

# DEPARTMENT OF ELECTRICAL MACHINES, MARKETING AND MANAGEMENT



**2005**

# 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

#### READERS (ASSOCIATE PROFESSORS)

1. Conf.dr.ing. Radu-Cristian CIORBA
2. Conf.dr.ing. Horia HEDEȘIU
3. Conf.dr.ing. Loránd SZABÓ

#### SENIOR LECTURERS (ASSISTANT PROFESSORS)

1. Ș.I.dr.ing. Claudia MARȚIȘ

#### ASSISTANTS

1. Asist.ec. Anca CONSTANTINESCU-DOBRA (part time Ph.D. student at the Babeș-Bolyai University, Cluj)

#### JUNIOR ASSISTANTS

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#### FULL-TIME Ph.D. STUDENTS

1. ing. Vasile BARZ, from November 2000 to September 2004. Supervisor: Prof.dr.ing. K.Á. Biró.
2. ing. Florin LAZA, from November 2000 to March 2005. Co-supervisors: Prof.dr.ing. M.M. Rădulescu and Prof. G. Champenois from *Université de Poitiers* (France).
3. ing. Alin Dragomir POPAN, from November 2000 to September 2004. Supervisor: Prof.dr.ing. I.A. Viorel.
4. ing. Gabriel Octavian CIMUCA, from November 2001 to November 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).

5. ing. **Jenő Barna DOBAI**, from November 2001. Supervisor: Prof.dr.ing. **K.Á. Biró**.
6. ing. **Daniel FODOREAN**, from November 2001 to September 2005. Co-supervisors: Prof.dr.ing. **I.A. Viorel** and Prof. A. Miraoui from **Université de Technologie Belfort-Montbéliard** (France).
7. ing. **Adina Mariana MUNTEAN**, from November 2001. Co-supervisors: Prof.dr.ing. **M.M. Rădulescu** and Prof. A. Miraoui from **Université de Technologie de Belfort-Montbéliard** (France).
8. ing. **Cristian ȘTEȚ**, from November 2001. Supervisor: Prof.dr.ing. **I.A. Viorel**.
9. ing. **Mircea GUTMAN**, from November 2002. Supervisor: Prof.dr.ing. **I.A. Viorel**.
10. ing. **Tiberiu MOLDOVAN**, from November 2002. Supervisor: Prof.dr.ing. **M.M. Rădulescu**.
11. ing. **Dan-Cristian POPA**, from November 2003. Supervisor: Prof.dr.ing. **V. Iancu**.
12. ing. **Ciprian ȘIMON**, from November 2003. Supervisor: Prof.dr.ing. **M.M. Rădulescu**.
13. ing. **Ioana-Cornelia VESE**, from November 2003. Supervisor: Prof.dr.ing. **M.M. Rădulescu**.
14. ing. **Bogdan-Ionuț TĂȚĂRANU**, from November 2003. Supervisor: Prof.dr.ing. **I.A. Viorel**.
15. ing. **Liliana VICOL**, from November 2003. Supervisor: Prof.dr.ing. **I.A. Viorel**.
16. ing. **Nicolae Florin JURCA**, from October 2004. Supervisor: Prof.dr.ing. **K.Á. Biró**.
17. ing. **Claudiu Alexandru OPREA**, from October 2004. Supervisor: Prof.dr.ing. **K.Á. Biró**.
18. ing. **Attila BÁNYAI**, from October 2005. Conducător științific: Prof.dr.ing. **I.A. Viorel**.
19. ing. **Cosmina NICULA**, from October 2005. Supervisor: Prof.dr.ing. **K.Á. Biró**.
20. ing. **Carmen CIURTIN**, from October 2005. Supervisor: Prof.dr.ing. **M.M. Rădulescu**.
21. ing. **Ștefan BREBAN**, from October 2005. 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 m<sup>2</sup>)
- Electromechanical Systems Laboratory, Room 6 (87 m<sup>2</sup>)
- Small Motors Laboratory, Room 6a (60 m<sup>2</sup>)
- CAD1 Laboratory, Room 9a (42 m<sup>2</sup>)
- CAD2 Laboratory, Room 4 (48 m<sup>2</sup>)
- Research lab for Ph.D. students Room 7a (45 m<sup>2</sup>)

### 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

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## FACULTY OF ELECTRICAL ENGINEERING

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- 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:

- **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
- 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)

**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
- **FLUX 2D (7.60)** general electromagnetic field computations (magnetostatic, magnetodynamic, electrodynamic, transient analysis, motion)
- **FLUX 3D (3.30)**, general electromagnetic three-dimensional field computations
- **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 is 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 **Technical University of Chemnitz** (Germany) in June 2005, where he taught the lecture "**Variable reluctance and permanent magnet synchronous motors with extended speed domain**".

