

Aasta tehnikauiliõpilane 2021 on Karolina Kudelina

Vaimann, Toomas Meie Leht 2021 / lk. 4 <http://narva->

joesuu.ee/documents/2032926/30038466/Meie_Leht_DETSEMBER_2021_EST.pdf/6812d56d-dce2-4684-87ee-72639332075f

AC losses analysis approaches for electric vehicle motors with hairpin winding configuration

Shams Ghahfarokhi, Payam; Podgornovs, Andrejs; Marques Cardoso, Antonio J.; Kallaste, Ants; Belahcen, Anouar; Vaimann, Toomas IECON 2021 - 47th Annual Conference of the IEEE Industrial Electronics Society, 2021 2021 / p. 1-4 : ill

<https://doi.org/10.1109/IECON48115.2021.9589339> [Conference Proceedings at Scopus](#) [Article at Scopus](#) [Article at WOS](#)

AC magnetic loss reduction of SLM processed Fe-Si for additive manufacturing of electrical machines

Tiismus, Hans; Kallaste, Ants; Belahcen, Anouar; Tarraste, Marek; Vaimann, Toomas; Rassõlkin, Anton; Asad, Bilal; Ghahfarokhi, Payam Shams Energies 2021 / 13 p. : ill <https://doi.org/10.3390/en14051241> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

ADCS development for student CubeSat satellites - TalTech case study

Rassõlkin, Anton; Vaimann, Toomas; Org, Peeter; Leibak, Alar; Gordon, Rauno; Priidel, Eiko Proceedings of the Estonian Academy of Sciences 2021 / p. 268-285 : ill <https://doi.org/10.3176/proc.2021.3.06> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

Additive design possibilities of electrical machines

Kallaste, Ants; Vaimann, Toomas; Rassõlkin, Anton 59th Annual International Scientific Conference on Power and Electrical Engineering : November 12, 13, 2018, Riga Technical University (RTUCON) : conference proceedings 2018 / 5 p. : ill

<https://doi.org/10.1109/RTUCON.2018.8659828>

Additive Manufacturing and Performance of E-Type Transformer Core

Tiismus, Hans; Kallaste, Ants; Belahcen, Anouar; Rassõlkin, Anton; Vaimann, Toomas; Ghahfarokhi, Payam Shams Energies 2021 / art. 3278 <https://doi.org/10.3390/en14113278> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

Additive manufacturing of electrical machines - towards the industrial use of a novel technology

Vaimann, Toomas; Kallaste, Ants Energies 2023 / art. 544 <https://doi.org/10.3390/en16010544> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

Additive manufacturing of prototype axial flux switched reluctance electrical machine

Tiismus, Hans; Kallaste, Ants; Belahcen, Anouar; Vaimann, Toomas; Rassõlkin, Anton 2021 28th International Workshop on Electric Drives : Improving Reliability of Electric Drives (IWED) 2021 / 4 p. : ill <https://doi.org/10.1109/IWED52055.2021.9376337>

Additively manufactured and topology optimized heatsink for a propulsion motor

Sarap, Martin; Kallaste, Ants; Vaimann, Toomas; Ghahfarokhi, Payam Shams 2024 International Conference on Electrical Machines (ICEM) 2024 / 6 p <https://doi.org/10.1109/ICEM60801.2024.10700108>

Adjusted electrical equivalent circuit model of induction motor with broken rotor bars

Rassõlkin, Anton; Vaimann, Toomas; Belahcen, Anouar; Kallaste, Ants; Petrov, Aleksei; Plokhov, Igor; Kotelnikov, Aleksandr PQ2016 : the 10th International Conference 2016 Electric Power Quality and Supply Reliability Conference (PQ) : August 29-31, 2016, Tallinn, Estonia : proceedings 2016 / p. 213-218 : ill <https://doi.org/10.1109/PQ.2016.7724115>

Adjusted electrical equivalent circuit model of induction motor with broken rotor bars and eccentricity faults

Petrov, Aleksei; Plokhov, Igor; Rassõlkin, Anton; Vaimann, Toomas; Kallaste, Ants; Belahcen, Anouar Proceeding of the 2017 IEEE 11th International Symposium on Diagnostics for Electric Machines, Power Electronics and Drives (SDEMPED) : [Tinos (Greece), August 29 - September 01, 2017] 2017 / p. 58-64 : ill <https://doi.org/10.1109/DEMPED.2017.8062334>

An advanced diagnostic approach for broken rotor bar detection and classification in DTC controlled induction motors by leveraging dynamic SHAP interaction feature selection (DSHAP-IFS) GBDT methodology

Khan, Muhammad Amir; Asad, Bilal; Vaimann, Toomas; Kallaste, Ants Machines 2024 / art. 495

<https://doi.org/10.3390/machines12070495> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

Advances in machine fault diagnosis

Vaimann, Toomas Applied sciences 2021 / art. 7348, 5 p <https://doi.org/10.3390/app11167348> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

Advances in machine fault diagnosis

2022 <https://doi.org/10.3390/books978-3-0365-5110-4>

Advances in machine fault diagnosis

Vaimann, Toomas Advances in machine fault diagnosis 2022 / p. 1-5 <https://doi.org/10.3390/app11167348>

Aeglasekäiguline otsetoimeline püsimagnetgeneraator tuuleagregaatidele

Kallaste, Ants; Vaimann, Toomas; Pabut, Ott Taastuvate energiaallikate uurimine ja kasutamine : neljateistkümnenda konverentsi kogumik = Investigation and Usage of Renewable Energy Sources : fourteenth conference proceedings : [8. nov. 2012, Tartu] 2012 / lk. 68-77 : ill

Air-gap eccentricity analysis of slow-speed slotless permanent magnet synchronous generator

Kangro, Rait; Kallaste, Ants; Vaimann, Toomas; Belahcen, Anouar PQ2014 : the 9th International 2014 Electric Power Quality and Supply Reliability Conference (PQ) : June 11-13, 2014, Rakvere, Estonia : proceedings 2014 / p. 225-228 : ill

Alusteaduste aastale pandi punkt

Vaimann, Toomas; Abner, Erik Eesti Teaduste Akadeemia sõnas ja pildis 2023 2024 / lk. 65-67 : fot

https://www.ester.ee/record=b5054043*est

Analysis of a slow-speed slotless permanent magnet synchronous generator

Tuttelberg, Kaur; Vaimann, Toomas; Kallaste, Ants 4th International Youth Conference on Energy 2013 : [proceedings] 2013 / p. 1-5 : ill

Analysis of a three-phase induction motor using the dynamic state space model

Asad, Bilal; Vaimann, Toomas; Belahcen, Anouar 17th International Symposium "Topical Problems in the Field of Electrical and Power Engineering". Doctoral school of energy and geotechnology. III : Kuressaare, Estonia, January 15-20, 2018 2018 / p. 65-69 : ill
http://ise.elnet.ee/record=b2950017~S2*est

Analysis of advanced passive heatsinks for electrical machines enabled by additive manufacturing

Sarap, Martin; Kallaste, Ants; Ghahfarokhi, Payam Shams; Vaimann, Toomas 2023 IEEE Workshop on Electrical Machines Design, Control and Diagnosis (WEMDCD) : proceedings 2023 / 6 p. : ill <https://doi.org/10.1109/WEMDCD55819.2023.10110940>

Analysis of common mode and rapidly varying voltage profile on stator current harmonics of an inverter-fed induction motor

Sardar, Muhammad Usman; Vaimann, Toomas; Kütt, Lauri; Kallaste, Ants; Asad, Bilal; Kudelina, Karolina; Akbar, Siddique 2023 IEEE 64th International Scientific Conference on Power and Electrical Engineering of Riga Technical University (RTUCon), Riga, Latvia, October 9-10, 2023 : conference proceedings 2023 / 6 p. : ill <https://doi.org/10.1109/RTUCon60080.2023.10413067>

Analysis of mechanical vibrations caused by eccentricity in a slow-speed slotless permanent magnet generator

Tiirats, Tauno; Pabut, Ott; Kallaste, Ants; Herranen, Henrik; Naar, Hendrik; Vaimann, Toomas PQ2014 : the 9th International 2014 Electric Power Quality and Supply Reliability Conference (PQ) : June 11-13, 2014, Rakvere, Estonia : proceedings 2014 / p. 237-241 : ill

Analysis of off-grid power supply for sparsely populated areas

Vaimann, Toomas; Janson, Kuno; Bolgov, Viktor; Kallaste, Ants 14th International Scientific Conference Electric Power Engineering 2013 : EPE 2013 : [proceedings] 2013 / p. 175-179 : ill

Analysis of possible faults and diagnostic methods of the Cartesian industrial robot

Autsou, Siarhei; Rassõlkin, Anton; Vaimann, Toomas; Kudelina, Karolina Proceedings of the Estonian Academy of Sciences 2022 / p. 227-24 : ill <https://doi.org/10.3176/proc.2022.3.04> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

Analysis of the eccentricity in a low-speed slotless permanent-magnet wind generator

Kallaste, Ants; Belahcen, Anouar; Kilk, Aleksander; Vaimann, Toomas PQ2012 : 8th International Conference : 2012 Electric Power Quality and Supply Reliability : June 11-13, 2012, Tartu, Estonia : conference proceedings 2012 / p. 47-52 : ill
<https://ieeexplore.ieee.org/document/6256199>

Analysis of the local and global forces acting on the coil structure of a modular slotless permanent magnet generator

Kallaste, Ants; Vaimann, Toomas; Belahcen, Anouar; Shams Ghahfarokhi, Payam; Rassõlkin, Anton Scientific Journal of Riga Technical University. Electrical, control and communication engineering 2019 / p. 9-14 : ill <https://doi.org/10.2478/ecce-2019-0002>

Analytical modelling of synchronous reluctance motor including non-linear magnetic condition

Naseer, Muhammad Usman; Kallaste, Ants; Asad, Bilal; Vaimann, Toomas; Rassõlkin, Anton IET electric power applications 2022 / p. 511-524 <https://doi.org/10.1049/elp2.12172> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

Analytical thermal model and flow network analysis suitable for open self-ventilated machines

Shams Ghahfarokhi, Payam; Kallaste, Ants; Belahcen, Anouar; Vaimann, Toomas IET Electric Power Applications 2020 / p. 929-936 : ill <https://doi.org/10.1049/iet-epa.2019.1020> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

Artificial intelligence driven approaches for fault prognostics of electrical machines using vibration spectrum analysis =

Tehisintellektil põhinevad lähenemisviisid elektrimasinate rikete prognoosimiseks vibratsioonispektri analüüsi abil
Kudelina, Karolina 2024 https://www.ester.ee/record=b5685285*est <https://doi.org/10.23658/taltech.28/2024>
<https://digikogu.taltech.ee/et/Item/229f1bbb-6178-414a-9e2e-2c98a30a783c>

Artificial intelligence in monitoring and diagnostics of electrical energy conversion systems

Vaimann, Toomas; Rassõlkin, Anton; Kallaste, Ants; Pomarnacki, Raimondas; Belahcen, Anouar; Van Khang, Hyunh 2020 27th International Workshop on Electric Drives: MPEI Department of Electric Drives 90th Anniversary (IWED), Moscow, Russia, January 27-30, 2020 2020 / 4 p <https://doi.org/10.1109/IWED48848.2020.9069566>

Artificial Intelligence-Based Predictive Analytics for Battery Energy Storage Systems in Electric Vehicle Applications = Tehisintellektil põhinev ennustav andmeanalüüs akupõhiste energiasalvestussüsteemide jaoks elektrisõidukites

Zequera, Rolando Antonio Gilbert 2025 https://www.ester.ee/record=b5758189*est <https://digikogu.taltech.ee/et/Item/7ecb1e38-a591-47c5-b37e-7c2e901d05f1> <https://doi.org/10.23658/taltech.61/2025>

Axial synchronous magnetic coupling modeling and printing with selective laser melting

Tiismus, Hans; Kallaste, Ants; Vaimann, Toomas; Rassõlkin, Anton; Belahcen, Anouar 2019 IEEE 60th International Scientific Conference on Power and Electrical Engineering of Riga Technical University (RTUCON), 7-9 October 2019 : conference proceedings 2019 / 4 p. : ill <https://doi.org/10.1109/RTUCON48111.2019.8982344>

Axially asymmetric design for additive manufacturing of synchronous reluctance machines

Naseer, Muhammad Usman; Kallaste, Ants; Asad, Bilal; Vaimann, Toomas; Rassõlkin, Anton 2023 IEEE International Conference on Electric Machines and Drives (IEMDC) 2023 / 5 p <https://doi.org/10.1109/IEMDC55163.2023.10238995>

Bearing fault analysis of BLDC motor for electric scooter application

Kudelina, Karolina; Asad, Bilal; Vaimann, Toomas; Belahcen, Anouar; Rassõlkin, Anton; Kallaste, Ants; Lukichev, Dmitry Designs 2020 / art. 42, 18 p. : ill <https://doi.org/10.3390/designs4040042> [Journal metrics at Scopus](#) [Article at Scopus](#)

Bearing fault analysis of BLDC motor intended for electric scooter application

Kudelina, Karolina; Asad, Bilal; Vaimann, Toomas; Rassõlkin, Anton; Kallaste, Ants 2021 IEEE 13th International Symposium on Diagnostics for Electrical Machines, Power Electronics and Drives (SDEMPED) 2021 / p. 427-432 <https://doi.org/10.1109/SDEMPED51010.2021.9605519>

The bearing faults detection methods for electrical machines — the state of the art

Khan, Muhammad Amir; Asad, Bilal; Kudelina, Karolina; Vaimann, Toomas; Kallaste, Ants Energies 2023 / art. 296 <https://doi.org/10.3390/en16010296> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

Broken rotor bar fault detection of the grid and inverter-fed induction motor by effective attenuation of the fundamental component

Asad, Bilal; Vaimann, Toomas; Belahcen, Anouar; Kallaste, Ants; Rassõlkin, Anton; Iqbal, Muhammad Naveed IET electric power applications 2019 / p. 2005–2014 <https://doi.org/10.1049/iet-epa.2019.0350> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

Broken rotor bar fault detection using machine learning: Optimal frequency resolution

Koveshnikov, Semen; Bouharroui, Nada El; Kudelina, Karolina; Naseer, Muhammad Usman; Vaimann, Toomas; Belahcen, Anouar 2024 International Conference on Electrical Machines (ICEM) 2024 / 6 p <https://doi.org/10.1109/ICEM60801.2024.10700228>

Broken rotor bar fault diagnostic of inverter fed induction motor using FFT, Hilbert and Park's vector approach

Asad, Bilal; Vaimann, Toomas; Belahcen, Anouar; Kallaste, Ants 2018 XIII International Conference on Electrical Machines (ICEM 2018) : Alexandroupoli, Greece, 3-6 September 2018 2018 / p. 2352-2358 : ill <https://doi.org/10.1109/ICELMACH.2018.8506957>

Calculation of the traction effort of ISEAUTO self-driving vehicle

Rassõlkin, Anton; Gevorkov, Levon; Vaimann, Toomas; Kallaste, Ants; Sell, Raivo 2018 25th International Workshop on Electric Drives: Optimization in Control of Electric Drives (IWED) 2018 / p. 1-5 : ill <https://doi.org/10.1109/IWED.2018.8321397>

Challenges of additive manufacturing of electrical machines

Tiismus, Hans; Kallaste, Ants; Belahcen, Anouar; Rassõlkin, Anton; Vaimann, Toomas 2019 IEEE 12th International Symposium on Diagnostics for Electrical Machines, Power Electronics and Drives (SDEMPED), 27-30 Aug. 2019, Toulouse, France : proceedings 2019 / p. 44-48 : ill <https://doi.org/10.1109/DEMPED.2019.8864850>

Changing of magnetic flux density distribution in a squirrel-cage induction motor with broken rotor bars

Vaimann, Toomas; Belahcen, Anouar; Kallaste, Ants Elektronika ir elektrotehnika = Electronics and electrical engineering 2014 / p. 11-14 : ill <https://doi.org/10.5755/j01.eee.20.7.8018> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

Characterization of high-frequency impedance-based models for transient terminal overvoltage estimation in cable-fed motor drive systems

Sardar, Muhammad Usman; Vaimann, Toomas; Kütt, Lauri; Asad, Bilal; Kallaste, Ants; Kudelina, Karolina 2024 International Conference on Electrical Machines (ICEM) 2024 / 7 p <https://doi.org/10.1109/ICEM60801.2024.10700495>

Charge Diagnostics and State Estimation of Battery Energy Storage Systems Through Transformer Models
Zequera, Rolando Antonio Gilbert; Rassölkin, Anton; Vaimann, Toomas; Kallaste, Ants IEEE Access 2025 / p. 17733–17744 : ill <https://doi.org/10.1109/ACCESS.2025.3532858>

Clustering and outlier analysis for key performance indicators in battery energy storage systems applications
Zequera, Rolando Antonio Gilbert; Rassölkin, Anton; Vaimann, Toomas; Kallaste, Ants 2023 IEEE 17th International Conference on Compatibility, Power Electronics and Power Engineering (CPE-POWERENG) 2023 / 6 p <https://doi.org/10.1109/CPE-POWERENG58103.2023.10227417>

Comparative analysis of wind generator energy efficiency based on machine design
Kallaste, Ants; Vaimann, Toomas; Kilk, Aleksander; Belahcen, Anouar 2014 55th International Scientific Conference on Power and Electrical Engineering of Riga Technical University (RTUCON) : proceedings 2014 / p. 9-12 : ill

