

DEPARTMENT OF ELECTRICAL MACHINES, MARKETING AND MANAGEMENT

Annual report



2004

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**

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. 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. 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. 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 ŞTEŢ**, 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. **Vasilica Maria IANCU**, from November 2002. Supervisor: Prof.dr.ing. **I.A. Viorel**.
11. ing. **Tiberiu MOLDOVAN**, from November 2002. Supervisor: Prof.dr.ing. **M.M. Rădulescu**.
12. ing. **Dan-Cristian POPA**, from November 2003. Supervisor: Prof.dr.ing. **V. Iancu**.
13. ing. **Ciprian ŞIMON**, from November 2003. Supervisor: Prof.dr.ing. **M.M. Rădulescu**.
14. ing. **Ioana-Cornelia VESE**, from November 2003. Supervisor: Prof.dr.ing. **M.M. Rădulescu**.
15. ing. **Bogdan-Ionuţ TĂTĂRANU**, from November 2003. Supervisor: Prof.dr.ing. **I.A. Viorel**.
16. ing. **Liliana VICOL**, from November 2003. Supervisor: Prof.dr.ing. **I.A. Viorel**.
17. ing. **Nicolae Florin JURCA**, from October 2004. Supervisor: Prof.dr.ing. **K.Á. Biró**.
18. ing. **Claudiu Alexandru OPREA**, from October 2004. Supervisor: Prof.dr.ing. **K.Á. Biró**.

1.3. ASSOCIATED TEACHING STAFF

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2. MAIN EQUIPMENT OF THE DEPARTMENT

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: **V. IANCU**). The Centre of Excellence is recognised by the National University Research Council of the Romanian Ministry of Education.

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:

- **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

Overheadprojectors

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
- **Scanners:** ScanJet 6200C, CanoScan LiDE 80
- **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.

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. **Vasile IANCU:** Invited Professor at **Technical University of Moldova** (Chişinău, Moldova), 29th of April – 2nd of May 2004.
2. **Mircea M. RĂDULESCU,** Invited Professor at **Université de Technologie de Belfort-Montbéliard** (France), January 2004.
3. **Claudia MARȚIȘ:** Invited Professor at Centre du Robotique, Electrotechnique et Automatique, **Universite Picardie Jules Verne (UPJV)**, Amiens (France), March 2004.

3.1.2. Research stages

1. **Károly Ágoston BIRÓ:** 3 weeks research stage in the framework of the Bilateral Scientific and Technological Cooperation Romania – Hungary at **Széchenyi István University of Győr** (Hungary), Institute of Information Technology and Electrical Engineering, 25th of October - 9th of November 2004.

2. **Károly Ágoston BIRÓ, Loránd SZABÓ**: 2 weeks research stage in the framework of the Bilateral Scientific and Technological Cooperation Romania – Hungary at **University of Veszprém** (Hungary), Institute of Information Technology and Electrical Engineering, in September 2004.
3. **Jenő Barna DOBAI**: one month research stage in the framework of the Bilateral Scientific and Technological Cooperation Romania – Hungary at **University of Veszprém** (Hungary), Institute of Information Technology and Electrical Engineering, 1th -30th of September 2004.
4. **Daniel FODOREAN**: Ph.D. stage in co-supervisorship and temporary research assistant at **Université de Technologie de Belfort-Montbéliard (France)**, January - August 2004.
5. **Florin LAZA**: Ph.D. stages in co-supervisorship at **École Supérieure d'Ingénieurs de Poitiers, Université de Poitiers (France)**, January - June 2004 and October - November 2004.
6. **Gabriel CIMUCA**: Ph.D. stages in co-supervisorship at **École des Hautes Etudes Industrielles, Université Catholique de Lille (France)**, January - March 2004 and September – December 2004.
7. **Adina MUNTEAN**: Ph.D. stages in co-supervisorship at **Université de Technologie de Belfort-Montbéliard (France)**, March - June 2004 and October - December 2004.

3.1.3. SOCRATES-ERASMUS Programme Mobilities

1. **Mircea M. RĂDULESCU**, mobility as Invited SOCRATES-ERASMUS Institutional Coordinator at **Hanzehogeschool Groningen (Netherlands)** and **Technische Universiteit Eindhoven (Netherlands)**, April 2004.
2. **Tiberiu MOLDOVAN**, mobility as ERASMUS Ph.D. Student at **Université de Picardie 'Jules Verne' Amiens (France)**, February – May 2004.

