

ENERGEETIKATEADUSKOND
ELEKTRIAJAMITE JA JÕUELEKTROONIKA INSTITUUT
TEADUS- JA ARENDUSTEGEVUSE AASTAARUANNE 2012

1. Instituudi struktuur

Elektriamite ja jõuelektronika instituut, Department of Electrical Drives and Power Electronics

Instituudi direktor Tõnu Lehtla

- Elektriamite ja elektrivarustuse õppetool, Chair of Electrical Drivers and Electrical Supply
- Robotitehnika õppetool, Chair of Robotics, Tõnu Lehtla

2. Instituudi teadus- ja arendustegevuse (edaspidi T&A) iseloomustus

2.1 Elektriamite ja jõuelektronika instituudi teadustöö toimus 2012. aastal järgmistes valdkondades

1. Muundustehnika ja jõupooljuhtmuundurite juhtimine, sh intelligentsed trafod. (Töörühma juht Dmitri Vinnikov). Töörühm on Euroopa jõuelektronika kompetentsikeskuse liige.
2. Elektriamid ja ajamite juhtimine, sh transpordivahendite ja tööstusrobotite juhtimine ning elektriautode laadimisjaamad. (töörühma juht prof. Valeri Vodovozov)
3. Ettevõtete, avaliku sektori ja kodutarbijate elektrivarustus ja energiatarbimise juhtimine, sh hajaenergeetikaobjektide ja mitmesuguste elektrisalvestite rakendamine. (Töörühma juht vanemteadur Argo Rosin)

2.1.1 teadustöö kirjeldus (*inglise keeles*);

Work group of power electronics and power converter technology

Innovative semiconductor converters (qZS converters, intelligent converters, DC/DC converters with high power density, frequency converters)

DC/DC converters with inverter and high-frequency intermediate based on IGBT transistors for powering on-board systems of trams and electric trains, integrating renewable energy sources and electricity storage devices to power network

Basic research of commutation processes and electromagnetic compatibility

Implementation research on scheme solutions

Prototypes for product development

Work group of electrical drives and industry automation

Electrical drives, industrial automation, electrical transport, including fast charging of electric cars in intelligent power networks

Electrical measuring in intelligent power networks

Researching electrical drives, electrical transport, and fast-charging stations in case of the communication channels of different types of batteries, power supply and converter systems, and in case of intelligent network infrastructure

Work group of electricity supply and local distribution grids (microgrids)

Power supply for companies and buildings. Analyse of load characteristics and research of load management methods

Modelling, simulation, investigating protection and safety problems

Power supply, electric lighting, and lighting and heating management in intelligent network

Researching the lighting characteristics (illumination, brightness, spectrum (colour), discomfort, etc.) of different types of lighting sources in the context of purpose (indoor and outdoor objects, and street lighting), Estonian global location, natural light, climate, and seasons

2.1.2 aruandeaastal saadud tähtsamad teadustulemused (*inglise keeles*).

Work group of power electronics and power converter technology

Best scientific publication in TUT in 2012 (D. Vinnikov, I. Roasto)

New types of converters for the renewable energy sources and successful cooperation with industrial companies in the frame of European competence centre of power electronics

Work group of electrical drives and industry automation

Successful development of infrastructure in the department for the research of charging stations for electric cars. Cooperation with industrial companies (ABB and Harju Electer)

Work group of electricity supply and local distribution grids (microgrids)

Successful development of infrastructure in the department for the research of smart and microgrids. Cooperation with industrial companies (Lep12121, Lep12154, Lep12176, Lep12012, Lep12013) and international project VFP514.

2.2 Iga uurimisgrupi 5 olulisemat publikatsiooni läinud aastal.

Work group of power electronics and power converter technology

1. Vinnikov, D.; Roasto, I.; Strzelecki, R.; Adamowicz, M. (2012). Step-Up DC/DC Converters with Cascaded Quasi-Z-Source Network . IEEE Transactions on Industrial Electronics, 59(10), 3727 - 3736.
2. Vinnikov, D.; Roasto, I.; Jalakas, T.; Strzelecki, R.; Adamowicz, M. (2012). Analytical Comparison between Capacitor Assisted and Diode Assisted Cascaded Quasi-Z-Source Inverters. Przegląd Elektrotechniczny, 88(1a/2012), 212 - 217.
3. Roasto, I.; Vinnikov, D. (2012). Impact of component losses on the voltage boost properties and efficiency of the QZS-converter family. COMPEL: The International Journal for Computation and Mathematics in Electrical and Electronic Engin, 31(6), 1945 - 1963.
4. Blinov, A.; Vinnikov, D.; Ivakhno, V.; Zamaruev, V. (2012). Implementation possibilities of hybrid IGBT-IGCT switches in three-level NPC inverters. COMPEL: The International Journal for Computation and Mathematics in Electrical and Electronic Engin, 31(6), 1917 - 1930.
5. Blinov, A.; Vinnikov, D.; Ivakhno, V.; Zamaruev, V. (2012). Hybrid IGBT-IGCT Switch. Przegląd Elektrotechniczny, 88(1a/2012), 12 - 15.

Work group of electrical drives and industry automation

1. Pettai, E. (2012). A 6D space framework for the description of distributed systems. *Estonian Journal of Engineering*, 18(2), 140 - 171.
2. Mägi, M; Peterson, K; Pettai, E. (2012). Analysis of Protection and Control Functions of Low Voltage Part of Substation for Smart Grid Applications. *In: Proceedings of 8th International Conference 2012 Electric Power Quality and Supply Reliability: 2012 Electric Power Quality and Supply Reliability, Tartu, June 11 - 13, 2012. (Toim.) Sakkos, T.. IEEE, 2012, 297 - 304.*
3. Vodovozov, V.; Raud, Z.; Lehtla, T. (2012). A Toolbox to Design Inverters for Automotive Applications. *In: Recent researches in applications of electrical and computer engineering :Proceedings of the 11th International Conference on Applications of Electrical Engineering (AEE '12) [...] Vouliagmeni Beach, Athens, Greece March 7-9, 2012: (Toim.) Kambe, T.; Bulucea, C. A.; Arapatsakos, C.. Vouliagmeni Beach, Athens, Greece:, 2012, 190 - 195.*
4. Brindfeldt, E.; Müür, M.; Pettai, E. (2012). Description of Learning Methods Using Sixdimensional Space Framework. 15th International Power Electronics and Motion Control Conference, EPE-PEMC 2012 ECCE Europe, Novi Sad,. IEEE, 2012.
5. Raud, Z.; Vodovozov, V. (2012). Innovative Training Practice in Electronics for Enterprises. *Przeglad Elektrotechniczny (Electrical Review)*, 2012(7b), 166 - 170.

