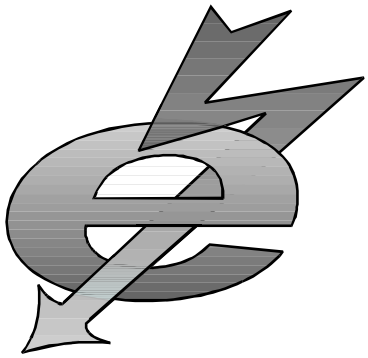
FACULTY OF ELECTRICAL AND POWER ENGINEERING



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DEPARTMENT OF ELECTROTECHNICS

MAIN RESEARCH FIELDS

- Galvanomagnetic effects studies

Keywords: transducers, circuits

- Fault analysis in medium-voltage power networks

Keywords: circuits, networks

- Numerical simulation of electromagnetic fields

Keywords: electric & magnetic field, 2D-FEM

- Technical applications of magnetic liquids

Keywords: magnetic field, forces, geometry improvement

- Magneto elastic properties of amorphous alloys

Keywords: amorphous alloys, magneto elastic properties

- Electromagnetic energy in industrial applications and electromagnetic field and high frequency waves in non homogenous medium

Keywords: electromagnetic field, energy, microwaves, laser waves

Researches in *GALVANOMAGNETIC EFECTS STUDIES*

FIELD DESCRIPTION

The domain refers to the analysis of electrical field in Hall plates and the behavior of Hall generator as a non-reciprocal circuit component. Also it refers to the determination of parameters of the Hall generator as function of the direction of magnetic induction.

ACTIVITIES AND RESULTS

We have developed computing methods of the electric field in the Hall plates. Introduction of the couple of system of transfer parameters components into the investigation has completely elucidated the problem of the Hall generator non-reciprocity, allowing for a most general formulation of the condition of non-reciprocity. They were achievement wattmeters Hall, ampermeters Hall, tesllameters Hall, and others.

RESEARCH TEAM

- Prof. doc. dr. eng. Constantin ŞORA, head of the team
- Prof. dr. eng. Ioan De SABATA
- Prof. dr. eng. Avram HELER
- Prof. dr. eng. Ioan VETREŞ
- Assist. eng. Ildiko TATAI

RESEARCH OFFERS

Consulting on the achievement of the Hall generator and for calculation of the electric field in the Hall plates

Researches in *FAULT ANALYSIS IN MEDIUM-VOLTAGE POWER NETWORK*

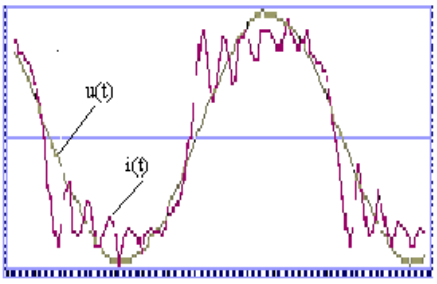
FIELD DESCRIPTION

Proper detection of line-to-ground faults in medium-voltage power network depends on the neutral-grounding system in use in the considered network. Intensive research is made, both analytical and by numerical simulation, to correctly asses the fault currents and other quantities needed for the tuning of the protective relays.

ACTIVITIES AND RESULTS

Analysis of single and double fault groundings in medium voltage power networks. Design and realization of digital relays to detect such faults in medium voltage power networks with not grounded neutral, respectively grounded via a compensation reactor. The possibility of detection of nonsimmetries in low voltage power network was also investigated, and a digital protective device to detect such regimes has been designed.

The results were published in technical journals, and the protective devices were implemented in the National Power System in the frame of three Grants namely RELANSIN, MENER and CEEX, the quality of electrical energy and the compatibility of Romanian Quality of Electrical Energy with the E.U. standards were also investigated.



Voltage and current waveform in an 110kV Power Station

RESEARCH TEAM

- Prof. dr. eng. Dumitru TOADER
- Prof. dr. eng. Ştefan HĂRĂGUŞ

RESEARCH OFFERS

Research for specifically medium voltage power network, technical advice and the digital protective devices, are offered.

Researches in *NUMERICAL SIMULATION OF ELECTROMAGNETIC FIELDS*

FIELD DESCRIPTION

The use of numerical methods for solving electromagnetic and thermal fields in technical devices: galvanomagnetic devices, electromagnets and permanents magnets systems, magnetoelastic and high DC currents transducers, electrical machines, induction heating equipments.

ACTIVITIES AND RESULTS

Optimal design of special purposes electromagnets, high sensitivity relays with permanent magnets. Analysis of the electromagnetic and thermal field in induction heating equipments.

RESEARCH TEAM

- Prof. doc. dr. eng. Constantin ŞORA
- Prof. dr. eng. Ioan De SABATA
- Prof. dr. eng. Ioan VETREŞ
- Prof. dr. eng. Dumitru RADU
- Prof. dr. eng. Ştefan HĂRĂGUŞ
- Prof. dr. eng. Ioan BERE
- Assoc. prof. dr. eng. Eugen BĂRBULESCU
- Assoc. prof. dr. eng. Dumitru IRIMIA
- Assoc. prof. dr. eng. Mariana TITIHĂZAN
- Lect. dr. eng. Constantin BLAJ
- Lect. dr. eng. Marian GRECONICI
- Assist. eng. Daniela VESA
- Prep. eng. Lucian LUCOAIE

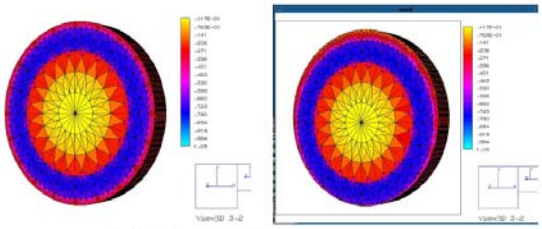
RESEARCH OFFERS

Optimal design of electromagnetic devices using numerical methods. 2D-FEM numerical analysis of electromagnetic and thermal field in inductive heating proceses. Dielectrics in high frequency electromagnetic fields.

