

## SYMPOSIUM PROGRAM

JANUARY 13, 2014
<b>12:30-13:30 - Lunch</b>
<b>13:00-14:00 - Registration</b>
<b>14:00-14:15 - Opening Ceremony</b> Dmitri Vinnikov, <i>General Chairman</i> Tõnu Lehtla, <i>Chairman of the Council of Doctoral School of Energy and Geotechnology,</i> <i>Tallinn University of Technology</i>
<b>14:15-16:00 – Invited Speeches</b> <b><i>REDUCING LOSSES OF ELECTRICAL MACHINE</i></b> Prof. Tapani Jokinen, <i>Aalto University, Finland</i> <b><i>SUPERCONDUCTING ROTATING ELECTRICAL MACHINES</i></b> Prof. Istvan Vajda, <i>Obuda University, Hungary</i>
<b>16:00-16:15 - Coffee</b>
<b>16:15-18:00 – Invited Speeches</b> <b><i>CONTROL AND MODULATION OF AC-DC-AC CONVERTERS FOR SMALL WIND TURBINES</i></b> Prof. Mariusz Malinowski, <i>Warsaw University of Technology, Poland</i> <b><i>HYBRID CONVERTERS IN AC POWER GRID</i></b> Dr. Jacek Kaniewski, <i>University of Zielona Gora, Poland</i>
<b>20:00-23:00 – Welcome Reception</b>

**JANUARY 14, 2014**

**09:00-10:30 – Workshop**

**SYSTEM-ON-CHIP DESIGN CHALLENGES**

**Lectors:** Prof. Sergii Ivanets, *Chernihiv National Technological University, Ukraine*  
Prof. Ilya Galkin, *Riga Technical University, Latvia*

**10:30-12:00 - Tutorials**

**POWER ELECTRONICS**

**Chairman: Prof. Istvan Vajda, Co-Chairman: Dr. Lauri Kütt**

**Resonant Converters with Quasi-Z-Source Networks**

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

**Power Electronics for Modern Power Supply Systems of Aircraft**

Prof. Sergey Kharitonov, *Novosibirsk State Technical University, Russia*

**Harmonic Analysis of Motor Currents in Smart Drive using VSI with Economic DC Link**

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

**Integration of Photovoltaic Plants into the Grid**

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

**12:00-13:00 - Tutorials**

**SMART GRIDS**

**Chairman: Prof. Mariusz Malinowski, Co-Chairman: Prof. Marius Klytta**

**Analysis of Local Energy Production Possibilities for Office Buildings**

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

**Home Monitoring Systems in a Smart Grid Context**

Prof. Joao Martins, *Universidade Nova de Lisboa, Portugal*

**13:00-14:00 – Lunch**

<p><b>14:00-15:30 – Tutorials</b>  <b>ELECTRICAL DRIVES</b>  <b>Chairman: Prof. Enrique Romero-Cadaval, Co-Chairman: Prof. Sergey Kharitonov</b></p>
<p><b>Design Considerations for Propulsion Drives of Electric Vehicles</b>  Prof. Valery Vodovozov, <i>Tallinn University of Technology, Estonia</i></p>
<p><b>Design Process of a Traction Motor for a Hybrid City Bus Application</b>  Dr. Pia Lindh, <i>Lappeenranta University of Technology, Finland</i></p>
<p><b>Influence of the Electric Vehicle Charging to the Distribution Networks</b>  Dr. Lauri Kütt, <i>Aalto University, Finland</i></p>
<p><b>Identification Using Electric Drives</b>  Dr. Tuomo Lindh, <i>Lappeenranta University of Technology, Finland</i></p>
<p><b>15:30-15:45 - Coffee</b></p>
<p><b>15:45-18:00 – Special Session</b>  <b>EDUCATIONAL ASPECTS</b>  <b>Chairman: Prof. Istvan Vajda, Co-Chairman: Dr. Zoja Raud</b></p>
<p><b>Evaluative Language Devices in Engineering Research Articles</b>  Mare-Anne Laane, <i>Tallinn University of Technology, Estonia</i></p>
<p><b>Proceedings of Winter School’2014 – Report on Common Formatting Mistakes</b>  Dr. Janis Zakis, <i>Tallinn University of Technology, Estonia</i></p>
<p><b>Development of Students’ Creative Activity Through Experimentation</b>  Dr. Zoja Raud, <i>Tallinn University of Technology, Estonia</i></p>
<p><b>Investigation of Applicability of Direct and Indirect Measurement Methods in the Engineering Education</b>  Anna Szakallas, <i>Budapest University of Technology and Economics, Hungary</i></p>
<p><b>PhD Studies in National Technical University of Ukraine “Kyiv Polytechnic Institute”</b>  Dr. Tetiana Khyzhniak, <i>National Technical University of Ukraine “Kyiv Polytechnic Institute”, Ukraine</i></p>
<p><b>18:30-19:30 - Dinner</b></p>
<p><b>20:00-23:00 – Social Session</b></p>