Comparative simulation study of pump system efficiency driven by induction and synchronous reluctance motors
Gevorkov, Levon; Dominguez-Garcia, Jose Luis; Rassölkin, Anton; Vaimann, Toomas Energies 2022 / art. 4068
<https://doi.org/10.3390/en15114068> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

Comparative Study of Advanced Heatsink Structures for Improved Thermal Performance in Axial Flux Motors
Sarap, Martin; Singh, Shalini; Kallaste, Ants; Qureshi, Ahmed Jawad; Tiismus, Hans; Vaimann, Toomas; Ghahfarokhi, Payam Shams IEEE Access 2025 / p. 100850-100860 <https://doi.org/10.1109/ACCESS.2025.3577289>

Comparative study of field-oriented control model in application for induction and synchronous reluctance motors for life-cycle analysis
Autsou, Siarhei; Saroka, Viktor; Karpovich, Dzmitry; Rassölkin, Anton; Gevorkov, Levon; Vaimann, Toomas; Kallaste, Ants; Belahcen, Anouar; Rassölkin, Anton 2018 25th International Workshop on Electric Drives: Optimization in Control of Electric Drives (IWED) 2018 / p. 1-5 : ill <https://doi.org/10.1109/IWED.2018.8321371>

Comparative study of slow-speed slotless synchronous generator using SmCo and NdFeB permanent magnets
Korn, Norman; Vaimann, Toomas; Kallaste, Ants; Belahcen, Anouar PQ2014 : the 9th International 2014 Electric Power Quality and Supply Reliability Conference (PQ) : June 11-13, 2014, Rakvere, Estonia : proceedings 2014 / p. 247-250 : ill

Comparison of synchronous reluctance machine and permanent magnet-assisted synchronous reluctance machine performance characteristics
Heidari, Hamidreza; Andriushchenko, Ekaterina; Rassölkin, Anton; Kallaste, Ants; Vaimann, Toomas; Demidova, Galina 2020 27th International Workshop on Electric Drives: MPEI Department of Electric Drives 90th Anniversary (IWED), Moscow, Russia, January 27-30, 2020 2020 / 5 p. : ill <https://doi.org/10.1109/IWED48848.2020.9069583>

A comparison of the vector control of synchronous reluctance motor and permanent magnet-assisted synchronous reluctance motor
Heidari, Hamidreza; Rassölkin, Anton; Kallaste, Ants; Vaimann, Toomas; Andriushchenko, Ekaterina; Belahcen, Anouar; Razzaghi, Arash 2021 XVIII International Scientific Technical Conference Alternating Current Electric Drives (ACED) : proceedings 2021 / 6 p. : ill <https://doi.org/10.1109/ACED50605.2021.9462265>

Compliance testing concept of grid-connected inverter-based resources using simulated input
Dvoracek, Jiri; Drapela, Jiri; Moravek, Jan; Vojtek, Martin; Toman, Petr; Rassölkin, Anton; Vaimann, Toomas 2023 23rd International Scientific Conference on Electric Power Engineering (EPE) 2023 / p. 1-6 <https://doi.org/10.1109/EPE58302.2023.10149232>

Components selection of local power supply system for sparsely populated areas
Kallaste, Ants; Vaimann, Toomas; Janson, Kuno; Bolgov, Viktor 14th International Scientific Conference Electric Power Engineering 2013 : EPE 2013 : [proceedings] 2013 / p. 181-186 : ill

Comprehensive computations of the response of faulty cage induction machines
Belahcen, Anouar; Martinez, Javier; Vaimann, Toomas Proceedings of the 2014 International Conference on Electrical Machines (ICEM) 2014 / p. 1504-1509 : ill

Comprehensive Diagnostic Assessment of Inverter Failures in a Utility-Scale Solar Power Plant : A Case Study Based on Field and Laboratory Validation
Kull, Karl; Asad, Bilal; Naseer, Muhammad Usman; Kallaste, Ants; Vaimann, Toomas Sensors 2025 / art. 3717
<https://doi.org/10.3390/s25123717>

Computation of stator vibration of an induction motor using nodal magnetic forces [Online resource]
Sathyan, Sabin; Belahcen, Anouar; Kataja, Juhani; Vaimann, Toomas; Sobra, Jan 2016 XXII International Conference on Electrical Machines (ICEM) : SwissTech Convention Center, Lausanne, Switzerland, 04-07 September, 2016 : proceedings 2016 / p. 2198-

Concept of the test Bench for electrical vehicle propulsion drive data acquisition

Rassõlkin, Anton; Rjabtšikov, Viktor; Vaimann, Toomas; Kallaste, Ants; Kuts, Vladimir 2020 XI International Conference on Electrical Power Drive Systems (ICEPDS), Saint-Petersburg, Russia, October 4-7, 2020 2020 / p. 35-42 : ill <https://doi.org/10.1109/ICEPDS47235.2020.9249078>

Concepts of additively manufactured electrical machines and components

Vaimann, Toomas; Tiismus, Hans; Kallaste, Ants 2023 23rd International Scientific Conference on Electric Power Engineering (EPE) 2023 / 6 p <https://doi.org/10.1109/EPE58302.2023.10149252>

Conceptual modelling of an EV-permanent magnet synchronous motor digital twin

Mohamed, Mahmoud Ibrahim Hassanin; Rjabtšikov, Viktor; Jegorov, Sergei; Rassõlkin, Anton; Vaimann, Toomas; Kallaste, Ants 2022 IEEE 20th International Power Electronics and Motion Control Conference (PEMC) : Brasov, Romania, 25-28 Sept. 2022 : proceedings 2022 / p. 156-160 <https://doi.org/10.1109/PEMC51159.2022.9962943>

Conceptual test bench for small class unmanned autonomous vehicle performance estimation

Pütsep, Kristjan; Rassõlkin, Anton; Vaimann, Toomas 2021 IEEE 19th International Power Electronics and Motion Control Conference, The Silesian University of Technology Gliwice, Poland, 25 - 29 April, 2021 (PEMC) : proceedings 2021 / p. 695-698 : ill <https://doi.org/10.1109/PEMC48073.2021.9432509>

Condition monitoring and fault detection for electrical machines using IOT

Raja, Hadi Ashraf; Vaimann, Toomas; Rassõlkin, Anton; Kallaste, Ants Proceedings of the Future Technologies Conference (FTC) 2022. Volume 2 2023 / p. 162-173 https://doi.org/10.1007/978-3-031-18458-1_12 [Conference proceedings at Scopus](#) [Article at Scopus](#)

Condition monitoring of a Cartesian robot with a mechanically damaged gear to create a fuzzy logic control and diagnosis algorithm

Autsou, Siarhei; Kudelina, Karolina; Vaimann, Toomas; Rassõlkin, Anton; Kallaste, Ants Applied sciences 2024 / art. 4241 <https://doi.org/10.3390/app14104241> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

Condition monitoring of electrical machines

Vaimann, Toomas; Kallaste, Ants 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 2012 / p. 209-212 : ill

Condition monitoring of electrical machines and its relation to industrial internet

Belahcen, Anouar; Gyftakis, Konstantinos N.; Martinez, Javier; Climente-Alarcon, Vicente; Vaimann, Toomas 2015 IEEE Workshop on Electrical Machines Design, Control and Diagnosis (WEMDCD) : proceedings : Castello del Valentino, Torino, Italy, 26-27 March, 2015 2015 / p. 233-241 : ill <http://dx.doi.org/10.1109/WEMDCD.2015.7194535>

Condition monitoring of electrical machines and its relation to IoT

Vaimann, Toomas 18th International Symposium "Topical Problems in the Field of Electrical and Power Engineering". Doctoral School of Energy and Geotechnology III : Toila, Estonia, January 14-19, 2019 : [proceedings] 2019 / p. 55-56 : ill https://www.ester.ee/record=b5183874*est

Control challenges of 3D printed switched reluctance motor

Rassõlkin, Anton; Kallaste, Ants; Vaimann, Toomas; Tiismus, Hans 2019 26th International Workshop on Electric Drives : Improvement in Efficiency of Electric Drives (WED) : Moscow Power Engineering Institute, Moscow, Russia 30th of January - 02nd of February 2019 : proceedings 2019 / 5 p. : ill <https://doi.org/10.1109/WED.2019.8664282>

Converter state-space model estimation using dynamic mode decomposition

Suskis, Pavels; Zakis, Janis; Suzdalenko, Alexander; Khang, Huynh Van; Rassõlkin, Anton; Vaimann, Toomas; Pomarnacki, Raimondas 2022 IEEE 7th International Energy Conference (ENERGYCON) 2022 / 5 I <https://doi.org/10.1109/ENERGYCON53164.2022.9830201>

Corrections to “Opportunities and Challenges of Utilizing Additive Manufacturing Approaches in Thermal Management of Electrical Machines”

Ghahfarokhi, Payam Shams; Podgornovs, Andrejs; Kallaste, Ants; Marques Cardoso, Antonio J.; Belahcen, Anouar; Vaimann, Toomas; Tiismus, Hans; Asad, Bilal IEEE Access 2021 / p. 62532 <https://doi.org/10.1109/ACCESS.2021.3074827> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

Cost efficiency analysis of slow-speed slotless permanent magnet synchronous generator using different magnetic materials

Laurit, Sten; Kallaste, Ants; Vaimann, Toomas; Belahcen, Anouar PQ2014 : the 9th International 2014 Electric Power Quality and Supply Reliability Conference (PQ) : June 11-13, 2014, Rakvere, Estonia : proceedings 2014 / p. 221-224 : ill

Cost-efficient real-time condition monitoring and fault diagnostics system for BLDC motor using IoT and Machine

learning

Raja, Hadi Ashraf; Raval, Hardik; Vaimann, Toomas; Kallaste, Ants; Rassõlkin, Anton; Belahcen, Anouar Diagnostika '22 : 2022 International Conference on Diagnostics in Electrical Engineering : conference proceedings 2022 / 4 p.
<https://doi.org/10.1109/Diagnostika55131.2022.9905102>

A current spectrum-based algorithm for fault detection of electrical machines using low-power data acquisition devices
Asad, Bilal; Raja, Hadi Ashraf; Vaimann, Toomas; Kallaste, Ants; Pomarnacki, Raimondas; Hyunh, Van Khang Electronics 2023 / art. 1746 <https://doi.org/10.3390/electronics12071746> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

Curricula reforms through structural reforms

Vaimann, Toomas; Rassõlkin, Anton; Palu, Ivo 2020 XI International Conference on Electrical Power Drive Systems (ICEPDS), Saint-Petersburg, Russia, October 4-7, 2020 2020 / p. 1-5 : ill <https://doi.org/10.1109/ICEPDS47235.2020.9249084>

Curved Airgap Topology : A Promising Strategy for Enhancing Axial-Flux Machine Performance Metrics

Naseer, Muhammad Usman; Kallaste, Ants; Vaimann, Toomas; Asad, Bilal International Conference on the Computation of Electromagnetic Fields (COMPUMAG) 2025

Custom simplified machine learning algorithms for fault diagnosis in electrical machines

Raja, Hadi Ashraf; Asad, Bilal; Vaimann, Toomas; Kallaste, Ants; Rassõlkin, Anton; Belahcen, Anouar Diagnostika '22 : 2022 International Conference on Diagnostics in Electrical Engineering : Conference proceedings 2022 / 4 p.
<https://doi.org/10.1109/Diagnostika55131.2022.9905174>

Data science-based techniques for modelling and diagnostics of battery cells based on end-of-life criteria

Zequera, Rolando Antonio Gilbert; Rassõlkin, Anton; Vaimann, Toomas; Kallaste, Ants 2023 International Conference on Electrical Drives and Power Electronics (EDPE) 2023 / 6 p <https://doi.org/10.1109/EDPE58625.2023.10274007>

Deep Learning methodology for charging management applications in battery cells based on Neural Networks

Zequera, Rolando Antonio Gilbert; Rjabtšikov, Viktor; Rassõlkin, Anton; Vaimann, Toomas; Kallaste, Ants IEEE Transactions on Intelligent Vehicles 2025 / p. 668-682 <https://doi.org/10.1109/TIV.2024.3417216>

Demagnetization in permanent magnet slotless generator using Halbach array

Kallaste, Ants; Kilk, Aleksander; Belahcen, Anouar; Vaimann, Toomas; Janson, Kuno Proceedings of the 13th International Scientific Conference Electric Power Engineering 2012 : EPE 2012 : Brno. Vol. 2 2012 / p. 1053-1057 : ill
https://www.researchgate.net/publication/262674411_Demagnetization_in_Permanent_Magnet_Slotless_Generator_Using_Halbach_Array

Design and modeling of contoured airgap topology for additively manufactured electrical machines = Kõverdatud õhupilu topoloogiaga kihtlisandusmeetodil valmistatud elektrimasinate projekteerimine ja modelleerimine

Naseer, Muhammad Usman 2025 https://www.ester.ee/record=b5747039*est <https://doi.org/10.23658/taltech.32/2025>
<https://digikogu.taltech.ee/et/Item/af3abd72-6077-43be-b7ed-5fa0b3f58602>

Design and optimization of permanent magnet generator with outer rotor for wind turbine application = Tuuleagregaadis kasutatava välisrootoriga püsomagnetgeneraatori projekteerimine ja optimeerimine

Kudrjajtsev, Oleg 2017 <https://digi.lib.ttu.ee/i/?7662> https://www.ester.ee/record=b4671603*est

Design and performance of laser additively manufactured core induction motor

Tiismus, Hans; Kallaste, Ants; Naseer, Muhammad Usman; Vaimann, Toomas; Rassõlkin, Anton IEEE Access 2022 / p. 50137-50152 <https://doi.org/10.1109/ACCESS.2022.3173317> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

Design and prototyping of directly driven outer rotor permanent magnet generator for small scale wind turbines [Online resource]

Vaimann, Toomas; Kudrjajtsev, Oleg; Kilk, Aleksander; Kallaste, Ants; Rassõlkin, Anton Advances in electrical and electronic engineering 2018 / p. 271-278 : ill <https://doi.org/10.15598/aeer.v16i3.2698> [Journal metrics at Scopus](#) [Article at Scopus](#)

Design and resonance analysis of tubular structured dual stator linear oscillating actuator

Ahmad, Zahoor; Kallaste, Ants; Vaimann, Toomas; Sardar, Muhammad Usman 2024 International Conference on Electrical Machines (ICEM) 2024 / 7 p <https://doi.org/10.1109/ICEM60801.2024.10700213>

Design of a research laboratory drive system for a synchronous reluctance motor for vector control and performance analysis

Heidari, Hamidreza; Rassõlkin, Anton; Kallaste, Ants; Vaimann, Toomas; Andriushchenko, Ekaterina; Belahcen, Anouar Inventions 2021 / art. 64, 21 p. : ill <https://doi.org/10.3390/inventions6040064> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

Design of an additively manufactured polymer composite electrical machine

Sarap, Martin; Kallaste, Ants; Naseer, Muhammad Usman; Tiismus, Hans; Rjabtšikov, Viktor; Ghahfarokhi, Payam Shams; Vaimann, Toomas; Aman, Alexander; Kutia, Mykhailo 2023 IEEE 17th International Conference on Compatibility, Power Electronics and Power Engineering (CPE-POWERENG) 2023 / 5 p <https://doi.org/10.1109/CPE-POWERENG58103.2023.10227413>

Design of an additively manufactured thermal solution for an axial flux switched reluctance motor

Sarap, Martin; Singh, Shalini; **Kallaste, Ants;** Jawad Qureshi, Ahmed Jawad; **Tiismus, Hans; Vaimann, Toomas;** Shams Ghahfarokhi, Payam Case studies in thermal engineering 2025 / art. 105805 <https://doi.org/10.1016/j.csite.2025.105805>

Design of permanent magnet assisted synchronous reluctance machine

Kallaste, Ants; Vaimann, Toomas; Belahcen, Anouar Proceedings : 2014 15th International Scientific Conference on Electric Power Engineering (EPE) 2014 / p. 579-582 : ill

Design of rotors for synchronous reluctance motor : analytical treatment and optimization

Orlova, Svetlana; Pugachov, Vladislav; **Rassõlkin, Anton; Kallaste, Ants; Vaimann, Toomas** 2019 21st European Conference on Power Electronics and Applications (EPE '19 ECCE Europe), 3-5 Sept. 2019, Genova, Italy : proceedings 2019 / 9 p. : ill <https://doi.org/10.23919/EPE.2019.8914760>

Design of slow-speed slotless SmCo permanent magnet synchronous generator for wind applications

Vaimann, Toomas; Kallaste, Ants; Korn, Norman; Laurit, Sten; Belahcen, Anouar Proceedings : 2014 15th International Scientific Conference on Electric Power Engineering (EPE) 2014 / p. 339-342 : ill

Design optimization methods of additively manufactured Switched Reluctance Motor = Kihltisandustehnoloogia abil toodetud samm-mootori optimeerimise meetodid

Andriushchenko, Ekaterina 2023 <https://doi.org/10.23658/taltech.16/2023> <https://digikogu.taltech.ee/et/Item/382b9eea-7bd1-4140-b124-9f0b580e81bc> https://www.ester.ee/record=b5558664*est

Design optimization of permanent magnet clutch

Andriushchenko, Ekaterina; Kallaste, Ants; Belahcen, Anouar; Heidari, Hamidreza; Vaimann, Toomas; Rassõlkin, Anton 2020 International Conference on Electrical Machines (ICEM), 23-26 August 2020, Gothenburg, Sweden : online : proceedings 2020 / p. 436-440 <https://doi.org/10.1109/ICEM49940.2020.9270726>