Researches in *TEHNICAL APPLICATIONS OF MAGNETIC LIQUIDS*

FIELD DESCRIPTION

The magnetic liquids have found a large interest in technical applications such as: magneto gravimetric separation, magnetic bearings and seals, pressure and flow transducers, inclinometers, accelerometers. Most of these applications are based on the magnetic field forces, depending on the magnetic properties of magnetic liquid and the geometry of the devices. The research of our group is concerned with the adequate magnetic liquids and geometry of the devices, in order to improve their performances.



The magnetic field in a bearing with magnetic liquid.

ACTIVITIES AND RESULTS

The analytical and numerical evaluation of the magnetic force that acts on the shaft of cylindrical bearings represents the main research of the group. There has been investigated the cylindrical bearing with permanent magnetized shaft and magnetic liquid, and the cylindrical bearing with alternating poles (sandwich type structure). An approximate analytical expression of the magnetic force that acts on the shaft has been established, analyzing the influence of the geometrical design of bearing and the magnetic properties of the liquid. The analytical results have been compared with the numerical results using a 3D-FEM program.

RESEARCH TEAM

- Prof. dr. eng. Ioan DE SABATA
- Lect. dr. eng. Marian GRECONICI
- Lect. dr. eng. Barbu NICOARĂ
- Lect. dr. eng. Constantin BLAJ

RESEARCH OFFERS

Magnetic field computation for magnetofluidic devices. The evaluation of the forces and energy distrbution in magnetic liquids. Geometry design improvement of ferrofluidic devices, based on field calculation.

Researches in *MAGNETOELASTIC PROPERTIES OF AMORPHUS ALLOYS*

FIELD DESCRIPTION

Amorphous alloys with magneto elastic properties are widely used in strain, displacement, or magnetic field sensors. Those properties, as well as other physical properties, are highly influenced by the alloy's composition. Research is conducted to optimize the magneto elastic properties via the alloy's composition, with emphasis on the addition of rare-earths elements.

ACTIVITIES AND RESULTS

A two years GRANT (2004, 2005) offered by CNCSIS.

RESEARCH TEAM

- Prof. dr. Ioan MIHALEA
- Assoc. prof. dr. Aurel ERCUŢA
- Prof. dr. eng. Ştefan HĂRĂGUŞ

RESEARCH OFFERS

Strain, displacement and magnetic field sensors based on magneto elastic amorphous alloys.

Researches in *ELECTROMAGNETIC ENERGY IN INDUSTRIAL APPLICATIONS. ELECTROMAGNATIC FIELD AND HIGH FREQUENCY WAVES IN NON-HOMOGENOUS MEDIUM*

FIELD DESCRIPTION

The evaluation of electromagnetic energy in industrial application has a permanent importance, theoretical and economic. Also, the electromagnetic field and high frequency electromagnetic waves in the non-homogenous medium have numerous applications: telecommunications, industrial technology, medicine, biology, etc. Important are the theoretical aspects.

ACTIVITIES AND RESULTS

The evaluation of electromagnetic energy in rolling-mill plants and optimization of consume rate is the priority of research. The thermoelectric effects in non-homogenous medium and propagation of high frequency electromagnetic waves in different mediums are developed using advanced methods and programs, with important results.

RESEARCH TEAM

- Prof. dr. eng. Nicolae BOGOEVICI
- Prof. dr. eng. Dumitru TOADER
- Prof. dr. eng. Ştefan HĂRĂGUŞ
- Assoc. prof. dr. eng. Dumitru IRIMIA
- Lect. dr. eng. Constantin BLAJ
- Assist. eng. Ildiko TATAI

RESEARCH OFFERS

Optimization of consume rate of electromagnetic energy in rolling-mill plants. The calculation of termoelectrical effects. Propagation in mom homogenous medium of the electromagnetic waves, with the evaluation of electromagnetic energy.

RESEARCH CONTRACTS

1. GRANT 12271/12.10.2005, *New methods, ecological technologies and realization solutions in accordance with the E.U. standards, to improve the electrical energy quality*, CEEX Program, Director: prof. dr. eng. Dumitru TOADER, Value: 60,000 RON
2. GRANT 2144 / 15.10.2004, *Researches regarding the applicability in IMM of a family of equipments for measuring and recording of electromagnetical quantities*, RELANSIN IMM Program, Director: prof. dr. eng. Dumitru TOADER, Value: 7,000 RON
3. GRANT 524/29.11.2004, *Method and system for measuring and recording in real time the quantities needed to asses the quality of electrical energy for compatibility with E.U. standards*, MENER Program, Director: prof. dr.eng. Dumitru TOADER, Value: 7,200 RON

