

DEPARTMENT OF ELECTRICAL DRIVES AND MECHATRONICS

<http://www.tuke.sk/fei-kepm>

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1 DEPARTMENT'S PROFILE

The Department is responsible for education and research in electrical engineering in fields of power electronics, industrial electronics, automation, and in mechatronic systems. The Department offers both types of undergraduate courses (master and bachelor courses) as well as the Ph.D. postgraduate course.

2 STAFF

Professors:

prof. Ing. Jaroslav Timko, PhD.
prof. Ing. Ladislav Zboray, PhD.



Associate Professors: doc. Ing. Jaroslav Dudrík, PhD.
doc. Ing. Viliam Fedák, PhD.
doc. Ing. Jozef Fedor, PhD.
doc. Ing. Pavol Fedor, PhD.
doc. Ing. Ján Fetyko, PhD.
doc. Ing. Michal Kostelný, PhD.
doc. Ing. Irena Kováčová, PhD., extraordinary professor
doc. Ing. Jozef Ondera, PhD.
doc. Ing. Pavel Záskaľický, PhD.

Assistant Professors: Ing. František Ďurovský, PhD.
Ing. Stanislav Fedor
Ing. Želmíra Ferková, PhD.
Ing. Ján Kaňuch
Ing. Daniela Perduková, PhD.
Ing. Jaroslava Žilková, PhD.

Senior Scientists: Ing. Katarína Harčarufková Ing. Emanuel Hutník
Ing. Peter Višny, PhD.

Technical Staff: Katarína Gočová
Ing. Vasil Graban Zuzana Olexová

Ph.D. Students: Ing. Martin Borbeľ Ing. Ondrej Šimko
Ing. Peter Girovský

3 EQUIPMENT

3.1. Teaching and Research Laboratories

- two laboratories for teaching of subjects on electrical engineering basics
- three specialized laboratories for power electronics, one for electronics
- laboratory for CAD and CAE in electrical drives, power electronics and electrical machines (COSMOS, ProEngineer, MATLAB, PSpice, and applied SW) - 10 x PC
- two specialized laboratories for electrical drives and servosystems based on industrial systems
- two specialized laboratories for electrical machines and one for electrical apparatus

3.2. Special Measuring Instruments and Equipment

Control Systems

- Modicon TSX Premium (Schneider Electric) incl. development SW (PL7 Pro V3.1)
- OMRON - Sysmac Mini SK20, OMRON - Sysmac CQM 1
- Allen Bradley Programmable controller SLC 200 incl. development SW RS logic 500, Tech. Terminal AB PanelView 550 and converter AB 1305
- Control system Symadyn
- Automat LOGO, Siemens

Apparatus

- Logic Analyser PHILIPS
- Controlled drives and converters

- DSP controlled AC drive
- DOMINOPUTER - teaching kit

Converters

- Frequency Converter ABB ACS 140, 5,5 kW, RLLK 101 (EVÚ Nová Dubnica)
- DC Converters SIEMENS: SIMOREG 6RA24, 6RA70
- AC Converters SIEMENS: SIMOVERT 6SE21, MicroMaster Junior, SIMOVERT 6SE70 Master drive, 6SE70 Master Drives - Motion Control 2-axes servodrive
- DC thyristor converters SIMOREG 6RA24 a 6RA70 DCMaster (SIEMENS)
- Softstarter (ABB)
- Ward-Leonard drive system

Mechatronics systems

- Educational Robot Tech Quipment MA 2000
- Physical model of production line
- DSP Controlled pendulum
- Model of liquid reservoir
- Model of caster material reservoirs
- Model of flow rate control