##### 3.1.2. Research stages

1. **Ioan-Adrian VIOREL:** Visiting Researcher at **RWTH Aachen** (Germany), Department of Electric Machines, May-July 2005.
2. **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) beginning with December 2005.
3. **Florin LAZA:** Visiting Ph.D. student at **École Supérieure d'Ingénieurs de Poitiers, Université de Poitiers** (France), January – March 2005.
4. **Gabriel CIMUCA:** Visiting Ph.D. student **École des Hautes Etudes d'Ingénieur, Université Catholique de Lille** (France), February - May 2005.
5. **Adina MUNTEAN:** Visiting Ph.D. student **Université de Technologie de Belfort-Montbéliard** (France), May - July 2005.
6. **Tiberiu MOLDOVAN:** Visiting Ph.D. student at **Université de Technologie de Belfort-Montbéliard** (France), November - December 2005.

### **3.1.3. SOCRATES-ERASMUS Programme Mobilities**

1. **Mircea M. RĂDULESCU**: mobility as Invited SOCRATES-ERASMUS Institutional Coordinator at Institut National des Sciences Appliquées (INSA) de Rouen (France), November 2005.

### **3.1.4. Participation in Conferences and Simposia\***

1. ***International Conference on Power Electronics, Drives and Motion (PCIM '2005)***, Nürnberg (Germany): **Ioan-Adrian VIOREL, Loránd SZABÓ**.
2. ***6<sup>th</sup> International Symposium on Advanced Electromechanical Motion Systems (ELECTROMOTION 2005)***, Lausanne (Switzerland): **Mircea M. RĂDULESCU, Gabriel CIMUCA**.
3. ***19<sup>th</sup> International Scientific Conference MicroCAD '2005***, Miskolc (Hungary): **Károly Ágoston BIRÓ, Jenő Barna DOBAL**.
4. ***5<sup>th</sup> International Conference on Electromechanical and Power Systems (SIELMEN '2005)***, Chisinau (Rep. Moldova): **Mircea GUTMAN, Dan-Cristian POPA**.
5. ***2<sup>nd</sup> International Workshop "Strengthening of interregional R&D collaborations between Hungary, Slovakia, Romania and Ukraine"***, Debrecen (Hungary): **Loránd SZABÓ**.
6. ***15<sup>th</sup> Diagnosis Conference and Exhibition***, Lajosmizse (Hungary): **Loránd SZABÓ**.
7. ***International Symposium of Electric Energy and Intelligent Systems (SELIS '2005)***, Iași (Romania): **Claudia MARȚIȘ, Dan-Cristian POPA**.
8. ***The IX. International Conference on Engineering of Modern Electric Systems on Theoretical Electrical Engineering (EMES '2005)***, Oradea (Romania): **Vasile IANCU**.
9. ***Conference on Energetics and Electrotechnics ENELKO '2005***, Cluj-Napoca (Romania): **Károly Ágoston BIRÓ, Loránd SZABÓ, Jenő Barna DOBAL**.
10. ***International Conference on Marketing - Contemporary Significance & Perspectives***, Cluj-Napoca (Romania): **Anca CONSTANTINESCU-DOBRA**.
11. ***USAID and Higher Education, Partnering to meet development goals***, Washington DC (USA): **Gh. Alexandru CATANĂ, Doina CATANĂ**. Paper presented: **Gh.A. CATANĂ – Doina CATANĂ: Report on Establishment of Romanian, American Center for Entrepreneurship Education and Management Development, Synergy in development, 2005**.
12. ***VII. Chemnitz Eastforum: "Research on Transition – Research in Transition"***, Chemnitz (Germany): **Gh. Alexandru CATANĂ, Doina CATANĂ**. Papers presented: **R. Lang – Gh.A. CATANĂ – Doina CATANĂ: Post-Socialist Entrepreneurs in behavioral traps? Special Types of entrepreneurial orientations and behavioral patterns in transforming societies**, **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**, **Gh.A. CATANĂ – Doina CATANĂ – J.L. Finlay – M. Neal: Leadership authority and CEO motivations in Romania: Max Weber revisited**.
13. ***21<sup>st</sup> EGOS colloquium***, Freie Universitat Berlin (Germany): **Gh. Alexandru CATANĂ, Doina CATANĂ**. Paper presented: **R. Lang – Gh.A. CATANĂ – Doina CATANĂ – J. Steyrer: Entrepreneurial lock in? Special types of entrepreneurial and managerial orientations and behavioral patterns in transforming societies**, "Unlocking organization" Sub-Theme 37: Organisational Change in Transforming Societies

Standing Working Group: Unlocking and Locking-in Organisations within Transforming and Developing Societies.