Work group of electricity supply and local distribution grids (microgrids)

1. Rosin, A.; Auväärt, A.; Lebedev, D. (2012). Energy storage dimensioning and feasibility analysis for household consumption scheduling based on fluctuations of Nord Pool Spot price. *Przeglad Elektrotechniczny*, 88(1a), 37 - 40.
2. Rosin, A.; Rosin, K.; Auväärt, A.; Strzelecki, R. (2012). Dimensioning of household electricity storage for PV-systems and load scheduling based on Nord Pool Spot prices. *Przeglad Elektrotechniczny*, 88(4b), 294 - 299.
3. Rosin, A.; Auväärt, A.; Lebedev, D. (2012). Analysis of operation times and electrical storage dimensioning for energy consumption shifting and balancing in residential areas. *Electronics and Electrical Engineering*, 4 (120), 15 - 20.
4. Drovtar, I.; Landsberg, M.; Kilter, J.; Rosin, A. (2012). Economic impact of renewable electricity generation on the Baltic region's electricity market. *Przeglad Elektrotechniczny*, 88(7b), 161 - 165.
5. Rosin, A.; Palu, I.; Rosin, K.; Auväärt, A. (2012). Dimensioning of Electricity Storage according to Small Wind Turbine Power Generation and Household Load Patterns . *In: IECON 2012 - 38th Annual Conference on IEEE Industrial Electronics Society: 38th Annual Conference on IEEE Industrial Electronics Society, Montreal, Canada, 25 - 28 October. IEEE, 2012, 5155 - 5160.*

2.3 Loetelu struktuuriüksuse töötajate rahvusvahelistest tunnustustest.

Rahvusvahelisi tunnustusi on saadud heade esinemiste eest konverentsidel

2.4 Loetelu struktuuriüksuse töötajatest, kes on välisakadeemiate või muude oluliste T&A-ga seotud välisorganisatsioonide liikmed.

Struktuuriüksuse inimesed on rahvusvaheliste konverentside korralduskomiteede liikmed (T.Lehtla, D. Vinnikov, A. Rosin)

2.5 Aruandeaasta tähtsamad T&A finantseerimise allikad.

Grandiprojektid G8020, G8538, G8687, G9350

ERA NET Smart Grid project GERA1

Lepingulised tööd ettevõtetega Lep 11101, Lep12055, Lep12092, Lep12121

Välisleping VE554

2.6 Soovi korral lisada aruandeaastal saadud T&A-ga seotud tunnustusi (va punktis 2.3 toodud tunnustused), ülevaate teaduskorralduslikust tegevusest, teadlasmobiilsusest ning anda hinnang oma teadustulemustele.

2.7 Instituudi teadus- ja arendustegevuse teemade ja projektide nimetused (*Eesti Teadusinfosüsteemi, edaspidi ETIS, andmetel*)

- Haridus- ja Teadusministeerium
 - sihtfinantseeritavad teemad:
T016, Aktiivsete elektrijaotusvõrkude muundurite topoloogiad ja juhtimismeetodid, Vinnikov Dmitri (2011 – 2016)
 - baasfinantseerimise toetusfondist rahastatud projektid (sh TTÜ tippkeskused):
 - riiklikud programmid:
 - Teiste ministeeriumide poolt rahastatavad riiklikud programmid:
 - Uuriija-professori rahastamine:
 - SA Eesti Teadusfond/Eesti Teadusagentuur
 - grandid:
ETF9350, Elektorsõidukite kiirlaadimiseks kasutatavate uudsete kahesuunaliste muunduritopoloogiate ja juhtimisalgoritmide uurimine ja väljatöötamine, Jalakas Tanel (2012 – 2015)
 - ETF8687, Intelligentne trafo – talitlusrežiimide analüüs, Roasto Indrek (2011 – 2014)
 - ETF8538, Kvaasi-impedantsallikaga alalis- ja vahelduvpingemuundurid , Vinnikov Dmitri (2011 – 2014)
 - ETF8020, Võimsate IGBT muundurite innovatiivsete juhtimis- ja diagnoostikasüsteemide uurimine, Vodovozov Valery (2009 – 2012)
 - ühisgrandid välisriigiga:
GERA1, Elektri tarkvõrgu kliendivalduse elektrikvaliteedi ja inimeste ning elektriseadmete ohutusnõuded, Lehtla Tõnu (2010 – 2013)
 - järel doktorite grandid (SA ETF ja Mobilitas):
MJD42, Zakis Janis, Research and Development of Bi-Directional Power Converters for Energy Storage Applications (15.07.2009 - 14.07.2012)
 - MJD391, Husev Oleksandr, RESEARCH, DESIGN AND IMPLEMENTATION OF qZS-DERIVED DC/DC AND MULTILEVEL DC/AC CONVERTERS (1.09.2012 - 31.07.2015)
- tippteadlase grandid (Mobilitas):
 - Ettevõtluse Arendamise SA
 - eeluuringud:
 - arendustoetused:
 - SA Archimedesega sõlmitud lepingud
 - infrastruktuur (nn „mini-infra“, „asutuse infra“):

AP016, Aktiivsete elektri jaotusvõrkude muundurite topoloogiad ja juhtimismeetodid, Vinnikov Dmitri (1.01.2011 - 31.12.2012)

ÜLTAP66, Arukad energiasüsteemid, Argo Rosin (1.01.2010 - 19.04.2012)

– Eesti tippkeskused:

– riiklikud programmid:

AR10126, Energiatehnoloogia, ENERGIASÜSTEEMI TALITLUSE OPTIMEERIMINE MUUTUVKOORMUSTE TASAKAALUSTAMISEKS, Alvar Kurrel (1.11.2010 - 31.10.2013)

– muud T&A lepingud:

Doktorikool:

DAR8130, Energia ja geotehnika doktorikool II, Vinnikov Dmitri (1.12.2008 - 31.08.2014)

- SA Keskkonnainvesteeringute Keskusega sõlmitud lepingud:
- Siseriiklikud lepingud:

Lep11101, Raudteeveeremi abitoitemuunduri EL-21 tootearendus, Vinnikov Dmitri (4.11.2011 - 10.05.2012)

Lep12092, Mittetraditsioonilistel mõõtetrafodel põhineva tehnoloogia analüüs ja hindamine, Lehtla Tõnu (24.05.2012 - 30.11.2012)

Lep12055, Taastuv energiasüsteemidele mõeldud kaasaegsete jõuelektronika muundurite väljatöötamine ja uurimine, Vinnikov Dmitri (1.04.2012 - 31.01.2013)

Lep12121, Tarbimise juhtimine – suurtarbijate koormusgraafikute salvestamine ning analüüs tarbimise juhtimise rakendamise võimaluste tuvastamiseks, Rosin Argo (7.08.2012 - 28.03.2013)

Lep12154, Energia lokaalse tootmise analüüs büroohoonele, Rosin Argo (1.09.2012 - 30.04.2013)

- EL Raamprogrammi projektid:
- Välisriiklikud lepingud:

VA431, Taastuenergiaallikate integreerimine ja energia muundamise efektiivsuse suurendamine mikro võrkudes, Vinnikov Dmitri (1.01.2010 - 31.12.2012)

VE554, Kvaasi-impedants tüüpi allikal põhinevad galvaaniliselt isoleeritud pinget kõrgendavad alalispingemuundurid. Etapp1: Matemaatiline analüüs ja arvutisimulatsioonid, Vinnikov Dmitri (1.04.2012 - 30.06.2013)

VA587, SMART POWER ELECTRONICS ARRANGEMENTS AND CONTROL METHODS FOR ACTIVE POWER DISTRIBUTION GRIDS, Vinnikov Dmitri (1.01.2013 - 31.12.2015)

2.8 Struktuuriüksuse töötajate poolt avaldatud eelretsenseeritavad teaduspublikatsioonid (*ETIS klassifikaatori alusel 1.1, 1.2, 1.3, 2.1, 2.2, 3.1, 3.2, 3.3, 4.1 ja 5.1*).

