FACULTY OF ELECTRICAL AND POWER ENGINEERING

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ELECTRICAL ENGINEERING DEPARTMENT

MAIN RESEARCH FIELDS

- Electric machines and equipment modeling, simulation, optimal design and testing (EME)

Keywords: electric machines, electric equipment, field calculation, optimal design, computer aided testing.

- Power electronics and motion control (PEMC)

Keywords: electric machines and drives, power electronics, speed and position control, digital control.

- Switched reluctance motor drive (SRMD)

Keywords: electric machines and drives, reluctance motor, power electronics, digital control.

- Power industrial electric drives (PIED)

Keywords: electric machines and drives, power electronics, speed control.

- Electrical lighting and Electrotechnologies (ELE)

Keywords: electromagnetic fields, applied electrostatics, welding, electrothermal processes, ultrasonics, power electronics, lighting devices.

Researches are organized in the centre **New system of intelligent motion of the electric machines.**

Researches in *ELECTRIC MACHINES AND EQUIPMENTS, OPTIMAL DESIGN, TESTING, MODELING AND SIMULATION*

FIELD DESCRIPTION

Electric machines modeling including saturation and frequency effect both in the lumped parameter or distributed parameter (field distribution) forms are paramount for global optimization design and new computer - aided testing and parameter identification methods, modeling and simulation.

ACTIVITIES AND RESULTS

Since 1980 aggressive theoretical and experimental work on ever better electric machine modeling, simulation, optimal design, testing and parameter identification has been taking place with the results of two U.P.T. codes for optimal design of large power a.c. machines and a few new testing and parameter identification techniques for electric machines. Most of the work resulted in prototypes tested (or built) in cooperation in industrial partners.

Due to the long time collaboration with the Faculty of Automation and Computer Science from Timişoara, in the field of data acquisition systems and digital signal processing, the D-109 Laboratory was affiliated at the research center in automation and computer science

RESEARCH BENEFICIARIES

Ministry of Hydro-Power plants such are Lotru-Ciunget, Slatina Aval-Drăgăneşti (hydro reversible generators of 14000 kVA), Iron Gates 1, Râul Mare Retezat (hydrogenerators of 175000 kVA), Turnu-Ruieni (hydrogenerators of 76500 kVA) and Nuclear Power Plant Cernavodă – Unit 2.

External cooperation – design and prototype of a low speed wind generator with HEXATRONIC Inc.-Canada.

RESEARCH TEAM

- Acad. Toma DORDEA
- Prof. dr. eng. Marius BIRIESCU
- Prof. dr. eng. Marius BABESCU
- Prof. dr. eng. Vladimir CREŢU
- Dr. eng. Gheorghe MADESCU, CS II
- Lect. dr. eng. Mihai MICEA
- Eng. Marţian MOŢ, CS III
- Assoc. prof. dr. eng. Sorin MUŞUROI
- Assoc. prof. dr. eng. Dan NICOARĂ
- Lect. Dr. eng. Ciprian Şorândaru
- Dr. eng. Ileana TORAC, CS II
- Eng. Lucian OCOLIŞAN, CS III

RESEARCH OFFERS

Advanced design methods of large a.c. machines including saturation and frequency effects, coupled with dynamic simulation, advanced design methods for ultrahigh torque induction motors, new design methods for capacitor induction motors, computer - aided parameters identification - software and hardware - for electric machines, consulting on large power electric machines design and testing.
Consulting regarding optimization, efficiency improvement testing procedures and refurbishment of hydro-generators.

CONTACT PERSON

Prof. dr. eng. Marius BIRIESCU
E-mail: marius.biriescu@et.upt.ro

Researches in *INTELLIGENT MOTION CONTROL*

FIELD DESCRIPTION

Intelligent motion control integrates motors, static power converters, digital controllers, sensors in systems that perform industrial motion automation with high efficiency (low losses).

ACTIVITIES AND RESULTS

Research activities on linear and rotary motors & drives since 1975 with numerous prototypes built and tested. Integration of intelligent motion systems in Romanian industries up to 2000 kW units since 1994. Various applications of power electronics in energy conversion and digital control concerned with: wind and hydraulic energy conversion systems into electric energy by means of variable speed operation, starter-alternators with digital control designed for hybrid and electric vehicles, and PM machines-based digital control systems up to 150 rpm.

RESEARCH BENEFICIARIES

Various Romanian industrial companies such as: Beespeed Automatizări Timişoara, UCM Reşiţa, Azomures Tg. Mureş, Aquatim Timisoara, SE Iernut, Electrocentrale Deva, CNCSIS, ANSTI etc.
External co-operations: Aalborg University Denmark, EBM Papst Germany, Casino University Italy

RESEARCH TEAM

- Prof. dr. eng. Ion BOLDEA
- Assoc. Prof. dr. eng. Nicolae MUNTEAN
- Assoc. Prof. dr. eng. Lucian TUTELEA
- Lect. dr. eng. Cristian LASCU
- Assoc. Prof. dr. eng. Lucian MIHEŢ - POPA
- Assist. Dr. eng. Sorin AGARLIŢĂ
- Assist. Dr. eng. Codruţa PAICU
- Ph.D. Student Vlad GRĂDINARU
- Ph.D. Student Robert ANTAL
- Ph.D. Student Alin ŞTIRBAN
- Ph.D. Student Liviu IEPURE
- Ph.D. Student Ana MOLDOVAN
- Ph.D. Student Ana-Maria UNGUREANU
- Ph.D. Student Mihaela GAVRIŞ
- Ph.D. Student Diana PETRILA
- Ph.D. Student Ovidiu PELAN
- Ph.D. Student Mircea BABA

RESEARCH OFFERS

HARDWARE: Integration of intelligent motion control systems in various industries (automotive electric actuators and renewable electric energy converters are key subjects of interest) from process identification to commissioning and service. Prototyping of new systems for given specifications.

SOFTWARE: Electric motor - linear and rotary - design software aids in the form as software licensed products by request.

Intelligent motion control system.

International intensive courses: in Germany at EBMPapst, in Italy at Vicenza Centro Produttivita, in Korea at Hanyang University from Seul and at KIMM (Korean National Institute of Machinery and Materials).

CONTACT PERSON

Prof. dr. eng. Ion BOLDEA
E-mail: boldea@lselinux.upt.ro

Researches in *SWITCHED RELUCTANCE MOTOR DRIVES*

FIELD DESCRIPTION

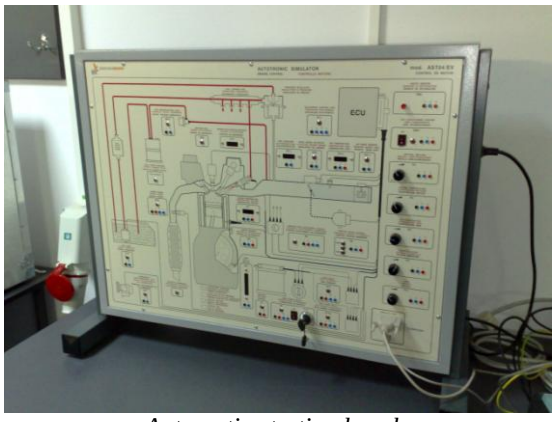
Switched reluctance motor (SRM) is a position-controlled power stepper motor with a very rugged topology and low costs but requires a specific static power converter and digital controller. Numerous potential applications in harsh environments look adequate for this kind of drive which drew world - wide attention in the last 10 years.

