

FACULTY OF ELECTRICAL AND POWER ENGINEERING



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ELECTRICAL ENGINEERING DEPARTMENT

MAIN RESEARCH FIELDS

- Electric machines and equipment modeling, simulation, optimal design and testing (EME)
Keywords: electric machines, electric equipment, field calculation, optimal design, computer aided testing.
- Power electronics and motion control (PEMC)
Keywords: electric machines and drives, power electronics, speed and position control, digital control.
- Switched reluctance motor drive (SRMD)
Keywords: electric machines and drives, reluctance motor, power electronics, digital control.
- Power industrial electric drives (PIED)
Keywords: electric machines and drives, power electronics, speed control.
- Electrical lighting and Electrotechnologies (ELE)
Keywords: electromagnetic fields, applied electrostatics, welding, electrothermal processes, ultrasonics, power electronics, lighting devices.

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

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

FIELD DESCRIPTION

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

ACTIVITIES AND RESULTS

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

Due to the long time collaboration with the Faculty of Automation and Computer Science from Timișoara, 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-Drăgănești (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 CREȚU
- Dr. eng. Gheorghe MADESCU, CS II
- Assoc. prof. dr. eng. Mihai MICEA
- Eng. Marțian MOȚ, CS III
- Assoc. prof. dr. eng. Sorin MUȘUROI
- Assoc. prof. dr. eng. Dan NICOARĂ
- Lect. Dr. eng. Ciprian ȘORÂNDARU
- Dr. eng. Ileana TORAC, CS II
- Eng. Lucian OCOLIȘAN, 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
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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 Timișoara, UCM Reșița, Azomures Tg. Mureș, Aquatim Timisoara, SE Iernut, Electrocentrale Deva, CNCISIS, ANSTI etc.

External co-operations: Aalborg University Denmark, EBM Papst Germany, Casino University Italy

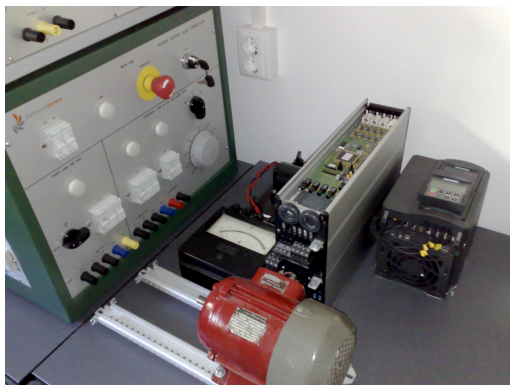
RESEARCH TEAM

- Prof. dr. eng. Ion BOLDEA
- Prof. dr. eng. Nicolae MUNTEAN
- Assoc. Prof. dr. eng. Lucian TUTELEA
- Lect. dr. eng. Cristian LASCU
- Assoc. Prof. dr. eng. Lucian MIHEȚ - POPA
- Assist. Dr. eng. Sorin AGARLIȚĂ
- Assist. Dr. eng. Codruța PAICU
- Ph.D. Student Vlad GRĂDINARU
- Ph.D. Student Robert ANTAL
- Ph.D. Student Alin ȘTIRBAN
- Ph.D. Student Liviu IEPURE
- Ph.D. Student Ana MOLDOVAN
- Ph.D. Student Ana-Maria UNGUREANU
- Ph.D. Student Mihaela GAVRIȘ
- Ph.D. Student Diana PETRILA
- Ph.D. Student Ovidiu PELAN
- Ph.D. Student Mircea BABA
- Ph.D. Student Dragoș URSU
- Ph.D. Student Emil GURAN

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 Produttività, in Korea at Hanyang University from Seul and at KIMM (Korean National Institute of Machinery and Materials).

CONTACT PERSON

Prof. dr. eng. Ion BOLDEA
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Researches in SWITCHED RELUCTANCE MOTOR DRIVES

FIELD DESCRIPTION

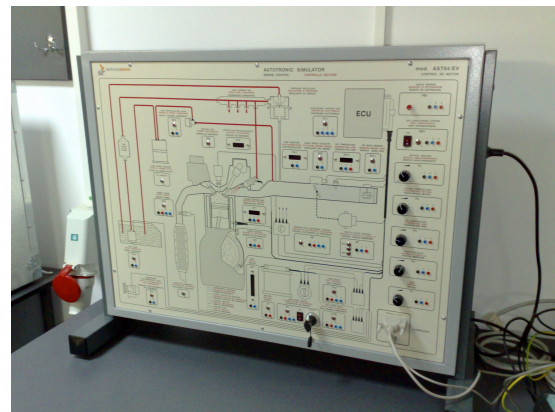
Switched reluctance motor (SRM) is a position-controlled power stepper motor with a very rugged topology and low costs but requires a specific static power converter and digital controller. Numerous potential applications in harsh environments look adequate for this kind of drive which drew world-wide 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 ARGEȘEANU
- Lect. dr. eng. Ciprian ȘORÂNDARU
- Lect. dr. eng. Octavian CORNEA
- Assist. eng. 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 MUȘUROI
- Assoc. prof. dr. eng. Ioan GHIUR
- Lect. Dr. eng. Ciprian ȘORÂNDARU
- Lect. Dr. Eng. Cristian LASCU
- Assist. eng. 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 MUȘUROI
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 sonosynthesis of nano-materials.