Alates 01.01.2013 alustas tööd elektri jaotamise ja jõuelektronika instituuti ning elektrotehnika aluste ja elektrimasinate instituuti ühendav uus struktuuriüksus (elektrotehnika instituut). Sellega seoses muudeti ETIS-es asutuse struktuuri ning väljavõtte on võimalik vaid uue struktuuriüksuse järgi.

Alltoodud publikatsioonid kajastavad uue ühendatud instituudi töötajate poolt publitseeritud artikleid (väljavõtte ETIS -est jaanuar 2013).

1.1

Rosin, A.; Auväärt, A.; Lebedev, D. (2012). Analysis of operation times and electrical storage dimensioning for energy consumption shifting and balancing in residential areas. Electronics and

Electrical Engineering, 4 (120), 15 - 20.

Vinnikov, D.; Roasto, I.; Jalakas, T.; Strzelecki, R.; Adamowicz, M. (2012). Analytical Comparison between Capacitor Assisted and Diode Assisted Cascaded Quasi-Z-Source Inverters. *Przeglad Elektrotechniczny*, 88(1a/2012), 212 - 217.

Andrijanovits, A.; Hoimoja, H.; Vinnikov, D. (2012). Comparative Review of Long-Term Energy Storage Technologies for Renewable Energy Systems. *Electronics and Electrical Engineering*, 2(118), 21 - 26.

Rosin, A.; Rosin, K.; Auväärt, A.; Strzelecki, R. (2012). Dimensioning of household electricity storage for PV-systems and load scheduling based on Nord Pool Spot prices. *Przeglad Elektrotechniczny*, 88(4b), 294 - 299.

Shafiq, M.; Kütt, L.; Isa, M.; Hashmi, M.; Lehtonen, M. (2012). Directional Calibration of Rogowski Coil for Localization of Partial Discharges in Smart Distribution Networks. *International Review of Electrical Engineering*, 5, 1 - 8.

Drovtar, I.; Landsberg, M.; Kilter, J.; Rosin, A. (2012). Economic impact of renewable electricity generation on the Baltic region's electricity market. *Przeglad Elektrotechniczny*, 88(7b), 161 - 165.

Beldjajev, V.; Roasto, I. (2012). Efficiency and Voltage Characteristics of the Bi-Directional Current Doubler Rectifier. *Przeglad Elektrotechniczny*, 88(8), 124 - 129.

Rosin, A.; Auväärt, A.; Lebedev, D. (2012). Energy storage dimensioning and feasibility analysis for household consumption scheduling based on fluctuations of Nord Pool Spot price. *Przeglad Elektrotechniczny*, 88(1a), 37 - 40.

Blinov, A.; Vinnikov, D.; Ivakhno, V.; Zamaruev, V. (2012). Hybrid IGBT-IGCT Switch. *Przeglad Elektrotechniczny*, 88(1a/2012), 12 - 15.

Roasto, I.; Vinnikov, D. (2012). Impact of component losses on the voltage boost properties and efficiency of the QZS-converter family. *COMPEL: The International Journal for Computation and Mathematics in Electrical and Electronic Engin*, 31(6), 1945 - 1963.

Blinov, A.; Vinnikov, D.; Ivakhno, V.; Zamaruev, V. (2012). Implementation possibilities of hybrid IGBT-IGCT switches in three-level NPC inverters. *COMPEL: The International Journal for Computation and Mathematics in Electrical and Electronic Engin*, 31(6), 1917 - 1930. [ilmumas]

Raud, Z.; Vodovozov, V. (2012). Innovative Training Practice in Electronics for Enterprises. *Przeglad Elektrotechniczny (Electrical Review)*, 2012(7b), 166 - 170.

Andrijanovits, A.; Blinov, A.; Vinnikov, D.; Martins, J. (2012). Magnetically Coupled Multiport Converter with Integrated Energy Storage. *Przeglad Elektrotechniczny*, 88(7b), 171 - 176.

Shklovski, J.; Janson, K., Sakkos, T.. (2012). Natural Mode Constant Power Source for Manual Arc Welding. *Elektronika ir Elektrotechnika*, xx - xx. [ilmumas]

Vinnikov, D.; Bisenieks, L.; Galkin, I. (2012). New Isolated Interface Converter for PMSG based Variable Speed Wind Turbines. *Przeglad Elektrotechniczny*, 88(1a/2012), 75 - 80.

Shafiq, M.; Kütt, L.; Lehtonen, M.; Nieminen, T.; Hashmi, M. (2012). Parameters Identification and Modeling of High Frequency Current Transducer for Partial Discharge Measurements . *IEEE Sensors Journal*, 99, 1 - 10. [ilmumas]

Vaimann, T.; Niitsoo, J.; Kivipõld, T.; Lehtla, T. (2012). Power Quality Issues in Dispersed Generation and Smart Grids. *Electronics and Electrical Engineering*, 10(8), 23 - 26.

Vinnikov, D.; Roasto, I.; Strzelecki, R.; Adamowicz, M. (2012). Step-Up DC/DC Converters with Cascaded Quasi-Z-Source Network . *IEEE Transactions on Industrial Electronics*, 59(10), 3727 - 3736.

Vaimann, T.; Kallaste, A.; Kilk, A. (2012). Using Clarke vector approach for stator current and voltage analysis on induction motors with broken rotor bars. *Electronics and Electrical Engineering*, 123(7), 17 - 20.

1.2

Pettai, E. (2012). A 6D space framework for the description of distributed systems. *Estonian Journal of Engineering*, 18(2), 140 - 171.

Zakis, J.; Vinnikov, D. (2012). Implementation Possibilities of SMD Capacitors for High Power Applications. *Scientific Journal of Riga Technical University: Power and Electrical Engineering*, 1 - 6.

