

SYMPOSIUM PROGRAM

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| JANUARY 16, 2012 |
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| 12:30-13:30 - Lunch |
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| 13:00-14.00 - Registration |
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| 14:00-14:30 - Opening Ceremony |
| Dmitri Vinnikov, <i>General Chairman</i> Andres Keevallik, <i>Rector of Tallinn University of Technology</i> Tõnu Lehtla, <i>Dean of Power Engineering Faculty, Tallinn University of Technology</i> |
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| 14:30-15:45 - Invited Speech |
| On the Use of Formal Languages and Grammatical Inference within Electrical and Power Engineering Prof. João Martins, <i>Universidade Nova de Lisboa-FCT-DEE and UNINOVA-CTS, Portugal</i> |
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| 15:45-16:00 - Coffee |
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| 16:00-18:00 – Special Session <i>HOW TO PREPARE A HIGH-QUALITY SCIENTIFIC PAPER</i> Chairman: Dr. Janis Zakis |
| Readability Formulas and Text Variables Affecting Research Writing Mare-Anne Laane, <i>Tallinn University of Technology, Estonia</i> |
| Common Formatting Mistakes in Scientific Papers Janis Zakis, <i>Tallinn University of Technology, Estonia</i> |
| MS Word as a Tool for Preparing Scientific Paper Rain Lahtmets, <i>Tallinn University of Technology, Estonia</i> |
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| 20:00-23.00 – Welcome Reception |

JANUARY 17, 2012

09:00-13:00 – Tutorials

ELECTRICAL MACHINES

Chairman: Prof. Tapani Jokinen, Co-Chairman: M.Sc. Guntis Orlovskis

Modern Approaches to Rotor Fault Diagnostics

Prof. Vanja Ambrozic, *University of Ljubljana, Slovenia*

Finite Element Analysis of Electrical Machines

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

Direct On-Line Connected Permanent Magnet Generators

Dr. Tuomo Lindh, *Lappeenranta University of Technology, Finland*

Design Process of Traction Motor Having Concentrated Non-Overlapping Windings

Dr. Pia Lindh, *Lappeenranta University of Technology, Finland*

13:00-14:00 - Lunch

14:00-15:00 - Invited Speech

Directions in Electronics: from System Design to Adaptronics and Smart Grids

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

15:00-16:30 – Regular Session

POWER ELECTRONICS - I

Chairman: Prof. Enrique Romero, Co-Chairman: M.Sc. Andrei Blinov

Novel Multiport DC/DC Converter for Distributed Energy Systems

Anna Andrijanovits, *Tallinn University of Technology, Estonia*

Effects of Parasitic Parameters on Three Phase EMI Filters

Gundars Asmanis, *Riga Technical University, Latvia*

Study of High Brightness RGB Light-Emitting Diode Color Control Systems

Olegs Tetervnoks, *Riga Technical University, Latvia*

Design of Primary Power Supply for Composite LED Luminary

Irena Milashevski, *Tallinn University of Technology, Estonia*

Review of DC Smoothing Techniques for Single-Phase AC-DC Converters

Jānis Doniņš, *Riga Technical University, Latvia*

Determination of Leakage Inductances of Three-Winding Transformer for HF-PSA Resonant Circuit

Helar Niilo, *Tallinn University of Technology, Estonia*

16:30-16:45 - Coffee

16:45-18:30 – Regular Session

SMART GRIDS

Chairman: Dr. Elmo Pettai, Co-Chairman: M.Sc. Oleksandr Husev

Microgrids Performance Challenges

Aleksei Kazakov, *Tallinn University of Technology, Estonia*

Profitability of Energy Storages for Household Load Scheduling

Denis Lebedev, *Tallinn University of Technology, Estonia*

Development of Electrical Network of Tallinn University of Technology

Georg Soots, *Tallinn University of Technology, Estonia*

Undesirable Usage of Energy in Residential House

Jaani Niitsoo, *Tallinn University of Technology, Estonia*

An Information Modeling Method for Electric Micro Grids

Tarmo Korõtko, *Tallinn University of Technology, Estonia*

Effectiveness Analysis of Microgrid Modules

Kristjan Peterson, *Tallinn University of Technology, Estonia*

Analysis of Distribution Substation Topologies for Energy Exchanging between EV and Utility Networks

Marek Mägi, *Tallinn University of Technology, Estonia*

18:30-19:30 - Dinner

20:00-23:00 – Social Session

JANUARY 18, 2012

09:00-13:00 – Tutorials

SMART GRIDS

Chairman: Prof. Ilya Galkin, Co-Chairman: M.Sc. Klemen Drobnic

CUPS&V2G - Elements of the Smart Grid

Prof. Grzegorz Benysek, *University of Zielona Gora, Poland*

Conducted Electromagnetic Interferences in Smart Grids

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

Research on Batteries for Electric Vehicles and Smart Grids at the University of Applied Sciences Kempten