RESEARCH BENEFICIARIES

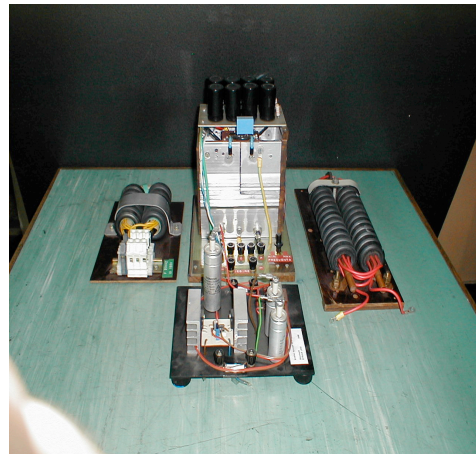
Ministry of Research, ISIM Timișoara

RESEARCH TEAM

- Prof. dr. eng. Ioan ȘORA
- Assoc. prof. dr. eng. Dan NICOARĂ
- Assoc. prof. dr. eng. Alexandru HEDEȘ

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 ȘORA
E-mail: ion.sora@et.upt.ro

MAIN PUBLICATIONS

PUBLISHED PAPERS

1. Dordea, T., Hoancă, V., Păun, S., Biriescu, M., Madescu, Gh., Liuba, Gh., Moț, M. *Direct-Drive Induction Motor for Railway Traction Application*, Proceedings of the Romanian Academy, Serie A, Vol.12, Nr.3, pag. 239-248, 10 pagini, ISSN 1454-9069.
2. Coroban-Schramel, V., Boldea, I., Andreescu, G.D., Blaabjerg, F. *Active-Flux-Based Motion-Sensorless Vector Control of Biaxial Excitation Generator/Motor for Automobiles*, *Industry Applications, IEEE Transactions on*, Vol. 47, pag. 812 - 819, 8 pag., ISSN 0093-9994.
3. Kirlin, R., L., Lascu, C., Trzynadlowski, A., M. *Shaping the noise spectrum in power electronic converters*, *IEEE Transactions on Industrial Electronics*, Vol. 58, no. 7, pag. 2780-2788, 9 pag., ISSN 0278-0046.
4. Iepure, L., Boldea, I., Blaabjerg, F. *Hybrid I-f starting and observer based sensorless control of single phase BLDC-PM motor drives*, *IEEE Transactions on Industrial Electronics*, Vol. PP, nr. 99, pag.1- 8, 8 pagini, ISSN 0278-0046.

5. Olarescu, N., V., Weinmann, M., Zeh, St., Musuroi, S., Sorandaru, C. *Optimum torque control algorithm for wide speed range and four quadrant operation of stator flux oriented induction machine drive without regenerative unit*, 3rd Annual IEEE Energy Conversion Congress and Exposition, ECCE 2011; Conference Proceeding, Phoenix, AZ, pag.1773-1777, 5 pagini, ISBN: 978-145770542-7.
6. Jafarzadeh, S., Lascu, C., Fadali, S., M. *Square root unscented Kalman filters for state estimation of induction motor drives*, IEEE ECCE 2011 Proceedings, pag. 75-82, 8 pag, ISBN: 978-145770542-7.
7. Musuroi, S., Svoboda, M., Sorandaru, C., Koblara, Th., Olarescu, N., V. *Deep bar effects produced by PWM power supplies in induction machines: Application to rotor Parameters determination*, EUROCON 2011 - International Conference on Computer as a Tool - Joint with Conftel 2011, Conference Proceeding, Lisbon, art. no. 5929282, 4 pagini, ISBN: 978-142447486-8.
8. Sorandaru, C., Musuroi, S., Svoboda, M., Koblara, T., Olarescu, N., V. *Sensor-based fixed-point DSP control of a 8/6 Switched Reluctance Motor*, EUROCON 2011 - International Conference on Computer as a Tool - Joint with Conftel 2011, Conference Proceeding, Lisbon, art. no. 5929285, 4 pagini, ISBN: 978-142447486-8.
9. Babescu, M., Olarescu, V., N., Sorandaru, C., Greconici, M., Musuroi, S. *Control of a wind system at an optimal speed*, SACI 2011 - 6th IEEE International Symposium on Applied Computational Intelligence and Informatics, Conference Proceeding , Timisoara, pag. 555 - 558, 4 pagini, ISBN 978-142449109-4.
10. Babescu, M., Sorandaru, C., Greconici, M., Svoboda, M., Musuroi, S. *Optimal control for a wind system considering the time evolution of the wind speed and the variation of the kinetic energy*, SACI 2011 - 6th IEEE International Symposium on Applied Computational Intelligence and Informatics, Conference Proceeding , Timisoara, pag. 549 - 553, 4 pagini, ISBN 978-142449109-4.
11. Biriescu, M., Proștean, G, Liuba, G, Nedelea ,V., M., Augustinov, L., Madescu, G., Moț, M. *Experimental Model of a Hydrogenerator with Static Excitation*, EUROCON 2011 - International Conference on Computer as a Tool - Joint with Conftel 2011, Conference Proceeding, Lisbon, CD, 4 pagini, ISBN: 978-142447486-8.
12. Madescu, G., Moț, M., Biriescu, M., Greconici, M., Koch, C. *Low Speed PM Generator for Direct-Drive Wind Applications*, EUROCON 2011 - International Conference on Computer as a Tool - Joint with Conftel 2011, Conference Proceeding, Lisbon, CD, 4 pagini, ISBN: 978-142447486-8.
13. Muntean, N., Gavris, M., Cornea, O. *Dual Input Hybrid DC-DC Converters*, EUROCON 2011 - International Conference on Computer as a Tool - Joint with Conftel 2011, Conference Proceeding, Lisbon, CD, 6 pagini, ISBN: 978-142447486-8.
14. Moldovan, A., Blaabjerg, F., Boldea, I. *Active-flux-based, V/f-with-stabilizing-loops versus sensorless vector control of IPMSM Drives*, Industrial Electronics (ISIE), 2011 IEEE International Symposium on, pag. 514 – 519, 6 pagini, ISBN: 978-1-4244-9310-4.
15. Agarlita, S.,C., Boldea, I., Blaabjerg, F. *High frequency injection assisted “active flux” based sensorless vector control of reluctance synchronous motors, with experiments from zero speed*, 3rd Annual IEEE Energy Conversion Congress and Exposition, ECCE 2011; Conference Proceeding, Phoenix, AZ, pag. 2725 - 2732, 8 pagini, ISBN: 978-145770542-7.
16. Gavriș M., Cornea O., Muntean N. *Multiple Input DC-DC Topologies in Renewable Energy Systems - A General Review*, IEEE 3th International Symposium on Exploitation of Renewable Energy Sources EXPRES 2011, Subotica, Serbia, CD, 6 pagini, ISBN 978-1-4577-0097-2.
17. Muntean, N., Tutela, L., Petrila, D., Pelan, O. *Hardware in the loop wind turbine emulator*, ACEMP 2011, Istanbul, Turkey, CD, 6 pagini, ACEMP 2011/7A.
18. Gavris, M., Muntean, N., Cornea, O. *A New Dual- Input Hybrid Buck DC-DC Converter*, ACEMP 2011, Istanbul, Turkey, CD, 6 pagini, ACEMP 2011/7A.
19. Tutela, L., N., Deaconu, S.,I., Boldea, I., Marignetti, F., Popa, G.,N. *Design and control of a single stator dual PM rotors axial synchronous machine for hybrid electric vehicles*, EPE 2011 , 14th European Conference on Power Electronics and Applications , Birmingham , Anglia, Art. No. 6020137, 10 pagini, ISBN: 9789075815153.
20. Gradinaru, V., Tutela, L., Boldea, I. *Hybrid analytical/FEM optimization design of SPMSM for refrigerator compressor loads*, Acemp-Electromotion, Istanbul, Turcia, pag. 677-682, 6 pagini, ACEMP 2011/7A.
21. Rob, R., Șora, I., Pănoiu, C., Pănoiu, M. *The Influence of Static Contactor on the THD Generated by Currents on a High Frequency Electro-Thermal Installation with Electromagnetic Induction*, WSEAS Transactions on Power Systems, Issue 2, Vol 6, pp 53-62, ISSN 1790-5060.
22. Agarlita, S., C, Boldea, I, Tutela, L., N. *Springless Resonant Linear PM Oscillomotrs*,