Zakis, J.; Vinnikov, D. (2012). Implementation Possibilities of SMD Capacitors for High Power Applications. *Scientific Journal of Riga Technical University: Power and Electrical Engineering*, 1 - 6. [ilmumas]

Rassõlkin, A.; Hõimoja, H.; Vodovozov, V. (2012). Improved Auxiliary Supply Solution for a Diesel-Electric Locomotive. *Scientific Journal of Riga Technical University: Power and Electrical Engineering*, xx - xx. [ilmumas]

Andrijanovits, A.; Rankis, I.; Zakis, J. (2012). Performance Comparison of Boost and quasi-Z-source Converters. *Технічна електродинаміка*, 4, 30 - 35.

Blinov, A.; Vinnikov, D.; Rang, T. (2012). SiC и GaAs Диоды в Устройствах Силовой Электроники. *Технічна електродинаміка*, 42-46

Roncero-Clemente, C.; Romero-Cadaval, E.; Husev, O.; Vinnikov, D. (2012). Simulation Study of Different Modulation Techniques for Three-Level Quasi-Z-Source Inverter. *Scientific Journal of Riga Technical University: Power and Electrical Engineering*, 1 - 7.

Beldjajev, V.; Roasto, I. (2012). State of the art trends and design challenges of power electronic transformer for future distribution grids. *Технічна електродинаміка*, 55 - 62.

Vinnal, T.; Janson, K.; Järvik, J.; Kalda, H.; Sakkos, T. (2012). Supply voltage quality in low voltage industrial networks of Estonia. *Estonian Journal of Engineering*, 18(2), 102 - 126.

Vinnikov, D.; Husev, O.; Blinov, A. (2012). Двухтактный Квази-Импедансный Повышающий DC/DC Преобразователь . *Технічна електродинаміка*, 36 - 42.

Husev, O.; Stepenko, S.; Clemente, C.; Cadaval, E.; Vinnikov, D. (2012). Трёхуровневый квази-импедансный инвертор с новым методом модуляции. *Технічна електродинаміка*, 47 - 52.

1.3

2.1

2.2

3.1

Husev, O.; Blinov, A.; Vinnikov, D. (2012). Experimental Results of Parallel Active Filter Implementation in Nonideal Power Grid. Luis M. Camarinha-Matos, Ehsan Shahamatnia, Goncalo Nunes (Toim.). Technological Innovation for Value Creation (291 - 298).Springer

Blinov, A.; Vinnikov, D. (2012). On Implementation Possibilities of High-Voltage IGBTs in Resonant Converters. Luis M. Camarinha-Matos, Ehsan Shahamatnia, Goncalo Nunes (Toim.). Technological Innovation for Value Creation (443 - 450).Springer

Blinov, A.; Ivakhno, V.; Zamaruev, V.; Vinnikov, D.; Husev, O. (2012). A Novel High-Voltage Half-Bridge Converter with Phase-Shifted Active Rectifier. In: Proceedings : 2012 IEEE International Conference on Industrial Technology: IEEE International Conference on Industrial Technology (ICIT), Ateena, 19-21 March 2012. IEEE, 2012, 967 - 970.

Martins, J.F.; Lopes, R.; Lima, C.; Romero-Cadaval, E.; Vinnikov, D. (2012). A Novel Nonintrusive Load Monitoring System based on the S-Transform . In: 13th International Conference on Optimization of Electrical and Electronic Equipment (OPTIM), 24-26 May 2012, Brasov, Romania: (Toim.) Clotea, L. R.; Gerigan, C.; Cernat, M.. IEEE, 2012, 973 - 978.

Vodovozov, V.; Raud, Z.; Lehtla, T. (2012). A Toolbox to Design Inverters for Automotive Applications. In: Recent researches in applications of electrical and computer engineering :Proceedings of the 11th International Conference on Applications of Electrical Engineering (AEE '12) [...] Vouliagmeni Beach, Athens, Greece March 7-9, 2012: (Toim.) Kambe, T.; Bulucea, C. A.; Arapatsakos, C.. Vouliagmeni Beach, Athens, Greece:, 2012, 190 - 195.

Kütt, L.; Järvi, J.; Kilter, J.; Shafiq, M.; Lehtonen, M. (2012). Air-core Inductive Current Sensor for Fast Transients Measurements in Distribution Networks. In: Proceedings of 8th International Conference 2012 Electric Power Quality and Supply Reliability: 2012 Electric Power Quality and Supply Reliability, Tartu, June 11 - 13, 2012. (Toim.) Sakkos, T.. IEEE, 2012, 249 - 252.

Hõimoja, Hardi; Rufer, Alfred; Dziechciaruk, Grzegorz; Vezzini, Andrea (2012). An Ultrafast EV Charging Station Demonstrator. In: 2012 International Symposium on Power Electronics, Electrical Drives, Automation and Motion: Sorrento, Itaalia: IEEE, 2012, 1390 - 1395.

Lepa, E.; Kilk, A. (2012). Analysis and Prototyping of a Low-Speed Small Scale Permanent Magnet Generator for Wind Power Applications. In: Proceedings of 8th International Conference 2012 Electric Power Quality and Supply Reliability: The 8th International Conference Electric Power Quality and Supply Reliability, June 11...13, 2012, Tartu, Estonia. IEEE, 2012, 41 - 46.

Mägi, M; Peterson, K; Pettai, E. (2012). Analysis of Protection and Control Functions of Low Voltage Part of Substation for Smart Grid Applications. In: Proceedings of 8th International Conference 2012 Electric Power Quality and Supply Reliability: 2012 Electric Power Quality and Supply Reliability, Tartu, June 11 - 13, 2012. (Toim.) Sakkos, T.. IEEE, 2012, 297 - 304.

Kallaste, A.; Belachen, A.; Kilk, A.; Vaimann, T. (2012). Analysis of the Eccentricity in a Low-Speed Slotless Permanent-Magnet Wind Generator. In: Proceedings of 8th International Conference 2012 Electric Power Quality and Supply Reliability: 2012 Electric Power Quality and Supply Reliability, Tartu, June 11 - 13, 2012. (Toim.) Sakkos, T.. IEEE, 2012, 47 - 52.

Husev, O.; Roncero-Clemente, C.; Stepenko, S.; Vinnikov, D.; Romero-Cadaval, E. (2012). CCM Operation Analysis of the Single-Phase Three-Level Quasi-Z-Source Inverter. In: Proceedings of: 15th International Power Electronics and Motion Control Conference and Exposition, EPE-PEMC 2012 ECCE Europe, September 4-6, 2012, Novi Sad, Serbia. IEEE,

2012, DS1b.21-1 - DS1b.21-6.

Milashevski, I.; Tetervenok, O.; Suzdalenko, A. (2012). Comparative Study of LED Ballasts for Different Light Regulation Techniques. 15th International Power Electronics and Motion Control Conference, EPE-PEMC 2012 ECCE Europe, Novi Sad, Serbia. IEEE, 2012, DS2b.16-1 - DS2b.16-6.

Suzdalenko, A.; Milashevski, I.; Galkin, I. (2012). Comparative Study of Smart Lighting Grids with LEDs Operated with Concentrated, Localized or Distributed Control. 21st edition of the International Symposium on Power Electronics, Electrical Drives, Automation and Motion. IEEE, 2012, 1437 - 1441.