Prof. Helmuth Biechl, *Kempten University of Applied Sciences, Germany*

Renewing Electrical Technology

Prof. Istvan Vajda, *Budapest University of Technology and Economics, Hungary*

13:00-14:00 - Lunch

14:00-15:00 – Special Session

PhD THESES PRE-DEFENCE PRESENTATIONS

Chairman: Prof. João Martins, Co-Chairman: Prof. Valery Vodovozov

Research of Switching Properties and Performance Improvement Methods of High-Voltage IGBT based DC/DC Converters

Andrei Blinov, *Tallinn University of Technology, Estonia*

Neuro-fuzzy control System of Active Line Conditioner

Oleksandr Husev, *Tallinn University of Technology, Estonia/Chernihiv State Technological University, Ukraine*

Energy-Efficient Control of the Mobile Unmanned Ground Vehicle

Maido Hiitemaa, *Tallinn University of Technology, Estonia*

Development of Learning Methods and Visual Teaching Materials for Engineering Student Courses Covering Actuators

Eduard Brindfeldt, *Tallinn University of Technology, Estonia*

15:00-16:30 – Regular Session

ELECTRICAL MACHINES

Chairman: Prof. Anouar Belahcen, Co-Chairman: M.Sc. Helar Niilo

Slow-Speed Ring-Shaped Permanent Magnet Generator for Wind Applications

Ants Kallaste, *Tallinn University of Technology, Estonia*

Influence of the Unbalanced Voltage on Torque Pulsation for Induction Motor

Guntis Orlovskis, *Riga Technical University, Latvia*

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| <p>Rotor Fault Detection in FOC Controlled Induction Motor Drives Klemen Drobnic, <i>University of Ljubljana, Slovenia</i></p> |
| <p>Condition Monitoring of Electrical Machines Toomas Vaimann, <i>Tallinn University of Technology, Estonia</i></p> |
| <p>A Novel Control Strategy for the Switched Reluctance Generator Peter Kosmatin, <i>University of Ljubljana, Slovenia</i></p> |
| <p>A 2D FEM EM Model for the Study of Electromagnetic Faults in Induction Motors Javier Martinez, <i>Aalto University, Finland</i></p> |
| <p>16:30-16:45 - Coffee</p> |
| <p>16:45-18:30 – Regular Session ELECTRICAL ENGINEERING - I Chairman: Prof. Jaan Järvi, Co-Chairman: M.Sc. Toomas Vaimann</p> |
| <p>Autonomous Monitoring System Harvesting Energy from Air Gusts caused by Moving Objects Alexander Suzdalenko, <i>Riga Technical University, Latvia</i></p> |
| <p>Approach for Monitoring and Measurement of Interdependent Services in Critical Infrastructures Anatolijs Zabasta, <i>Riga Technical University, Latvia</i></p> |
| <p>Calculation of the Traction Effort of Switching Locomotive Anton Rassõlkin, <i>Tallinn University of Technology, Estonia</i></p> |
| <p>Hybrid Vehicle for Military Operations Genadijs Zaleskis, <i>Riga Technical University, Latvia</i></p> |
| <p>Large-Scale Wind Integration Impact on the Baltic Region's Electricity Market Participants in 2025 - With and Without RES Subsidies Imre Drovtar, <i>Tallinn University of Technology, Estonia</i></p> |
| <p>Electronic Differential Behaviour Analysis for Electric Kart Kristaps Vitols, <i>Riga Technical University, Latvia</i></p> |
| <p>Power and Frequency Control Principles of Different European Synchronous Areas Svetlana Pulkkinen, <i>Tallinn University of Technology, Estonia</i></p> |
| <p>18:30-19:30 - Dinner</p> |
| <p>20.00-23.00 – Social Session</p> |

JANUARY 19, 2012

09:00-13:00 – Tutorials

POWER ELECTRONICS FOR SMART GRIDS

Chairman: Prof. Tõnu Lehtla, Co-Chairman: M.Sc. Alexander Suzdalenko

Smart Inverter for Distributed Energy Resources

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

Power Electronic Smart Transformers - Future of Smart Grids or Just Vogue?

Prof. Ryszard Strzelecki, *Gdynia Maritime University, Poland*

Review of DC/DC Converter Topologies for Power Electronic Smart Transformer

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

Speeding Up the Charge in Electromobility

Dr. Hardi Hõimoja, *Ecole Polytechnique Fédérale de Lausanne, Switzerland*

Comparison of Different Boost Converters for Renewable Energy Applications

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

13:00-14:00 - Lunch

14:00-15:00 – Invited Speech

Introduction in Supervising of Scientific Project

Dr. Nadezda Kunicina, *Riga Technical University, Latvia*

15:00-16:00 – Regular Session

POWER ELECTRONICS - II

Chairman: Prof. Grzegorz Benysek, Co-Chairman: M.Sc. Anna Andrijanovits

Space Vector Modulation Techniques for Common Mode Voltage Elimination in the Three-Level Voltage Source Inverter

Piotr Lezynski, *University of Zielona Gora, Poland*

Transient Response Analyze of Different Voltage-Fed qZS-family Inverters

Silver Ott, *Tallinn University of Technology, Estonia*

Power Conditioning System (PCS) Based on a Shunt Active Power Filter with Supercapacitor

