

**Latvia University of Agriculture  
Faculty of Engineering**



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

# **ENGINEERING FOR RURAL DEVELOPMENT**

**PROGRAMME**



**Jelgava, Latvia, May 29 – 30, 2014**

## ***PROGRAM COMMITTEE***

***Chairman:*** Kaspars Vartukapteinis, Latvia University of Agriculture, Latvia

***Members:*** Aivars Aboltins, Latvia University of Agriculture, Latvia  
Valeriy Adamchuk, National Academy of Agrarian Science of Ukraine, Ukraine  
Andres Annuk, Estonian University of Life Sciences, Estonia  
Milan Brozek, Czech University of Life Sciences Prague, Czech Republic  
Algirdas Jasinskas, Aleksandras Stulginskis University, Lithuania, Lithuania  
Pavel Kic, Czech University of Life Sciences Prague, Czech Republic  
Nikolai Morozov, All-Russia Scientific-Research Institute of Livestock Farming  
Mechanization, Russia  
Juozas Navickas, Aleksandras Stulginskis University, Lithuania, Lithuania  
Juri Olt, Estonian University of Life Sciences, Estonia  
Simon Popescu, Transylvania University of Brasov, Romania  
Juris Priekulis, Latvia University of Agriculture, Latvia  
Vaclav Romaniuk, Institute of Technology and Life Sciences, Poland  
Yang Zhang, University of Sheffield, United Kingdom  
Vladimir Peredna, National Academy of Sciences of Belarus, Scientific and Practical Centre  
for Agricultural Mechanization, Belarus

## ***ORGANISING COMMITTEE***

***Chairman:*** Janis Palabinskis, Latvia University of Agriculture, Latvia

***Members:*** Aivars Aboltins, Latvia University of Agriculture, Latvia  
Armins Laurs, Latvia University of Agriculture, Latvia  
Gunars Godmanis, Latvia University of Agriculture, Latvia  
Aigars Kunkulis, Latvia University of Agriculture, Latvia  
Aina Priekule, Latvia University of Agriculture, Latvia  
Jolanta Krisuna, Latvia University of Agriculture, Latvia  
Ansis Salins, Latvia University of Agriculture, Latvia  
Martins Tisenkopfs, Latvia University of Agriculture, Latvia

## Thursday, 29 May

- 9<sup>00</sup> – 10<sup>00</sup>** Registration of participants,  
Faculty of Engineering, LUA, 5 J. Cakstes blvd., 2<sup>nd</sup> floor, Room 254,  
Cofee
- 10<sup>00</sup> – 12<sup>10</sup>** Opening of the conference and plenary session  
Faculty of Engineering, Room 429
- Chairman:** Dr.sc.ing. Aivars Aboltins, Latvia University of Agriculture  
**Vice-chairman:** Dr. sc.ing. Janis Palabinskis, Latvia University of Agriculture

<b>10<sup>00</sup> – 10<sup>10</sup></b>	<b>Kaspars Vartukapteinis</b> <i>Dean of the Faculty of Engineering, Latvia University of Agriculture</i> OPENING SPEECH
<b>10<sup>10</sup> – 10<sup>40</sup></b>	AGRICULTURAL LAND-USE POTENTIAL AND INVESTMENT REQUIRED IN LATVIA <b>Irina Pilvere, Aleksejs Nipers, Ilze Upite</b> <i>Latvia University of Agriculture</i>
<b>10<sup>40</sup> – 11<sup>10</sup></b>	ADVANTAGES AND DISADVANTAGES OF BIOFUELS: OBSERVATIONS IN LATVIA <b>Dainis Viesturs<sup>1</sup>, Ligita Melece<sup>2</sup></b> <i><sup>1</sup>Latvia University of Agriculture; <sup>2</sup>Latvian State Institute of Agrarian Economics</i>
<b>11<sup>10</sup> – 11<sup>40</sup></b>	THE COURSE TRANSPORT, HANDLING AND MANIPULATION MACHINERY IN ENGINEERING EDUCATION <b>Pavel Kic</b> <i>Czech University of Life Sciences Prague</i>
<b>11<sup>40</sup> – 12<sup>10</sup></b>	AVOIDING PLAGIARISM IN STUDENTS' WRITTEN WORKS: EXPERIENCE OF LLU <b>Linas Stabingis</b> <i>Aleksandras Stulginskis University, Lithuania</i>

- 12<sup>15</sup> – 13<sup>00</sup>** Lunch
- 13<sup>00</sup> – 15<sup>00</sup>** Work in sections
- 15<sup>00</sup> – 15<sup>30</sup>** Coffee break, Room 254
- 15<sup>30</sup> – 18<sup>00</sup>** Work in sections
- Regulations:**     *Presentations – 10 minutes*  
                              *Discussions – 5 minutes*
- 19<sup>00</sup>** Conference dinner  
5 J. Cakstes blvd., Room 254

*Conference languages – English, Russian, Latvian*

**Note for the participants.** The workshop “Basics of using microcontroller units (MCU) for acquiring process signals” will be held on Wednesday **28 May** at 10<sup>00</sup>, 5 J. Cakstes blvd., Room 516.