- IFAC Mechatronics Journal, Volume 21, Issue 5, pag. 240-245, 6 pagini, ISSN: 0957-4158.
23. Moldovan, A., Boldea, I., Andreescu, Gh. *V/f Control with Active Flux Active Flux and Power Stabilizing Corrections for IPMSM Drives*, The VIth International Conference, Days of the Academy of Technical Science from Romania, Timișoara, România, Proceedings of the VIth International Conference, Days of the Academy of Technical Science from Romania, Timișoara, România, pag.3- 6, 4 pagini, ISSN 2066-6586.
 24. Munteanu, A., M., (Ungurean), Agarlita, S., C., Boldea, I. *Experimental Characterization of Surface Permanent Magnet Synchronous Motor Drive*, The VIth International Conference, Days of the Academy of Technical Science from Romania, Timișoara, România, Proceedings of the VIth International Conference, Days of the Academy of Technical Science from Romania, Timișoara, România, pag. 87 - 92, 6 pagini, ISSN 2066-6586.
 25. Tutelea, L., Boldea, I., Ursu, D. *Interior Permanent Magnet Claw Pole Alternator: Optimization Design with 3D FEM Validation*, The VIth International Conference, Days of the Academy of Technical Science from Romania, Timișoara, România, Proceedings of the VIth International Conference, Days of the Academy of Technical Science from Romania, Timișoara, România, pag. 93 - 98, 6 pagini, ISSN 2066-6586.
 26. Boldea, I., Tutelea, L., N., Deaconu, S., I., Marignetti, F. *Dual rotor single stator brushless PMSM motor/generator system for full HEVs*, 4th International Conference on Electronics , Computers and Artificial Intelligence ECAI 2011 , Pitesti , Romania, Proceedings of the 4th International Conference on Electronics , Computers and Artificial Intelligence, pag. 95-102, 8 pagini, ISSN 1843-2115.
 27. Deliu, M., Hedeș, A., Șora, I. *Reactive power compensation in Systems with adjustable speed drives*, The VIth International Conference, Days of the Academy of Technical Science from Romania, Timișoara, România, Proceedings of the VIth International Conference, Days of the Academy of Technical Science from Romania, Timișoara, România, pag. 39 - 44, 6 pagini, ISSN 2066-6586.
 28. Tutelea, L.,N., Deaconu, S., I., Boldea, I., Marignetti, F., Popa, G.,N. *Quasi-3D FEM Analysis of an Single Stator Dual PM Rotors Axial Synchronous Machine for Hybrid Electric Vehicles*, Electrimacs 2011 , Proceedings , University Cergy-Pontoise , Paris, Franta, , Electrimacs 2011 , Proceedings , University Cergy-Pontoise , Paris, Franta, CD, 7 pagini, ISBN: 978-2-7466-3454-1.
 29. Babescu, M., Borza, I., Gana, O., Lacatusu, F. *Based wind energy conversion system*, International Conference Building Services and Ambiental Confort, 20th Edition, Timisoara, Proceedings of the International Conference Building Services and Ambiental Confort, CD, 25 pagini, ISBN 1842-9491.
 30. Babescu, M., Borza, I., Lacatusu, F. *Maximizarea energiei si aplatizarea fluctuatiilor puterii generate in retea, la un sistem eolian*, Conferinta Stiinta Moderna si Energia - Producerea, Transportul si Utilizarea Energiei, Cluj-Napoca, Volumul Conferintei Stiinta Moderna si Energia - Producerea, Transportul si Utilizarea Energiei, CD, 14 pagini, ISBN 2066-4125.

