSITE CHARACTERISTICS: CASE STUDY  
**Uldis Zaimis, Sintija Ozolina, Andrejs Kukuskins**  
*Liepaja University, Latvia*
- 12:00 TF171 DEVELOPMENT AND APPLICATION OF BIODEGRADABLE WHEAT STRAW AND CARRAGEENAN COMPOSITE IN AGRICULTURE  
**Sintija Ozolina, Uldis Zaimis, Andrejs Kukuskins**  
*Liepaja University, Latvia*
- 12:20 TF179 HYBRID FIBER COMPOSITE MATERIAL WITH OSA MECHANICAL LOAD-BEARING CAPACITY AFTER THERMAL HEATING  
**Karunamoorthy Rengasamy Kannathan, Stanley Jacob Maria Michaelraj, Eirik Gjerlow, Iveta Novakova, Mindaugas Vaisnoras**  
*Riga Technical University, Latvia; UiT the Arctic University of Norway, Norway; Lithuanian Energy Institute, Lithuania*



- 12:40 TF155 METHANE (CH<sub>4</sub>) AND NITROUS OXIDE (N<sub>2</sub>O) EMISSIONS FROM SURFACE OF DECIDUOUS TREE STEMS AND SOIL IN FORESTS WITH DRAINED AND NATURALLY WET ORGANIC SOILS  
**Iloņa Skranda, Dana Purvina, Arta Bardule, Guna Petaja**  
*Latvian State Forest Research Institute "Silava", Latvia*
- 13:00 *PHOTO, LUNCH*
- 14:20 TF129 EXPERIMENTAL STUDY OF LARVAE CAGE AREA IMPACT ON PRODUCTIVITY IN GREEN LACEWING INDUSTRIAL-SCALE REARING  
**Vladislav Yaroshevsky, Igor Bespalov, Vasyl Khodorchuk, Vitalii Barkar, Volodymyr Bulgakov, Adolfs Rucins, Aivars Aboltins**  
*Engineering and Technological Institute "Biotekhnika" of NAAS, Ukraine; National University of Life and Environmental Sciences of Ukraine, Ukraine; Latvia University of Life Sciences and Technologies, Latvia*
- 14:40 TF087 IMPROVEMENT OF REACTION TO FIRE PERFORMANCE OF BIRCH PLYWOOD BY VENEER SOAKING METHOD  
**Edgars Buksans, Ilze Kalnina**  
*Forest and Wood Products Research and Development Institute, Latvia; AS "Latvijas finieris", Latvia*
- 15:00 TF029 MECHANICAL PROPERTIES OF EPOXY AND CONCRETE BASED COMPOSITE MATERIALS REINFORCED WITH OIL SHALE ASH  
**Ilgar Jafarli, Arturs Macanovskis, Eirik Gjerlow, Mindaugas Vaisnoras**  
*Riga Technical University, Latvia; UiT the Arctic University of Norway, Norway; Lithuanian Energy Institute, Lithuania*
- 15:20 TF034 SIMULATION RESEARCH ON PROPERTIES OF SPHERICAL MANURE GRANULES  
**Vaidas Bivainis, Egle Jotautiene, Ramunas Mieldazys, Grazvydas Juodisius**  
*Vytautas Magnus University, Lithuania*
- 15:40 TF056 EFFECTS OF VERMICOMPOST APPLICATION ON GROWTH AND YIELD OF HOT PEPPER (*CAPSICUM FRUTESCENS*)  
**Atilgan Atilgan, Firat Arslan, Burak Saltuk, Joanna Kociecka, Egle Jotautiene, Antanas Juostas**  
*Alanya Alaaddin Keykubat University, Turkey; Poznan University of Life Sciences, Poland; Vytautas Magnus University, Lithuania*
- 16:00 *COFFEE BREAK*
- 16:30 TF182 INFLUENCE OF INDUSTRY ON AIR POLLUTION IN JELGAVA CITY  
**Inga Grinfelde, Kristaps Siltumens, Vilda Grybauskiene, Maris Bertins, Jovita Pilecka-Ulcugaceva**  
*Latvia University of Life Sciences and Technologies, Latvia; University of Latvia, Latvia; Vytautas Magnus University, Lithuania*
- 16:50 TF190 USE OF SHREDDED TEXTILE WASTE AS MATERIAL FOR SOUND ABSORPTION  
**Kristaps Siltumens, Inga Grinfelde, Gintars Znots, Rudolfs Golubovs, Raitis Brencis**  
*Latvia University of Life Sciences and Technologies, Latvia; University of Latvia, Latvia; RISEBA University of Applied Sciences, Latvia; Riga Technical University, Latvia*
- 17:10 TF227 DRIVING SUSTAINABLE E-WASTE RECYCLING BEHAVIORS IN INDIA: CHALLENGES, MODELS, AND SOLUTIONS  
**Naibin George, Andrejs Cekuls**  
*University of Latvia, Latvia*