## Section 1: AGRICULTURAL MACHINERY AND HUSBANDRY

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5 J.Cakstes blvd., Room 212

Chairman: Dr.sc.ing. **Dainis Viesturs**, *Latvia University of Agriculture*

Vice-chairman: Dr.sc.ing. **Marek Gaworski**, *Warsaw University of Life Sciences, Poland*

- 1 TRACTOR FLEET DEVELOPMENT DYNAMICS ON FARMS OF LATVIA  
**Nikolajs Kopiks, Dainis Viesturs**  
*Latvia University of Agriculture*
- 2 JOHN DEERE COMBINE HARVESTERS FUEL CONSUMPTION AND OPERATION COSTS  
**Lukas Benes, Petr Novak, Jiri Masek, Stanislav Petrsek**  
*Czech University of Life Sciences Prague*
- 3 INVESTIGATIONS INTO LOSSES OF BIOLOGICAL MASS AND QUALITY DURING HARVEST OF INDUSTRIAL HEMP  
**Semjons Ivanovs<sup>1</sup>, Aleksandrs Adamovics<sup>1</sup>, Adolfs Rucins<sup>1</sup>, Volodimir Bulgakov<sup>2</sup>**  
*<sup>1</sup>Latvia University of Agriculture; <sup>2</sup>National University of Life and Environmental Sciences of Ukraine*
- 4 EXPERIMENTAL LABORATORY INVESTIGATIONS OF OPERATING ELEMENT FOR SUGAR BEET TOP REMOVAL  
**Volodimir Bulgakov<sup>1</sup>, Semjons Ivanovs<sup>2</sup>, Valeriy Adamchuk<sup>3</sup>, Andrey Boris<sup>3</sup>**  
*<sup>1</sup>National University of Life and Environmental Sciences of Ukraine; <sup>2</sup>Latvia University of Agriculture; <sup>3</sup>National Research Centre of National Academy of Agrarian Science of Ukraine "Institute of Mechanization and Electrification of Agriculture"*
- 5 DEEP, SHALLOW AND NO-TILLAGE EFFECTS ON SOIL COMPACTION PARAMETERS  
**Egidijus Sarauskis<sup>1</sup>, Sidona Buragiene<sup>1</sup>, Kestutis Romaneckas<sup>1</sup>, Laura Masilionyte<sup>2</sup>, Zita Kriauciuniene<sup>1</sup>, Antanas Sakalauskas<sup>1</sup>, Algirdas Jasinskas<sup>1</sup>, Davut Karayel<sup>3</sup>**  
*<sup>1</sup>Aleksandras Stulginskis University, Lithuania; <sup>2</sup>Lithuanian Research Centre for Agriculture and Forestry; <sup>3</sup>Akdeniz University, Turkey*
- 6 TECHNOLOGICAL OPERATIONAL ASSESSMENT OF ONE PASS COMBINED AGRICULTURAL MACHINERY FOR SEEDBED PREPARATION AND SEEDING  
**Oskars Valainis, Adolfs Rucins, Arvids Vilde**  
*Latvia University of Agriculture*
- 7 GLOBAL NAVIGATION SATELLITE SYSTEM AS TECHNICAL SOLUTION ELEMENT OF FARMLAND PROCESSING IN LATVIA  
**Armands Celms, Aivars Ratkevics, Vivita Baumane**  
*Latvia University of Agriculture*
- 8 INVESTIGATION OF VANE-TYPE RETHRESHER OF COMBINE HARVESTER  
**Dainius Steponavicius, Anicetas Straksas, Alvydas Baliunas, Rolandas Domeika, Tadas Bartkus**  
*Aleksandras Stulginskis University, Lithuania*
- 9 APPLICATION OF SPOT WELDING UNDER CONDITIONS OF SOUTHEAST ASIA  
**Petr Hrabe, Miroslav Muller**  
*Czech University of Life Sciences Prague*