RESEARCH GRANTS

1. Director: Boldea Ion, „EE-VERT”*Energy Efficient Vehicles for Road Transport*, Project type project: FP7, Value: 6.466.966 Euro.
2. Director: Musuroi Sorin, *Contract for research-development and consultancy*, Contract: 9228/6.07.2010, Value: 16.000Euro.
3. Membru coordinator: Muntean Nicolae, *Improvement of the Structures and Efficiency of Small Horizontal Axis Wind Generators with Non-Regulated Blades*, Project type: SEE, Project: RO 0018, Value: 4.689.520,96868146lei.

PhD THESIS DEFENDED

1. Stirban, A. *Low cogging torque PMSM drives with rectangular current control*, Phd. Supervisor: Ion Boldea.
2. Antal, R. *New Self-Boost (Z-Source) and Boost DC-AC Converter Topologies*, Phd. Supervisor: Ion Boldea.
3. Iepure, L. *Sensorless control of single phase PM brushless DC motor drives*, Phd. Supervisor: Ion Boldea.

CONTACT

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DEPARTMENT OF POWER ENGINEERING

MAIN RESEARCH FIELDS

- Electromagnetic Compatibility in Power Systems
Keywords: electromagnetic field, environment, disturbance source, electromagnetic interference
- 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

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

RESEARCH BENEFICIARIES

National Power Transmission Company – Transelectrica, Timișoara branch.

RESEARCH TEAM

- Prof. dr. eng. Flavius Dan ȘURIANU
- Lect dr. eng. Ilona BUCATARIU
- Phd. Student Adrian OLARIU
- Phd. Student Monica MOLNAR-MATEI

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 ($U_n > 1000$ V).
Tests on medium voltage 20 kV steel-aluminum conductor insulated with XLPE.
Tests on insulation of welding equipment.

RESEARCH BENEFICIARIES

SC Electroconstrucția ELCO Oradea S.A., S.C. ENEL Banat Timișoara, ISIM Timișoara

RESEARCH TEAM

- Prof. dr. eng. Flavius Dan ȘURIANU
- Prof. dr. eng. Iuliu DELESEGA
- Assoc. prof. dr. eng. Adrian PANĂ

- Phd. Student Adrian OLARIU
- Phd. Student Răzvan TESLOVAN

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
- As. dr. eng. Felicia COROIU

RESEARCH OFFERS

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

Researches in POWER SYSTEMS RELIABILITY

FIELD DESCRIPTION

The research presents for different power systems configuration the probable energy value, which cannot 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
- Lect. dr. eng. Flaviu FRIGURĂ-ILIASA
- As. dr. eng. Felicia COROIU

RESEARCH OFFERS

Reliability evaluation of power system extension.

Researches in POWER APPARATUS AND EQUIPMENT

FIELD DESCRIPTION

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

ACTIVITIES AND RESULTS

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

RESEARCH BENEFICIARIES

Ministry of Education and Research, S.C. Transelectrica S.A. (S.T. Sibiu)

RESEARCH TEAM

- Prof. dr. eng. Alexandru VASILIEVICI
- Prof. dr. eng. Petru ANDEA
- Prof. dr. eng. Iuliu DELESEGA
- Assoc. prof. dr. eng. Doru VĂTĂU
- Lect. dr. eng. Flaviu FRIGURĂ-ILIASA
- Phd. Student Florin SOLOMONESC
- Phd. Student Marcela Florica LIȚCANU
- Phd. Student Ioan Sorin RANCOV

Researches in POWER QUALITY

FIELD DESCRIPTION

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

ACTIVITIES AND RESULTS

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

RESEARCH BENEFICIARIES

National Agency of Scientific Research, National Power Transmission Company – Transelectrica.

RESEARCH TEAM

- Assoc. prof. dr. eng. Adrian PANĂ

- Lect. dr. eng. Ilona BUCATARIU
- Dr. eng. Alexandru BĂLOI

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

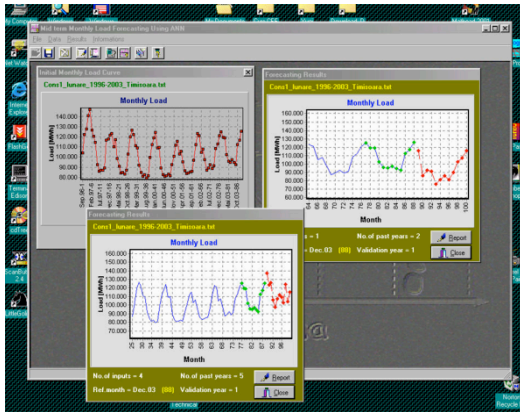
Analysis of electrical energy and power need for short and mid-term load forecasting; algorithm and program development for monthly energy consumption and daily load curves.

