FACULTY OF ELECTRICAL AND POWER ENGINEERING

2 Vasile Pârvan Blv.
300223 – Timişoara, Romania
Tel: +40-256-403381 **E-mail: decanat@et.upt.ro**
Fax: +40-256-403384 **Web: www.et.upt.ro**

DEPARTMENT OF ELECTRIC MACHINES, DRIVES, ELECTRICAL LIGHTING AND ELECTROTECHNOLOGIES

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.

- Logic of the creative process (LCP)

Keywords: logicization, algorithmization, cybernettization, inventics, innovation.

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
- Lect. dr. eng. Lucian Miheţ - POPA
- Ph.D. Student Răzvan ANCUŢI
- Ph.D. Student Marius FĂTU
- Ph.D. Student Sorin AGARLIŢĂ
- Ph.D. Student Lucian CIBU
- Ph.D. Student Codruţa PAICU
- Ph.D. Student Vlad GRĂDINARU
- Ph.D. Student Robert ANTAL
- Ph.D. Student Alin ŞTIRBAN
- Ph.D. Student Liviu IEPURE

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

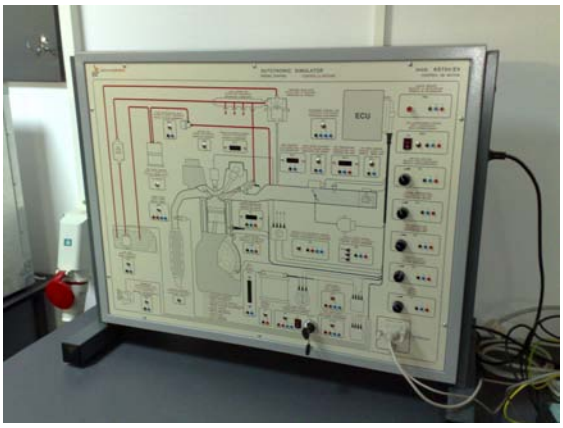
Switched reluctance motor (SRM) is a position-controlled power stepper motor with a very rugged topology and low costs but requires a specific static power converter and digital controller. Numerous potential applications in harsh environments look adequate for this kind of drive which drew world - wide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

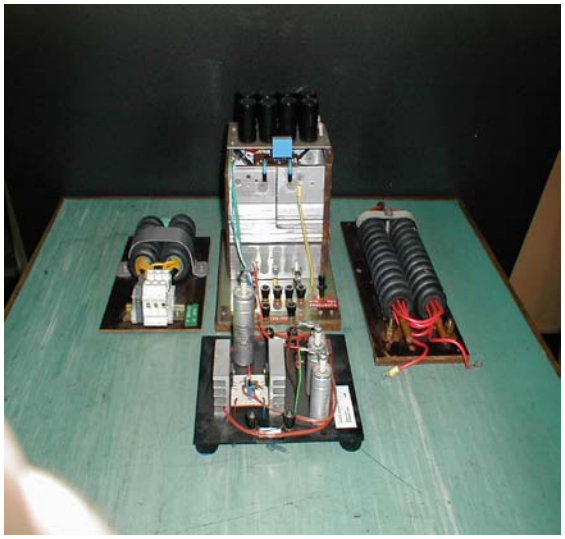
Ministry of Research, ISIM Timişoara

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

BOOKS

1. Babescu, M., *Surse statice de energie electrică*, Editura Politehnica, ISBN 978-973-625-427-7
2. Miheţ-Popa, L., *Modelare şi Simulare în MATLAB & Simulink cu aplicaţii în Inginerie Electricã*, Editura Politehnica, ISBN 978-973-625-439-0
3. Miheţ-Popa, L., *Wind Turbines using Induction Generators connected to the grid*, (monography), Editura Politehnica, ISBN 978-973-625-533-5

PUBLISHED PAPERS

1. Lascu, C., Asiminoaei, L., Boldea, I., Blaabjerg, F. *High Performance Current Controller for Selective Harmonic Compensation in Active Power Filters,* Power Electronics, IEEE Transactions 2007, ISSN 0885-8993
2. Babău, R.., Boldea, I.., Miller, T.J.E., Muntean, N. *Complete Parameter Identification of Large Induction Machines From No-Load Acceleration–Deceleration Tests*, Industrial Electronics, IEEE Transactions on Industrial Electronics, Volume 54, Number 4, August 2007, ISSN 0278-0046
3. Fahimi, B., Boldea, I. *Guest Editorial (Electric Machinery and Adjustable-Speed Motor Drives)*, Part I, Industrial Electronics, IEEE Transactions 2007, ISSN 0278-0046