ACTIVITIES AND RESULTS

The actual activity aims at introducing the modeling, simulation and validation of the permanent and dynamic performances of the SR Drives

RESEARCH TEAM

- Prof. dr. eng. Gheorghe ATANASIU
- Prof. dr. eng. Dorin POPOVICI
- Lect. dr. eng. Alin ARGEŞEANU
- Lect. dr. eng. Ciprian ŞORÂNDARU
- Assist. eng. Octavian CORNEA
- Ph.D. Student Marcus SVOBODA



Automotive testing bench.

RESEARCH OFFERS

New drives with SRMs - from research to prototyping for various applications at variable speed, digital control of industrial drives with static power converters, medium power variable frequency motor drives (research and consulting)

CONTACT PERSON

Prof. dr. eng. Dorin POPOVICI
E-mail: dorin.popovici@et.upt.ro

Researches in *POWER INDUSTRIAL ELECTRIC DRIVES*

FIELD DESCRIPTION

Power electric drives with variable speed are useful to increase productivity and quality in various processes and require means for speed control invariably. The load requirements are very specific and the best solution depends notably on the application.

ACTIVITIES AND RESULTS

Since 1980, with emphasis on overhead cranes using various static power converters, research efforts have been developed to define, design, built and test power drives with variable speed. New design methods and converter realizations have been obtained both with rotary or linear motors.

RESEARCH BENEFICIARIES

Mechanical works Timisoara, Ministry of Education, PROMPT Research Institute.

RESEARCH TEAM

- Prof. dr. eng. Eugen SERACIN
- Prof. dr. eng. Dorin POPOVICI
- Assoc. prof. dr. eng. Sorin MUŞUROI
- Assoc. prof. dr. eng. Ioan GHIUR
- Lect. Dr. eng. Ciprian ŞORÂNDARU
- Lect. Dr. Eng. Cristian LASCU
- Ph.D. Student Marcus SVOBODA

RESEARCH OFFERS

Optimal design methods for power industrial drives, current inverter power drives, linear motors conveyors.

CONTACT PERSON

Assoc. prof. dr. eng. Sorin MUŞUROI
E-mail: sorin.musuroi@et.upt.ro

Researches in *ELECTRIC LIGHTING AND EQUIPMENT FOR ELECTROTECHNOLOGIES*

FIELD DESCRIPTION

Modern lighting sources and lighting devices, optimal lighting design, power electronics for electric lighting, electrotechnologies - based on electromagnetic or electrostatic fields are widely used in the fabrications manufacturing systems and include electrothermal processes, welding power sources, power ultrasonics, electrostatic etching etc.

ACTIVITIES AND RESULTS

Since 1980 notable research efforts have been devoted to investigate induction - the welding process and the power sources, new electric welding and ultrasonic power electronics sources. A few prototypes have been built and tested. New researches have been oriented to ultrasonic enhancement of liquid magnetic processing and sonosinthesys of nano-materials.

RESEARCH BENEFICIARIES

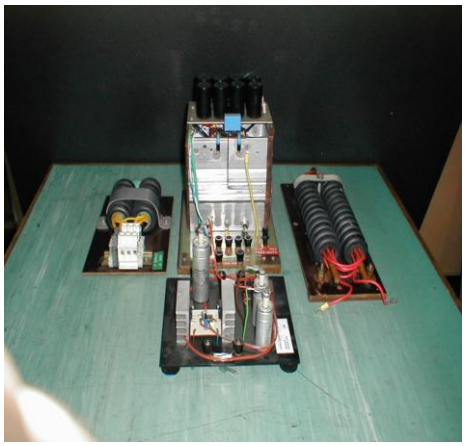
Ministry of Research, ISIM Timişoara

RESEARCH TEAM

- Prof. dr. eng. Ioan ŞORA
- Assoc. prof.. dr. eng. Dan NICOARĂ
- Assoc. prof. dr. eng. Alexandru HEDEŞ

RESEARCH OFFERS

Power electronics, for electrotechnologies, including high-frequency power transformers, arc welding power sources, advanced power electronics ultrasonics sources (from research to prototyping), ultrasonic processing of materials, consulting in electrotechnologies and electric lighting devices.



High frequency welding transformers.

