

DEPARTMENT OF ELECTRICAL MACHINES, MARKETING AND MANAGEMENT



2006

DEPARTMENT OF ELECTRICAL MACHINES, MARKETING AND MANAGEMENT

HEAD OF DEPARTMENT
Prof.dr.ing. Károly Ágoston BIRÓ

1. ACADEMIC AND RESEARCH STAFF

1.1. ACADEMIC STAFF

FULL PROFESSORS

1. Prof.dr.ing. **Károly Ágoston BIRÓ**
2. Prof.dr.ing. **Ioan-Adrian VIOREL**
3. Prof.dr.ing. **Vasile IANCU**
4. Prof.dr.ing. **Mircea M. RĂDULESCU**
5. Prof.dr.ec. **Gh. Alexandru CATANĂ**
6. Prof.dr.ec. **Doina CATANĂ**
7. Prof.dr.ing. **Loránd SZABÓ**

READERS (ASSOCIATE PROFESSORS)

1. Conf.dr.ing. **Radu-Cristian CIORBA**
2. Conf.dr.ing. **Horia HEDEȘIU**
3. Conf.dr.ing. **Claudia MARȚIȘ**

SENIOR LECTURERS (ASSISTANT PROFESSORS)

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ASSISTANTS

1. Asist.dr.ing. **Daniel FODOREAN**
2. Asist.drd.ing. **Dan-Cristian POPA**
3. Asist.ec. **Anca CONSTANTINESCU-DOBRA**

JUNIOR ASSISTANTS

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FULL-TIME Ph.D. STUDENTS

1. ing. **Jenő Barna DOBAI**, since November 2001. Supervisor: Prof.dr.ing. **K.Á. Biró**.
2. ing. **Adina Mariana MUNTEAN**, since November 2001. Co-supervisors: Prof.dr.ing. **M.M. Rădulescu** and Prof. A. Miraoui since *Université de Technologie de Belfort-Montbéliard* (France).

3. ing. **Mircea GUTMAN**, from November 2002 to October 2006. Supervisor: Prof.dr.ing. **I.A. Viorel**.
4. ing. **Tiberiu MOLDOVAN**, since November 2002. Supervisor: Prof.dr.ing. **M.M. Rădulescu**.
5. ing. **Ciprian ȘIMON**, since November 2003. Supervisor: Prof.dr.ing. **M.M. Rădulescu**.
6. ing. **Ioana-Cornelia VESE**, since November 2003. Supervisor: Prof.dr.ing. **M.M. Rădulescu**.
7. ing. **Bogdan-Ionuț TĂȚĂRANU**, since November 2003. Supervisor: Prof.dr.ing. **I.A. Viorel**.
8. ing. **Liliana VICOL**, since November 2003. Supervisor: Prof.dr.ing. **I.A. Viorel**.
9. ing. **Nicolae Florin JURCA**, since October 2004. Supervisor: Prof.dr.ing. **K.Á. Biró**.
10. ing. **Claudiu Alexandru OPREA**, since October 2004. Supervisor: Prof.dr.ing. **K.Á. Biró**.
11. ing. **Attila BÁNYAI**, since October 2005. Conducător științific: Prof.dr.ing. **I.A. Viorel**.
12. ing. **Cosmina NICULA**, since October 2005. Supervisor: Prof.dr.ing. **K.Á. Biró**.
13. ing. **Carmen CIURTIN**, since October 2005. Supervisor: Prof.dr.ing. **M.M. Rădulescu**.
14. ing. **Ștefan BREBAN**, since October 2005. Co-supervisors: Prof.dr.ing. **M.M. Rădulescu** and Prof. B. Robyns from the *École des Hautes Etude Industrielles, Université Catholique de Lille* (France).
15. ing. **Larisa STRETE**, since October 2006. Supervisor: Prof.dr.ing. **I.A. Viorel**.
16. ing. **Györgyi-Karola MAGYARI**, since October 2006. Supervisor: Prof.dr.ing. **M.M. Rădulescu**.

1.3. ASSOCIATED TEACHING STAFF

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2. MAIN EQUIPMENT OF THE DEPARTMENT

There are 6 laboratories in the Department:

- Classical Electrical Machines Laboratory, Room 7 (192 m²)
- Electromechanical Systems Laboratory, Room 6 (87 m²)
- Small Motors Laboratory, Room 6a (60 m²)
- CAD1 Laboratory, Room 9a (42 m²)
- CAD2 Laboratory, Room 4 (48 m²)
- Research lab for Ph.D. students Room 7a (45 m²)

EQUIPMENT:

Power sources:

- Three-phase AC mains of 380/220 V, 400 KVA, 50 Hz
- Variable three-phase AC source of 4-600 V, 50 Hz
- DC generators of 40-400 V (variable output), 110 V, 220 V
- Three-phase synchronous generator of 14 kW, 380/220 V, 50 Hz
- Full commanded rectifiers of 0-220 V, 20 A.

Benches for experimental testing of electric machines with:

- Transformers
- Classical rotational electrical machines of 1-5 kW (DC machines, wounded rotor induction machines, squirrel cage rotor induction machine, synchronous machines)
- Special electric machines (stepper motors, two-phase induction machines, brushless DC motors, variable reluctance motors, and linear motors).

Measuring systems and electronic apparatus:

- **Torque transducer unit** (Dr. Steiger Mohilo & Co. GmbH)
- **Incremental position transducer** (Siemens)
- **Accelerometer 625B01**
- **Condensor microphone 377A40 with pre-amplifier 426A30**
- **Data acquisition Systems** (National Instruments Inc.)
- **Digital oscilloscope** Tektronix TD270
- **Handy Power Quality Analyzer** Chauvin Arnoux CA8332
- **Precision digital TRMS multimeter** Metrawatt METRAHIT29s (with the following accessories: 2 mains power pack, 2 clip-on measuring instruments, 2 thermal sensors for surface and immersion measurements)
- **Arbitrary Function Generator** Hameg HM8131
- Over 100 de classical analogue measuring instruments (ammeters, voltmeters, wattmeters, frequency meters etc.)
- Over 20 new high performance digital measuring instruments.