4. Asiminoaei, L., Lascu, C., Blaabjerg, F., Boldea, I. *Performance Improvement of Shunt Active Power Filter With Dual Parallel Topology,* Power Electronics, IEEE Transactions 2007, ISSN 0885-8993
5. Madescu, Gh., Biriescu, M., Moţ, M., Muller, V. *Analysis of the unsymmetrical induction motor supplied by unbalanced voltage system*, Rev. Ingenierias, Abril-Junio 2007, vol. X, nr. 35, pp.48-56, Nuevo Leon, Mexico, ISSN 1405-0676
6. Fătu M., Tutelea L., Boldea I., Teodorescu R. *Novel motion sensorless control of stand alone Permanent Magnet Synchronous Generator (PMSG): harmonics and negative sequence voltage compensation under nonlinear load*, Power Electronics and Applications, 2007, European Conference, pag.1-10, ISSN 0197-2618, ISBN 978-1-4244-1260-0
7. Fătu M., Lascu C., Andreescu Gh., Teodorescu R., Blaabjerg F., Boldea I. *Voltage Sags Ride-Through of Motion Sensorless Controlled PMSG for Wind Turbines*, Industry Applications Conference, 2007, 42nd IAS Annual Meeting, Conference Record of the 2007 IEEE , pag. 171-178, ISSN 0197-2618, ISBN 978-1-4244-1260-0
8. Fătu M., Tutelea L., Teodorescu R., Blaabjerg F., Boldea I. *Motion Sensorless Bidirectional PWM Converter Control with Seamless Switching from Power Grid to Stand Alone and Back*, Power Electronics Specialists Conference, PESC 2007, IEEE, pp. 1239-1244, ISSN 0275-9306, ISBN 978-1-4244-0655-5
9. Muşuroi, S., Vătău, D., Andea, P., Şurianu, F.D., Frigură, F., Bărbulescu, C. *Analysis of the Magnetic Losses from the Induction Machines Supplied by Inverters*, EUROCON 2007, The International Conference on "Computer as a Tool", IEEE Catalog Number: 07EX1617C, ISBN 1-4244-0813-X, Library of Congress: 2006937182 Warsaw, pp. 1800-1809
10. Biriescu, M., Groza, V., Creţu, V., Proştean, O., Madescu, Gh., Moţ, M. *Computer Aided Testing of Electrical Machines*, EUROCON 2007, International Conference on "Computer as a Tool", IEEE Catalog Number: 07EX1617C, ISBN 1-4244-0813-X, Library of Congress: 2006937182, Warsaw, pag.1910-1915, ISBN 1-4244-0813-X
11. Miheţ-Popa, L., *Current Signature Analysis as Diagnosis Media for incipient fault detection*, Journal of Advances in Electrical and Computer Engineering, Vol. 7, no. 2, pp. 11-16, 2007, ISSN 1582-7445
12. Miheţ-Popa, L., *Grid connection control mode of a small variable-speed wind turbine*, Scientific Bulletin of the "Politehnica" University of Timişoara, Trans. on automatic control and computer science, vol. 3, pp. 141-146, 2007, ISSN 1224-600x
13. Miheţ-Popa, L. *Limited variable-speed generation by induction generators with passive rotor elements*, Scientific Bulletin of the "Politehnica" University of Timişoara, Trans. on mechanics, vol. 6, pp. 101-108, 2007, ISSN 1224-6077
14. Miheţ-Popa, L., *Overview of renewable energy systems-development in energy technology and trends*, Scientific Bulletin of the "Politehnica" University of Timişoara, Trans. on mechanics, vol. 6, pp. 116-122, 2007, ISSN 1224-6077
15. Miheţ-Popa, L., Nicoară, D., *Sisteme neconvenţionale de conversie a energiei-dezvoltare-tendinţe actuale*, Buletinul AGIR, nr. 3, 2007
16. Miheţ-Popa, L., Nicoară, D., *Evaluarea pierderilor într-un sistem de conversie a energiei eoliene cu viteză variabilă*, Buletinul AGIR, nr.3, 2007
17. Miheţ-Popa, L., Nicoară, D., *Principalele configuraţii ale sistemelor solare şi topologii de invertoare fotovoltaice*, Buletinul AGIR, nr.3, 2007
18. Miheţ-Popa, L., Nicoară, D., *Strategii de comandă şi control ale turbinelor de vânt de mare putere*, Buletinul AGIR, nr.3, 2007
19. Dordea, T., Hoancă, V., Păun, Şt., Liuba, Gh., Madescu, Gh., Torac, I., Moţ, M., Ocolişan, L., *Traction system with direct drive induction motor*, Scientific Bulletin of the "Politehnica" University of Timişoara, Romania, Trans. on Mechanics, ISSN 1224-6077, Tom 52(66), Fasc.7, 2007
20. Muşuroi, S., Şurianu, D.F., Svoboda, M., Sorândaru, C., *The magnetic field from the air gap of the induction machine fed through voltage inverters*, Scientific Bulletin of the "Politehnica" University of Timişoara, Trans. on Power Engineering, Tom 52(66), ISSN 1582-7194, Proc. 7th Int. Power Systems Conference, Timişoara, 22-23 November, 2007, pp. 433-438
21. Muşuroi, S., Şurianu, D.F., Şorândaru, C., *Modelling and simulation of a vectorial leading system of the induction machine with speed control*, Scientific Bulletin of the "Politehnica" University of Timişoara, Trans. on Power Engineering, Tom 52(66), ISSN 1582-7194, Proc. 7th International Power Systems Conference, Timişoara, 22-23 November, 2007, pp. 439-444
22. Şorândaru, C., Svoboda, M., Muşuroi, S., Popovici, D., *Electrical drive systems with vectorial control for the induction motors*

implemented on naval mechanisms, Scientific Bulletin of the "Politehnica" University of Timişoara, Trans. on Power Engineering, Tom 52(66), ISSN 1582-7194, Proc. 7th Int. Power Systems Conference, Timişoara, 22-23 November, 2007, pp. 609-614