## Section 3: MODELLING AND SIMULATION

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5 J.Cakstes blvd., Room 215

Join Zoom Meeting

<https://zoom.us/j/93521869195?pwd=bHc3RjRMa0NRVmpOdjZ0TmJWNTJmZz09>

Meeting ID: 935 2186 9195

Passcode: 3G7SdiMFC

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*Latvia University of Life Sciences and Technologies, Latvia*

Vice-chairman: Mg.sc.ing. **Olesja Grigorjeva**  
*Riga Technical University, Latvia*



- 10:20 TF030 SYSTEM MODEL OF E-SERVICES FOR SUBURBAN AREA MANAGEMENT  
**Volodymyr Nazarenko, Victor Smolii, Borys Onyshchenko, Maksym Misiura**  
*National University of Life and Environmental Sciences of Ukraine, Ukraine*
- 10:40 TF040 EVALUATING INFLUENCE OF CFD MESH ON FLOW CHARACTERISTICS OF PNEUMATIC BRAKE VALVE DIFFERENTIAL SECTION  
**Marcin Kisiel, Dariusz Szpica**  
*Bialystok University of Technology, Poland*
- 11:00 TF059 MODELLING OF REINFORCED CONCRETE SLAB TO ACCOUNT FOR CRACKING  
**Taliat Azizov, Nataliia Sribniak, Liudmyla Tsyhanenko, Dmytro Volkov**  
*Pavlo Tychyna Uman State Pedagogical University, Ukraine; Sumy National Agrarian University, Ukraine*
- 11:20 TF060 STRENGTH ANALYSIS OF FEMORAL IMPLANT OF BONE ANCHORED PROSTHESIS  
**Kithalawalana Jayathilaka, Oskars Gainutdinovs, Svetlana Sokolova, Peteris Studers**  
*Riga Technical University, Latvia; SIA "Tehniskā Ortopēdija", Latvia; Riga Stradins University, Latvia*
- 11:40 TF117 NON-STANDARD METHOD FOR SOLVING HYPERBOLIC HEAT EQUATIONS  
**Tabita Treilande, Ilmars Iltins**  
*Riga Technical University, Latvia*
- 12:00 TF146 MATHEMATICAL MODELLING OF CHEMICAL REACTION WITH PROPANE  
**Harijs Kalis, Ilmars Kangro**  
*Institute of Mathematics and Computer Science, University of Latvia, Latvia; Rezekne Academy of Technologies, Latvia*
- 12:20 TF189 ON SIMULATION OF SOFT MATTER AND FLOW INTERACTIONS IN BIOMASS PROCESSING APPLICATIONS  
**Uldis Strautins, Maksims Marinaki**  
*Institute of Mathematics and Computer Science, University of Latvia, Latvia*
- 12:40 TF212 IMPROVED AND VECTORISED MATLAB-BASED ALGORITHMS FOR SERIAL AND PARALLEL IMPLEMENTATION OF FINITE ELEMENT METHOD IN LINEAR ELASTICITY  
**Baurice Sylvain Sadjiep Tchuigwa, Jan Krmela, Jan Pokorny, Vladimira Krmelova**  
*University of Pardubice, Czech Republic; Alexander Dubcek University of Trencin, Slovakia*
- 13:00 *PHOTO, LUNCH*
- 14:20 TF047 INVESTIGATION IN CRITICAL RADIUS OF THERMAL INSULATION FOR VERTICAL PIPES  
**Daria Vakulenko, Viktor Mileikovskyyi, Tetiana Tkachenko, Oleksandr Liubarets**  
*Kyiv National University of Construction and Architecture, Ukraine*
- 14:40 TF192 ANALYSIS OF CHANGES IN BRAIN MODEL PARAMETERS AFTER STROKE  
**Olesja Grigorjeva, Zigurds Markovics**  
*Riga Technical University, Latvia*