Frequency converters:

- **MICROMASTER Integrated MI220/3**, 2.2 KW (Siemens)
- **ACS600** – with Direct Torque Control (ABB Industry Oy)
- **MICROMASTER** (Siemens)
- **SIMOVERT MC** (Siemens)

Rectifier: SIMOREG DC Master for 4 quadrant operation (Siemens)

Switched Reluctance Motor (SRM) with its controller: EMS-WX 35E (Ematron) with SRM (EMS-VVX 160 W, 250 rpm)

MCK2407 motion control kit (Technosoft) based on the Texas Instruments TMS320F2407 DSP controller)

dSPACE ACE Kit with DS1103 PowerPC GX and dSPACE Software

4-Axis Stepper/Servo Controller for PCI PCI-7344 (National Instruments)

Multi-function IGBT three-phase converter SKM 50 GB 123D

Digital Oscilloscope Tektronix TDS 1001B

Kit Oscilloscope OX 7104 CK (AEMC Instruments)

Programmable Logic Controllers (PLCs): SIMATIC S7-200, LOGO! (Siemens), **S7-300** with extensions, **Profibus** interface, accessories, etc.

FieldPoint real-time distributed industrial control systems (National Instruments)

Wireless industrial communication systems Pocket PC Sharp Zaurus SL500/Linux, with accessories

Retroprojectors

Multimedia Projectors: MP 7640 and ML7460 (3M)

Computers:

- **Computer network 1** (CAD 1) composed of:
 - server (having 2 Pentium II-350 processors, 20 + 6.4 GB HDD, 128 MB RAM, CD 48 X), connected to the INTERNET
 - 7 workstations (with Pentium II-350 processors, 4.3 GB HDD, 64 MB RAM)
 - 3 workstations (with INTEL CELERON-600 processors, 64 MB SDRAM, 20 GB Seagate HDD)
- **Computer network 2** (CAD 2) composed of:
 - server (having Pentium III-800 processor, 20 GB HDD, 256 MB RAM, CD 50 X, CD-RW 16 X) connected to the INTERNET
 - 7 workstations (having Pentium III-600 processors, 20 GB HDD, 128 MB RAM)
 - ScanJet 5300C scanner
 - HP LaserJet 1100 laser printer

- **Notebooks** (laptops): COMPAQ Presario 2715EA, Presario 1800 and ASUS L3500TP9
- **12 different computers** (having Pentium MMX-II, Pentium MMX-III, Pentium III 1 GHz, Pentium P4 1,4 GHz processors) all of them connected to the INTERNET.
- **Printers:** HP LaserJet 1100, HP InkJet 690, CANON S 200
- **Scanner:** ScanJet 6200C
- **Copier:** Xerox 5815

On our computers we have installed several **SOFTWARE** products as:

- **MATLAB Suite 6.0 (MATLAB + SIMULINK + Symbolic Math Toolbox)** for 5 seats for general numeric and symbolic computations and for simulating dynamic systems
- **MagNet 5.3** for single user for general electromagnetic field computations
- **MagNet v6** for 8 seats (with 2D/axisymmetric magnetostatic solver, 2D/axisymmetric time-harmonic solver, 2D/axisymmetric transient + motion solver, scripting form and parameterisation facilities) for general electromagnetic field computations
- **LabVIEW 6i**, general purpose data acquisition and virtual instrumentation software
- **Flux2D & Flux3D (v9.3)**, 2 permanent licenses with the following modules: Environnement, Magnetostatic, Steady AC Magnetic, Transient Magnetic, Coupling with Circuit Equations, Rotating Motion, Translating Motion, Steady State Thermal, Transient Thermal, Steady AC magnetic coupled to Transient Thermal, Skew, Iron Losses, Flux to Simulink link (for 2D), respectively Environnement, Magnetostatic, Steady AC magnetic, Transient Magnetic, Coupling with Circuit Equations, Rotating Motion, Translating Motion, Iron Losses (for 3D);
- **EPLAN 5.30** general purpose electrical engineering CAD program package (8 professional licenses + 2 SC1 licenses)
- **SIMPLORER 4.2** power electronics modelling and simulation (8 licenses)
- **STEP7-MicroWin 3.0** and **LOGO!** software for the Micro S7-200 and Micro S7-300 PLCs.

All the equipment of the Department are part of the **Centre of Excellence for Science and Research in the field of electrical machines and drives** (head: Vasile IANCU).

Details concerning the laboratory facilities can be found at
URL: <http://users.utcluj.ro/~szabol/Laboratory.htm>

3. INTERNATIONAL ACADEMIC EXCHANGES

3.1. DEPARTMENT'S STAFF

3.1.1. Invited Professor Mobilities

1. **Ioan-Adrian VIOREL:** Invited Professor at **Changwoon University** (South Korea) where he taught the lecture ***Rotor topology of the permanent magnet synchronous motors. Double excited synchronous motors for traction drive systems*** (in June 2006).
2. **Mircea M. RĂDULESCU:** Invited Professor and Visiting Researcher, **Ecole Centrale de Lille** (France), where he participated in the joint research project ***Optimal design of small brushless permanent-magnet and reluctance motors for light electric traction applications*** (in May-June 2006).
3. **Károly Ágoston BIRÓ:** Invited Professor at **Veszprém University** (Hungary) where he

taught the lecture ***Small power special electrical machines*** (in September 2006).

4. **Loránd SZABÓ**: Invited Professor at **Veszprém University** (Hungary) where he taught the lecture ***Linear generators used in wave energy power converters*** (in September 2006).

3.1.2. Research stages

1. **Ioan-Adrian VIOREL**: Visiting Researcher at the **Korean Electrical Research Institute (KERI)** in Changwon (Republic of Korea) in the framework of a grant funded by the Korean Science Foundation (KOSEF), December 2005 – August 2006.
2. **Daniel FODOREAN**: Contract as Teaching and Research Asistent at the **Université de Technologie de Belfort-Montbéliard**, France, January-August 2006.
3. **Dan-Cristian POPA**: Visiting Ph.D. student at **Universita di Bologna** (Italy), June 2006.
4. **Ioana VESE**: Visiting Ph.D. student at **Universita degli Studi di Cassino** (Italy), February - April 2006.
5. **Ştefan BREBAN**: Visiting Ph.D. student at **École des Hautes Etudes d'Ingénieur, Université Catholique de Lille** (France), February-May and September-November 2006.
6. **Adina MUNTEAN**: Visiting Ph.D. student at **Université de Technologie de Belfort-Montbéliard** (France), January-August 2006.
7. **Tiberiu MOLDOVAN**: Visiting Ph.D. student at **Université de Technologie de Belfort-Montbéliard** (France), October - November 2006.