23. Svoboda, M., Şorândaru, C., Popovici, D., Mușuroi, S., *Numerical command for the drive of a rolling crane*, Scientific Bulletin of the "Politehnica" University of Timişoara, Trans. on Power Engineering, Tom 52(66), ISSN 1582-7194, Proc. 7th International Power Systems Conference, Timişoara, 22-23 November, 2007, pp. 621-626
24. Miheţ-Popa, L., Boldea, I. *Control strategies for large wind turbine applications*, Journal of Electrical Engineering, www.jee.ro, Vol.7, Edition 3, ISSN 1582-4594
25. Muntean, N., Hedeş, A., Scridon, S., Babău, R. *Variable Speed Drives Structures and Benefits in Cooling Tower Fans*, Applications WSEAS Transaction on Systems, vol. 6, no. 4, pp. 110-116, ISSN 1109-2777
26. Muntean, N., Hedeş, A., Scridon, S. *Harmonic Analysis Study of an Industrial Power System with High Power Adjustable Speed Drives*, WSEAS Transaction on Systems, vol. 6, no. 4, pp. 117-122, ISSN 1109-2777
27. Miheţ-Popa, L., Proştean, O., Szeidert, I., *A comprehensive labaratory system for monitoring and detection of electrical drives systems*, PES, Nis-Serbia, 2007, pp. 102-108, ISBN 978-86-85195-43-8
28. Miheţ-Popa, L., Proştean, O., Szeidert, I., Filip, I., Vasar, C., *Fault Detection Methods for frequency converters fed induction machines* , ETFA, Patras, Greece, 2007, pp. 161-168, ISBN 1-6244-0826-1
29. Miheţ-Popa, L., Groza, V., Proştean, O., Szeidert, I., *Variable-speed wind turbines using cage-rotor induction generators connected to the grid*, EPC, Montreal, Canada, 2007, pp. 271-279
30. Cornea, O., Şorândaru, C., *Digital control of a 6/4 switched reluctance motor using Dspace 14th international symposium on power electronics*, Ee 2007, 7-9 nov., Novi-Sad, Paper No. T4-1.1, ISBN 978-86-7892-067-7
31. Hedeş, A., Munten, N., Boldea, I., *Automatic Control System of a Synchronous Motor Excitation*, 14th International Symposium on Power Electronics, Novi Sad, Serbia, 2007, Paper No. T4-1.6, ISBN 978-86-7892-067-7
32. Mușuroi, S., Madescu, Gh., Moţ, M., Greconici, M., *The Analysis of the Skin Effect in the Deep Bars of the Rotors of the Induction Motors Supplied by Inverters*, Proceedings 8th International Conference on Applied Electromagnetics PES 2007, Nis, Serbia, 3-5 September, 2007, Book of Abstracts, pp. 111-112, ISBN 978-86-85195-43-8
33. Madescu, Gh., Biriescu, M., Greconici, M., Mușuroi, S., Moţ, M., *Field Analysis of Induction Machine Using Two Different Models*, Proceedings International Aegean Conference on Electrical Machines and Power Electronics&Electromotion, Bodrum, Turkey, 10-12 September, 2007, pp. 616-620, ISBN 978-975-93410-2-2
34. Svoboda, M., Greconici, M., Şorândaru, C., Mușuroi, S., *Intelligent Control of the Permanent Magnet Synchronous Machine*, 14th International Symposium on Power Electronics, Ee 2007, Novi Sad, Serbia, 7-9 November, 2007, Paper No. T4-1.7, ISBN 978-86-7892-067-7
35. Miheţ-Popa, L., Szeidert, I., Vasar, C., *2 MW Active Stall Controlled Wind Turbines versus Pitch Controlled Wind Turbines*, ELS Suceava, pp. 121-126, ISBN 978-973-666-259-1
36. Mușuroi, S., Svoboda, M., Şorândaru, C., Cornea, O., Popovici, D., Atanasiu, Gh., *Deep bar effects produced by PWM power supplies in induction machines: application to rotor parameters determination*, ELS 2007, International symposium on electrical engineering and energy convertors, 27-28 sept., Suceava, Romania, pp. 191-195, ISBN 978-973-666-259-1
37. Cornea, O., Mușuroi, S., Şorândaru, C., *Experimental determination of the moment of inertia for switched reluctance motors*, ELS 2007, International symposium on electrical engineering and energy convertors, 27-28 sept., Suceava, Romania, pp. 165-168, ISBN 978-973-666-259-1
38. Şorândaru, C., Mușuroi, S., *Low cost data acqisition setup for electrical machines laboratory*, 15th IMEKO TC-4 International symposium on noveltinness in electrical measurements and instrumentation, 3rd technical instrumentation in next-generation grids, Iaşi, 2007, pp. 659-664, ISBN: 978-973-667-260-6, 978-973-667-260-0
39. Boldea, I., Agarliţă, S., Tutelea, L., Marginetti, F., *Novel linear PM valve actuator: FE design and dynamic model*, Record of LDIA, 2007, pp. 152-153, ISBN 978-2-915913-21-7
40. Boldea, I., Babak, F., *Control issues in adjustable speed drives: a review*, Record of LDIA, 2007, pp. 154-158, ISBN 978-2-915913-21-7
41. Pănoiu, M., Pănoiu, C., Şora, I., Osaci, M., *Simulations results on the reactive compensation process on electric arc furnace*

using PSCAD-EMTDC, International Journal of Modelling, Identification and Control, vol. 2, nr. 3, 2007, pp. 250-257, ISSN 1746-6172

42. Pănoiu, M., Pănoiu, C., Şora, I., Osaci, M., Muscalagiu, I., *Modeling simulating and experimental validation of the AC electric arc in the circuit of three phase electric furnaces,* EUROSIM 2007 Congress, Sept. 2007, Ljubljana, Slovenia, CD-Rom, 10 pages, ISBN 987-33-901608-32-2
43. Pănoiu, M., Pănoiu, C., Şora, I., Osaci, M., *Using a model based on linearization of the current-voltage characteristic for electric simulation*, 16th IASTED International Conference on Applied Simulation and Modelling, ASM 2007, Palma de Mallorca, Spain, August 2007, pp. 99-103, ISBN 978-0-88986-687-4
44. Pănoiu, M., Pănoiu, C., Şora, I., *Modeling of three electric arc furnaces,* Acta Electrotehnica, vol. 48, nr. 2, pp. 124-132, 2007, ISSN 1841-3323
45. Pănoiu, M., Pănoiu, C., Şora, I., Osaci, M., *About the possibility of power controlling in the three phase electric arc furnaces using PSCAD-EMTDC simulation program,* Advances in Electrical and Computer Engineering, vol. 7, nr. 1 (27), 2007, ISSN 1582-7446
46. Nicoară, D., Hedeş, Al., Şora, I., Deliu, M., Oancă, O., *Experimental investigation of the harmonic pollution provided by electric discharge lamps in distribution networks,* Conference – Illumination 2007, Cluj-Napoca, May 2007, pp. 28/1-28/5, ISBN 978-973-713-177-5

