

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



**24<sup>th</sup> International Scientific Conference**

# **ENGINEERING FOR RURAL DEVELOPMENT**

**PROGRAMME**



**ISC**  
**ERDev**



**Wednesday, 21 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, 22 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>** Plenary session,  
5 J. Cakstes blvd., Room 314  
Welcome speech  
**Gatis Vitols,**  
*LBTU,*  
Vice-rector of science  
**Ruslans Smigins,**  
*Faculty of Engineering and Information Technologies,*  
Dean

**10<sup>15</sup> – 10<sup>50</sup>** **Aivars Aboltins,**  
*Conference programme committee,*  
Chairman  
Research on hydrogen use in national economy of Latvia  
**Aigars Laizans**  
*Faculty of Engineering and Information Technologies,*  
Professor

Join Zoom Meeting  
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Passcode: umX5reb3y



<https://zoom.us/j/91087996903?pwd=XDPGO9LLL5ljgcltkWp9vI50wq6aqK.1>

**11<sup>00</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, 23 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:***

Aivars Aboltins, Latvia University of Life Sciences and Technologies, Latvia

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Mariusz Adamski, Bialystok University of Technology, Poland  
Zhaulyt 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  
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Jan Dizo, University of Zilina, Slovakia  
Givi Gavardashvili, Georgian Technical University, Georgia  
Marek Gaworski, Warsaw University of Life Science, Poland  
Edwin Gevorkyan, Ukrainian State University of Railway Transport, Ukraine  
Algirdas Jasinskas, 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  
Aigars Laizans, Latvia University of Life Sciences and Technologies, Latvia  
Chou Li-Chen, Shantou University, China  
Tomasz Lipinski, University of Warmia and Mazury in Olsztyn, Poland  
Francesco Marinello, University of Padova, Italy  
Agris Nikitenko, Riga Technical University, Latvia  
Juri Olt, Estonian University of Life Sciences, Estonia  
Vitālijs Osadčuks, Latvia University of Life Sciences and Technologies, Latvia  
Andrea Pezzuolo, University of Padova, Italy  
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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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***Members:***

Aivars Āboltniņš, Dainis Berjoza, Ilmārs Dukulis, Ainārs Galiņš, Ināra Jurgena, Aivars Kaķītis, Liene Kanceviča, Janis Kjakste, Māris Mangalis, Vitālijs Osadčuks, Dace Rotgalve-Birzieta, Ādolfs Ruciņš, Ruslans Šmigins, Natālija Vronska, Olafs Vronskis

## Abstracted and indexed (depending on volume)

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Conference homepage

ENGINEERING FOR RURAL DEVELOPMENT is available online at  
<https://www.iitf.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**



Weedbot - High precision laser weeding  
technology  
<https://weedbot.eu/>

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



## Section 1: AGRICULTURAL MACHINERY

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5 J.Cakstes blvd., **Room 326**,

Join Zoom Meeting

<https://zoom.us/j/92501232098?pwd=iclhSK4toNDD8CAjNTzaEKrotszbH.1>

Meeting ID: 925 0123 2098

Passcode: CvvKqS95R

Chairman: Dr.sc.ing. **Adolfs Rucins**,  
*Latvia University of Life Sciences and Technologies, Latvia*  
Vice-chairman: Dr.sc.ing. **Egle Jotautiene**  
*Vytautas Magnus University, Lithuania*



- 11:00 TF021 STUDY OF *PROPYLEA QUATUORDECIMPUNCTATA* FEED CONSUMPTION DYNAMICS AT VARIOUS STAGES OF ONTOGENESIS IN REARING TECHNOLOGY  
**Vitalii Barkar, Tetiana Markina, Volodymyr Bulgakov, Aivars Aboltins, Adolfs Rucins, Anatoliy Zaryshnyak**  
*Engineering and Technological Institute "Biotehnika" of NAAS, Ukraine; Kharkiv National Pedagogical University named after H. S. Skovoroda, Ukraine; National University of Life and Environmental Sciences of Ukraine, Ukraine; Latvia University of Life Sciences and Technologies, Latvia; NAAS of Ukraine, Ukraine*
- 11:20 TF121 INVESTIGATION OF VIBRATION DYNAMICS IN VERTICAL PLANE OF TRACTORS WITH SINGLE AND DOUBLED WHEELS  
**Volodymyr Bulgakov, Valerii Adamchuk, Roman Antoshchenkov, Ivan Holovach, Adolfs Rucins, Aivars Aboltins, Ivan Beloev, Ivan Halych, Oleksandra Trokhaniak, Yevhen Ihnatiev**  
*National University of Life and Environmental Sciences of Ukraine, Ukraine; Institute of Mechanics and Automatics of Agroindustrial Production of the NAAS of Ukraine, Ukraine; State Biotechnological University, Ukraine; Latvia University of Life Sciences and Technologies, Latvia; "Angel Kanchev" University of Ruse, Bulgaria; Dmytro Motornyi Tavria State Agrotechnological University, Ukraine*
- 11:40 TF123 ASSESSMENT OF AERODYNAMIC SCREEN EFFICIENCY OF VIBRO-FRICTIONAL SEED SEPARATOR IN PROCESSING SMALL SEED MATERIALS  
**Volodymyr Bulgakov, Roman Antoshchenkov, Anton Nykyforov, Adolfs Rucins, Aivars Aboltins, Ivan Beloev, Ivan Holovach, Oleksandra Trokhaniak**  
*National University of Life and Environmental Sciences of Ukraine, Ukraine; State Biotechnological University, Ukraine; Latvia University of Life Sciences and Technologies, Latvia; "Angel Kanchev" University of Ruse, Bulgaria*
- 12:00 TF088 BRIEF OVERVIEW OF UNMANNED AERIAL VEHICLE (UAV) SPRAY APPLICATIONS: OPPORTUNITIES AND CHALLENGES  
**Alessia Farella, Francesco Paciolla, Tommaso Quartarella, Simone Pascuzzi**  
*University of Bari Aldo Moro, Italy*
- 12:20 TF065 PREDICTION OF ENVIRONMENTAL IMPACT OF HYBRID-ELECTRIC TRACTOR USING ITS DIGITAL MODEL  
**Francesco Paciolla, Alessia Farella, Giovanni Popeo, Simone Pascuzzi**  
*University of Bari Aldo Moro, Italy*
- 12:40 TF142 COMPARISON OF TWO ELECTROMAGNETOMETERS FOR SURVEYING SOIL ELECTRICAL CONDUCTIVITY: CDM MINI-EXPLORER AND SOIL EXPLORER  
**Giovanni Popeo, Alessia Farella, Francesco Vicino, Simone Pascuzzi**  
*University of Bari Aldo Moro, Italy*
- 13:00  **PHOTO, LUNCH**
- 14:20 TF175 DESIGN AND STRUCTURAL ANALYSIS OF NEW MOWER DESIGN CAPABLE OF WORKING IN AREAS WITH 45° SLOPE  
**Lukasz Gierz, Marcin Zastempowski, Pawel Wysocki**  
*Poznan University of Technology, Poland; Bydgoszcz University of Science and Technology, Poland*