3.1.3. Participation in Conferences and Simposia*

1. **17th International Conference on Electrical Machines (ICEM '2006)**, Chania (Crete Island, Greece): **Mircea M. RĂDULESCU**.
2. **International Conference on Power Electronics, Drives and Motion (PCIM '2006)**, Nürnberg (Germany): **Károly Ágoston BIRÓ, Loránd SZABÓ, Claudia MARȚIȘ**.
3. **12th International Power Electronics and Motion Control Conference (EPE-PEMC '2006)**, Portoroz (Slovenia): **Loránd SZABÓ**.
4. **2006 IEEE International Conference on Mechatronics (ICM '2006)**, Budapest (Hungary): **Loránd SZABÓ**.
5. **10th International Conference on Optimization of Electrical and Electronic Equipment (OPTIM '2006)**, Braşov (Romania): **Mircea M. RĂDULESCU, Ştefan BREBAN**.
6. **20th International Scientific Conference MicroCAD '2006**, Miskolc (Hungary): **Károly Ágoston BIRÓ, Loránd SZABÓ, Claudia MARȚIȘ**.
7. **4th International Conference on Materials and Manufacturing Technologies (MATEHN '06)**, Cluj-Napoca (Romania): **Vasile IANCU, Dan-Cristian POPA**.
8. **8th International Conference of Applied and Theoretical Electricity (ICATE '2006)**, Băile Herculane (Romania): **Ioana VESE**.
9. **6th International Conference on Renewable Sources And Environmental Electro-Technologies**, Oradea (Romania): **Vasile IANCU**.

10. **International Conference on Energetics and Electrotechnics ENELKO '2006**, Cluj-Napoca (Romania): **Károly Ágoston BIRÓ, Loránd SZABÓ, Jenő Barna DOBAI.**
11. **13th National Conference on Electrical Drives (CNAE '2006)**, Ploiești (Romania): **Carmen CIURTIN.**
12. **Strategic leadership in the context of globalization and regionalization**, Cluj-Napoca (Romania): **Gh.A. CATANĂ, Doina CATANĂ, ANCA CONSTANTINESCU-DOBRA.**

* The papers presented and published in the Proceedings of the conferences are given in section 6.

3.2. INVITED FELLOWS

1. **Prof. Domenico CASADEI**, Head of Dipartimento di Ingegneria Elettrica, Universita degli Studi di Bologna, Italy, visited the *Small Electric Motors and Electric Traction (SEMET) Group* during his participation in the **5th Technical Meeting of 'Master in Advanced Power Electrical Engineering (MAPEE) ERASMUS PROGUC Project'** organized by **Mircea M. RĂDULESCU** at the Technical University of Cluj-Napoca, 21-22 September 2006.
2. **Prof. dr. Richard KUSTIN**, **Southern Connecticut State University**, in the framework of USAID-ALO grant (2004-2006); trainer for Sales/Sales management course, offered by the Romanian-American Center for Entrepreneurship Education and Management Development, January 20-21, 2006.
3. **Prof. dr. Ellen FRANK**, **Southern Connecticut State University**, in the framework of USAID-ALO grant (2004-2006); trainer for Team work&conflict management course, offered by the Romanian-American Center for Entrepreneurship Education and Management Development, 31st March – 1st April, 2006.
4. **Assoc. prof. dr. Gyula BAKACSI**, **Corvinus University of Budapest**, for discussion related to setting up a research consortium, GLOBE-România and to designing the report on jointly performed research, 19th May, 23rd June, 8th December 2006.

4. RESEARCH

4.1. RESEARCH CENTERS

- Since 2001 the Department of Electrical Machines, Marketing and Management together with the Department of Electrical Drives and Robots form the **Centre of Excellence for Science and Research in the field of electrical machines and drives** (head: **V. IANCU**). The Centre of Excellence is recognised by the National University Research Council of the Romanian Ministry of Education.
- The image shows a certificate with the following text: 'MINISTERUL EDUCAȚIEI ȘI CERCETĂRII ȘTIINȚIFICE ȘI ÎN ÎNĂLȚĂMÎNȚA ȘCOLARĂ', 'CONSILIUL NAȚIONAL AL CERCETĂRII ȘTIINȚIFICE ȘI ÎN ÎNĂLȚĂMÎNȚA ȘCOLARĂ', 'CERTIFICAT', 'Centrul Național al Cercetării Științifice în Domeniul Ingineriei Electrice', 'Centrul de Cercetare', 'în domeniul', 'CERCETAREA ȘTIINȚIFICĂ ÎN DOMENIUL INGINERIEI ELECTRICE ȘI ÎN ÎNĂLȚĂMÎNȚA ȘCOLARĂ', 'MAPEE - ERASMUS PROGUC', 'ȘTIINȚA ȘI ÎN ÎNĂLȚĂMÎNȚA ȘCOLARĂ', 'UNIVERSITATEA TEHNICĂ DE CLUJ-NAPOCA', 'București, 17.12.2006', 'Căminul nr. 1018A'.
- The **Small Electric Motors and Electric Traction (SEMET) Group** is a 2000-founded research team, as part of the *Centre of Excellence for Research in Electric Machines and Drives*. The group has about fifteen members (academic staff, Ph.D. students, graduates and final-year undergraduate students) and is headed by **Mircea M. RĂDULESCU**. The Web-site of the research group is: <http://semet.idilis.ro>
 - The Marketing & Management group of the Department manages the **Romanian American Center for Entrepreneurship Education and Management Development**, set up in the framework of an USAID-ALO grant (2004-2006). The

Center is a partnership between *Technical University of Cluj-Napoca* and *Southern Connecticut State University*. Details about this Center history and activity can be found at: <http://www.liderXXI.utcluj.ro>. The Web-site of the Marketing & Management group is: <http://www.marketing.utcluj.ro>