CONTACT PERSON

Prof. dr. eng. Ioan ŞORA
E-mail: ion.sora@et.utp.ro

MAIN PUBLICATIONS

PUBLISHED PAPERS

1. Dordea T., Dordea T.P., Biriescu M., Madescu Gh., Torac I., Moț M., Ocolișan L., *Les courants electriques par les conducteurs elementaires tubulaires d'une barre Roebel - Part 2. Determination des courants*, Revue Roumaine des Sciences Techniques. Serie Electrotehnique et Energetique. Editura Academiei Române, Decembrie 2010, Tom 55, nr. 2, pp. 113-122, ISSN 0035-4066.
2. Deliu M., Hedeș A., Șora I., *Detuned Filters for Power Factor Correction of Adjustable Speed Drives*, Selected Topics in Energy, Environment, Sustainable Development and Landscaping, Proceedings of the 6th WSEAS International Conference on Energy Environment, Ecosystems & Sustainable Development (EEESD'10), Timișoara, 2010, pp. 288-293, ISBN 978-960-474-237-0.
3. Cornea O., Muntean N., Gavriș M., *Interleaved 3 phase DC/DC converter for automotive applications*, Proceedings of Optimization of Electrical and Electronic Equipment, OPTIM May 2010, Braşov, pp. 100-105, ISBN 978-963-661-915-2.
4. Muntean N., Cornea O., Petrila D., *A new conversion and control system for a small OFF – GRID wind turbine*, Proceedings of Optimization of Electrical and Electronic Equipment, OPTIM May 2010, Braşov, pp. 94-99, ISBN 978-963-661-915-2.
5. Antal R., Muntean N., Boldea I., Blabjerg F., *Novel four-switch Z-source three-phase inverter*, Proceedings of IECON- May 2010 Glendale, AZ, USA, pp. 202-207, ISBN 978-1-4244-5226-2.
6. Tutelea L., Boldea I., *Surface Permanent Magnet Synchronous Motor Optimization Design: Hooke3 Jeeves Method Versus Genetic Algorithms*, ISIE July 2010, Bari, Italia, pp. 1504-1509, ISBN 978-1-4244-6391-6.
7. Paicu M. C., Tutelea L., Boldea I., Andreescu Gh., Ancuți R., *PM-RSM Sensorless Vector Control: Zero q-Axis Flux versus Approximate Maximum Torque per Current, with Experiments*, Proceedings of Optimization of Electrical and Electronic Equipment, OPTIM May 2010, Braşov, pp. 460-468, ISBN 978-1-4244-7019-8.
8. Agarliță S., Fătu M., Tutelea L., Blabjerg F., Boldea I., *I-f Starting and Active flux Based Sensorless Vector Control of Reluctance Synchronous Motors, With Experiments*, Proceedings of Optimization of Electrical and Electronic Equipment, OPTIM May 2010, Braşov, pp. 337-342, ISBN 978-1-4244-7019-8.
9. Boldea I., Topor M., Deaconu S., Tutelea L., Marignetti F., *A novel, single Stator Dual PM Rotor, Synchronous Machine: topology, circuit model, controlled dynamics simulation and 3D FEM Analisis of Torque Production*, Proceedings of Optimization of Electrical and Electronic Equipment, OPTIM May 2010, Braşov, pp. 343-351, ISBN 978-1-4244-7019-8.
10. Grădinaru V., Tutelea L., Boldea I., *BLDC-SPM Motor Drive DC-DC Converter in the DC Link: Hall Sensor versus Sensorless Speed Control*, Proceedings of Optimization of Electrical and Electronic Equipment, OPTIM May 2010, Braşov, pp. 422-429, ISBN 978-1-4244-7019-8.
11. Moldovan A., Tutelea L., Boldea I. *A classs of Fast Dynamic V/f Sensorless AC General Drives with PM -RSM as a case study*, Proceedings of Optimization of Electrical and Electronic Equipment, OPTIM May 2010, Braşov, pp. 453-459, ISBN 978-1-4244-7019-8.
12. Tutelea L., Boldea I., *Induction Motor Electromagnetic Design Optimization: Hooke Jeeves Method Versus Genetic Algorithhms*, Proceedings of Optimization of Electrical and Electronic Equipment, OPTIM May 2010, Braşov, pp. 485-492, ISBN 978-1-4244-7019-8.
13. Agarliță S.,Boldea I., Marignetti F., Tutelea L., *Position Sensorless Control of a Linear Interior Permanent magnet with Experiments*, Proceedings of Optimization of Electrical and Electronic Equipment, OPTIM May 2010, Braşov, pp. 689-695, ISBN 978-1-4244-7019-8.
14. Știrban A., Boldea I., Andreescu Gh., Ileș D., Blaabjerg F., *Motion sensorless control of BLDC PM motor with offline FEM info assisted state observer*, Proceedings of Optimization of Electrical and Electronic Equipment, OPTIM May 2010, Braşov, pp. 321-328, ISBN 978-1-4244-7019-8.
15. Iepure L.I., Boldea I., Andreescu Gh., Ileș, D., Blaabjerg F., *Novel motion sensorless control of single phase brushless D.C. PM motor drive, with experiments*, Proceedings of Optimization of Electrical and Electronic Equipment, OPTIM May 2010, Braşov, pp. 329-336, ISBN 978-1-4244-7019-8.
16. Boldea I., Moldovan A., Schramel V.C., Andreescu Gh., Tutelea L., *A class of fast dynamics V/f sensorless AC general drives with PM-RSM as a case study*, Proceedings of Optimization of Electrical and Electronic Equipment, OPTIM May 2010, Braşov, pp. 453-459, ISBN 978-1-4244-7019-8.
17. Ungureanu A., Coroban-Schramel V., Boldea I., *Sensorless control of a BLDC PM motor based on I-f starting and back-EMF zero-crossing detection*, Proceedings of Optimization of Electrical and Electronic Equipment, OPTIM May 2010, Braşov, pp. 377-382, ISBN 978-1-4244-7019-8.

18. Babescu M., Boraci R., Greconici M., *The influence of Wind Speed Variation on Maximum Power of a Wind Turbine System*, Proceedings 6th WSEAS International Conference on ENERGY, ENVIRONMENT, ECOSYSTEMS and SUSTAINABLE DEVELOPMENT (EEESD '10) 3rd WSEAS International Conference on LANDSCAPE ARCHITECTURE (LA '10), Timişoara, pp. 428-432, ISBN 978-960-474-237-0.
19. Olărescu N.V., Muşuroi S., Şorândaru C., Weinmann M., Zeh S., *Optimum current command algorithm for wide speed range and four quadrant operation of PMSMS drive without regenerative unit*, Proceedings of Optimization of Electrical and Electronic Equipment, OPTIM 2010, 12th International Conference on, Braşov, pp. 704-709, ISBN 978-1-4244-7019-8.
20. Olărescu N.V., Weinmann M., Zeh S, Muşuroi S., Şorândaru C., *Optimum current reference algorithm for PMSMS drive system for wide speed range*, Proceedings of 15th IEEE Mediterranean Electrotechnical Conference, Melecon March 2010, pp. 1073-1077, ISBN 978-1-4244-5793-9.
21. Olărescu N.V., Weinmann M., Zeh S, Muşuroi S., Şorândaru C., *Optimum current reference generation algorithm for four quadrant operation of PMSMS drive system without regenerative unit*, Proceedings of Industrial Electronics (ISIE) July 2010, IEEE International Symposium on, pp. 1408-1413, ISBN 978-1-4244-6390-9.
22. Koblara T., Şorândaru C., Muşuroi S., Svoboda M., *A low voltage sensorless Switched Reluctance motor drive using flux linkage method*, Proceedings of Optimization of Electrical and Electronic Equipment, OPTIM May 2010, 12th International Conference on, Braşov, pp. 665-672, ISBN 978-1-4244-7019-8.
23. Cornea O., Popovici D., *Software Positioning Tuning of a SRM Drive System*, Proceedings of Optimization of Electrical and Electronic Equipment, OPTIM May 2010, 12th International Conference on, Braşov, pp. 700-706, ISBN 978-1-4244-7019-8.
24. Argeşeanu A., Ritchie E., Leban K., *Torque Optimization Algorithm for SRM Driving Using a Robust Predictive Strategy*, Proceedings of Optimization of Electrical and Electronic Equipment, OPTIM May 2010, 12th International Conference on, Braşov, pp. 252-257, ISBN 978-1-4244-7019-8.
25. Argeşeanu A., Ritchie E., Leban K., *New Balncing Equipment for Mass Production of Small ans Medium-Sized Electrical Machines*, Proceedings of Optimization of Electrical and Electronic Equipment, OPTIM May 2010, 12th International Conference on, Braşov, pp. 506-511, ISBN 978-1-4244-7019-8.
26. Argeşeanu A., Ritchie E., Leban K., *New Low Cost Structure for Dual Axis Mount Solar Tracking System Using Adaptive Solar Sensor*, Proceedings of Optimization of Electrical and Electronic Equipment, OPTIM May 2010, 12th International Conference on, Braşov, pp. 1109-1114, ISBN 978-1-4244-7019-8.
27. Cornea O., Popovici D., *Using a Low Cost Microcontroller Development System for Teaching Microcontroller Programming Basics*, Annals of the univesty of Craiova, Electrical Engineering Series, No. 34, Oct. 2010, Vol. II, pp. 59-62, ISSN 1842-4805.
28. Madescu Gh., Biriescu M., Pros□tean O., Mihuț T., Greconici M., Moț M., Augustinov L., *Low speed synchronous generator with PM excitation*, ICEM Sept. 2010 19th Conference on Electric Machines, Roma, Italia, pp. 1-5, ISBN 978-1-4244-4174-7.
29. Strete L., Tutelea L., Boldea I., Martiş C., Viorel I.A., *Optimal design of a Rotating Transverse Flux Motor (TFM) with Permanent Magnets in Rotor*, ICEM Sept. 2010 19th Conference on Electric Machines, Roma, Italia, RF 009318, ISBN 978-1-4244-4175-4.
30. Babescu M., Boraci R., *On Functioning of the Electric Wind System at its Maximum Power*, International Joint Conferences on Computational Cybernetics and Technical Informatics, Timişoara, 2010, pp. 125-131, ISBN 979-1-4244-7431-8.
31. Babescu M., Boraci R., *The Control of the Diesel-Synchronous Generator Electro-Energetic System*, International Joint Conferences on Computational Cybernetics and Technical Informatics, Timişoara, 2010, pp. 132-137, ISBN 979-1-4244-7431-8.
32. Babescu M., *Dependenta sarcinii generatorului sincron de viteza vantului la un sistem eolian*, Conferinta tehn. Stintifica - Instalatii pentru constructia si economia de energie, Iaşi, 2010, pp. 40-53, ISSN 1843-661.