Design optimization of permanent magnet clutch with Ārtap framework

Andriushchenko, Ekaterina; Kaska, Jan; **Kallaste, Ants; Belahcen, Anouar; Vaimann, Toomas; Rassõlkin, Anton** Periodica polytechnica electrical engineering and computer science 2021 / p. 106-112 <https://doi.org/10.3311/PPee.17007> [Journal metrics at Scopus Article at Scopus](https://www.scopus.com/article/record/17007)

Design procedure and preliminary analysis for the introduction of axial asymmetry in the synchronous reluctance machines : [proceedings]

Naseer, Muhammad Usman; Kallaste, Ants; Asad, Bilal; Vaimann, Toomas; Rassõlkin, Anton 2023 IEEE Workshop on Electrical Machines Design, Control and Diagnosis (WEMDCD) : proceedings 2023 / 6 p. : ill <https://doi.org/10.1109/WEMDCD55819.2023.10110903>

Detection of broken bars in frequency converter fed induction motor using Park's vector approach

Vaimann, Toomas; Belahcen, Anouar; Martinez, Javier; **Kilk, Aleksander** PQ2012 : 8th International Conference : 2012 Electric Power Quality and Supply Reliability : June 11-13, 2012, Tartu, Estonia : conference proceedings 2012 / p. 53-56 : ill https://www.researchgate.net/publication/261051228_Detection_of_broken_bars_in_frequency_converter_fed_induction_motor_using_Park's_vector_approach

Detection of broken rotor bars in three-phase squirrel-cage induction motor using fast Fourier transform

Vaimann, Toomas; Kallaste, Ants 10th International Symposium "Topical Problems in the Field of Electrical and Power Engineering". Doctoral School of Energy and Geotechnology II : Pärnu, Estonia, January 10-15, 2011 2011 / p. 52-56 : ill

Detection of induction motor broken bars in grid and frequency converter supply

Vaimann, Toomas; Belahcen, Anouar; Martinez, Javier; **Kilk, Aleksander** Riga Technical University 53rd International Scientific Conference dedicated to the 150th anniversary and the 1st Congress of World Engineers and Riga Polytechnical Institute/RTU Alumni : 11-12 October 2012, Riga, Latvia : [abstracts] 2012 / p. 112 : ill https://www.researchgate.net/publication/262674778_Detection_of_induction_motor_broken_bars_in_grid_and_frequency_converter_supply

Detection of induction motor broken bars in grid and frequency converter supply

Vaimann, Toomas; Belahcen, Anouar; Martinez, Javier; **Kilk, Aleksander** Przegląd elektrotechniczny 2014 / p. 90-94 : ill <https://www.pe.org.pl/articles/2014/1/22.pdf> [Journal metrics at Scopus Article at Scopus](https://www.scopus.com/article/record/17007)

Determination of forced convection coefficient over a flat side of coil

Ghahfarokhi, Payam Shams; Kallaste, Ants; Vaimann, Toomas; Rassõlkin, Anton; Belahcen, Anouar 2017 IEEE 58th International Scientific Conference on Power and Electrical Engineering of Riga Technical University (RTUCON) : proceedings : Latvia, Riga, 12-13 October, 2017 2017 / [4] p. : ill <https://doi.org/10.1109/RTUCON.2017.8124759>

Determination of heat transfer coefficient for the air forced cooling over a flat side of coil

Ghahfarokhi, Payam Shams; Kallaste, Ants; Belahcen, Anouar; Vaimann, Toomas Scientific Journal of Riga Technical University. Electrical, control and communication engineering 2019 / p. 15-20 : ill <https://doi.org/10.2478/ecce-2019-0003>

Determination of heat transfer coefficient from housing surface of a totally enclosed fan-cooled machine during passive cooling

Shams Ghahfarokhi, Payam; Podgornovs, Andrejs; Kallaste, Ants; Cardoso, Antonio J. Marques; Belahcen, Anouar; Vaimann, Toomas; Asad, Bilal; Tiismus, Hans Machines 2021 / art. 120 <https://doi.org/10.3390/machines9060120> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

Determination of heat transfer coefficient of finned housing of a TEFC variable speed motor

Shams Ghahfarokhi, Payam; Kallaste, Ants; Podgornovs, Andrejs; Belahcen, Anouar; Vaimann, Toomas; Asad, Bilal Electrical Engineering 2021 / p. 1009–1017 : ill <https://doi.org/10.1007/s00202-020-01132-1> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

Determination of natural convection heat transfer coefficient over the fin side of a coil system

Shams Ghahfarokhi, Payam; Belahcen, Anouar; Kallaste, Ants; Vaimann, Toomas; Rassõlkin, Anton International journal of heat and mass transfer 2018 / p. 677-682 : ill <https://doi.org/10.1016/j.ijheatmasstransfer.2018.05.071> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

Determining the thermal conductivity of additively manufactured metal specimens

Sarap, Martin; Kallaste, Ants; Ghahfarokhi, Payam Shams; Tiismus, Hans; Vaimann, Toomas 2022 29th International Workshop on Electric Drives: Advances in Power Electronics for Electric Drives (IWED) 2022 / 4 p <https://doi.org/10.1109/IWED54598.2022.9722591>

Development and utilization of synthetic signals for fault diagnostics of electrical machines

Raja, Hadi Ashraf; Kudelina, Karolina; Asad, Bilal; Vaimann, Toomas; Rassõlkin, Anton; Kallaste, Ants IEEE journal of emerging and selected topics in industrial electronics 2024 / 9 p <https://doi.org/10.1109/JESTIE.2024.3395650>

Development of an axial flux SRM through additive manufacturing

Hussain, Shahid; Kallaste, Ants; Naseer, Muhammad Usman; Tiismus, Hans; Vaimann, Toomas 2024 International Conference on Electrical Machines (ICEM) 2024 / 6 p <https://doi.org/10.1109/ICEM60801.2024.10700569>

Development of analytical thermal analysis tool for synchronous reluctance motors

Shams Ghahfarokhi, Payam; Kallaste, Ants; Podgornovs, Andrejs; Belahcen, Anouar; Vaimann, Toomas IET electric power applications 2020 / p. 1828-1836 <https://doi.org/10.1049/iet-epa.2020.0237> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

Diagnostic possibilities of induction motor bearing currents

Kudelina, Karolina; Vaimann, Toomas; Rassõlkin, Anton; Kallaste, Ants; Demidova, Galina; Karpovich, Dzmitry 2021 XVIII International Scientific Technical Conference Alternating Current Electric Drives (ACED) : proceedings 2021 / 5 p. : ill <https://doi.org/10.1109/ACED50605.2021.9462298>

Diagnostics of induction machine rotor faults using analysis of stator signals = Asünkroonmasina rootori diagnostika staatorisignaali uurimise meetodid

Vaimann, Toomas 2014 https://www.eester.ee/record=b4376858*est

Diagnostics of induction motor rotor faults using analysis of stator current

Vaimann, Toomas 6th International Symposium "Topical Problems in the Field of Electrical and Power Engineering" : Doctoral School of Energy and Geotechnology : [Kuressaare, January 12-17, 2009] 2009 / p. 13-17 : ill

Diagnostika säästab elektrimasinate tervist

Vaimann, Toomas; Kilk, Aleksander Keskkonnatehnika 2011 / 5, lk. 31-32 : ill https://artiklid.elnet.ee/record=b2426053*est

Digitaalkaksikud diagnostika rakenduseks

Vaimann, Toomas Elektriala 2023 / lk. 24-25 https://www.eester.ee/record=b1240496*est

Digital Twin as a virtual sensor for wind turbine applications

Mohamed, Mahmoud Ibrahim Hassanin; Rassõlkin, Anton; Vaimann, Toomas; Kallaste, Ants; Zakis, Janis; Hyunh, Van Khang; Pomarnacki, Raimondas Energies 2023 / art. 6246 <https://doi.org/10.3390/en16176246> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

Digital twin for propulsion drive of autonomous electric vehicle

Rassõlkin, Anton; Kuts, Vladimir; Kallaste, Ants; Vaimann, Toomas 2019 IEEE 60th International Scientific Conference on Power and Electrical Engineering of Riga Technical University (RTUCON), 7-9 October 2019 : conference proceedings 2019 / 4 p. : ill <https://doi.org/10.1109/RTUCON48111.2019.8982326>

Digital twin of an electrical motor based on empirical performance model

Rassõlkin, Anton; Rjabtšikov, Viktor; Vaimann, Toomas; Kallaste, Ants; Kuts, Vladimir; Partyshev, Andriy 2020 XI International Conference on Electrical Power Drive Systems (ICEPDS), Saint-Petersburg, Russia, October 4-7, 2020 2020 / p. 11-14 : ill <https://doi.org/10.1109/ICEPDS47235.2020.9249366>

Digital twin of wind generator for modelling various turbine characteristics

Raja, Hadi Ashraf; Autsou, Siarhei; Kudelina, Karolina; Rjabtšikov, Viktor; Vaimann, Toomas; Kallaste, Ants; Pomarnacki, Raimondas; Hyunh, Van Khang 2023 International Conference on Electrical Drives and Power Electronics (EDPE) 2023 / p. 1-5 <https://doi.org/10.1109/EDPE58625.2023.10274050>

Digital twin of wind generator to simulate different turbine characteristics using IoT

Raja, Hadi Ashraf; Kudelina, Karolina; Rjabtšikov, Viktor; Vaimann, Toomas; Kallaste, Ants; Pomarnacki, Raimondas; Hyunh, Van Khang Proceedings of the Future Technologies Conference (FTC) 2023. Vol. 1 2023 / p. 123-132 https://doi.org/10.1007/978-3-031-47454-5_9 [Conference proceedings at Scopus](#) [Article at Scopus](#)

Digital twin service unit development for an EV induction motor fault detection

Rjabtšikov, Viktor; Mohamed, Mahmoud Ibrahim Hassanin; Asad, Bilal; Rassõlkin, Anton; Vaimann, Toomas; Kallaste, Ants; Kuts, Vladimir; Stepień, Mariusz; Krawczyk, Mateusz 2023 IEEE International Conference on Electric Machines and Drives (IEMDC) 2023 / 5 p <https://doi.org/10.1109/IEMDC55163.2023.10239085>

Digital Twin service unit for AC motor stator inter-turn short circuit fault detection

Rjabtšikov, Viktor; Rassõlkin, Anton; Asad, Bilal; Vaimann, Toomas; Kallaste, Ants; Kuts, Vladimir; Jegorov, Sergei; Stepień, Mariusz; Krawczyk, Mateusz 2021 28th International Workshop on Electric Drives : Improving Reliability of Electric Drives (IWED) 2021 <https://doi.org/10.1109/IWED52055.2021.9376328>

Direct conductor cooling of outer-rotor machine enabled by additive manufacturing

Sarap, Martin; Kallaste, Ants; Ghahfarokhi, Payam Shams; Tiismus, Hans; Vaimann, Toomas 2023 IEEE International Conference on Electric Machines and Drives (IEMDC) 2023 / 4 p <https://doi.org/10.1109/IEMDC55163.2023.10238858>

Direct liquid cooling in low-power electrical machines : proof-of-concept

Lindh, Pia; Petrov, Ilya; Semken, R. Scott; **Vaimann, Toomas; Kallaste, Ants** IEEE transactions on energy conversion 2016 / p. 1257-1266 : ill <https://doi.org/10.1109/TEC.2016.2597059> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

Dispersed generation accommodation into smart grid

Vaimann, Toomas; Niitsoo, Jaan; Kivipõld, Tanel The 52nd Annual International Scientific Conference of Riga Technical University : abstract book and electronic proceedings : Latvia, Riga, 12.-14. October, 2011 2011 / p. ID-42

Distance learning in technical education on example of Estonia and Poland

Vaimann, Toomas; Stepień, Mariusz; **Rassõlkin, Anton; Palu, Ivo** 2020 XI International Conference on Electrical Power Drive Systems (ICEPDS), Saint-Petersburg, Russia, October 4-7, 2020 2020 / p. 285-288 : ill <https://doi.org/10.1109/ICEPDS47235.2020.9249317>

Distantsõppe tehnikahariduses

Vaimann, Toomas; Palu, Ivo Elektriala 2020 / lk. 10-12 : portr http://www.ester.ee/record=b1240496*est

Doktorantide läbipõlemine suretab Eesti teaduse

Vaimann, Toomas postimees.ee 2025 <https://arvamus.postimees.ee/8236689/toomas-vaimann-doktorantide-labipolemine-suretab-eesti-teaduse>

Dynamic control system for electric motor drive testing on the test bench

Rassõlkin, Anton; Kallaste, Ants; Vaimann, Toomas 2015 9th International Conference on Compatibility and Power Electronics (CPE) : proceedings : Faculty of Science and Technology (FCT), Caparica, Lisbon, Portugal, 24-26 June, 2015 2015 / p. 252-257 : ill <http://dx.doi.org/10.1109/CPE.2015.7231082>

Dynamic modeling of the demagnetization in Halbach array permanent magnet machines

Kallaste, Ants; Belahcen, Anouar; Vaimann, Toomas COMPUMAG 2013 : [proceedings] 2013 / p. 1-2 : ill

Dynamic state space model based analysis of a three-phase induction motor using nonlinear magnetization inductance

Asad, Bilal; Vaimann, Toomas; Rassõlkin, Anton; Belahcen, Anouar 2018 19th International Scientific Conference on Electric Power Engineering (EPE 2018) : Brno, Czech Republic, 16 - 18 May 2018 2018 / p. 260-265 : ill <https://doi.org/10.1109/EPE.2018.8396039>

Eddy current loss reduction prospects in laser additively manufactured soft magnetic cores

Tiismus, Hans; Kallaste, Ants; Vaimann, Toomas; Rassõlkin, Anton 2022 International Conference on Electrical Machines (ICEM) 2022 / p. 1511-1516 <https://doi.org/10.1109/ICEM51905.2022.9910679>

EDUTECH - good practices in cooperation between schools and academia attracting candidates for technical education
Rassõlkin, Anton; Vaimann, Toomas; Kudelina, Karolina; Stepień, Mariusz; Berger, Kevin 2020 IEEE 61st International Scientific Conference on Power and Electrical Engineering of Riga Technical University (RTUCON), Riga, Latvia, Nov. 5-7, 2020 : conference proceedings 2020 <https://doi.org/10.1109/RTUCON51174.2020.9316614>

Eessõna

Vaimann, Toomas; Risthein, Endel Eesti energeetika 100 aastat 2018 / lk. 9-10 https://www.ester.ee/record=b4774821*est

Eesti energeetika 100 aastat

Vaimann, Toomas; Risthein, Endel 2018 https://www.ester.ee/record=b4774821*est

The effect of build direction on the thermal conductivity of additively manufactured AIS10Mg and silicon-steel samples
Sarap, Martin; Kallaste, Ants; Shams Ghahfarokhi, Payam; Tiismus, Hans; Vaimann, Toomas 2022 International Conference on Electrical Machines (ICEM) 2022 / p. 538-543 <https://doi.org/10.1109/ICEM51905.2022.9910944>

Effect of PM parameters variability on the operation quantities of a wind generator

Kallaste, Ants; Belahcen, Anouar; Vaimann, Toomas 2015 IEEE Workshop on Electrical Machines Design, Control and Diagnosis (WEMDCD) : proceedings : Castello del Valentino, Torino, Italy, 26-27 March, 2015 2015 / p. 242-247 : ill <http://dx.doi.org/10.1109/WEMDCD.2015.7194536>

Efficiency map comparison of induction and synchronous reluctance motors

Rassõlkin, Anton; Heidari, Hamidreza; Kallaste, Ants; Vaimann, Toomas; Acedo, Jaime Pando; Romero-Cadaval, Enrique 2019 26th International Workshop on Electric Drives : Improvement in Efficiency of Electric Drives (IWED) : Moscow Power Engineering Institute, Moscow, Russia, 30th of January – 2nd of February 2019 : proceedings 2019 / 4 p. : ill <https://doi.org/10.1109/IWED.2019.8664334>

Electric drive for throttle control of centrifugal pump system

Gevorkov, Levon; Rassõlkin, Anton; Kallaste, Ants; Vaimann, Toomas 59th Annual International Scientific Conference on Power and Electrical Engineering : November 12, 13, 2018, Riga Technical University (RTUCON) : conference proceedings 2018 / 5 p. : ill <https://doi.org/10.1109/RTUCON.2018.8659845>

Electrical and thermal anisotropy in additively manufactured AISi10Mg and Fe-Si samples

Sarap, Martin; Tiismus, Hans; Kallaste, Ants; Saarna, Mart; Kolnes, Märt; Shams Ghahfarokhi, Payam; **Vaimann, Toomas** Machines 2025 / art. 1 <https://doi.org/10.3390/machines13010001>

Electrical machine research in TalTech

Vaimann, Toomas 19th International Symposium "Topical problems in the field of electrical and power engineering. Doctoral school of energy and geotechnology. III" : Tartu, Estonia, January 14-17, 2020 2020 / p. 39-40 : ill https://www.ester.ee/record=b5291755*est

Electrical resistivity of additively manufactured silicon steel for electrical machine fabrication

Tiismus, Hans; Kallaste, Ants; Vaimann, Toomas; Rassõlkin, Anton; Belahcen, Anouar 2019 Electric Power Quality and Supply Reliability Conference (PQ) & 2019 Symposium on Electrical Engineering and Mechatronics (SEEM), Kärda, Estonia, June 12-15, 2019 : proceedings 2019 / 4 p. : ill <https://doi.org/10.1109/PQ.2019.8818252>

Elekter pakub pinget vist kogu eluks : [intervjuu Aasta tehnikaüliõpilaseks nimetatud Toomas Vaimanniga]

Vaimann, Toomas; Feldmann, Mati Inseneeria 2012 / lk. 34-37 : fot https://artiklid.elnet.ee/record=b2465586*est

Elektriala doktoritöödest Tallinna Tehnikaülikoolis 1.