4.2. SCIENTIFIC RESEARCH GRANTS

1. ***Model-based fault diagnosis of induction machines***, Joint Research Project between the University of Veszprém (Hungary) and Technical University of Cluj-Napoca (Romania), C 18001/09.01.2006, ID no. HU 38/06, within the framework of the *Bilateral Scientific and Technological Cooperation Romania – Hungary*. Romanian counterpart project manager: **Károly Ágoston BIRÓ**.
2. ***Condition monitoring of linear and rotational electrical machine drives by means of advanced data processing instruments***, Joint Research Project between the University of Miskolc (Hungary) and Technical University of Cluj-Napoca (Romania), C 18001/09.01.2006, ID no. HU 13/06, within the framework of the *Bilateral Scientific and Technological Cooperation Romania – Hungary*. Romanian counterpart project manager: **Loránd SZABÓ**.
3. ***Energy-efficiency increase in the process of electromechanical conversion using AC motors (HIGH_EFF)***. Funder: Ministry of Education and Research, Grant PNCDI-CEEX, No.47/2006 (Sub-contract TUC-N No.1291/2006). Project coordination: S.C. ICPE ME – Research Institute for Electrical Machines, Bucharest. Project manager for TUC-N: **Vasile IANCU**. Project value in 2006: 122,000 RON (for TUC-N).
4. ***Mathematical models and integrated design solutions of electric machines in view of rationale use of natural and artificial resources (PROMEDIU)***. Funder: Ministry of Education and Research, Grant PNCDI-CEEX, No. 285/2006 (Sub-contract TUC-N No. 285/P2/2006). Project coordination: S.C. ICPE SA, Bucharest. Project manager for TUC-N: **Mircea M. RĂDULESCU**. Project value in 2006: 10,000 RON (for TUC-N).
5. ***New automotive electric actuator technologies (AEAT)***. Funder: Ministry of Education and Research, Grant PCD-CEEX, No. X2C33/2006 (Sub-contract TUC-N No. 12376/2006). Project coordination: Polytechnic University of Timisoara. Project manager for TUC-N: **Mircea M. RĂDULESCU**. Project value in 2006: 26,000 RON (for TUC-N).
6. ***Mobile systems of monitoring, diagnosis, testing and control of the electromechanical convertors***. Funder: Ministry of Education, Research and Youth, National University Research Council, Grant A, no. 2930/2006, Theme A9, CNCSIS code 887. Project manager: **Károly Ágoston BIRÓ**. Project value in 2006: 21,000 RON.
7. ***New advanced materials and structures used for electrical machines***. Funder: Ministry of Education, Research and Youth, National University Research Council, Grant A, no. 2930/2006, Theme: A24, CNCSIS code 769. Project manager: **Vasile IANCU**. Project value in 2006: 18,000 RON.
8. ***Linear generators for wave power converters***. Funder: Ministry of Education, Research and Youth, National University Research Council, Grant A, no. 2783/2006, Theme: A11, CNCSIS code 1305. Project manager: **Loránd SZABÓ**. Project value in 2006: 19,000 RON.

9. **Mobile virtual instrumentation systems for real-time monitoring and diagnosis in electromechanical cell architectures.** Funder: Ministry of Education, Research and Youth, National University Research Council, Grant A, no. 2783/2006, Theme: A1, CNCSIS code 1263. Project manager: **Horia HEDEȘIU**. Project value in 2006: 18,000 RON.
10. **Linear transverse flux motor for flexible manufacturing systems.** Funder: Ministry of Education, Research and Youth, National University Research Council, Grant TD, no. 2930/2006, Theme: TD10, CNCSIS code 257. Project manager: **Dan-Cristian POPA**. Project value in 2006: 6,000 RON.
11. **Experimental study on laboratory model of interior-permanent-magnet synchronous motors for propulsion of light electric vehicles.** Funder: Ministry of Education and Research, National University Research Council (CNCSIS), Grant TD, no. 2930/2006, CNCSIS code 233. Project manager: **Adina MUNTEAN**.
12. **Practical implementation of an integrated starter / alternator system for new-generation autovehicles using a direct-driven electronically-commutated machine.** Funder: Ministry of Education and Research, National University Research Council (CNCSIS), Grant TD, no. 2930/2006, CNCSIS code 241. Project manager: **Tiberiu MOLDOVAN**.
13. **Drive system based on permanent magnet synchronous reluctance motor.** Funder: Ministry of Education, Research and Youth, National University Research Council, Grant TD, no. 2930/2006, Theme: TD4, CNCSIS code 258. Project manager: **Mircea GUTMAN**. Project value in 2006: 8,300 RON.

4.3. PATENTS

1. D.Gribovschi – T. Cățuneanu – O. Lobonțiu – **V. IANCU**: **Servocontrol system for forger hammers**, patent no. 105318/CBI.

5. OTHER KINDS OF RESEARCH AND SPECIALIZATION ACTIVITIES

1. **Gh. Alexandru CATANĂ, Doina CATANĂ**: Establishment of Romanian-American Center for Entrepreneurship Education and Management Development, Romanian Director USAID-ALO grant 2004-2006 (<http://www.liderXXI.utcluj.ro>).
2. **Gh. Alexandru CATANĂ, Doina CATANĂ, Anca CONSTANTINESCU-DOBRA**, GLOBE-ROMANIA, research financed by Telecom Budapesta.

6. PUBLICATIONS

6.1. BOOKS AND BOOK CHAPTERS

1. **Adina MUNTEAN – M.M. RĂDULESCU – A. Miraoui**: **Wide-speed operation of direct torque-controlled interior permanent-magnet synchronous motors**, in *Recent developments of electrical drives* (Eds. S. Wiak, M. Dems, K. Komez), Springer, The Netherlands, 2006, Ch. 2, pp. 177-186, ISBN 1-4020-4534-4.