PUBLICATIONS

PUBLISHED PAPERS

1. Toader, D., Blaj, C., Greconici, M., *The transient regime of a DC relay supplied bz a chargd condenser*, Proceedings of 7th International Conference on Applied Electromagnetics, Nis, Serbia & Montenegro, 2005, pp. 63-64
2. Blaj, C., Toader, D., Iancului, D., *Consideration on the modeliyation of a device for electrostatic spinning disc atomiser*, Proceedings of 7th International Conference on Applied Electromagnetics, Nis, Serbia & Montenegro, 2005, pp. 53-54
3. Greconici, M., Blaj, C., Nicoara, B.L., *The numerical evaluation of the magnetic field produced by a rotor with alternating poles*, Serbian Journal of Electrical Engineering, vol.2, nr.2, Serbia & Montenegro, 2005, pp. 181-188
4. Barbulescu, E., Bere, I., *Simple analytical model of the magnetic characteristic of a ferromagnetic circuit in the current transformer*, Proceedings of 7th International Conference on Applied Electromagnetics, Nis, Serbia & Montenegro, 2005, pp. 51-52
5. Barbulescu, E., Bere, I., *An overview of the classical models of the magnetization characteristic*, Proceedings of 7th International Conference on Applied Electromagnetics, Nis, Serbia & Montenegro, 2005, pp. 107-108
6. Bere, I., Barbulescu, E., *Another permeability of the nonlinear and anisotropic permanent magnets and the refraction theorems in case of the magnetization main direction are orthogonal*, Proceedings of 7th International Conference on Applied Electromagnetics, Nis, Serbia & Montenegro, 2005, pp. 65-66
7. Marincu, A., Greconici, M., Musuroi, S., *The electromagnetic field around a high voltage 400 KV electrical overhead lines and the influence on the biological systems*, Facta Universitatis, YU, ISSN 0353-3670, Vol. 18, Nr. 1, Nis, Serbia & Montenegro, 2005, pp. 105-111
8. Blaj, C., Greconici, M., Toader, D., *Restoring force of magnetic liquid bearing*, 13th

International Symposium on Power Electronics Ee2005, (on CD), Novi Sad, Serbia & Montenegro, 2005, 4 pages

9. Toader, D., Buta, A., Blaj, C., s.a., *New aspects about power definition in electric circuits*, 13th International Symposium on Power Electronics Ee2005, (on CD), Novi Sad, Serbia & Montenegro, 2005, 4 pages
10. Musuroi, S., Greconici, M., Mot, M., *A direct FOC of a inverter FED induction motor*, 13th International Symposium on Power Electronics Ee2005, (on CD), Novi Sad, Serbia & Montenegro, 2005, 4 pages
11. Şora, C., *Homage to Professor Emeritus Phd Engineer Plautius Andronescu*, Scientific Bulletin of the "Politehnica" University of Timisoara, Tom 50(64), fasc.1-2, 2005, pp. 531-534
12. De Sabata, I., De Sabata, A., *Thermodynamic derivation of the expressions of the force and energy in the Maxwell-Hertz theory*, Scientific Bulletin of the "Politehnica" University of Timisoara, Tom 50(64), fasc.1-2, 2005, pp. 185-194
13. Toader, D., Hategan, I.D., Diaconu, I., Ruset, P, *The power quality improvement in the distribution systems with the resonant earthed neutral systems by means of the protection optimization*, Scientific Bulletin of the "Politehnica" University of Timisoara, Tom 50(64), fasc.1-2, 2005, pp. 591-597
14. Blaj, C., Toader, D., Greconici, M., *The influence of different magnetic materials on the performances of a bearing with magnetic liquid and alternating poles placed in the stator*, Scientific Bulletin of the "Politehnica" University of Timisoara, Tom 50(64), fasc.1-2, 2005, pp. 71-77
15. Greconici, M., Blaj, C., Musuroi, S., Vesa, D., *The electromagnetic field around a high voltage 220 KV electrical overhead lines and the influence on the biological systems*, Scientific Bulletin of the "Politehnica" University of Timisoara, Tom 50(64), fasc.1-2, 2005, pp. 261-264
16. Toader, D., Haragus, S., Blaj, C., *Analysis of broken conductor with ground contact faults in medium voltage power network*, Proceedings of National Syposium of Teoretical Electrical Engineering, SNET'05, , (on CD), Bucharest, 2005, pp. 248-254
17. Greconici, M., *The numerical evaluation of the levitation force in a hydrostatic bearing with alternating poles*, Proceedings of National Syposium of Teoretical Electrical Engineering, SNET'05, (on CD), Bucharest, 2005, pp. 152-157
18. Toader, D., Ruset, P., Diaconu, I., Pandia, T., *Aspecte noi privind tratarea neutrului reţelelor de medie tensiune*, National Symposium „Safety in the energetic system", Sinaia, Romania, 2005, 6 pages (published in Romanian)
19. Toader, D., Pandia, T., Pinte, N., Ruset, P., *Protecţia digitală pentru posturile de transformare*, National Symposium „Safety in the energetic system", Sinaia, Romania, 2005, 5 pages (published in Romanian)
20. Toader, D., Haţegan, D., Diaconu, I., Ruşet, P., *Contribuţii la creşterea siguranţei în alimentarea consumatorilor prin reţele de medie tensiune cu neutrul tratat prin bobină*, National Symposium „Safety in the energetic system", Sinaia, Romania, 2005, 6 pages (published in Romanian)
21. Buta, A., Toader D., Molnar M., Băloi A., *Aspecte noi privind definirea puterilor în reţele electrice care funcţionează în regimuri nesimetrice şi nesinusoidale*, Timis Academic Days, Symposium on Electrotechnics and Energetics, (on CD), Timişoara, 2005, 17 pages, (published in Romanian)
22. Greconici, M., *Calculul numeric al câmpului magnetic într-un lagăr magnetic cu poli alternanţi folosind MEF-3D*, Timis Academic Days, Symposium on Electrotechnics and Energetics, (on CD), Timişoara, 2005, 10 pages, (published in Romanian)

CONTACT

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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 MODELLING, SIMULATION, OPTIMAL DESIGN AND TESTING*

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 (Prof. dr. ing Ştefan Preitl)

RESEARCH TEAM

- Acad. Toma DORDEA
- Prof. dr. eng. Marius BIRIESCU
- Prof. dr. eng. Elena NICA
- Prof. dr. eng. Marius BABESCU
- Prof. dr. eng. Vladimir CREŢU
- Lect. dr. eng. Mihai MICEA
- Dr. eng. Marţian MOŢ
- Dr. eng. Gheorghe MADESCU
- Dr. eng. Ileana TORAC

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.