- 10** INVESTIGATION IN TRACTOR CLAAS ARES 557ATX OPERATING PARAMETERS USING HYDROTREATED VEGETABLE OIL FUEL  
**Kristaps Sondors, Aivars Birkavs, Ilmars Dukulis, Vilnis Pirs, Zanis Jesko**  
*Latvia University of Agriculture*
- 11** DOSAGE UNIFORMITY OF RAINFALL SIMULATOR DEPENDING ON NOZZLE TYPE AND PRESSURE  
**Petr Novak, Jan Chyba, Milan Kroulik, Jiri Masek**  
*Czech University of Life Sciences Prague*
- 12** EVALUATION OF HYDRAULIC HITCH-SYSTEM IMPROVEMENT  
**Janis Laceklis-Bertmanis<sup>1</sup>, Vilnis Pirs<sup>1</sup>, Eriks Kronbergs<sup>1</sup>, Aivars Metla-Rozentals<sup>2</sup>**  
<sup>1</sup>*Latvia University of Agriculture;* <sup>2</sup>*KONEKESKO, Department of Agriculture Technique, Latvia*
- 13** ANALYSIS OF MILKING SYSTEM DEVELOPMENT ON EXAMPLE OF TWO BALTIC COUNTRIES  
**Marek Gaworski<sup>1</sup>, Juris Priekulis<sup>2</sup>**  
<sup>1</sup>*Warsaw University of Life Sciences, Poland;* <sup>2</sup>*Latvia University of Agriculture, Latvia*
- 14** COW TRAFFIC DYNAMICS USING MECHANICAL MOVERS  
**Maris Mangalis, Dzintars Jaundzeikars, Juris Priekulis**  
*Latvia University of Agriculture*
- 15** MILKING TECHNOLOGY INFLUENCE ON DAIRY COW MILK PRODUCTIVITY AND QUALITY  
**Solvita Petrovska, Daina Jonkus**  
*Latvia University of Agriculture*
- 16** STUDIES ON LINER VACUUM IN HIGH AND LOW LEVEL MILKING SYSTEMS  
**Edgars Andersons, Armins Laurs, Juris Priekulis**  
*Latvia University of Agriculture*
- 17** USE OF VENTILATION EMISSIONS FROM ANIMAL BARN FOR IMPROVEMENT OF PLANT GROWTH  
**Vladislav Gordeev, Viacheslav Mironov**  
*North-West Research Institute of Agricultural Engineering and Electrification (SZNIIMESH) of the Russian Academy of Agricultural Sciences, Russia*
- 18** PERFORMANCE OF 4 WD TRACTOR ON GRAVELED ROAD  
**Vaclovas Kurkauskas, Algirdas Janulevicius, Gediminas Pupinis**  
*Aleksandras Stulginskis University, Lithuania*

J. Cakstes blvd., Room 429

Chairman: Dr.sc.ing. **Aivars Aboltins**, *Latvia University of Agriculture*

Vice-chairman: Dh.D., D.Sc. **Milan Brozek**, *Czech University of Life Sciences Prague*

- 1 OPTIMIZATION OF TECHNOLOGICAL MEASURES TO PROMOTE CEREAL STRAW DECOMPOSITION IN THE POST HARVEST PERIOD  
**Ausra Arlauskiene, Aleksandras Velykis, Alvyra Slepeliene**  
*Lithuanian Research Centre for Agriculture and Forestry*
- 2 POST HARVEST COVER CROP TECHNOLOGIES UNDER REDUCED TILLAGE CONDITIONS  
**Antanas Satkus, Aleksandras Velykis**  
*Lithuanian Research Centre for Agriculture and Forestry*
- 3 DETERMINATION OF CURRENT STATUS IN THE RESULTING OF WASTE MATERIALS FROM PRODUCTION OF GREENHOUSE AND ITS ENVIRONMENTAL INTERACTION  
**Atilgan Atilgan, Hasan Oz, H. Ibrahim Yilmaz, Hale Uzer**  
*Suleyman Demirel University, Turkey*
- 4 HIGH CAPACITY HEATING SYSTEM BY USING FLUE GAS COOLING DEVICE  
**Edmunds Visockis<sup>1</sup>, Gotfrids Noviks<sup>1</sup>, Raimunds Selegovskis<sup>2</sup>**  
*<sup>1</sup>Rezekne Higher Education Institution, Latvia; <sup>2</sup>Latvia University of Agriculture*
- 5 MECHANICAL DURABILITY OF BRIQUETTES MADE OF ENERGY CROPS AND WOOD RESIDUES  
**Tatiana Ivanova, Michel Kolarikova, Bohumil Havrland, Lubos Passian**  
*Czech University of Life Sciences Prague*
- 6 DRYING PROCESS OF TWO SPECIAL PLANTS  
**Pavel Kic<sup>1</sup>, Aivars Aboltins<sup>2</sup>**  
*<sup>1</sup>Czech University of Life Sciences Prague; <sup>2</sup>Latvia University of Agriculture*
- 7 COMPARISON OF TWO METHODS OF POULTRY MANURE DRYING  
**Aivars Aboltins<sup>1</sup>, Pavel Kic<sup>2</sup>**  
*<sup>1</sup>Latvia University of Agriculture; <sup>2</sup>Czech University of Life Sciences Prague*
- 8 STALK BIOMASS DRYING RATE EVALUATION AT VARIOUS LAYERS AND DRYING PARAMETERS  
**Martins Ozollapins, Aivars Kakitis, Imants Nulle**  
*Latvia University of Agriculture*
- 9 RESEARCHES REGARDING OPTIMIZATION OF CONTINUOUS FLOW DOSAGE OF AGRICULTURAL PRODUCTS FOR ASSURING FOOD QUALITY AND SECURITY  
**Carmen Bracacescu<sup>1</sup>, Dumitru Milea<sup>1</sup>, Anisoara Paun<sup>1</sup>, Dragos Manea<sup>1</sup>, Iuliana Gageanu<sup>1</sup>, Simion Popescu<sup>2</sup>**  
*<sup>1</sup>INMA Bucharest, Romania; <sup>2</sup>Transilvania University of Brasov, Romania*