|       |   |  |
|-------|---|--|
| 14:40 | TF158   | EXPERIMENTAL INVESTIGATION ON DYNAMICS OF PRECISION SPREADING OF GRANULAR FERTILIZERS<br><b>Egle Jotautiene, Antanas Juostas, Edvardas Vaiciukevicius, Rolandas Domeika</b><br><i>Vytautas Magnus University, Lithuania</i>  |
| 15:00 | TF122   | ANALYSIS OF IMAGES OF VINEYARD WITH COMPUTER VISION MODELS FOR DATA UNDERSTANDING INTERPRETATION<br><b>Francesco Vicino, Francesco Paciolla, Tommaso Quartarella, Simone Pascuzzi</b><br><i>University of Bari Aldo Moro, Italy</i>  |
| 15:20 | TF132   | ADVANCED PNEUMATIC CONVEYING SYSTEMS FOR GRANULAR AGRIFOOD MATERIALS<br><b>Raluca-Adriana Zota, Sorin-Stefan Biris, Mihaela-Florentina Dutu, Nelus-Evelin Gheorghita, Alina-Daiana Ionescu</b><br><i>National University of Science and Technology Politehnica of Bucharest, Romania</i>   |
| 15:40 | TF025   | INVESTIGATION AND JUSTIFICATION OF WORKING BODY PARAMETERS OF COMBINED SOIL TILLAGE IMPLEMENT SCREW SECTION<br><b>Volodymyr Bulgakov, Olena Glazunova, Oleksandra Trokhaniak, Adolfs Rucins, Aivars Aboltins, Mykola Klendii, Ivan Beloev, Valentina Vasileva</b><br><i>National University of Life and Environmental Sciences of Ukraine, Ukraine; Latvia University of Life Sciences and Technologies, Latvia; Separated Subdivision of National University of Life and Environmental Sciences of Ukraine "Berezhany Agrotechnical Institute", Ukraine; "Angel Kanchev" University of Ruse, Bulgaria</i> |
| 16:00 |    | COFFEE BREAK   |
| 16:30 | TF066   | DESIGN OF CHAINS OF CHAIN CONVEYOR AS PART OF MOBILE WORKING MACHINE MODIFICATION<br><b>Miroslav Blatnický, Jan Dizo, Alyona Lovska, Stanislav Semenov</b><br><i>University of Zilina, Slovakia; Volodymyr Dahl East Ukrainian National University, Ukraine</i>  |
| 16:50 | TF036   | ANALYSIS OF AGRICULTURAL TRACTOR CABIN STRENGTH<br><b>Jacek Caban, Aleksander Nieoczym, Leszek Gardynski, Jan Vrabel</b><br><i>Lublin University of Technology, Poland; University of Zilina, Slovakia</i>   |
| 17:10 | TF162   | INVESTIGATION OF POSSIBILITIES TO APPLY THE METHOD OF TENSOR TRANSFORMATIONS OF ELECTRIC NETWORKS IN SYNTHESIS OF CONTROL STRUCTURES IN AGRO-INDUSTRIAL COMPLEX<br><b>Volodymyr Bulgakov, Roman Antoshchenkov, Anton Nykyforov, Adolfs Rucins, Aivars Aboltins, Ivan Beloev, Ivan Holovach, Oleksandra Trokhaniak</b><br><i>National University of Life and Environmental Sciences of Ukraine, Ukraine; State Biotechnological University, Ukraine; Latvia University of Life Sciences and Technologies, Latvia; "Angel Kanchev" University of Ruse, Bulgaria</i>  |
| 17:30 | TF163   | THEORETICAL INVESTIGATION OF MOVEMENT OF ROUND-SHAPE TABLE BEET ROOTS INSIDE SPIRAL VIBRATION TYPE CLEANER<br><b>Volodymyr Bulgakov, Ivan Holovach, Volodymyr Martyniuk, Oleksandra Trokhaniak, Aivars Aboltins, Adolfs Rucins, Juri Olt, Yevhen Ihnatiev</b><br><i>National University of Life and Environmental 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</i>   |
| 17:50 | TF072   | STUDY AND SETTING-UP OF AUTONOMOUS TERRESTRIAL ROVER SUITABLE FOR MONITORING ACTIVITIES IN "TENDONE" TRAINED VINEYARDS<br><b>Simone Pascuzzi, Francesco Paciolla, Giovanni Popeo, Tommaso Quartarella, Francesco Vicino, Alessia Farella</b><br><i>University of Bari Aldo Moro, Italy</i>   |
| 18:10 | TF026   | INVESTIGATION IN WORKING BODY POWER PARAMETERS AND ENERGY CAPACITY FOR REMOVING DAMAGED SOIL FROM SURFACE OF CRATERS<br><b>Volodymyr Bulgakov, Olena Glazunova, Ivan Holovach, Oleksandra Trokhaniak, Zinoviy Ruzhylo, Adolfs Rucins, Aivars Aboltins, Gencho Popov, Ivan Beloev, Valentina Vasileva</b><br><i>National University of Life and Environmental Sciences of Ukraine, Ukraine; Latvia University of Life Sciences and Technologies, Latvia; "Angel Kanchev" University of Ruse, Bulgaria</i>   |
| 19:00 |  | CONFERENCE DINNER  |