RESEARCH GRANTS

1. Popovici, D., Muşuroi, S., Şorândaru, C., Svoboda, M., *Vector Control Systems for Naval Electric Drives*, CNCSIS 365, 2006-2007
2. Tutelea, L., *Actionări electrice noi pentru refrigerare - creşterea eficienţei energetice cu cost redus,* Theme 18, Cod 357, CNCSIS
3. Boldea I., Muntean N., Tutelea L., *Tehnologii noi de actuatoare electrice pentru automobile*, CEEX X2C33
4. Biriescu, M., Madescu, Gh., Moţ, M., *Optimizarea funcţionării hidrogeneratoarelor electrice prin modernizarea sistemelor de excitaţie în vederea creşterii eficienţei energetice şi competitivităţii lor*, PNCDI 2, nr. 21028
5. Şora, I., *Centrul virtual pentru tehnologii integrate cu aplicaţii ale energiei electroultraacustice în ingineria materialelor avansate*, Project P-CD M1-C2-2235, CEEX „ULTRATECH”, Subcontract 10612/2007
6. Şora, I., *Nanomateriale cu porozitate controlată şi proprietăţi magnetice şi optice dirijate, obţinute prin metoda sol-gel şi sonosinteză, cu potenţial aplicativ în protecţia mediului, biologie şi medicină*, Project PC-D04-PT04-320, CEEX "NANOBIOMED", Subprogram 9/ Contract 38/2005, Subcontract 1198/B, phase 2007, Director Savii Cecilia
7. Şora, I., *Nanoparticule pe bază de fier şi oxid de fier pentru nanofluide magnetice: preparare, caracterizare şi aplicaţii*, Project P-CD CEEX „Fe-MANANOF”/ Contract 11711/2005, phase 2007, Director Vekas Ladislau

PhD THESIS DEFENDED

1. Olărescu V., *Sisteme de acţionări electrice performante ce utilizează maşina sincronă cu magneţi permanenţi în comutaţie statică*, PhD supervisor: Prof.dr.eng. Gh. Atanasiu
2. Cornea, O., *Strategii de comandă a motorului sincron cu reluctanţă variabilă şi comutaţie secvenţială în acţionări electrice*, PhD supervisor: Prof. dr. eng. Gh. Atanasiu
3. Bobăianu A., *Optimizarea maşinilor de inducţie cu rotorul în scurtcircuit cuplate cu convertoare*, PhD supervisor: Acad. Toma Dordea

CONTACT

Prof.dr.eng. Dorin POPOVICI, Head of Department
2, Vasile Pârvan Blv.
300223, Timişoara, Romania

Tel/Fax: +40-256-403451
Tel: +40-256-403452
Email: dorin.popovici@et.upt.ro
Web: http://www.et.upt.ro

DEPARTMENT OF POWER ENGINEERING

MAIN RESEARCH FIELDS

- Electromagnetic Compatibility in Power Systems

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

- High Voltage Laboratory Tests and Quality Checking

Keywords: high voltage technique, overvoltages, testing record

- 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

Over-voltage protection equipments, using ZnO varistors

Mathematics modeling and measurements of induced voltages in two-line circuit and adjacently circuits

RESEARCH TEAM

- Prof. dr. eng. Flavius Dan ŞURIANU
- Prof. dr. eng. Viorel TITIHĂZAN
- Lect dr. eng. Ilona BUCATARIU

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 TEAM

- Prof. dr. eng. Flavius Dan ŞURIANU
- Assoc. prof. dr. eng. Viorel TITIHĂZAN
- Assoc. prof. dr. eng. Adrian PANĂ
- Lect dr. eng. Mariana TITIHĂZAN

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 Daniel DONDERA
- PhD Student Răzvan POPA

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.

RESEARCH TEAM

- Prof. dr. eng. Corneliu VELICESCU
- Prof. dr. eng. Mircea NEMEŞ
- PhD Student Daniel DONDERA
- PhD Student Răzvan POPA
- PhD Student Oana POP

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 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

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 TEAM

- Prof. dr. eng. Vasile DUŞA
- Prof. dr. eng. Petru GHEJU
- 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.

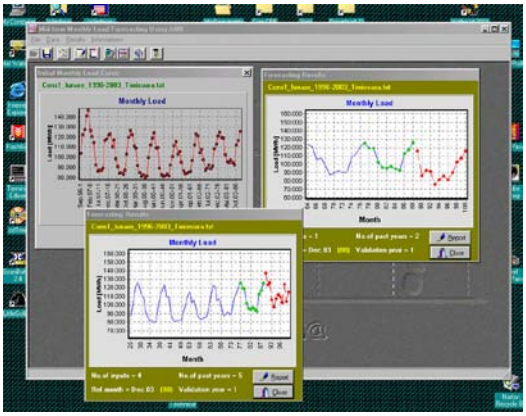
Researches in *LOAD FORECASTING*

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
- Lect. dr. eng. Ilona BUCATARIU

- PhD Student Constantin BĂRBULESCU
- PhD Student 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. Mircea NEMEŞ
- Prof. dr. eng. Corneliu VELICESCU
- Assoc. prof. dr. eng. Gheorghe VUC
- Assoc. prof. dr. mat. Doru PĂUNESCU
- Eng. Oana POP

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 TEAM

- Prof. dr. eng. Stefan KILYENI
- Prof. dr. eng. Mircea NEMEŞ
- 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
- Phd. Student Constantin BĂRBULESCU
- Phd. Student Dan JIGORIA-OPREA

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 TEAM

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

RESEARCH OFFERS

Modeling single-phase transformers and equipment 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 DUȘA
- Prof. dr. eng. Bucur LUȘTREA
- Lect. dr. eng Ioan BORLEA
- Lect. dr. eng Ilona BUCATARIU
- Phd. Student Florin MOLNAR-MATEI
- Phd. Student 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 TEAM

- Prof. dr. eng. Flavius Dan ȘURIANU
- 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. Șurianu, F.D., *Electrical energy consumers*, Orizonturi Universitare Publishing House, Timişoara, 2007, ISBN 978-973-638-339-7
2. Moga, M., *Microcontroller Systems for Data Acquisition*, UPT Publishing House, 2007