- 10** VIBRATION MONITORING OF POWER GENERATION SYSTEMS, USING BUILT-IN MATLAB FUNCTIONS FOR DATA ANALYSIS  
**Marina Griscenko, Guntis Kulikovskis**  
*Riga Technical University, Latvia*
- 11** TECHNICAL-ECONOMICAL EVALUATION OF BEECH PLYWOOD BONDING  
**Milan Brozek**  
*Czech University of Life Sciences Prague*
- 12** TRUCK CABIN CORROSION RESISTANCE OBSERVATION IN ARTIFICIAL ATMOSPHERE  
**Radek Pavelka, Milan Brozek**  
*Czech University of Life Sciences Prague*
- 13** PROGRESSIVE METHOD OF OBSERVATION AND ASSESSMENT DURING CORROSION TESTS WITH ARTIFICIAL ATMOSPHERE  
**Radek Pavelka, Milan Brozek**  
*Czech University of Life Sciences Prague*
- 14** SELECTED PLASTICS WEAR RESISTANCE  
**Alexandra Novakova, Milan Brozek**  
*Czech University of Life Sciences Prague*
- 15** INNOVATIVE TECHNOLOGIES AND EQUIPMENT FOR EFFICIENT USE OF FODDER GRAIN  
**Vladimir Perednia, Vladimir Khrutsky, Andrej Tarasevich, Aleksandr A. Kuvshinov**  
*The State Unitary Enterprise "Scientific and Practical Centre of the National Academy of Sciences of Belarus for Agriculture Mechanization"*
- 16** EVALUATION OF HEMP STRAW AND FIBRE STRENGTH  
**Roberts Berzins, Aivars Kakitis, Uldis Berzins, Janis Cukurs**  
*Latvia University of Agriculture*
- 17** PENETRATION DEPTH OF ADHESIVE DEPENDING ON WOOD ANATOMICAL STRUCTURE  
**Laura Laiveniece, Andris Morozovs**  
*Latvia University of Agriculture*

### Section 3: MOTOR VEHICLES AND FUELS

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5 J. Cakstes blvd., Room 431

Chairman: Dr.sc.ing. **Ilmars Dukulis**, *Latvia University of Agriculture*

Vice-chairman: Dr.sc.ing. **Algirdas Jasinskas**, *Aleksandras Stulginskis University, Lithuania*

**1 TRAFFIC INTENSITY IN FIELDS AND TECHNICAL POSSIBILITIES FOR REDUCTION OF MACHINERY PASSES**

**Jiri Masek, Milan Kroulik, Jan Chyba, Petr Novak, Frantisek Kumhala**

*Czech University of Life Sciences Prague*

**2 INFRINGEMENTS OF REQUIREMENTS OF SOCIAL LEGISLATION FOR DRIVERS OF COMMERCIAL VEHICLES INVOLVED IN ROAD TRAFFIC ACCIDENTS**

**Gundars Zalcanis, Aivis Grislis, Juris Kreicbergs**

*Riga Technical University, Latvia*

**3 CASE STUDY OF VEHICLE PARKING MOBILE PAYMENT APPLICATION: DATA STORAGE AND SYNCHRONIZATION SOLUTION**

**Jekaterina Smirnova, Nikolajs Bumanis, Gatis Vitols**

*Latvia University of Agriculture*

**4 INVESTIGATION OF FLIGHT OF MICRO AERIAL VEHICLE WITH FLAPPING WINGS**

**Abdessemed Ahmed Chaouki, Janis Viba**

*Riga Technical University, Latvia*

**5 REGULATED EMISSIONS FROM SPARK IGNITION ENGINE ADAPTED FOR USE OF E85 FUEL**

**Vilnis Pirs, Maris Gailis**

*Latvia University of Agriculture*

**6 INCREASING OF ENGINE OIL CHANGE INTERVAL BY USING ADDITIONAL OIL FILTER IN DIESEL ENGINES**

**Jevgenijs Semjonovs, Guntis Springis, Armands Leitans**

*Riga Technical University, Latvia*

**7 ASSESSMENT OF UNCONVENTIONAL TALL GRASSES CULTIVATION AND PREPARATION FOR SOLID BIOFUEL**

**Algirdas Jasinskas<sup>1</sup>, Egidijus Sarauskis<sup>1</sup>, Antanas Sakalauskas<sup>1</sup>, Edvardas Vaiciukevicius<sup>1</sup>, Gintaras Siaudinis<sup>2</sup>, Sigitas Cekanauskas<sup>1</sup>**

*<sup>1</sup>Aleksandras Stulginskis University, Lithuania; <sup>2</sup>Lithuanian Research Centre for Agriculture and Forestry*