3.1.4. Participation in Conferences and Simposia*

1. **16th International Conference on Electrical Machines – ICEM '2004**, Cracow (Poland): **Ioan-Adrian VIOREL, Mircea M. RĂDULESCU, Daniel FODOREAN**.
2. **International Conference on Power Electronics, Drives and Motion (PCIM '2004)**, Nürnberg (Germany): **Ioan-Adrian VIOREL, Loránd SZABÓ**.
3. **Panel 15: Workforce Development/Private sector Development/Business Administration/Marketing, Synergy in Development 2004, USAID-ALO**, Washington DC (U.S.A.): **Gh. Alexandru CATANĂ., Doina CATANĂ.**
4. **The 20th EGOS Colloquium: The Organization as a Set of Dynamic Relationships Sub-theme: Organizational Change in Transforming Societies**, Ljubljana (Slovenia): **Gh. Alexandru CATANĂ., Doina CATANĂ.**
5. **5th International Conference ELECTRO 2004 connected with the 5th International Conference New Trends in Diagnostics and Repairs of Electrical Machines and Equipments**, Žilina (Slovakia): **Ioan-Adrian VIOREL, Jenő Barna DOBAI**.
6. **17th International Scientific Conference MicroCAD '2003**, Miskolc (Hungary): **Károly Ágoston BIRÓ**
7. **9th International Conference on Optimization of Electrical and Electronic Equipments – OPTIM '2004**, Braşov (Romania): **Mircea M. RĂDULESCU, Gabriel CIMUCA**.

8. **8th IEEE International Conference on Intelligent Engineering Systems INES '2004**, Cluj-Napoca (Romania): **Ioan-Adrian VIOREL, Loránd SZABÓ**.
 9. **International Conference on Automation, Quality and Testing, Robotics, A&QT-R 2004 (THETA 14)**, Cluj-Napoca (Romania): **Loránd SZABÓ**.
 10. **12th National Conference of Electrical Drives CNAE '2004**, Cluj-Napoca (Romania): **Ioan-Adrian VIOREL, Vasile IANCU, Loránd SZABÓ, Horia HEDEȘIU, Claudia MARTIȘ**.
 11. **Conference on Energetics and Electrotechnics ENELKO '2004**, Cluj-Napoca (Romania): **Károly Ágoston BIRÓ, Loránd SZABÓ, Jenő Barna DOBAI**.
 12. **The VII International Conference on Engineering of Modern Electric Systems on Theoretical Electrical Engineering (EMES '2004)**, Oradea (Romania): **Vasile IANCU, Cristian ȘTEȚ, Mircea GUTMAN, Dan-Cristian POPA**.
- All the participants at the conferences have been presenting papers.

3.1.5. Other Mobilities

1. **Ioan-Adrian Viorel**: visiting **Széchenyi István University, Győr**, December 2004.
2. **Gh. Alexandru CATANĂ, Doina CATANĂ**: visiting **Southern Connecticut State University**, 14 - 24 of August 2004.

3.2. INVITED FELLOWS

1. **Dr. Kay HAMEYER** (*Rheinisch-Westfälische Technische Hochschule Aachen*, Germany) and **Dr. Jean-Jaques SIMMOND** (*L'Ecole Polytechnique Fédérale de Lausanne*, Switzerland) when the **Doctor Honoris Causa** was conferred to them on the proposal of our Department.
2. **Dr. Benoit ROBYNS** (Département de Génie Electrique, **École des Hautes Etudes Industrielles, Université Catholique de Lille**, France), teaching-staff mobility in the framework of SOCRATES-ERASMUS Programme 2003-2004, 5-9 June 2004.
3. **Dr. Humberto HENAO** (Département de Génie Electrique, **Université de Picardie 'Jules Verne' Amiens**, France) teaching-staff mobility in the framework of SOCRATES-ERASMUS Programme 2003-2004, June 2004.
4. **Dr. Ellen Frank** (**Southern Connecticut State University**), American Director of the **Romanian American Center for Entrepreneurship Education and Management Development** co-ordination of the first training module offered by the Center.
5. **Dr. FODOR Dénes** (Institute of Information Technology and Electrical Engineering, **University of Veszprém**, Hungary),: 4 visits in the framework of the Bilateral Scientific and Technological Cooperation Romania – Hungary: 18 – 31 May, 2nd of June – 7th July, 17 – 25 September and 5 – 13 October 2004.