## Section 2: MATERIAL SCIENCE AND GHG EMISSIONS

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5 J.Cakstes blvd., **Room 312**,

Join Zoom Meeting


<https://zoom.us/j/93175223413?pwd=jUxPigCcHdFLBmgU9vA59THaH0Fs2q.1>

Meeting ID: 931 7522 3413

Passcode: XiS7ivPr9

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*Latvia University of Life Sciences and Technologies, Latvia*  
Vice-chairman: Dr.sc.ing. **Miroslaw Rucki**  
*Casimir Pulaski Radom University, Poland*



- 11:00 TF089 SELECTION AND JUSTIFICATION OF BINDING MATERIAL FOR POLYMER-GRAVEL COMPOSITE OF BLOCK TYPE INVERSE GRAVEL FILTER  
**Gulzada Umirova, Andrii Sudakov, Aidar Kuttybayev, Diana Sudakova**  
*Kazakh National Technical University named after K.I. Satpayev, Kazakhstan; Dnipro University of Technology, Ukraine*
- 11:20 TF210 INNOVATIVE SOLUTIONS FOR PHOSPHORUS REMOVAL IN MUNICIPAL WASTEWATER: PRIMARY AND POST-TREATMENT APPROACHES  
**Dagnija Grabuza, Linda Grinberga, Ruta Ozola-Davidane, Julija Karasa**  
*Latvia University of Life Sciences and Technologies, Latvia; University of Latvia, Latvia*
- 11:40 TF188 PROSPECTS FOR RECYCLING THERMAL INSULATION MATERIALS  
**Andrii Khaliiev, Oleksandr Novytskyi, Mykola Stashko**  
*Sumy National Agrarian University, Ukraine; Ukrainian State University of Railway Transport, Ukraine*
- 12:00 TF111 INFLUENCE OF VARIOUS FACTORS ON DETERMINATION ACCURACY OF SURFACE PROFILE ELEMENTS FOR ENGINEERING CALCULATIONS  
**Natalija Bulaha**  
*Riga Technical University, Latvia*
- 12:20 TF085 INNOVATIVE TECHNOLOGIES FOR EQUIPPING OPERATIONAL WELLS WITH SYSTEMS FOR MECHANICAL PURIFICATION OF LIQUID AND GASEOUS MINERAL RESOURCES  
**Gulzada Umirova, Andrii Sudakov, Dmytro Pobidynskyi, Askar Seidaliyev**  
*Kazakh National Technical University named after K.I. Satpayev, Kazakhstan; Dnipro University of Technology, Ukraine; Caspian University of Technology and Engineering named after Sh. Yessenov, Kazakhstan*
- 12:40 TF179 MATHEMATICAL MODEL OF REED GRIPPER DYNAMICS CONSIDERING FLEXIBILITY OF STEM  
**Olafs Vronskis, Aivars Kakitis**  
*Latvia University of Life Sciences and Technologies, Latvia*
- 13:00  *PHOTO, LUNCH*
- 14:20 TF134 CONSTRUCTION WASTE MANAGEMENT IN CONTEXT OF SUSTAINABLE DEVELOPMENT CASE STUDY OF POLYGON "BRAKŠĶI" JEGAVA MUNICIPALITY, LATVIA  
**Sandra Gusta, Nils Mezsargs**  
*Latvia University of Life Sciences and Technologies, Latvia*
- 14:40 TF035 EVALUATION OF BONE MEAL GRANULAR FERTILIZER PHYSICAL MECHANICAL PROPERTIES  
**Ramunas Mieldazys, Egle Jotautiene, Algirdas Jasinskas, Grazvydas Juodisius**  
*Vytautas Magnus University, Lithuania*