- 15:00 TF083 MODELLING OF HAZARDOUS OPERATING MODES OF RUBBER-CORD COUPLING IN FEM ENVIRONMENT  
**Dmitrijs Gorbacovs, Pavels Gavrilovs, Janis Eiduks**  
*Riga Technical University, Latvia*
- 15:20 TF109 NEUTRON SHIELDING MATERIAL CONTAINING BASALT-BORON FIBERS AND OSA FOR SPENT NUCLEAR FUEL CONTAINER, NUMERICAL MODELLING  
**Iryna Romanenko, Iveta Novakova, Riho Motlep, Volodymyr Gulik, Andrejs Krasnikovs, Mindaugas Vaisnoras**  
*Riga Technical University, Latvia; UiT the Arctic University of Norway, Norway; University of Tartu, Estonia; Lithuanian Energy Institute, Lithuania*
- 15:40 TF175 DEVELOPMENT AND TESTING OF AUTOMATED CONTROL SYSTEM FOR SEA BUCKTHORN BERRY HARVESTING ROBOT "AGROBOT"  
**Andrejs Stupans, Pavels Maksimkins, Armands Senfelds, Leonids Ribickis**  
*Riga Technical University, Latvia*
- 16:00 COFFEE BREAK
- 16:30 TF233 REDUCING EXTERNALITIES OF LAST MILE DELIVERY THROUGH TAXATION  
**Maris Juruss, Baiba Smite-Roke, Irina Nesterenko**  
*Riga Technical University, Latvia*
- 16:50 TF063 SENSOR NETWORK APPLICATION FOR STUDYING MODAL PROPERTIES OF TURBOMACHINE  
**Aleksej Mironov, Pavel Doronkin, Vitalijs Kuzmickis, Aleksejs Safonovs**  
*D un D Centrs, Latvia; SIA "D un D centrs", Latvia; Riga Technical University, Latvia*
- 17:10 TF172 SOLUTIONS FOR REDUCING (MINIMIZING) FIREFIGHTING TRUCK REPAIRS IN EU COUNTRIES AND IN LATVIA IN PARTICULAR  
**Viktorija Politika, Jelena Pundure, Marina Jarvis**  
*State Fire and Rescue Service, Latvia; Riga Technical University, Latvia; Tallinn University of Technology, Estonia*
- 17:30 TF052 SMALL SHIPMENT SUSTAINABLE DELIVERIES WITHIN AND BETWEEN CITIES  
**Pavels Patlins**  
*Riga Technical College, Latvia*

## Section 4: RENEWABLE AND CONVENTIONAL ENERGY

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5 J.Cakstes blvd., Room 314

Join Zoom Meeting

<https://zoom.us/j/93760670423?pwd=dGVKdDR4ckVZZXpFamZHSDNoZFFlQT09>

Meeting ID: 937 6067 0423

Passcode: kmF3ape89

Chairman: Dr.oec. **Inara Jurgena**,  
*Latvia University of Life Sciences and Technologies, Latvia*

Vice-chairman: Dr.sc.ing. **Algirdas Jasinskas**,  
*Vytautas Magnus University, Lithuania*