Kazakov, A.; Janson, K.; Vaimann, T.; Järvik, J. (2012). DC Microgrid Protection Means. In: Proceedings of 8th International Conference 2012 Electric Power Quality and Supply Reliability: 2012 Electric Power Quality and Supply Reliability, Tartu, June 11 - 13, 2012. (Toim.) Sakkos, T.. IEEE, 2012, 311 - 316.

Kallaste, A.; Kilk, A.; Belahcen, A.; Vaimann, T.; Janson, K. (2012). Demagnetization in Permanent Magnet Slotless Generator Using Halbach Array. In: Proceedings of the 13th International Scientific Conference Electric Power Engineering 2012: EPE 2012, May 23-25, 2012, Brno, Czech Republic. Brno: IEEE, 2012, 1053 - 1057.

Brindfeldt, E.; Mür, M.; Pettai, E. (2012). Description of Learning Methods Using Sixdimensional Space Framework. 15th International Power Electronics and Motion Control Conference, EPE-PEMC 2012 ECCE Europe, Novi Sad,. IEEE, 2012. [ilmumas]

Kütt, L.; Järvik, J.; Kilter, J.; Shafiq, M.; Lehtonen, M. (2012). Design of High-Frequency Transient Current Sensor for Powerline On-Line Measurement. In: Proceedings of the 7th International Conference on Electrical and Control Technologies ECT-2012: 7th International Conference on Electrical and Control Technologies ECT-2012, Kaunas, Lithuania; May 3 - 5, 2012. Kaunas Technologija, 2012, 212 - 216.

Vaimann, T.; Belahcen, A.; Martinez, J.; Kilk, A. (2012). Detection of Broken Rotor Bars in Frequency Converter Fed Induction Motor Using Park's Vector Approach. In: Proceedings of 8th International Conference 2012 Electric Power Quality and Supply Reliability: 2012 Electric Power Quality and Supply Reliability, Tartu, June 11 - 13, 2012. (Toim.) Sakkos, T.. IEEE, 2012, 53 - 56.

Shklovski, J.; Janson, K.; Niilo, H. (2012). Development and Verification of the Resonant Converter with Parametrical Alternation of Resonant Tank Topology for Constant-Power Manual Arc Welding . EPE 2012, Brno, Czech Republic, 23-25.05.2012. IEEE, 2012.

Shklovski, J.; Janson, K. (2012). Development of Constant-Power Source for Arc Welding. In: BEC2012 Conference Proceedings: October 3-5, 2012, Tallinn, Estonia. , 2012. [ilmumas]

Rosin, A.; Palu, I.; Rosin, K.; Auväärt, A. (2012). Dimensioning of Electricity Storage according to Small Wind Turbine Power Generation and Household Load Patterns . In: IECON 2012 - 38th Annual Conference on IEEE Industrial Electronics Society: 38th Annual Conference on IEEE Industrial Electronics Society, Montreal, Canada, 25 - 28 October. IEEE, 2012, 5155 - 5160.

Galkin, I.; Suzdalenko, A.; Armas, J. (2012). Distance Encoding Waves for Identification of Lighting Failures. BEC 2012 : 13th biennial Baltic Electronics Conference : proceedings of the 13th biennial Baltic Electronics Conference : Tallinn University of Technology, October 3-5, 2012, Tallinn, Estonia. Tallinn: IEEE, 2012, 227 - 230.

- Zakis, J.; Vinnikov, D.; Husev, O.; Rankis, I. (2012). Dynamic Behaviour of qZS-based Bi-directional DC/DC Converter in Supercapacitor Charging Mode. In: 2012 International Symposium on Power Electronics, Electrical Drives, Automation and Motion, Sorrento, Italy, 20th – 22nd June, 2012: IEE, 2012, 764 - 768.
- Raud, Z.; Vodovozov, V.; Lehtla, T. (2012). Educational Thesaurus for Learning Electronics. In: Recent Researches in Communications, Information Science and Education: Proceedings ...: 3rd World Conference on Education and Educational Technologies (WORLD-EDU 2012), Vouliagmeni, Athens, Greece, March 7-9, 2012. (Toim.) Kambe, T.; Bulucea, A. C.; Arapatsakos, C.. WSEAS, 2012, 67 - 72.
- Drovtar, I.; Niitsoo, J.; Rosin, A.; Kilter, J.; Palu, I. (2012). Electricity Consumption Analysis and Power Quality Monitoring in Commercial Buildings. In: Proceedings of 8th International Conference 2012 Electric Power Quality and Supply Reliability: 2012 Electric Power Quality and Supply Reliability, Tartu, June 11 - 13, 2012. (Toim.) Sakkos, T.. IEEE, 2012, 107 - 112.
- Raud, Z.; Vodovozov, V.; Lehtla, T. (2012). Enhancing Students' Activity in Electrical Engineering through Web and Social Networks. IEEE International Conference EDUCON 2012, Marrakech, Morocco. IEEE, 2012, 263 - 269.
- Suzdalenko, A.; Stepanov, A.; Galkin, I. (2012). Example of Autonomous Monitoring Device Powered by Traffic Participants. 13th International Scientific Conference on Electrical Power Engineering. IEEE, 2012, 563 - 566.
- Ott, S.; Jalakas, T.; Vinnikov, D.; Roasto, I. (2012). Experimental Analysis of Extended Boost Quasi-Z-Source Inverters. In: BEC 2012 : 13th biennial Baltic Electronics Conference : proceedings of the 13th biennial Baltic Electronics Conference : Tallinn University of Technology, October 3-5, 2012, Tallinn, Estonia : (Toim.) T. Rang, P. Ellervee. Tallinn: IEEE, 2012, 259 - 262.
- Blinov, Andrei; Vinnikov, Dmitri; Rang, Toomas (2012). Experimental analysis of the dynamic performance of Si, GaAs and SiC diodes. In: Proceedings of the 13th Biennial Baltic Electronics Conference: 2012 13th Binnial Baltic Electronics Conference. (Toim.) Toomas Rang, Peeter Ellervee. Tallinn, Estonia; IEEE Catalog Number: CFP12BEC-PRT: TTU Press, 2012, 49 - 52.
- Blinov, A.; Ivakhno, V.; Zamaruev, V.; Vinnikov, D.; Husev, O. (2012). Experimental Verification of DC/DC Converter with Full-Bridge Active Rectifier. The 38th Annual Conference of the IEEE Industrial Electronics Society (IECON2012), Montreal, Canada, 25-28 October 2012. IEEE, 2012. [ilmumas]
- Stepenko, S.; Husev, O.; Vinnikov, D.; Ivanets, S. (2012). FPGA Control of the Neutral Point Clamped Quasi-Z-Source Inverter. In: BEC 2012 : 13th biennial Baltic Electronics Conference : proceedings of the 13th biennial Baltic Electronics Conference : Tallinn University of Technology, October 3-5, 2012, Tallinn, Estonia : (Toim.) T. Rang, P. Ellervee. Tallinn: IEEE, 2012, 263 - 266.
- Kütt, L.; Järvi, J.; Vaimann, T.; Shafiq, M.; Lehtonen, M.; Kilter, J. (2012). High-Frequency Current Sensor for Power Network On-line Measurements. In: Proceedings of the 13th International Scientific Conference Electric Power Engineering 2012: EPE 2012, May 23-25, 2012, Brno, Czech Republic. Brno: IEEE, 2012, 367 - 371.
- Beldjajev, V.; Roasto, I. (2012). Impact of Component Losses on the Efficiency of the Bi-Directional Current Doubler Rectifier Based Isolation-Stage. The 38th Annual Conference of the IEEE Industrial Electronics Society (IECON2012), Montreal, Canada, 25-28 October 2012. IEEE, 2012. [ilmumas]