4. SCIENTIFIC RESEARCH CONTRACTS

1. ***Adaptive and robust algorithms for speed sensorless ac motor drives.*** Joint Research Project between *University of Veszprém* (Hungary) and *Technical University of Cluj-Napoca* (Romania), no. C 18051/2003, ID nr. HU 12/02, within the framework of the Bilateral Scientific and Technological Cooperation Romania – Hungary. Romanian counterpart project manager: **Károly Ágoston BIRÓ**. Member of the research team: **Vasile IANCU, Loránd SZABÓ, Jenő Barna DOBAI**.
2. ***Applied informatics and power electronics.*** Joint Research Project between *Széchenyi István University of Győr* (Hungary) and *Technical University of Cluj-Napoca* (Romania) no. C 18051/2003, ID nr. HU 12/02, within the framework of the Bilateral Scientific and Technological Cooperation Romania – Hungary. Romanian counterpart project manager: K. Pusztai (Computer Science and automation faculty). Member of the research team: **Károly Ágoston BIRÓ**.
3. ***Mobile systems of monitoring, diagnosis, testing and control of the electromechanical convertors.*** Beneficiary: Ministry of Education, Research and Youth, National University Research Council, Grant A, no 33385/2004, Theme: 10, CNCSIS code 887. Director de proiect: **Károly Ágoston BIRÓ**. Project value in 2004: 130.000.000 ROL.
4. ***Study on the analytical and field computation based optimisation of the electromagnetic structure of the electrical machines with doubly salient poles on both armatures.*** Beneficiary: Romanian Academy. Grant GAR, no 100/2004. Project manager: **Ioan-Adrian VIOREL**. Project value in 2004: 26.000.000 ROL.
5. ***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.*** Beneficiary: 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 2004: 80.000.000 ROL.
6. ***Modular planar motor for flexible manufacturing lines.*** Beneficiary: 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 2004: 75.000.000 ROL.
7. ***Pocket PC mobile architectures instrumentation for telediagnosis and electrical machines analysis.*** Beneficiary: Ministry of Education, Research and Youth, National University Research Council, Grant AT, no. 33385/2004. Project manager: **Horia HEDEȘIU**. Project value in 2004: 125.925.000 ROL.
8. ***Theoretical and experimental study of the integrated starter / alternator system for new-generation autovehicles.*** Beneficiary: Ministry of Education and Research, National University Research Council (CNCSIS), Grant AT, no. 33385/2004, CNCSIS code 152. Project manager: **Tiberiu MOLDOVAN**. Project value in 2004: 89.000.000 ROL.
9. ***Flywheel energy storage system.*** Beneficiary: Ministry of Education and Research, National University Research Council (CNCSIS), Grant TD, no. 33385/2004, CNCSIS code 37. Project manager: **Gabriel CIMUCA**. Project value in 2004: 45.000.000 ROL.

10. ***Influence of faults on magnetic fields and losses in induction machine.*** Beneficiary: 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 2004: 45.000.000 ROL.
11. ***Design and Control Of a Double Excited Synchronous Motor.*** Beneficiary: Ministry of Education and Research, National University Research Council (CNCSIS), Grant TD 19, no. 33385/2004, CNCSIS code 39. Project manager: **Daniel FODOREAN**. Project value in 2004: 60.000.000 ROL.
12. ***Experimental study on laboratory model of interior-permanent-magnet synchronous motors for propulsion of light electric vehicles.*** Beneficiary: Ministry of Education and Research, National University Research Council (CNCSIS), Grant TD, no. 33385/2004, CNCSIS code 233. Project manager: **Adina MUNTEAN**. Project value in 2004: 50.000.000 ROL.
13. ***Practical implementation of an integrated starter / alternator system for new-generation autovehicles using a direct-driven electronically-commutated machine.*** Beneficiary: 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 2004: 42.632.000 ROL