BOOKS

1. Boldea I., Nasar S.A. *The Induction Machines Handbook – Second Edition*, CRC Press, Taylor & Francis Group, ISBN 978-1-4200-6668-5.
2. Boldea I., Tutelea L. *Electric Machines – steady State, Transients and design with Matlab*, CRC Press, Taylor & Francis Group, ISBN 978-1-4200-5572-6.
3. Boldea I., Tutelea L. *Electric Machines*, CRC Press, ISBN 978-1-4200-5572-6.
4. Boldea I. *Transformatoare şi maşini electrice*, Editura Politehnica, ISBN 978-973-625-943-2.

RESEARCH GRANTS

1. Boldea, I. *EE-VERT Energy Efficient Vehicles for Road Transport*, FP7, No. 218598, value 15.640 EURO.
2. Biriescu, M. *Optimizarea funcționării hidrogeneratoarelor electrice prin modernizarea sistemelor de excitație în vederea creşterii eficienței energetice şi competitivității lor*, PNCDI2, value 1.151.212 RON.
3. Biriescu, M. *Optimizarea înfăşurărilor hidro generatoarelor electrice în vederea creşterii eficienței energetice*, PNCDI2, value 507.087 RON.
4. Argeşanu, A. *Optimizarea eficientei energetice a climatizarii prin implementarea structurilor de stocare cu densitate energetica ridicata realizate cu materiale ecologice*, number 8840-29.06.2010, value 45.220 RON.

PhD THESIS DEFENDED

1. Stirban Alin Nicusor, *Low Cogging Torque PMSM Drives with Rectangular Current Control*, PhD supervisor Boldea, I.
2. Iepure Liviu Ioan, *Sensorless Control of Single Phase PM Brushless DC Motor Drives*, PhD supervisor Boldea, I.
3. Antal Robert, *New Self-Boost (Z-Source) and Boost DC-AC Converter Topologies*, PhD supervisor Boldea I.

ORGANIZED CONFERENCE

1. *12th International Conference on Optimization of Electrical and Electronic Equipment*, May, 20-22, organized by: The Faculty of Electrical Engineering of the Transilvania University of Braşov, The Faculty of Electrical Engineering of the Politehnica University of Timişoara and The Faculty of Electrical Engineering of the Technical University of Cluj-Napoca in co-operation with The Institute of Electrical and Electronics Engineers IEEE and The Institution of Electrical Engineers IEE

PATENTS

1. Antal R., Boldea I., Muntean Nicolae, *Static converter comprises voltage inverter, anti-parallel diodes and passive components*, Brevet internațional OSIM, Nr. Brevet RO125493-A2, 2010.
2. Agarliță S. C. *Electromagnetic device for actuation of valves of heat engine comprises pre-polarized electromagnet, fixed magnetic cores, internal core and external core*, Nr. Brevet RO125407-A2, 2010.

CONTACT

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DEPARTMENT OF POWER ENGINEERING

MAIN RESEARCH FIELDS

- Electromagnetic Compatibility in Power Systems

Keywords: electromagnetic field, environment, disturbance source, electromagnetic interference, filters, electromagnetic shields

- High Voltage Laboratory Tests and Quality Checking

Keywords: high voltage techniques, overvoltages, testing record, induced voltages

- Modeling and Simulation of Electromagnetic Transients in Power Systems

Keywords: switching and lightning, overvoltages, transient response, simulation

- Power System Reliability

Keywords: loss of load probability, power system reliability, probability density function

- Power Apparatus and Equipments

Keywords: power apparatus, electrical equipment, switching devices, protection devices

- Power Quality

Keywords: harmonic analysis, data acquisition, computer aided statistical research

- Load Forecasting

Keywords: energy forecasting, expert system

- Power System Restructuring

Keywords: power system, energy pool, transmission open access, ancillary services, independent system operator

- Power System Transient Stability and Voltage Stability

Keywords: power systems, power systems stability, transient stability, voltage stability

- Electrical Materials

Keywords: ferromagnetic materials, hysteresis loop, transformer iron core, non-linear analyses methods

- Electrical Substations and Power Plants

Keywords: electrical energy production, power transformer, switching devices, protection devices, secondary circuits

- Energy Management

Keywords: energy efficiency, energy management systems, project feasibility

Researches in *ELECTROMAGNETIC COMPATIBILITY IN POWER SYSTEMS*

FIELD DESCRIPTION

Electromagnetically disturbances analysis produced by high and low perturbation sources; coupling mode between sources and victims and against perturbation action to protect the energetically field receptors analyses.

ACTIVITIES AND RESULTS

Overvoltage protection equipments, using ZnO varistors. Mathematics modeling and measurements of induced voltages in two-line circuit and adjacently circuits.

RESEARCH BENEFICIARIES

National Power Transmission Company – Transelectrica, Timişoara branch

RESEARCH TEAM

- Prof. dr. eng. Flavius Dan ŞURIANU
- Prof. dr. eng. Viorel TITIHĂZAN
- Lect dr. eng. Ilona BUCATARIU
- Phd. Student Adrian OLARIU

Researches in *HIGH VOLTAGE LABORATORY TESTS AND QUALITY CHECKING*

FIELD DESCRIPTION

The purpose of high voltage tests consists of certifying the quality of insulation systems and emitting testing bulletins, optimal computation and experimental testing of insulation disturbance location and characteristic parameters measuring.

ACTIVITIES AND RESULTS

Tests on sparkover voltages (high voltages resistance variable arresters).
Tests on insulators of glass and composite insulators for a.c. overhead lines (Un >1000 V).
Tests on medium voltage 20 kV steel-aluminum conductor insulated with XLPE.
Tests on insulation of welding equipment.