**8 NEW MODIFIED BETA TYPE STIRLING ENGINE COMPARISON WITH CLASSICAL STIRLING ENGINE LAYOUT**

**Ilmars Blumbergs**

*Riga Aeronautical Institute, Latvia*

**9 INDUCTION MOTOR STATOR WINDING THERMAL PROCESS RESEARCH AND MODELLING UNDER LOCKED ROTOR MODE**

**Aleksejs Gedzurs, Andris Sniders**

*Latvia University of Agriculture*

- 10** TOWARDS PRACTICAL APPLICATION OF SWARM ROBOTICS: OVERVIEW OF SWARM TASKS  
**Aleksis Liekna, Janis Grundspenkis**  
*Riga Technical University, Latvia*
- 11** EXPERIMENTAL RESEARCH ON BIODIESEL COMPATIBILITY WITH FUEL SYSTEM ELASTOMERS  
**Raitis Rudbahs, Ruslans Smigins**  
*Latvia University of Agriculture*
- 12** EFFECT OF MODIFIED DIESEL FUEL ON ENGINE FUEL EFFICIENCY  
**Juris Kreicbergs, Aivis Grislis, Gundars Zalcmanis, Janis Rudzitis**  
*Riga Technical University, Latvia*
- 13** IMPACT OF BIOETHANOL FUEL ON OUTPUT PARAMETERS OF TWO-STROKE RECIPROCATING ENGINE  
**Arne Kuut, Risto Ilves, Andrey Vlasov, Kaarel Soots, Juri Olt**  
*Estonian University of Life Sciences*
- 14** ENVIRONMENTAL ASSESSMENT OF SAWDUST BLENDS WITH GLYCEROL BURNING  
**Vytautas Kucinskas, Algirdas Jasinskas, Egle Jotautiene, Antanas Pocius**  
*Aleksandras Stulginskis University, Lithuania*

## Section 4: **ENERGETICS AND AUTOMATION**

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5 J. Cakstes blvd., Room 403

Chairman: Dr.sc.ing. **Imants Ziemelis**, *Latvia University of Agriculture*

Vice-chairman: Dr.sc.ing. **Agris Nikitenko**, *Riga Technical University, Latvia*

- 1 EFFICIENCY OF FIXED AND TRACKING PHOTOVOLTAIC PANEL  
**Viktorija Zagorska, Liene Kancevica, Henriks Putans, Imants Ziemelis**  
*Latvia University of Agriculture*
- 2 THE USE OF WARM OUTFLOW VENTILATION AIR FOR INCREASE AN OPEN AIR HEAT PUMP EFFICIENCY  
**Andrievs Ilsters, Imants Ziemelis, Henriks Putans**  
*Latvia University of Agriculture*
- 3 USE OF SOLAR ENERGY IN SMALL CAPACITY ELECTRIC VEHICLES  
**Dainis Berjoza, Edgars Misjuro**  
*Latvia University of Agriculture*
- 4 RESEARCH IN CHARGING PARAMETERS OF BATTERIES FOR TWO-WHEEL ELECTRIC VEHICLES  
**Dainis Berjoza, Inara Jurgena**  
*Latvia University of Agriculture*
- 5 INFLUENCE OF CONVEYOR POCKETS ON MATERIAL THROUGHPUT MEASUREMENT BY CAPACITIVE SENSOR  
**Jakub Lev, Frantisek Kumhala**  
*Czech University of Life Sciences Prague*
- 6 ECONOMICAL ASSESSMENT OF A SMALL SCALE WIND TURBINE FOR POWER GENERATION IN LATVIA  
**Ilze Priedite**  
*Institute of Physical Energetics, Latvia*
- 7 DESIGN AND VERIFICATION OF VERTICAL AXIS WIND TURBINE SIMULATION MODEL  
**Toms Komass, Andris Sniders**  
*Latvia University of Agriculture*
- 8 RESEARCH OF BUCKLING STABILITY OF FLAT-TYPE MULTILAYER RUBBER-METAL PACKAGE  
**Vladimirs Gonca<sup>1</sup>, Svetlana Polukoshko<sup>2</sup>**  
*<sup>1</sup>Riga Technical University, Latvia; <sup>2</sup>Ventspils University College, Latvia*
- 9 MODELING OF PERFORMANCE OF PACKING EQUIPMENT UNITS  
**Daina Kanaska, Gunars Verdins, Roberts Vanags**  
*Latvia University of Agriculture*
- 10 ENERGETIC ASSESSMENT OF BIOETHANOL CONGRUENT DEHYDRATION PROCESS  
**Gunars Bremers, Adolfs Rucins, Kristine Zihmane-Ritina, Gints Birzietis, Arturs Baltins, Arnolds Skele**  
*Latvia University of Agriculture*