Testing bench of electrical machines

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

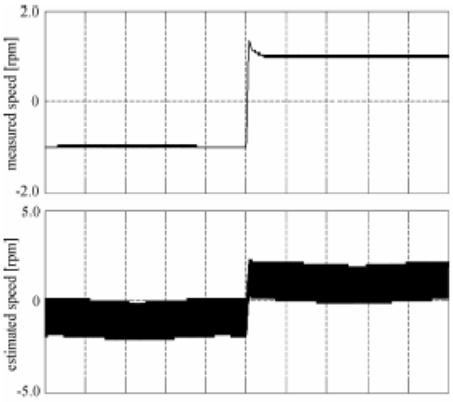
- Prof. dr. eng. Ion BOLDEA
- Assoc. Prof. dr. eng. Nicolae MUNTEAN
- Assoc. Prof. dr. eng. Lucian TUTELEA
- Assist. Prof. dr. eng. Cristian LASCU
- Assist. Prof. dr. eng. Lucian Miheţ - POPA
- PhD student Marcel Topor
- PhD student Răzvan Ancuţi
- PhD student George Iliescu
- PhD student Vasile Coroban
- PhD student Agarlita Sorin
- PhD student Cibu Lucian
- PhD student Paicu Codruta

RESEARCH OFFERS

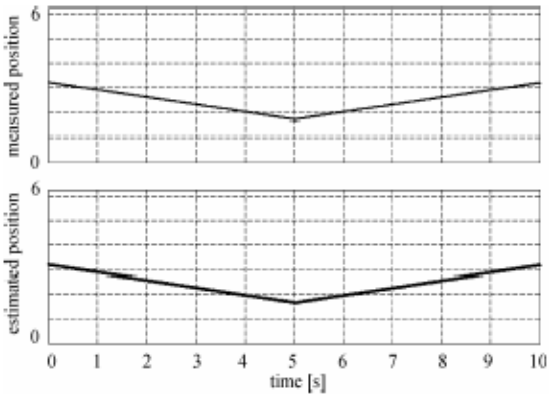
HARDWARE: Integration of intelligent motion control systems in various industries (automotive electric actuators and renewable electric energy converters are key subjects of interest) from process identification to commissioning and service. Prototyping of new systems for given specifications.

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

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



Simulation results at -1 to 1 rpm reversal speed for full load (12 Nm): measured speed, estimated speed



Simulation results at -1 to 1 rpm reversal speed for full load: measured and estimated position

INTERNATIONAL PRIZES

Boldea, I, Miheţ–Popa, L., *Second prize for the paper published in IEEE Trans. Vol. Industry Applications, USA*

CONTACT PERSON

Prof. dr. eng. Ion BOLDEA
E-mail: ion.boldea@et.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

SRM Motor

RESEARCH TEAM

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

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. Gheorghe Atanasiu
E-mail: george.atanasiu@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. Gheorghe PĂPUŞOIU
- Eng. Ioan GHIUR
- Eng. Sorin MUŞUROI
- Eng. Liviu BĂJAN

RESEARCH OFFERS

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

CONTACT PERSON

Prof. dr. eng. Eugen Seracin
E-mail: eugen.seracin@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 ultrasonics power electronics sources. A few prototypes have been built and tested.

RESEARCH BENEFICIARIES

Ministry of Research, ISIM Timişoara

RESEARCH TEAM

- Prof. dr. eng. Ioan ŞORA
- Lect. dr. eng. Dan NICOARĂ
- Lect. dr. eng. Alexandru HEDEŞ
- Assist. eng. Adriana TRĂISTARU

RESEARCH OFFERS

Low weight power electronics, including high-frequency power transformers, arc welding power sources, advanced power electronics ultrasonics sources (from research to prototyping), consulting in electrotechnologies and electric lighting devices.

HF Power transformers for electrotechnologies

NATIONAL PRIZES

Şora, I., *Anniversary Diploma of the Electrical Instalation and Automation Romanian Society (SIEAR 40)*

CONTACT PERSON

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Researches in *LOGIC OF THE CREATIVE PROCESS & CREATIVE ENGINEERING EDUCATION*

FIELD DESCRIPTION

In our days the logicization and algorithmization of creative processes constitute an important direction of development of innovation paradigm and they frames into the inventology domain following the efficientization of original technical creation. Therefore the integration of the paradigm of innovation into the engineering education is requested.

ACTIVITIES AND RESULTS

The researches concerning the complex development of inventics as a science of technical creation and as an educational discipline started in 1994 had as a result the elaboration of some general models of system concerning the object, the processuality and resources of technical creation, aimed to support the creative thinking and acting.

RESEARCH TEAM

- Prof. dr. eng. Stefan BARTZER

ACTIVITIES AND RESULTS

Efficient systemic and transdisciplinary approaches of technical creation's problems and engineering education, strategy elements and innovation tactic and technologic transfer, especially in the electrotechnical systems domain.