PUBLISHED PAPERS

1. Chiosa, N., Pantazi, N., Luştrea, B., Borlea I., Bărbulescu C., Păunescu D.M., *Synchrophasor measurement system implementation in the National Power System – essential aspects*, Scientific Bulletin of the "Politehnica" University of Timisoara, Trans. on Power Systems, Tom 52(66), Proceedings 7th Int. Power Systems Conference, Timişoara, 22-23 November 2007, pp. 157-166, ISSN 1582-7194
2. Chiş, V, Velicescu, C., *Modeling and simulation of metal oxide surge arrester*, Scientific Bulletin of the "Politehnica" University of Timisoara, Trans. on Power Systems, Tom 52(66), Proceedings 7th Int. Power Systems Conference, Timişoara, 22-23 November 2007, pp. 171-176, ISSN 1582-7194
3. Chiş, V, Vuc, G., *Arc modeling using Simpowersystems*, Scientific Bulletin of the "Politehnica" University of Timisoara, Trans. on Power Systems, Tom 52(66), Proceedings 7th Int. Power Systems Conference, Timişoara, 22-23 November 2007, pp. 177-182, ISSN 1582-7194
4. Deleşega, I., *Power apparatuses integration in distribution networks*, Scientific Bulletin of the "Politehnica" University of Timisoara, Trans. on Power Systems, Tom 52(66), Proceedings 7th Int. Power Systems Conference, Timişoara, 22-23 November 2007, pp. 191-196, ISSN 1582-7194
5. Dondera D., Popa R., *Application of probabilistic load flow computation using the method of combined cumulants and Gram-Charlier expansion*, Scientific Bulletin of the "Politehnica" University of Timisoara, Trans. on Power Systems, Tom 52(66), Proceedings 7th Int. Power Systems Conference, Timişoara, 22-23 November 2007, pp. 239-242, ISSN 1582-7194
6. Kilyeni, Șt., Bărbulescu, C., Jigoria-Oprea, D., Chiosa, N., Ardelean, I., Pop, D., Dilertea, F.,

Reactive power balance analysis in the Western and South-Western area of the Romanian Power System, Scientific Bulletin of the "Politehnica" University of Timisoara, Trans. on Power Systems, Tom 52(66), Proceedings 7th Int. Power Systems Conference, Timişoara, 22-23 November 2007, pp. 339-346, ISSN 1582-7194

7. Kilyeni, Şt., Vuc, G., Bărbulescu, C., Jigoria-Oprea, D., *Power system analysis based on probabilistic load flow approach. Case study – Test 50 power system*, Scientific Bulletin of the "Politehnica" University of Timisoara, Trans. on Power Systems, Tom 52(66), Proceedings 7th Int. Power Systems Conference, Timişoara, 22-23 November 2007, pp. 347-356, ISSN 1582-7194
8. Nemeş, M., Păunescu, D., Vuc, G., *Assessment of hourly cost of gradual penalty tax*, Scientific Bulletin of the "Politehnica" University of Timisoara, Trans. on Power Systems, Tom 52(66), Proceedings 7th Int. Power Systems Conference, Timişoara, 22-23 November 2007, pp. 445-454, ISSN 1582-7194
9. Nemeş, M., Pop, O., *Optimal transfer in power systems*, Scientific Bulletin of the "Politehnica" University of Timisoara, Trans. on Power Systems, Tom 52(66), Proceedings 7th Int. Power Systems Conference, Timişoara, 22-23 November 2007, pp. 455-462, ISSN 1582-7194
10. Pană, A., Băloi, A., Mârza, F., *Technical considerations regarding some unconventional electrification solutions. Part I. Determination of limit length constrained by maximal admissible voltage losses*, Scientific Bulletin of the "Politehnica" University of Timisoara, Trans. on Power Systems, Tom 52(66), Proceedings 7th Int. Power Systems Conference, Timişoara, 22-23 November 2007, pp. 481-490, ISSN 1582-7194
11. Pană, A., Băloi, A., Mârza, F., *Technical considerations regarding some unconventional electrification solutions. Part II. Determining the limit lengths imposed by the sensitivity of protections*, Scientific Bulletin of the "Politehnica" University of Timisoara, Trans. on Power Systems, Tom 52(66), Proceedings 7th Int. Power Systems Conference, Timişoara, 22-23 November 2007, pp. 491-502, ISSN 1582-7194
12. Pop, O., Nemeş, M., *Power transmission allocation with network matrices*, Scientific Bulletin of the "Politehnica" University of Timisoara, Trans. on Power Systems, Tom 52(66), Proceedings 7th Int. Power Systems Conference, Timişoara, 22-23 November 2007, pp. 527-534, ISSN 1582-7194
13. Seghier, T., Mahi, D., Vătău, D., Frigură – Iliasa, F.M., *Study by simulation the combined effect of space charge and cavities on electric field and potential distribution solid insulation containing cavities*, Scientific Bulletin of the "Politehnica" University of Timisoara, Trans. on Power Systems, Tom 52(66), Proceedings 7th Int. Power Systems Conference, Timişoara, 22-23 November 2007, pp. 597-602, ISSN 1582-7194
14. Seghier, T., Mahi, D., Vătău, D., Frigură – Iliasa, F.M., *Effect of temperature and relative humidity on partial discharges activity in artificial air gap embedded in high density polyethylene*, Scientific Bulletin of the "Politehnica" University of Timisoara, Trans. on Power Systems, Tom 52(66), Proceedings 7th Int. Power Systems Conference, Timişoara, 22-23 November 2007, pp. 603-608, ISSN 1582-7194
15. Şurianu, F.D., *An apparatus for signalizing the induced currents in the disconnected circuits of double circuit h.v. overhead lines*, Scientific Bulletin of the "Politehnica" University of Timisoara, Trans. on Power Systems, Tom 52(66), Proceedings 7th Int. Power Systems Conference, Timişoara, 22-23 November 2007, pp. 615-620, ISSN 1582-7194
16. Titihăzan, V., Titihăzan, M., *Transient processes in transformers windings with impulse wave tested in Pspice medium modelling*, Scientific Bulletin of the "Politehnica" University of Timisoara, Trans. on Power Systems, Tom 52(66), Proceedings 7th Int. Power Systems Conference, Timişoara, 22-23 November 2007, pp. 649-654, ISSN 1582-7194
17. Vasilievici, A., Dziţac, S., *Modeling the magnetic field with finite element. Calculation of Lorentz force*, Scientific Bulletin of the "Politehnica" University of Timisoara, Trans. on Power Systems, Tom 52(66), Proceedings 7th Int. Power Systems Conference, Timişoara, 22-23 November 2007, pp. 697-704, ISSN 1582-7194
18. Vasilievici, A., Gal, S., Bălaşiu, F., Stănescu, C., *Power quality permanent monitoring system at the interface between transmission and distribution grid*, Scientific Bulletin of the "Politehnica" University of Timisoara, Trans. on Power Systems, Tom 52(66), Proceedings 7th Int. Power Systems Conference, Timişoara, 22-23 November 2007, pp. 705-708, ISSN 1582-7194
19. Ardelean, I., Bărbulescu, C., Vuc, G., Borlea, I., Kilyeni, Şt., *Technical and financial feasibility of using fuel cells as back up source*

