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## PROGRAM

<b>JANUARY 16, 2017</b>
<b>12:30-13:30 – Lunch</b>
<b>13:00-14:00 - Registration</b>
<b>14:00-14:45 - Opening Ceremony</b>
<b>Welcome Speech and Symposium Information from General Chairman</b> Dr. Dmitri Vinnikov, <i>General Chairman of the Symposium</i>
<b>Greetings from the Dean</b> Prof. Arvo Oorn, <i>Dean of the School of Engineering, TUT</i>
<b>R&amp;D in the Department of Electrical Power Engineering and Mechatronics of TUT</b> Prof. Ivo Palu, <i>Head of the Department of Electrical Power Engineering and Mechatronics, TUT</i>
<b>14:45-16:15 – Invited Speeches</b> <i>PART I</i> <b>Chairman: Prof. Ivo Palu, Co-Chairman: Dr. Janis Zakis</b>
<b>On Parallel Robots Control</b> Prof. Didier Pascault, <i>UPJV – Amiens, France</i>
<b>Electrical Machines and Drives for Electrical Vehicles</b> Prof. Istvan Vajda, <i>Óbuda University, Hungary</i>
<b>Modern Traction Electric Drives for Urban Transport</b> Prof. Alecksey Anuchin, <i>Moscow Power Engineering Institute, Russia</i>
<b>16:15-16:30 - Coffee</b>
<b>16:30-18.00 – Invited Speeches</b> <i>PART II</i> <b>Chairman: Prof. Ivo Palu, Co-Chairman: Dr. Janis Zakis</b>
<b>Raising Energy Awareness for Energy Efficiency</b> Prof. Joao Martins, <i>FCT/UNL – UNINOVA, Portugal</i>
<b>Smart Grid Technologies</b> Prof. Grzegorz Benysek, <i>University of Zielona Gora, Poland</i>
<b>Open Source Initiatives in Higher Engineering Education and Research</b> Prof. Manfred Glesner, <i>Technische Universität Darmstadt, Germany</i>
<b>20:00-23:00 – Welcome Reception</b>

**JANUARY 17, 2017**

**9:00-10:00 – Invited Speeches**

**MECHATRONICS**

**Chairman: Prof. Mart Tamre, Co-Chairman: Dr. Klodian Dhoska**

**Wireless Sensor Network for Kitchen Automation**

Prof. Trieu Minh Vu, *Tallinn University of Technology, Estonia*

**Bio-Mechatronics Research and Perspectives**

Prof. Victor Musalimov, *ITMO University, Russia*

**Geometric Models of Parallel Robots for Control and Structure Choice: MATLAB Examples**

Prof. Didier Pascault, *UPJV – Amiens, France*

**10:00-11:15 – Regular Session**

**MECHATRONICS - I**

**Chairman: Prof. Didier Pascault, Co-Chairman: Prof. Margarita Skotnikova**

**Fabrication of Polydimethylsiloxane Stamps**

Dr. Klodian Dhoska, *Tallinn University of Technology, Estonia*

**Identification, Control and Tuning of the Motor Speed in TIA Portal**

Assoc. Prof. Olga Ruban, *Tallinn University of Technology, Estonia*

**Control of the Radial Increment for Layer Winding Cylindrical Composite Products**

Alexey Kutin, *ITMO University, Russia*

**Analysis and Design of Knee Joint Modules of Smart-Orthosis**

Mikhail Erofeev, *ITMO University, Russia*

**Modeling and Synthesis of Belt Driven Ship Model Testing Carriage System**

Dhanushka Chamara Liyanage, *Tallinn University of Technology, Estonia*

**11:15-13:00 – Regular Session**

**MECHATRONICS - II**

**Chairman: Prof. Victor Musalimov, Co-Chairman: Dr. Klodian Dhoska**

**Simplified Algorithm Applicable for Vibration Measurements in Buildings**

Martin Parker, *Tallinn University of Technology, Estonia*

**Influence of Roughness Parameters on Dynamics of a Friction Interaction**

Nuzhdin Kirill, *ITMO University, Russia*

**Application of Leddar to Optimize Image Processing Operations**

Oliver Mets, *Tallinn University of Technology, Estonia*

**Mapping Leddar Distance Measurements to Coordinate System**

Ervin Piigli, *Tallinn University of Technology, Estonia*

**Study Kevlar Deformation Principle by System of Technical Vision**

Soloveva Galina, *ITMO University, Russia*

**An Object Detection And Pose Estimation Approach for Position Based Visual Servoing**

Lei Shi, *Tallinn University of Technology, Estonia*

**13:00-14:00 – Lunch**

**14:00-15:00 – Regular Session**

**MECHATRONICS - III**

**Chairman: Prof. Mart Tamre, Co-Chairman: Assoc. Prof. Olga Ruban**

**Application of Hyperspectral Imaging in Waste Paper Sorting**

Märt Juurma, *Tallinn University of Technology, Estonia*

**Mechanics of Diagnostic Machine on Electrical Transmission Lines Conductors**

Bahrami Mohammad Reza, *Peter the Great St. Petersburg Polytechnic University, Russia*