5. OTHER KINDS OF RESEARCH AND SPECIALIZATION ACTIVITIES

1. **Gh. Alexandru CATANĂ, Doina CATANĂ:** ***Grant USAID-ALO*** aiming at setting up the Romanian American Center for Entrepreneurship Education and Management Development in partnership with Southern Connecticut State University, grant total value: 127.712 USD, out of which equipment 6.000 USD

6. PUBLICATIONS

6.1. BOOKS

1. **Claudia MARȚIȘ:** ***Electromagnetic compatibility in electromechanical systems*** (in Romanian), MEDIAMIRA, Cluj-Napoca, 2004, ISBN: 973-713-033-2.
2. **Doina CATANĂ – Anca DOBRA:** ***Management in Power Point*** (in Romanian), UTPRES, Cluj-Napoca, ISBN 973-662-109-X.
3. **Gh.A. CATANĂ – Anca DOBRA CONSTANTINESCU,** ***Marketing in Power Point*** (in Romanian), UTPRES, Cluj-Napoca, ISBN 973-662-052-2.

6.2. SCIENTIFIC PAPERS PUBLISHED IN SPECIALISED PERIODICALS

1. H. Henao – **Claudia MARȚIȘ** – G.-A. Capolino: ***An equivalent internal circuit of the induction machine for advanced spectral analysis***, IEEE Transactions on Industry Applications, vol. 40, no. 3, May-June 2004, pp. 726-734.
2. C. Saudemont – L. Leclercq – B. Robyns – **G. CIMUCA – M.M. RĂDULESCU :** ***Développement d'un émulateur temps réel d'un système de génération eolienne associé à un stockage inertiel d'énergie***, Revue de l'Electricité et de l'Electronique – REE (France), no. 11, Décembre 2004, pp. 49-59 (ISSN 1265-6534).
3. **L. SZABÓ – I.A. VIOREL – I. Szépi:** ***Linear and Planar Variable Reluctance Motors for Flexible Manufacturing Cells***, Advances in Electrical and Electronic Engineering (Slovakia), no. 2, vol. 3, 2004, pp. 39-42 (ISSN 1336-1376).

4. **I.A. VIOREL – L. SZABÓ – R.C. CIORBA – V. BARZ: *Intelligent Compact Drive System with a Synchronous Variable Reluctance Motor***, Advances in Electrical and Electronic Engineering (Slovakia), no. 2, vol. 3, 2004, pp. 47-50 (ISSN 1336-1376).
5. **I.A. VIOREL – J.J. Simond – Liliana VICOL: *On the large synchronous machine parameters calculation***, Advances in Electrical and Electronic Engineering (Slovakia), no. 2, vol. 3, 2004, pp.43-46 (ISSN 1336-1376).
6. **L. SZABÓ – J.B. DOBAI – K.Á. BÍRÓ: *Virtual Instruments for Detecting Rotor Faults in Induction Motors***, Advances in Electrical and Electronic Engineering (Slovakia), no. 2, vol. 3, 2004, pp. 119-122 (ISSN 1336-1376).
7. **I.A. VIOREL – M. Crivii. – L. Löwenstein. – L. SZABÓ – M. GUTMAN: *Direct Drive Systems with Transverse Flux Reluctance Motors***, Acta Electrotehnica, vol. 44, no. 3, 2004, pp. 33-40 (ISSN 1224-2487).
8. **I.A. VIOREL – L. SZABÓ – Löwenstein L. – C. ŞTEȚ: *Integrated Starter-Generators for Automotive Applications***, Acta Electrotehnica, vol. 44, no. 3, 2004, pp. 255-260 (ISSN 1224-2487).
9. **R.C. CIORBA – V. BARZ: *A Three Axis Drive System, Calculation and Modules' Selection***, Acta Electrotehnica, vol. 44, nr. 3, 2004, pp. 203-206 (ISSN 1224-2487).
10. **H. HEDEŞIU – S. Folea – G. Chindris: *Mobile monitoring technologies applied to electromechanical systems***, Acta Electrotehnica vol. 44, no. 3, 2004, pp.207-211 (ISSN 1224-2497).
11. **Claudia MARȚIŞ: *Analytical description of the stator and rotor defaults influence on the squirrel cage induction machine frequency response***, Acta Electrotehnica, vol. 44, no. 3, 2004, pp. 491-499 (ISSN 1224-2487).
12. **Claudia MARȚIŞ – H. HEDEŞIU: *Conducted interferences in electrical drives with PWM-inverter fed doubly-salient permanent-magnet machines***, Acta Electrotehnica, vol. 45, no. 4, 2004, ISSN 1224-2497, pp. 92-97 (ISSN 1224-2487).
13. **Adina MUNTEAN – M.M. RĂDULESCU – Tatiana Bălăşoiu – A. Câmpeanu – M. Ignat: *Design and analysis of small interior permanent-magnet synchronous motors for wide-speed range applications***, Acta Electrotehnica (Romania), vol. 44, no. 3, 2004, pp. 47-50 (ISSN 1224-2497).
14. **T. MOLDOVAN – M.M. RĂDULESCU – G.-A. Capolino: *Design and simulation of an interior permanent-magnet synchronous machine-based direct-drive automotive integrated starter-alternator***, Acta Electrotehnica (Romania), vol. 44, no. 3, 2004, pp. 267-270 (ISSN 1224-2497).
15. **E.M.Trifu – Manuela Muresan – K.Á. BÍRÓ: *Study about the start-up of the chopper equipped trams***, Acta Electrotehnica, vol. 44, no.3, pp. 129-134, 2004 (ISSN 1224 - 2497).
16. **R.C. CIORBA – V. BARZ: *Motoare electrice cu înalt randament***, Măsurări și Automatizări, nr. 5, 2004
17. **R.C. CIORBA – V. BARZ: *Reducerea consumului energetic la consumatorii industriali prin utilizarea echipamentelor cu randament ridicat***, Electricianul, nr. 3, 2004.
18. **L. SZABÓ: *New tendencies in propulsions for clean cars*** (in Hungarian), Műszaki Szemle (Romania), vol. 25, 2004, pp. 44-54 (ISSN: 1454-0746).