- 10:20 TF009 THE EFFECT OF FOREST STAND THINNING ON TREE BIOMASS CARBON STOCK  
**Karlis Bickovskis, Valters Samariks, Aris Jansons**  
*Latvian State Forest Research Institute "Silava", Latvia; Latvian State Forest Research Institute "Silava", Latvia; Latvian State Forest Research Institute "Silava", Latvia*
- 10:40 TF118 ANALYSIS OF SOSNOWSKY'S HOGWEED (*HERACLEUM SOSNOWSKYT*) AND GIANT KNOTWEED (*FALLOPIA SACHALINENSIS*) FOR PRODUCTION OF PRESSED BIOFUEL  
**Gvidas Gramauskas, Algirdas Jasinskas, Egidijus Lemanas, Aivars Aboltins**  
*Vytautas Magnus University, Lithuania; Lithuanian Energy Institute, Lithuania; Latvia University of Life Sciences and Technologies, Latvia*
- 11:00 TF067 EXPERIMENTAL STUDY ON INFLUENCE OF BIOFUELS ON INJECTION CHARACTERISTICS OF DIESEL ENGINE COMMON RAIL SYSTEM  
**Stasys Slavinskas, Paulius Bendziunas**  
*Vytautas Magnus University, Lithuania*
- 11:20 TF026 EFFECT OF STEAM INJECTION ON PERFORMANCE AND EMISSIONS OF AGRICULTURAL DIESEL ENGINE  
**Karlis Amatnieks, Aivars Birkavs**  
*Latvia University of Life Sciences and Technologies, Latvia*
- 11:40 TF039 KINETIC STUDY ON MICROWAVE PRE-TREATED BIOMASS COMBUSTION, HEAT PRODUCTION AND EMISSION COMPOSITION  
**Raimonds Valdmanis, Maija Zake**  
*Institute of Physics, University of Latvia, Latvia*
- 12:00 TF071 ENERGY CONVERSION OF BIOMASS FROM FAST-GROWING PLANTS FOR HEAT PRODUCTION  
**Savelii Kukharets, Algirdas Jasinskas, Olena Sukmaniuk, Mykolai Kukharets**  
*Vytautas Magnus University, Lithuania; Polissia National University, Ukraine*
- 12:20 TF103 POTENTIAL OF RENEWABLE ENERGY COMMUNITIES IN LATVIA'S ENERGY SECTOR TRANSFORMATION  
**Ivars Kudrenickis, Gaidis Klavs, Janis Rekis**  
*Institute of Physical Energetics, Latvia*
- 12:40 TF104 BIOGAS POTENTIAL FROM BIODIESEL PRODUCTION RESIDUES  
**Vilis Dubrovskis, Imants Plume**  
*Latvia University of Life Sciences and Technologies, Latvia*
- 13:00 *PHOTO, LUNCH*
- 14:20 TF105 BIOMETHANE PRODUCTION FROM PELLETS OF HORSE MANURE AND LITTER MIXTURE  
**Vilis Dubrovskis, Imants Plume**  
*Latvia University of Life Sciences and Technologies, Latvia*