4 TEACHING

4.1. Undergraduate Study (Bc.)

Subject	Semester	Lectures/Labs (hours per week)	Name of lecturer
Technical Documentation in El. Engineering	1 st	2/1	Žurovský
Electrical Machines	3 rd	3/3	Kostelný
Power Electronics I.	3 rd	3/3	Dudrík
Microprocessor Techniques	3 rd	2/3	Fedor, P., Perduková D.
Applied SW in Electrical Engineering	3 rd	1/3	Dudrík, Fedák
Electrical Machines and Apparatus	4 th	3/3	Kostelný, Fedor, J.
Power Electronics II.	4 th	3/3	Dudrík
Automation of Electrical Equipment	4 th	3/3	Fedor, P.
Electrical Drives	4 th	3/3	Timko
Automatic Electrical Drives I.	5 th	3/3	Fetyko
Power Semiconductor Systems I.	5 th	3/3	Ondera
Control Systems in Power Electronics	5 th	2/2	Dudrík, Višnyi
Electrical Equipment for Vehicles	5 th	2/2	Žurovský
Robots and Manipulators	5 th	2/2	Fetyko
Automated Electrical Drives II.	6 th	3/3	Fetyko
Power Semiconductor Systems II.	6 th	3/3	Ondera
Design of Electrical Drives	6 th	2/2	Maxim
Selected Industrial Drives	6 th	2/2	Žurovský
Fundamentals of Mechatronics	6 th	2/3	Fetyko

4.2. Graduate Study (Ing.)

Subject	Semester	Lectures/Labs (hours per week)	Name of lecturer
Technical Documentation in El. Eng.	1 st	2/1	Ďurovský
Electrical Machines I.	5 th	3/3	Kostelný
Applied Electronics	5 th	2/3	Kováčová
Micro-Controllers	5 th	2/2	Fedor, P., Višnyi
Marketing	5 th	2/2	Kováčová
Power Electronics	6 th	3/3	Dudrík
Electrical Apparatus	6 th	3/2	Fedor, J.
Electrical Machines II.	6 th	3/3	Kostelný
Control Systems Software	6 th	2/3	Fedor, P.
Mechatronics Fundamentals	6 th	2/3	Fetyko
Electrical Drives	7 th	3/3	Timko
Automation Technology	7 th	3/3	Fedor, P.
Semestral Project	7 th	0/2	Supervisor
Models of Dynamic Systems	7 th	2/2	Fedák, Fetyko
Control Circuits for Power Electronics	7 th	2/2	Dudrík, Višnyi
Electrical Machines Design	7 th	2/2	Ferková
Electrical Equipment of Vehicles	7 th	2/2	Ďurovský
Applied SW in Electrical Engineering	7 th	1/3	Dudrík, Fedák
Controlled Drives	8 th	3/3	Zboray
Electrical Apparatus Construction	8 th	2/3	Fedor, J.
Projection of Electrical Systems	8 th	2/3	Maxim
Mechatronic Systems	8 th	2/3	Fetyko, Fedák
Logic and Non-linear Control	8 th	2/3	Fedor, P.
Power Semiconductor Converters	8 th	2/3	Ondera
Semestral Project	8 th	0/2	supervisor
Special El. Machines and Apparatus	9 th	3/2	Kostelný, Fedor, J.
Semiconductor Converters Applications	9 th	2/3	Ondera
Control and Visualisation Systems of Technological Lines	9 th	2/3	Fedor, P.
Control of Robots and Manipulators	9 th	2/3	Fetyko
Production Systems	9 th	2/3	Fetyko, Ďurovský
Digital Control of Converters	9 th	2/2	Višnyi
Neural and Fuzzy Control of El. Drives	9 th	2/2	Timko, Žilková
Master Thesis (Diploma Work)	10 th	0/8	Thesis supervisor

4.3. Undergraduate and Graduate Study for Foreign Students (In English Language)

Subject	Lectures/Labs (hours per week)	Name of lecturer
Control Theory	2/2	Fedák
Electrical Machines I.	3/3	Záskalický
Electromechanical Systems	2/2	Fedák, Fetyko
Power Electronics	3/3	Dudrík

Electrical Apparatus	3/2	Fedor J.
Electrical Machines II.	3/3	Záskalický
Measurement in El. and Power Engineering	2/3	Záskalický
Mechatronics Fundamentals	2/3	Fetyko
Electrical Drives	3/3	Fedák
Automation of Electrical Equipment	3/3	Fedor P., Perduková
State Control of Electrical Drives	2/3	Zboray
Industrial Systems Identification	2/3	Fedák
Control Circuits for Power Electronics	2/3	Dudrík, Višnyi
Electrical Equipment of Vehicles	2/2	Maxim
System Identification	2/2	Fedák
Applied SW in Electrical Engineering	1/3	Dudrík, Fedák
Controlled Drives	3/3	Zboray
Complex Drive Systems	2/3	Fedák
Power Semiconductor Converters	2/3	Dudrík
Master Thesis Workshop	0/5	supervisor
Power Semiconductor Converters Applications	2/3	Dudrík
Electrical Drives Design	2/3	Maxim
Control of Robots and Manipulators	2/3	Fetyko
Selected Industrial Drives	2/3	Fetyko, Ďurovský
Master Thesis	0/8	Thesis supervisor