19. J. Finlay – M. Neal – Gh.A. CATANĂ – Doina CATANĂ: ***Anticipated Management Styles: Viewpoints of Potential Women Employees from Selected Evolving Countries***, Economic and Business Review for Central and South Eastern Europe, Ljubljana (Slovenia), vol. 5. no. 4/2004, pp. 285-307 (ISSN 1580 – 0466).
20. Gh.A. CATANĂ – Doina CATANĂ: ***Book review, Arnold, S./Chadraba, P./Springer, R. (eds): Marketing strategies for Central and Eastern Europe, Journal for East European Management Studies***, Rainer Hampp Verlag, vol.9, no. 3 /2004, pp. 328-333

6.3. PAPERS IN THE PROCEEDINGS OF INTERNATIONAL CONFERENCES

1. I.A. VIOREL – M. Crivii – M. Jufer – A. Viorel: ***Scaling procedure applied to the transverse flux motors***, Proceedings of the 16th International Conference on Electrical Machines – ICEM'04, Cracow (Poland), September 2004, Paper no. 500, CD-ROM (ISBN 12-345678-90).
2. A.D. POPAN – I.A. VIOREL – R.C. CIORBA: ***Two-phase transverse flux permanent-magnet machine***. Proceedings of the 16th International Conference on Electrical Machines – ICEM'04, Cracow (Poland), September 2004, Paper no. 501, CD-ROM (ISBN 12-345678-90).
3. D. FODOREAN – A. Djerdir – A. Miraoui – I.A. VIOREL: ***Flux Weakening Performances for a Double-Excited Machine***, Proceedings of the 16th International Conference on Electrical Machines – ICEM'04, Cracow (Poland), September 2004, Paper no. 434, CD-ROM (ISBN 12-345678-90).
4. G. CIMUCA – M.M. RĂDULESCU – C. Saudemont – B. Robyns: ***Losses and efficiency of a flywheel energy storage system with permanent-magnet synchronous machine associated to a variable-speed wind generator***, Proceedings of the 16th International Conference on Electrical Machines – ICEM 2004 Cracow (Poland), September 2004, Paper no. 694, CD-ROM (ISBN 12-345678-90).
5. Adina MUNTEAN – M.M. RĂDULESCU – A. Miraoui: ***Wide-speed operation of direct torque-controlled interior permanent-magnet synchronous motors***, Proceedings of the 16th International Conference on Electrical Machines – ICEM 2004 Cracow (Poland), September 2004, Paper no.714, CD-ROM (ISBN 12-345678-90).
6. I.A. VIOREL – L. SZABÓ – R.C. CIORBA – V. BARZ – Z. Puklus: ***Synchronous Reluctance Machine Based Compact Variable Speed Drive System***, Proceedings of the International Conference on Power Electronics, Drives and Motion (PCIM), Nürnberg (Germany), 2004, vol. 2, pp. 201-206, on CD-ROM: S2c-4.pdf (ISSN 3-928643-39-8).
7. Claudia MARȚIȘ – J.B. DOBAI – H. Henao – K.Á. BIRÓ: ***Electromagnetic torque as a tool for diagnosis and condition monitoring purposes in induction machine electrical drives***, Proceedings of the International Conference on Power Electronics, Drives and Motion (PCIM), Nürnberg (Germany), 2004, on CD-ROM: PP4.pdf (ISSN 3-928643-39-8).
8. G. Chindriș – H. HEDEȘIU – O.A. Pop: ***Developing Power Line Carrier Applications on Embedded Systems***, Proceedings of the The Independent European ICT Security Conference and Exhibition ISSE, September 2004, Berlin (Germania), IEEE catalog number 04EX830.
9. L. SZABÓ – I.A. VIOREL – J.B. DOBAI – I. Szépi: ***Optimal Trajectory Generation for a Modular Planar Motor Used in Flexible Manufacturing Systems***, Proceedings of the 11th International Power Electronics and Motion Control Conference (EPE-PEMC '2004), Riga (Latvia), on CD-ROM: A53272.pdf (ISBN 9984-32-070-7).