- 14:40 TF128 PRODUCTION OF BIOGAS FROM GRASS AT VARIOUS PRE-TREATMENT AND ANAEROBIC FERMENTATION TEMPERATURES UNDER INFLUENCE OF MAGNETIC FIELD  
**Imants Plume, Eduards Azits, Vilis Dubrovskis, Lauris Plume**  
*Latvia University of Life Sciences and Technologies, Latvia*
- 15:00 TF228 EFFICIENCY OF DECENTRALIZED HEAT SUPPLY BASED ON TRADITIONAL HEAT GENERATORS WITH STEAM-COMPRESSION CONVERSION OF ENERGY FROM LOW-TEMPERATURE SOURCES  
**Vitaly Petrash, Vitaly Baryshev, Leonid Shevchenko, Elina Geraskina**  
*Odessa State Academy of Civil Engineering and Architecture, Ukraine*
- 15:20 TF110 POSSIBILITIES AND BENEFITS OF USING PHOTOVOLTAIC POWER PLANTS WITH MICROINVERTERS IN RURAL AREAS  
**Vytautas Adomavicius, Gintvile Simkoniene, Artem Dedenok**  
*Kaunas University of Technology, Lithuania; Lithuanian Maritime Academy, Lithuania*
- 15:40 TF111 USEFULNESS OF SMALL-SCALE STAND-ALONE HYBRID SOLAR-WIND POWER PLANTS IN RURAL AREAS  
**Vytautas Adomavicius, Gintvile Simkoniene, Artem Dedenok**  
*Kaunas University of Technology, Lithuania; Lithuanian Maritime Academy, Lithuania*
- 16:00 COFFEE BREAK
- 16:30 TF035 CHANGES IN ELECTRIC CAR ENERGY CONSUMPTION DEPENDING ON MASS  
**Dainis Berjoza, Inara Jurgena, Jiri Masek**  
*Latvia University of Life Sciences and Technologies, Latvia; Czech University of Life Sciences Prague, Czech Republic*
- 16:50 TF121 IMPACT OF ASH OBTAINED AFTER MULTI-CROP PELLETT BURNING ON SPRING BARLEY FERTILIZATION  
**Algirdas Jasinskas, Rita Petlickaite, Marius Praspaliauskas, Kestutis Romaneckas, Ausra Sinkeviciene**  
*Vytautas Magnus University, Lithuania; Lithuanian Energy Institute, Lithuania*
- 17:10 TF183 UPCOMING WATER DEFICIT IN CENTRAL ASIA RURAL REGIONS AND PERSPECTIVES OF GREEN HYDROGEN PRODUCTION  
**Vladislav Zavadskiy, Gita Revalde**  
*Almaty University of Power Engineering and Telecommunication, Kazakhstan; Riga Technical University, Latvia*
- 17:30 TF202 SUN-POWERED WHEELS: PV CHARGERS FOR SHARED E-SCOOTERS TO MITIGATE URBAN CO<sub>2</sub> EMISSIONS  
**Aivars Rubenis, Leslie R. Adrian, Martins Garkevics**  
*Latvia University of Life Sciences and Technologies, Latvia; Riga Technical University, Latvia; SIA "Lesla Latvia", Latvia; SIA "Sustainable Mobility Technologies", Latvia*
- 17:50 TF207 DEFINITION OF NEW TECHNICAL-ECONOMIC PERFORMANCE INDICATORS TO BETTER MONITOR THE PRODUCTION EFFICIENCY OF WINERIES  
**Marco Bietresato, Gellio Ciotti, Alessandro Zironi, Roberto Zironi, Rino Gubiani**  
*Universita degli Studi di Udine, Italy*

## Section 5: ENGINEERING ECONOMICS AND ENGINEERING EDUCATION

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5 J.Cakstes blvd., Room 336

Join Zoom Meeting

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Chairman: Dr.paed. **Natalija Vronska**,  
*Latvia University of Life Sciences and Technologies, Latvia*

Vice-chairman: Dr.paed. **Baiba Briede**,  
*Latvia University of Life Sciences and Technologies, Latvia*