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|-------|---|---|
| 15:00 | TF143   | MECHANICAL PROPERTIES OF ECOLOGICAL COMPOSITE MATERIAL WITH OIL SHALE ASH PARTICLES<br><b>Ilgar Jafarli, Armands Grickus, Igors Tipans, Laimdota Snidere</b><br><i>Riga Technical University, Latvia; RTU Liepaja Academy, Latvia</i>   |
| 15:20 | TF120   | CHARACTERIZATION AND ASSESSMENT OF PHYSICAL AND MECHANICAL PROPERTIES OF ROSEHIP ( <i>ROSA CANINA</i> L.) FRUITS AND SEEDS<br><b>Alina-Daiana Ionescu, Gheorghe Voicu, Elena-Madalina Stefan, Gabriel-Alexandru Constantin</b><br><i>National University of Science and Technology Politehnica of Bucharest, Romania</i>  |
| 15:40 | TF110   | DEVELOPMENT AND OPTIMIZATION OF HARD ALLOY COMPOSITIONS FOR ROCK DESTRUCTION<br><b>Oleksandr Pashchenko, Oleksandr Kamyshatskyi, Elmira Omirzakova, Sara Ratova</b><br><i>Dnipro University of Technology, Ukraine; Ukrainian State University of Science and Technologies, Ukraine; Satbayev University, Kazakhstan</i>  |
| 16:00 |    | COFFEE BREAK  |
| 16:30 | TF081   | ANALYSIS OF WC-CO AND ZRO <sub>2</sub> -WC MATRICES FROM PERSPECTIVE OF WEAR RESISTANCE OF DIAMOND-REINFORCED COMPOSITES<br><b>Boranbay Ratov, Mirosław Rucki, Edvin Hevorkian, Volodymyr Mechnik, Mykola Bondarenko, Anita Bialkowska, Dora Kroisova</b><br><i>Kazakh National Technical University named after K.I. Satpayev, Kazakhstan; Casimir Pulaski Radom University, Poland; Ukrainian State University of Railway Transport, Ukraine; V.Bakul Institute for Superhard Materials NAS, Ukraine; Technical University at Liberec, Czech Republic</i> |
| 16:50 | TF079   | DISTRIBUTION OF CHROMIUM IN TRANSITION LAYER OF BIMETALLIC CASTINGS<br><b>Yevhenii Aftandiliants, Svyatoslav Gnyloskurenko, Helena Meniailo, Valerii Khrychikov</b><br><i>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</i>  |
| 17:10 | TF055   | INFLUENCE OF DIFFERENT VENEER SOAKING TECHNOLOGICAL FACTORS ON REACTION TO FIRE PERFORMANCE OF BIRCH PLYWOOD<br><b>Edgars Buksans, Ilze Kalnina</b><br><i>Forest and Wood Products Research and Development Institute, Latvia; Latvia University of Life Sciences and Technologies, Latvia; AS "Latvijas finieris", Latvia</i>  |
| 17:30 | TF040   | EVALUATION OF SOIL AMENDMENT EFFECT ON FOLIAR NUTRIENT COMPOSITION AS BASIS FOR DEVELOPING PREDICTIVE TECHNOLOGIES FOR FOREST STAND RESPONSE<br><b>Guna Petaja, Zaiga Anna Zvaigzne, Dana Purvina, Andis Lazdins</b><br><i>Latvian State Forest Research Institute "Silava", Latvia; Latvian Academy of Sciences, Latvia</i>  |
| 17:50 | TF015   | RESULTS OF PILOT STUDY COMPARING GREENHOUSE GAS FLUXES FROM FORWARDING RUTS AND CONTROL AREA IN MOIST MINERAL SOIL AFTER CLEARFELLING<br><b>Andis Lazdins, Aldis Butlers, Dana Purvina</b><br><i>Latvian Academy of Sciences, Latvia; Latvian State Forest Research Institute "Silava", Latvia</i>  |
| 18:10 | TF082   | APPLICATION OF REINFORCEMENT LEARNING AI METHODS FOR SELF-CALIBRATION OF MODULAR OPTICAL ROTARY ENCODERS<br><b>Armantas Piksrys, Donatas Gurauskis, Patryk Osuch, Mirosław Rucki</b><br><i>Vilnius University, Lithuania; Vilnius Gediminas Technical University, Lithuania; Precision Machine Parts Poland Sp. z o.o., Poland; Casimir Pulaski Radom University, Poland</i>  |
| 19:00 |  | CONFERENCE DINNER   |

### Section 3: MODELLING AND SIMULATION

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5 J.Cakstes blvd., **Room 215**,

Join Zoom Meeting

<https://zoom.us/j/99502275429?pwd=g7QWahxIQvysuslFFCQrSaLa1lkkRi.1>

Meeting ID: 995 0227 5429

Passcode: Y8kbY7Bfg

Chairman: Dr.sc.ing. **Aivars Aboltins**,  
*Latvia University of Life Sciences and Technologies, Latvia*  
Vice-chairman: Dr.sc.ing. **Jan Dizo**,  
*University of Zilina, Slovakia*