JANUARY 15, 2014

**09:00-10:45 – Tutorials**

**MECHATRONICS AND MECHANICAL ENGINEERING - I**

**Chairman: Prof. Tauno Otto**

**Modern Mathematical Methods in Tribology**

Prof. Victor Musalimov, *Saint Petersburg National Research University of Informational Technology, Mechanics and Optics, Russia*

**House of Knowledge - Where Knowledge Meets Innovation**

Prof. Zeljko Tekic, *University of Novi Sad, Serbia*

**Comparative Study on Vehicle Trajectory Generation**

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

**10:45-11:00 – Break**

**11:00-13:00 – PhD Thesis Defence**

Victoria Bashkite, *Department of Machinery, Tallinn University of Technology*

**Green Framework Development for Used Industrial Equipment Life Cycle Assessment and Extension**

Supervisor: Dr. Tatjana Karaulova, *Tallinn University of Technology, Estonia*

Opponents: Prof. Zeljko Tekic, *University of Novi Sad, Serbia*  
Dr. Olev Eljas, *Software Engineering Center OÜ, Estonia*

**13:00-14:00 – Lunch**

**14:00-15:30 – Regular Session**

**MECHATRONICS - I**

**Chairman: Prof. Mart Tamre, Co-Chairman: Dr. Gennadi Arjassov**

**Eddy Current Electrical Conductivity Measurements for Temperature Measurements**

Martin Parker, *Tallinn University of Technology, Estonia*

**3D Measurement Setup for Angle Measurement Multi-Element Photo-Detector**

Klodian Dhoska, *Tallinn University of Technology, Estonia*

**Design of Autonomous Manipulation System Based on Technical Vision**

Dmitry Kupriyanov, *National Research University of Informational Technology, Mechanics and Optics (NRU ITMO), Russia*

**Hardware Capturing Analysis and Synthesis of Human Gait**

Irina Rubinstein, *National Research University of Informational Technology, Mechanics and Optics (NRU ITMO), Russia*