Drovtar, I.; Landsberg, M.; Kilter, J.; Rosin, A. (2012). Impacts of Large Scale Wind Integration on the Baltic Region's Thermal Power Plant Economics and Electricity Market in 2025. In: Power Electronics, Electrical Drives, Automation and Motion Symposium Proceedings: The 21st International Symposium on Power Electronics, Electrical Drives, Automation and Motion (SPEEDAM 2012), June 20-22, 2012, Sorrento, ITALY. Sorrento, Italy: IEEE, 2012, 684 - 689.

Avotins, A.; Suzdalenko, A., Galkin, I. (2012). Implementation of FPGA based LED dimmer control as practical workshop for students of power Electronics . 15th International Power Electronics and Motion Control Conference, EPE-PEMC 2012 ECCE Europe, Novi Sad, Serbia. IEEE, 2012, DS3e.10-1 - DS3e.10-7.

Mölder, H; Järvik, J; Vaimann, T; Gordon, R. (2012). Investigation of molten metal mixing in a DC electric arc furnace with added AC component on different frequencies. In: Proceedings of 8th International Conference 2012 Electric Power Quality and Supply Reliability: 2012 Electric Power Quality and Supply Reliability, Tartu, June 11 - 13, 2012. (Toim.) Sakkos, T.. IEEE, 2012, 4 p..

Beldjajev, V.; Roasto, I.; Zakis, J. (2012). Isolation Stage for Power Electronic Transformer: Dual Active Bridge vs Bi-Directional Current Doubler Rectifier. In: International Symposium on Power Electronics, Electrical Drives, Automation and Motion (SPEEDAM): SPEEDAM, Sorrento, Italia, 20-22 June 2012. IEEE, 2012, 849 - 854.

Shklovski, J.; Janson, K.; Kallaste, A. (2012). Load-Resonant Converter with Changing Resonant Tank Topology for Welding Applications. 38th Annual Conference of the IEEE Industrial Electronics Society IECON2012, 25 - 28 October 2012, ÉTS, Montréal, Canada. IEEE, 2012. [ilmumas]

Kütt, L.; Järvik, J.; Mölder, H.; Kilter, J.; Muhammad, S. (2012). Magnetic Current Sensor Stray Components in High Frequency Operation and their Effects. In: Conference Proceedings: 2012 11th International Conference on Environment and Electrical Engineering, Venice, May 18-25. IEEE, 2012, 617 - 620.

Mölder, H.; Järvik, J.; Vaimann, T.; Gordon, R. (2012). Multi-Electrode Arc Furnace Technology with Improved Metal Processing Capability Using Current Driven Mixing. In: Conference Proceedings: 2012 11th International Conference on Environment and Electrical Engineering, Venice, May 18-25. IEEE, 2012, 313 - 316.

Andrijanoviš, A.; Blinov, A.; Husev, O.; Vinnikov, D. (2012). Multiport Converter with Integrated Energy Storage for Hydrogen Buffer Interfacing with Renewable Energy Systems. In: Proceedings : 2012 IEEE International Conference on Industrial Technology: IEEE International Conference on Industrial Technology (ICIT), Ateena, 19-21 March 2012. IEEE, 2012, 230 - 235.

Vinnikov, D.; Zakis, J.; Husev, O.; Strzelecki, R. (2012). New High-Gain Step-Up DC/DC Converter with High-Frequency Isolation. In: 2012 Twenty-Seventh Annual IEEE Applied Power Electronics Conference and Exposition (APEC), Orlando (FL), USA, 5-9 Feb. 2012: IEEE, 2012, 1204 - 1209.

Roasto, I.; Vinnikov, D. (2012). New Voltage Mode Control Method for the Quasi-Z-Source-Based Isolated DC/DC Converters. In: Proceedings : 2012 IEEE International Conference on Industrial Technology: IEEE International Conference on Industrial Technology (ICIT), Ateena, 19-21 March 2012. IEEE, 2012, 644 - 649.

Jalakas, T.; Roasto, I.; Vinnikov, D. (2012). Non-Shoot-Through Mode Behavior of DC/DC Converters with a Quasi Z Source Inverter. EPE PEMC ECCE Europe 2012, Serbia, Novi Sad,

September 4-6, 2012. IEEE, 2012, xx - xx. [ilmumas]

Jalakas, T.; Roasto, I.; Vinnikov, D.; Agabus, H. (2012). Novel Power Conditioning System for Residential Fuel Cell Power Plants. 2012 3rd IEEE International Symposium on Power Electronics for Distributed Generation Systems (PEDG), Aalborg, Taani, 25.06.2012 - 28.06.2012. IEEE, 2012.

Vaimann, T.; Belahcen, A.; Martinez, J.; Kilk, A. (2012). Park's Vector Approach for Detection Broken Rotor Bars in Frequency Converter Fed Induction Generator. In: Proceedings of the 13th International Scientific Conference Electric Power Engineering 2012: EPE 2012, May 23-25, 2012, Brno, Czech Republic. Brno: IEEE, 2012, 985 - 988.

Hõimoja, H.; Vasiladiotis, M.; Rufer, A. (2012). Power interfaces and storage selection for an ultrafast EV charging station. In: 6th IET International Conference on Power Electronics, Machines and Drives (PEMD): University of Bristol, UK, 27-29 March 2012. IEEE, 2012.

Rassõlkin, A.; Hõimoja, H. (2012). Power Quality Application of Hybrid Drivetrain. International Conference on Electrical Systems for Aircraft, Railway and Ship Propulsion (ESARS'12), Bologna (Italy), 16.10-18.10.2012. IEEE, 2012.

Martinez, C.; Jalakas, T.; Vinnikov, D.; Lazaro, A.; Barrado, A. (2012). QZSI DC/DC Converters in Input-Series Output-Parallel Connection for Distributed Generation. In: Proceedings : 2012 International Symposium on Power Electronics, Electrical Drives, Automation and Motion (SPEEDAM), Sorrento, Italy, 20th – 22nd June, 2012. IEEE, 2012, 952 - 957.