ACTIVITIES AND RESULTS

Electrical load data acquisition from S.C. ENEL Banat Timisoara substations and data files processing.
Development of PRENPS and PELTRNA programs for short-term daily load curve forecasting, respectively for mid-term monthly load forecasting.
Result analysis and forecast validation.

RESEARCH TEAM

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



Load Forecast Software

RESEARCH OFFERS

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

Researches in *POWER SYSTEM RESTRUCTURING*

FIELD DESCRIPTION

The unprecedented world - wide restructuring of the power industry move away from the

traditional monopolies and toward greater competition, in the form an increased members of independent power producers and an unbundling of the main services that were until now provided by the utilities, has been building up for over a decade.

ACTIVITIES AND RESULTS

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

RESEARCH TEAM

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

RESEARCH OFFERS

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

Researches in *POWER SYSTEM TRANSIENT STABILITY AND VOLTAGE STABILITY*

FIELD DESCRIPTION

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



Power Systems Optimization Laboratory

ACTIVITIES AND RESULTS

Advanced software for stability analysis.

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

RESEARCH BENEFICIARIES

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

RESEARCH TEAM

- Prof. dr. eng. Stefan KILYENI
- Prof. dr. eng. Mihai MOGA
- Lect. dr. eng. Ioan BORLEA
- Lect. dr. eng. Constantin BĂRBULESCU
- As. dr. eng. Dan JIGORIA-OPREA
- Phd. Student Dan CRISTIAN
- Phd. Student Florin SOLOMONESC
- Phd. Student Antheia DEACU
- Phd. Student Attila SIMO

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 VĂȚĂU
- Lect. eng. dr. Flaviu FRIGURĂ-ILIASA

RESEARCH OFFER

Modeling single-phase transformers and equipments with ferromagnetic core.

Estimation of electromagnetic quantities: time variation shape, r.m.s., peak values, harmonic analyze over a wide range of conditions.

Time and frequency analysis of electromagnetic quantities.

Behavioral analysis of a complex system containing a transformer or an apparatus.

Iron core power losses detailed analysis.

**Researches in ELECTRICAL
SUBSTATIONS AND POWER PLANTS**

FIELD DESCRIPTION

Constructive solutions optimization used for electrical equipments and installations in electrical substations, operating principles and general characteristic optimization for the reliability and system management improvement.

Specific problems of planning for the electrical network operating control and command.

ACTIVITIES AND RESULTS

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

RESEARCH TEAM

- Lect. dr. eng. Ioan BORLEA
- Lect. dr. eng. Iona BUCATARIU
- Dr. eng. Florin MOLNAR-MATEI
- Dr. eng. Alexandru BĂLOI

RESEARCH OFFERS

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

Researches in ENERGY MANAGEMENT

FIELD DESCRIPTION

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

ACTIVITIES AND RESULTS

Measurements audit were made in substations for “Transelectrica” National Transmission Company. Were realized feasibilities studies for new solutions in auxiliary services

supplying and for public lightning systems energy efficiency improvement.

RESEARCH BENEFICIARIES

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

RESEARCH TEAM

- Prof. dr. eng. Flavius Dan ȘURIANU
- Assoc. prof. dr. eng. Gheorghe VUC
- Assoc. prof. dr. eng. Adrian PANĂ
- Phd. Student Antheia DEACU
- Phd. Student Marcela Florica LIȚCANU

RESEARCH OFFERS

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

PUBLICATIONS

BOOKS

1. Andea Petru, *Automatizarea și protecția instalațiilor și sistemelor electroenergetice* (Manual pentru studenți), Editura Orizonturi Universitare Timisoara, pag. 292, ISBN 978-973-638-468-4
2. Kilyeni Stefan, Bărbulescu Constantin, *Tehnici de optimizare în ingineria energetică. Lucrări practice*, Ed. a 5-a, (Manual pentru studenți), Editura Orizonturi Universitare Timisoara, pag. 104, ISBN 978-973-638-474-5
3. Kilyeni Stefan, *Metode numerice. Algoritme, programe de calcul, aplicații în energetică*, Ed. a 4-a, (Manual pentru studenți), Editura Orizonturi Universitare Timisoara, pag. 360, ISBN 978-973-638-483-7
4. Kilyeni Stefan, Bărbulescu Constantin, *Metode numerice. Algoritme, programe de calcul, aplicații în energetică. Lucrări practice*, Ed. a 5-a (Manual pentru studenți), Editura Orizonturi Universitare Timisoara, pag. 144, ISBN 978-973-638-484-4
5. DeleSega Iuliu, *Introducere în Tehnica tensiunilor înalte*, (Manual pentru studenți), Editura Orizonturi Universitare Timisoara, pag. 178, ISBN 978-973-638-495-0

Chapters in books published in foreign publishers

1. *Power Quality - Monitoring, Analysis and Enhancement* (Tratat), Edited by Zobaa, A. F., Canteli, M. Bansal, M., R., InTech Publishing, Numar total pagini: 364 pag., Autor capitol: Pană Adrian, *Active Load Balancing in a Three-Phase Network by*

Reactive Power Compensation, 35 pag., ISBN 978-953-307-330-9

2. *Numerical simulation of physical and engineering processes* (Tratat), Edited by Jan Andrejcewicz, InTech, Croatia, Numar total pagini: 580, Autor capitol: Șurianu Flavius Dan, *Mathematical modelling and numerical simulation of the dynamic behaviour of thermal and hydro power plants*, 26 pag., ISBN 978-953-307-620-1