- 10:20 TF122 COMPETENCE DEVELOPMENT OF LABOUR PROTECTION SPECIALISTS IN CIVIL PROTECTION STUDIES  
**Dace Brizga, Olga Miezite, Kristine Andrejeva, Linards Sisenis**  
*Latvia University of Life Sciences and Technologies, Latvia*
- 10:40 TF073 ENGINEERING STUDENT PERCEPTIONS OF AI TECHNOLOGY IMPLEMENTATION IN ESP  
**Tatjana Sinkus, Inese Ozola**  
*Latvia University of Life Sciences and Technologies, Latvia*
- 11:00 TF011 USE OF INNOVATIVE DIGITAL EDUCATION TECHNOLOGIES IN HIGHER SCHOOL DURING DISTANCE LEARNING  
**Inna Savytska, Oksana Bulgakova, Lesya Zbaravska, Iryna Mushenyk, Adolfs Rucins**  
*National University of Life and Environmental Sciences of Ukraine, Ukraine; Podillia State University, Ukraine; Latvia University of Life Sciences and Technologies, Latvia*
- 11:20 TF012 PROFESSIONALLY ORIENTED LABORATORY PRACTICUM IN PHYSICS FOR ENGINEERING STUDENTS  
**Inna Savytska, Oksana Bulgakova, Lesya Zbaravska, Mykhailo Torchuk, Adolfs Rucins**  
*National University of Life and Environmental Sciences of Ukraine, Ukraine; Podillia State University, Ukraine; Latvia University of Life Sciences and Technologies, Latvia*
- 11:40 TF014 PHYSICAL TASKS AND THEIR FUNCTIONS IN TRAINING FUTURE SPECIALISTS IN AGRICULTURAL AND TECHNICAL INDUSTRY  
**Oksana Bulgakova, Inna Savytska, Lesya Zbaravska, 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 TF013 IMPLEMENTATION OF PROFESSIONAL ORIENTATION OF THEORETICAL TRAINING IN PHYSICS FOR STUDENTS OF ENGINEERING AND PEDAGOGICAL SPECIALTIES  
**Inna Savytska, Oksana Bulgakova, Lesya Zbaravska, Adolfs Rucins, Mykhailo Torchuk, Olena Podobied**  
*National University of Life and Environmental Sciences of Ukraine, Ukraine; Podillia State University, Ukraine; Latvia University of Life Sciences and Technologies, Latvia; Dragomanov Ukrainian State University, Ukraine*
- 12:20 TF043 FORMATION OF SELF-EDUCATIONAL COMPETENCE OF FUTURE ENGINEERS AS CONTEMPORARY PEDAGOGICAL PROBLEM  
**Oksana Bulgakova, Inna Savytska, 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*