Husev, O.; Stepenko, S.; Roncero-Clemente, C.; Romero-Cadaval, E.; Vinnikov, D. (2012). Single-Phase Three-Level Quasi-Z-Source Inverter with a New Boost Modulation Technique. In: Proceedings of : IECON 2012 - 38th Annual Conference on IEEE Industrial Electronics Society, October 25-28, 2012, Montreal, Canada. IEEE, 2012, 5856 - 5861.

Rahmoun, A.; Biechl, H.; Rosin, A. (2012). SOC Estimation for Li-Ion Batteries Based on Equivalent Circuit Diagrams and the Application of a Kalman Filter. In: Proceedings of 8th International Conference 2012 Electric Power Quality and Supply Reliability: 2012 Electric Power Quality and Supply Reliability, Tartu, June 11 - 13, 2012. (Toim.) Sakkos, T.. IEEE, 2012, 273 - 276.

Husev, O.; Vinnikov, D.; Roasto, I. (2012). Stability Analysis of the Quasi-Z-Source DC/DC Converter Based on Small Signal Model. In: Proceedings : 2012 International Symposium on Power Electronics, Electrical Drives, Automation and Motion (SPEEDAM), Sorrento, Italy, 20th – 22nd June, 2012. IEEE, 2012, 298 - 303.

Roasto, I.; Romero-Cadaval, E.; Martins, J.; Smolenski, R. (2012). State of the Art of Active Power Electronic Transformers for Smart Grids. 38th Annual Conference of the IEEE Industrial Electronics Society, Montreal, Canada, 25-28 October 2012. IEEE, 2012. [ilmumas]

Zakis, J.; Vinnikov, D.; Rankis, I. (2012). Steady State Analysis of the Galvanically Isolated DC/DC Converter with a Commutating LC Filter. In: Proceedings : 2012 IEEE International Conference on Industrial Technology: IEEE International Conference on Industrial Technology (ICIT), Ateena, 19-21 March 2012. IEEE, 2012, 827 - 832.

Kilk, A.; Kudrjavitsev, O. (2012). Study and Verification of a Slow Speed PM Generator with Outer Rotor for Small Scale Wind Turbines. In: Proceedings of 8th International Conference 2012 Electric Power Quality and Supply Reliability: The 8th International Conference Electric Power Quality and Supply Reliability, June 11...13, 2012, Tartu, Estonia. IEEE, 2012, 19 - 24.

Vinnal, T.; Janson, K.; Kalda, H.; Kütt, L. (2012). Supply Voltage Level Optimisation in Low Voltage Networks Using Shunt Capacitors. In: Proceedings of the 7th International Conference on Electrical and Control Technologies ECT-2012: 7th International Conference on Electrical and Control Technologies ECT-2012, Kaunas, Lithuania; May 3 - 5, 2012. Kaunas Technologija, 2012, 206 - 211.

Vinnal, T.; Janson, K.; Kalda, H.; Sakkos, T. (2012). Supply Voltage Level Optimization in Industrial Low Voltage Networks . In: Proceedings of 8th International Conference 2012 Electric Power Quality and Supply Reliability: 2012 Electric Power Quality and Supply Reliability, Tartu, June 11 - 13, 2012. (Toim.) Sakkos, T.. IEEE, 2012.

Andrijanovits, A.; Beldjajev, V. (2012). Techno-Economic Analysis of Hydrogen Buffers for Distributed Energy Systems. Power Electronics, Electrical Drives, Automation and Motion (SPEEDAM), Sorrento (Italy), 20-22 June 2012. IEEE, 2012, 1401 - 1406.

Bolgov, V.; Janson, K.; Shklovski, J.; Palu, I.; Laanetu, M. (2012). Wind Power Generation Impact on Sõrve Peninsula Network Operation in Saaremaa. In: Electric Power Quality and Supply Reliability Conference Proceedings: The 8th International Conference PQ2012, June 11 - 13, 2012, Tartu, Estonia. IEEE, 2012, 175 - 182.

3.2

Mägi, M. (2012). Analysis of Distribution Substation Topologies for Energy Exchanging between EV and Utility Networks. Zakis, J. (Toim.). 11th International Symposium "Topical problems in the field of electrical and power engineering". Doctoral school of energy and geotechnology II : Pärnu, Estonia, January 16-21, 2012 (158 - 167). Tallinn: Tallinn University of Technology, Faculty of Power Engineering; Elektriajam

Šklovski, J.; Janson, K.; Niilo, H. (2012). Determination of Leakage Inductances of Three-Winding Transformer for HF-PSA Resonant Circuit. Zakis, J. (Toim.). 11th International Symposium "Topical Problems in the Field of Electrical and Power Engineering". Doctoral school of energy and geotechnology. II : Pärnu, Estonia, January 16-21, 2012 (113 - 116).Elektriajam

Melentjev, S. (2012). Diagnostics System for Electronic Circuits. Janis Zakis (Toim.). 11th International Symposium "Topical Problems in the Field of Electrical and Power Engineering". Doctoral school of energy and geotechnology. II : Pärnu, Estonia, January 16-21, 2012 (192 - 194). Pärnu: Elektriajam

Mägi, M. (2012). Overview of Development in the Field of Energy Exchange between Electric Vehicles and Utility Network. Lahtmets, R. (Toim.). 12th International Symposium "Topical Problems in the Field of Electrical and Power Engineering". Doctoral School of Energy and Geotechnology II: Kuressaare, Estonia, June 11-16, 2012 (123 - 124). Kuressaare: Elektriajam

Vodovozov, V.; Lehtla, T. (2012). Active learning electrical drives through social networking. 12th International symposium "Topical Problems in the Field of Electrical and Power Engineering". Doctoral School of Energy and Geotechnology II. Kuressaare, Estonia:, 2012, 12 - 19.

Vaimann, T.; Kallaste, A. (2012). Condition Monitoring of Electrical Machines. In: 11th International Symposium "Topical Problems in the Field of Electrical and Power Engineering" and "Doctoral School of Energy and Geotechnology II": (Toim.) Zakis, J.. Tallinn: Elektriajam, 2012, 209 - 212.

Brindfeldt, E.; Müür, M.; Pettai, E. (2012). Description of Teaching Processes Using Six-Dimensional Space Framework. In: 11th International Symposium "Topical Problems in the

Field of Electrical and Power Engineering". Doctoral school of energy and geotechnology. II : Pärnu, Estonia, January 16-21, 2012 : (Toim.) J. Zakis. Tallinn: Elektriajam, 2012, 76 - 83.

Beldjajev, V.; Roasto, I. (2012). Dual Active Bridge Based Isolation Stage for Power Electronic Transformer. In: 11th International Symposium "Topical Problems in the Field of Electrical and Power Engineering". Doctoral school of energy and geotechnology. II : Pärnu, Estonia, January 16-21, 2012 : (Toim.) Zakis, J.. Tallinn: Elektriajam, 2012.