CONTACT PERSON

Prof dr. eng. Ştefan Bartzer
E-mail: stefan.bartzer@et.upt.ro

MAIN PUBLICATIONS

PUBLISHED PAPERS

1. Lascu, C., Boldea I., Blaabjerg, F., *Very – Low – Speed Variable – Structure of Sensorless Induction Machine Drives without Signal Injection*, IEEE Transaction – IA, vol. 41, issue 2, 2005, ISSN 0093-9994, pp. 591-598
2. Scridon, S., Boldea, I., Tutelea, L., Blaabjerg, F., Ritchie, A. E., *BEGA – A Biaxial Excitation Generator for Automobiles: Comprehensive Characterization and Test Results*, IEEE Transaction – IA, vol. 41, Issue 4, 2005, ISSN 0093-9994, pp. 935-944
3. Tutelea, L., Kim, M. C., Chun, Y. D., Kim, T. H., Lim, S. B., Ahn, J. S., Lee, J., Boldea, I., *A Set of Experiments to More Fully Characterized Linear Oscillatory Machines*, IEEE Transaction on Magnetics, vol. 41, Issue 10, 2005, ISSN 0018-9464, pp. 4009-4011
4. Dordea, T., Madescu, Gh., Torac, I., Moţ, M., Ocolişan, L., *L'optimisation des machines electriques. Elements de base*, Revue Roumain des Science Techniques, Serie Electrotechnique et Energetique, Bucharest, vol. 49, nr.4, 2004 (published in 2005), ISSN 0035-4066, pp. 495-511
5. Pitic, C.I., Andreescu, Gh.D., Blaabjerg, F., Boldea, I., *IPMSM Motion – Sensorless Direct Torque and Flux Control*, IECON 2005, Raleigh, North Carolina, pp. 1756-1761
6. Klumpner, D.I., Risticevic, M., Boldea, I., *Advanced Optimization Design Techniques for Automotive Interior Permanent Magnet Synchronous Machines*, IEMDC 2005, San Antonio, Texas, pp. 227-234
7. Marignetti, F., Delli Colli, V., Cancelliere, P., Scarano, M., Boldea, I., Topor, M., *A Fractional Slot Axial Flux PM Direct Drive*, IEMDC 2005, San Antonio, Texas, pp. 689-695
8. Miheţ–Poapa, L., Pacas, J.M., *Failure Detection in Converter Fed Induction machines under Different Operation Conditions*, IEMDC 2005, San Antonio, Texas, pp. 967-974
9. Miheţ–Poapa, L., Pacas, J.M., *Active Stall Constant Speed Wind Turbine During Transient Grid Fault Events and Sudden Changes in Wind Speed*, PCIM 2005, Nuremberg, Germany, pp. 646-651
10. Klumpner, D.I., Serban, I., Risticevic, M., Boldea, I., *High – Speed Automotive Permanent Synchronous Motors*, PCIM 2005, Nuremberg, Germany, session 5.c
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2. Boldea, I., *Electric Generators Handbook (Part 1/2 – Synchronous Generators and Part 2/2 – Variable Speed Generators)*, CRC Press, Florida, Taylor and Francis, New York, London, 0-8493-5725-X (Part1/1), ISBN 0-8493-5715-2 (Part 2/2), 1000 pages
3. Miheţ–Popa, L., Nicoară, D., *Conversia şi utilizarea energiei electrice*, Politehnica Publishing House, 2005, ISBN 973-625-254-X, 85 pages
4. Proca, V., Dordea, T., Madescu, Gh., *Transformator cu raport variabil şi reglaj fin al tensiunii în sarcină*, Ed. ICMET, Craiova, ISBN

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RESEARCH GRANTS

1. Dordea, T., *Influenţa câmpului magnetic radial din zona capetelor de bobină şi a celui din crestătură asupra coeficientului de modificare a rezistenţei electrice în curent alternativ a barelor Roebel*, Romanian Academy nr. 91/2005
2. Muntean, N., *Technical Solutions Regarding Energy Consumption and Harmonic Pollution Reduction in Variable Speed Drives with Power Electronics, CNCSIS 712, Contract no. 27688/2005*

PhD THESIS DEFENDED

1. Klumpner, Dorin–Iles, *Automotive Permanent Magnet Brushless Actuation Technologies*, PhD supervisor: Prof. dr. eng. Boldea Ion
2. Pitic, Cristian Ilie, *A Permanent Magnets Assisted Reluctance Synchronous Machine for Mild Hybrid Vehicles* , PhD supervisor: Prof. dr. eng. Boldea Ion
3. Serban, Ioan, *Contributions To The Control of Variable Speed Generators For Renewable Energy*, PhD supervisor: Prof. dr. eng. Boldea Ion
4. Tudor, Aurelian Traian, *Study of the Voltage Control Loop in the Marines Synchronous Generators External Dynamics Characteristics*, PhD supervisor: Prof. dr. eng. Novac Ioan
5. Iagăr, Angela, *Contributions Regarding Electric Heating Control and Modelling*, PhD supervisor: Prof. dr. eng. Şora Ion

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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.

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 BENEFICIARIES

RN Transelectrica S.A., Timişoara

RESEARCH TEAM

- Prof. dr. eng. Flavius Dan ŞURIANU
- Prof. dr. eng. Viorel TITIHĂZAN
- Asist. 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.