**Mathematical Modelling of Contact Interaction in Belt Drive**

Evgeny Oborin, *Peter the Great St. Petersburg Polytechnic University, Russia*

**Development of Educational Robotic Complex**

Dmitry Kupriyanov, *ITMO University, Russia*

**15:00-16:00 – Special Session**

**PhD THESES PRESENTATIONS**

**Chairman: Prof. Istvan Vajda, Co-Chairman: Prof. Manfred Glesner**

**Study and Optimization of PM Generator with Outer Rotor for Wind Turbine Application**

Oleg Kudrjartsev, *Tallinn University of Technology, Estonia*

**Research and Development of Storage Based Energy Management System for Households**

Denis Lebedev, *Tallinn University of Technology, Estonia*

**Development of Risk and Reliability Assessment Methodology for Thermal Power Plants**

Sergei Trashchenkov, *Pskov State University, Russia*

**Model Based Power Estimation for Centrifugal Pumps**

Levon Gevorkov, *Tallinn University of Technology, Estonia*

**16:00-16.30 – Coffee**

**16.30-18:20 – Special Session**

**EDUCATIONAL ASPECTS**

**Chairman: Prof. Valery Vodovozov, Co-Chairman: Dr. Zoja Raud**

**ITMO-TUT MSc Mechatronics Double Degree Program: Experience of Development and Implementation and R&D Collaboration Prospects**

Assoc. Prof. Pavel Kovalenko, *ITMO University, Russia*

**Writing for Publication: Conventions and Style**

Mare-Anne Laane, *Tallinn University of Technology, Estonia*

**Ontology-Based Design of a Curriculum with Flexible Educational Trajectories**

Dr. Zoja Raud, *Tallinn University of Technology, Estonia*

**Complex Numbers Imaginary or Real?**

Dr. Indrek Roasto, *Tallinn University of Technology, Estonia*

**Action Plan and Attestation of PhD Students**

Dr. Argo Rosin, *Tallinn University of Technology, Estonia*

**18:20-19:00 – Dinner**

**20:00-23:00 – Social Event: Exploring Hidden Treasures of Pärnu (Outdoor activity)**

**JANUARY 18, 2017**

**09:00-11:00 – Tutorials**

**POWER ELECTRONICS AND ELECTRICAL ENGINEERING - I**

**Chairman: Dr. Indrek Roasto, Co-Chairman: Dr. Carlos Roncero-Clemente**

**From Misconceptions to Energy Saving Concepts: Case Study in Pumping Engineering**

Prof. Valery Vodovozov, *Tallinn University of Technology, Estonia*

**High Voltage Shore-to-Ship (S2SP) Connection System**

Prof. Robert Smolenski, *University of Zielona Gora, Poland*

**Planning the Integration of Storage Systems in Distribution Networks Using Multi-Objective Optimization**

Prof. Vitor Pires, *Polytechnic Institute of Setúbal, Portugal*

**Power Electronics for Energy Storage in Smart Grids**

Prof. Enrique Romero-Cadaval, *University of Extremadura, Spain*

**Power Supply with Modular Structure for Micro Resistance Welding**

Dr. Oleksandr Bondarenko, *National Technical University of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute", Ukraine*

**Maximum Power Point Tracking Techniques for Photovoltaic Application**

Prof. Oleksandr Velihorskyi, *Chernihiv National University of Technology, Ukraine*