- 11:00 TF018 RESEARCH OF DYNAMIC LOADING CAPACITY AND STRENGTH OF CONTAINER WHEN TRANSPORTED ON OPEN WAGON  
**Juraj Gerlici, Alyona Lovska, Jan Dizo, Pavlo Rukavishnikov**  
*University of Zilina, Slovakia; Ukrainian State University of Railway Transport, Ukraine*
- 11:20 TF078 SUSTAINABLE LAST-MILE DELIVERY TECHNOLOGIES IN REGIONAL PERSPECTIVE AND POLICY-MAKING: INPUT-OUTPUT ANALYSIS  
**Astra Auzina-Emsina**  
*Riga Technical University, Latvia*
- 11:40 TF187 HYPERBOLIC TYPE SPLINES FOR SOLVING STATIONARY DIFFUSION PROBLEMS IN 3-D DOMAIN WITH SPECIAL SOURCE FUNCTIONS  
**Harijs Kalis, Ilmars Kangro, Aivars Aboltins**  
*Institute of Mathematics and Computer Science, University of Latvia, Latvia; Rezekne Academy of Riga Technical University, Latvia; Latvia University of Life Sciences and Technologies, Latvia*
- 12:00 TF020 ANALYSIS OF LOCOMOTIVE DRIVER RIDE COMFORT  
**Jan Dizo, Miroslav Blatnický, Alyona Lovska, Vadym Ishchuk, Martin Bucko**  
*University of Zilina, Slovakia*
- 12:20 TF098 DESIGN AND FEA SIMULATION OF SELF-CLEANING PUBLIC BENCH  
**Kithalawalana Jayathilaka, Pomudhi Gayathmi Pathirage**  
*Riga Technical University, Latvia; The British School in Colombo, Sri Lanka*
- 12:40 TF125 EVALUATING VIBRATIONAL AND STRUCTURAL STABILITY OF OSSEOINTEGRATED FEMORAL PROSTHESES: FINITE ELEMENT APPROACH  
**Kithalawalana Jayathilaka, Vladislavs Jevstignejevs, Oskars Gainutdinovs**  
*Riga Technical University, Latvia; SIA "Tehniskā Ortopēdija", Latvia*
- 13:00  **PHOTO, LUNCH**
- 14:20 TF141 CONTROLLING SHAPE OF FLAME WITH DIFFERENTIABLE PHYSICS  
**Laura Leja, Karlis Freivalds**  
*University of Latvia, Latvia; Institute of Electronics and Computer Science, Latvia*
- 14:40 TF155 ON MODELLING AND SIMULATION OF AUTO-IGNITION IN PARTICLE-LADEN BIOMASS FLOWS  
**Uldis Strautins, Maksims Marinaki**  
*Institute of Mathematics and Computer Science, University of Latvia, Latvia*
- 15:00 TF053 STUDY OF GRID COVER STRUCTURE BEHAVIOR  
**Nataliia Sribniak, Liudmyla Tsyhanenko, Serhii Halushka, Hennadii Tsyhanenko, Valerii Lutskovskyi, Oleksandr Dranik**  
*Sumy National Agrarian University, Ukraine*

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|-------|---|---|
| 15:20 | TF095   | SUPPLIER RELIABILITY PREDICTION IN CONSTRUCTION WITH ARTIFICIAL INTELLIGENCE AND ADAPTIVE EVALUATION METRICS<br><b>Shirantha Ramanayake, Janis Zvirgzdins, Thilina-Ganganath Weerakoon, Ineta Geipele</b><br><i>Riga Technical University, Latvia; Vilnius Gediminas Technical University, Lithuania</i>    |
| 15:40 | TF112   | EARLY DETECTION OF CATERPILLARS USING ARTIFICIAL INTELLIGENCE<br><b>Sergejs Kodors, Ilmars Apeinans, Imants Vancans, Toms Bartulsons, Imants Zarembo</b><br><i>Rezekne Academy of Riga Technical University, Latvia; Institute of Horticulture (LatHort), Latvia</i>  |
| 16:00 |    | COFFEE BREAK  |
| 16:30 | TF042   | DEVELOPING METHODOLOGY FOR MANAGING CHANGE ORDERS IN CONSTRUCTION PROJECTS USING BIM AND CLOUD COMPUTING<br><b>Mohamed H. Shaban, Ali Amran</b><br><i>Homs University, Syria</i>  |
| 16:50 | TF287   | EVALUATION OF VISUAL ODOMETRY ALGORITHMS FOR TREE NURSERY INSPECTION MACHINES<br><b>Vitalijs Osadcuks, Kristaps Muska, Andrejs Zujevs, Arturs Ardavs</b><br><i>Latvia University of Life Sciences and Technologies, Latvia; Riga Technical University, Latvia</i>   |
| 17:10 | TF096   | STAR TIME SERIES MODELS WITH ASYMMETRIC TRANSITION FUNCTION: ESTIMATION USING R SOFTWARE AND APPLICATIONS FOR LATVIAN ECONOMIC DATA<br><b>Oksana Pavlenko</b><br><i>Riga Technical University, Latvia</i>   |
| 17:30 | TF148   | COMPARISON OF GROSS OUTPUT AND FINAL DEMAND OF INDUSTRY AGRICULTURE, HUNTING, FORESTRY IN THE BALTIC STATES AND FINLAND<br><b>Ilze Balode, Andrejs Jaunzems</b><br><i>Riga Stradins University, Latvia; Ventspils University of Applied Sciences, Latvia</i>  |
| 17:50 | TF071   | INVESTIGATION OF IMPACT OF COLOR SATURATION AND HUE ON NEURAL NETWORK-BASED OBJECT RECOGNITION IN UNDERWATER ENVIRONMENTS<br><b>Andrejs Salms, Uldis Zaimis</b><br><i>Riga Technical University Liepaja Academy, Latvia</i>   |
| 18:10 | TF019   | FORECASTING ENERGY PATTERNS OF BUILDING PROJECTS THROUGH DEEP LEARNING MODELS TOWARD NET-ZERO CONSTRUCTION<br><b>Thilina-Ganganath Weerakoon, Sulaksha Wimalasena, Chaniru Koralagama, Keshmin Senaratna</b><br><i>Vilnius Gediminas Technical University, Lithuania; Riga Technical University, Latvia</i> |
| 19:00 |  | CONFERENCE DINNER   |

## Section 4: RENEWABLE AND CONVENTIONAL ENERGY

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5 J.Cakstes blvd., **Room 314**,

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Chairman: Dr.sc.ing. **Liene Kancevica**,  
*Latvia University of Life Sciences and Technologies, Latvia*  
Vice-chairman: Dr.sc.ing. **Pavel Kic**  
*Czech University of Life Sciences Prague, Czech Republic*