High Voltage Test Laboratory

RESEARCH BENEFICIARIES

SC Electroconstrucţia ELCO Oradea S.A., S.C. Electrica Banat Timişoara, ISIM Timişoara

RESEARCH TEAM

- Prof. dr. eng. Flavius Dan ŞURIANU
- Assoc. prof. dr. eng. Viorel TITIHĂZAN
- Prof. dr. eng. Adrian BUTA
- 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
- Prof. dr. eng. Mircea NEMEŞ
- Lect. dr. eng. Gheorghe VUC
- Eng. Oana POP

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 Daniel DONDERA
- PhD student Răzvan POPA

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
- Assist. eng. Eva ZENG
- Assist. eng. Cristian POPA

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
Electrical Power Distribution Company – Electrica
National Power Transmission Company – Transelectrica

RESEARCH TEAM

- Prof. dr. eng. Adrian BUTA
- Prof. dr. eng. Vasile DUŞA

- Prof. dr. eng. Petru GHEJU
- Assoc. prof. dr. eng. Adrian PANĂ
- Assist. dr. eng. Ilona BUCATARIU
- Assist. eng. Gabriel LIMBEAN

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

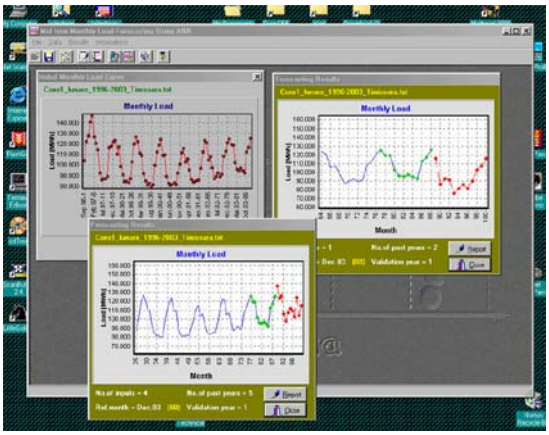
Researches in *LOAD FORECASTING*

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. Adrian BUTA
- Prof. dr. eng. Bucur LUŞTREA
- Assoc. prof. dr. eng. Adrian PANĂ
- Lect. dr. eng Ioan Borlea
- Assist. dr. eng. Ilona BUCATARIU
- Eng. Silviu COLBAN (SISE Banat)
- Eng. Gabriel LIMBEAN

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
- Lect. dr. eng. Gheorghe VUC
- Assoc. prof. dr. mat. Doru PĂUNESCU (Department of Mathematics)
- Eng. Oana POP
- Eng. Simona IOVA

RESEARCH OFFERS

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

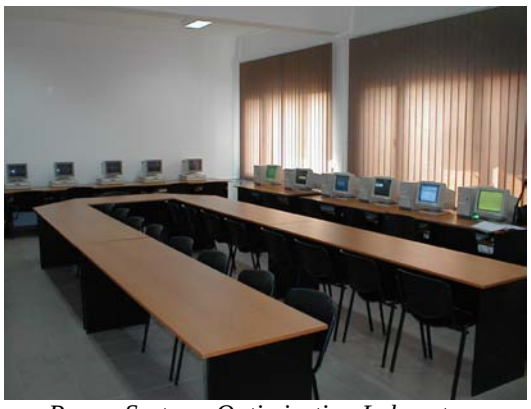
Researches in *POWER SYSTEM TRANSIENT STABILITY AND VOLTAGE STABILITY*

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.

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



Power Systems Optimization Laboratory

RESEARCH BENEFICIARIES

Ministry of Education and Research
Electrical Power Distribution Company – Electrica
National Power Transmission Company – Transelectrica

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
- Eng. Gabriel LIMBEAN
- Eng. Filip LUPEA
- Eng. Marius GROZA

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 apparatuses with ferromagnetic core
Estimation of electromagnetic quantities: time variation shape, r.m.s., peak values, harmonic analyse 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
- Assist. dr. eng. Ilona BUCATARIU
- Phd. Student Florin MOLNAR-MATEI

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.

PUBLICATIONS

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2. Luştrea Bucur, *Power system engineering basics*, Orizonturi Universitare Publishing House, Timişoara, 2005, ISBN 973-638-220-6, 167 pages (published in Romanian)
3. Velicescu Corneliu, *Energetic Systems Reliability* (Revised), Politehnica Publishing House, Timişoara, 2005, ISBN 973-9389-27-9, 265 pages (published in Romanian)
4. Velicescu Corneliu, *Production and Distribution of Electrical Energy Engineering* (Revised), Politehnica Publishing House, Timişoara, 2005, ISBN 973-9389-76-7, 246 pages (published in Romanian)