- 12:40 TF042 FORMATION OF PROFESSIONAL COMPETENCE OF FUTURE AGRICULTURAL ENGINEERING SPECIALISTS STUDYING DISCIPLINE "MAINTENANCE OF MACHINERY AND EQUIPMENT"  
**Oksana Bulgakova, Inna Savytska, Lesya Zbaravska, Ilmars Dukulis, Mykhailo Torchuk, Adolfs Rucins, Oksana Zakhutska**  
*National University of Life and Environmental Sciences of Ukraine, Ukraine; Podillia State University, Ukraine; Latvia University of Life Sciences and Technologies, Latvia*
- 13:00 *PHOTO, LUNCH*
- 14:20 TF168 ON HOMEWORK ROLE IN MATHEMATICS TEACHING AT RIGA TECHNICAL UNIVERSITY  
**Natalja Budkina, Gerda Dubkevicha, Aija Pola**  
*Riga Technical University, Latvia*
- 14:40 TF216 AI-BASED MATHEMATICS LEARNING PLATFORMS IN UNDERGRADUATE ENGINEERING STUDIES: ANALYSES OF USER EXPERIENCES  
**Anna Vintere, Elena Safiulina, Olga Panova**  
*Latvia University of Life Sciences and Technologies, Latvia; TTK University of Applied Sciences, Estonia; Estonian University of Life Sciences, Estonia*
- 15:00 TF160 DIAGNOSTICS OF COMPETITIVE POTENTIAL OF AGRICULTURAL ENTERPRISES IN UKRAINE DURING WAR  
**Oleksandr Nykytiuk, Olesia Lynovytska, Innola Novytkova, Andrii Dinets**  
*Kyiv Agrarian University, National Academy of Agrarian Sciences of Ukraine, Ukraine*
- 15:20 TF017 EFFECTIVE PROJECT MANAGEMENT PRACTICES IN CONSTRUCTION INDUSTRY: QUANTITATIVE STUDY  
**Rashmi Jaymin-Sanchaniya, Dany Thomson, Antra Kundzina, Ineta Geipele**  
*Riga Technical University, Latvia*
- 15:40 TF148 ENERGY EFFICIENCY IMPROVEMENT SUPPORT PROGRAMMES FOR PRIVATE BUILDINGS IN LATVIA  
**Gunita Mazure**  
*Latvia University of Life Sciences and Technologies, Latvia*
- 16:00 *COFFEE BREAK*
- 16:30 TF198 ENERGY EFFICIENT RENOVATION OF MULTI-APARTMENT BUILDINGS: MANAGEMENT, ECONOMIC AND ENGINEERING ASPECTS  
**Ivars Kudrenickis, Raimonds Ernsteins, Liga Biezina, Rasa Ikstena**  
*Institute of Physical Energetics, Latvia; University of Latvia, Latvia*
- 16:50 TF101 PROFITABILITY OF SUGAR BEET PRODUCTION IN 2022/2023 CAMPAIGN ON EXAMPLE OF LUBLIN VOIVODESHIP  
**Zbigniew Krzysiak**  
*University of Life Sciences in Lublin, Poland*
- 17:10 TF076 CASE STUDY OF GRAIN EXPORT ROUTS CHANGES FOR UKRAINE IN 2022-2023  
**Valerijs Skribans, Natalia Maslii, Maryna Demianchuk**  
*Riga Technical University, Latvia; Odesa I.I.Mechnikov National University, Ukraine; University of Warsaw, Poland*
- 17:30 TF045 ABOUT IRR AND NEW INVESTMENT PRIORITY INDEX  
**Manfred Sneps-Sneppe, Dmitry Smirnov**  
*Ventspils University of Applied Sciences, Latvia*
- 17:50 TF080 TRANSPORT SECTOR TECHNOLOGICAL SHIFTS AND INTERSECTORAL LINKAGES IN LATVIA  
**Astra Auzina-Emsina, Inguna Jurgelane-Kaldava, Agnese Batenko, Linda Kelle**  
*Riga Technical University, Latvia*

***Friday, 24 May***

- 8<sup>30</sup> – 9<sup>00</sup>                    Gathering at the faculty 5 J. Čakste blvd.
- 9<sup>30</sup> – 11<sup>00</sup>                    Excursion ZELT Smiltsērķšķi (Sea buckthorn garden), return via Jelgava
- 13<sup>00</sup> – 14<sup>00</sup>                    Excursion to the Ķegums Energy Museum
- 14<sup>15</sup> – 15<sup>15</sup>                    Lunch in Lielvārde café “Panna”
- 15<sup>40</sup>                                Skrīveru sweets
- 16<sup>30</sup>                                Going to Jelgava

The largest *Sea buckthorn* garden of single variety sea buckthorn in Latvia. ZELT garden of sea buckthorn is located in Jelgava Region, Platone Parish, on the bank of the River Platone. This year the garden area has already reached 36 hectares. ZELT sea buckthorn that are grown in Latvia are unique – products made from it are rich in vitamins, amino acids and antioxidants and are perfect for health, for strengthening immunity, for nutrition, as well as for beauty care and maintaining healthy skin.



<https://www.zelt.bio/en>



The exhibition of the museum tells the story of Latvia’s energy history – from the first electric light bulb to the launch of Ķegums HPP and the growth of Latvenergo Group into one of the largest energy supply companies in the Baltic states. The open-air exposition of the museum displays unique industrial heritage – evidence of the history of technology – turbines of Ķegums and Pļaviņas HPPs.

<https://latvenergo.lv/en/energetikas-muzejs/ekspozicija-keguma>

The excursion to the company "Skrīveru saldumi" will give the opportunity to taste the famous Gotiņa products. The company's motto is: Combine the healthy with the sweet.