10. **D. FODOREAN – I.A. VIOREL – A.Miraoui – M. GUTMAN: *Comparison of Hybrid Excited Synchronous Motors for Electrical Vehicle Propulsion***, Proceedings of International Aegean Conference on Electrical Machines and Power Electronics – ACEMP'04, Istanbul (Turkey), May, 2004, pp.52-57 (ISBN 975-93410-1-8).
11. S. Folea – M. Ghercioiu – **H. HEDEȘIU** – C. Gratian – C. Ceteras – I. Monoses, ***LabVIEW on Small Target***, Proceedings of the 2004 IEEE-TTTC - International Conference on Automation, Quality and Testing, Robotics, A&QT-R 2004 (THETA 14), Cluj-Napoca (Romania), Tome II, pp. 275 (ISBN 973-713-047-2).
12. M. Ghercioiu – S. Folea – **H. HEDEȘIU** – C. Ceteras – C. Gratian — I. Monoses: ***Modular Embedded System***, Proceedings of the 2004 IEEE-TTTC - International Conference on Automation, Quality and Testing, Robotics, A&QT-R 2004 (THETA 14), Cluj-Napoca (Romania), Tome II, pp. 281 (ISBN 973-713-047-2).
13. **L. SZABÓ – J.B. DOBAI – K.Á. BÍRÓ: *Rotor Faults Detection in Squirrel-Cage Induction Motors by Current Signature Analysis***, Proceedings of the 2004 IEEE-TTTC - International Conference on Automation, Quality and Testing, Robotics, A&QT-R 2004 (THETA 14), Cluj-Napoca, Tome I., pp. 353-358, pe CD-ROM: 2569_Szabo.pdf (ISBN 973-713-046-4).
14. **I.A. VIOREL – L. SZABÓ – M. GUTMAN – Z. Puklus.: *Transverse Flux Motor Drive Dynamics***, Proceedings of the 8th IEEE International Conference on Intelligent Engineering Systems INES '2004, Cluj-Napoca (Romania), 2004, pp. 393-396 (ISBN 973-662-120-0).
15. **L. SZABÓ – K.Á. BÍRÓ – J.B. DOBAI – D. Fodor – J. Vass: *Wavelet Transform Approach to Rotor Faults Detection in Induction Motors***, Proceedings of the 8th IEEE International Conference on Intelligent Engineering Systems INES '2004, Cluj-Napoca (Romania), 2004, pp. 397-402 (ISBN 973-662-120-0).
16. **Claudia MARȚIȘ – H. HEDEȘIU – B. TĂȚĂRANU – C. OPREA – F. JURCA: *Electrical Machines Virtual Laboratory - Using LabView for Parameter Estimation of a Transformer***, 5th European Conference E-Comm-Line 2004, Bucharest, 2004, on CD-ROM: 59-C5-63-2004.pdf.
17. **G. CIMUCA – M.M. RĂDULESCU – C. Saudemont – B. Robyns: *Performance analysis of an induction machine-based flywheel energy storage system associated to a variable-speed wind generator***, Proceedings of the 9th International Conference on Optimization of Electrical and Electronic Equipments – OPTIM 2004 (Brașov, Romania), vol. II, pp. 319-326.
18. **G. CIMUCA – M.M. RĂDULESCU – C. Saudemont – B. Robyns: *Losses and efficiency of a flywheel energy storage system with permanent-magnet synchronous machine associated to a variable-speed wind generator***, Proceedings of the International Conference on Applied and Theoretical Electricity - ICATE 2004, Băile Herculane (Romania), pp. 133-136.
19. G. Chindriș – **H. HEDEȘIU: *Mobile Monitoring Instruments Applied To Power Systems***. Proceedings of the 10th International Symposium for Design and Technology of Electronic Packages SIITME, 2004, Bucharest (Romania) (ISBN 973-9463-83-5).