- 11:00 TF006 ASSESSMENT OF INDOOR AIR HUMIDIFIER PERFORMANCE  
**Pavel Kic**  
*Czech University of Life Sciences Prague, Czech Republic*
- 11:20 TF061 WATER ELECTROLYSIS TECHNOLOGIES: COMPARISON OF MATURITY, OPERATIONAL AND COST EFFICIENCY  
**Andris Backurs, Leo Jansons, Aigars Laizans**  
*Latvia University of Life Sciences and Technologies, Latvia; Riga Technical University, Latvia*
- 11:40 TF190 REVIEW OF LATEST ACHIEVEMENTS IN AGRIVOLTAICS  
**Vytautas Adomavicius, Gintvile Simkoniene, Artem Dedenok**  
*Kaunas University of Technology, Lithuania; Klaipėda University, Lithuania*
- 12:00 TF191 SMALL-SCALE SOLAR-WIND POWER PLANTS FOR RURAL AREAS  
**Vytautas Adomavicius, Gintvile Simkoniene, Artem Dedenok**  
*Kaunas University of Technology, Lithuania; Klaipėda University, Lithuania*
- 12:20 TF136 SOLAR ENERGY CONVERSION MODULE RESEARCH  
**Marius Mickevicius, Egidijus Zvicevicius, Kestutis Ziura, Inga Adamonyte**  
*Vytautas Magnus University, Lithuania*
- 12:40 TF276 ASSESSMENT OF NATURAL AND INDUSTRIAL RESOURCES FOR GREEN HYDROGEN INDUSTRY DEVELOPMENT IN THE BALTIC STATES  
**Ilgmars Lejnicks, Modrite Pelse**  
*Latvia University of Life Sciences and Technologies, Latvia*
- 13:00  **PHOTO, LUNCH**
- 14:20 TF014 ANALYSIS OF INPUT BIOMASS PARAMETER IMPACT ON ELECTRIC CAPACITY FACTOR OF BIOGAS PLANTS  
**Lauris Plume, Imants Plume**  
*Latvia University of Life Sciences and Technologies, Latvia*
- 14:40 TF211 MODELLING ELECTRICITY PRODUCTION FROM 49.9 KWP FIXED VERTICAL AGRI-VOLTAIC POWER PLANT AS FUNCTION OF SPOT SALES IN THE CZECH REPUBLIC  
**Michal Strnad, Libor Matyas, Martin Cisler, Petr Novak**  
*Czech University of Life Sciences Prague, Czech Republic*
- 15:00 TF109 APPLICATION OF MACHINE LEARNING FOR WELLBORE STABILITY ASSESSMENT  
**Samal Muratova, Oleksandr Pashchenko, Volodymyr Khomenko, Abat Zhailiev**  
*Satbayev University, Kazakhstan; Dnipro University of Technology, Ukraine; Caspian University of Technology and Engineering named after Sh. Yessenov, Kazakhstan*
- 15:20 TF069 ENVIRONMENTAL CHARACTERISTICS OF BIODIESEL PRODUCED USING DIFFERENT ALCOHOLS AND HETEROGENEOUS CATALYSTS  
**Ieva Gaide, Andrius Grigas, Violeta Makareviciene, Egle Sendzikiene**  
*Vytautas Magnus University, Lithuania*

- 15:40 TF194 IMPROVING SCOTS PINE REGENERATION ON STAGNATING SITES THROUGH SOIL PREPARATION  
**Karlis Dumins, Toms Arturs Stals, Kristaps Makovskis, Dagnija Lazdina**  
*Latvian State Forest Research Institute "Silava", Latvia*
- 16:00  COFFEE BREAK
- 16:30 TF237 METEOROLOGICAL SENSITIVITY OF TREE-RING WIDTH OF SCOTS PINE AND NORWAY SPRUCE IN DRAINED STAND  
**Karlis Bickovskis, Aris Jansons, Diana Jansone, Roberts Matisons**  
*Latvian State Forest Research Institute "Silava", Latvia; Latvia University of Life Sciences and Technologies, Latvia*
- 16:50 TF107 IMPROVED TECHNIQUE FOR MEASURING RHEOLOGICAL PROPERTIES OF DRILLING FLUID  
**Volodymyr Khomenko, Samal Muratova, Zamanbek Utepov, Arailym Zhanggirkhanova**  
*Dnipro University of Technology, Ukraine; Satbayev University, Kazakhstan; Caspian University of Technology and Engineering named after Sh. Yessenov, Kazakhstan*
- 17:10 TF170 ASSESSMENT OF EFFICIENCY OF SPRAYER FOR AUTOMATIC FIRE-EXTINGUISHING SPRINKLER SYSTEMS  
**Aleksandrs Dobrovolskis, Maris Ziemelis, Vladimir Jemeljanov**  
*Riga Technical University, Latvia*
- 17:30 TF084 APPLICATION OF BIOREACTORS IN PRODUCTION OF ALTERNATIVE PROTEINS - REVIEW  
**Elena-Valeria Vladut, Sorin-Stefan Biris, Mariana Ferdes, Adrian Iosif, Vasile Padureanu**  
*National University of Science and Technology Politehnica of Bucharest, Romania*
- 17:50 TF013 CO-DIGESTION OF CATTLE MANURE WITH PAPER DUST BRIQUETTES  
**Indulis Straume, Vilis Dubrovskis, Imants Plume**  
*Latvia University of Life Sciences and Technologies, Latvia*
- 19:00  CONFERENCE DINNER

5 J.Cakstes blvd., **Room 319**,

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Chairman: Dr.sc.ing. **Dainis Berjoza**,  
*Latvia University of Life Sciences and Technologies, Latvia*  
Vice-chairman: Dr.sc.ing. **Tomas Mickevicius**  
*Kauno kolegija Higher Education Institution, Lithuania*