5 RESEARCH PROJECTS

- *Modern Methods of Identification and Control of Industrial Systems*, Scientific grant agency project (S.G.A.) VEGA project No. 1/9033/02 (01.2002-12.2004)
- *Voltage and Current Power Supplies with High Efficiency and Reduced Electromagnetic Interference*. VEGA project No. 1/9025/02 (01/2002-12/2004)
- *Modern Control Methods for Mechatronic Systems*, VEGA project No. 1/9277/02 (01/2002-12/2004)
- *ECM Power Converters*, VEGA project No. 1/0376/2003 (01/2003-12/2005)
- *Development of Special Electrical Machines for Industrial Automation*, VEGA project No. 1/8127/01 (01/2002-12/2004)
- *Shape Memory Devices Used as Actuators in Relays and Circuit Breakers*, Institutional research project of FEI TU Košice No. 4409
- *Development of Modern Components for Mechatronic Systems*. Institutional research project of FEI TU Košice, No. 4424 (01/2003 – 12/2005)

6 CO-OPERATION

6.1. Co-operation in Slovakia

The Department co-operates with many industrial enterprises in Slovakia having joint project at modernising of the electrical drive systems, control and mechatronic applications: US STEEL Košice, SIEMENS, ABB, BSH Drives and Pumps Michalovce, Křížik Prešov, Schneider Electric Slovakia, Spell Procont Prešov, Vonsch Podbrezová, TEKO Košice, ENERGO CONTROL Košice, ZŤS VVU Košice, ŽP Podbrezová, Bukóza Hencovce.

6.1.1. Visitors to the Department

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6.2. International Co-operation

The department maintains intensive contacts with universities co-operating in current joint international projects:

- Montanuniversity of Leoben, Austria
- University of Zagreb, Croatia
- Brno University of Technology, Czech Republic
- Institut National Polytechnique de Lorraine, Nancy, France
- National Technical University of Athens, Greece
- University of Technology and Economy, Budapest, Hungary
- University of Miskolc, Hungary
- Politecnico di Torino, Italy
- University of Podgorica, Montenegro, Yugoslavia
- Silesian University of Gliwice, Poland
- University of Maribor, Slovenia
- University of Manchester, United Kingdom

6.2.1. Visits of Staff Members to Foreign Institutions

- FEDÁK, V.: Brussels, Belgium, 2-6 Feb. 2003, (EPE Executive Council + ISC EPE 2003 Conference)
- FEDÁK, V.: Budapest, 2 March 2003 (preparation of the FP6 project, activity "Coordinated Actions" - POWERSES)
- FEDÁK, V.: Warsaw, Poland, 6-9 March 2003 (preparation of the FP6 project, activity "Coordinated Actions" - POWERSES)
- FERKOVÁ, Ž.: Brno, Czech Republic 21-25 March 2003
- FEDÁK, V.: Budapest, Hungary, 10-11 April 2003, Coordinator meeting with partners in framework of the INETELE project
- FEDÁK, V.: Podgorica, 12–17 April 2003 (3rd coordinator meeting of TEMPUS project coordinators)
- FERKOVÁ, Ž.: Liberec, Czech Republic, 22-25 April 2003,
- Dudrík, J.: Gliwice, Poland, 29-31 May 2003, invited speaker in the ESPETO Conference
- ĎUROVSKÝ, F., FEDOR, S., FEDOR, P.: Liberec, Czech Republic, 2-6 June 2003
- ĎUROVSKÝ, F.: Pilsen, Czech Republic, 10-12 June 2003 (Conference on Electrical Drives)
- FEDÁK, V.: Hagen, Germany, 23-28 June, 2003 (2nd Joint Coordinator Meeting of the eEDUSER project, Leonardo da Vinci II programme)
- FEDÁK V., Leoben, Austria, 29 June-4 July 2003 (interrupted on 2 July) – (2nd Joint Coordinator Meeting of the INETELE project)
- FEDÁK, V.: Brussels Belgium, 2 July 2003 (European Commission on E-learning meeting)
- KOVÁČOVÁ, I.: Pilsen, Czech Republic, 9-13 Sept. 2003 (6-th Int. Conf. on Advanced Methods in the Theory of Electrical Engineering Applied to Power Systems, University of West Bohemia, Pilsen)
- FERKOVÁ, Ž., ZÁSKALICKÝ, P.: Prague, Czech Republic, 9-12 Sept. 2003 (XI. Conference ISEM'03)