6.2. SCIENTIFIC PAPERS PUBLISHED IN PERIODICALS

1. **D. FODOREAN – I.A. VIOREL – A. Djerdir – A.Miraoui: *On a Double-Excited Synchronous Motor with Wide Speed Range, Numerical and Experimental Results***: Iranian Journal of Electrical and Computer Engineering - IJECE, vol.5, n°1, Winter-Spring 2006, pp.63-68, ISSN 1682-0053.
2. G. Cimuca – C. Saudemont – B. Robyns – **M.M. RĂDULESCU: *Control and performance evaluation of a flywheel energy-storage system associated to a variable-speed wind generator***, *IEEE Transactions on Industrial Electronics*, Vol. 53 (2006), No. 4, pp. 1074-1085, ISSN 0278-0046.
3. G. Cimuca – **Ş. BREBAN – M.M. RĂDULESCU – C. Saudemont – B. Robyns: *Energy-optimized direct torque control of an induction machine-based flywheel energy storage system associated to a variable-speed wind generator***, *ELECTROMOTION*, Vol. 13 (2006), No. 1, pp. 80-86, ISSN 1223-057X.
4. M. Poloujadoff – C. Rioux – **M.M. RĂDULESCU: *On the flywheel design for inertial energy-storage systems***, *ELECTROMOTION*, Vol. 13 (2006), No. 4, pp. 271-275, ISSN 1223-057X.
5. R. Lang – R. Alas – R. Alt – **Doina CATANĂ – R. Hartz: *Leadership in transformation – Between Local Embeddedness and Global Challenges***, *Journal of cross-Cultural Competence & Management*, nr. 4/2005, pp.215-246, ISSN 1436-8811.

6.3. PAPERS IN THE PROCEEDINGS OF INTERNATIONAL CONFERENCES

1. **I.A. VIOREL – C.J. Hwan – D.H. Kang – Alina Viorel – Larisa STRETE: *Limits and advantages of scaling as a fast procedure for designing transverse flux motors***, Proceedings of XVII International Conference on Electrical Machine, ICEM '06, Chania (Crete Island, Greece), PSA4-14, on CD.
2. **I.A. VIOREL – R. Munteanu – D. FODOREAN – L. SZABÓ: *On the possibility to use a Hybrid Synchronous Machine as an Integrated Starter-Generator***, Proceedings of the 5th IEEE International Conference on Industrial Technology – ICIT'06, Mumbai (India), pp.1195-1200, ISBN 1-4244-0726-5.
3. **I.A. VIOREL – D. FODOREAN – A. Viorel – L. SZABÓ: *Stand-Alone Double-Excited Synchronous Generator Operating on a Variable Load***, Proceedings of the International Conference on Power Electronics, Intelligent Motion and Power Quality (PCIM '2006), Nürnberg (Germany), pp. 675-680, ISBN 3-928643-43-6.
4. **L. SZABÓ – I.A. VIOREL – P. van Duijsen: *Developing Control Techniques for Two-Coordinate Planar Positioning Systems by Means of Coupled Advanced Simulation Tools***, Proceedings of the International Conference on Power Electronics, Intelligent Motion and Power Quality (PCIM '2006), Nürnberg (Germany), pp. 705-710, ISBN 3-928643-43-6.
5. **D. FODOREAN – A. Djerdir – I.A. VIOREL – A. Miraoui: *Improved Efficiency for an In-Wheel Motor in Large Speed Operating***, Proceedings of the 12th IEEE Conference on Electromagnetic Field Computation – CEFC 2006, Miami, Florida (USA), Digest-Book, pp. 313, ISBN 1-4244-0319-7.
6. C.J. Hwan – D.H. Kang – **I.A. VIOREL – Ilinca Tomescu – Larisa STRETE: *Saturated double salient reluctance motors' analytical model***, Proceedings of XVII International Conference on Electrical Machine, ICEM'06, Chania (Crete Island, Greece), PTA2-12, on CD.

7. J.H. Chang – D.H. Kang – I.A. VIOREL – Larisa STRETE: ***Transverse flux reluctance linear motor (TFRLM) analytical model based on finite element method (FEM) analysis***, Proceedings of the 12th IEEE, Conference on Electromagnetic Field Computation, CEFC '2006, Miami, Florida (USA), Digest-Book, pp. 434, ISBN 1-4244-0319-7.
8. Liliana VICOL – J.-J. Simond – Mai TuXuan – I.A. VIOREL: ***The identification of the synchronous machine parameters by standstill DC decay test***, Proceedings of XVII International Conference on Electrical Machine, ICEM '06, Chania (Crete Island, Greece), on CD.
9. L. SZABÓ – D.C. POPA – V. IANCU: ***Compact Double Sided Modular Linear Motor for Narrow Industrial Applications***, Proceedings of the 12th International Power Electronics and Motion Control Conference (EPE-PEMC '2006), Portoroz (Slovenia), pp. 1064 – 1069, ISBN 1-4244-0121-6.
10. L. SZABÓ – D.C. POPA – V. IANCU – E. Kovács – F. Tóth: ***On the Usefulness of Simulation in Designing a Permanent Magnet Modular Surface Motor for Advanced Mechatronic Systems***, Proceedings of the 2006 IEEE International Conference on Mechatronics (ICM '2006), Budapest (Hungary), pp. 88-93, ISBN 1-4244-9712-6.
11. L. SZABÓ – D.C. POPA – V. IANCU – E. Kovács – F. Tóth: ***3D FEM Models of Linear Electrical Machines Used in Fault Detection Studies***, Proceedings of the International Scientific Conference MicroCAD '2006, Miskolc (Hungary), Section J (Electrotehnics and Electronics), pp. 89-94, ISBN 963-661-710-4.
12. G. Cimuca – Ș. BREBAN – M.M. RĂDULESCU – C. Saudemont – B. Robyns: ***DTC vs. FOC for an induction machine-based flywheel energy storage system associated to a variable-speed wind generator – Experimental results***. Proceedings of the 17th International Conference on Electrical Machines (ICEM 2006), Chania (Crete Island, Greece), on CD, Paper 205 – OSA3-5, 6 pp.
13. G. Cimuca – S. BREBAN – M.M. RĂDULESCU – C. Saudemont – B. Robyns: ***Control strategy for an induction machine-based flywheel energy storage system associated to a variable-speed wind generator***. Proceedings of the 10th International Conference on Optimization of Electrical and Electronic Equipment (OPTIM 2006), Brașov (Romania), Vol. II, pp. 191-198, ISBN 973-635-704-X.
14. Claudia MARȚIȘ – F. JURCA – C. OPREA – Cosmina NICULA – K.Á. BIRÓ: ***Harmonics Analysis in Renewable Energy Sources Based on Induction and Synchronous Generators***, Proceedings of the International Scientific Conference MicroCAD '2006, Miskolc (Hungary), Section J (Electrotehnics and Electronics), pp. 41-47, ISBN 963-661-700-7.
15. Claudia MARȚIȘ – F. JURCA – H. HEDEȘIU – K.Á. BIRÓ: ***Analytical Description of the Wound Rotor Induction Generator Frequency Response for Diagnosis Purposes***, Proceedings of the International Scientific Conference MicroCAD '2006, Miskolc (Hungary), Section J (Electrotehnics and Electronics), pp. 47-53, ISBN: 963-661-700-7.
16. F. JURCA – Claudia MARȚIȘ – C. OPREA – K.Á. BIRÓ: ***Claw-Poles Machines in the Power Systems based on Renewable Resources***, Proceedings of the International Conference on Power Electronics, Intelligent Motion and Power Quality (PCIM '2006), Nürnberg (Germany), on the CD 123_PP_64_Jurca.pdf, ISBN 3-928613-43-6.