RESEARCH BENEFICIARIES

SC Electroconstrucția ELCO Oradea S.A., S.C. ENEL - Electrica Banat Timişoara, ISIM Timişoara

RESEARCH TEAM

- Prof. dr. eng. Flavius Dan ŞURIANU
- Assoc. prof. dr. eng. Viorel TITIHĂZAN
- Assoc. prof. dr. eng. Adrian PANĂ
- Assoc. prof. dr. eng. Mariana TITIHĂZAN
- Phd. Student Adrian OLARIU

Researches in *MODELING AND SIMULATION OF ELECTROMAGNETIC TRANSIENTS IN POWER SYSTEMS*

FIELD DESCRIPTION

Studies present the statistical results of a switching or a lightning overvoltage performed on electromagnetic transients. The probability of shielding failures and backflashover have been evaluated and compared to the characteristics of transmission lines in service. Overvoltages caused by line energization, single and

three phase reclosing have been investigated by statistical approach using ATP – EMTP.

ACTIVITIES AND RESULTS

In scientific research programs several models have been developed for calculation of switching or lightning overvoltages**.**

RESEARCH TEAM

- Prof. dr. eng. Corneliu VELICESCU
- Assoc. prof. dr. eng. Gheorghe VUC
- Phd. Student Felicia COROIU

RESEARCH OFFERS

Power systems transients - modeling and simulation
Power systems reliability studies.
Transformer iron core, non-linear analyses methods.

Researches in *POWER SYSTEMS RELIABILITY*

FIELD DESCRIPTION

The research presents for different power systems configuration the probable energy value, which cannon be supplied and the loss of load probability. To obtain the probability density function the different probabilistic models are used like Gram-Charlier expansion or Monte Carlo simulation.

ACTIVITIES AND RESULTS

The scientific papers are published in power system reliability area**.**

RESEARCH TEAM

- Prof. dr. eng. Corneliu VELICESCU
- Phd. Student Felicia COROIU

RESEARCH OFFERS

Reliability evaluation of power system extension.

Researches in *POWER APPARATUS AND EQUIPMENT*

FIELD DESCRIPTION

There are a very large category of electrical systems, which include all type of switching devices (from Low to High Voltage), all the equipment existing in power stations, protection systems (surge arresters, current protections), automatic equipment (relays, contactors), power electronic devices and digital command equipment (such as PLC-s).

ACTIVITIES AND RESULTS

Design of new electrical switching devices, equipment and installations.
PCL's implementation for different applications.
Software for digital command equipment.
On-line systems for monitoring and diagnosis of electrical equipment.

RESEARCH BENEFICIARIES

Ministry of Education and Research, S.C. Electrica S.A. (S.D. Timişoara and Sibiu), S.C. Transelectrica S.A. (S.T. Sibiu), Electroputere S.A. Craiova

RESEARCH TEAM

- Prof. dr. eng. Alexandru VASILIEVICI
- Prof. dr. eng. Iuliu DELESEGA
- Prof. dr. eng. Petru ANDEA
- Assoc. prof. dr. eng. Doru VĂTĂU
- Lect. dr. eng. Flaviu FRIGURĂ
- Phd. Student Răzvan TESLOVAN

Researches in *POWER QUALITY*

FIELD DESCRIPTION

Analysis of harmonics, unsymmetrical operations; equivalent parameter measurements for harmonic frequencies; evaluation of static reactive power compensation; control of passive power filter in electrical distribution systems.

ACTIVITIES AND RESULTS

Measurements were made in substations for Romanian National Electricity Company. A complex digital data acquisition system was used for the statistical estimation of harmonic distortion and unsymmetrical operation. New solutions were developed for the improvement of power quality in distribution systems.

RESEARCH BENEFICIARIES

National Agency of Scientific Research, National Power Transmission Company – Transelectrica, S.C. Electrica S.A. (S.D. Timişoara).

RESEARCH TEAM

- Prof. dr. eng. Vasile DUŞA
- Assoc. prof. dr. eng. Adrian PANĂ
- Lect. dr. eng. Ilona BUCATARIU

RESEARCH OFFERS

Measurement and characterization of harmonic distortion for large industrial loads, location of harmonics in power systems, estimation effects for harmonics and unbalanced load on power system's equipment, analysis of power quality.

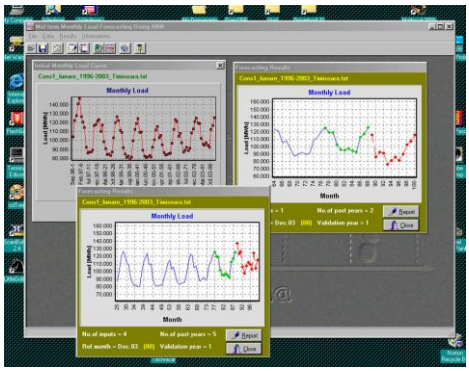
Researches in *LOAD FORECASTING*

FIELD DESCRIPTION

Analysis of electrical energy and power need for short and mid-term load forecasting; algorithm and program development for monthly energy consumption and daily load curves.

ACTIVITIES AND RESULTS

Electrical load data acquisition from "Electrica Banat" substations and data files processing.
Development of PRENPS and PELTMRNA programs for short-term daily load curve forecasting, respectively for mid-term monthly load forecasting.
Result analysis and forecast validation.



Load Forecast Software

RESEARCH TEAM

- Prof. dr. eng. Bucur LUŞTREA
- Assoc. prof. dr. eng. Adrian PANĂ
- Lect. dr. eng Ioan BORLEA
- As. dr. eng. Constantin BĂRBULESCU
- As. dr. eng. Dan JIGORIA-OPREA

RESEARCH OFFERS

Short-term energy and load curve forecasting. Expert systems for the checking of used database at forecasting.

Researches in *POWER SYSTEM RESTRUCTURING*

FIELD DESCRIPTION

The unprecedented world - wide restructuring of the power industry move away from the traditional monopolies and toward greater competition, in the form an increased members of independent power producers and an unbundling of the main services that were until now provided by the utilities, has been building up for over a decade.

ACTIVITIES AND RESULTS

Managing risk on new market power and price stability.
Pricing of network access.

RESEARCH TEAM

- Prof. dr. eng. Corneliu VELICESCU
- Assoc. prof. dr. eng. Gheorghe VUC
- Assoc. prof. dr. mat. Doru PĂUNESCU (Department of Mathematics)

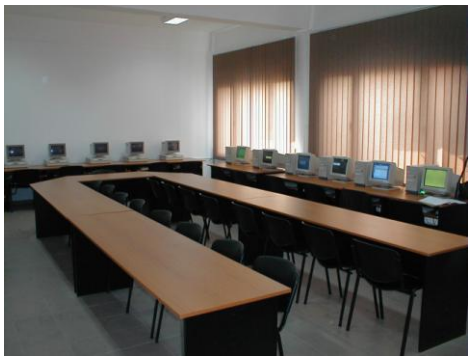
RESEARCH OFFERS

Digital model of power system
Optimal Power Price Simulator (OPP)

Researches in *POWER SYSTEM TRANSIENT STABILITY AND VOLTAGE STABILITY*

FIELD DESCRIPTION

Computer aided analysis and improvement of the stability of the electric power system (transient stability, dynamic stability and voltage stability). New control technique for stability improvement. Developing of the master studies in these fields.