- 11:00 TF076 IMPACT OF BIODIESEL EXPORTS AND IMPORTS ON NATIONAL ECONOMY OF LATVIA  
**Gunita Mazure, Tatjana Hane, Anita Cesnauska**  
*Latvia University of Life Sciences and Technologies, Latvia*
- 11:20 TF102 COMPARATIVE ANALYSIS OF MATERIAL USE IN URBAN AND RURAL AREAS OF LATVIA:  
FINANCIAL AND ENVIRONMENTAL EFFECTS OF BIM-DRIVEN CONSTRUCTION  
**Soroush Saneimoghaddam, Ineta Geipele, Antra Kundzina, Janis Zvirgzdins**  
*Riga Technical University, Latvia*
- 11:40 TF103 USING PUBLIC-PRIVATE PARTNERSHIPS TO MODERNIZE LATVIA'S INFRASTRUCTURE:  
ACHIEVEMENTS AND TAKEAWAYS  
**Soroush Saneimoghaddam, Ineta Geipele, Antra Kundzina, Janis Zvirgzdins**  
*Riga Technical University, Latvia*
- 12:00 TF011 FACTORS INFLUENCING PROPERTY REUSE FOR AGE-FRIENDLY SOCIAL HOUSING  
DEVELOPMENT: SYSTEMATIC REVIEW  
**Rashmi Jaymin-Sanchaniya, Jurgita Cerneckiene, Ineta Geipele, Antra Kundzina**  
*Riga Technical University, Latvia; Kaunas University of Technology, Lithuania*
- 12:20 TF129 ROLE OF INNOVATION SOURCES FOR EXTERNAL KNOWLEDGE ABSORPTION READINESS  
FOR LATVIAN ENTERPRISES  
**Andris Ozols, Elina Gaile-Sarkane, Valdis Avotins**  
*Riga Technical University, Latvia; Institute of Astronomy of University of Latvia, Latvia*
- 12:40 TF005 SYNERGIZING POLICY, INNOVATION AND BUSINESS SUSTAINABILITY FOR GREENER,  
EFFICIENT AND POLITICALLY ENGAGED RIGA AIRPORT ECOSYSTEM  
**Inese Abolina**  
*University of Latvia, Latvia*
- 13:00  **PHOTO, LUNCH**
- 14:20 TF083 REDUCING AIR RESISTANCE AND FUEL CONSUMPTION IN PASSENGER CAR-CARAVAN  
COMBINATIONS USING ROOF SPOILER PROTOTYPES  
**Dainis Berjoza, Inara Jurgena, Janis Ozols**  
*Latvia University of Life Sciences and Technologies, Latvia*
- 14:40 TF058 OUTSOURCING OF LOGISTICS SERVICES AS STRATEGIC ADVANTAGE OF SUPPLY CHAIN  
**Oleg Zagurskiy, Liliya Savchenko, Oleksandr Domin, Viktoriia Opalko**  
*National University of Life and Environmental Sciences of Ukraine, Ukraine*
- 15:00 TF203 IDLE MOTION DURING PROPULSION OF WHEELCHAIRS WITH DRIVETRAIN SYSTEMS  
EQUIPPED WITH TRANSMISSIONS  
**Lukasz Wargula, Mateusz Kukla**  
*Poznan University of Technology, Poland*
- 15:20 TF004 INVESTIGATION OF PNEUMATIC TIRE OPERATION UNDER LOAD  
**Ramis Zaripov, Valeriy Yessaulkov, Pavels Gavrilovs**  
*Toraighyrov University, Kazakhstan; Riga Technical University, Latvia*

|       |  |   |
|-------|--|---|
| 15:40 | TF174  | INVESTIGATION IN INFLUENCE OF VEHICLE DRIVER SEATING POSITION ON VISIBILITY<br><b>Jonas Matijosius, Rytis Zautra, Tomas Mickevicius</b><br><i>Kauno kolegija Higher Education Institution, Lithuania</i>  |
| 16:00 |   | COFFEE BREAK  |
| 16:30 | TF168  | INFLUENCE OF OIL ADDITIVE ON ENGINE PERFORMANCE<br><b>Tomas Mickevicius, Povilas Saulys</b><br><i>Kauno kolegija Higher Education Institution, Lithuania</i>  |
| 16:50 | TF177  | CHICKEN MANURE AS CLOSED-LOOP CIRCULAR ECONOMY PRODUCT OF POULTRY INDUSTRY<br><b>Vjaceslavs Kocetkovs, Andra Zvirbule</b><br><i>Latvia University of Life Sciences and Technologies, Latvia</i>   |
| 17:10 | TF145  | IMPACT OF FIREFIGHTING VEHICLE TECHNICAL PARAMETERS ON FIREFIGHTING EFFICIENCY<br><b>Viktorija Politika, Jelena Pundure, Vladimir Jemeljanov, Marina Jarvis</b><br><i>State Fire and Rescue Service, Latvia; Riga Technical University, Latvia; Tallinn University of Technology, Estonia</i> |
| 17:30 | TF232  | ACCOUNTING OF EXTRACTED HARVESTING RESIDUES USING FORWARDER BOOM SCALES<br><b>Agris Zimelis, Santa Kaleja, Jordane Champion</b><br><i>Latvian State Forest Research Institute "Silava", Latvia</i>  |
| 17:50 | TF057  | CADASTRAL ACCOUNTING OF LAND POLLUTED AS A RESULT OF MILITARY OPERATIONS IN UKRAINE<br><b>Olha Tykhenko, Andrii Martyn, Ruslan Tykhenko, Ivan Openko</b><br><i>National University of Life and Environmental Sciences of Ukraine, Ukraine</i>   |
| 19:00 |  | CONFERENCE DINNER   |



### *Friday, 23 May*

8<sup>00</sup> – 8<sup>30</sup>

Gathering at the faculty 5 J. Čakste blvd.