in a power system substation, CNEE 2007 Sinaia, 7-8 November 2007, pp. 1032-1039, ISSN 1843-6005

20. Frigură-Iliasa, M., Frigură-Iliasa, F.M., *New Manufacturing Technology Developed for ZnO Based Varistors Applied in Telecommunications*, Proceedings 9th Int. Symposium "Young People and Multidisciplinary Research", Timişoara, 15-16 November 2007, pp. 85-90, ISSN 1843-6609
21. Frigură-Iliasa, M., Frigură-Iliasa, F.M., *An Original Algorithm Used to Design Low Voltage ZnO Based Varistors*, Proceedings 9th International Symposium "Young People and Multidisciplinary Research", Timişoara, 15-16 November 2007, pp. 91-94, ISSN 1843-6609
22. Frigură – Iliasa, F.M., Bărbulescu, C., Kilyeni, Şt., Vătău, D., *Optimization of Power Equipment Operating Conditions*, Electronic Multi-Topic Journal of International Research Publications, Volume 2, Issue Technomat and Infotel, "Materials, Methods and Technologies", June 2007, ScienceBg Publishing Burgas, Science Academy of Bulgaria, pp. 44-53, ISSN 1311-8978
23. Frigură – Iliasa, F.M., Bărbulescu, C., Kilyeni, Şt, Vătău, D., *Computer Program Developed in DELPHI Environment for Electrical Overhead Lines Optimal Realizing*, Electronic Multi-Topic Journal of International Research Publications, Volume 2, Issue Technomat and Infotel, "Materials, Methods and Technologies", June 2007, ScienceBg Publishing Burgas, Science Academy of Bulgaria, pp. 66-78, ISSN 1311-8978
24. Pană, A., Băloi, A., Molnar-Matei, F., *Experimental Validation of Power Mechanism for Load Balancing Using Variable Susceptances in Three Phase Four Wire Distribution Networks*, EUROCON 2007, International Conference on "Computer as a Tool", Warsaw, Poland, 09-12 September 2007, Library of Congress: 2006937182, pp. 1567-1572, ISBN 1-4244-0813-X
25. Pană, A., Băloi, A., Molnar-Matei, F., *Application of the State Variables Method on Quickly Evaluation of the Harmonic Resonance Frequencies in a Transmission Line*, EUROCON 2007, International Conference on "Computer as a Tool", Warsaw, Poland, 09-12 September 2007, pp. 1573-1578, ISBN 1-4244-0813-X, Library of Congress: 2006937182
26. Vuc, Gh., Ardelean, I., Luştrea, B., Duşa, V., Borlea, I., *Fuel Cells Solution for Auxiliary Services Backup Supply in a Power System Substation*, EUROCON 2007, International Conference on "Computer as a tool", Warsaw, September 9-12, IEEE Catalog Number: 07EX1617C, ISBN: 1-4244-0813-X, Library of Congress: 2006937182
27. Vuc, Gh., Bărbulescu, C., Kilyeni, Şt., *Power System congestion Management Using Probabilistic Load Flow*, International Scientific Conference eRA–2, Athens, 22-23 September 2007, paper A.5.3.
28. Bărbulescu, C., Bacria, V., *Examining and reducing the noise generated by some power equipment*, Proceedings of the International Conference "Research and Actual Tasks on Multidisciplinary Sciences", 6-8 June, 2007, Lozenec, Bulgaria, pp. 340-345, ISBN 978-954-91147-3-7
29. Bărbulescu, C., Kilyeni, Şt., Ceclan, A., Micu, D.D., Vuc, G., *Power Flow Calculation for ill-Conditioned Systems. Simplified Newton Method with SVD Partial Regularization*, EUROCON 2007, International Conference on "Computer as a tool", Warsaw, September 9-12, IEEE Catalog Number: 07EX1617C, pp. 1481-1484, ISBN: 1-4244-0813-X, Library of Congress: 2006937182
30. Bărbulescu, C., Kilyeni, Şt., Vuc, G., Paicu, C.M., Frigură-Iliasa, F.M., *Educational Toolbox for Optimal Management Applications in Power Engineering*, eRA-2 the Conference for the contribution of Information, Technology, to Science, Economy, Society and Education, Greece, September 2007
31. Bărbulescu, C., Vuc, G., Kilyeni, Şt., *Probabilistic Load Modelling Influences on the Load Flow. Case Study TEST25 Test Power System*, Proceedings of the International Youth Conference on Energetics 2007 (IYCE 2007), 31.V-02.VI.2007, Budapest, Hungary, pp. 175-179, ISBN: 978-963-420-908-9
32. Vuc, G., Bărbulescu, C., Kilyeni, Şt., *Transmission Network's Congestion with Probabilistic Load Model*, Proceedings of the International Youth Conference on Energetics 2007 (IYCE 2007), 31.V-02.VI.2007, Budapest, Hungary, pp.73-78, ISBN: 978-963-420-908-9
33. Bărbulescu, C., Frigură-Iliasa, F.M., Vătău, D., Kilyeni, Şt., *Structural Improvements to ZnO Based Varistors*, Proceedings of the International Youth Conference on Energetics 2007 (IYCE 2007), 31.V-02.VI.2007, Budapest, Hungary, pp. 51-54, ISBN: 978-963-420-908-9
34. Dondera, D., Popa, R., Velicescu, C., *The Multi-Area Systems Reliability Estimation Using Probabilistic Load Flow by Gramm-*