17. **Claudia MARȚIȘ – B. TĂȚĂRANU: *Analytical Description of the Synchronous Machine Frequency Response For Diagnosis Purposes***, Proceedings of the International Conference on Power Electronics, Intelligent Motion and Power Quality (PCIM '2006), Nürnberg (Germany), on the CD 122_PP_62_MARTIS.pdf, ISBN 3-928613-43-6.
18. **I.A. VIOREL – A. BANYAI – Claudia MARȚIȘ – B. TĂȚĂRANU – Ioana Vintiloiu: *On the segmented rotor reluctance synchronous motor saliency ratio calculation***, Proceedings of the 8th International Conference ELEKTRO 2006, Zilina (Slovakia), pp. 1709-1714, ISSN 1-4244-0121-6.
19. **Claudia MARȚIȘ – H. HEDEȘIU – L. SZABÓ – B. TĂȚĂRANU – F. JURCA – C. OPREA: *Electrical Machines Virtual Laboratory - Grid Connection of a Synchronous Generator***, Proceedings of the 12th International Power Electronics and Motion Control Conference (EPE-PEMC '2006), Portoroz (Slovenia), pp. 1709-1714, ISBN 1-4244-0121-6.
20. **S. Kia – H. Henao – G. Capolino - Claudia MARȚIȘ: *Induction Machine Broken Bars Fault Detection Using Stray Flux after Supply Disconnection***, Proceedings of the 32nd Annual Conference of the IEEE Industrial Electronics Society, IECON 2006, Paris (France), on the CD: PF-002534, ISBN 1-4244-0136-4.
21. **D. FODOREAN – I.A. VIOREL – A. Djerdir – A. Miraoui: *Wide Speed Control of a Hybrid Excited Synchronous Machine***, Proceedings of XVII International Conference on Electrical Machine, ICEM '06, Chania (Crete Island, Greece), on CD.
22. **D.C. POPA – V. IANCU – L. SZABÓ: *Linear Transverse Flux Reluctance Machine with Permanent Magnets***, Proceedings of the International Conference on Transversal Flux Machines (ICTFM '2006), Changwon (South Korea), pp. 85-90, ISBN 89-87898-13-5.
23. **V. IANCU – T. Canta – D.C. POPA – L. SZABÓ: *Soft Magnetic Composites Used for the Iron Core of the Electrical Machines***, Proceedings of the 4th International Conference on Materials and Manufacturing Technologies, Cluj-Napoca (Romania), pp. 125, ISBN 973-751-300-2.
24. **Gh.A. CATANĂ, ANCA CONSTANTINESCU-DOBRA, Doina CATANĂ: *An assessment of Romanian Comercial Banks Web sites: a Marketing Perspective***, International conference: Strategic leadership in the context of globalization and regionalization, Faculty of Economics and Business Administration, Babes-Bolyai University, Cluj-Napoca, Supliment Revista Studia, pp. 36-59, ISSN 1220-0506.
25. **Gh.A. CATANĂ – Doina CATANĂ – J.L. Finlay – M. Neal: *Leadership authority and CEO motivations in Romania, Max Weber Revisited***, Schriften zur Organisationswissenschaft10/2006, Forschungsberichte und aufsatze, Special issue, selected papers from the VII Chemnitz East Forum, I pp. 1-24, ISSN 1612-7218.
26. **J.L. Finlay – M. Neal – Gh.A. CATANĂ – Doina CATANĂ: *Did Communism Lead to Rational Legal Leadership Expectations? Some Evidence to the Contrary from Prospective Women Managers in Romania***, Schriften zur Organisationswissenschaft10/2006, Forschungsberichte und aufsatze, Special issue, selected papers from the VII Chemnitz East Forum, pp. 45-66, ISSN 1612-7218.
27. **ANCA CONSTANTINESCU-DOBRA: *External marketing environment as perceived by managers from Romanian Cosmetic Market***, International conference: Strategic leadership in the context of globalization and regionalization, Faculty of Economics and Business Administration, Babes-Bolyai University, Cluj-Napoca, Supliment Revista Studia, pp. 540-551, ISSN 1220-0506.