**11:00-13:00 – Tutorials**

**POWER ELECTRONICS AND ELECTRICAL ENGINEERING - II**

**Chairman: Prof. Enrique Romero-Cadaval, Co-Chairman: Prof. Vitor Pires**

**Power Quality Issues in Distribution Networks with Net-Zero Energy Buildings**

Prof. Lauri Kiutt, *Tallinn University of Technology, Estonia*

**Capacitors in Power Electronics Applications: Reliability and Circuit Design**

Prof. Huai Wang, *Aalborg University, Denmark*

**Residential and Small Commercial AC-grid Integrated Storage System**

Dr. Andrei Blinov, *Tallinn University of Technology, Estonia*

**A Flexible Modulation Technique with Shoot-Through for N-level Impedance Source Inverters**

Dr. Carlos Roncero-Clemente, *University of Extremadura, Spain*

**Calculation of Processes in Power Electronics Schemes**

Prof. Ivars Rankis, *Riga Technical University, Latvia*

**Buck-Boost Voltage Frequency Converters without DC Storage for AC Drives - General Overview**

Prof. Marius Klytta, *TH Mittelhessen University of Applied Sciences, Germany*

**13:00-14:00 – Lunch**

<b>14:00-15:40 – Tutorials</b> <b>MECHATRONICS AND MECHANICAL ENGINEERING</b> <b>Chairman: Prof. Tauno Otto, Co-Chairman: Prof. Mart Tamre</b>
<b>Mechanics of Diagnostic Machine on Electrical Transmission Lines Conductors</b> Prof. Margarita Skotnikova, <i>Peter the Great St. Petersburg Polytechnic University, Russia</i>
<b>From Models to Design of Autonomous and Robotic Systems</b> Prof. Mart Tamre, <i>Tallinn University of Technology, Estonia</i>
<b>AR&amp;VR Research for Industry (Part I)</b> Dr. Marco Sacco, <i>ITIA-CNR, Italy</i>
<b>15:40-16:00 - Coffee</b>
<b>16:00-18:00 – Tutorials</b> <b>MINING AND GEOTECHNOLOGY</b> <b>Chairman: Dr. Veiko Karu, Co-Chairman: Dr. Mall Orru</b>
<b>Mining Industry Development</b> Dr. Tony Hand, <i>EIT Raw Materials GmbH, Germany</i>
<b>Development of Crushing Bucket Series</b> Ilpo Ellonen, <i>ALLU OY, Finland</i>
<b>18:00-19:00 - Dinner</b>
<b>20:00-23:00 – Social Event: International Evening (Conference room, 6th floor of Building 3 of SPA Tervis)</b>

<b>JANUARY 19, 2017</b>
<b>9:00-10:00 – Invited Speeches</b> <b>MECHANICAL ENGINEERING</b> <b>Chairman: Dr. Jüri Majak, Co-Chairman: Dr. Eduard Ševtšenko</b>
<b>VR&amp;AR applications in industry (Part II)</b> Dr. Marco Sacco, <i>ITIA-CNR, Italy</i>
<b>Business Processes Modelling</b> Dr. Eduard Ševtšenko, <i>Tallinn University of Technology, Estonia</i>
<b>Analysis and Design of Multifunctional Laminated Glass Composite Panel</b> Dr. Jüri Majak, <i>Tallinn University of Technology, Estonia</i>

**10:00-13:00 Regular Session**

**MECHANICAL ENGINEERING**

**Chairman: Dr. Marco Sacco, Co-Chairman: Dr. Toivo Tähemaa**

**Manufature - Roadmap to Manufacturing 2030**

Prof. Tauno Otto, *Tallinn University of Technology, Estonia*

**DFMA - Design for Manufacture and Assembly**

Toivo Tähemaa, *Tallinn University of Technology, Estonia*

**Risk Assessment Method for Partner Network of SMEs**

Kashif Mahmood, *Tallinn University of Technology, Estonia*

**Usage of the Multifunctional Robot-Manipulator Components and the Database of Usage Areas in Production and Education Processes**

Vladimir Kuts, *Tallinn University of Technology, Estonia*

**Resource Efficient Wooden Structures and Composites**

Kaur Väer, *Tallinn University of Technology, Estonia*

**Intelligent Manufacturing Cell in Digital Manufacturing Hub and Implementation Process in Manufacturing Network of SME-s**