**Solution of Plane Inverse Kinematics in Case of Limited Height of Space**

Sergei Zhigailov, *Tallinn University of Technology, Estonia*

<b>15:30-15:45 - Coffee</b>
<b>15:45-17:00 – Regular Session</b> <b>MECHATRONICS – II</b> <b>Chairman: Prof. Victor Musalimov, Co-Chairman: Dr. Olev Eljas</b>
<b>A Modern Laboratory of the External Friction Dynamic Investigations</b> Andrey Tyurin, <i>National Research University of Informational Technology, Mechanics and Optics (NRU ITMO), Russia</i>
<b>Tunnelling Machine Cutting Pressure Calculation</b> Dmitri Katushin, <i>Tallinn University of Technology, Estonia</i>
<b>Cooling Potential of a Collector Night-Radiative Cooling System</b> Priit Pikk, <i>University of Life Sciences, Estonia</i>
<b>Improved Calculation Method of Barge Hull</b> Dmitri Gornostajev, <i>Tallinn University of Technology, Estonia</i>
<b>Some Methods to Operate Artificial Limbs Using EMG Technology</b> Dmitri Rõbak, <i>Tallinn University of Technology, Estonia</i>
<b>Reed as Fuel. Resources, Characteristics, Using in Energy</b> Ülo Kask, <i>Tallinn University of Technology, Estonia</i>
<b>17:00-18:30 – Regular Session</b> <b>MECHANICAL ENGINEERING</b> <b>Chairman: Prof. Trieu Minh Vu, Co-Chairman: Dr. Tatjana Karaulova</b>
<b>Erosion Wear Testing of Boiler Steels at Elevated Temperatures</b> Jelena Priss, <i>Tallinn University of Technology, Estonia</i>
<b>Co-Creation in Product Development Projects</b> Anja Orcik, <i>University of Novi Sad, Serbia</i>
<b>SMEs Collaborative Networks Concept of its Establishment</b> Igor Polyantchikov, <i>Tallinn University of Technology, Estonia</i>
<b>Cooperation Models Between Companies and Universities: a Case Study</b> Merili Randmaa, <i>Tallinn University of Technology, Estonia</i>
<b>Digital Object Memory Based Monitoring and Assistance Applications in Manual Work Station</b> Tanel Aruväli, <i>Tallinn University of Technology, Estonia</i>
<b>Machinery Prognostics</b> Aleksi Snatkin, <i>Tallinn University of Technology, Estonia</i>
<b>18:30-19:30 - Dinner</b>
<b>20:00-23:00 – Social Session</b> <b>PRESENTATION "INTRODUCTION TO VIETNAM"</b> Prof. Trieu Minh Vu, <i>Tallinn University of Technology, Estonia</i>

**JANUARY 16, 2014**

**09:00-10:00 – Special Session**

***PhD THESES PRESENTATIONS***

**Chairman: Prof. Valery Vodovozov, Co-Chairman: Prof. Ivars Rankis**

**Research and Development of Electrical Propulsion Drives with Increased Operational Efficiency**

Anton Rassõlkin, *Tallinn University of Technology, Estonia*

**Improving Visual Code Based Traceability of Wood Products**

Ahti Põlder, *Tallinn University of Technology, Estonia*

**The Optimization of Power Supply Restoration in Medium Voltage**

Sigmar Priman, *Tallinn University of Technology, Estonia*

**Overview of Research Problems in Flexible Manufacturing Systems**

Aigar Hermaste, *Tallinn University of Technology, Estonia*

**10:00-11:30 Regular Session**

***POWER ENGINEERING***

**Chairman: Dr. Lauri Kütt, Co-Chairman: M. Sc. Imre Drovтар**

**Active Power Losses in Estonian Power Transmission Network**

Karin Maria Ainsaar, *Tallinn University of Technology, Estonia*

**Overview of AC 25 kV 50 Hz Traction Power Supply Systems and Contact Line Configurations**

Triin Kangro, *Tallinn University of Technology, Estonia*

**Online Condition Monitoring System for Medium Voltage Distribution Networks**

Muhammad Shafiq, *Aalto University, Finland*

**Bare Overhead Conductor Thermal Rating Calculation on The Example of Estonian OHL**

Vadim Slenduhhov, *Tallinn University of Technology, Estonia*

**Automatic Detection of Poor Electrical Contact in Low voltage (less than 1 kV) Power Grid**

Lourenss Zeikats, *Riga Technical University, Latvia*

**11:30-13:00 Regular Session**

***SMART GRIDS AND DEMAND SIDE MANAGEMENT***

**Chairman: Dr. Argo Rosin, Co-Chairman: M. Sc. Javier Gallardo-Lozano**

**Demand Side Management Potential in Estonia – a Case Study for the Wood Industry**

Imre Drovтар, *Tallinn University of Technology, Estonia*

**Analysis of Proposed Microgrid Electric Energy Management Methods**

Tarmo Korõtko, *Tallinn University of Technology, Estonia*

**Context Data Analysis for Microgrid Decision Support System**

Anna Kyselova, *National Technical University of Ukraine “Kyiv Polytechnic Institute”, Ukraine*