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

### 3.1.5. Other Mobilities

1. **Gh. Alexandru CATANĂ, Doina CATANĂ**: visiting *Institute for Software Science, University of Vienna* (12-16 July 2005).
2. **Gh. Alexandru CATANĂ, Doina CATANĂ**: visiting **Southern Connecticut State University** (19-23 July 2005) in the framework of the USAID-ALO grant.
3. **Gh. Alexandru CATANĂ, Doina CATANĂ**: visiting *Institut Regional du Travail, Universite de la Mediterranee*, Aix Marseille II, (18-25 September 2005). Knowledge sharing in organizing Management Development Centers.
4. **Loránd SZABÓ**: visiting *Institute of Electrical Drives and Machines, Vienna University of Technology* (23-24 June 2005).

### 3.2. INVITED FELLOWS

1. Prof. **Dan MITCHELL** and prof. **Richard KUSTIN**: **Southern Connecticut State University**, U.S.A. (in March, respectively May 2005).
2. **Prof. Gérard CHAMPENOIS**, Director of Laboratoire d'Automatique et d'Informatique Industrielle, Ecole Supérieure d'Ingénieurs de Poitiers, **Université de Poitiers**, France, teaching-staff mobility in the framework of SOCRATES-ERASMUS Programme 2004-2005, 8-13 April 2005.
3. **Dr. Abdesslem DJERDIR**, Département Génie Systèmes de Commande, **Université de Technologie de Belfort-Montbéliard**, France, teaching-staff mobility in the framework of SOCRATES-ERASMUS Programme 2004-2005, 16-21 April 2005.
4. **Prof. Benoît ROBYNS**, Director of Département Génie Electrique, Ecole des Hautes Etudes d'Ingénieur (HEI), **Université Catholique de Lille**, France, teaching-staff mobility in the framework of SOCRATES-ERASMUS Programme 2004-2005, 1-4 December 2005.
5. **Dr. Christophe SAUDEMONT**, Ecole des Hautes Etudes d'Ingénieur (HEI), **Université Catholique de Lille**, France, teaching-staff mobility in the framework of SOCRATES-ERASMUS Programme 2004-2005, 1-4 Decembrie 2005.
6. **Prof. Abdellatif MIRAOUI**, Director of Département Génie Systèmes de Commande, **Université de Technologie de Belfort-Montbéliard**, France, teaching-staff mobility in the framework of SOCRATES-ERASMUS Programme 2004-2005, 1-4 December 2005.

## 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 ***Small Electric Motors And Electric Traction (SEMET) Group*** is a 2000-founded research team. The group's head and founder is **Mircea M. RĂDULESCU**. The group has about twenty members (academic staff, Ph.D. students, graduates and final-year undergraduate students). The home page of the research group: <http://users.utcluj.ro/~cimuca/>.
- 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>.

## 4.2. SCIENTIFIC RESEARCH GRANTS

1. ***Energetic efficiency increase in the process of electromechanical conversion of energy using ac motors (HIGH\_EFF)***. Funder: Ministry of Education, Research and Youth, National University Research Council, Grant PNCDI-CEEX (RELANSIN), no. 47/2005 (subcontract UTC-N 1291/2005). Project manager: M.V. Cistelean, S.C. ICPE – Research Institute for Electrical Machines (ICPE-ME). Project managers for UTCN: **Vasile IANCU**. Project value in 2005: 20,000 RON (for UTC-N).
2. ***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 33385/2004, Theme: 10, CNCSIS code 887. Project manager: **Károly Ágoston BIRÓ**. Project value in 2005: 18,000 RON.
3. ***Special electrical machine with double role: starter and generator for automobiles, and its command and control system. Study of the possible solutions, design, prototyping and laboratory testing***. Funder: Ministry of Education, Research and Youth, National University Research Council, Grant A, no 33385/2004, Theme: 68, CNCSIS code 363. Project manager: **Ioan-Adrian VIOREL**. Project value in 2005: 20,000 RON.
4. ***New advanced materials and structures used for electrical machines***. Funder: Ministry of Education, Research and Youth, National University Research Council, Grant A, no 27702/2005, Theme: A13, CNCSIS code 769. Project manager: **Vasile IANCU**. Project value in 2005: 19,000 RON.
5. ***Modular planar motor for flexible manufacturing lines***. Funder: Ministry of Education, Research and Youth, National University Research Council, Grant A, no 33385/2004, Theme: 65, CNCSIS code 369. Project manager: **Loránd SZABÓ**. Project value in 2005: 11,000 RON.
6. ***Direct torque control adapted to a flywheel energy storage system associated to the wind generators***, Funder: Ministry of Education and Research, National University Research Council (CNCSIS), Grant TD, no. 27702/2005, CNCSIS code 37. Project manager: **Gabriel CIMUCA**. Project value in 2005: 6,000 RON.
7. ***Influence of faults on magnetic fields and losses in induction machine***. Funder: Ministry of Education and Research, National University Research Council. Grant TD, no. 33385/2004, Theme: TD7, CNCSIS code 221. Project manager: **Jenő Barna DOBAI**. Project value in 2005: 4,500 RON.
8. ***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. 33385/2004, CNCSIS code 233. Project manager: **Adina MUNTEAN**.