Vaimann, Toomas Elektriala 2022 / lk. 12-13 : fot https://www.ester.ee/record=b1240496*est

Elektriala doktoritöödest Tallinna Tehnikaülikoolis 2.

Vaimann, Toomas Elektriala 2022 / lk. 16-17 : fot https://www.ester.ee/record=b1240496*est

Elektrimasinate diagnostika - lihtne viis suureks kokkuhoiuks

Vaimann, Toomas; Kilk, Aleksander Elektriala 2011 / 5, lk. 26-27 : ill

Elektrimasinate diagnostika kui moodus nende eluea pikendamiseks

Vaimann, Toomas; Kilk, Aleksander Inseneeria 2011 / lk. 38, 40 : ill https://www.ester.ee/record=b1519314*est

Elektrimasinate soojusarvutus on uute masinate projekteerimisel määrava tähtsusega

Vaimann, Toomas Elektriala 2020 / lk. 12-13 : ill http://www.ester.ee/record=b1240496*est

Elektrimootorite 3D-printimine ei ole ulme

Vaimann, Toomas; Kallaste, Ants Director. Inseneeria 2021 / lk. 74-78 : fot <https://director.ee/2021/02/03/elektrimootorite-3d-printimine-ei-ole-ulme/> http://www.ester.ee/record=b2336521*est

Energia- ja geotehnika doktorikool areneb jõudsalt. Doktorikooli teadussuunad TTÜs

Lehtla, Tõnu; Vaimann, Toomas; Ummelas, Mart Mente et Manu 2013 / lk. 16-17 : fot https://artiklid.elnet.ee/record=b2619499*est

ENTA president: napp järelkasv ohustab eestikeelse kõrghariduse tulevikku

Vaimann, Toomas; Oidermaa, Jaan-Juhan novaator.err.ee 2023 [ENTA president: napp järelkasv ohustab eestikeelse kõrghariduse tulevikku](#)

Environmental and life cycle cost analysis of a synchronous reluctance machine [Online resource]

Rassõlkin, Anton; Orlova, Svetlana; Vaimann, Toomas; Belahcen, Anouar; Kallaste, Ants 2016 57th International Scientific Conference on Power and Electrical Engineering of Riga Technical University (RTUCON) : October 13, 14, 2016 : conference proceedings 2016 / [5] p. : ill <https://doi.org/10.1109/RTUCON.2016.7763127>

Environmental considerations in lifecycle based optimization of electrical machines

Vaimann, Toomas; Kallaste, Ants; Bolgov, Viktor; Belahcen, Anouar Proceedings of the 2015 16th International Scientific Conference on Electric Power Engineering (EPE) : May 20-22, 2015, Czech Republic 2015 / p. 209-214 : ill <http://dx.doi.org/10.1109/EPE.2015.7161057>

The Erasmus+ strategic partnership as a way to attract young people to engineering

Stepien, Mariusz; Berger, Kevin; Rassõlkin, Anton; Vaimann, Toomas Advances in Human Factors in Training, Education, and Learning Sciences : Proceedings of the AHFE 2019 International Conference on Human Factors in Training, Education, and Learning Sciences, July 24-28, 2019, Washington D.C., USA 2020 / p. 252-259 https://doi.org/10.1007/978-3-030-20135-7_25 [Conference proceedings at Scopus](#) [Article at Scopus](#)

Erko Lepa: inseneriharidus annab baasi ükskõik mis valdkonda liikumiseks

Lepa, Erko Elektriala 2020 / lk. 22-23 : fot http://www.ester.ee/record=b1240496*est <https://new.abb.com/news/et/detail/63276/erko-lepa-inseneriharidus-annab-baasi-ukskoik-mis-valdkonda-liikumiseks>

EV-powertrain test bench for digital twin development

Rjabtšikov, Viktor; Mohamed, Mahmoud Ibrahim Hassanin; Rassõlkin, Anton; Vaimann, Toomas; Kallaste, Ants 2022 IEEE 20th International Power Electronics and Motion Control Conference (PEMC) : Brasov, Romania, 25-28 Sept. 2022 : proceedings 2022 / p. 559-563 : ill <https://doi.org/10.1109/PEMC51159.2022.9962879>

An EV-traction inverter data-driven modelling for digital twin development

Ibrahim, Akram Abdalla Mohammed; Raja, Hadi Ashraf; Rassõlkin, Anton; Vaimann, Toomas; Kallaste, Ants 2023 23rd International Scientific Conference on Electric Power Engineering (EPE) 2023 / 5 p. : ill <https://doi.org/10.1109/EPE58302.2023.10149230>

Experimental determination of equivalent circuit parameters for a synchronous generator

Naseer, Muhammad Usman; Asad, Bilal; Ghahfarokhi, Payam Shams; Kallaste, Ants; Vaimann, Toomas; Rassõlkin, Anton 2021 IEEE Open Conference of Electrical, Electronic and Information Sciences (eStream): proceedings of the conference, April 22, 2021, Vilnius, Lithuania 2021 / 7 p. : ill <https://doi.org/10.1109/eStream53087.2021.9431442>

Experimental investigation of high viscosity on oil spray cooling system with hairpin winding

Ghahfarokhi, Payam Shams; Kallaste, Ants; Podgornovs, Andrejs; Cardoso, Antonio J. Marques; Vaimann, Toomas; Sarap, Martin; Rjabtšikov, Viktor 2023 IEEE 14th International Symposium on Diagnostics for Electrical Machines, Power Electronics and Drives (SDEMPED) 2023 / p. 234-238 <https://doi.org/10.1109/SDEMPED54949.2023.10271484>

Experimental prototype of high-efficiency wind turbine based on Magnus effect

Lukin, Aleksandr; Demidova, Galina; Lukichev, Dmitry; Rassõlkin, Anton; Kallaste, Ants; Vaimann, Toomas; Belahcen, Anouar 2020 27th International Workshop on Electric Drives: MPEI Department of Electric Drives 90th Anniversary (IWED), Moscow, Russia, January 27-30, 2020 / 6 p <https://doi.org/10.1109/IWED48848.2020.9069565>

Exploring the limits of early predictive maintenance in wind turbines applying an anomaly detection technique

Jankauskas, Mindaugas; Serackis, Artūras; Šapurov, Martynas; Pomarnacki, Raimondas; Baskys, Algirdas; Hyunh, Van Khang; Vaimann, Toomas; Zakis, Janis Sensors 2023 / art. 5695 <https://doi.org/10.3390/s23125695> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

Exterior-rotor permanent magnet synchronous machine with toroidal windings for unmanned aerial vehicles

Nukki, Rene; Kilk, Aleksander; Kallaste, Ants; Vaimann, Toomas; Tiimus, Kristjan PQ2014 : the 9th International 2014 Electric Power Quality and Supply Reliability Conference (PQ) : June 11-13, 2014, Rakvere, Estonia : proceedings 2014 / p. 215-220 : ill

Fault detecting accuracy of mechanical damages in rolling bearings

Kudelina, Karolina; Baraškova, Tatjana; Shirokova, Veroonika; Vaimann, Toomas; Rassõlkin, Anton Machines 2022 / art. 86 <https://doi.org/10.3390/machines10020086> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

Fault detection and predictive maintenance of electrical machines : perspective chapter

Raja, Hadi Ashraf; Kudelina, Karolina; Asad, Bilal; Vaimann, Toomas New Trends in Electric Machines - Technology and Applications 2022 <https://doi.org/10.5772/intechopen.107167>

Fault diagnosis of the tooth belt transmission of Cartesian robot

Autsou, Siarhei; Vaimann, Toomas; Rassõlkin, Anton; Asad, Bilal; Kudelina, Karolina; Huynh, Van Khang 2022 29th International Workshop on Electric Drives : Advances in Power Electronics for Electric Drives : IWED2022 : Moscow Power Engineering Institute, Moscow, Russia : 26th– 29th of January 2022 : Proceedings 2022 / 6 p
<https://doi.org/10.1109/IWED54598.2022.9722578>

Fault diagnosis system of Cartesian robot for various belt tension

Autsou, Siarhei; Vaimann, Toomas; Rassõlkin, Anton; Kudelina, Karolina 2022 International Conference on Diagnostics in Electrical Engineering (Diagnostics) 2022 / 4 | <https://doi.org/10.1109/Diagnostics55131.2022.9905111>

Fault simulation and analysis of high-voltage circuit breaker's spring charging mechanism using a universal motor model

Asad, Bilal; Vaimann, Toomas; Kallaste, Ants; Kilter, Jako; Sardar, Muhammad Usman 2024 IEEE 65th International Scientific Conference on Power and Electrical Engineering of Riga Technical University (RTUCON) 2024 / 5 p
<https://doi.org/10.1109/RTUCON62997.2024.10830846>

Fault tolerant control and diagnosis strategies for cartesian industrial robot motion control planning system =

Tõrketaluvusega juhtimis- ja diagnostikastrateegiad tööstusliku karteesianroboti liikumise planeerimise juhtimissüsteemi jaoks

Autsou, Siarhei 2025 https://www.ester.ee/record=b5734587*est <https://digikogu.taltech.ee/et/Item/c9afdbf3-354b-41f5-a705-ed924a2af21>
<https://doi.org/10.23658/taltech.14/2025>

Fault tolerant control of a grid-connected microgrid with high penetration of renewable energy

Senanayaka, Jagath; Khang, Huynh Van; **Vaimann, Toomas; Rassõlkin, Anton** 24th International Conference on Electrical Machines and Systems (ICEMS) 2021 / p. 938-943 <https://doi.org/10.23919/ICEMS52562.2021.9634364>

Fault-tolerant control of a grid-connected bipolar DC microgrid with high penetration of intermittent renewable energy

Senanayaka, Jagath; Khang, Huynh Van; **Rassõlkin, Anton; Vaimann, Toomas;** Zakis, Janis; Pomarnacki, Raimondas IECON 2022 - 48th Annual Conference of the IEEE Industrial Electronics Society 2022 / p. 1-6
<https://doi.org/10.1109/IECON49645.2022.9968572> [Conference proceedings at Scopus](#) [Article at Scopus](#)

Feasibility study of a local power supply system for sparsely populated areas in Estonia

Vaimann, Toomas; Rassõlkin, Anton; Kallaste, Ants; Märss, Maido Agronomy research 2016 / p. 1720-1729 : ill
http://www.ester.ee/record=b1787401*est [Journal metrics at Scopus](#) [Article at Scopus](#)

The FEM based modeling and corresponding test rig preparation for broken rotor bars analysis

Asad, Bilal; Eensalu, Lauri; Vaimann, Toomas; Kallaste, Ants; Rassõlkin, Anton; Belahcen, Anouar 2019 IEEE 60th International Scientific Conference on Power and Electrical Engineering of Riga Technical University (RTUCON), 7-9 October 2019 : conference proceedings 2019 / 9 p. : ill <https://doi.org/10.1109/RTUCON48111.2019.8982350>

Flood prevention through condition monitoring of pumping stations

Gevorkov, Levon; **Rassõlkin, Anton; Kallaste, Ants; Vaimann, Toomas** 2019 IEEE 60th International Scientific Conference on Power and Electrical Engineering of Riga Technical University (RTUCON), 7-9 October 2019 : conference proceedings 2019 / 5 p. : ill <https://doi.org/10.1109/RTUCON48111.2019.8982305>

Force-based feedback for haptic device of mobile assembly robot

Lukin, Aleksandr; **Demidova, Galina; Rassõlkin, Anton; Vaimann, Toomas;** Roozbahani, Hamid 2020 27th International Workshop on Electric Drives: MPEI Department of Electric Drives 90th Anniversary (IWED), Moscow, Russia, January 27-30, 2020 2020 / 5 p. : ill <https://doi.org/10.1109/IWED48848.2020.9069581>

Fundamentals of electrical machines

Kallaste, Ants; Vaimann, Toomas; Rassõlkin, Anton; Janson, Kuno 2026 https://www.routledge.com/Fundamentals-of-Electrical-Machines/Kallaste-Vaimann-Rassolkin-Janson/p/book/9781032518206?srsltid=AfmBOopOWsvE7PCq4afDRJAsSt-7MPjB1tipnsK8Yhta6i_tqjIPvPr

Generative design in development of mechanical components for Magnus effect-based wind turbine

Lukin, Aleksandr; Perepelkina, Svetlana; Demidova, Galina; Lukichev, Dmitry; **Rassõlkin, Anton; Vaimann, Toomas; Kallaste, Ants** 2020 XI International Conference on Electrical Power Drive Systems (ICEPDS), Saint-Petersburg, Russia, October 4-7, 2020 2020 / p. 6-10 : ill <https://doi.org/10.1109/ICEPDS47235.2020.9249344>

Generative design in weight optimization of reconfigurable continuous track robot

Valme, Daniil; Kudelina, Karolina; Belolipetskaja, Diana; Rassõlkin, Anton; Vaimann, Toomas; Kallaste, Ants 2021 28th International Workshop on Electric Drives : Improving Reliability of Electric Drives (IWED) 2021 / 6 p
<https://doi.org/10.1109/IWED52055.2021.9376329>

Generator mode analysis of exterior-rotor PM synchronous machine with Gramme's winding

Nukki, Rene; Kilk, Aleksander; Kallaste, Ants; Vaimann, Toomas; Tiimus, Kristjan 2015 IEEE 5th International Conference on Power Engineering, Energy and Electrical Drives (POWERENG) : proceedings : May 11-13, 2015, Riga, Latvia 2015 / p. 347-352 : ill <http://dx.doi.org/10.1109/PowerEng.2015.7266341>

Hairpin windings for electric vehicle motors : modeling and investigation of AC loss-mitigating approaches

Ghahfarokhi, Payam Shams; Podgornovs, Andrejs; Cardoso, Antonio J. Marques; Kallaste, Ants; Belahcen, Anouar; Vaimann, Toomas Machines 2022 / art. 1029 <https://doi.org/10.3390/machines10111029> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

Hairpin windings manufacturing, design, and AC losses analysis approaches for electric vehicle motors

Ghahfarokhi, Payam Shams; Podgornovs, Andrejs; Cardoso, Antonio J. Marques; Kallaste, Ants; Belahcen, Anouar; Vaimann, Toomas 2021 11th International Electric Drives Production Conference (EDPC) : 7-9 Dec. 2021 2021 / p. 1-7 <https://doi.org/10.1109/EDPC53547.2021.9684208>

Harmonic spectrum analysis of induction motor with broken rotor bar fault

Asad, Bilal; Vaimann, Toomas; Kallaste, Ants; Belahcen, Anouar 59th Annual International Scientific Conference on Power and Electrical Engineering : November 12, 13, 2018, Riga Technical University (RTUCON) : conference proceedings 2018 / 7 p. : ill <https://doi.org/10.1109/RTUCON.2018.8659842>

Harmonics distortion in inverter-fed motor-drive systems : case study

Heidari, Hamidreza; Rassõlkin, Anton; Kallaste, Ants; Vaimann, Toomas; Belahcen, Anouar 2019 Electric Power Quality and Supply Reliability Conference (PQ) & 2019 Symposium on Electrical Engineering and Mechatronics (SEEM), Kärda, Estonia, June 12-15, 2019 : proceedings 2019 / 4 p. : ill <https://doi.org/10.1109/PQ.2019.8818230>

Health and charge indicators for battery energy storage systems in electric vehicles applications

Zequera, Rolando Antonio Gilbert; Rassõlkin, Anton; Vaimann, Toomas; Kallaste, Ants 2022 IEEE 20th International Power Electronics and Motion Control Conference (PEMC) : Brasov, Romania, 25-28 Sept. 2022 : proceedings 2022 / p. 427-432 <https://doi.org/10.1109/PEMC51159.2022.9962858>

Heat pump induction motor faults caused by soft starter topology — case study

Kudelina, Karolina; Vaimann, Toomas; Rassõlkin, Anton; Kallaste, Ants; Huynh, Van Khang 2021 IEEE 19th International Power Electronics and Motion Control Conference, The Silesian University of Technology Gliwice, Poland, 25 - 29 April, 2021 (PEMC) : proceedings 2021 / p. 454-459 : ill <https://doi.org/10.1109/PEMC48073.2021.9432506>

High voltage circuit breaker charging motor's condition monitoring - importance, possibilities, and challenges

Asad, Bilal; Sardar, Muhammad Usman; Vaimann, Toomas; Kallaste, Ants; Asefi, Sajjad; Kilter, Jako 2024 International Conference on Diagnostics in Electrical Engineering (Dignostika) 2024 / 7 p <https://doi.org/10.1109/Dignostika61830.2024.10693906>

High-frequency current sensor for power network on-line mea[s]urements

Kütt, Lauri; Järvi, Jaan; Vaimann, Toomas; Shafiq, Muhammad; Lehtonen, Matti; Kilter, Jako Proceedings of the 13th International Scientific Conference Electric Power Engineering 2012 : EPE 2012 : Brno. Vol. 1 2012 / p. 367-371 : ill https://www.researchgate.net/publication/262674502_High-Frequency_Current_Sensor_for_Power_Network_On-line_Measurements

Hilbert transform, an effective replacement of Park's vector modulus for the detection of rotor faults

Asad, Bilal; Vaimann, Toomas; Kallaste, Ants; Rassõlkin, Anton; Belahcen, Anouar 2019 Electric Power Quality and Supply Reliability Conference (PQ) & 2019 Symposium on Electrical Engineering and Mechatronics (SEEM), Kärda, Estonia, June 12-15, 2019 : proceedings 2019 / 4 p. : ill <https://doi.org/10.1109/PQ.2019.8818227>