- 11** INVESTIGATION OF UNDERWATER ROBOTIC SYSTEM FOR OBJECT MOTION  
PROPULSION AND ENERGY GENERATION  
**Janis Viba, Daumants Vitols, Marina Grischenko, Maris Eiduks, Guntis Kulikovskis**  
*Riga Technical University, Latvia*
- 12** MOBILE ROBOT PATH PLANNING FOR INDOOR USE  
**Agris Nikitenko, Aleksis Liekna, Ilze Andersone, Martins Ekmanis, Evalds Urtans**  
*Riga Technical University, Latvia*
- 13** INFRARED ACTIVE BEACON APPLICATION EVALUATION FOR MOBILE ROBOT  
LOCALIZATION IN AGRICULTURE  
**Andrejs Kostromins, Vitalijs Osadcuks**  
*Latvia University of Agriculture*
- 14** SOME METRICS OF ELECTRONIC WEIGHT CONTROL USED IN CATTLE CUBS FEEDER  
**Eugene V. Ternov**  
*The State Unitary Enterprise “Scientific and Practical Centre of the National Academy of Sciences  
of Belarus for Agriculture Mechanization”*
- 15** DIGITALLY CONTROLLED SYNCHRONOUS BUCK-BOOST CONVERTER FOR  
ULTRACAPACITOR BASED ENERGY STORAGE APPLICATION  
**Kaspars Kroics<sup>1,2</sup>, Viesturs Brazis<sup>2</sup>**  
*<sup>1</sup>Institute of Physical Energetics, Latvia; <sup>2</sup>Riga Technical University, Latvia*

## Section 5: BIOMASS CONDITIONING FOR ENERGY

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5 J. Cakstes blvd., Room 410

Chairman: Dr.sc.ing. **Eriks Kronbergs**, *Latvia University of Agriculture*

Vice-chairman: Dh.D. **Josef Pecen**, *Czech University of Life Sciences Prague*

- 1 RECYCLING OF WASTE RUBBER POWDER AND MICRO-PARTICLES AS FILLER OF THERMOSETS – ABRASIVE WEAR  
**Petr Valasek, Miroslav Muller**  
*Czech University of Life Sciences Prague*
- 2 RESEARCH OF PARTICLE GEOMETRICAL PARAMETERS AND AERODYNAMIC FEATURES OF GRANULAR ORGANIC COMPOST FERTILIZERS  
**Antanas Pocius, Egle Jotautiene, Juozas Pekarskas, Ramunas Mioldazys, Algirdas Jasinskas**  
*Aleksandras Stulginskis University, Lithuania*
- 3 INVESTIGATION OF GRANULATION PROCESS PARAMETERS INFLUENCE ON GRANULATED FERTILIZER COMPOST PROPERTIES  
**Antanas Pocius, Egle Jotautiene, Ramunas Mioldazys, Algirdas Jasinskas, Vytautas Kucinskas**  
*Aleksandras Stulginskis University, Lithuania*
- 4 AERODYNAMIC RESISTANCE OF BIOFILTER WITH PACKING FROM PINE CONES  
**Aleksandr Mitin, Aleksandr Pushnov, Natalya Nikolaykina**  
*Moscow State University of Mechanical Engineering (MAMI) Environmental and Chemical Engineering Institute, Russia*
- 5 DETERMINANTS OF BIOMASS PRODUCTION FOR ENERGY PURPOSES IN NORTH-EASTERN POLAND  
**Krystyna Kurowska, Hubert Kryszk, Stanislaw Bielski**  
*University of Warmia and Mazury in Olsztyn, Poland*
- 6 EVALUATION OF COMBUSTION PROPERTIES OF BIOMASS MIXTURES  
**Aivars Kakitis, Dainis Ancans, Imants Nulle**  
*Latvia University of Agriculture*
- 7 EXPERIMENTAL INVESTIGATION ON BIOGAS PRODUCTION FROM BIOMASS OF JERUSALEM ARTICHOKE (*HELIANTHUS TUBEROSUS* L.) TUBERS  
**Kestutis Venslauskas, Naviskas Kestutis, Zuperka Vidmantas, Monika Jurgita Brazaite**  
*Aleksandras Stulginskis University, Lithuania*
- 8 EVALUATION OF GREENHOUSE GAS EMISSIONS USING BIOMASS OF PERENNIAL GRASS FOR BIOGAS PRODUCTION  
**Kestutis Venslauskas, Nekrošius Arvydas, Navickas Kestutis**  
*Aleksandras Stulginskis University, Lithuania*
- 9 WATER SORPTION BY BRIQUETTES FROM BIOMASS  
**Josef Pecen, Petra Zabloudivova, Michal Kavalek, Iva Cerna**  
*Czech University of Life Sciences Prague*
- 10 DURABILITY OF COMPACTED ENERGY CROP BIOMASS  
**Edgars Repsa, Eriks Kronbergs, Emils Pudans**  
*Latvia University of Agriculture*

- 11** INDICATORS CHARACTERISING CALORIFIC VALUE OF REED CANARY GRASS AND  
LAST YEAR'S GRASS  
**Rasma Platace, Aleksandrs Adamovics**  
*Latvia University of Agriculture*
- 12** CONTENT OF LIGNING AND ASH IN GRASS BIOMASS DEPENDING ON FERTILISER  
TYPE AND RATE  
**Rasma Platace, Aleksandrs Adamovics**  
*Latvia University of Agriculture*
- 13** BIOCHEMICAL METHANE POTENTIAL OF FAST GROWING ENERGY FOREST  
**Vilis Dubrovskis, Kaspars Pulnins**  
*Latvia University of Agriculture*
- 14** THE BIOGAS YIELD FROM AEROBIC HYDROLYSIS USING BIOGAS PLANTS  
DIGESTATE  
**Vilis Dubrovskis, Vladimirs Kotelnecs**  
*Latvia University of Agriculture*
- 15** EVALUATION OF THE QUALITY OF NATURAL ENVIRONMENT  
**Svetlana M. Pavlova**  
*Northwest Institute of Printing, Saint-Petersburg, Russia*