- HARČARUFKOVÁ, K.: Hradec Králové, Czech Republic, 5-6 Nov. 2003
- FERKOVÁ, Ž.: Brno, Czech Republic, 10-11 Nov. 2003
- FEDÁK, V.: Prague, Czech Republic, 5-7 Nov. 2003 (Leonardo da Vinci seminar on preparation of interim and final project reports)
- ZÁSKALICKÝ, P.: Brno, Czech Republic, 11-13 Nov. 2003, (Int. conf. on Low-voltage Electrical Machines)
- ŠIMKO, O.: Prague, Czech Republic, 23-25 Nov. 2003
- FETYKO, J.: Erlangen, Germany, 26-28 Nov. 2003, (visiting of the SIEMENS headquarter: co-operation with SIEMENS)
- DUDRÍK, J., FEDÁK, V., FETYKO, J.: Budapest University of Technology and Economics, Hungary, 4-6 Dec. 2003 (co-operation with the partner in the INETELE project)

6.3. Membership in International Organizations, Societies and Committees

- FEDÁK, V.: EPE Executive Council full member, EPE General Assembly member (EPE = European Power Electronics and Drives Association - Brussels)
- FEDÁK, V.; TIMKO, J.: EPE-PEMC-C members (Power Electronics and Motion Control Council - Budapest)

Members of Programme and Steering Committees of the International Conferences

- ISC of the EPE 2003 Toulouse conference: FEDÁK, V.
- ISC of the 12th Int. Symposium on Power Electronics, eE 2003, Novi Sad: FEDÁK, V.

6.4. Membership in National Organisations and Societies

- TIMKO, J. (Vice-chairman); FEDÁK, V.; FEDOR, J.; ZBORAY, L.: members of Joint Slovak Board for the Ph.D. Study in Electrical Engineering
- FERKOVÁ, Ž.: member of Technical Standards Commission on Electrical Machines in SR
- FEDOR, J.: Working group member of Accreditation Committee at Ministry of Education of SR
- FEDÁK, V.; FEDOR, J.; FETYKO, J.; KAŇUCH, J.; ONDERA, J.; TIMKO, J.; ZÁSKALICKÝ, P.; ZBORAY, L.: members of The SES (Slovak Electrotechnical Society), Branch at FEEI TU Košice
- ONDERA J.: Slovak Electrotechnical Society Committee member

6.5. Contracts, International Projects

The Department is a co-ordinating body in the Leonardo da Vinci project *Interactive and Unified E-Based Education and Training in Electrical Engineering - INETELE*, (No CZ/02/B/F/PP/ 134009). The objective of the project is to facilitate understanding and enhancement the studying in field of electrical engineering by teaching materials in electronic form with animated figures and interactive simulations. Target groups consist of students (secondary and university level), unemployed, disabled and all those who needs to refresh the knowledge from EE.

The Partnership consists of universities, chambers of commerce and industry, research institute and SME: Montanuniversität Leoben (A), Brno University of Technology (CZ), Institut National Polytechnique de Lorraine, Nancy (F), Budapest

University of Economics and Technology (H), Silesian Technical University, Gliwice (PL), Delft University of Technology (NL), Slovak Chamber of Commerce and Industry (SK), Chamber of Commerce (CZ), Simulation Research (NL), Mercury-Sméal, Košice (SK). Duration of the project: 2002-2005. Project co-ordinator: Fedák, V.