PUBLISHED PAPERS

1. Bărbulescu, C., Kilyeni, St., Chiosa, N., Jigoria-Oprea, D., *Electric substation ancillary services power consumption and quality monitoring and analysis*, International Review of Electrical Engineering (IREE), Vol. 6, nr. 4, 20011, pp. 2048-2058, ISSN 1827-6660.
2. Mulec, Gh., Vasii, R., Vătău, D., Frigură Iliasa, F., M., *WLAN Security Performance Study*, Proceedings of the 10th WSEAS International Conference on ELECTRONICS, HARDWARE, WIRELESS and OPTICAL COMMUNICATIONS (EHAC '11), pp. 401-406, ISBN 978-960-474-276-9
3. Vătău, D., Surianu, F., D., MuSuroi, S., Frigură Iliasa, F., M., Prosteian, O., *220 kV and 400 kV Power Plant Electromagnetic Pollution Analysis*, Proceedings of IEEE-EUROCON 2011, the International Conference on "Computer as a Tool", Lisbon, Portugal, pp. 569-575, ISBN 978-1-4244-0812-2
4. Vătău, D., Surianu, F., D., Olariu, A., F., Frigură Iliasa, F., M., *Power Facilities Environmental Impact. Neuro Fuzzy Methods Approach*, Proceedings of European Computing Conference ECC'11, Paris, France, pp. 164-170, ISBN 978-960-474-297-4
5. Vătău, D., Surianu, F., D., Bianu, A., E., Olariu A., *Considerations on the Electromagnetic Pollution Produced by High Voltage Power Plants*, Proceedings of European Computing Conference ECC'11, Paris, France, pp. 182-187, ISBN 978-960-474-297-4
6. Ardelean, I., Oltean, M., Florea, G., Mateescu, E., Marginean, D., Kilyeni, St., Bărbulescu, C., *Case Study on Increasing the Transport Capacity of 220 kV dc OHL Iernut-Baia Mare by Reconductoring Using LM Technologies*, Proceedings of the 2011 IEEE PES 12th International Conference on Transmission and Distribution Construction, Operation and Live-Line Maintenance (ESMO), Rhode Island,

- Providence, USA. IDS Number: BXV13, pp. 1-7, ISBN 978-1-4577-0567-0
7. Băloi, Al., Pană, A., *A Virtual Measurement Instrument for Three Phase Electrical Networks Analysis*, Proceedings of the 8th WSEAS International Conference on Engineering Education, pp. 167-171, ISBN 978-1-61804-021-3
 8. Pană, A., Şurianu, F., D., Băloi, Al., *MatLab Simulation Applied to Study the Mechanism of Load Balancing by Unbalanced Capacitive Shunt Compensation in a Three-Phase Three-Wire Network*, Proceedings of the International Conference on "Computer as a Tool" EUROCON 2011, ID 346, ISBN 978-1-4244-7486-8
 9. Molnar-Matei, F., Moga, M., Iovan, M., *Procedure for Determining the Response of the System Load to Voltage Sags*, EUROCON 2011-The International Conference on "Computer as a Tool", Lisbon, Portugal, pp. 1-4, ISBN 978-1-4244-7486-8
 10. Aron, A., Gîrban, G., Kilyeni, St., *A geometric approach of a battery mathematical model for on-line energy monitoring*, EUROCON 2011-The International Conference on "Computer as a Tool", Lisbon, Portugal, 4 p., ISBN 978-1-4244-7486-9
 11. Aron, A., Kilyeni, St., *A geometrical point of view over a battery mathematical model*, EUROCON 2011-The International Conference on "Computer as a Tool", Lisbon, Portugal, 4 p., ISBN 978-1-4244-7486-10
 12. Coroiu, F., Velicescu, C., Bărbulescu, C., *Probabilistic and Deterministic Load Flows Methods in Power Systems Reliability Estimation*, Proceedings of the IEEE International Conference Eurocon 2011, Lisabona, Portugalia, 4 p., ISBN 978-1-4244-7485-1
 13. Kilyeni, St., Bărbulescu, C., Pop, D., Cristian, P., D., Solomonesc, F., *Transmission Expansion Planning. Case Study for the Romanian Power System*, Journal of Sustainable Energy, Oradea University, Vol. 2, nr. 4, 2011, 8 p., ISSN 2067-5534
 14. Pop, O., Bărbulescu, C., Kilyeni, St., *Contingency-Constrained Congestion Management Transmission Cost Allocation*, Journal of Sustainable Energy, Oradea University, Vol. 2, nr. 4, 2011, 6 p., ISSN 2067-5534
 15. Jigoria-Oprea, D., Kilyeni, St., Dan, F., *Electric energy forecast for residential user*, Journal of Sustainable Energy, Oradea University, Vol.2, nr.2, 2011, p. 85-90, ISSN 2067-5534
 16. Vintan, M., Mihu, I., Borlea, I., *Ground wires influence on ac power lines impedance*, Journal of Sustainable Energy, Oradea University, Vol. II, nr. 3, 2011, p. 85-88, ISSN 2067-5534
 17. Vintan, M., Mihu, I., Borlea, I., *Computational methods of ac power lines impedances*, Journal of Sustainable Energy, Oradea University, Vol. II, nr. 2, 2011, p. 80-84, ISSN 2067-5534
 18. Bărbulescu, C., Ardelean, I., Kilyeni, St., *Maximum OHL reconductoring efficiency within large scale power systems*, Scientific Bulletin of Technical University of Cluj-Napoca, Acta Electrotehnica, Vol. 52 , nr. 1, 2011, p. 50-55, ISSN 1841-3323
 19. Bărbulescu, C., Kilyeni, St., Vuc, Gh., Borlea, I., *Electric Substation Ancillary Services Power Supply Using Fuel Cell*, International Review on Modelling and Simulations, Papers (Part B), Vol. 4, nr. 5, 2011, ISSN 1974-9821
 20. Vătău, D., Alexa, F., Crăciunescu, A., Teslovan, R., *Sustainable Development Oriented Power Plant Environmental Impact Analysis*, Proceedings of the 6th IEEE International Symposium on Applied Computational Intelligence and Informatics, May 19–21, 2011, Timisoara, Romania, pp. 599-602, ISBN 978-1-4211-9107-0
 21. Cornoiu, M., Bărbulescu, C., Jigoria-Oprea, D., Kilyeni, St., ProStean, G., Teslovan, R., *Power Quality Monitoring and Analysis. Case Study for 220/110 kV Substation*, Proceedings of the 3rd IEEE International Symposium on Exploitation of Renewable Energy Sources (EXPRES 2011), Subotica, Serbia, pp. 133-138, ISBN 978-1-4577-0095-8
 22. Bărbulescu, C., Kilyeni, St., ProStean, G., Cristian, P., D., Solomonesc, F., Ungureanu, D., *Deregulated Environment, Transmission Expansion Planning*, Proceedings of the IEEE International Conference Eurocon 2011, Lisabona, Portugalia, 4 p., ISBN 978-1-4244-7485-1
 23. Pop, O., Bărbulescu, C., Andea, P., Jigoria-Oprea, D., Coroiu, F., Tirian, O., *Comparison of Power System Tracing Cost Allocation Methods*, Proceedings of the IEEE International Conference Eurocon 2011, Lisabona, Portugalia, 4 p., ISBN 978-1-4244-7485-1
 24. Pop, O., Păunescu, D., Bărbulescu, C., Kilyeni, St., *New Instrument Designed for Probabilistic Power Flow Analysis*, Proceedings of the 3rd IEEE International