9. **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. 33385/2004, CNCSIS code 241. Project manager: **Tiberiu MOLDOVAN**. Project value in 2005: 4,263.2 RON.
10. **Drive system based on permanent magnet synchronous reluctance motor.** Funder: Ministry of Education, Research and Youth, National University Research Council, Grant TD, no 27702/2005, Theme: TD2, CNCSIS code 258. Project manager: **Mircea GUTMAN**. Project value in 2005: 4,200 RON.
11. **Linear transverse flux motor for flexible manufacturing systems.** Funder: Ministry of Education, Research and Youth, National University Research Council, Grant TD, no 27702/2005, Theme: TD4, CNCSIS code 257. Project manager: **Dan-Cristian POPA**. Project value in 2005: 4,200 RON.

## 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, co-director for Romania, USAID-ALO grant 2004-2006 (<http://www.liderXXI.utcluj.ro>).
2. **Gh. Alexandru CATANĂ, Doina CATANĂ, Anca CONSTANTINESCU-DOBRA,** World Study: Banking Websites 2005 (2500 banks from 163 countries), coord. Prof Net Institute for Internet Marketing, Munster Germany, study of Romanian banks websites (<http://www.profnet.de/index.php4?PHPSESSID=34e41b5f226918e17441283498146bbe&COiD=35&displayItem=1130#1130>).

## 6. PUBLICATIONS

### 6.1. BOOKS

1. **K.Á. BÍRÓ – I.A. VIOREL – L. SZABÓ – G. Henneberger:** *Maşini electrice speciale (Special electrical machines, in Romanian)*, Mediamira Puplicher, Cluj-Napoca (Romania), 2005. ISBN 973-713-055-3.
2. J. Finlay – M Neal – **Gh.A. CATANĂ – Doina CATANĂ:** *The influence of cultural background on perceptions of manager and subordinate relationships in Romania, Lebanon and Oman: A preliminary Cross cultural investigation*, in R. Lang, coord, *The End of Transition?*, Rainer Hampp Verlag, Munchen und Mering, 2005, ISBN 3-87988-929-5.
3. **Adina MUNTEAN – M.M. RĂDULESCU – A. Miraoui:** *Control, Measurements and Monitoring* (Ch. 2), 'Wide-speed operation of direct torque-controlled interior permanent-magnet synchronous motors' (Par. 2.4) in *Recent developments of electrical drives* (Eds. S. Wiak, M. Dems, K. Komeza), Springer Science, Amsterdam, The Netherlands, 2005.

### 6.2. SCIENTIFIC PAPERS PUBLISHED IN SPECIALISED PERIODICALS

1. B. Robyns – A. Ansel – A. Davigny – C. Saudemont – **G. CIMUCA – M.M. RĂDULESCU – J-M. Grave :** *Apport du stockage de l'énergie à l'intégration*

*des éoliennes dans les réseaux. électriques. Contribution aux services système*, Revue de l'Electricité et de l'Electronique – REE, no. 5 (May 2005), pp. 75-85, ISSN: 1265-6534.

2. J.-C. Mipo – M. Poloujadoff – **M.M. RĂDULESCU**: ***Simulated annealing approach to the design optimization of two-speed induction-motor windings***, ELECTROMOTION, Vol. 12 (2005), No. 1, pp. 19-25, ISSN: 1223-057X.
3. **D. FODOREAN** – **I.A. VIOREL** – A. Djerdir – A. Miraoui: ***Double-Excited Synchronous Motor with Wide Speed Range: Numerical and Experimental Results***, Iranian Journal of Electrical and Computer Engineering (IJECE), paper 344, 2005, in print.
4. **L. SZABÓ** – **B.J. DOBAI** – **K.Á. BÍRÓ**: ***Discrete Wavelet Transform Based Rotor Faults Detection Method for Induction Machines***, Intelligent Systems at the Service of Mankind, vol. 2. (eds: Elmenreich, W., Machado, J.T., Rudas, I.J.), Ubooks, Augsburg (Germany), 2005, in print.
5. **D. FODOREAN** – A. Djerdir – A. Miraoui – **I.A. VIOREL**: ***Double-Excited Synchronous Motor Performances using the Flux-Simulink Coupling Technique***, "Flux Magazine", 2005, in print.
6. **G. CIMUCA**: ***Flywheel Energy Storage System*** (in Romanian), Revista de Politică Științei și Scientometrie, Special number, 2005, ISSN: 1582-1218.