Staff members are also involved in the following international projects:

- TEMPUS JEP CD-16127-2001: Standardisation of Curriculum for Electrical Machines Using Multimedia (Fedák, partners: University of Montenegro, Politecnico di Torino,
- Leonardo do Vinci: SK/02/B/P/PP/142256: Efficient E-Learning Network Services Establishment for Education without Borders (Fedák – project coordinator, 10 partners in: The Netherlands, Germany, Spain, Finland, Greece, Slovakia)
- CEEPUS PL-0119-01/02: Multimedia as Auxiliary Tool in Teaching and Learning of Electrical Engineering (subco-ordinator: Fedák, V. Partners: universities in Maribor, Budapest, Pilsen, Bratislava, Gliwice)

7 THESES

7.1. Masters Theses (Ing. Study)

1. BAKOŠ, D.: *Asynchronous Motor Drive in Steady and Transient States – Interactive Multimedia Processing*. (supervisor: Fedák, V.)
2. BUČEK, M.: *Parameters Measurement Methods of the One-Phase Induction Motors*. (Ondera, J.)
3. DŽAMA, P.: *Power Sinusoidal Source with Switched Output Stage*. (Ondera, J.)
4. ĎURICA, P.: *Unity Power Factor Rectifier with Bidirectional Power Flow*. (Ondera, J.)
5. GIROVSKÝ, P.: *Control of an Asynchronous Motor Using a Neural Network*. (Žilková, J.)
6. HARAKAL, M.: *Maximal Torque Moment Control of One-Phase Induction Motors by Condensator Change*. (Kostelný, M.)
7. HRIŇA, J.: *Control of Asynchronous Motor by Digital Signal Processor*. (Fetyko, J.)
8. JURKO, R.: *Current – Mode Controlled Source for Arc Welding*. (Dudrik, J.)
9. KAČALIÁK, M.: *Sinusoidal Switch – Mode Current Source*. (Ondera, J.)
10. LAPŠANSKÝ, V.: *Model of Switched Reluctance Motor $2P_1/2P_2=8/6$* . (Ferková, Ž.)
11. LIPTÁK, S.: *Microcomputer Module for Educational Process*. (Perduková, D.)
12. MAZÁK, A.: *Hierarchical Distributed Control System*. (Harčaruška, R.)
13. MIŠKO, J.: *DC Motor Drive in Steady and Transient States – Interactive Multimedia Processing*. (Fedák, V.)
14. MIŠKO, P.: *Visual Education Possibilities of Rectifying Technique*. (Ondera, J.)
15. PAVLÍK, B.: *Fuzzy Model Based Control of DC Drive*. (Fedor, P.)
16. PRÓNYAI, V.: *Design and Realization of Small Power (12 VDC/120 W) Car Inverter with Utilization of Field Controlled Transistors*. (Kováčová, I.)
17. SCHUTZ, R.: *AC Dynamometer*. (Ďurovský, F.)
18. SIRKO, J.: *Multimotor Electromechanical Systems – Interactive Multimedia Processing*. (Fedák, V.)
19. ŠAMUDOVSÝ, T.: *Control of Pendulum Using Digital Signal Processor*. (Fetyko, J.)

20. ŠIRÝ, M.: *Variables Identification of a Direct Current Motor with Separate Excitation Using Neural Networks.* (Timko, J.)
21. ŠKOVAN, R.: *Dynamic Model of Two – Phase Synchronous Permanent – Magnet Motor.* (Záskalický, P.)
22. TUTKO, L.: *Parameter Identification of a DC Motor by Means of Genetic Algorithms.* (Zboray, L.)
23. VÝROST, Š.: *Simulation of Electrically Robust Unipolar Power Semiconductor Switch.* (Kováčová, I.)
24. ŽATKOVIČ, M.: *Washing Machine Quality Properties Investigation.* (Fedor, P.)

Note: All theses are in Slovak.