Tavo Kangru, *Tallinn University of Technology, Estonia*

**Development of Methodology for Improving Unmanned Aircraft Performance by Using Miniflaps**

Peep Lauk, *Tallinn University of Technology, Estonia*

**The Development of Optimal Operation of the Portal Autooperator**

Siarhei Autsou, *Belarusian State Technological University, Belarus*

**Exploring Power Sources for Self-Sufficient Robots via Inspiration from Nature**

Elina Auzina, *Riga Technical University, Latvia*

**Open Discussion Panel: 4<sup>th</sup> Industrial Revolution and Science**

**13:00-14:00 – Lunch**

**14:00-18:00 – Regular Session**

**MINING AND GEOTECHNOLOGY**

**Chairman: Dr. Veiko Karu, Co-Chairman: Dr. Mall Orru**

**Alternative and Hybrid Fragmentation Concepts for Hard Rock Mining**

Dr. Philipp Hartlieb, *Leoben University, Austria*

**Raw Materials University Day in Tallinn University of Technology 2017**

Dr. Veiko Karu, *Tallinn University of Technology, Estonia*

**Blast Vibrations in Estonian Open Cast Mines**

Tõnu Tomberg, *Tallinn University of Technology, Estonia*

**The Method of Improvement the Limestone Aggregate Quality**

Julia Gulevich, *Tallinn University of Technology, Estonia*

**16:00-16:30 – Coffee**

<b>Digitalizing Peat Fields Information for Future Research</b> Dr. Mall Orru, <i>Tallinn University of Technology, Estonia</i>
<b>XRF Method in Resource Geology</b> Siim Pajusaar, <i>Tallinn University of Technology, Estonia</i>
<b>CO2 Seguestration in Oil Shale Ash Plateau Sediments</b> Kristjan Leben, <i>University of Tartu, Estonia</i>
<b>Analytical Methods for Determination of Sulfur Content in Oil Shale</b> Heliis Pikkor, <i>Tallinn University of Technology, Estonia</i>
<b>18:00-19:00 – Dinner</b>
<b>19:00-22:00 – Social Event: Visit to Waterpark in Tevise Paradiis (Side str. 14, Pärnu)</b>

<b>JANUARY 20, 2017</b>
<b>9:00-10:30 – Invited Speeches</b> <b>ELECTRICAL ENGINEERING</b> <b>Chairman: Prof. Joao Martins, Co-Chairman: Prof. Lauri Kütt</b>
<b>Impact of New Types of Electricity Generating Patterns to High Voltage Equipment and Cable Insulations</b> Prof. Ivo Palu, <i>Tallinn University of Technology, Estonia</i>
<b>Design of Street Lighting Networks with MeteorCalc SL</b> Dr. Jelena Armas, <i>Tallinn University of Technology, Estonia</i>
<b>Resistance Welding Control Based on Dilatometry Effect</b> Dr. Andrii Dubko, <i>E.O. Paton Electric Welding Institute of the NAS of Ukraine, Ukraine</i>
<b>Generalized Method of Symmetrical Components for Electric Circuits with Non-Sinusoidal Currents and Voltages</b> Prof. Sergey Kharitonov, <i>Novosibirsk State Technical University, Russia</i>
<b>Optimization of Axial Flux Machines</b> Dr. Pia Lindh, <i>Lappeenranta University of Technology, Finland</i>
<b>Control Methods of Permanent Magnet Assisted Reluctance Drive</b> Dr. Anton Rassölkin, <i>Tallinn University of Technology, Estonia</i>
<b>10:30-11:15 – Tutorial</b> <b>DESIGN FOR RELIABILITY IN POWER ELECTRONIC SYSTEMS</b> <b>Prof. Frede Blaabjerg, Aalborg University, Denmark</b>
<b>11:30-13:00 – Regular Session</b> <b>ELECTRICAL ENGINEERING</b> <b>Chairman: Prof. Frede Blaabjerg, Co-Chairman: Dr. Elizaveta Liivik</b>
<b>Energy Scheduling of Battery Storage Systems in Micro Grids</b> Andreas Armstorfer, <i>University of Applied Sciences Kempten, Germany</i>