Power Systems Optimization Laboratory

ACTIVITIES AND RESULTS

Advanced software for stability analysis.

New control techniques for the improvement of the dynamic behavior of synchronous generators PHARE postgraduate and PhD program.

RESEARCH BENEFICIARIES

Ministry of Education and Research, National Power Transmission Company – Transelectrica.

RESEARCH TEAM

- Prof. dr. eng. Stefan KILYENI
- Prof. dr. eng. Ştefan PREITL
- Prof. dr. eng. Bucur LUŞTREA
- Prof. dr. eng. Mihai MOGA
- Prof. dr. eng. Radu Emil PRECUP
- Lect. dr. eng. Ioan BORLEA
- As. dr. eng. Constantin BĂRBULESCU
- As. dr. eng. Dan JIGORIA-OPREA
- Phd. Student Dan CRISTIAN
- Phd. Student Florin SOLOMONESC

RESEARCH OFFERS

Software for stability analysis and improvement
Studies concerning dynamic behavior of power systems.
Advanced control techniques for transient and voltage stability improvement.

Researches in *APPLIED NON-LINEAR MODELING OF FERROMAGNETIC MATERIALS*

FIELD DESCRIPTION

The modeling of non linear transformer iron core considered the hysteresis loop. Modeling methods for establishment and validation. Estimation of the transformer behavior under symmetrical (sinusoidal and non-sinusoidal) and asymmetrical supply conditions. Analyses the main quantities. Iron core losses harmonic analyses.

ACTIVITIES AND RESULTS

Measurements were performed in the "National Research Center for Welding and Material Trials-ISIM" and the "Power Energy Department" laboratories. A complex digital system was used for data acquisition and harmonics analyze of the

transformer currents and tension for different supply conditions. The proposed transformer model was implemented into a welding machine and validated (comparison between the simulated and the measured results showed a very good agreement). Simulations were performed over in order to estimate the welding performances over a wide range of condition defined through: different firing pulse angle, materials, forms and thickness of welding pieces.

RESEARCH BENEFICIARIES

National Research Center for Welding and Material Trials-ISIM, Timisoara, Power Energy Department of the "Politehnica" University of Timisoara, ICPE Bucharest - manufacturer of the welding transformer under test.

RESEARCH TEAM

- Assoc. prof. dr. eng. Doru VĂTĂU
- Lect. eng. dr. Flaviu FRIGURĂ

RESEARCH OFFER

Modeling single-phase transformers and equipments with ferromagnetic core.
Estimation of electromagnetic quantities: time variation shape, r.m.s., peak values, harmonic analyze over a wide range of conditions.

Time and frequency analysis of electromagnetic quantities.
Behavioral analysis of a complex system containing a transformer or an apparatus.
Iron core power losses detailed analysis.

Researches in ELECTRICAL SUBSTATIONS AND POWER PLANTS

FIELD DESCRIPTION

Constructive solutions optimization used for electrical equipments and installations in electrical substations, operating principles and general characteristic optimization for the reliability and system management improvement.
Specific problems of planning for the electrical network operating control and command.

ACTIVITIES AND RESULTS

Solutions for the electrical substation auxiliaries supplying from the 220/110 kV autotransformer tertiary. Development of an expert system which offer informational support for substation operating recovery, which following a failure, that monitor continually all functions needed by protection and control and which come in to support for operating personnel.

RESEARCH TEAM

- Prof. dr. eng. Petru GHEJU
- Prof. dr. eng. Vasile DUŞA
- Prof. dr. eng. Bucur LUŞTREA
- Lect. dr. eng. Ioan BORLEA
- Lect. dr. eng. Ilona BUCATARIU
- Dr. eng. Florin MOLNAR-MATEI
- Dr. eng. Alexandru BĂLOI

RESEARCH OFFERS

The opportunity analysis of the implementation intelligent systems needed for filtering, cataloguing and store of the information provided from the protection and control systems in the electrical substations for substation remote control.

Researches in *ENERGY MANAGEMENT*

FIELD DESCRIPTION

Energy audit, energy management are the only means for sustainable energy use and best economical performance in entire society.

ACTIVITIES AND RESULTS

Measurements audit were made in substations for "Transelectrica" National Transmission Company. Were realized feasibilities studies for new solutions in auxiliary services supplying and for public lightning systems energy efficiency improvement.

RESEARCH BENEFICIARIES

National Agency of Scientific Research, Timisoara, Lugoj City Councils, National Power Transmission Company – Transelectrica, Politehnica University from Timisoara.

RESEARCH TEAM

- Prof. dr. eng. Flavius Dan ŞURIANU
- Assoc. prof. dr. eng. Gheorghe VUC
- Assoc. prof. dr. eng. Dan NICOARA
- Assoc. prof. dr. eng. Alexandru HEDES

RESEARCH OFFERS

Feasibility studies for energy efficiency projects, energy audits, energy policies advising.

PUBLICATIONS

BOOKS

1. Delesega I., *Echipamente programabile. Teorie si aplicatii în ingineria energetică*, Edit. Orizonturi Universitare Timişoara, 2010, ISBN 978-973638-459-2.
2. Surianu F.D., *Modelarea şi identificarea elementelor sistemului electroenergetic*, Manual pentru studenți, Edit. Orizonturi Universitare Timişoara 2010, ISBN 978-973-638-457-8.
3. Kilyeni Șt., Bărbulescu C-tin., *Metode numerice. Algoritme, programe de calcul, aplicatii in energetica. Lucrari practice*, Manual pentru studenți, Editura Orizonturi Universitare, Timisoara 2010, ISBN 978-973-638-376.
4. Kilyeni Șt., Bărbulescu C-tin., *Tehnici de optimizare in ingineria energetica. Lucrari practice*, Manual pentru studenți, Editura Orizonturi Universitare, Timisoara 2010, ISBN 978-973-638-375-5.
5. Lustrea B., *Conversia energiei si analiză energetică. Elemente fundamentale*, Manual

pentru studenți, Edit. Orizonturi Universitare, Timisoara 2010, ISBN 978-973-638-401-1.
6. Molnar-Matei F., *Contribuții privind analiza golurilor de tensiune din rețelele electrice în aprecierea calității energiei electrice*, Teză de doctorat, Edit. Politehnica, Timisoara 2010, ISBN 978-606-554-051-4.
7. Jigoria-Oprea D., *Integrarea surselor regenerabile de energie în sistemele electroenergetice actuale*, Teză de doctorat, Edit. Politehnica, Timisoara 2010, ISBN 978-606-554-155-9.
8. Pop D. M., *Contributii privind planificarea extinderii sistemelor electroenergetice complexe*, Teză de doctorat, Edit. Politehnica, Timisoara 2010, ISBN 978-606-554-155-2.
9. Totor N., *Analiza în domeniul timp a variatiilor de functionare a masinii asincrone de putere redusă*, Teză de doctorat, Edit. Politehnica, Timisoara, 2010, ISBN 978-606-554-155-2.