## Section 6: EDUCATION AND MANAGEMENT

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5 J. Cakstes blvd., Room 336

Chairman: Dr.paed. **Irena Katane**, *Latvia University of Agriculture*

Vice-chairman: Dr.sc.ing. **Bruno Grasmanis**, *Riga Technical University, Latvia*

- 1 ELECTRIC VEHICLE TECHNOLOGY IMPLEMENTATION IN STUDIES  
**Uldis Putnieks, Dainis Berjoza, Inara Jurgena**  
*Latvia University of Agriculture*
- 2 THEORETICAL MECHANICS FOR STUDENTS OF ENGINEERING PROFILE  
**Tatjana Novohatska, Bruno Grasmanis, Ilmars Vjaters**  
*Riga Technical University, Latvia*
- 3 HOSPITALITY STUDENTS' PROFESSIONAL PRACTICE IN THE ASPECT OF ECOLOGICAL APPROACH  
**Irena Katane, Sandra Iriste**  
*Latvia University of Agriculture*
- 4 RESEARCH IN MATHEMATICAL COMPETENCE IN ENGINEERS' PROFESSIONAL ACTIVITIES  
**Anna Vintere, Anda Zeidmane**  
*Latvia University of Agriculture*
- 5 IMPORTANCE OF THEORETICAL KNOWLEDGE IN MATHEMATICS STUDIES IN ENGINEERING PROGRAMS  
**Anda Zeidmane, Svetlana Atslega**  
*Latvia University of Agriculture*
- 6 DEVELOPMENT OF STUDENTS' CAREER MANAGEMENT COMPETENCY IN VOCATIONAL SECONDARY SCHOOLS  
**Inita Soika**  
*Latvia University of Agriculture*
- 7 DEVELOPMENT OF SPECIALISTS' ATTITUDE TO OCCUPATIONAL HEALTH AND SAFETY  
**Dace Brizga, Vija Ozolina, Ludis Peks**  
*Latvia University of Agriculture*
- 8 STUDENTS' VIEWS ON THE PROFESSIONAL CAREER OPPORTUNITIES  
**Inese Jurgena, Janis Gedrovics, Dagnija Cedere**  
*Riga Teacher Training and Educational Management Academy, Latvia*
- 9 EVALUATION OF SUPPORT AND PROMOTION SYSTEM MODEL FOR DEVELOPMENT OF STAFF COMPETITIVENESS IN MODERN ENTERPRISE AS LEARNING ORGANIZATION  
**Irena Katane**  
*Latvia University of Agriculture*
- 10 ASSESSMENT FOR DETERMINATION POSSIBILITIES OF LAND USE ECONOMIC EFFICIENCY  
**Vivita Baumane, Armands Celms, Aivars Ratkevics**  
*Latvia University of Agriculture*

- 11** INTEGRATION OF RISKS AND POLITICAL CHANGES IN DYNAMIC MODELLING OF BIOGAS PRODUCTION  
**Sandija Zeverte-Rivza, Irina Pilvere, Peteris Rivza**  
*Latvia University of Agriculture*
- 12** ENGINEERING AND ECONOMIC CALCULATIONS FOR ASSESSING LAND CONSOLIDATION  
**Dace Platonova, Vivita Baumanė**  
*Latvia University of Agriculture*
- 13** CHARACTERISTICS OF CITRUS FRUIT PRICE DEVELOPMENTS ON THE LATAKIA MARKETS, THE SYRIAN ARAB REPUBLIC, AS PRECONDITIONS FOR A FUNCTIONAL MARKETING INFORMATION SYSTEM  
**Haiyan Sulaiman, Tomas Doucha, Alexander Kandakov**  
*Czech University of Life Sciences Prague*
- 14** SOCIAL AWARENESS ON WASTE PRODUCTION IN RURAL AREAS  
**Eva Mrlikova Tydlitova, Bohumil Havrland, Tatiana Ivanova**  
*Czech University of Life Sciences Prague*
- 15** QUALITY CONTROL IMPROVEMENT OF HARVESTERS IN COMERCIAL THINNING  
**Janis Petersons, Aleksandrs Saveljevs, Kaspars Sevcuks**  
*Latvia University of Agriculture*

## Friday, 30 May

9<sup>00</sup> - 17<sup>00</sup>

### *Social tour*

Departue from 5 J. Cakstes blvd. at 9<sup>00</sup>

#### *Rhododendron garden*

University of Latvia rhododendron breeding and testing nursery “Babīte” is located in a pine forest in Babīte village on the area of 11.8 ha. At present it is the only specialised rhododendron cultivation plot in the Baltic States.



#### *Jūrmala*

Jūrmala – the largest health resort in the Baltic States that has way back become famous due to the mild climate, sea, healthy air and 32.8 km long beach. In case of favourable weather it will be possible to enjoy the white seaside sand and refreshing of the waves of the Baltic Sea.