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1. Kilyeni, St., Andea, P., Groza, M., Barbulescu, C., *Optimal Compensation of Radial Networks Part I. Calculation of State Variables*, Proc. of the IEEE International Conference EUROCON 2005, Belgrade, Serbia & Montenegro, November 21-24, 2005, IEEE Catalog Number 05EX1255, ISBN 1-4244-0049-X, pp. 1513-1516
2. Kilyeni, St., Andea, P., Groza, M., Barbulescu, C., *Optimal Compensation of Radial Networks. Part II. Optimisation Problem's Solution*, Proc. of the IEEE International Conference EUROCON 2005, Belgrade, Serbia & Montenegro, November 21-24, 2005, IEEE Catalog Number 05EX1255, ISBN 1-4244-0049-X, pp. 1517-1521
3. Precup, R.E., Preitl, Zs., Kilyeni, St., *Fuzzy Control Solution for Hydro Turbine Generators*, Proc. of the 5th IEEE International Conference on Control and Automation, Budapest, Hungary, June 27-29, 2005, IEEE Catalog Number 05EX1076C, ISBN 0-7803-9138-1, pp. 83-88
4. Borlea, I., Buta, A., Duşa, V., Lustrea, B., *DIASE – Expert System Fault Diagnosis for Timisoara 220 kV Substation*, Proc. of the IEEE International Conference EUROCON 2005, Belgrade, Serbia & Montenegro, November 21-24, 2005, IEEE Catalog Number 05EX1255, ISBN 1-4244-0049-X, pp. 221-224
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6. Borlea, I., Kilyeni, St., Lustrea, B., *Knowledge Based System for Power System Static Security Assessment*, Proc. of the IEEE International Conference EUROCON 2005, Belgrade, Serbia & Montenegro, November 21-24, 2005, IEEE Catalog Number 05EX1255, ISBN 1-4244-0049-X, pp. 1116-1119
7. Balint, R., Buta, A., Molnar, F.M., *The magnetic fields particularity product of overhead lines that feeding the railway electrical stations*, 7th International Conference on Applied Electromagnetics, TIEC 2005, Nis, Serbia & Montenegro, 23-25 May 2005, Proceedings TIEC 2005, pp. 49-50
8. Frigura, F., Vătău, D., Şurianu, F.D., *An experimental Method Applied to ZnO Varistors in Order to Determine Their Voltage limits for a Certain Environment Temperature*, Proceeding 6th International Power Systems Conference, Timişoara, 3-4 Nov. 2005, ISSN 1582 - 7194, pp. 237-245
9. Frigură, F., Zeng E., Popa C, *The experimental determination of the maximum continuous operating voltage for ZnO based varistor*, Proceedings of the 8th International Simposioum ISIRR, Szeged, Hungary, 10 pages, T5-02
10. Frigură–Iliasa, M., Frigură–Iliasa, F.M., *Modern Approach to the Updating of Reşiţa's Drinking Water Plant*, Proceeding 6th International Power Systems Conference, Timişoara, 3-4 Nov. 2005, ISSN 1582 - 7194, pp. 237-245
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14. Titihăzan, V., Titihăzan, M., *Protection Zones at Lighting Rods with Auxiliar Discharge Devices*, Proceeding 6th International Power Systems Conference, Timişoara, 3-4 Nov. 2005, ISSN 1582 - 7194, pp. 587-590
15. Moga, M., *Contributions to Distributions Management System*¸ Proceeding 6th

International Power Systems Conference, Timişoara, 3-4 Nov. 2005, ISSN 1582 - 7194, pp. 261-268

16. Vasilievici, Al., Huidan, A.S., *Control, Protection and Automation Program of a Natural Gas Compressor with Electric Action,* Proceeding 6th International Power Systems, Conference, Timişoara, 3-4 Nov. 2005, ISSN 1582 - 7194, pp. 621-628
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23. Pană, A., Buta, A., *New Concept in Transfiguration of the Electrical Distribution Networks,* Proceeding 6th International Power Systems Conference, Timişoara, 3-4 Nov. 2005, ISSN 1582 - 7194, pp. 433-438
24. Dehelean, D., Delesega, I., Hrinca, I., Oancă, O., Schlett, Z., Stan, D., *Aspect on Material Processing Using Stored Energy,* Academic Journal of Manufacturing Engineering, Vol.3, Nr.1, 2005, ISSN 1583-7904, pp. 31-29
25. Delesega, I., *Computation of the Inducting Magnetic Flux Density Harmonics for the Electro-Dynamic Cryotransmission,* Proceeding 6th International Power Systems Conference, Timişoara, 3-4 Nov. 2005, ISSN 1582 - 7194, pp. 179-184.
26. Ardelean, I., Buta, A., Pană, P., *Considerations above opportunity of phases rotation on high voltage electrical lines,* XIXth National Symposium on SEN Reliability, SIG 2005, Sinaia, Romania, pp. 170-177 (published in Romanian)
27. Buta, A., Toader, D., Molnar, F.M., Băloi, A., *New aspects regarding power definition in electrical networks with non-symmetrical and non-sinusoidal regimes,* Timis Academic Days, IX edition, 26-27 May 2005, L3, pp. 17 (published in Romanian)
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30. Opincariu, D., Buta, A., Ticula, E., Ciobanu, N., *Possible Solutions to Ensure Power Quality in Supply Networks for Electrical Arc Furnaces,* Proceeding 6th International Power Systems Conference, Timişoara, 3-4 Nov. 2005, ISSN 1582 - 7194, pp. 413-420
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32. Borlea, I., Luştrea, B., Buta, A., Duşa, V., Gheju, P., *Some Aspects Concerning the Knowledge Base Development for Timişoara 220 kV Electrical Substation,* Proceeding 6th International Power Systems Conference, Timişoara, 3-4 Nov. 2005, ISSN 1582 - 7194, pp. 83-90
33. Duşa, V, Gheju, P., Buta, A., Borlea, I., Luştrea, B., *Diagnosis Rules for the Expert System DIASE,* Proceeding 6th International Power Systems Conference, Timişoara, 3-4 Nov. 2005, ISSN 1582 - 7194, pp. 217-222
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35. Groza, M., Kilyeni, St., Bărbulescu, C., *Q-V Secondary Control in Large Power Systems. Part II: Case Study*, Proceeding 6th International Power Systems Conference, Timişoara, 3-4 Nov. 2005, ISSN 1582 - 7194, pp. 275-284
36. Iova, S., Vuc, Gh., Păunescu, D., Nemeş, M., *Optimal Pattern for Next-Day Price Forecasting*, Proceeding 6th International Power Systems Conference, Timişoara, 3-4 Nov. 2005, ISSN 1582 - 7194, pp. 289-294
37. Vuc, Gh., Dezsi, Al, Ogârcin, A., *Distributed Generation. Consequences' Evaluation in Competitive Environment*, Proceeding 6th International Power Systems Conference, Timişoara, 3-4 Nov. 2005, ISSN 1582 - 7194, pp.643-652
38. Nemeş, M., Pop, O., *Congestions Cost in Transmission System and the Locational Marginal Price in Power Market Conditions*, Proceeding 6th International Power Systems Conference, Timişoara, 3-4 Nov. 2005, ISSN 1582 - 7194, pp. 377-384
39. Kilyeni, St., Groza, M., Bărbulescu, C., *Optimization Soft Library. Power engineering applications*, Proceeding 6th International Power Systems Conference, Timişoara, 3-4 Nov. 2005, ISSN 1582 - 7194, pp. 307-316
40. Precup, R.E., Preitl, Z., Preitl, St., Kilyeni, St., *Predictive Control Solution for Hydro Turbine Generators*, Proceeding 6th International Power Systems Conference, Timişoara, 3-4 Nov. 2005, ISSN 1582 - 7194, pp. 475-482
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42. Nemeş, M., Vuc, Gh., Păunescu, D., Pop, O., *The power system structure changes in energy market conditions* (published in Romanian), Timis Academic Days, IX edition, 26-27 May 2005, CD, 8 pages