<p><b>Example of Automatic Safety Systems Based on Power Line Communication and Microsoft Azure</b> Kamil Daukaev, <i>Tallinn University of Technology, Estonia</i></p>
<p><b>Occupants Influence on Buildings Energy Consumption</b> Vasco Delgado-Gomes, <i>FCT-UNINOVA, Portugal</i></p>
<p><b>Preliminary Study on Voltage Level Influence on Harmonic Current of LED Lamps</b> Marek Jarkovoi, <i>Tallinn University of Technology, Estonia</i></p>
<p><b>Synthesis of the control system with a fuzzy regulator in the presence of noise in the input data</b> Andrei Shumski, <i>Belarusian State Technological University, Belarus</i></p>
<p><b>Analysis and Application of Light-Technical Parameters to Assure Pedestrian Safety on Roadway Crossings with Additional Lighting</b> Toivo Varjas, <i>Tallinn University of Technology, Estonia</i></p>
<p><b>Multicell-Type Charger for Supercapacitors with Power Factor Correction</b> Oleksandr Kaloshyn, <i>National Technical University of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute", Ukraine</i></p>
<p><b>13:00-14:00 - Lunch</b></p>
<p><b>14:00-16:00 – Regular Session</b> <b>ELECTRICAL POWER ENGINEERING</b> <b>Chairman: Prof. Ivo Palu, Co-Chairman: Dr. Argo Rosin</b></p>
<p><b>Power Engineering Research and Development in KTU</b> Prof. Saulius Gudzius, <i>Kaunas University of Technology, Lithuania</i></p>
<p><b>Testing of PMU-based Transmission Loss Monitoring Application</b> Mari Löper, <i>Tallinn University of Technology, Estonia</i></p>
<p><b>Methods to Define Operational Lifetime of Overhead Lines in Estonian Transmission Grid</b> Henri Manninen, <i>Tallinn University of Technology, Estonia</i></p>
<p><b>Power Market Liberalisation Experience in Baltic States: Review of Power Market Liberalisation Process in Estonia, Latvia and Lithuania</b> Erkki Sapp, <i>Tallinn University of Technology, Estonia</i></p>
<p><b>Studding the Impacts of Photovoltaic Systems on Low-Voltage Distribution Grids: Peak Load Assessment</b> Rui Lopes, <i>FCT-UNINOVA, Portugal</i></p>
<p><b>DC Power Line Loss Simulation Method by using Variable Resistor in MATLAB Environment</b> Girts Stana, <i>Riga Technical University, Latvia</i></p>
<p><b>First Results on Load Model Estimation Using Digital Fault Recorder Measurements</b> Madis Leinakse, <i>Tallinn University of Technology, Estonia</i></p>
<p><b>Efficiency Analysis of Smart Distribution Network</b> Jonas Vaišnys, <i>Kaunas University of Technology, Lithuania</i></p>
<p><b>16:00-16:15 – Coffee</b></p>



**16:15-18:00 – Regular Session**

**POWER ELECTRONICS**

**Chairman: Dr. Andrei Blinov, Co-Chairman: Dr. Jelena Armas**

**Bidirectional Soft-Switching Current-Fed Flyback Converter with Natural Clamping for Low Voltage Battery Energy Storage Applications**

Roman Kosenko, *Tallinn University of Technology, Estonia*

**Overview of Control Methods of DC-AC Grid Connected Converter**

Elena Makovenko, *Tallinn University of Technology, Estonia*

**Induction Motor Drive System Powered From Solar Panels – Experimental Setup**

Wojciech Matelski, *Electrotechnical Institute, Poland*

**Properties of the AC/AC Buck-Boost Converter**

Marcis Prieditis, *Riga Technical University, Latvia*

**Comparative Study of Efficiency of Three-Phase Three-Level Neutral-Point-Clamped and T-Type Quasi-Z-Source Inverters with PWM**

Mercedes Ruiz-Cortés, *University of Extremadura, Spain*

**SVPWM Strategy for Single-Phase Three-Level Impedance Source Inverter**

Tatiana Shults, *Novosibirsk State Technical University, Russia*

**Power Electronic Transformers Review**

Andrey Sidorov, *Novosibirsk State Technical University, Russia*

**18:00-19:45 – Regular Session**

**ELECTRICAL ENGINEERING AND ELECTRICAL MACHINES**

**Chairman: Prof. Oleksandr Velihorskyi, Co-Chairman: Dr. Oleksandr Bondarenko**

**Multi-Objective Design Optimization of a High-Temperature Superconducting Quasi-Diamagnetic Motor**

Marcell Baranyai, *Obuda University, Hungary*

**Determination of Thermal Convection Coefficient from Coil's Flat Plate Side**

Payam Shams Ghahfarokhi, *Tallinn University of Technology, Estonia*

**Noise, Vibration and Harshness on a Permanent Magnet Synchronous Motor for Electric Vehicle Applications**

Jaime Pando-Acedo, *University of Extremadura, Spain*

**Adjusted Electrical Equivalent Circuit Model of Induction Motor**

Aleksei Petrov, *Pskov State University, Russia*

**Electronic Phase Shifting in Multipulse Rectifier**

Yurii Voitovych, *National Technical University "Kharkiv Polytechnic Institute", Ukraine*

**Reliability-Oriented Cost Benchmarking of Active Capacitive DC-Links in Single-Phase Power Converters**

Haoran Wang, *Aalborg University, Denmark*

**Topology Analyser System for Modelling of Switched Reluctance Machines**

Sandor Horvath, *Obuda University, Hungary*

**20:30-24:00 – Gala Dinner and Awards Ceremony**