PUBLISHED PAPERS

1. Andea P., Mnerie D., Cristian D., Pop O., Jigoria-Oprea D., *Conventional vs. Alternative Energy Sources Overview Part I. Energy and Environment*, Proceedings of the IEEE International Joint Conferences on Computational Cybernetics and Technical Informatics (ICCC-CONTI 2010), pp. 595-600, ISBN 978-1-4244-7431-8.
2. Andea P., Mnerie A. V., Solomonesc F., Pop O., Cristian D. *Conventional vs. Alternative Energy Sources Overview Part II. European Strategies*, Proceedings of the IEEE International Joint Conferences on Computational Cybernetics and Technical Informatics (ICCC-CONTI 2010), pp. 601-606, ISBN 978-1-4244-7431-8.
3. Andea P., Mnerie G., Pop O., Solomonesc F., Simo A., *Conventional vs. Alternative Energy Sources Overview Part III. Perspectives in Romania*, Proceedings of the IEEE International Joint Conferences on Computational Cybernetics and Technical Informatics (ICCC-CONTI 2010), pp. 607-612, ISBN 978-1-4244-7431-8.
4. Kilyeni Șt., Pop O., Slavici T., Crăciun C., Andea P., Mnerie D., *Transmission Cost Allocation Using the Distribution Factors Method*, Proceedings of the 15th IEEE Mediterranian International Electromechanical Conference Melecon 2010, Valletta, Malta, pp. 1093-1098, ISBN 978-1-4244-5794-6.
5. Kilyeni Șt., Bărbulescu C-tin., Crăciun C., *Available Transfer Capacity Evaluation within Complex Power Systems. Theory, Software Tool and Case Study*, Proceedings of the IEEE International Joint Conferences on Computational Cybernetics and Technical Informatics (ICCC-CONTI 2010), pp. 505-510, ISBN 978-1-4244-7431-8.
6. Kilyeni Șt., Pop O., Crăciun C., Bărbulescu C-tin., Jigoria-Oprea D., *Distribution Factors with AC Power Flow for Electric Energy Transmission Cost Allocation*, Proceedings of the IEEE Inter-national Joint Conferences on Computational Cybernetics and Technical Informatics (ICCC-CONTI 2010), pp. 169-174, ISBN 978-1-4244-7431-8.
7. Vuc Gh., Bărbulescu C-tin., Kilyeni Șt., Solomonesc F., *Substation Ancillary Services Fuel Cell Power Supply. Part 2. Case Study*, Proceedings of the IEEE International Joint Conferences on Computational Cybernetics and Technical Informatics (ICCC-CONTI 2010), pp. 589-594, ISBN 978-1-4244-7431-8.
8. Pană A., Băloi Al., Molnar-Matei F., *Load Balancing by Unbalanced Capacitive Shunt Compensation–A Numerical Approach*, ICHQP 2010–14th International Conference on Harmonics and Quality of Power, 26-29 September 2010, Bergamo, Italy, paper ID 605, ISBN 978-1-4244-7245-1.
9. Vătau D., Andea P., Frigura-Iliasa F.M., Surianu F.D., Kilyeni A., Bărbulescu C., *Overvoltage Protection Systems for Low Voltage and Domestic Electric Consumers*, Proceedings of the 15th IEEE Mediterranian International Electromechanical Conference Melecon 2010, Valletta, Malta, pp. 1394-1397, ISBN 978-1-4244-5794-6.
10. Borlea I., Kilyeni Șt., Bărbulescu C-tin., Cristian D., *Substation Ancillary Services Fuel Cell Power Supply. Part 1. Solution Overview*, Proceedings of the IEEE International Joint Conferences on Computational Cybernetics and Technical Informatics (ICCC-CONTI 2010), pp. 585-588, ISBN 978-1-4244-7431-8.
11. Borlea I., Vuc Gh., Jigoria-Oprea D., Kilyeni A., Bărbulescu C-tin., Slavici T., *A Rule-Based Expert System for Steady State Diagnosis of Electrical Distribution Networks*, Proceedings of the 15th IEEE Mediterranian International Electromechanical Conference Melecon 2010, Valletta, Malta, pp. 142-147, ISBN 978-1-4244-5794-6.
12. Bărbulescu C-tin., Kilyeni Șt., Mnerie D., Cristian D., Simo A., *Deregulated Power Market Congestion Management*, Proceedings of the 15th IEEE Mediterranian International Electromechanical Conference Melecon 2010, Valletta, Malta, pp. 654-659, ISBN 978-1-4244-5794-6.
13. Molnar-Matei F., Moga M., Pană A., *New Method for Voltage Sags Characteristics Detection in Electrical Networks*, MELECON 2010, The 15th IEEE Mediterranean

International Electrotechnical Conference, Malta, pp. 1612-1618, ISBN 978-1-4244-5794-6.