Hybrid FEA-Simulink modelling of permanent magnet assisted synchronous reluctance motor with unbalanced magnet flux

Pando-Acedo, Jaime; Rassõlkin, Anton; Lehtonen, Antti; Vaimann, Toomas; Kallaste, Ants; Romero-Cadaval, Enrique; Belahcen, Anouar 2019 IEEE 12th International Symposium on Diagnostics for Electrical Machines, Power Electronics and Drives (SDEMPED), 27-30 Aug. 2019, Toulouse, France : proceedings 2019 / p. : 174-180 : ill <https://doi.org/10.1109/DEMPED.2019.8864925>

Hybrid thermal model of a synchronous reluctance machine

Shams Ghahfarokhi, Payam; Kallaste, Ants; Belahcen, Anouar; Vaimann, Toomas; Rassõlkin, Anton Case studies in thermal engineering 2018 / p. 381-389 : ill <https://doi.org/10.1016/j.csite.2018.05.007> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

Hysteresis loss evaluation of additively manufactured soft magnetic core

Tiimus, Hans; Kallaste, Ants; Belahcen, Anouar; Rassõlkin, Anton; Vaimann, Toomas 2020 International Conference on Electrical Machines (ICEM), 23-26 august 2020, Gothenburg, Sweden : online : proceedings 2020 / p. 1657-1661 <https://doi.org/10.1109/ICEM49940.2020.9270836>

Hysteresis measurements and numerical losses segregation of additively manufactured silicon steel for 3D printing electrical machines

Tiismus, Hans; Kallaste, Ants; Belahcen, Anouar; Vaimann, Toomas; Rassõlkin, Anton; Lukichev, Dmitry Applied sciences 2020 / art. 6515, 15 p <https://doi.org/10.3390/app10186515> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

Identification and characterization of modulation scheme in an EV-PMSM control strategy for digital twin modeling
Mohamed, Mahmoud Ibrahim Hassanin; Rassõlkin, Anton; Vaimann, Toomas; Kallaste, Ants Diagnostika 2024 - 2024 International Conference on Diagnostics in Electrical Engineering, Proceedings 2024 / 5 p
<https://doi.org/10.1109/Diagnostika61830.2024.10693927>

Impact of bearing faults on vibration level of BLDC motor
Kudelina, Karolina; Vaimann, Toomas; Rassõlkin, Anton; Kallaste, Ants IECON 2021 – 47th Annual Conference of the IEEE Industrial Electronics Society, 2021 2021 / p. 1-6 : ill <https://doi.org/10.1109/IECON48115.2021.9589268> [Conference Proceedings at Scopus](#) [Article at Scopus](#) [Article at WOS](#)

Impact of conducting and insulating material to electric field
Järvik, Jaan; Mölder, Heigo; Vaimann, Toomas 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 2012 / p. 107-112 : ill

The impact of control environments on global parameters of electrical machines in case of broken rotor bars
Kudelina, Karolina; Raja, Hadi Ashraf; Autso, Siarhei; Asad, Bilal; Vaimann, Toomas; Rassõlkin, Anton; Kallaste, Ants Diagnostika '22 : 2022 International Conference on Diagnostics in Electrical Engineering : Conference proceedings 2022 / 4 p.
<https://doi.org/10.1109/Diagnostika55131.2022.9905149>

The impact of load on global parameters of electrical machines in case of healthy and broken rotor bars
Kudelina, Karolina; Raja, Hadi Ashraf; Autso, Siarhei; Asad, Bilal; Vaimann, Toomas; Rassõlkin, Anton; Kallaste, Ants; Shabbir, Noman 2022 18th Biennial Baltic Electronics Conference (BEC) 2022 / 5 l. <https://doi.org/10.1109/BEC56180.2022.9935614>

Impact of wind parks on the efficiency of thermal power plants [Electronic resource]
Astapov, Victor; Šuvalova, Jelena; Vaimann, Toomas; Kallaste, Ants; Belahcen, Anouar Proceedings of the 8th International Scientific Symposium on Electrical Power Engineering ELEKTROENERGETIKA 2015 : September 16-18, 2015, Stara Lesna, Slovak Republic 2015 / p. 589-592 : ill. [CD-ROM]

Implementation and analysis of rolling bearing faults caused by shaft currents
Kudelina, Karolina; Autso, Siarhei; Asad, Bilal; Vaimann, Toomas; Rassõlkin, Anton; Kallaste, Ants International Workshop on Electric Drives: Optimization in Control of Electric Drives (IWED) 2022 <https://doi.org/10.1109/IWED54598.2022.9722596>

Implementation of different magnetic materials in outer rotor PM generator
Kudrjavitsev, Oleg; Kilk, Aleksander; Vaimann, Toomas; Belahcen, Anouar; Kallaste, Ants 2015 IEEE 5th International Conference on Power Engineering, Energy and Electrical Drives (POWERENG) : proceedings : May 11-13, 2015, Riga, Latvia 2015 / p. 74-78 : ill <http://dx.doi.org/10.1109/PowerEng.2015.7266298>

Implementation of Digital Twins for electrical energy conversion systems in selected case studies
Rassõlkin, Anton; Orosz, Tamas; Demidova, Galina; Kuts, Vladimir; Rjabtšikov, Viktor; Vaimann, Toomas; Kallaste, Ants Proceedings of the Estonian Academy of Sciences 2021 / p. 19-39 : ill <https://doi.org/10.3176/proc.2021.1.03> https://doi.org/wp-content/plugins/kirj/pub/proc-1-2021-19-39_20210201183802.pdf [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

Improved diagnostic approach for BRB detection and classification in inverter-driven induction motors employing sparse stacked autoencoder (SSAE) and lightGBM
Khan, Muhammad Amir; Asad, Bilal; Vaimann, Toomas; Kallaste, Ants Electronics (Switzerland) 2024 / art. 1292
<https://doi.org/10.3390/electronics13071292> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

Improved fault classification and localization in power transmission networks using vae-generated synthetic data and machine learning algorithms
Khan, Muhammad Amir; Asad, Bilal; Vaimann, Toomas; Kallaste, Ants; Pomarnacki, Raimondas; Hyunh, Van Khang Machines 2023 / art. 963 <https://doi.org/10.3390/machines11100963> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

Improving legibility of motor current spectrum for broken rotor bars fault diagnostics
Asad, Bilal; Vaimann, Toomas; Kallaste, Ants; Rassõlkin, Anton; Belahcen, Anouar; Iqbal, Muhammad Naveed Scientific Journal of Riga Technical University. Electrical, control and communication engineering 2019 / p. 1–8 : ill <https://doi.org/10.2478/ecce-2019-0001>

Induction machine fault detection using smartphone recorded audible noise
Vaimann, Toomas; Sobra, Jan; Belahcen, Anouar; Rassõlkin, Anton; Rolak, Michal; Kallaste, Ants IET science, measurement and technology 2018 / p. 554-560 : ill <https://doi.org/10.1049/iet-smt.2017.0104> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

Induction motor bearing currents - causes and damages

Kudelina, Karolina; Vaimann, Toomas; Rassõlkin, Anton; Kallaste, Ants; Asad, Bilal; Demidova, Galina 2021 28th International Workshop on Electric Drives : Improving Reliability of Electric Drives (IWED) 2021 / 5 p
<https://doi.org/10.1109/IWED52055.2021.9376354>

Influence of choice of permanent magnet electromagnetic parameters in the research of electrical devices

Ose-Zala, Baiba; Kallaste, Ants; Vaimann, Toomas PQ2016 : the 10th International Conference 2016 Electric Power Quality and Supply Reliability Conference (PQ) : August 29-31, 2016, Tallinn, Estonia : proceedings 2016 / p. 225-228 : ill
<https://doi.org/10.1109/PQ.2016.7724117>

Influence of different tooth belt transmission faults on the work of a cartesian robot

Autsou, Siarhei; Vaimann, Toomas; Rassõlkin, Anton; Kudelina, Karolina; Asad, Bilal Proceedings of the 2022 20th International Conference on Mechatronics - Mechatronika, (ME), Pilsen, Czech Republic, December 7–9, 2022 2022 / 5 p. : ill
<https://doi.org/10.1109/ME54704.2022.9982815>

Influence of magnet material selection on the design of slow-speed permanent magnet synchronous generators for wind applications

Kallaste, Ants; Vaimann, Toomas; Belahcen, Anouar Elektronika ir elektrotehnika = Electronics and electrical engineering 2017 / p. 31-38 : ill <https://doi.org/10.5755/j01.eie.23.1.17581> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

Influence of magnetic forces and magnetostriction on the vibration behavior of an induction motor

Sathyan, Sabin; Aydin, Ugur; Lehtikoinen, Antti; Belahcen, Anouar; Vaimann, Toomas; Kataja, Juhani International journal of applied electromagnetics and mechanics 2019 / p. 825-834 <https://doi.org/10.3233/JAE-171045> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

Influence of permanent magnet characteristic variability on the wind generator operation

Kudrjavitsev, Oleg; Kallaste, Ants; Kilk, Aleksander; Vaimann, Toomas; Orlova, Svetlana Latvian journal of physics and technical sciences 2017 / p. 3-11 : ill <https://doi.org/10.1515/lpts-2017-0001> [Journal metrics at Scopus](#) [Article at Scopus](#)

Influence of slot wedge material on permanent magnet losses in a traction motor with tooth coil windings

Lindh, Pia; Vaimann, Toomas; Kallaste, Ants; Pyrhönen, Juha; Vinnikov, Dmitri; Naumanen, Ville International journal of applied electromagnetics and mechanics 2013 / p. 227-236 : ill <https://doi.org/10.3233/JAE-131659> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

Initial design estimation of synchronous machines

Naseer, Muhammad Usman; Kallaste, Ants; Asad, Bilal; Vaimann, Toomas; Rassõlkin, Anton International Workshop on Electric Drives: Optimization in Control of Electric Drives (IWED) 2022 <https://doi.org/10.1109/IWED54598.2022.9722585>

Interface development for digital twin of an electric motor based on empirical performance model

Rassõlkin, Anton; Rjabtšikov, Viktor; Kuts, Vladimir; Vaimann, Toomas; Kallaste, Ants; Asad, Bilal; Partyshev, Andriy IEEE Access 2022 / p. 15635-15643 <https://doi.org/10.1109/ACCESS.2022.3148708> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

Investigation of FEM software for Magnus Effect Simulation

Lukin, Aleksandr; Demidova, Galina; Lukichev, Dmitri; Rassõlkin, Anton; Vaimann, Toomas; Kallaste, Ants 2021 28th International Workshop on Electric Drives : Improving Reliability of Electric Drives (IWED) 2021 / 5 p
<https://doi.org/10.1109/IWED52055.2021.9376396>

Investigation of molten metal mixing in a DC electric arc furnace with added AC component on different frequencies

Mölder, Heigo; Järvik, Jaan; Vaimann, Toomas; Gordon, Rauno PQ2012 : 8th International Conference : 2012 Electric Power Quality and Supply Reliability : June 11-13, 2012, Tartu, Estonia : conference proceedings 2012 / p. 33-36 : ill
<https://www.semanticscholar.org/paper/Investigation-of-molten-metal-mixing-in-a-DC-arc-AC-M%C3%B5lder-Jarvik/38848bbd53c7d118a0077072daa0ffb86f649657>

Investigation of the forces acting on the coils of a Modular Slotless Permanent Magnet Generator

Kallaste, Ants; Vaimann, Toomas; Rassõlkin, Anton; Belahcen, Anouar 21st International Conference on the Computation of Electromagnetic Fields (Compumag 2017) : Daejeon, South Korea, 18-22 June 2017 2017 / p. 707-708 : ill
[http://www.compumag.org/CMAG2017/\[PD-M3-9\]_727.pdf](http://www.compumag.org/CMAG2017/[PD-M3-9]_727.pdf)

IoT based tools and methods for electrical machine diagnostics = Asjade interneti põhised tööriistad ja meetodid elektrimasinate diagnostikaks

Raja, Hadi Ashraf 2023 <https://doi.org/10.23658/taltech.20/2023> <https://digikogu.taltech.ee/et/Item/3015334f-c32b-43ae-ba2d-bfcd4536aba5>
https://www.eester.ee/record=b5558656*est

IoT based tools for data acquisition in electrical machines and robotics

Raja, Hadi Ashraf; Vaimann, Toomas; Rassõlkin, Anton; Kallaste, Ants; Belahcen, Anouar 2021 IEEE 19th International

Karolina Kudelinale 1. preemia [Võrguväljaanne]

Vaimann, Toomas Meie Leht 2021 / Lk. 1 : fot ["Karolina Kudelinale 1. preemia"](#)

3D printimine avab elektrimasinate tootmisel ennenägematuid võimalusi

Vaimann, Toomas Elektriala 2023 / lk. 22-23 : portr., fot https://www.ester.ee/record=b1240496*est

Kolmogorov-Arnold networks for algorithm design in battery energy storage system applications

Zequera, Rolando Antonio Gilbert; Rassõlkin, Anton; Vaimann, Toomas; Kallaste, Ants Energy Reports 2025 / p. 2664-2677 <https://doi.org/10.1016/j.egyr.2025.02.002>

Kuidas jõuavad teadussaavutused igapäevaelu?

Alvela, Ain postimees.ee 2024 [Kuidas jõuavad teadussaavutused igapäevaelu?](#)

Laser additively manufactured magnetic core design and process for electrical machine applications

Tiismus, Hans; Kallaste, Ants; Vaimann, Toomas; Lind, Liina; Virro, Indrek; Rassõlkin, Anton; Dedova, Tatjana Energies 2022 / art. 3665 <https://doi.org/10.3390/en15103665> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

Life cycle analysis of electrical motor-drive system based on electrical machine type

Rassõlkin, Anton; Belahcen, Anouar; Kallaste, Ants; Vaimann, Toomas; Heidari, Hamidreza; Asad, Bilal Proceedings of the Estonian Academy of Sciences 2020 / p. 162–177 : ill <https://doi.org/10.3176/proc.2020.2.07> [journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

Lifecycle analysis of different motors from the standpoint of environmental impact

Orlova, Svetlana; Rassõlkin, Anton; Kallaste, Ants; Vaimann, Toomas; Belahcen, Anouar Latvian journal of physics and technical sciences 2016 / p. 37-46 : ill <https://doi.org/10.1515/lpts-2016-0042> [Journal metrics at Scopus](#) [Article at Scopus](#)

Lifecycle-based design and optimization of electrical motor-drives - challenges and possibilities

Vaimann, Toomas; Kallaste, Ants; Kilk, Aleksander; Belahcen, Anouar The 3rd International Conference on Electric Power and Energy Conversion Systems (EPECS 2013) : [proceedings] 2013 / p. 1-4 : ill

LightGBM-based fault diagnosis of rotating machinery under changing working conditions using modified recursive feature elimination

Saberi, Alireza Nemat; Belahcen, Anouar; Sobra, Jan; Vaimann, Toomas IEEE Access 2022 / p. 81910-81925 <https://doi.org/10.1109/ACCESS.2022.3195939> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

Magnetic properties of reduced Dy NdFeB permanent magnets and their usage in electrical machines

Vaimann, Toomas; Kallaste, Ants; Kilk, Aleksander; Belahcen, Anouar IEEE AFRICON 2013 : [proceedings] 2013 / p. 1124-1128 : ill <https://doi.org/10.1109/AFRCON.2013.6757787> [Conference Proceedings at Scopus](#) [Article at Scopus](#)

Main faults and diagnostic possibilities of BLDC motors

Kudelin, Karolina; Asad, Bilal; Vaimann, Toomas; Rassõlkin, Anton; Kallaste, Ants; Lukichev, Dmitry 2020 27th International Workshop on Electric Drives: MPEI Department of Electric Drives 90th Anniversary (IWED), Moscow, Russia, January 27-30, 2020 2020 / 6 p. : ill <https://doi.org/10.1109/IWED48848.2020.9069553>

Mathematical modelling of three phase squirrel cage induction motor and related signal processing for fault diagnostics = Kolme faasilise lühisrootoriga asünkroonmootori matemaatiline modelleerimine ning lähtuv rikke diagnostiline signaalitöötlus

Asad, Bilal 2021 <https://digikogu.taltech.ee/et/Item/8b5869c8-de30-4380-a0c6-8a6a2d6b6ff3> https://www.ester.ee/record=b5452432*est <https://doi.org/10.23658/taltech.40/2021>

Mechanical vibration analysis of induction machine under dynamic rotor eccentricity [Electronic resource]

Sobra, Jan; Vaimann, Toomas; Belahcen, Anouar 2016 17th International Scientific Conference on Electric Power Engineering (EPE) : proceedings 2016 / [4] p. : ill. [USB] <https://doi.org/10.1109/EPE.2016.7521732>

A method for contouring an airgap profile in an electromagnetic device

Naseer, Muhammad Usman; Kallaste, Ants; Vaimann, Toomas 2025 <https://www.etis.ee/Portal/IndustrialProperties/Display/4de92487-f0be-4f69-bd60-e647dcc5920f> <https://digikogu.taltech.ee/et/Item/af3abd72-6077-43be-b7ed-5fa0b3f58602>

A method for mixing molten metal and a compatible electric arc furnace

Mölder, Heigo; Järvik, Jaan; Janson, Kuno; Gordon, Rauno; Vaimann, Toomas Estonian journal of engineering 2011 / p. 220-240 : ill

Methods of condition monitoring and fault detection for electrical machines

Kudelina, Karolina; Asad, Bilal; Vaimann, Toomas; Rassõlkin, Anton; Kallaste, Ants; Khang, Huynh Van Energies 2021 / art. 7459, 20 p. : ill <https://doi.org/10.3390/en14227459> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