Charlier Expansion, EUROCON 2007, Warsaw, Poland; International Conference on "Computer as a tool", IEEE Catalog Number: 07EX1617C; ISBN: 1-4244-0813-X, Warsaw, Sept. 2007

35. Popa, R., Dondera, D., Velicescu, C., *The Gram-Charlier Expansion in Power System Reliability Estimation*, International Youth Conference on Energetics (IYCE 2007), 31.V-02.VI.2007, Budapest, Hungary, pp. 55-59, ISBN: 978-963-420-908-9

36. Dondera, D., Popa, R., Velicescu, C., *Monte Carlo Simulation Adequacy in Distributed Generation Systems*, International Youth Conference on Energetics (IYCE 2007), 31.V-02.VI.2007, Budapest, Hungary, pp. 60-65, ISBN: 978-963-420-908-9

37. Moga, M., Molnar, M., *Advantages of Using of the Topological Indices for the Distribution*, Networks Representation IEEE Region 8, EUROCON 2007 International Conference on "Computer as a tool", IEEE Catalog Number: 07EX1617C; ISBN: 1-4244-0813-X, Warsaw, Sept. 2007

38. Şurianu, F.D., Andea, P., Vătău, D., Frigură, F., Bărbulescu, C., Borlea, I., *Measurements and Numerical Simulation for Induced Voltages on the 220 kV Double Circuit Aerial Power Line, Having a Passive Circuit*, IEEE Region 8 EUROCON 2007 Conference, Sept. 9-12, 2007, Warsaw, Poland, pp. 2150-2153

39. Bărbulescu, C., Frigură-Iliasa, F.M., Vătău, D., Kilyeni, Şt., *Structural Improvements to ZnO Based Varistors*, Proceedings of the International Youth Conference on Energetics 2007 (IYCE 2007), 31.V-02.VI.2007, Budapest, Hungary, pp. 51-55, ISBN: 978-963-420-908-9

40. Frigură-Iliasa, F.M., Popa, C.M., Mâţiu-Iovan, L., Frigură-Iliasa, M., *The Influence of Cr2O3's Concentration on the Opening Voltage of a Metal Oxide Varistor*, Proceedings of the First International Conference „Research People and Actual Task son Multidisciplinary Sciences", Lozenec, Bulgaria, June 6-8 2007, Volume 3, pp. 136-140, ISBN 978-954-911147-3-7

41. Frigură-Iliasa, F.M., Popa, C.M., Mâţiu-Iovan, L., Frigură-Iliasa, M., *The Influence of Co3O4's Concentration on the Opening Voltage of a Metal Oxide Varistor*, Proceedings of the First International Conference „Research People and Actual Task son Multidisciplinary Sciences", Lozenec, Bulgaria, June 6-8 2007, Volume 3, pp. 141-145, ISBN 978-954-911147-3-7

42. Frigură-Iliasa, F.M., Frigură-Iliasa, M., Popa, C.M., Mâţiu-Iovan, L., *The Influence of the Baking Temperature on the Electrical Propreties of a Metal Oxide Varistor*, Proceedings of the First International Conference „Research People and Actual Task son Multidisciplinary Sciences", Lozenec, Bulgaria, June 6-8 2007, Volume 3, pp. 146-150, ISBN 978-954-911147-3-7

43. Frigură-Iliasa, F.M., Munteanu, F., Frigură-Iliasa, M., Popa, C.M., *Some Aspects Concerning the Chemical Composition of a Low Voltage Metal Oxide Varistor*, Proceedings of the 9th International Symposium on Interdisciplinary Regional Research, ISIRR-2007, Novi Sad, Serbia, June 21-23, 2007, paper S5-A-O-14, ISBN 978-86-7892-042-4

44. Munteanu, F., Frigură-Iliasa, F.M., Frigură-Iliasa, M., Popa, C.M., *Some Aspects Concerning the Over-Voltage Protections for Telecommunication Equipment*, Proceedings of the 9th International Symposium on Interdisciplinary Regional Research, ISIRR-2007, Novi Sad, Serbia, June 21-23, 2007, paper S5-A-O-03, ISBN 978-86-7892-042-4

45. Munteanu, F., Frigură-Iliasa, F.M., Frigură-Iliasa, M., *New Manufacturing Technology Developed for Low Voltage ZnO Based Varistors*, Proceedings of the 5th International Conference on the Management of Technological Changes, 25-26 August 2007, Alexandroupolis, Greece, Vol. II, pp. 95-100, ISBN: 978-960-8932-0-5, 978-960-8932-2-9

46. Munteanu, F., Frigură-Iliasa, F.M., Frigură-Iliasa, M., *Tools for Computer Aided Design of High Voltage Switching Devices*, Proceedings of the 5th International Conference on the Management of Technological Changes, 25-26 August 2007, Alexandroupolis, Greece, Vol. II, pp. 101-106, ISBN: 978-960-8932-0-5, 978-960-8932-2-9

47. Frigură-Iliasa, F.M., Popa, C.M., Mâţiu-Iovan, L., Vătău, D., *A Case Study about Mass Production of a Low-Voltage Domestic Surge-Arrester*, Proceedings of the 5th International Conference on the Management of Technological Changes, 25-26 August 2007, Alexandroupolis, Greece, Vol. I, pp. 457-464, ISBN: 978-960-8932-0-5, 978-960-8932-2-9