6.4. PAPERS IN UNIVERSITY ANNALS

1. **L. SZABÓ – K.Á. BÍRÓ – J.B. DOBAI – D. Fodor – J. Vass: *Wound Rotor Induction Machine's Rotor Faults Detection Method Based on Wavelet Transform***, Oradea University Annals, Electrotechnical Section, 2004, pp. 127-133 (ISSN 1223 – 2106).

2. **L. SZABÓ – I.A. VIOREL – V. IANCU – D.C. POPA: *Soft Magnetic Composites Used in Transverse Flux Machines***, Oradea University Annals, Electrotechnical Section, 2004, pp. 134-141 (ISSN 1223 – 2106)
3. **D.FODOREAN – I.A.VIOREL – A.Miraoui – A.Djerdir – M.GUTMAN: *On the performances of a synchronous motor with different rotor configurations***, Oradea University Annals, Electrotechnical Section, 2004, pp. 105-109 (ISSN 1223-2106).
4. **C. ȘTEȚ – I.A. VIOREL – L. SZABÓ – L. Löwenstein: *Hybrid Electric Vehicles Based on Switched Reluctance Motor Drives***, Oradea University Annals, Electrotechnical Section, 2004, pp. 167-171 (ISSN 1223 – 2106).

6.5. PAPERS IN PROCEEDINGS OF NATIONAL CONFERENCES

1. D. Fodor – J. Vass – R. Tóth – **K.Á. BÍRÓ – L. SZABÓ – J.B. DOBAI: *Speed Sensorless LPV H_∞ Control of the Induction Motor*** (in Hungarian), Conference on Electrical Engineering ENELKO '2004, Cluj-Napoca (Romania), pp. 73-85 (ISBN 973-86852-9-X).
2. **L. SZABÓ: *Integrated Starter-Generators for Hybrid Vehicles***, (in Hungarian), Conference on Electrical Engineering ENELKO '2004, Cluj-Napoca (Romania), pp. 172-178 (ISBN 973-86852-9-X).
3. **I.A.VIOREL – Alina C.Viorel: *Microcentrala electrica eoliana echipata cu generator cu flux transversal – o solutie pentru micro sisteme insularizate***. National Conference on Electrotechnologies and Environment, Sibiu (Romania), CD-ROM.

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. **Mircea M. RĂDULESCU**: Editor (together with V. Trifa, C. Rusu and I. Birou) of the ***Proceedings of the 12th National Conference of Electrical Drives – CNAE 2004***, 23-25 September 2004, Cluj-Napoca (Romania) – ISSN 1224-2497.
3. **Vasile IANCU**, member of the editorial board, ***Acta Electrotehnica***, ISSN 1224 -2497
4. **Doina CATANĂ**: Corresponding member of the editorial board, ***East European Management Studies***, Rainer Hampp Verlag, Germany.