7.2. Theses to the PhD. Exam.

1. BORBEL, M.: *Artificial Neural Networks Applications in Electric Drives.*
2. GIROVSKÝ, P.: *Control of Alternating Current Drives by Artificial Neural Networks.*

8 OTHER ACTIVITIES

8.1. Symposia, Workshops, Conferences

- *High-Tech Workshop, Herľany 2003.* High-Tech (as the abbreviation of High-Technology) is the engineering workshop aimed to the informal exchange of ideas of teachers, students, graduates and colleagues from practise in the Educational and Training Centre of Technical University of Košice in Herľany (www.gejzir.sk). The 2003 workshop, already 15th in order, is organised annually and its programme includes specialised, sport and social parts with extremely interesting presentations and discussions, and amusing sporting and other disciplines. More information about this activity is to be found in www.tuke.sk/hth.
- *15th Electrical Drives and Power Electronics Conference, EDPE '03* organised by the Department jointly with Slovak Electrotechnical Society, branch at FEEI TU Kosice was held on 24-26 Sept. 2003 in the hotel Permon, The High Tatras, Slovak Republic. More than 150 participants from 24 countries took part in the conference. Altogether 124 papers were read in 5 keynote presentations, 4 oral sessions, 3 dialogue sessions. The details are to be found in <http://www.tuke.sk/edpe>. Thanks to established cooperation with the University of Zagreb, an agreement on Coordination of EDPE Conference Organisation and Exchange was signed that will enable to organise the next EDPE conference in Dubrovnik in 2005.

8.2. Projects for Industry

1. FETYKO J.; ĎUROVSKÝ, F.; HUTNÍK, E.: Design and Realisation of Drives for Turboexhaustor for Sintering Strips. US Steel Košice, The Blast Furnace Plant
2. FETYKO J.; ĎUROVSKÝ, F.; HUTNÍK, E.: Design and Realisation of Drives and Control of Cutting Line. US Steel Košice, The Hot Tandem Mill Plant.
3. FEDOR, P.: Control System for Injection Moulding Machine. ZEST Michalovce.
4. FETYKO, J., HUTNÍK, E.: Measurement and Analysis of Tension and Loop Control on Hot Strip Finishing Mill. Project solved for U.S. Steel Košice.

5. FETYKO, J., ĎUROVSKÝ, F.: Modernization of Drives of Winders in Chemosvit, a.s. Project solved in cooperation with SIEMENS s.r.o. Bratislava, branch in Košice for Chemosvit a.s.
6. FETYKO, J., DUROVSKÚ, F., HUTNÍK, E.: Participation on Modernization of Paper Machine in SCP Ružomberok. Project solved in cooperation with SIEMENS, s.r.o. Bratislava, branch in Košice for SCP Ružomberok, a.s.
7. FETYKO J.: Measurement and Analysis of Hoisting Drives of Casting Crane. Project solved for ŽP Podbrezová, a.s.
8. DUDRÍK, J., ONDERA, J., VIŠNYI, P.: Design and Realization of Switching Device for Switching and Synchronization of Short-Circuit Current. Project solved for SEZ Krompachy, a.s.
9. FETYKO, J., FEDOR, J., FERKOVÁ, Ž., ZÁSKALICKÝ, P.: Modelling of Short-Circuit Ccurrent Switching-off Processes in Low Voltage Apparatus. Project solved within the *State program of research and development* for SEZ Krompachy, a.s.
10. FETYKO, J., FEDOR, P., DUDRÍK, J., VIŠNYI, P., ĎUROVSKÝ, F.: Design and Realization of Testing Device for Adjusting of the Trigger of Circuit Breaker. Project solved for SEZ Krompachy, a.s.

9 PUBLICATIONS

9.1. Books

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9.2. Journals

1. FERKOVÁ, Ž. – ZBORAY, L.: Model of the Switched Reluctance Motor with Sensorless Control. *Acta Technica ČSAV* 48 (2003), pp. 301-311
2. FEDOR P. – PERDUKOVÁ, D.: A DC Drive Fuzzy Model. *IJECE – Iranian Journal of Electrical and Computer Engineering*, Vol. 2, No. 1, Winter- Spring 2003, pp. 11-16, ISSN 1682-0053
3. PERDUKOVÁ, D. – FEDOR, P.: Fuzzy Controller for Continuous Line. *JEE – Journal of Electrical Engineering*, University Politehnica Romania, Vol. 3/2003, No. 1, pp. 5-11, ISSN 1582-4594
4. FEDOR, P. – PERDUKOVÁ, D.: Dynamical System Replacement by Fuzzy System. *Automatizace*, Vol. 46, No 7, July 2003, pp. 430-434, ISSN 0005-125X (in Slovak)
5. FEDOR, P., - PERDUKOVÁ, D., - TIMKO J.: Identification of the Asynchronous Motor Internal Values, *Acta Technica CSAV* 48, No.1, 2003, pp. 89-97, Prague, ISSN 0001-7043
6. ŽILKOVÁ J., - TIMKO J., - GIROVSKÝ, P.: An Inverse Neural Model for Controlling Non-linear Dynamic Systems. *Acta Technica CSAV*, 2003, Prague, ISSN 0001-7043
7. FERKOVÁ, Ž.: Contribution to Modelling of Switched Reluctance Motor. *Časopis pre elektrotechniku a energetiku (Journal for Electrical and Power Engineering)*, 33. Vol. 9, No 3, June 2003, pp. 10-11, ISSN 1335-2547 (in Slovak)
8. FETYKO, J. - ĎUROVSKÝ, F. - TAKÁČ, T. - HUTNÍK, E.: Electrical Drives of the SIEMENS Company in Education at the FEEI TU of Košice. *AT&P Journal* 2/2003, pp. 86-87, ISSN 1335-2237 (in Slovak)