- Symposium on Logistics and Industrial Informatics (LINDI 2011), Budapest, Hungary, pp. 219-224, ISBN 978-1-4577-1841-0
25. Bărbulescu, C., Kilyeni, St., *Congestion Management, Transmission Expansion Planning Considering Large Wind Power Plants*, Proceedings of the 6th International Symposium on Applied Computational Intelligence and Informatics (SACI), Timisoara, Romania (IEEE Catalog number: CFP1145C-CDR), pp. 559-564, ISBN 978-1-4244-9107-0
 26. Bărbulescu, C., Cristian, P., D., Slomonesc, F., Kilyeni, St., *Congestion Management Driven Transmission Expansion Planning*, Proceedings of the 46th International Universities' Power Engineering Conference (UPEC2011), Soest, Germany, 6 p., ISBN 978-3-8007-3402-3
 27. Pop, O., Solomonesc, F., Bărbulescu, C., Kilyeni, St., *Allocation of Transmission Cost for Reactive Power Using System Matrices Method*, Proceedings of the 46th International Universities' Power Engineering Conference (UPEC2011), Soest, Germany, 4 p., ISBN 978-3-8007-3402-3
 28. Jigoria-Oprea, D., Cristian, D., P., Bărbulescu, C., Kilyeni, St., *Large Wind Farm Integration in Large Power Systems - Case Study: Western Romanian Power System*, Proceedings of the 46th International Universities Power Engineering Conference (UPEC 2011), Soest, Germany, 4 p., ISBN 978-3-8007-3402-3
 29. Jigoria-Oprea, D., Kilyeni, St., Bărbulescu, C., Solomonesc, F., Cristian, D., P., *Integration of Large Wind Farms within the Romanian Power System*, Proceedings of the 10th International Conference on Environment and Electrical Engineering, Roma, Italia, pp. 1009-1012, ISBN 978-1-4244-8781-3
 30. Jigoria-Oprea, D., Kilyeni, St., Bărbulescu, C., ProStean, G., Solomonesc, F., Cristian, P., D., *Power Systems Expansion Considering Large Wind Farms. Case Study: Western Romania Power System*, Proceedings of the 3rd IEEE International Symposium on Exploitation of Renewable Energy Sources, Express 2011, Subotica, Serbia, pp. 95-100, ISBN 978-1-4577-0095-8
 31. Jigoria-Oprea, D., Bărbulescu, C., Kilyeni, St., Raduca, M., *Large Wind Farms Integration in Romanian Power System. Case Study: Moldavia Region*, 6th IEEE International Symposium on applied Computational Intelligence and Informatics, SACI 2011, pp. 565-570, ISBN 978-1-4244-9107-0
 32. Băloi, Al., Pană, A., Molnar-Matei, F., *Contributions on Harmonic Impedance Monitoring in Smart Grids Using Virtual Instruments*, The second European conference and exhibition on Innovative Smart Grid Technologies 2011 (ISGT-EUROPE 2011), ID 40
 33. Vuc, Gh., Borlea, I., Bărbulescu, C., ProStean, O., Jigoria-Oprea, D., Neaga, L., *Optimal energy mix for a grid connected hybrid wind — Photovoltaic generation system*, Proceedings of the 3rd IEEE International Symposium on Exploitation of Renewable Energy Sources (EXPRES2011), Subotica, Serbia, CD, 4, ISBN 978-1-4577-0097-2
 34. Vuc, Gh., Borlea, I., Jigoria-Oprea, D., Kilyeni, St., Bărbulescu, C., *Expert system diagnosis of electrical distribution networks. Reference regimes probabilistic approach*, Proceedings of the International Conference on Power Engineering, Energy and Electrical Drives (POWERENG2011), Torremolinos, Malaga, Spain, CD, 6, ISBN 978-1-4244-9845-1
 35. Şurianu, F., D., Pană, A., *Fiber Optic Cable Mounted on Common Poles with a Medium Voltage Overhead Line Standardizing Procedure*, 19th Telecommunications Forum (TELFOR), Belgrade, Serbia, TFR – 1544, 4 p., ISSN 1821-3251
 36. Frigură-Iliasa, F., M., Benche, G., Solomonesc, F., Andea, P., *MadeInTime - RealTime Operating System Applied for Power Quality Analysis*, 10th WSEAS International Conference on EHAC, Cambridge, UK, 6 p., ISBN 978-960-474-276-9
 37. Frigură-Iliasa, F., M., Vătău, D., Vuc, Gh., Greconici, M., Vărtosu, A., *Hydrogenerators Refurbishment within Romanian Power System*, 3rd IEEE International Symposium on Exploitation of Renewable Energy Sources (EXPRES), 6 p., ISBN 978-1-4577-0097