Microgrids performance challenges

Kazakov, Aleksei; Janson, Kuno; Vaimann, Toomas 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 2012 / p. 42-46 : ill

Model for energy management of residential building heating system

Gevorkov, Levon; Šmidl, Vaclav; Sirovy, Martin; Rassõlkin, Anton; Kallaste, Ants; Vaimann, Toomas 2020 27th International Workshop on Electric Drives: MPEI Department of Electric Drives 90th Anniversary (IWED), Moscow, Russia, January 27-30, 2020 2020 / 4 p <https://doi.org/10.1109/IWED48848.2020.9069503>

Model for torque estimation of pump system with horizontal pipe network

Gevorkov, Levon; Smidl, Vaclav; Sirovy, Martin; **Rassõlkin, Anton; Kallaste, Ants; Vaimann, Toomas** 2019 26th International Workshop on Electric Drives : Improvement in Efficiency of Electric Drives (IWED) : Moscow Power Engineering Institute, Moscow, Russia, 30th of January – 2nd of February 2019 : proceedings 2019 / 5 p. : ill <https://doi.org/10.1109/IWED.2019.8664304>

The modeling and investigation of slot skews and supply imbalance on the development of principal slotting harmonics in squirrel cage induction machines

Asad, Bilal; Vaimann, Toomas; Belahcen, Anouar; Kallaste, Ants; Rassõlkin, Anton; Khang, Huynh Van; **Ghahfarokhi, Payam Shams; Naseer, Muhammad Usman; Iqbal, Muhammad Naveed** IEEE Access 2021 / p. 165932-165946 <https://doi.org/10.1109/ACCESS.2021.3134331> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

Modeling battery energy storage systems based on remaining useful lifetime through regression algorithms and binary classifiers

Zequera, Rolando Antonio Gilbert; Rjabtšikov, Viktor; Rassõlkin, Anton; Vaimann, Toomas; Kallaste, Ants Applied sciences 2023 / art. 7597 <https://doi.org/10.3390/app13137597> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

Modern mechatronics and robotics education program: border cooperation between Estonia and Russia

Rassõlkin, Anton; Vaimann, Toomas; Kudelina, Karolina; Demidova, Galina; Lukichev, Dmitry; Perepelkina, Svetlana Proceedings of the 2020 IEEE Global Engineering Education Conference (EDUCON) : Engineering Education for the Future in a Multicultural and Smart World, 27-30 April, 2020, Porto, Portugal 2020 / p. 1272-1277 : ill <https://doi.org/10.1109/EDUCON45650.2020.9125406>

A modified dynamic model of single-sided linear induction motors considering longitudinal and transversal effects

Heidari, Hamidreza; Rassõlkin, Anton; Razzaghi, Arash; Vaimann, Toomas; Kallaste, Ants; Andriushchenko, Ekaterina; Belahcen, Anouar; Lukichev, Dmitry Electronics 2021 / art. 933, 14 p. : ill <https://doi.org/10.3390/electronics10080933> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

Modified initial design procedure for synchronous reluctance motor

Naseer, Muhammad Usman; Kallaste, Ants; Asad, Bilal; Vaimann, Toomas; Rassõlkin, Anton 2022 International Conference on Electrical Machines (ICEM) 2022 / p. 1969-1975 <https://doi.org/10.1109/ICEM51905.2022.9910594>

Modified technique of parameter identification of a permanent magnet synchronous motor with PWM inverter in the presence of dead-time effect and measurement noise

Mamatov, Aleksandr; Lovlin, Sergey; Vaimann, Toomas; Rassõlkin, Anton; Vakulenko, Sergei; Abramian, Andrei Electronics 2019 / art. 1200, 19 p <https://doi.org/10.3390/electronics8101200> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

Modified winding function analysis of synchronous reluctance motor for design iteration purposes : [journal article]

Naseer, Muhammad Usman; Kallaste, Ants; Asad, Bilal; Vaimann, Toomas; Rassõlkin, Anton IEEE transactions on magnetics 2022 / art. 7500704 <https://doi.org/10.1109/TMAG.2022.3164189> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

Modified winding function-based model of squirrel cage induction motor for fault diagnostics

Asad, Bilal; Vaimann, Toomas; Belahcen, Anouar; Kallaste, Ants; Rassõlkin, Anton; Iqbal, Muhammad Naveed IET electric power applications 2020 / p. 1722-1734 <https://doi.org/10.1049/iet-epa.2019.1002> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

MPPT algorithms for wind turbines : review and comparison

Lukin, Aleksandr; Demidova, Galina; Alassaf, Omar; Lukichev, Dmitry; **Rassõlkin, Anton; Vaimann, Toomas** 29th International Workshop on Electric Drives: Advances in Power Electronics for Electric Drives (IWED) 2022 / p. 1-6 <https://doi.org/10.1109/IWED54598.2022.9722597>

Multi-criteria design optimization of ultra large diameter permanent magnet generator

Pabut, Ott; Eerme, Martin; Kallaste, Ants; Vaimann, Toomas Elektronika ir elektrotehnika = Electronics and electrical engineering 2015 / p. 42-48 : ill <https://doi.org/10.5755/j01.eee.21.3.10278> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

Multi-electrode arc furnace technology with improved metal processing capability using current driven mixing
Mölder, Heigo; Järvik, Jaan; Vaimann, Toomas; Gordon, Rauno Conference proceedings : 2012 11th International Conference on Environment and Electrical Engineering : Venice, Italy, 18-25 May 2012 2012 / p. 313-316 : ill

Multi-Rate Vibration Signal Analysis for Enhanced Data-Driven Monitoring of Bearing Faults in Induction Machines
El Bouharrouti, Nada; Koveshnikov, Semen; Garcia-Calva, Tomas Alberto; Vehvilainen, Milla; **Kudelina, Karolina; Naseer, Muhammad Usman; Vaimann, Toomas; Belahcen, Anouar** 2024 International Conference on Electrical Machines, ICEM 2024 2024 / 7 p. <http://dx.doi.org/10.1109/ICEM60801.2024.10700488>

Multi-sensor fault diagnosis of induction motors using random forests and support vector machine
Saber, Alireza Nemat; Sandirasegaram, Sarvavignoban; **Belahcen, Anouar; Vaimann, Toomas; Sobra, Jan** 2020 International Conference on Electrical Machines (ICEM), 23-26 august 2020, Gothenburg, Sweden : online : proceedings 2020 / p. 1404–1410 <https://doi.org/10.1109/ICEM49940.2020.9270689>

MWFA model based synthetic data creation and utilization for the training of XGBoost based fault diagnostic algorithm of a squirrel cage induction motor

Asad, Bilal; Khan, Muhammad Amir; Raja, Hadi Ashraf; Vaimann, Toomas; Kallaste, Ants; Naseer, Muhammad Usman 2024 International Conference on Electrical Machines (ICEM) 2024 / 7 p <https://doi.org/10.1109/ICEM60801.2024.10700453>

Natural convection from flat side's of coil system

Ghahfarokhi, Payam Shams; Kallaste, Ants; Vaimann, Toomas; Belahcen, Anouar 2018 19th International Scientific Conference on Electric Power Engineering (EPE 2018) : Brno, Czech Republic, 16 - 18 May 2018 2018 / p. 288-292 : ill <https://doi.org/10.1109/EPE.2018.8395967>

Necessity for implementation of inverse problem theory in electric machine fault diagnosis

Vaimann, Toomas; Belahcen, Anouar; Kallaste, Ants SDEMPED 2015 : 10th IEEE International Symposium on Diagnostics for Electric Machines, Power Electronics and Drives : Guarda, Portugal, September 1-4, 2015 : proceedings 2015 / p. 380-385 : ill <http://dx.doi.org/10.1109/DEMPED.2015.7303718>

Novel approaches to electrical machine fault diagnosis

Vaimann, Toomas; Antonino-Daviu, Jose Alfonso; Rassõlkin, Anton Energies 2023 / art. 5641 <https://doi.org/10.3390/en16155641> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

A Novel vector control strategy for a six-phase induction motor with low torque ripples and harmonic currents

Heidari, Hamidreza; Rassõlkin, Anton; Vaimann, Toomas; Kallaste, Ants; Taheri, Asghar; Holakooie, Mohammad Hosein; Belahcen, Anouar Energies 2019 / art. 1102, 14 p. : ill <https://doi.org/10.3390/en12061102> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

The oil spray cooling system of automotive traction motors : the state of the art

Ghahfarokhi, Payam Shams; Podgornovs, Andrejs; Kallaste, Ants; Cardoso, Antonio J. Marques; Belahcen, Anouar; Vaimann, Toomas IEEE Transactions on Transportation Electrification 2023 / p. 428-451 <https://doi.org/10.1109/TTE.2022.3189596> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

Oil spray cooling with hairpin windings in high-performance electric vehicle motors

Shams Ghahfarokhi, Payam; Podgornovs, Andrejs; Kallaste, Ants; Vaimann, Toomas; Belahcen, Anouar; Cardoso, Antonio J. Marques 2021 28th International Workshop on Electric Drives : Improving Reliability of Electric Drives (IWED) 2021 / 5 p <https://doi.org/10.1109/IWED52055.2021.9376390>

Opportunities and challenges of utilizing additive manufacturing approaches in thermal management of electrical machines

Ghahfarokhi, Payam Shams; Podgornovs, Andrejs; Kallaste, Ants; Cardoso, Antonio J. Marques; Belahcen, Anouar; Vaimann, Toomas; Tiismus, Hans; Asad, Bilal IEEE Access 2021 / art. 9364970, p. 36368-36381 : ill <https://doi.org/10.1109/ACCESS.2021.3062618> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

Optimal control of automatic manipulator for elimination of galvanic line load oscillation

Autsou, Siarhei; Rassõlkin, Anton; Vaimann, Toomas; Demidova, Galina; Saroka, Viktor; Karpovich, Dzmitry; Kallaste, Ants Periodica polytechnica electrical engineering and computer science 2021 / 15 p. : ill <https://doi.org/10.3311/PPee.15893> [Journal metrics at Scopus](#) [Article at Scopus](#)

Optimization of a 3D-printed permanent magnet coupling using genetic algorithm and Taguchi method

Andriushchenko, Ekaterina; Kallaste, Ants; Belahcen, Anouar; Vaimann, Toomas; Rassõlkin, Anton; Heidari, Hamidreza; Tiismus, Hans Electronics 2021 / art. 494, 16 p. : ill <https://doi.org/10.3390/electronics10040494> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

Overview of battery energy storage systems readiness for digital twin of electric vehicles

Zequera, Rolando Antonio Gilbert; Rassõlkin, Anton; Vaimann, Toomas; Kallaste, Ants IET Smart Grid 2023 / p. 5-16
<https://doi.org/10.1049/stg2.12101> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

Overview of control methods of reluctance machines with sensors and sensorless

Melentjev, Sergei; Belahcen, Anouar; Kallaste, Ants; Vaimann, Toomas 2014 55th International Scientific Conference on Power and Electrical Engineering of Riga Technical University (RTUCON) : proceedings 2014 / p. 26-29 : ill

An overview of fuzzy logic approaches for fault diagnosis in energy conversion devices

Demidova, Galina; Rassõlkin, Anton; Vaimann, Toomas; Kallaste, Ants; Zakis, Janis; Suzdalenko, Alexander 2021 28th International Workshop on Electric Drives : Improving Reliability of Electric Drives (IWED) 2021 / 7 p
<https://doi.org/10.1109/IWED52055.2021.9376389>

Overview of sensorless diagnostic possibilities of induction motors with broken rotor bars [Electronic resource]

Vaimann, Toomas; Kallaste, Ants; Kilk, Aleksander Proceedings of the 12th International Scientific Conference Electric Power Engineering 2011, Kouty nad Desnou, Czech Republic, May 17-19, 2011 2011 / [4 p.] : ill. [CD-ROM]
<https://www.scinapse.io/papers/2583767167>

Overview of the use of Bellman dynamic programming method to eliminate oscillations in mechanical and electrical assemblies of technical objects

Autsou, Siarhei; Saroka, Viktor; Karpovich, Dzmitry; Rassõlkin, Anton; Kallaste, Ants; Vaimann, Toomas 2019 Electric Power Quality and Supply Reliability Conference (PQ) & 2019 Symposium on Electrical Engineering and Mechatronics (SEEM), Kärddla, Estonia, June 12-15, 2019 : proceedings 2019 / 4 p <https://doi.org/10.1109/PQ.2019.8818246>

Overview on digital twin for autonomous electrical vehicles propulsion drive system

Mohamed, Mahmoud Ibrahim Hassanin; Rassõlkin, Anton; Vaimann, Toomas; Kallaste, Ants Sustainability 2022 / art. 601
<https://doi.org/10.3390/su14020601> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

A parallel estimation system of stator resistance and rotor speed for active disturbance rejection control of six-phase induction motor

Heidari, Hamidreza; Rassõlkin, Anton; Holakooie, Mohammad Hosein; Vaimann, Toomas; Kallaste, Ants; Belahcen, Anouar; Lukichev, Dmitry Energies 2020 / 17 p <https://doi.org/10.3390/en13051121> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

Parametric digital twin of autonomous electric vehicle transmission

Rassõlkin, Anton; Rjabtšikov, Viktor; Kuts, Vladimir; Kudelina, Karolina; Vaimann, Toomas; Kallaste, Ants; Partyshev, Andriy Journal of machine engineering 2021 / p. 131-140 : ill <https://doi.org/10.36897/jme/134435> [Journal metrics at Scopus](#) [Article at Scopus](#)

Park's vector approach for detection of broken rotor bars in frequency converter fed induced generator

Vaimann, Toomas; Belahcen, Anouar; Martinez, Javier; Kilk, Aleksander Proceedings of the 13th International Scientific Conference Electric Power Engineering 2012 : EPE 2012 : Brno. Vol. 2 2012 / p. 985-988 : ill
https://www.academia.edu/17399045/Parks_Vector_Approach_for_Detection_Broken_Rotor_Bars_in_Frequency_Converter_Fed_Induction_Generator

Possibilities of changing the transport characteristics of the TEP70 locomotive

Rjabtšikov, Viktor; Rassõlkin, Anton; Vaimann, Toomas; Kallaste, Ants; Lukichev, Dmitry 2020 27th International Workshop on Electric Drives: MPEI Department of Electric Drives 90th Anniversary (IWED), Moscow, Russia, January 27-30, 2020 2020 / 6 p
<https://doi.org/10.1109/IWED48848.2020.9069576>

Possibilities of decreasing induction motor bearing currents

Kudelina, Karolina; Vaimann, Toomas; Rassõlkin, Anton; Kallaste, Ants 2021 IEEE Open Conference of Electrical, Electronic and Information Sciences (eStream): proceedings of the conference, April 22, 2021, Vilnius, Lithuania 2021 / 5 p. : ill
<https://doi.org/10.1109/eStream53087.2021.9431419>

Possible manufacturing tolerance faults in design and construction of low speed slotless permanent magnet generator

Kallaste, Ants; Vaimann, Toomas; Belahcen, Anouar 2014 16th European Conference on Power Electronics and Applications (EPE'14-ECCE Europe) : Lappeenranta, Finland, 26-28 August 2014. Vol. 4 2014 / p. 3073-3082 : ill

Power losses analysis in thermal design of a synchronous reluctance motor

Shams Ghahfarokhi, Payam; Kallaste, Ants; Vaimann, Toomas; Belahcen, Anouar 2019 IEEE 60th International Scientific Conference on Power and Electrical Engineering of Riga Technical University (RTUCON), 7-9 October 2019 : conference proceedings 2019 / 5 p. : ill <https://doi.org/10.1109/RTUCON48111.2019.8982256>

Power quality issues in dispersed generation and smart grids

Vaimann, Toomas; Niitsoo, Jaan; Kivipõld, Tanel; Lehtla, Tõnu Elektronika ir elektrotehnika = Electronics and electrical

engineering 2012 / p. 23-26 : ill <https://citeseerx.ist.psu.edu/document?repid=rep1&type=pdf&doi=573c03a0753bcfce3929ba739ff032b16882acf5>

Preliminary analysis of bearing current faults for predictive maintenance

Kudelina, Karolina; Raja, Hadi Ashraf; Vaimann, Toomas; Kallaste, Ants; Pomarnacki, Raimondas; Hyunh, Van Khang 2023 IEEE International Conference on Electric Machines and Drives (IEMDC) 2023 / 5 p. : ill <https://doi.org/10.1109/IEMDC55163.2023.10238934>

Preliminary analysis of global parameters of induction machine for fault prediction in rotor bars

Kudelina, Karolina; Raja, Hadi Ashraf; Autso, Siarhei; Asad, Bilal; Vaimann, Toomas; Rassõlkin, Anton; Kallaste, Ants 2022 IEEE 20th International Power Electronics and Motion Control Conference (PEMC) : Brasov, Romania, 25-28 Sept. 2022 : proceedings 2022 / p. 243-248 : ill <https://doi.org/10.1109/PEMC51159.2022.9962922>

Preliminary analysis of mechanical bearing faults for predictive maintenance of electrical machines

Kudelina, Karolina; Raja, Hadi Ashraf; Autso, Siarhei; Naseer, Muhammad Usman; Vaimann, Toomas; Kallaste, Ants; Pomarnacki, Raimondas; Hyunh, Van Khang 2023 IEEE 14th International Symposium on Diagnostics for Electrical Machines, Power Electronics and Drives (SDEMPED) 2023 / p. 430-435 : ill <https://doi.org/10.1109/SDEMPED54949.2023.10271451>

Preliminary analysis of soft magnetic material properties for additive manufacturing of electrical machines