## *Friday, 30 May*

### Jelgava City Festival

**Venue: May 30th- June 1st, 2014**

**Place: All around the city**

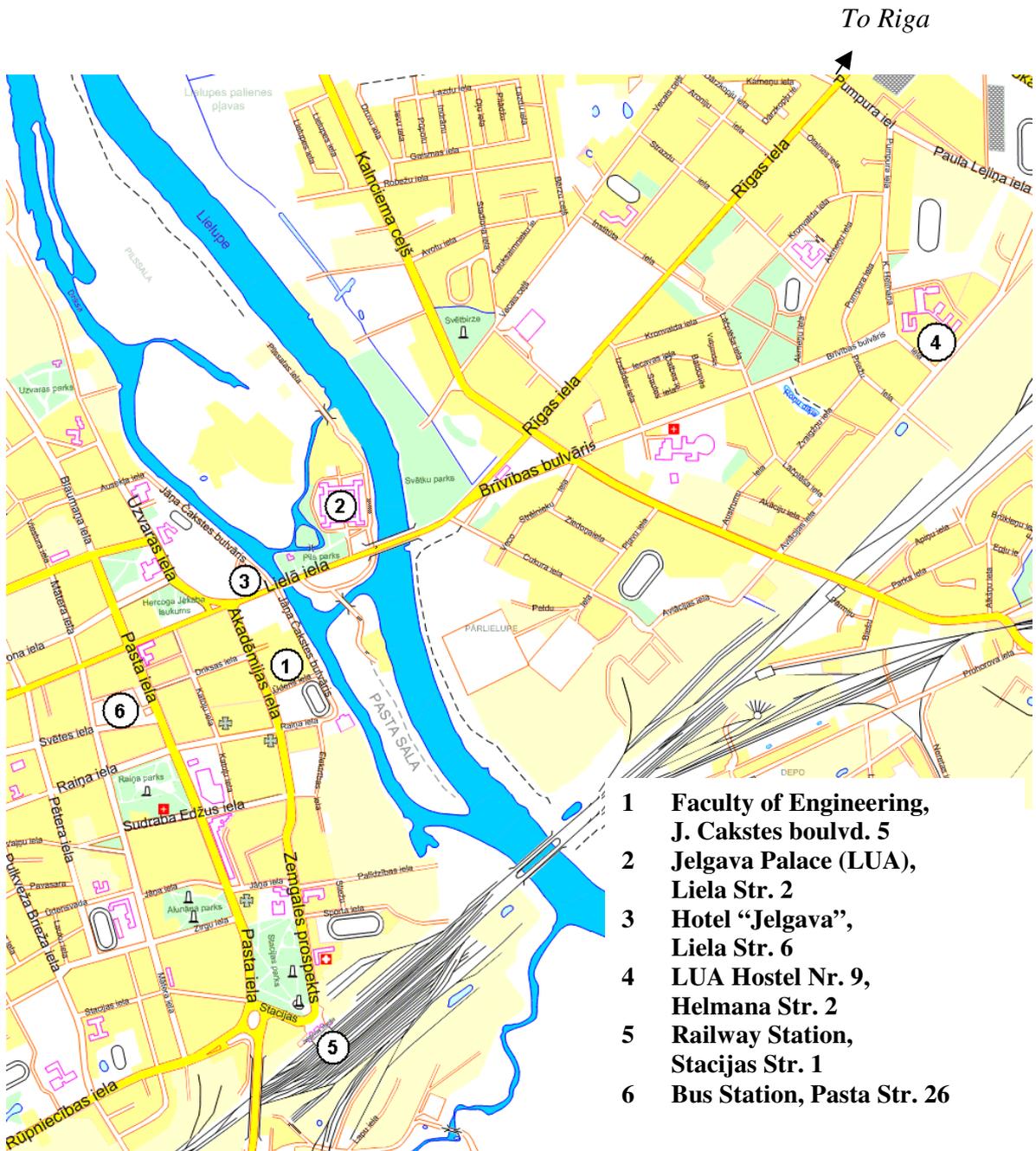
Last weekend of May is special to everyone here in Jelgava. Citizens and guests can plunge into our City festival that offers wide range of activities, including performances, shows, exhibitions, concerts and numerous parades.

A tradition already, the Crafts' Day offers an extraordinary market hustle in the centre of the city – in Raina park, bringing together hundreds of craftsmen, their apprentices and citizens willing to buy handmade goods.



Societies of national minorities and artists from twinning cities are most welcome guests, bringing spirit of friendship, various cultures and traditions to the city.

- 17.00 – City Festival Parade
- 19.00 – Performance of dance studio “Benefice” at Duke Jacob's Square
- 23.00 - Concert "Seasons" in Jelgava Palace courtyard (fee EUR 5.00).



- 1 Faculty of Engineering,  
J. Cakstes boulvd. 5
- 2 Jelgava Palace (LUA),  
Liela Str. 2
- 3 Hotel "Jelgava",  
Liela Str. 6
- 4 LUA 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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