14. Băloi Al., Pană A., Chiosa N., *Optimal Choosing and Placing of Reactive Power Sources in an Electrical Distribution Network Harmonically Polluted*, ICHQP 2010, The 14th International Conference on Harmonics and Quality of Power, 26-29 September 2010, Bergamo, Italy, paper ID 603, ISBN 978-1-4244-7245-1.
15. Precup R.E., Mosincat I., Radac M. B., Preitl Șt., Kilyeni Șt., Petriu E., Dragos C.A., *Experiments in Iterative Feedback Tuning for Level Control of Three-Tank System*, Proceedings of the 15th IEEE Mediterranian International Electromechanical Conference Melecon 2010, Valletta, Malta, pp. 564-569, ISBN 978-1-4244-5794-6.
16. Gherman L., Șurianu F. D., Rusu-Anghel S., Mezinescu S., *Power System Harmonic Pollution Limitation Using Fuzzy Logic Controlled Active Filters*, Proceedings of The 6th International Conference on Energy, Environment, Ecosystems and Sustainable Development (EEESD), Timisoara, Romania, 21-23 October, 2010, pp. 101-108, ISBN 978-960-474-237-0.
17. Surianu F. D., Olariu A., *Technical solution to alert the working staff to the dangerous values of the currents induced in the conductors of the disconnected circuit of a double circuit overhead power line*, Universities Power Engineering Conference (UPEC), 2010 45th International, Aug. 31- Sept. 3, 2010, Cardiff, Wales, UK, pp. 1-4, ISBN 978-1-4244-7667-1.
18. Kilyeni Șt., Pop O., Andea P., Crăciun C., Bărbulescu C-tin., Solomonesc F., *Reactive power allocation within the deregulated power systems*, Proceedings of the 45th International Universities' Power Engineering Conference (UPEC2010), Cardiff, Wales, UK, ISBN 978-0-9565570-0-1.
19. Kilyeni Șt., Pop O., Prostean G., Crăciun C., *Transmission Cost Allocation Based on Power Flow Tracing Using Z Bus Matrix*, Proceedings of the 14th International Conference on Harmonics and Quality of Power (ICHQP2010), Bergamo, Italy, ISBN 978-1-4244-7245-1.
20. Vuc Gh., Borlea I., Kilyeni Șt., Bărbulescu C-tin., Jigoria-Oprea D., Olariu A., *Probabilistic approach for reference regimes development for expert systems on electrical distribution network diagnosis*, Proceedings of the 45th International Universities' Power Engineering Conference (UPEC2010), Cardiff, Wales, UK, ISBN 978-0-9565570-0-1.
21. Frigura-Iliasa F., Cristian D., Mihet-Popa L., Vătau D., *A Few Aspects Concerning the Thermal Connection of ZnO Based Varistors*, Proceedings of the 45th International Universities' Power Engineering Conference (UPEC2010), Cardiff, Wales, UK, ISBN 978-0-9565570-0-1.
22. Frigura - Iliasa F., Vătau D., Mihet - Popa L., Bărbulescu C-tin., *Heat Dissipation Improvement for ZnO Based Varistors*, Proceedings of the 14th International Conference on Harmonics and Quality of Power (ICHQP2010), Bergamo, Italy, ISBN 978-1-4244-7245-1.
23. Bărbulescu C-tin., Kilyeni Șt., Cristian D., Jigoria-Oprea D., *Congestion management using open power market environment electricity trading*, Proceedings of the 45th International Universities' Power Engineering Conference (UPEC2010), Cardiff, Wales, UK, ISBN 978-0-9565570-0-1.
24. Bărbulescu C-tin., Kilyeni Șt., Jigoria-Oprea D., Chiosa N., *Electric Substation Ancillary Services Power Consumption Analysis.Case study: Timisoara 400/220/110 kV Substation*, Proceedings of the 14th International Conference on Harmonics and Quality of Power (ICHQP2010), Bergamo, Italy, ISBN 978-1-4244-7245-1.
25. Chiosa N., Kilyeni Șt., Bărbulescu C-tin., Jigoria-Oprea D., *Power Quality Monitoring for Electric Substation Ancillary Services Supplying*, Proceedings of the 14th International Conference on Harmonics and Quality of Power (ICHQP2010), Bergamo, Italy, ISBN 978-1-4244-7245-1.
26. Chiosa N., Kilyeni Șt., Cristian D., Bărbulescu C-tin., Simo A., *Power quality monitoring for substation ancillary services*, Proceedings of the 45th International Universities' Power Engineering Conference (UPEC2010), Cardiff, Wales, UK, ISBN 978-0-9565570-0-1.
27. Prostean O., Bărbulescu C-tin., Vuc Gh., Borlea I., *Unconventional Sources for Electric Substation Ancillary Services Power Supply*, Proceedings of the 14th International Conference on Harmonics and Quality of Power (ICHQP2010), Bergamo, Italy, ISBN 978-1-4244-7245-1.
28. Molnar-Matei F., Moga M., Băloi Al., Solomonesc F., *Application Software for Analyzing Unbalanced Voltage Sags Effects on Power System Loads*, UPEC 2010 - 45th International Universities' Power Engineering Conference, Cardiff, Wales, UK, Paper ID: 154, ISBN 978-1-4244-7667-1.
29. Coroiu F., Dondera D., Velicescu C., Vuc Gh., *Power Systems Reliability Evaluation Using Probabilistic Load Flows Methods*, 45th International Universities' Power Engineering Conference, Cardiff, Wales, UK, UPEC 2010-Cardiff, ISBN 978-0-9565570-0-1.
30. Moga M., Molnar-Matei F., Iovan M., *System Load Parameter Estimation Using Passive Experimental Tests*, Journal of Sustainable

Energy, Vol. 1, Nr. 2, pp. 67-73, ISSN 2067-5534.

31. Kilyeni Şt., Bărbulescu C-tin., Jigoria-Oprea D., Cristian D., *Software tool developed for deregulated power system analysis*, Journal of Sustainable Energy, Vol. 1, Nr. 1, pp. 87-96, ISSN 2067-5534.
32. Borlea I., Jigoria-Oprea D., Luştrea B., Vinţan M., *Knowledge base for electrical distribution networks reconfiguration*, Journal of Sustainable Energy, Vol. 1, No. 3, pp. 97-102, ISSN 2067-5534.
33. Vinţan M., Borlea I., Mihu I., *Tower ground impedance influence on AC overhead line ground fault currents*, Journal of sustainable energy, Vol. I, No. 3, 2010, pp. 12-15, ISSN 2067-5534.
34. Vinţan M., Mihu I., Borlea I., *Coupling factor influence on AC overhead line ground fault currents*, Journal of sustainable energy, Vol. I, No. 3, 2010, pp. 6-9, ISSN 2067-5534.
35. Pop O., Kilyeni Şt., Andea P., *Power flow tracing method for electricity transmission and wheeling pricing*, Journal of Sustainable Energy, Vol. 1, No. 4, pp. 66-72, ISSN 2067-5534.
36. Bărbulescu C-tin, Kilyeni Şt., *Deregulated Power Market Analysis Tool for Congestion Management*, Energetica Bucuresti, No. 8, 371-376, ISSN 1453-2360.
37. Kilyeni Şt, Pop O., *Inter-zonal Congestion Management. Theory, Mathematical Model, Case Study*, Revista Energetica Bucuresti, No. 8, 390-395, 6 pp.

RESEARCH GRANTS

1. *Modélisation et caractérisation des propriétés thermiques dans des fluides contenant des nano inclusions anisotropes de forme différente*, A.U.F.- 301PS521, value 20.000 euro, Cord.: U.T.C.M. Sofia, Partners: U.P. Timisoara, U.P.S. Toulouse, UPT team: Vatau D., Hadjov K., Ilia I., Barbulescu C.
2. *Metode si tehnici moderne în exploatarea si protectia instalatiilor electroenergetice* (Tehimpuls) - Brokinnovoucher, RO-2006/018-446.01.01.01.25, value 15.000 euro, UPT team: Frigura Iliasa F., Vasilievici A., Delesega I.
3. *Pregatirea si instruirea personalului ce are responsabilitati de implementare si aplicare a programului de autoinstruire si autoevaluare asistata de calculator pentru personalul operational din statiile electrice*, Nr. 84/2010, value 15.369 RON, Kilyeni St., Barbulescu C., Jigoria-Oprea D., Vuc Gh., Borlea I., Kilyeni A., Cristian D., Simo A.

PATENTS

1. Surianu F. D., *Aparat pentru semnalizarea curenţilor induşi în linii electrice aeriene*, 30.03.2010, Nr. 122880/30.03.2010, OSIM.

ORGANIZED CONFERENCE

1. 3rd Applied Computing Conference (AC'10), WSEAS and UPT, ISBN 978-960-474-236-3-1792-5908, www.wseas.org, Kilyeni Şt.
2. 12th Mathematical Methods and Computational Techniques in Electrical Engineering Conference (MMCTEE '10), WSEAS and UPT, ISBN 978-960-474-238-7 1792-5967, www.wseas.org, Kilyeni Şt.
3. 6th Energy, Environment, Ecosystems and Sustainable Development Conference (EEESD'10), WSEAS and UPT, ISBN 978-960-474-237-0 1792-5924, www.wseas.org, Kilyeni Şt.
4. 3rd Landscape Architecture Conference (LA'10), WSEAS and UPT, ISBN 978-960-474-237-0 1792-5940, www.wseas.org, Kilyeni Şt.

CONTACT

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