### 6.3. PAPERS IN THE PROCEEDINGS OF INTERNATIONAL CONFERENCES

1. **I.A. VIOREL** – **A.D. POPAN** – **L. SZABÓ** – **R.C. CIORBA**: ***Direct Drive System with Two Phase Transverse Flux Disc-Type Motor***, Proceedings of the International Conference on Power Electronics, Drives and Motion (PCIM), Nürnberg (Germany), 2005, pp. 303-308, ISBN: 3-928643-41-X.
2. C. Saudemont – B. Robyns – **G. CIMUCA** – **M.M. RĂDULESCU**: ***Grid Connected or Stand-Alone Real-Time Variable Speed Wind Generator Emulator Associated to a Flywheel Energy Storage System***, Proceedings of the 11<sup>th</sup> European Conference on Power Electronics and Applications (EPE '2005) Dresden (Germany), on CD: 0459.pdf.
3. **G. CIMUCA** – **M.M. RĂDULESCU** – C. Saudemont – B. Robyns – **S. BREBAN**: ***Energy-Optimized Direct Torque Control of an Induction Machine-based Flywheel Energy Storage System Associated to a Variable-Speed Wind Generator***, Proceedings of the 6<sup>th</sup> International Symposium on Advanced Electromechanical Motion Systems (ELECTROMOTION '2005), Lausanne (Switzerland), on CD, paper OS4-1, ISSN: 1223-057X.
4. M. Poloujadoff – C. Rioux – **M.M. RĂDULESCU**: ***On the flywheel design for energy storage systems***, Proceedings of the 6<sup>th</sup> International Symposium on Advanced Electromechanical Motion Systems (ELECTROMOTION '2005), Lausanne (Switzerland), on CD, paper OS4-6, ISSN: 1223-057X.
5. A. Câmpeanu – M. Bădică – **V. IANCU**: ***Direct torque and flux control of saturated induction machines***, Proceedings of the 6<sup>th</sup> International Symposium on Advanced Electromechanical Motion Systems (ELECTROMOTION '2005), Lausanne (Switzerland), on CD, paper OS2-2, ISSN: 1223-057X.
6. **G. CIMUCA** – **M.M. RĂDULESCU** – C. Saudemont – B. Robyns: ***DTC versus FOC of an IM-based Flywheel Energy Storage System Associated to a Variable-Speed Wind Generator***, Invited paper at 8<sup>th</sup> International Conference on Modeling and Simulation of Electric Machines, Converters and Systems (Electrimacs '2005), Hammamet (Tunisia).

7. H. Henao – **Claudia MARȚIȘ** – G.A. Gapolino: **Analytical approach of the frequency response for the wound rotor induction machine for diagnosis purpose**, Proceedings of the 5<sup>th</sup> IEEE International Symposium on Diagnostics, Electrical Machines, Power Electronics and Drives (SDEMPED '2005), Vienna (Austria), on CD, ISBN: 0-7803-9123-X.
8. **L. SZABÓ** – **J.B. DOBAI** – **K.Á. BÍRÓ** – D. Fodor – F. Tóth: **Study on Squirrel Cage Faults of Induction Machines by Means of Advanced FEM Based Simulations**, Proceedings of the International Conference on Electrical Drives and Power Electronics (EDPE '2005), Dubrovnik (Croatia), on CD, E05-78.pdf. ISBN: 953-6037-43-2.
9. **M. GUTMAN** – **I.A. VIOREL** – **D. FODOREAN**: **Extended Speed Range Drive System with Synchronous Motors**, Proceedings of the 5<sup>th</sup> International Conference on Electromechanical and Power System (SIELMEN '2005), Chisinau (Rep. Moldova), 2005, vol. 2, pp. 815-818, ISBN: 973-716-230-7.
10. **D.C. POPA** – **V. IANCU** – **I.A. VIOREL**: **On the Transverse Flux Linear Motor Design**, Proceedings of the 5<sup>th</sup> International Conference on Electromechanical and Power System (SIELMEN '2005), Chisinau (Rep. Moldova), 2005, vol. 2, pp. 800-803, ISBN: 973-716-230-7.
11. **D. FODOREAN** – **I.A. VIOREL** – A. Djerdir – A. Miraoui: **A Comparison of the Main Classes of Brushless Motors by Analytical and Numerical Calculation**, Proceedings of the 11<sup>th</sup> International Conference on Electrical Machines, Drives and Power Systems ELMA '2005, Sofia (Bulgaria).
12. **J.B. DOBAI** – **L. SZABÓ** – **K.Á. BÍRÓ**: **FEM Based Transient Motion Analysis of Induction Machines Having Broken Rotor Bars**, Proceedings of the International Scientific Conference MicroCAD '2005, Miskolc (Hungary), Section J (Electrotehnics and Electronics), pp. 13-18, ISBN: 963-661-656-6.
13. **Anca CONSTANTINESCU-DOBRA**: **On-line purchasing decision making process**, Proceedings of the International Conference on Marketing – Contemporary Significance & Perspectives, Babeș-Bolyai University Cluj-Napoca, Ed. Risoprint, Cluj-Napoca, 2005, ISBN: 973-656-851-2.
14. **Doina CATANĂ** – **Gh. Alexandru CATANĂ** – **V. IANCU**: **Communication - a major function of an entrepreneurial university, Higher Education in Romania and EUNET project 2005**, British Council, Romania (<http://www.britishcouncil.ro/eunet/romania-support-eunet-ro-05-comunicarea-universitatea-antreprenoriala.htm>).
15. **Gh.A. CATANĂ** – **Doina CATANĂ**: **Report on Establishment of Romanian, American Center for Entrepreneurship Education and Management Development, Synergy in development**, 2005, USAID and Higher Education, Partnering to meet development goals (Washington DC) (<http://www.aascu.org/ALO/Synergy/Synergy2005/synergy2005.htm>).