7.2. SCIENTIFIC REFEREES AND REVIEWERS

1. **Mircea M. RĂDULESCU**: Scientific Referee for ***ELECTROMOTION*** Quarterly, Vol. 11 (2004), 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. **Gh. Alexandru CATANĂ, Doina CATANĂ**: Reviewers of ***Journal for East European Management Studies***, Chemnitz, Germania.
4. **Ioan-Adrian VIOREL**: Scientific Referee for the scientific bulletin ***Oradea University Annals, Electrical Section***, 2004, ISSN 1223 – 2106.

7.3. MEMBERS OF ORGANISING / STEERING COMMITTEES

1. **Mircea M. RĂDULESCU**: Member of the **International Steering Committee** and **Editorial Board** of **16th International Conference on Electrical Machines**, Cracow (Poland)
2. **Mircea M. RĂDULESCU**: Member of the **International Steering Committee** and **Advisory Board** of **9th International Conference on Optimization of Electrical and Electronic Equipments**, Braşov (Romania)
3. **Mircea M. RĂDULESCU**: Member of the **International Programme Committee** of **International XIV Symposium on Micromachines & Servodrives**, Tuczno (Poland)
4. **Mircea M. RĂDULESCU**: Member of the **International Scientific Committee** of **7th International Conference of Applied and Theoretical Electricity**, 2004, Baile Herculane (Romania)
5. **Mircea M. RĂDULESCU**: Scientific Secretary of **12th National Conference of Electrical Drives – CNAE 2004**, Cluj-Napoca (Romania).
6. **Ioan-Adrian VIOREL**: section Chairman **8th IEEE International Conference on Intelligent Engineering Systems INES '2004**, Cluj-Napoca (Romania).
7. **Károly Ágoston BIRÓ**: Conference Chairman **ENELKO '2004 Conference on Energetics and Electrotehnics**, Cluj-Napoca (Romania).
8. **Károly Ágoston BIRÓ**, **Loránd SZABÓ**: Members in the Organising Committee **ENELKO '2003 Conference on Energetics and Electrotehnics**, Cluj-Napoca (Romania).

7.4. EXPERTS

1. **Károly Ágoston BIRÓ**, **Ioan-Adrian VIOREL**, **Vasile IANCU**, **Mircea M. RĂDULESCU**, **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,
3. **Loránd SZABÓ**: Expert **FP6 – Sixth Research Framework Programme (European Community)**, ID: EX2002B039458.

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

1. **Mircea M. RĂDULESCU**: 1 nomination as a Ph.D. Thesis Examiner at the Faculty of Electrical Engineering, **Polytechnic University of Timișoara**, 2004.
2. **Vasile IANCU**: 4 nominations as a Ph.D. Thesis Examiner at the **University of Oradea**, 2004.
3. **Gh. Alexandru CATANĂ**: member committee of Ph.D. admitting examination, Faculty of European Studies, Babes-Bolyai University, 4 candidates

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. Ioan-Adrian VIOREL: received *Meritul pentru învățământ clasa II* award from Ministry of Education, Research and Youth.

7.8. OTHERS

1. Doina CATANĂ: Chair, *National Comitee for the National Contest in Economics*, April 2004.
2. Doina CATANĂ: member of assessment and examination in secondary education group of the *Ministry of Higher Education and Research*

8. DOCTORAL THESES AND REPORTS CARRIED OUT

8.1 DOCTORAL THESIS

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8.2 DOCTORAL REPORTS

1. Daniel FODOREAN: 1 doctoral report sustained (supervisor: I.A. VIOREL):
 - *Contributions at the double excited synchronous motors control* (October 2004).
2. Tiberiu MOLDOVAN: sustained 3 doctoral reports (supervisor: M.M. RĂDULESCU):
 - *Comparative analysis of integrated starter / alternator systems for new-generation autovehicles* (June 2004)
 - *Modelling and simulation of an integrated starter / alternator system for new-generation autovehicles* (October 2004)
 - *Experimental study on laboratory model of the operating modes of an integrated starter / alternator system for new-generation autovehicles* (October 2004)
3. Mircea GUTMAN : sustained 2 doctoral reports (supervisor: I.A. VIOREL):
 - *Stator digital flux estimation for a stator flux oriented vector control for a PWM inverteor-fed induction motor drive* (June 2004)
 - *Study of different rotor topologies for a variable reluctance synchronous machine* (November 2004).

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