Vodovozov, V.; Lehtla, T. (2012). Educational Thesauri for Mastering Engineering Courses. In: 11th International Symposium "Topical Problems in the Field of Electrical and Power Engineering": Doctoral school of energy and geotechnology. II : Tallinn: Elektriajam, 2012, 24 - 29.

Raud, Z.; Vodovozov, V. (2012). Flexible Curricula Based on Educational Thesaurus. In: Proceedings of the IASTED International Conference Computers and Advanced Technology in Education (CATE 2012) June 25 - 27, 2012 Napoli, Italy: IASTED Educational Conference "Computers and Advanced Technology in Education" (CATE 2012). Napoly, Italy:, 2012, 219 - 226.

Järvik, J.; Mölder, H.; Vaimann, T. (2012). Impact of Conducting and Insulating Material to Electric Field. In: 11th International Symposium "Topical Problems in the Field of Electrical and Power Engineering" and "Doctoral School of Energy and Geotechnology II": (Toim.) Zakis, J.. Tallinn: Elektriajam, 2012, 107 - 112.

Kazakov, A.; Janson, K.; Vaimann, T. (2012). Microgrids Performance Challenges. In: 11th International Symposium "Topical Problems in the Field of Electrical and Power Engineering" and "Doctoral School of Energy and Geotechnology II": (Toim.) Zakis, J.. Tallinn: Elektriajam, 2012, 42 - 46.

Bakman, I.; Vodovozov, V. (2012). Multi-Pump Control Applications for ABB ACQ 810 Industrial Drive. 12th International Symposium "Topical Problems in the Field of Electrical and Power Engineering". Doctoral School of Energy and Geotechnology II. Kuressaare, Estonia:, 2012, 37 - 44.

Kallaste, A.; Vaimann, T.; Pabut, O. (2012). Slow-Speed Ring-Shaped Permanent Magnet Generator for Wind Applications. In: 11th International Symposium "Topical Problems in the Field of Electrical and Power Engineering" and "Doctoral School of Energy and Geotechnology II": (Toim.) Zakis, J.. Tallinn: Elektriajam, 2012, 66 - 69.

Brindfeldt, E.; Müür, M. (2012). Student and Employer Satisfaction Survey Concerning Acquisition of Production Automation Related Disciplines at Tallinn University of Technology. In: 12th International Symposium "Topical Problems in the Field of Electrical and Power Engineering * Doctoral School of Energy and Geotechnology II": 12th International Symposium "Topical Problems in the Field of Electrical and Power Engineering" and "Doctoral School of Energy and Geotechnology II", Kuressaare, Estonia, 11.06-16.06.2012. (Toim.) Rain Lahtmets. Tallinn, Estonia: Elektriajam, 2012, 56 - 59.

Rassõlkin, A.; Hõimoja, H. (2012). Switching Locomotive as a Part of Smart Electrical Grid. 8th PP&PSC (Power Plant and Power System Control) Symposium, Toulouse (France), 02.09-05.09.2012. , 2012.

Raud, Z. (2012). Web-Based Learning with Social Networking of Electronic Engineering and Electrical Drives. In: 11th International Symposium "Topical Problems in the Field of Electrical and Power Engineering": Doctoral school of energy and geotechnology. II: Tallinn: Elektriajam, 2012, 220 - 225

3.3

4.1

(2012). PQ2012: The 8th International Conference Electric Power Quality and Supply Reliability. Conference Proceedings. IEEE

5.1

2.9 Struktuuriüksuses kaitstud doktoriväitekirjade loetelu (*NB! struktuuriüksus lisab struktuuriüksuse töötaja juhendamisel mujal kaitstud doktoriväitekirjade loetelu*)

Andrei Blinov, elektriainite ja jõuelektroonika instituut

Teema: *Research of Switching Properties and Performance Improvement Methods of High-Voltage IGBT based DC/DC Converters* (Kõrgepingelistel IGBT transistoridel põhinevate alalispingemuundurite lülitusomaduste ja jõudluse suurendamise meetodite uurimine)

Juhendaja: vanemteadur Dmitri Vinnikov

Kaitses: 11.06.2012

Omistatud kraad: filosoofiadoktor (elektriainid ja jõuelektroonika)

Zoja Raud, elektriainite ja jõuelektroonika instituut

Teema: *Research and Development of an Active Learning Technology for University-Level Education in the Field of Electronics and Power Electronics* (Aktiivõppetehnoloogia uurimine ja väljatöötamine kõrghariduse õppekavale elektroonika ja jõuelektroonika valdkonnas)

Juhendajad: prof Valery Vodovozov ja prof Tõnu Lehtla

Kaitses: 11.06.2012

Omistatud kraad: filosoofiadoktor (elektriainid ja jõuelektroonika)

2.10 Struktuuriüksuses järel doktorina T&A-s osalenud isikute loetelu (*ETIS-e kaudu esitatud taotluste alusel*)

Zakis Janis, Research and Development of Bi-Directional Power Converters for Energy Storage Applications (15.07.2009 - 14.07.2012)

Husev Oleksandr, RESEARCH, DESIGN AND IMPLEMENTATION OF qZS-DERIVED DC/DC AND MULTILEVEL DC/AC CONVERTERS (1.09.2012 - 31.07.2015)

2.11 Struktuuriüksuses loodud tööstusomandi loetelu

WO2012116708 (PCT/EE2012/000002)

Method of shoot-through generation for modified sine wave z-source, quasi-z-source and trans-z-source inverters

Taotlus esitatud: 28.02.2012

Autorid: Kristi Tammet, Hannes Agabus, Indrek Roasto Tanel Jalakas Dmitri Vinnikov

Omanik: TTÜ

3. Struktuuriüksuse infrastruktuuri uuendamise loetelu (*lisatud summa eurodes*)

PV007284, Tuuleturbiini komplekt, 19.01.2012, (25 850,00)

PV007285, Ülikondensaator moodul, 19.01.2012 (25 850,00)

PV007296, Kütuseelemendi komplekt, 1.02.2012 (38 800,00)

PV007312, Päikesepaneelide komplekt , 20.02.2012 (48 700,00)
PV007322, Juhtimis- ja analüüsikompleks, 2.03.2012 (22 000,00)
PV007323, Termokaamera FLUKE TI10 -, 5.03.2012 (4 370,00)
PV007324, Power Logger - Analyser FLUKE, 5.03.2012 (3 137,50)
PV007339, Akukapp jõupooljuhtmuundurile, 3.04.2012 (11 750,00)
PV007341, Reaalajas simulats.süsteem, 5.04.2012 (8 283,00)
PV007340, Arvestid jõupooljuhtmuundurile, 9.04.2012 (11 160,00)
PV007463, El.energia tarbimise juhtimise seade, 31.07.2012 (8 458,00)
PV007529, Energiaanalüsaator 36 mõõte, 26.12.2012 (3 816,00)