#### 6.4. PAPERS IN UNIVERSITY ANNALS

1. **B. TĂTARANU** – **I.A. VIOREL** – **Claudia MARȚIȘ**: **On the Variable Reluctance Synchronous Motor Air-Gap Field Harmonics**, Oradea University Annals, Electrotechnical Fascicle, 2005, pp. 176-179, ISSN: 1223-2106.
2. **D.C. POPA** – **V. IANCU** – **I.A. VIOREL**: **A Comparison between Different Transverse Flux Motor Variants**, Oradea University Annals, Electrotechnical Fascicle, 2005, pp. 162-165, ISSN: 1223-2106.

3. **Liliana VICOL – I.A. VIOREL – C. ŞTEŢ:** *On the Synchronous Machine Equivalent Circuits*, Oradea University Annals, Electrotechnical Fascicle, 2005, pp. 180-183, ISSN: 1223-2106.
4. **M. GUTMAN – I.A. VIOREL – D. FODOREAN – C. ŞTEŢ:** *Different Variants of Permanent Magnet Synchronous Motors with Field Weakening Possibilities*, Oradea University Annals, Electrotechnical Fascicle, 2005, pp. 150-153, ISSN: 1223-2106.
5. **L. SZABÓ – I.A. VIOREL – F. Tóth – I. Szépi:** *High Performance Linear and Surface Motors for Advanced Flexible Manufacturing Systems*, Oradea University Annals, Electrotechnical Fascicle, 2005, pp. 170-175. ISSN: 1223-2106.
6. **V. IANCU – H. HEDEŞIU – D.C. POPA – B. TĂŢĂRANU – M. GUTMAN – K. Á. BIRÓ:** *The Unbalanced Operating Regime of the Three Phase Induction Motor - Noise and Vibration Source*, Oradea University Annals, Electrotechnical Fascicle, 2005, pp. 142-145, ISSN: 1223-2106.
7. **C. OPREA – F. JURCA – H. HEDEŞIU – B. TĂŢĂRANU – Claudia MARŢIŞ:** *Parameter estimation of a transformer in an electrical machines virtual laboratory using LabVIEW*, Oradea University Annals, Electrotechnical Fascicle, 2005, pp. 158-162, ISSN: 1223-2106.
8. **D.C. POPA – V. IANCU – I.A. VIOREL – L. SZABÓ:** *C.A.D. of Linear Transverse Flux Motors*, Bulletin of the Polytechnic Institute of Iaşi, Tome LI (LV), Fasc. 5, Electrotechnics, Energetics, Electronics, 2005, pp. 79-84. ISSN: 1223-8139.
9. **Claudia MARŢIŞ – I.A. VIOREL:** *Modeling and Analysis of Micro-Integrated Electromagnetic Pump*, Bulletin of the Polytechnic Institute of Iaşi, Tome LI (LV), Fasc. 5, Electrotechnics, Energetics, Electronics, 2005, pp. 73-78. ISSN: 1223-8139.