9. ŽILKOVÁ, J. – TIMKO, J.: Continuous Identification of the Rotor Resistor of AM on Basis of Artificial Neural Network. *Acta Electrotechnica et Informatica*, No.1, Vol.3, 2003, pp.53-56, ISSN1335-8243 (in Slovak)
10. PERDUKOVÁ, D. – FEDOR, P.: Information Exchange in MIMI Systems. *AT&P Journal* No 6, 2003, pp. 70-71, ISSN 1335-2237 (in Slovak)
11. FERKOVÁ, Ž.: Contribution to Modelling of Switched Reluctance Motor. *Časopis pre elektrotechniku a energetiku (Journal for Electrical and Power Engineering)*, 33. Vol. 9, No 3, June 2003, pp. 10-11, ISSN 1335-2547 (in Slovak)
12. KOVÁČOVÁ, I. – KOVÁČ, D.: Safeguard Circuits of Power Semiconductor Parts. *Acta Electrotechnica et Informatica*, 2003, No.3, Vol.3, pp. 44-51
13. KOVÁČOVÁ, I. – KOVÁČ, D.: EMC Compatibility of Power Semiconductor Converters and Inverters. *Acta Electrotechnica et Informatica*, 2003, No.2, Vol.3, pp. 12-14
14. ZÁSKALICKÝ, P. – ZÁSKALICKÁ, M.: Analytical Solution of Magnetic Circuits with Variable Structure, *Acta Mechanica Slovaca*, 2003, No.3, Vol.7, pp. 97-104, ISSN 1335- 2393 (in Slovak)
15. ZÁSKALICKÝ, P.: Permanent Magnet Synchronous Machines and their Utilization in Mechatronic Applications. *Acta Mechanica Slovaca*, 2003, ISSN 1335- 2393 (in Slovak)

9.3. Textbooks

1. HARČARUFKA, R. – HARČARUFKOVÁ, K.: Electronic Communication in a Virtual Team, *Technical University of Košice*, 2003. ISBN 80-8073-035-0 (in Slovak)
2. HARČARUFKOVÁ, K. - ORBÁNOVÁ, I.: Development of Study Package for Distance Education Programs, *Technical University of Košice*, 2003. ISBN 80-8073-038-5 (in Slovak)
3. HARČARUFKOVÁ, K. – PERDUKOVÁ, D.: Writing Textbook in Word Program, *Technical University of Košice*, 2003. ISBN 80-8073-040-7 (in Slovak)
4. HARČARUFKOVÁ, K. – HARČARUFKA, R.: Online Publishing, *Technical University of Košice*, 2003. ISBN 80-8073-041-5 (in Slovak)
5. HARČARUFKOVÁ, K. – ORBÁNOVÁ, I. – HARČARUFKA, R. – ZEĽOVÁ, A. – PERDUKOVÁ, D.: Virtual Authors Team for Distance Online Education. Online distance course, *Technical University of Košice*, 2003, CD-ROM, ISBN 80-8073-050-4 (in Slovak)
6. KOVÁČOVÁ, I. – KOVÁČ, D., - MOJŽIŠ, M., - ORENDÁČ, M.: Theoretical Electrical Engineering II, *E-learning textbook, FEI TU of Košice*, 2003, p. 102. (in Slovak)

9.4. Conferences

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