8<sup>30</sup> – 16<sup>30</sup>

Excursion: TBA

**Svēte Bread.** The company bakes bread using original recipes. During the tour, we will explore the bread-making and baking process. Various types of bread and pastry products will be available for tasting during the tour.



**Dinex Latvia.** Europe's leading Heavy Duty Exhaust & Emission supplier for the Aftermarket. Dinex, a Danish company founded in 1982, began with Jørgen and Grethe Dinesen's vision: to create high-quality, in-house exhaust systems for heavy-duty vehicles, delivered swiftly through a comprehensive catalog and regional warehouses. Today, Dinex is a global leader in exhaust and emission solutions, employing over 2,000 people and serving aftermarket and OEM customers across three continents.

**“Viesu Līči” or “Farmer’s Feast”.** An excursion to the rural tourism destination "Farmer's Feast." The owner of the business will share how the idea, born in 1998, developed into a company well known to many residents of Latvia. The tour includes an introduction to the leisure complex and enjoying a lunch meal.



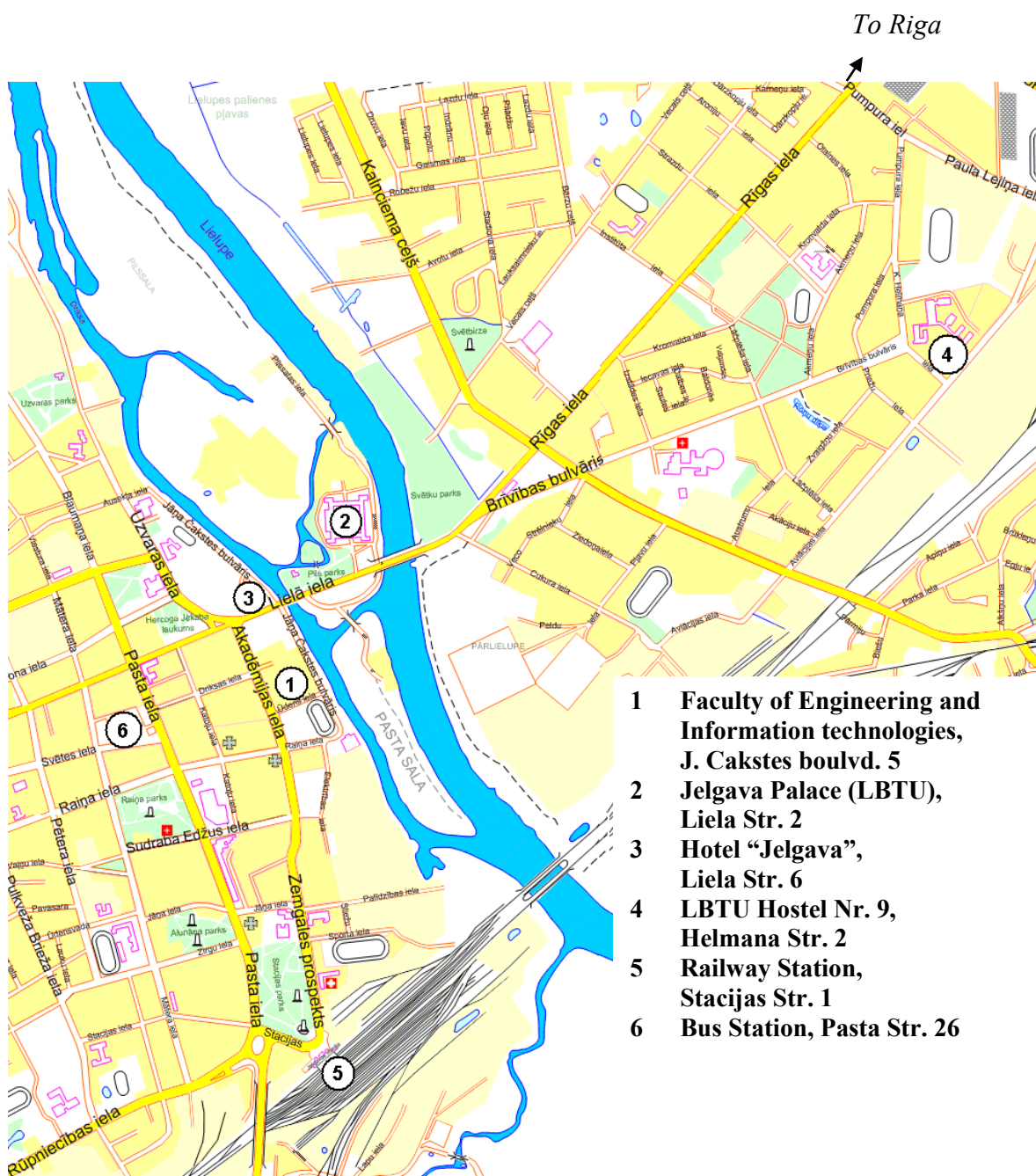
**Boat Trip with “Relax”.** At the end of the excursion, we will take a boat trip with “Relax” around Castle and Post Islands. During the boat ride, we will also have the opportunity to see wild horses.











### *Address of the Conference Committee*

**Faculty of Engineering and Information Technologies  
Latvia University of Life Sciences and Technologies  
5 J. Cakstes blvd., Jelgava, LV-3001, Latvia**

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