## 6.5. PAPERS IN PROCEEDINGS OF NATIONAL CONFERENCES

1. **L. SZABÓ:** *Typical Faults of Electrical Machines and Their Diagnosis* (in Hungarian), Proceedings of the 15<sup>th</sup> Conference and Exhibition on Diagnosis, Lajosmizse (Hungary), 2005, pp. 19-33. ISBN: 963-217-741-X.
2. **F. Tóth – L. SZABÓ:** *Comment on the Expression Describing the Magnetic Field of the Electrical Machine* (in Hungarian), Proceedings of the Conference on Electrical Engineering '2005, Cluj-Napoca (Romania), 2005, pp. 181-186. ISBN: 973-7840-06-2.
3. **B.J. DOBAI – L. SZABÓ – K.Á. BÍRÓ – D. Fodor:** *FEM based analysis of squirrel cage induction machines having broken rotor bars* (in Hungarian), Proceedings of the Conference on Electrical Engineering '2005, Cluj-Napoca (Romania), 2005, pp. 27-32, ISBN: 973-7840-06-2.
4. **L. SZABÓ:** *Linear Generators for Wave Power Plants* (in Hungarian), Proceedings of the Conference on Electrical Engineering '2005, Cluj-Napoca (Romania), 2005, pp. 161-168. ISBN: 973-7840-06-2.

## 7. OTHER ACTIVITIES

### 7.1. EDITORS

1. **Mircea M. RĂDULESCU:** Associate Editor of the international scientific quarterly *ELECTROMOTION*, ISSN 122-3-057X, Mediamira Science Publisher, Switzerland – Romania.

2. **Vasile IANCU**, member of the editorial board, *Acta Electrotehnica*, ISSN: 1224 -2497.
3. **Doina CATANĂ**: Corresponding member of the editorial board, *Journal for East European Management Studies*, Rainer Hampp Verlag, Germany.

## 7.2. SCIENTIFIC REFEREES AND REVIEWERS

1. **Mircea M. RĂDULESCU**: Scientific Referee for *ELECTROMOTION*, Mediamira Science Publisher, Switzerland – Romania, ISSN: 122-3-057X.
2. **Ioan-Adrian VIOREL**, **Loránd SZABÓ**: Reviewers of *Iranian Journal of Electrical and Computer Engineering*, Tehran, Iran, ISSN: 1682-0053.
3. **Mircea M. RĂDULESCU**, **Gabriel CIMUCA**: Reviewers *IEEE Transactions on Industrial Electronics*.
4. **Gh. Alexandru CATANĂ**, **Doina CATANĂ**: Reviewers of *Journal for East European Management Studies*, Chemnitz, Germany.
5. **Ioan-Adrian VIOREL**: Scientific Referee for the scientific bulletin *Oradea University Annals, Electrical Section*, 2005, ISSN 1223 – 2106.
6. **Mircea M. RĂDULESCU**: Scientific Referee for the scientific bulletin *Annals of the University of Craiova, Electrical Engineering*.

## 7.3. MEMBERS OF ORGANISING / STEERING COMMITTEES

1. **Mircea M. RĂDULESCU**: member in the International Steering Committee, Scientific Secretary and Section Chairman at the *6<sup>th</sup> International Symposium on Advanced Electromechanical Motion Systems – ELECTROMOTION 2005*, Lausanne (Elveția).
2. **Mircea M. RĂDULESCU**: member in the International Scientific Committee la *International Conference on Ship Propulsion and Railway Traction Systems – SPRTS 2005*, Bologna (Italia).
3. **Mircea M. RĂDULESCU**: member in the International Steering Committee of the *11<sup>th</sup> International Conference on Electrical Machines, Drives and Power Systems – ELMA 2005*, Sofia (Bulgaria).
4. **Károly Ágoston BIRÓ**: Conference Chairman of *ENELKO '2004 Conference on Energetics and Electrotehnics*, Cluj-Napoca (Romania).
5. **Károly Ágoston BIRÓ**, **Loránd SZABÓ**: Members in the Organising Committee of *ENELKO '2003 Conference on Energetics and Electrotehnics*, Cluj (Romania).
6. **Vasile IANCU**: Member in the Organising Committee of *SELIS '2005 Conference*, Iași (Romania).