Maciej Grabarek, *Gdynia Maritime University, Poland*

Parameters Identification of Equivalent Circuit Diagrams for Li-Ion Batteries

Ahmad Rahmoun, *Kempton University of Applied Sciences, Germany*

16:00-16:15 - Coffee

16:15-18:00 – Regular Session

MECHANICAL ENGINEERING

Chairman: Prof. Mart Tamre, Co-Chairman: M.Sc. Priit Pikk

Slurry Erosion Testing of Steel with Oil Shale Ash as Abrasive

Jelena Priss, *Tallinn University of Technology, Estonia*

Energy Consumption of Mini UAV Helicopters with Different Number of Rotors

Dmitri Aleksandrov, *Tallinn University of Technology, Estonia*

Value Investigation for Used Automotive Products by Analysis of Possible End-of-Life Scenarios

Viktoria Bashkite, *Tallinn University of Technology, Estonia*

Nanodevices Expectations in Construction Engineering

Tanel Aruväli, *Tallinn University of Technology, Estonia*

Optimal Design of Elastic Elements of Ladder Frames

Sergei Zhigailov, *Tallinn University of Technology, Estonia*

Methodology of System Integrated Analysis and Assessment of Operational Efficiency of a Technological System (E-Profil AS Case Study)

Roman Zahharov, *Tallinn University of Technology, Estonia*

Elaboration of Tool for Production Process Reliability Evaluation in Machinery Industry

Marina Kostina, *Tallinn University of Technology, Estonia*

18:00-19:00 - Dinner

19:00-22:00 – Visit to waterpark in Tevise Paradiis (Side str. 14, Pärnu)

JANUARY 20, 2012

09:00-13:00 – Tutorials

ELECTRICAL ENGINEERING

Chairman: Prof. Helmuth Biechl, Co-Chairman: M.Sc. Kristaps Vitols

Characteristics, Demagnetisation and Modelling of Permanent Magnets

Prof. Tapani Jokinen, *Aalto University, Finland*

Price Sensitive Control Models for Energy Demand Side Management

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

Wind Energy Future in Estonia

Dr. Hannes Agabus, *4E Tehnoinvest, Estonia*

Lighting for Schools

Dr. Jelena Armas, *Eesti Energia Jaotusvõrk OÜ, Estonia*

Educational Thesauri in Teaching and Learning Engineering Disciplines

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

Interaction in Electrical Circuits and Elements

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

13:00-14:00 - Lunch

14:00-16:00 – Regular Session

MINING ENGINEERING

Chairman: Prof. Ingo Valgma, Co-Chairman: M.Sc. Julia Gulevich

Mine Development and Blasting

Dr. Otto Hedström, *Aalto University, Finland*

Sustainable Mining Conditions in Estonia

Prof. Ingo Valgma, *Tallinn University of Technology, Estonia*

Sustainable Assessment in Dolostone Mining Management

Julija Šommet, *Tallinn University of Technology, Estonia*

Evaluation of Local Aggregate Unbound Mixtures for Estonian Highway Base Courses

Julia Gulevich, *Tallinn University of Technology, Estonia*

Water Balance of the Selisoo Bog and its Changes Caused by Underground Mining

Merle Otsmaa, *Tallinn University of Technology, Estonia*

Dependence of Land Stability on Applied Mining Technology

Veiko Karu, *Tallinn University of Technology, Estonia*

16:00-16:15 - Coffee

16:15-17:45 – Regular Session

ELECTRICAL ENGINEERING - II

Chairman: Dr. Indrek Roasto, Co-Chairman: M.Sc. Piotr Lezynski

Dual Active Bridge Based Isolation Stage for Power Electronic Transformer

Viktor Beldjajev, *Tallinn University of Technology, Estonia*

Diagnostics System for Electronic Circuits

Sergei Melentjev, *Tallinn University of Technology, Estonia*

Vector Optimization of Thermal Power Plants

Victor Astapov, *Tallinn University of Technology, Estonia*

Overview of Photovoltaic-Thermal Collector Cooling Technologies in Northern Latitudes

Priit Pikk, *Estonian University of Life Sciences, Estonia*

Impact of Conducting and Insulating Material to Electric Field

Heigo Mölder, *Tallinn University of Technology, Estonia*

Experiments with Travelling Wave Transients for Verification of Suitability of Sensor

Lauri Kütt, *Tallinn University of Technology, Estonia*

17:45-18:30 – Regular Session

EDUCATIONAL ASPECTS

Chairman: Prof. Valery Vodovozov, Co-Chairman: M.Sc. Kristjan Peterson

Web-Based Learning with Social Networking of Electronic Engineering and Electrical Drives

Zoja Raud, *Tallinn University of Technology, Estonia*

Description of Teaching Processes Using Six-Dimensional Space Framework

Margus Müür, *Tallinn University of Technology, Estonia*

Teaching Holistic Value Approach at Tallinn University of Technology

Merili Randmaa, *Tallinn University of Technology, Estonia*

20.00-23.00 – Gala Dinner and Awards Ceremony