**Electricity Price and Load Forecast Based New Energy Management System for Households**

Denis Lebedev, *Tallinn University of Technology, Estonia*

**Active Battery Equalization Novel Control for Series Connected Batteries**

Javier Gallardo-Lozano, *University of Extremadura, Spain*

<b>13:00-14:00 – Lunch</b>
<b>14:00-15:30 – Special Session</b> <b>SUSTAINABLE MINING ENGINEERING</b> <b>Chairman: Dr. Veiko Karu, Co-Chairman: Prof. Mall Orru</b>
<b>Backfilling and Waste Management in Estonian Oil Shale Industry</b> Jüri-Rivaldo Pastarus, <i>Tallinn University of Technology, Estonia</i>
<b>Mine Collapses in NE Estonia – Detection, Identification and Causes</b> Heidi Soosalu, <i>Tallinn University of Technology, Estonia</i>
<b>Tectonics of the Continental and Offshore Territory of Estonia and its Structural Evolution in Proterozoic and Phanerozoic</b> Ülo Sõstra, <i>Tallinn University of Technology, Estonia</i>
<b>15:30-16:00 – Coffee</b>
<b>16:00-18:00 – Regular Session</b> <b>MINING TECHNOLOGIES</b> <b>Chairman: Dr. Jüri-Rivaldo Pastarus, Co-Chairman: Prof. Ingo Valgma</b>
<b>Mining Waste Management Methods</b> Veiko Karu, <i>Tallinn University of Technology, Estonia</i>
<b>Sustainable and Environmentally Acceptable Oil Shale Mining</b> Ingo Valgma, <i>Tallinn University of Technology, Estonia</i>
<b>NORwEST as Cooperation Basic Structure</b> Erki Närep, <i>Tallinn University of Technology, Estonia</i>
<b>Crushing and Sieving With Pilot Unit</b> Tiit Rahe, <i>Tallinn University of Technology, Estonia</i>
<b>Blasting Survey</b> Raul Roots, <i>Tallinn University of Technology, Estonia</i>
<b>Mine Qualification</b> Gaia Grossfeldt, <i>Tallinn University of Technology, Estonia</i>
<b>Applications of Conveyor Bridges for Oil Shale Mining</b> Martin Saarnak, <i>Tallinn University of Technology, Estonia</i>
<b>Local Mineral Resources for Local Road Construction: Dilemma Between Sustainability and Quality</b> Julia Gulevich, <i>Tallinn University of Technology, Estonia</i>
<b>Laser Scanning Differences Between Normal Surveys</b> Fred Rusanov, <i>Tallinn University of Technology, Estonia</i>
<b>18:00-19:00 – Dinner</b>
<b>19:00-22:00 – Visit to Waterpark in Tevise Paradiis (Side str. 14, Pärnu)</b>

JANUARY 17, 2014

**9:00-10:00 - Invited Speeches**

**SCIENCE INTO BUSINESS/ENTREPRENEURSHIP**

Dr. Hannes Agabus, *OÜ Ubik Solutions, Estonia*

**MODELING LOSSES IN ELECTRICAL MACHINES**

Prof. Anouar Belahcen, *Aalto University, Finland/Tallinn University of Technology, Estonia*

**10:00-11:00 – Panel Discussion**

**FUTURE EDUCATIONAL CHALLENGES IN ELECTRICAL ENGINEERING EDUCATION: WILL MOOCS BE A THREAT OR AN OPPORTUNITY?**

Moderator: Prof. Manfred Glesner, *Technische Universität Darmstadt, Germany*

**11:00-13:00 – Regular Session**

**POWER ELECTRONICS**

**Chairman: Dr. Tanel Jalakas, Co-Chairman: M. Sc. Anton Rassõlkin**

**SEPIC-Based Modular DC/DC Converter**

Andrii Chub, *Tallinn University of Technology, Estonia*

**Simulation Study and Validation of Control Methods for Simplified Multilevel AC-DC-AC Converter for Small Power Generation System**