## 7.4. EXPERTS

1. **Károly Ágoston BIRÓ**, **Vasile IANCU**, **Gh. Alexandru CATANĂ**, **Doina CATANĂ**, **Loránd SZABÓ**: experts *National Council of Higher Education Scientific Research (CNCSIS)*.
2. **Loránd SZABÓ**: Expert *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,

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

1. **Mircea M. RĂDULESCU**: Ph.D. Thesis Examiner at: **Ecole Normale Supérieure de Cachan** (France).
2. **Ioan-Adrian VIOREL**: 3 nominations as Ph.D. Thesis Examiner at: **Politehnica University Timișoara** (2) and **Transilvania University Brașov** (1).
3. **Vasile IANCU**: 3 nominations as a Ph.D. Thesis Examiner at **Technical University of Timișoara**, **University of Craiova** and **University of Oradea**.
4. **Mircea M. RĂDULESCU**: 2 nominations as a Ph.D. Thesis Examiner at the Faculty of Electrical Engineering, **Polytechnic University of Timișoara**.
5. **Gh. Alexandru CATANĂ**: nomination as a Ph.D. Thesis Examiner at **Alexandru Ioan Cuza University Iași**.
6. **Gh. Alexandru CATANĂ**: member in Ph.D. examination comitee, **Babeș-Bolyai University Cluj**.

#### 7.6. MEMBERS OF SCIENTIFIC ORGANISATIONS

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

#### 7.7. HONORIFIC AWARDS

1. **Claudia MARȚIȘ**: **Electrical Engineering Young Researcher Award**, Technical University of Cluj-Napoca.

#### 7.8. OTHERS

1. **Vasile IANCU**: member in **National Council for Financing of the Higher Education** (CNFIS).
2. **Doina CATANĂ**: President of **High School Students National Contest in Economics**, April 2005.
3. **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 THESIS

1. **Florin LAZA**: defended Ph.D. thesis: '**Contributions à l'étude d'un moteur triphasé magnétoélectrique et réductant à inversion de flux et à autocommutation électronique** (*Contributions to the study of a PM-reluctance three-phase motor with flux reversal and electronic self-commutation*). Co-supervisors: Prof.dr.ing. **M.M. RĂDULESCU** and Prof. **G. Champenois** from *Université de Poitiers* (France).
2. **Daniel FODOREAN**: defended Ph.D. thesis: **Conception et réalisation d'une machine synchrone à double excitation: Application à l'entraînement direct** (*Design and Prototype Realization of a Double Excited Synchronous Machine: Electric*

*Vehicle Propulsion Application*). Co-supervisors: Prof.dr.ing. **I.A. Viorel** and Prof. **A. Miraoui** from *Technological University of Belfort-Montbéliard* (France).

3. **Gabriel CIMUCA**: defended Ph.D. thesis: ***Système inertiel de stockage d'énergie associé à des générateurs éoliens*** (*Flywheel energy storage system associated to the wind generators*). Co-supervisors: Prof.dr.ing. **M.M. Rădulescu** and Prof. **B. Robyns** from *École des Hautes Etude Industrielles, Université Catholique de Lille* (France).
4. Emil Gherman: defended Ph.D. thesis: ***Intelligent controller, based on a logic programmable device with feedback control, for electrical machines control in electric drives***. Supervisor: Prof.dr.ing. **I.A. Viorel**.

## 8.2. DOCTORAL REPORTS

1. **Dan-Cristian POPA**: sustained 3 doctoral reports (supervisor: prof.dr.ing. **V. IANCU**):
  - ***State-of-the-art in the transverse flux machines research field.***
  - ***Modelling of a transverse flux machine structure.***
  - ***Computed and experimental results obtained on prototype.***
2. **Bogdan TĂȚĂRANU**: sustained 3 doctoral reports (supervisor: prof.dr.ing. **I.A. VIOREL**):
  - ***The harmonics computation for the ac machines. The state-of-the-art.***
  - ***On the field harmonics computation for the ac machines.***
  - ***On the harmonics experimental measurement for the ac machines. The state-of-the-art.***
3. **Ciprian ȘIMON**: sustained 3 doctoral reports (supervisor: prof.dr.ing. **M.M. RĂDULESCU**):
  - ***Condition monitoring and fault diagnosis of autocommutated small electric motors.***
  - ***Fault analysis and design of an autocommutated small electric motor.***
  - ***Fault tolerant control of an autocommutated small electric motor.***
4. **Ioana VESE**: sustained 3 doctoral reports (supervisor: prof.dr.ing. **M.M. RĂDULESCU**):
  - ***Comparative study of tubular linear actuators***
  - ***Modelling and simulation of a tubular linear three-phased actuator***
  - ***Experimental study on tubular linear actuators***
5. **Orbán Zoltán**: sustained 1 doctoral report (supervisor: prof.dr.ing. **M.M. RĂDULESCU**):
  - ***Design, modelling and simulation of an electric drive-system with a small two-phase induction motor and PWM voltage source inverter for a household applications***
6. **Mircea Duma**: sustained 1 doctoral report (supervisor: prof.dr.ing. **M.M. RĂDULESCU**):
  - ***Design and realization of an ac railway network with active conductors of the traction current.***