6.4. PAPERS IN UNIVERSITY ANNALS

1. **L. SZABÓ – C. OPREA: *Linear Generators for Wave Power Plants to Be Set up Near the Romanian Coasts of the Black Sea***, Oradea University Annals, Electrotechnical Fascicle, Computer Science and Control Systems Session, pp. 120-125, ISSN 1841 – 7213.
2. **L. SZABÓ – K.Á. BÍRÓ – D. Fodor – E. Kovács: *Improved Condition Monitoring System for Induction Machines Using a Model-Based Fault Detection Approach***, Oradea University Annals, Electrotechnical Fascicle, Computer Science and Control Systems Session, pp. 126 – 131, ISSN 1841-7213.
3. **V. IANCU – D.C. POPA – L. SZABÓ – M. Ruba – E. Trifu: *Comparative Study on Linear Transverse Flux Reluctance Machines***, Oradea University Annals, Electrotechnical Fascicle, Electrical Engineering Session, pp. 136-139, ISSN 1841-7221.
4. **Cosmina NICULA – Claudia MARTIȘ – F. JURCA: *Electrical Machines Virtual Laboratory – the Unbalanced Operation Regime of the Three-Phase Induction Motor***, Oradea University Annals, Electrotechnical Fascicle, Electrical Engineering Session, pp. 86-92, ISBN 1841-7213.
5. **C. Șteț – I.A. VIOREL – Liliana VICOL – M. Gutman: *Computer Aided Design Procedure for a Switched Reluctance Motor***, “Gh.Asachi” Technical University of Iasi Scientific Journal, Tomul LII (LVI), Fasc. 5A, pp. 455, ISSN 1223-8139.
6. **F. Marignetti – Ioana VESE – R. Di Stefano – M.M. RĂDULESCU: *Thermal analysis of a permanent-magnet tubular machine***. Craiova University Annals, Electrical Engineering Series, Vol. 30 (2006), No. 30, pp. 174-177, ISSN 1842-4805.
7. **V. Trifa – M.M. RĂDULESCU – C. Marginean – Carmen CIURTIN: *Aspects concerning the implementation of electric bikes in the urban transportation of Cluj-Napoca city***. Petroleum-Gas University of Ploiești Bulletin – Technical Series, Vol. 58 (2006), No. 2 bis, pp. 281-288, ISSN 1224-8495.
8. **C. OPREA – Claudia MARTIȘ – K.Á. BIRÓ – F. JURCA: *Comparative study of two topologies of linear electrical generator suitable for wave energy conversion***, Petroleum – Gas University of Ploiești Bulletin – Technical Series, vol. LVIII, No. 2bis/2006, pp. 169-175, ISSN 1224-8495.

6.5. PAPERS IN PROCEEDINGS OF NATIONAL CONFERENCES

1. **L. SZABÓ – K.Á. BÍRÓ – D. Fodor – A. Fodor: *Model-based methods used in the diagnosis of induction machines*** (in Hungarian), Proceedings of the National Conference on Electrical Engineering and Power Systems ENELKO '2006, Cluj (Romania), pp. 112-116, ISSN 1842-4546.
2. **L. SZABÓ – E. Kovács – K.Á. BÍRÓ – J.B. Dobai – Cs. Blága: *Advanced data acquisition systems used in the condition monitoring and diagnosis devices of electrical machines*** (in Hungarian), Proceedings of the National Conference on Electrical Engineering and Power Systems ENELKO '2006, Cluj (Romania), pp. 117-121, ISSN 1842-4546.
3. **A. Fodor – D. Fodor – K.Á. BÍRÓ – L. SZABÓ: *CAN as industrial communication protocol*** (in Hungarian), Proceedings of the National Conference on Electrical Engineering and Power Systems ENELKO '2006, Cluj (Romania), pp. 23-28, ISSN 1842-4546.

4. F. Tóth – L. SZABÓ: *The diagnosis of electrical equipment based on the changes of the leakage flux, Part I. The computation of the external magnetic fields*, (in Hungarian), Proceedings of the National Conference on Electrical Engineering and Power Systems ENELKO '2006, Cluj (Romania), pp. 143-148, ISSN 1842-4546.

7. OTHER ACTIVITIES

7.1. EDITORS

1. **Mircea M. RĂDULESCU**: Associate Editor of the international scientific quarterly *ELECTROMOTION*, Mediamira Science Publisher, Switzerland – Romania, ISSN 122-3-057X.
2. **Mircea M. RĂDULESCU**: Member of the Editorial Board, *Annals of the University of Craiova, Electrical Engineering Series*, Romania, ISSN 1842-4805.
3. **Vasile IANCU, Gh. Alexandru CATANĂ**: Members of the editorial board, *Acta Electrotehnica*, Cluj-Napoca, Romania, ISSN 1224 -2497.
4. **Károly Ágoston BIRÓ**: Member of the Editorial Board *Műszaki szemle*, edited by E.M.T. Association, Cluj-Napoca, Romania, ISSN 1454-0746.
5. **Doina CATANĂ**: Corresponding member of the editorial board, *Journal for East European Management Studies*, Rainer Hampp Verlag, Germany, ISSN 0949-6181.

7.2. SCIENTIFIC REFEREES AND REVIEWERS

1. **Mircea M. RĂDULESCU**: Reviewer for *IEEE Transactions on Industrial Electronics* and *IEEE/ ASME Transactions on Mechatronics*.
2. **Mircea M. RĂDULESCU**: Scientific Referee for *ELECTROMOTION*, Mediamira Science Publisher, Switzerland – Romania, ISSN 122-3-057X.
3. **Ioan-Adrian VIOREL**: Reviewer for *Iranian Journal of Electrical and Computer Engineering*, Tehran, Iran, ISSN 1682-0053.
4. **Ioan-Adrian VIOREL**: Reviewer for *International Journal on Electric Traction- IJET*, France.
5. **Ioan-Adrian VIOREL**: Scientific Referee for the scientific bulletin *Oradea University Annals*, Electrical Section, ISSN 1223 – 2106.
6. **Ioan-Adrian VIOREL**: Reviewer for the *13th National Conference on Electrical Drives* - CNAE 2006, Ploiesti, Romania.
7. **Loránd SZABÓ**: Reviewer for the *12th International Power Electronics and Motion Control Conference (EPE PEMC '2006)*, Portoroz (Slovenia), ISBN 1-4244-0121-6.
8. **Loránd SZABÓ**: Reviewer for *IEEE International Symposium on Industrial Electronics (ISIE '2007)*, Vigo (Spain).
9. **Károly Ágoston BIRÓ, Loránd SZABÓ, Daniel FODOREAN**: Reviewers for *IEEE - International Electric Machines and Drives Conference (IEMDC '2007)*, Antalya (Turkey).
10. **Gh. Alexandru CATANĂ, Doina CATANĂ**: Reviewers for *Journal for East European Management Studies*, Chemnitz, Germany, ISSN 0949-6181.