Pawel Mlodzikowski, *Warsaw University of Technology, Poland*

**Brief View of Multi-Objective Optimization Approaches Used for Design AC-DC Power Electronic Converters**

Szymon Piasecki, *Warsaw University of Technology, Poland*

**Analysis of Harmonic Current Injection of Inverters**

Mikko Purhonen, *Lappeenranta University of Technology, Finland*

**An Overview on the Synchronous Generator Self-Excitation Converter Possible Configurations**

Genadijs Zaleskis, *Riga Technical University, Latvia*

**High Precision Hardware/Software Zero Crossing Detection**

Maxim Vorobyov, *Riga Technical University, Latvia*

**Modeling of Solar Irradiation on PV Cells and Panels**

Matthijs Heuvelmans, *KTH Royal Institute of Technology, Sweden*

**Quasi-Z-Source DC/DC Converter with a Series Resonant Circuit**

Liisa Liivik, *Tallinn University of Technology, Estonia*

**13:00-14:00 - Lunch**



**14:00-16:00 – Regular Session**

**ELECTRICAL DRIVES AND ELECTRICAL MACHINES**

**Chairman: Prof. Anouar Belahcen, Co-Chairman: M. Sc. Szymon Piasecki**

**Semi-Natural Simulation of Pumping Systems**

Levon Gevorgov, *Tallinn University of Technology, Estonia*

**COMSOL/MATLAB Simulation of a Permanent Magnet Synchronous Machine**

Gergely Máté Kiss, *Budapest University of Technology and Economics, Hungary*

**Spectral Stochastic FEM for Electromagnetic Problems with Random Conductor Locations**

Antti Lehtikainen, *Aalto University, Finland*

**Power Transformer Design Optimization with Geometric Programming**

Tamás Orosz, *Budapest University of Technology and Economics, Hungary*

**Design Considerations of Novel Superconductor-Based Electrical Rotating Machine**

Arpad Racz, *Budapest University of Technology and Economics, Hungary*

**Variable-Speed Single-Phase Induction Motor Drive**

Nikolai Lillo, *Tallinn University of Technology, Estonia*

**Using Efficiency Readings to Choose the Number of Running Pumps in Multi-Pump System**

Ilja Bakman, *Tallinn University of Technology, Estonia*

**The Implementation and Development Trends of High Specific Power Electrical Drives**

Rene Nukki, *Tallinn University of Technology, Estonia*

**Methods for Calculation the Variable Parameters of the Rotor of the Cage Induction Motor**

Julija Maksimkina, *Riga Technical University, Latvia*

**16:00-16:15 – Coffee**

**16:15-17:30 – Regular Session**

**ELECTRICAL ENGINEERING**

**Chairman: Prof. Joao Martins, Co-Chairman: M. Sc. Gergely Máté Kiss**

**Design Aspects and Test of a Magnetic Shielding Inductive Fault Current Limiter**

Pedro Arsenio, *Nova University of Lisbon, Portugal*

**Technical Solutions to Realization of Regeneration Energy Storage System of Industrial Robots**

Marcis Prieditis, *Riga Technical University, Latvia*

**Electrical Technologies for Primary Energy Saving in Buildings**

Szymon Werminski, *University of Zielona Gora, Poland*

**A Study of Different Aspects for Building a Thermal Model for Lithium-Ion Cells**

Ahmad Rahmoun, *Tallinn University of Technology, Estonia*

**Modelling and Simulation of Saturated Core Fault Current Limiters**

Nuno Vilhena, *Nova University of Lisbon, Portugal*

**First Charging Cycle Model of a Lithium-ion Battery and its Experimental Verification**

Kristjan Peterson, *Tallinn University of Technology, Estonia*

**17:30-18:15 – Special Session**

***ELECTRICAL ENGINEERING***

**Chairman: Prof. Jaan Järvik, Co-Chairman: M. Sc. Kristjan Peterson**

**Does the Ether is an Infinitely Large Conductor?**

Prof. Jaan Järvik, *Tallinn University of Technology, Estonia*

**Induction Heating Exploration**

Anatoli Korolev, *Ivanovo State Power University, Russia*

**Foundations for Simulation of Synchronous Polyphase Motors with Permanent Magnets**

Vladimir Martynov, *Ivanovo State Power University, Russia*

**18:15-19:00 – Closing Plenary Session**

***ENHANCING INDUSTRIAL APPLICATIONS WITH WIRELESS SENSOR NETWORKS***

Prof. Manfred Glesner, *Technische Universität Darmstadt, Germany*

François Philipp, *Technische Universität Darmstadt, Germany*

**20:00-23:00 – Gala Dinner and Awards Ceremony**