48. Frigură-Iliasa, F.M., Popa, C.M., Mâţiu-Iovan, L., Vătău, D., *A Few Aspects Concerning the Real Time Predictive Maintenance of High Voltage Equipment*, Proceedings of the 5th International Conference on the Management of Technological Changes, 25-26 August 2007, Alexandroupolis, Greece, Vol. I, pp. 355-361, ISBN: 978-960-8932-0-5, 978-960-8932-2-9

49. Mâţiu-Iovan, L., Frigură-Iliasa, F.M., Popa, C.M., Zeng, E., *Determining the Coefficients in B-spline Interpolation by Using the Second Derivative*, Proceedings of IEEE-EUROCON 2007, International Conference on „Computer as a Tool", Warszaw, Poland, September 9-12, 2007, pp. 142-145, ISBN 1-4244-0813-X, IEEE Catalog Number: 07EX1617C, Library of Congress: 2006937182

50. Şurianu, F.D., Andea, P., Vătău, D., Frigură-Iliasa, F.M., Bărbulescu, C., Borlea, I., *Measurements and Numerical Simulation for Induced Voltages on the 220 kV Double Circuit Aerial Power Line Having a Passive Circuit*, Proceedings of the IEEE-EUROCON 2007, International Conference on „Computer as a Tool", Warszaw, Poland, September 9-12, 2007, pp. 2150-2153, ISBN 1-4244-0813-X, IEEE Catalog Number: 07EX1617C, Library of Congress: 2006937182

51. Mâţiu-Iovan, L., Frigură-Iliasa, F.M., Vătău, D., *A Method to Determine the Coefficients in B-Spline Interpolation*, Proceedings of the 5th International Conference on Electrical and Electronics Engineering, IEEE-ELECO 2007, Bursa, Turkey, 5-9 December 2007, pp. 160-163, ISBN 978-9944-89-421-0

52. Bărbulescu, C., Kilyeni, Şt., Vuc, G., Paicu, C.M., Frigură-Iliasa, F.M., *Educational Toolbox for Optimal Management Applications in Power Engineering*, Proceedings of the 2nd International Conference for the Contribution of Information and Technology to Science, Economy, Society and Education, eRA-2, Athens, 22-23 September 2007, paper A.5.4.

53. Frigură-Iliasa, F.M., Vătău, D., Bărbulescu, C., *A Few Aspects about a Fuzzy Logic Method Applied to High Voltage Switching Device Diagnosis*, Proceedings of the 2nd International Conference for the Contribution of Information and Technology to Science, Economy, Society and Education, eRA-2, Athens, 22-23 September 2007, paper B.3.5.

RESEARCH GRANTS

1. Frigură-Iliasa, F.M., *Operating performances improvement of over voltage protection equipment based on ZnO varistors for low voltage applications*, Grant CEEX, type ET, Cod 33, 2006-2008

2. Şurianu, F.D., Duşa, V., Bucătariu, I., *Study concerning the mobile short-circuits section establishment method taking into consideration the new type of protections existing in substations operated by Transelectrica*, September 2007, C.N.E.E. Transelectrica S.A., Transmission Branch Timişoara, Nr. 85/01.08.2007, Nr. UPT 726/01.08.2007

3. Şurianu, F.D., *Study concerning the mobile short-circuits section establishment method taking into consideration the new type of protections existing in substations operated by Transelectrica*, September 2007, C.N.E.E. Transelectrica S.A., Transmission Branch Timişoara, Nr. 85 / 726 / 01.08.2007

4. Vuc, G., *Network congestion probabilistic value determination in power market conditions and their allocation on network zones*, September 2007, C.N.E.E. Transelectrica S.A. 84/27.07.2007, BC 718/2007

5. Borlea, I., *Study about fuel cell compatibility with substation auxiliary services regimes*, September 2007, C.N.E.E. Transelectrica S.A., Transmission Branch Timişoara, 56/07.05.2007, BC 659/16.05.2007

6. Duşa, V., *Short circuit currents calculus in Timişoara 220 kV Substation for establish the auxiliary services supplying from AT tertiary*, September 2007, C.N.E.E. Transelectrica S.A., Transmission Branch Timişoara, UPT 613 / 06.03.2007

7. Kilyeni, Şt., *Complex power systems congestion analysis. Case study West side of the National Power System of Romania*, May 2007, C.N.T.E.E. Transelectrica S.A., Transmission Branch Timişoara, Nr. 55/07. 05.2007, Nr. UPT: BC 658/16.05.2007

8. Kilyeni, Şt., *Study concerning the operating regimes of power system operated by Transmission Branch Timişoara regarding the 400 kV expansion*, October 2007, C.N.T.E.E. Transelectrica S.A., Transmission Branch Timişoara, Nr. 130/26.11.2007, Nr. UPT, BC 790/22.11.2007

9. Bărbulescu, C., *Congestion management in an open market environment*, Scientific Research Scholarship / artistic creation for young PhD, Students, Code CNCSIS 33

PhD THESIS DEFENDED

1. Băla, C., *Contributions regarding monitoring and diagnosing electrical transformers operating parameters from electrical substations using complex data bases*, 19 Jan. 2007, Scientific supervisor: prof.dr.eng. Al. Vasilievici

2. Stănescu, C.G., *Contributions regarding the electrical energy quality monitoring at the interface between transmission network and the distribution one*, 4 May 2007, Scientific supervisor: prof.dr.eng. Al. Vasilievici

3. Munteanu, F., *Contributions regarding the over voltage protections implementation in telecommunication equipment*, 26 Oct. 2007, Scientific supervisor: prof.dr.eng. Al. Vasilievici

CONTACT

Prof. dr. eng. Flavius Dan ŞURIANU

Tel/Fax: +40-256-403411
Email: catee@et.upt.ro