7.3. MEMBERS OF ORGANISING / STEERING COMMITTEES

1. **Ioan-Adrian VIOREL**: co-chairman *1st International Conference on Transverse Flux Machines ICTFM*, Changwoon (South Korea), September 2006.
2. **Mircea M. RĂDULESCU**: member of the International Steering Committee and Session Chairman at the *17th International Conference on Electrical Machines (ICEM 2006)*, Chania (Crete Island, Greece).
3. **Mircea M. RĂDULESCU**: member of the International Programme Committee of the *Jubilee International XV Symposium on Micromachines and Servosystems (MiS'06)* Soplicowo (Poland), September 17-21, 2006.
4. **Mircea M. RĂDULESCU**: member of the Local Technical Committee of the *10th International Conference on Optimization of Electrical and Electronic Equipment (OPTIM 2006)*, Brasov (Romania).
5. **Ioan-Adrian VIOREL, Mircea M. RĂDULESCU**: member of the International Scientific Committee of the *8th International Conference on Applied and Theoretical Electricity – ICATE 2006*, Baile Herculane (Romania).
6. **Károly Ágoston BIRÓ**: Conference Chairman of *ENELKO '2006 Conference on Energetics and Electrotehnics*, Cluj-Napoca (Romania).
7. **Károly Ágoston BIRÓ, Loránd SZABÓ**: Members in the Organising Committee of *ENELKO '2006 Conference on Energetics and Electrotehnics*, Cluj-Napoca (Romania).
8. **Loránd SZABÓ**: member of the International Scientific Committee of the *6th International Conference on Renewable Sources And Environmental Electro-Technologies*, Oradea (Romania), Section B and A3.
9. **Gh. Alexandru CATANĂ**: co-chairman *Strategic leadership in the context of globalization and regionalization*, 2006, Faculty of Economics and Business Administration, Babes-Bolyai University, Cluj-Napoca (Romania).

7.4. EXPERTS

1. **Loránd SZABÓ**: reviewer *FP6 și FP7*, no. EX2002B039458.
2. **Loránd SZABÓ**: reviewer *Georgian National Science Foundation (GNSF)*.
3. **Loránd SZABÓ**: reviewer *INTAS – International Association for the promotion of co-operation with scientists from the New Independent States of the former Soviet Union (formed by the European Community)*, ID: 4413.
4. **Károly Ágoston BIRÓ, Ioan-Adrian VIOREL, Vasile IANCU, Loránd SZABÓ, Gh. Alexandru CATANĂ, Doina CATANĂ, Horia HEDEȘIU**: reviewers for *National Council of Higher Education Scientific Research (CNCSIS)*.
5. **Loránd SZABÓ, Gh. Alexandru CATANĂ, Doina CATANĂ**: reviewers for *Romanian for Quality assurance in Higher Education, (ARACIS)*.

7.5. Ph.D. THESIS EXAMINERS AND MEMBERS OF ASSESSMENT COMMITTEES

1. **Károly Ágoston BIRÓ**: 1 nomination as a Ph.D. Thesis Examiner at **Politehnica University Timișoara**.

2. **Ioan-Adrian VIOREL**: 1 nomination as a Ph.D. Thesis Examiner at **Politehnica University Timișoara**.
3. **Vasile IANCU**: 1 nomination as a Ph.D. Thesis Examiner at **Politehnica University Timișoara**.
4. **Doina CATANĂ**: 2 nominations as a Ph.D. Thesis Examiner at **Faculty of Sociology, Babeș-Bolyai University, Cluj-Napoca**.

7.6. MEMBERS OF SCIENTIFIC ORGANISATIONS

1. **Mircea M. RĂDULESCU**: Senior Member no. 4250312 **IEEE (Institute of Electrical & Electronics Engineers)**, *Industry Applications Society*, USA.
2. **Ioan-Adrian VIOREL**: Member **IEEE (Institute of Electrical & Electronics Engineers)** since 1993, *Industry Applications Society*, *Power Conversion*, *Magnetics* societies.
3. **Loránd SZABÓ**: Member **IEEE (Institute of Electrical & Electronics Engineers)** no. 80367394, *Power Electronics*, *Magnetics*, *Communications* societies.
4. **Károly Ágoston BIRÓ**, **Loránd SZABÓ**, **Jenő Barna DOBAI**: Members in the *Transylvanian Hungarian Technical Scientific Society*, Cluj-Napoca (Romania).

7.7. OTHERS

1. **Vasile IANCU**: member in *National Council for Financing of the Higher Education (CNFIS)*.
2. **Gh. Alexandru CATANĂ**: member of the *Department for quality of TUC-N*, responsible for Faculty of Electrical Engineering.
3. **Doina CATANĂ**: President of *High School Students National Contest in Economics*, April 2005.
4. **Doina CATANĂ**: member in the *National Comitee for Social and Human Sciences* (Ministry of Higher Education and Research).

8. DOCTORAL THESES AND REPORTS CARRIED OUT

8.1. DOCTORAL REPORTS

1. **Anca CONSTANTINESCU-DOBRA**: presented 1 doctoral report (supervisor: prof.dr.ec. Maria Bârsan from Faculty of European Studies, Babeș-Bolyai University):
 - *Business environment in romanian cosmetical industry*
2. **Florin JURCA**: presented 3 doctoral report (supervisor: prof.dr.ing. K.Á. BIRÓ):
 - *Alternative energy production systems – state-of-the-art*
 - *Modelling of an alternative energy production system*
 - *Experimental analysis of an alternative energy production system*
3. **Claudiu OPREA**: presented 3 doctoral report (supervisor: prof.dr.ing. K.Á. BIRÓ):
 - *The development of the linear electrical machines with permanent magnets*
 - *Modelling of an alternative energy production system*
 - *Experimental analysis of an alternative energy production system*

4. Orbán Zoltán: presented 1 doctoral report (supervisor: prof.dr.ing. **M.M. RĂDULESCU**):
 - *Vector control of the small two-phase induction motor - PWM voltage source inverter system for household applications*
5. **Cosmina NICULA**: defended her doctoral research project (supervisor: prof.dr.ing. **K.Á. BIRÓ**)
 - *The effects of the renewable sources on the electric energy quality*
6. **Carmen CIURTIN**: defended her doctoral research project (supervisor: prof.dr.ing. **M.M. RĂDULESCU**):
 - *Contributions to the study of switched reluctance motors for light electric traction applications*
7. **Ștefan BREBAN**: defended his doctoral research project (supervisor: **prof.dr.ing. M.M. RĂDULESCU**):
 - *Study of the electromechanical conversion system for a variable-speed micro hydroelectrical plant*

Home Page of the Department:
<http://users.utcluj.ro/~szabol/index.html>