Tiismus, Hans; Kallaste, Ants; Rassõlkin, Anton; Vaimann, Toomas Modern Materials and Manufacturing 2019 : 12th International DAAAM Baltic Conference and 27th International Baltic Conference BALTMATTRIB 2019. Selected, peer reviewed papers from the conference Modern Materials and Manufacturing 2019 (MMM 2019), April 24-26, 2019, Tallinn, Estonia 2019 / p. 270-275 : ill <https://www.scientific.net/KEM.799.270> https://www.ester.ee/record=b5235278*est <https://doi.org/10.4028/www.scientific.net/KEM.799.270> Conference proceeding at Scopus Article at Scopus

Preliminary design analysis of an axial flux yokeless stator switched reluctance machine

Hussain, Shahid; Kallaste, Ants; Naseer, Muhammad Usman; Sarap, Martin; Tiismus, Hans; Vaimann, Toomas 2023 IEEE 64th International Scientific Conference on Power and Electrical Engineering of Riga Technical University (RTUCON), Riga, Latvia, October 9-10, 2023 : conference proceedings 2023 / 6 p <https://doi.org/10.1109/RTUCON60080.2023.10413130>

Principles and methods of servomotor control : comparative analysis and applications

Autso, Siarhei; Kudelina, Karolina; Vaimann, Toomas; Rassõlkin, Anton; Kallaste, Ants Applied sciences 2024 / art. 2579 <https://doi.org/10.3390/app14062579> Journal metrics at Scopus Article at Scopus Journal metrics at WOS Article at WOS

Problems in the operation of parallel-series converter when using two switch forward inverter

Niilo, Helar; Vaimann, Toomas 7th International Conference-workshop Compatibility and Power Electronics : CPE 2011 : Tallinn, Estonia, June 3, 2011 : student forum 2011 / p. 28-33 : ill

Production and properties of additively manufactured electrical machine cores = Kihtlisandus meetodil valmistatud elektrimasinate magnetsüdamikud ja nende omadused

Tiismus, Hans 2022 <https://doi.org/10.23658/taltech.49/2022> <https://digikogu.taltech.ee/et/Item/1a6cde04-f268-42c1-95d7-b9a43dd70046> https://www.ester.ee/record=b5511687*est

Production quality related propagating faults of induction machines

Kudelina, Karolina; Asad, Bilal; Vaimann, Toomas; Rassõlkin, Anton; Kallaste, Ants 2020 XI International Conference on Electrical Power Drive Systems (ICEPDS), Saint-Petersburg, Russia, October 4-7, 2020 2020 / p. 311-315 : ill <https://doi.org/10.1109/ICEPDS47235.2020.9249355>

Propulsion drives and control algorithms of electrical vehicles

Mohamed, Mahmoud Ibrahim Hassanin; Rassõlkin, Anton; Vaimann, Toomas; Kallaste, Ants Handbook of power electronics in autonomous and electric vehicles 2024 / p. 139-159 <https://doi.org/10.1016/B978-0-323-99545-0.00009-9>

Propulsion motor drive topology selection for further development of ISEAUTO self-driving car

Rassõlkin, Anton; Vaimann, Toomas; Kallaste, Ants; Sell, Raivo 59th Annual International Scientific Conference on Power and Electrical Engineering : November 12, 13, 2018, Riga Technical University (RTUCON) : conference proceedings 2018 / 5 p. : ill <https://doi.org/10.1109/RTUCON.2018.8659887>

Põrlevate elektrimasinate diagnostika staatorisignaali analüüsi meetodid

Vaimann, Toomas; Kallaste, Ants; Kilk, Aleksander Taastuvate energiaallikate uurimine ja kasutamine : neljateistkümnenda konverentsi kogumik = Investigation and Usage of Renewable Energy Sources : fourteenth conference proceedings : [8. nov. 2012, Tartu] 2012 / lk. 78-87 : ill

Quo vadis, Eesti energeetika?

Vaimann, Toomas Riigikogu Toimetised 2023 / lk. 21-24 <https://rito.riigikogu.ee/nr-47/quo-vadis-eesti-energeetika/> https://www.ester.ee/record=b1361123*est

Rahvusvaheline elektritoite kvaliteedi ja varustuskindluse konverents PQ2012 möödus edukalt

Recent trends in additive manufacturing and topology optimization of reluctance machines

Hussain, Shahid; Kallaste, Ants; Vaimann, Toomas Energies 2023 / art. 3840 <https://doi.org/10.3390/en16093840> Journal metrics at Scopus Article at Scopus Journal metrics at WOS Article at WOS

Reducing of hanger-to-motor oscillations of galvanic line auto-operator

Autsou, Siarhei; Rassõlkin, Anton; Demidova, Galina; Vaimann, Toomas; Karpovich, Dzmitry; Saroka, Viktor 2020 XI International Conference on Electrical Power Drive Systems (ICEPDS), Saint-Petersburg, Russia, October 4-7, 2020 2020 / p. 43-48 <https://doi.org/10.1109/ICEPDS47235.2020.9249311>

Reducing of sparking caused by the parametric modulation of sliding electric contact unit at synchronous machine

Kozyreva, Oksana; Plokhov, Igor; Kotkov, Nikita; Gevorkov, Levon; Rassõlkin, Anton; Vaimann, Toomas; Kallaste, Ants 17th International Symposium "Topical Problems in the Field of Electrical and Power Engineering". Doctoral school of energy and geotechnology. III : Kuressaare, Estonia, January 15-20, 2018 2018 / p. 236-239 : ill http://ise.elnet.ee/record=b2950145~S2*est

Reducing sparking in the transient layer of the sliding electrical contact unit

Kozyreva, Oksana; Plokhov, Igor; Kotkov, Nikita; Savrajev, Igor; Ilyin, Alexander; Vaimann, Toomas; Rassõlkin, Anton; Gevorkov, Levon; Kallaste, Ants 2018 19th International Scientific Conference on Electric Power Engineering (EPE 2018) : Brno, Czech Republic, 16 - 18 May 2018 2018 / p. 223-227 : ill <https://doi.org/10.1109/EPE.2018.8395969>

Residential load harmonics in distribution grid

Niitsoo, Jaan; Palu, Ivo; Kilter, Jako; Taklaja, Paul; Vaimann, Toomas The 3rd International Conference on Electric Power and Energy Conversion Systems (EPECS 2013) : [proceedings] 2013 / p. 1-6 : ill

Response surface method for optimization of synchronous reluctance motor rotor

Orlova, Svetlana; Auzins, Janis; Pugachov, Vladislav; Rassõlkin, Anton; Vaimann, Toomas Machines 2022 / art. 897 <https://doi.org/10.3390/machines10100897> Journal metrics at Scopus Article at Scopus Journal metrics at WOS Article at WOS

Re-use and recycling of different electrical machines

Rassõlkin, Anton; Kallaste, Ants; Orlova, Svetlana; Gevorkov, Levon; Vaimann, Toomas; Belahcen, Anouar Latvian journal of physics and technical sciences 2018 / p. 13-23 : ill <https://doi.org/10.2478/lpts-2018-0025> Journal metrics at Scopus Article at Scopus

Review of design freedom offered by additive manufacturing for performance enhancement of electrical machine

Ahmad, Zahoor; Kallaste, Ants; Vaimann, Toomas; Naseer, Muhammad Usman; Hussain, Shahid; Rassõlkin, Anton IEEE Open Journal of the Industrial Electronics Society 2024 / p. 1300-1323 <https://doi.org/10.1109/OJIES.2024.3509547>

Review of electric vehicle testing procedures for digital twin development : a comprehensive analysis

Rjabtšikov, Viktor; Rassõlkin, Anton; Kudelina, Karolina; Kallaste, Ants; Vaimann, Toomas Energies 2023 / art. 6952 <https://doi.org/10.3390/en16196952> Journal metrics at Scopus Article at Scopus Journal metrics at WOS Article at WOS

A review of electrical machine design processes from the standpoint of software selection

Daukaev, Kamil; Rassõlkin, Anton; Kallaste, Ants; Vaimann, Toomas; Belahcen, Anouar 2017 IEEE 58th International Scientific Conference on Power and Electrical Engineering of Riga Technical University (RTUCon) : proceedings : Latvia, Riga, 12-13 October, 2017 2017 / [6] p. : ill <https://doi.org/10.1109/RTUCon.2017.8124818>

Review of electrical machine diagnostic methods applicability in the perspective of Industry 4.0

Asad, Bilal; Vaimann, Toomas; Rassõlkin, Anton; Kallaste, Ants; Belahcen, Anouar Scientific Journal of Riga Technical University. Electrical, control and communication engineering 2018 / p. 108-116 : ill <https://doi.org/10.2478/ecce-2018-0013>

Review of high voltage instrument transformer condition monitoring

Asefi, Sajjad; Asad, Bilal; Leinakse, Madis; Manninen, Henri; Kilter, Jako; Vaimann, Toomas; Kallaste, Ants; Tealane, Marko; Landsberg, Mart IEEE Transactions on Dielectrics and Electrical Insulation 2024 / 12 p <https://doi.org/10.1109/TDEI.2024.3422260>

Review of loss calculation reduction control methods of permanent magnet assisted reluctance drive

Melentjev, Sergei; Belahcen, Anouar; Kallaste, Ants; Rassõlkin, Anton; Vaimann, Toomas PQ2016 : the 10th International Conference 2016 Electric Power Quality and Supply Reliability Conference (PQ) : August 29-31, 2016, Tallinn, Estonia : proceedings 2016 / p. 199-206 : ill <https://doi.org/10.1109/PQ.2016.7724113>

A review of synchronous reluctance motor-drive advancements

Heidari, Hamidreza; Rassõlkin, Anton; Kallaste, Ants; Vaimann, Toomas; Andriushchenko, Ekaterina; Belahcen, Anouar; Lukichev, Dmitry Sustainability 2021 / art. 729, p. 1-37 <https://doi.org/10.3390/su13020729> Journal metrics at Scopus Article at Scopus Journal metrics at WOS Article at WOS

Review of the analytical flow model to predict the hydraulic behaviour in electrical machine

Ghahfarokhi, Payam Shams; Kallaste, Ants; Vaimann, Toomas; Belahcen, Anouar 2019 Electric Power Quality and Supply

Reliability Conference (PQ) & 2019 Symposium on Electrical Engineering and Mechatronics (SEEM), Kärda, Estonia, June 12-15, 2019 : proceedings 2019 / 4 p. : ill <https://doi.org/10.1109/PQ.2019.8818271>

Review of thermal analysis of permanent magnet assisted synchronous reluctance machines

Ghahfarokhi, Payam Shams; Kallaste, Ants; Belahcen, Anouar; Vaimann, Toomas; Rassõlkin, Anton PQ2016 : the 10th International Conference 2016 Electric Power Quality and Supply Reliability Conference (PQ) : August 29-31, 2016, Tallinn, Estonia : proceedings 2016 / p. 219-224 <https://doi.org/10.1109/PQ.2016.7724116>

A review on additive manufacturing possibilities for electrical machines

Naseer, Muhammad Usman; Kallaste, Ants; Asad, Bilal; Vaimann, Toomas; Rassõlkin, Anton Energies 2021 / art. 1940 <https://doi.org/10.3390/en14071940> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

Rotor fault diagnostic of inverter fed induction motor using frequency analysis

Asad, Bilal; Vaimann, Toomas; Belahcen, Anouar; Kallaste, Ants; Rassõlkin, Anton 2019 IEEE 12th International Symposium on Diagnostics for Electrical Machines, Power Electronics and Drives (SDEMPED), 27-30 Aug. 2019, Toulouse, France : proceedings 2019 / p. 127-133 : ill <https://doi.org/10.1109/DEMPED.2019.8864903>

Sensorless detection of induction motor faults using the clarke vector approach

Vaimann, Toomas; Kallaste, Ants; Kilk, Aleksander Scientific journal of Riga Technical University. Serija 4, Power and electrical engineering 2011 / p. 43-48 : ill https://www.researchgate.net/publication/258547195_Sensorless_Detection_of_Induction_Motor_Rotor_Faults_Using_the_Clarke_Vector_Approach

Signal processing and machine learning techniques for predictive maintenance of rotor bars in induction machine

Kudelina, Karolina; Raja, Hadi Ashraf; Rjabtšikov, Viktor; Naseer, Muhammad Usman; Vaimann, Toomas; Kallaste, Ants 2023 International Conference on Electrical Drives and Power Electronics (EDPE) 2023 / 7 p. : ill <https://doi.org/10.1109/EDPE58625.2023.10274030>

Signal spectrum-based machine learning approach for fault prediction and maintenance of electrical machines

Raja, Hadi Ashraf; Kudelina, Karolina; Asad, Bilal; Vaimann, Toomas; Kallaste, Ants; Rassõlkin, Anton; Khang, Huynh Van Energies 2022 / art. 9507 <https://doi.org/10.3390/en15249507> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

Simulation of wind turbine vibrations

Andriushchenko, Ekaterina; Kallaste, Ants; Vaimann, Toomas; Rassõlkin, Anton; Meshkov, Aleksandr; Heidari, Hamidreza; Demidova, Galina 2020 27th International Workshop on Electric Drives: MPEI Department of Electric Drives 90th Anniversary (IWED), Moscow, Russia, January 27-30, 2020 2020 / 4 p <https://doi.org/10.1109/IWED48848.2020.9069567>

Simulation study of a centrifugal pumping plant's power consumption at throttling and speed control

Gevorkov, Levon; Rassõlkin, Anton; Kallaste, Ants; Vaimann, Toomas 2017 IEEE 58th International Scientific Conference on Power and Electrical Engineering of Riga Technical University (RTUCON) : proceedings : Latvia, Riga, 12-13 October, 2017 2017 / [5] p. : ill <http://dx.doi.org/10.1109/RTUCON.2017.8124823>

Simulation study of mixed pressure and flow control systems for optimal operation of centrifugal pumping plants

Gevorkov, Levon; Rassõlkin, Anton; Kallaste, Ants; Vaimann, Toomas Scientific Journal of Riga Technical University. Electrical, control and communication engineering 2018 / p. 89-94 : ill <https://doi.org/10.2478/ecce-2018-0010>

Simulink based model for flow control of a centrifugal pumping system

Gevorkov, Levon; Rassõlkin, Anton; Kallaste, Ants; Vaimann, Toomas 2018 25th International Workshop on Electric Drives: Optimization in Control of Electric Drives (IWED) 2018 / p. 1-4 : ill <https://doi.org/10.1109/IWED.2018.8321399>

Simulink based model of electric drive for throttle valve in pumping application

Gevorkov, Levon; Rassõlkin, Anton; Kallaste, Ants; Vaimann, Toomas 2018 19th International Scientific Conference on Electric Power Engineering (EPE 2018) : Brno, Czech Republic, 16 - 18 May 2018 2018 / p. 256-259 : ill <https://doi.org/10.1109/EPE.2018.8395996>

Sliding mean value subtraction-based DC drift correction of B-H curve for 3D-printed magnetic materials

Asad, Bilal; Tiismus, Hans; Vaimann, Toomas; Belahcen, Anouar; Kallaste, Ants; Rassõlkin, Anton; Ghahfarokhi, Payam Shams Energies 2021 / art. 284, 10 p <https://doi.org/10.3390/en14020284> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

Slow-speed ring-shaped permanent magnet generator for wind applications

Kallaste, Ants; Vaimann, Toomas; Pabut, Ott 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 2012 / p. 66-69 : ill

Small magnus wind turbine : modeling approaches

Lukin, Aleksandr; Demidova, Galina; Rassõlkin, Anton; Lukichev, Dmitry; Vaimann, Toomas; Anuchin, Alecksey Applied

sciences 2022 / art. 1884 <https://doi.org/10.3390/app12041884> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

Spectrum analysis additional vibrations of Cartesian robot by different control modes

Autsou, Siarhei; Vaimann, Toomas; Rassõlkin, Anton; Kudelina, Karolina 2022 18th Biennial Baltic Electronics Conference (BEC) 2022 / 5 l. <https://doi.org/10.1109/BEC56180.2022.9935595>

State of the art of additively manufactured electromagnetic materials for topology optimized electrical machines

Tiismus, Hans; Kallaste, Ants; Vaimann, Toomas; Rassõlkin, Anton Additive manufacturing 2022 / art. 102778, 19 p. : ill <https://doi.org/10.1016/j.addma.2022.102778> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

State-of-the-Art techniques for fault diagnosis in electrical machines: Advancements and future directions

Akbar, Siddique; Vaimann, Toomas; Asad, Bilal; Kallaste, Ants; Sardar, Muhammad Usman; Kudelina, Karolina Energies 2023 / Art. 6345 <https://doi.org/10.3390/en16176345> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

Stator voltage analysis of frequency converter fed induction generator with broken rotor bars

Vaimann, Toomas; Belahcen, Anouar; Martinez, Javier; Kilk, Aleksander 13th International Symposium "Topical Problems in the Field of Electrical and Power Engineering." Doctoral School of Energy and Geotechnology II : Pärnu, Estonia, January 14-19, 2013 2013 / p. 249-251 : ill

Steady-state thermal model of a synchronous reluctance motor

Shams Ghahfarokhi, Payam; Belahcen, Anouar; Kallaste, Ants; Vaimann, Toomas; Rassõlkin, Anton 59th Annual International Scientific Conference on Power and Electrical Engineering : November 12, 13, 2018, Riga Technical University (RTUCON) : conference proceedings 2018 / 5 p. : ill <https://doi.org/10.1109/RTUCON.2018.8659846>