ORGANIZED INTERNATIONAL CONFERENCE

1. Frigură-Iliasa F. M., *The XIII-th International Symposium Young People and Multidisciplinary Research*, 10-11 November 2011, Timisoara, ACMV-Asociatia pentru Cercetare Multidisciplinara din Zona de Vest, U.P.T., ISSN 1224-6077, www.acmv.ro

RESEARCH GRANTS

International Projects

1. Vatau Doru , *L'impact des installations électriques sur l'environnement et Matériaux pour le génie électrique*, CE/MC/287/10, Parteneri: Universitatea "Paul Sabatier" Toulouse, Universitatea "Politehnica" Timisora, Agentia Universitara a Francofoniei, Valoare totală: 1400 Euro
2. Proștean Octavian, *Improvement of the Structures and Efficiency of Small Horizontal Axis Wind Generators with Non-Regulated Blades*, Nr. RO 0018, Tip. SEE, Finantator: EEA Grants, Valoarea totala: 4,689,520 lei

Projects financed from the Structural Funds

1. Vasii Radu, *Dezvoltarea si sustinerea de programe postdoctorale multidisciplinare in domenii tehnice prioritare ale strategiei nationale de cercetare - dezvoltare - inovare* 4D-POSTDOC, POSDRU/89/1.5/S/52603 ID 52603, Axa prioritară: 1 - Educatia si formarea profesionala in sprijinul cresterii economice si dezvoltarii economice si dezvoltarii societatii bazate pe cunoastere, Domeniul major 1.5 - Programe doctorale si post-doctorale în sprijinul cercetării, Parteneri: Universitatea Tehnică „Gheorghe Asachi” din Iași, Universitatea „Politehnica” din Timișoara, Valoate totală: 3,856,711 lei
2. Andea Petru, *O șansă în plus: stagii de practică pentru studenții de la facultățile de energetică*, POSDRU/90/2.1/S/62528 ID 62528, Axa prioritară – 2 Corelarea învățării pe tot parcursul vietii cu piata muncii, Domeniul major 2.1 - Tranzitia de la școală la viata activă, Valoare totală: 2,061,628 lei, Parteneri: Patronatul Uniunea Energetica Romana, SC Siveco Romania SA, Universitatea "Politehnica" din Timisoara
3. Ionel Ioana, *Rețea națională de formare continuă a cadrelor didactice din învățământul preuniversitar profesional și tehnic* – CONCORD, POSDRU/87/1.3/S/61397 ID 61397, Axa prioritară: 1 - Educatia si formarea profesionala in sprijinul cresterii

- economice si dezvoltarii economice si dezvoltarii societatii bazate pe cunoastere, Domeniul major 1.3 - Dezvoltarea resurselor umane din educatie si formare profesionala, Parteneri: Universitatea Politehnica din Bucuresti, Universitatea "Politehnica" din Timișoara, Universitatea Tehnică “Gheorghe Asachi” din Iași, Universitatea Tehnică din Cluj-Napoca, Centrul Național de Dezvoltare a Învățământului Profesional și Tehnic, MultiMedia Sunshine Ltd.
4. Adreescu Daniel, *Școala doctorală în sprijinul cercetării în context european*, POSDRU/21 /1.5/G/13798 ID 13798, Axa prioritară 1 - Educatia si formarea profesională in sprijinul cresterii economice si dezvoltarii economice si dezvoltarii societatii bazate pe cunoastere, Domeniul major 1.5 - Programe doctorale si post-doctorale în sprijinul cercetării 703/E/ 30.06.2010, Parteneri: Universitatea Politehnica din Timiosra Si Universitatea de Vest din TimiSoara, Valoare totală: 1,810,000 lei

PhD THESIS DEFENDED

1. Coroiu Felicia, *Aplicarea comparativa a modelelor probabilistice pentru estimarea continuitatii in alimentarea consumatorilor electrici si pretul energiei produse*, Domeniul: Inginerie energetică, PhD supervisor Velicescu Corneliu
2. Gherman Lucian, *Optimizarea conducerii procesului de producere a oțelului în cuptoarele cu arc electric de curent continuu*, Domeniul: Inginerie energetică, PhD supervisor Surianu Flavius Dan
3. Florențiu Deliu, *Fenomene tranzitorii in echipamentele electrice navale alimentate hibrid*, Domeniul: Inginerie energetică, PhD supervisor Petru Andea

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