RESEARCH PROJECTS / CONTRACTS

1. Contract BC 149/2004, *Testing Bulletin* 05 / 2005, Beneficiary: Airport, Directors: V. Titihăzan, Fl. Surianu, M. Titihăzan, Value: 280 RON
2. Contract BC 221/2005, *Testing Bulletin* 01 / 2005, Beneficiary: ISIM-SSVM, Directors: V. Titihăzan, M. Titihăzan, Value: 300 RON
3. Contract BC 268/2005, *Testing Bulletin* 02 / 2005, Beneficiary: SudExpert - IRS, Directors V. Titihăzan, M. Titihăzan, Value: 300 RON
4. Contract BC 335/2005, *Testing Bulletin* 03 / 2005, Beneficiary: Incert Timiş - HDPE, Directors: V. Titihăzan, M. Titihăzan, Value: 200 RON
5. Contract 94/2004 – AD1/2005, *Translations and technical documentation for high voltage power stations rehabilitation*, Beneficiary: CN Transelectrica S.T. Timişoara, Director: M. Moga, Colab. B. Luştrea, I. Borlea, G. Vuc, A. Pană, I. Bucatariu, P. Bîca, St. Kilyeni, Value: 5,000 RON
6. Contract 53/04.07.2005 – BC287/28.06.2005, *Measuring of the inducted tension in LEA 229 kVd.c. and in parallel to LEA 110 kV*, Beneficiary: CN Transelectrica S.T. Timişoara, Director: Şurianu F.D., Value: 27,000 RON
7. Contract 80/27.09.2005 – BC324/2005, *Study regarding the possibility to realize a device for warning personnel regarding the presence of magnetic field due to hight voltages*, Beneficiary: CN Transelectrica S.T. Timişoara, Director: Şurianu F.D., Value: 13,000 RON
8. Contract 257/12.03.2005, *Opportunity study regarding the concession of public lighting in the view of maintenance, extension and modernisation of the public lighting system in Timişoara, North Area*, Beneficiary: S.C. ELBA S.A. Timişoara, Director: Şurianu F.D., Value: 4,250 RON
9. Contract 258/12.03.2005, *Opportunity study regarding the concession of public lighting in the view of maintenance, extension and modernisation of the public lighting system in Timişoara, South Area*, Beneficiary: S.C. LUXTEN LIGHTING Co. S.A. Timişoara, Director: Şurianu F.D., Value: 4,250 RON
10. Contract 419/20.09.2004, Et.II/2005, MENER Program, A4 Subprogram, *Determination of the characteristic values of the polluting effects and measuring procedures*, Beneficiary: ISCE Bucharest, Director: Buta, A., Titihăzan, V., Colab. Luştrea B., Kilyeni St., Şurianu F.D., Moga M., Pană A., Borlea I., Titihăzan M., Irimia D., Molnar F.M., Băloi A., Value: 15,000 RON
11. Contract 419 / 20.09.2004, Et.III / 2005, MENER Program, A4 Subprogram, *Measures to reduce polluting factors*, Beneficiary: ISCE Bucharest, Director: Buta A., Titihăzan V., Colab. Luştrea B., Kilyeni St., Şurianu F.D., Moga M., Pană A., Borlea I., Titihăzan M.,

Irimia D., Molnar F.M., Băloi A.., Value: 15,000 RON

12. Contract 106 / 10.11.2005, BC 357 / 17.11.2005, *Study regarding the opprtunity to implement some systems for filtering, classifying and stocking information from a control and protection system in a transforming station, in the view of an optimal control without human personnel*, Beneficiary: C.N. Transelectrica S.T. Timisoara Director: Buta A., Colab. I. Borlea, B. Luştrea, V. Duşa, P. Gheju, A. Vasilievici, I. Bucatariu, A. Băloi, F. Molnar-Matei, Value: 23,000 RON
13. Contract 263/31.05.2005, *Analysis of the electromagnetic field at S.C. SIGITEX S.R.L.*, Beneficiary: S.C. Sigitex S.R.L., Director: Buta A., Colab. Molnar F.M., Băloi A.., Value: 500 RON

PhD THESIS DEFENDED

1. Moraru Gheorghe: *Protection equipment for TPT 100 transformers*, PhD supervisor: prof. dr. eng. Alexandru Vasilievici
2. Chiosa Nicolae: *Contributions regards auxiliary services supplying from autotransformer tertiary* (published in Romanian), PhD supervisor: prof. dr. eng. Adrian Buta

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