Steady-state thermal modeling of salient pole synchronous generator

Ghahfarokhi, Payam Shams; Podgornovs, Andrejs; Kallaste, Ants; Cardoso, Antonio J. Marques; Belahcen, Anouar; Vaimann, Toomas; Kudrjavtsev, Oleg; Asad, Bilal; Iqbal, Muhammad Naveed Energies 2022 / art. 9460 <https://doi.org/10.3390/en15249460> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

Study of bearing currents in induction machine : diagnostic possibilities, fault detection, and prediction

Kudelina, Karolina; Raja, Hadi Ashraf; Naseer, Muhammad Usman; Autsou, Siarhei; Asad, Bilal; Vaimann, Toomas; Kallaste, Ants Electrical engineering 2024 / 14 p. : ill <https://doi.org/10.1007/s00202-024-02411-x> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

A survey of broken rotor bar fault diagnostic methods of induction motor

Asad, Bilal; Vaimann, Toomas; Rassõlkin, Anton; Kallaste, Ants; Belahcen, Anouar Scientific Journal of Riga Technical University. Electrical, control and communication engineering 2018 / p. 117–124 : ill <https://doi.org/10.2478/ecce-2018-0014>

TalTech is helping to raise the quality of technical higher education in Belarus

Vaimann, Toomas studyinestonia.eu 2021 / 1 p <https://www.studyinestonia.eu/news/taltech-helping-raise-quality-technical-higher-education-belarus>

Teadlased käisid Nepalis ja Bhutanis elutarkust ammutamas ja jagamas

Tamm, Liivi toostusest.ee 2024 [Teadlased käisid Nepalis ja Bhutanis elutarkust ammutamas ja jagamas](#)

Teadlased käisid Nepalis ja Bhutanis elutarkust ammutamas ja jagamas

Tamm, Liivi TööstusEST 2024 / lk. 30-31 : fot https://www.ester.ee/record=b4481084*est

Teadus ja igapäevaelu : teadussaavutuste rakendamine praktikas

Alvela, Ain Tehnikamaailm 2024 / lk. 68-73 : ill., fot., portr https://www.ester.ee/record=b1073050*est

Teaduspreemia tehnikateaduste alal tööde tsükli "Kihtlisandustehnoloogial põhinevad elektrimasinad" eest : Toomas

Vaimann, Anton Rassõlkin, Ants Kallaste (kollektiivi juht) ja Hans Tiismus

Vaimann, Toomas; Rassõlkin, Anton; Kallaste, Ants; Tiismus, Hans Eesti Vabariigi preemiad 2022 : teadus. F. J. Wiedemanni keeleauhind. Kultuur. Sport 2022 / lk. 130-145 : ill., fot https://www.ester.ee/record=b1226072*est

Technologies for additive manufacturing of electrical machines

Tiismus, Hans; Kallaste, Ants; Vaimann, Toomas; Rassõlkin, Anton; Belahcen, Anouar 2019 20th International Conference of Young Specialists on Micro/Nanotechnologies and Electron Devices (EDM) 2019 / p. 651-655 : ill <https://doi.org/10.1109/EDM.2019.8823462>

Tehnikaülikooli elektriala tudengid on Eesti parimad

Vaimann, Toomas; Kilter, Jako Elektriala 2021 / lk. 6-8 : ill https://www.ester.ee/record=b1240496*est

Tehnikaülikoolist elektrisenergi - energiamuundus- ja juhtimissüsteemide magistriõpe
Vaimann, Toomas Elektriala 2020 / lk. 10 -11 : portr http://www.eester.ee/record=b1240496*est

The cluster computation-based hybrid FEM–analytical model of induction motor for fault diagnostics
Asad, Bilal; Vaimann, Toomas; Belahcen, Anouar; Kallaste, Ants; Rassõlkin, Anton; Iqbal, Muhammad Naveed Applied sciences 2020 / art. 7572, 15 p. : ill <https://doi.org/10.3390/app10217572> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

The cluster computation-based hybrid FEM–analytical model of induction motor for fault diagnostics
Asad, Bilal; Vaimann, Toomas; Belahcen, Anouar; Kallaste, Ants; Rassõlkin, Anton; Iqbal, Muhammad Naveed Advances in machine fault diagnosis 2022 / p. 27-41 <https://doi.org/10.3390/app10217572>

The low voltage start-up test of induction motor for the detection of broken bars
Asad, Bilal; Vaimann, Toomas; Belahcen, Anouar; Kallaste, Ants; Rassõlkin, Anton; Heidari, Hamidreza 2020 International Conference on Electrical Machines (ICEM), 23-26 august 2020, Gothenburg, Sweden : online : proceedings 2020 / p. 1481-1487 <https://doi.org/10.1109/ICEM49940.2020.9271018>

The usage of fuzzy logic for detecting mechanical faults in gearboxes of robotic system
Autsou, Siarhei; Kudelina, Karolina; Vaimann, Toomas; Rassõlkin, Anton 2024 International Conference on Electrical Machines (ICEM) 2024 / 7 p <https://doi.org/10.1109/ICEM60801.2024.10700425>

The Use of DigSilent Power Factory Simulator for "Introduction into Power Systems" Lectures
Astapov, Victor; Palu, Ivo; Vaimann, Toomas Scientific Journal of Riga Technical University. Electrical, control and communication engineering 2018 / p. 95–99 : ill <https://doi.org/10.2478/ecce-2018-0011>

Thermal analysis of a SynRM using a thermal network and a hybrid model
Shams Ghahfarokhi, Payam; Belahcen, Anouar; Kallaste, Ants; Vaimann, Toomas; Gevorkov, Levon; Rassõlkin, Anton 2018 XIII International Conference on Electrical Machines (ICEM 2018) : Alexandroupoli, Greece, 3-6 September 2018 2018 / p. 2682-2688 : ill <https://doi.org/10.1109/ICELMACH.2018.8507002>

Thermal analysis of electromagnetic levitation coil [Electronic resource]
Ghahfarokhi, Payam Shams; Kallaste, Ants; Belahcen, Anouar; Vaimann, Toomas 2016 17th International Scientific Conference on Electric Power Engineering (EPE) : proceedings 2016 / [5] p. : ill. [USB] <https://doi.org/10.1109/EPE.2016.7521725>

Thermal analysis of salient pole synchronous machines by multiple model planes approach
Shams Ghahfarokhi, Payam; Kallaste, Ants; Podgornovs, Andrejs; Belahcen, Anouar; Vaimann, Toomas; Kudrjavitsev, Oleg 2020 International Conference on Electrical Machines (ICEM), 23-26 august 2020, Gothenburg, Sweden : online : proceedings 2020 / p. 1511–1517 <https://doi.org/10.1109/ICEM49940.2020.9270753>

Thermal analysis of the PM generator with outer rotor for wind turbine application
Kudrjavitsev, Oleg; Kilk, Aleksander; Vaimann, Toomas PQ2016 : the 10th International Conference 2016 Electric Power Quality and Supply Reliability Conference (PQ) : August 29-31, 2016, Tallinn, Estonia : proceedings 2016 / p. 229-232 : ill <https://doi.org/10.1109/PQ.2016.7724118>

Thermal analysis of totally enclosed fan cooled synchronous reluctance motor-state of art
Ghahfarokhi, Payam Shams; Kallaste, Ants; Vaimann, Toomas; Belahcen, Anouar IECON 2019 - 45th Annual Conference of the IEEE Industrial Electronics Society : proceedings 2019 / p. 4372-4377 : ill <https://doi.org/10.1109/IECON.2019.8927706> [Conference proceedings at Scopus](#) [Article at Scopus](#) [Article at WOS](#)

Thermal modeling of a TEFC synchronous reluctance motor
Shams Ghahfarokhi, Payam; Podgornovs, Andrejs; Marques Cardoso, Antonio J.; Kallaste, Ants; Belahcen, Anouar; Vaimann, Toomas 2021 IEEE 62nd International Scientific Conference on Power and Electrical Engineering of Riga Technical University (RTUCON), 15-17 Nov. 2021 : conference proceedings 2021 / 4 p. : ill <https://doi.org/10.1109/RTUCON53541.2021.9711740>

3D printing of electrical machines is a cutting-edge research in TalTech [Electronic resource]
Kallaste, Ants; Vaimann, Toomas Research in Estonia 2021 / 1 p. : ill <https://researchinestonia.eu/2021/10/14/3d-printing-of-electrical-machines-is-a-cutting-edge-research-in-taltech/>

Three-phase electrical equivalent model for squirrel cage induction motor
Petrov, Aleksei; Rassõlkin, Anton; Vaimann, Toomas; Plokhov, Igor; Kallaste, Ants; Kotelnikov, Aleksandr; Asad, Bilal; Savraev, Igor 2019 Electric Power Quality and Supply Reliability Conference (PQ) & 2019 Symposium on Electrical Engineering and Mechatronics (SEEM), Kärda, Estonia, June 12-15, 2019 : proceedings 2019 / 6 p. : ill <https://doi.org/10.1109/PQ.2019.8818241>

Time dependency of current harmonics for switch-mode power supplies
Iqbal, Muhammad Naveed; Kütt, Lauri; Asad, Bilal; Vaimann, Toomas; Rassõlkin, Anton; Demidova, Galina Applied sciences 2020 / art. 7806, 12 p. : ill <https://doi.org/10.3390/app10217806> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

Toomas Vaimann: energeetikasektori omapäraks on pikaajalisus

Vaimann, Toomas err.ee 2023 [Toomas Vaimann: energeetikasektori omapäraks on pikaajalisus](#)

Topology optimization and additive manufacturing of a loudspeaker soft magnetic core

Sarap, Martin; Pärtel, Marcus; Kallaste, Ants; Tiismus, Hans; Vaimann, Toomas 2024 International Conference on Electrical and Computer Engineering Researches (ICECER) 2024 / 5 p <https://doi.org/10.1109/ICECER62944.2024.10920438>

Transient modeling and recovery of non-stationary fault signature for condition monitoring of induction motors

Asad, Bilal; Vaimann, Toomas; Belahcen, Anouar; Kallaste, Ants; Rassõlkin, Anton; Ghahfarokhi, Payam Shams; Kudelina, Karolina Applied sciences 2021 / 17 p. : ill <https://doi.org/10.3390/app11062806> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

Transient modeling and recovery of non-stationary fault signature for condition monitoring of induction motors

Asad, Bilal; Vaimann, Toomas; Belahcen, Anouar; Kallaste, Ants; Rassõlkin, Anton; Ghahfarokhi, Payam Shams Advances in machine fault diagnosis 2022 / p. 43-59 <https://doi.org/10.3390/app11062806>

Trends and challenges in intelligent condition monitoring of electrical machines using machine learning

Kudelina, Karolina; Vaimann, Toomas; Asad, Bilal; Rassõlkin, Anton; Kallaste, Ants; Demidova, Galina Applied sciences 2021 / art. 2761, 19 p. : ill <https://doi.org/10.3390/app11062761> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

2 switch forward inverter for parallel-series resonance alternating (PSA) converter for supplying electric welding arc

Niilo, Helar; Vaimann, Toomas 10th International Symposium "Topical Problems in the Field of Electrical and Power Engineering". Doctoral School of Energy and Geotechnology II : Pärnu, Estonia, January 10-15, 2011 2011 / p. 140-144 : ill

Töötav elektrimootor otse printerist – jah, see on võimalik!

Vaimann, Toomas Õhtuleht 2022 / Lk. 19 <https://dea.digar.ee/article/oh tuleht/2022/03/12/14>

Uncertainty quantification of input parameters in a 2D finite-element model for broken rotor bar in an induction machine

Billah, Md Masum; Martin, Floran; Belahcen, Anouar; Balasubramanian, Aswin; Vaimann, Toomas; Sobra, Jan IEEE transactions on magnetism 2022 / art. 8205804 <https://doi.org/10.1109/TMAG.2022.3173663> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

Using a fuzzy regulator to reduce noise

Shumski, Andrei; Rassõlkin, Anton; Autso, Siarhei; Karpovich, Dzmitry; Kallaste, Ants; Vaimann, Toomas 2019 Electric Power Quality and Supply Reliability Conference (PQ) & 2019 Symposium on Electrical Engineering and Mechatronics (SEEM), Kärda, Estonia, June 12-15, 2019 : proceedings 2019 / 4 p. : ill <https://doi.org/10.1109/PQ.2019.8818257>

Using analysis of stator current for squirrel-cage induction motor rotor faults diagnostics

Vaimann, Toomas; Kallaste, Ants; Kilk, Aleksander Electrical and Control Technologies : Proceedings of the 6th International Conference on Electrical and Control Technologies (ECT-2011), May 5-6, 2011, Kaunas, Lithuania 2011 / p. 245-250 : ill

Using Clarke vector approach for stator current and voltage analysis on induction motors with broken rotor bars

Vaimann, Toomas; Kallaste, Ants; Kilk, Aleksander Elektronika ir elektrotehnika = Electronics and electrical engineering 2012 / p. 17-20 : ill

Utilization of additive manufacturing in the thermal design of electrical machines : a review

Sarap, Martin; Kallaste, Ants; Ghahfarokhi, Payam Shams; Tiismus, Hans; Vaimann, Toomas Machines 2022 / art. 251 <https://doi.org/10.3390/machines10040251> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

Uued inimesed ja positsioonid

Kiigema, Kadri; Sibinski, Maciej; Bauk, Sanja; Kujala, Pentti Jouko Sakari; Levo, Anu-Mai; Vaimann, Toomas Mente et Manu 2023 / lk. 44-47 : fot https://www.ester.ee/record=b1242496*est

Uus õppeaine annab tudengile kinnituse, et ta õpib õiget asja

Sommer, Sven Mente et Manu 2018 / lk. 44-45 : fot http://www.ester.ee/record=b1242496*est <http://dea.digar.ee/publication/AKmenteetmanu> https://www.ttu.ee/public/m/mente-et-manu/MM_05_2018/mobile/index.html https://artiklid.elnet.ee/record=b2868942*est

Validation of an EV-permanent magnet synchronous motor model based on analytical dynamic approach

Mohamed, Mahmoud Ibrahim Hassanin; Rjabtsikov, Viktor; Rassõlkin, Anton; Vaimann, Toomas; Kallaste, Ants 2022 International Conference on Electrical Machines (ICEM) 2022 / p. 2384-2390 <https://doi.org/10.1109/ICEM51905.2022.9910755>

Vector control of synchronous reluctance motor with reduced torque ripples

Heidari, Hamidreza; Rassõlkin, Anton; Kallaste, Ants; Vaimann, Toomas; Andriushchenko, Ekaterina 2020 XI International

Conference on Electrical Power Drive Systems (ICEPDS), Saint-Petersburg, Russia, October 4-7, 2020 2021 / p. 223-227 : ill <https://doi.org/10.1109/ICEPDS47235.2020.9249309>

Vibration and stator current spectral analysis of induction machine operating under dynamic eccentricity

Sobra, Jan; **Belahcen, Anouar; Vaimann, Toomas** 2015 International Conference on Electrical Drives and Power Electronics (EDPE) : 18th International Conference, 7th Joint Slovakian-Croatian Conference : proceedings : Hotel Slovan, Tatranska Lomnica, The High Tatras, Slovakia, September 21-23, 2015 2015 / p. 285-290 : ill <http://dx.doi.org/10.1109/EDPE.2015.7325307>

Wideband frequency response analysis for sensitive condition estimation of machine's turn insulation degradation faults

Sardar, Muhammad Usman; Vaimann, Toomas; Kütt, Lauri; Asad, Bilal; Kallaste, Ants; Land, Raul 2025 IEEE Workshop on Electrical Machines Design, Control and Diagnosis (WEMDCD) 2025 / 6 p <https://doi.org/10.1109/WEMDCD61816.2025.11014207>

Winding function based analytical model of squirrel cage induction motor for fault diagnostics

Asad, Bilal; Vaimann, Toomas; Kallaste, Ants; Rassõlkin, Anton; Belahcen, Anouar 2019 26th International Workshop on Electric Drives : Improvement in Efficiency of Electric Drives (IWED) : Moscow Power Engineering Institute, Moscow, Russia, 30th of January - 2nd of February 2019 : proceedings 2019 / 6 p. : ill <https://doi.org/10.1109/IWED.2019.8664314>

Visual-interactive simulation models in electrical power engineering and mechatronics programs for distance education at ITMO university

Usoltcev, Aleksandr; Lukichev, Dmitry; Demidova, Galina; **Rassõlkin, Anton; Vaimann, Toomas** 2020 XI International Conference on Electrical Power Drive Systems (ICEPDS), Saint-Petersburg, Russia, October 4-7, 2020 2020 / p. 280-284 : ill <https://doi.org/10.1109/ICEPDS47235.2020.9249365>

Каролина Куделина - Технический студент года 2021

Vaimann, Toomas Meie Leht 2021 / с. 4 http://narva-joesuu.ee/documents/2032926/30038466/Meie_Leht_DETSEMBER_2021_RU.pdf/bf177e2c-2aa3-4d44-933b-eeedf407a2b0

Каролина Куделина стала призером национального конкурса [Online resource]

Vaimann, Toomas Meie Leht 2021 "[Каролина Куделина стала призером национального конкурса](#)"

Обзор низкоскоростных генераторов с постоянными магнитами для ветряных установок

Rassõlkin, Anton; Kallaste, Ants; Vaimann, Toomas; Savrajev, Igor Вестник Псковского государственного университета. Технические науки 2016 / с. 58-68

Технико-экономическое обоснование автономной системы электроснабжения на примере Псковской области

Bandurin, Ivan; Shchelikalin, Vyacheslav; Smirnova, Anastasia; **Rassõlkin, Anton; Kallaste, Ants; Vaimann, Toomas** Вестник Псковского государственного университета. Технические науки 2016 / с. 100-109