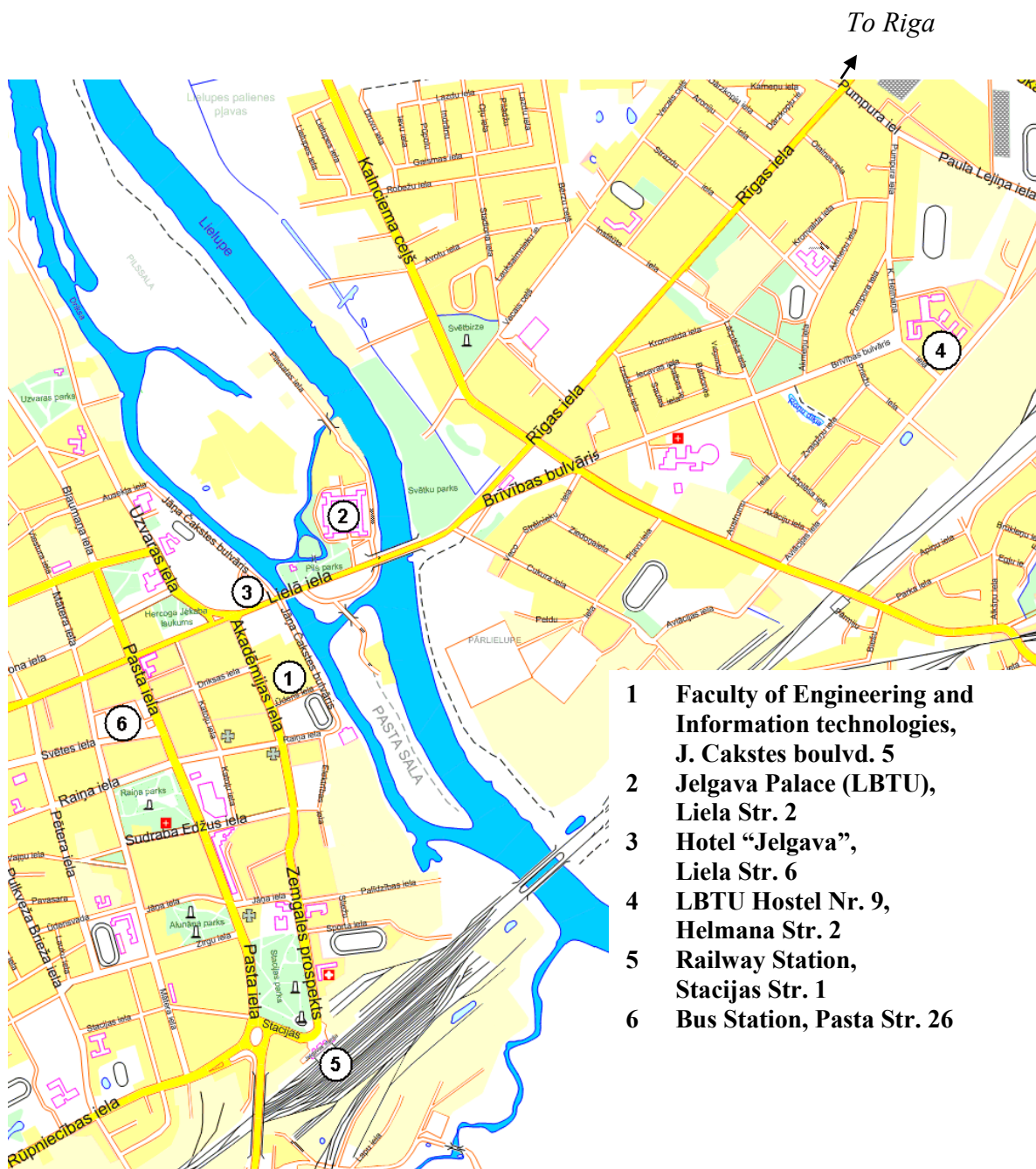


<https://skriveru.com/en/index>









- 1 Faculty of Engineering and Information technologies, J. Čakstes boulvd. 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

*Address of the Conference Committee*

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**<http://www.tf.lbtu.lv/conference/>**