

## DEPARTMENT OF MECHATRONICS AND ELECTRONICS

### 1 General Information

The Department of mechatronics and electronics has evaluated the second year of its existence in December, 2006. During this period personnel and location structures have been stabilized. Carrying out of the greater rooms in new building makes it possible to concentrate staff and also most of laboratories in one integrated built unit. These circumstances significantly contributed to more effective operation of the Department. Moreover inventive cooperation and human relations between employees has improved. Transition to the new building has brought also important completion of laboratories by new instruments and audiovisual techniques and special laboratory equipment. The last year was extremely successful also of the point of view of the accepted projects. The Department has obtained two APVV application projects, oriented on applied research and support of technical study propagation for selected high schools. We can positively evaluate also doctorate PhD study course in which five PhD students have handover their dissertation works and three ones were successful in defense examinations.

In the year 2006 the Department involves twelve members of educational staff, three research workers, eight internal PhD students and twenty one external PhD students. From the point of view of internal structure it has been divided into two divisions. The first one is focused on power- and applied electronics. The second one is operating in the field of mechatronics and industry automation.

Within the frame of educational pedagogical operation the Department has been providing education of electronics, mechatronics, micro-computer systems involving industrial controllers and power electronics at the Faculty of Electrical Engineering, and also at further faculties of the University of Zilina. Such an education has been dedicated for different study branches and specializations in the bachelor-, magisterial- and PhD doctoral studies, both in internal and external ones. Besides, the Department is providing and guarantying study branch of Electro-technical systems in mechatronics in bachelor- and magisterial stage of the study, and specialization of Power semiconductor systems on magisterial stage of the branch of energetic- and electrical engineering (ESI).

The Department also has been organized and provided research and development, expertizing and contracts, and develops publication activity in the field of electronics, control systems, mechatronics and power electronics mainly. Further education is provided by the Department in the field of power electronic systems, microcomputer control systems, industrial controllers and programmable logic systems.

Professional activities of the Department have been applied and disseminated on creation and operation of quality- and reliable electronic devices and systems, application of programmable logic areas in design of electronic systems, reconfigurable circuits study as well as diagnostics and analysing of the failures using image analysis. Topology optimising for power semiconductor converters, and their electro-magnetic compatibility belongs to main activities of the Department.

In present time the Department operates with six laboratories dedicated for pedagogical operation, including final projects, final- and master thesis providing. Rather great attention has been devoted to improving of laboratory equipment and modern educational methods, which lead to higher effectiveness of pedagogical process, in the last year. Beside above mentioned labs the Department offers for utilizing three high-tech workplaces dedicated for research and development activities and to experimental part of PhD study providing. It deals with the laboratory of digital image processing and laboratories of digital signal processors and industrial programmable logic controllers.

## 2 Staff of the Department

Head of the Department	: Pavol Špánik
Vice-head of the Department	: Branislav Dobrucký
Secretary for Education	: Anna Kondelová
Administrative Support	: Andrea Prandová
Technical Support	: Ján Dávidík

### 2.1 Sections of the Department

#### 2.1.1 Section of Electronics and Control Systems

Head of the Section	: Jozef Čuntala
Professors	: Branislav Dobrucký
Visiting Professors	: Alfio Consoli
Associate Professors	: Pavol Špánik, Jozef Čuntala, Miroslav Hrianka
Research Fellows	: Rastislav Pavlanin, Roman Radvan, Radovan Ovcaričik, Štefan Kuchar, Daniel Spáčil,
Senior Lecturers (without PhD)	: Ivan Kožehuba, Jozef Lakatoš, Peter Šindler, Libor Hargaš, Anna Kondelová

#### 2.1.2 Section of Mechatronics Systems and Industry Automation

Head of the Section	: Fedor Kállay
Associate Professors	: Fedor Kállay, Pavel Pavlásek,
Research Fellows	: Marek Paškala
Senior Lecturers (with PhD)	: Anna Príkopová

#### 2.1.3 Postgraduate Students

Internal (full-time)	: Peter Izák, Róbert Šul, Slavomír Drozdy, Viktor Bobek Branislav Zigmund, Juraj Vereš (to 10 <sup>th</sup> August 2006), Michal Frivaldský (from 2 <sup>nd</sup> October 2006), Dušan Koniar (from 2 <sup>nd</sup> October 2006), Peter Drgoňa (from 23 <sup>rd</sup> October 2006)
External (part-time)	: Gabriel Kácsor, Libor Hargaš, Peter Šindler, Anna Kondelová, Anna Príkopová, Ivan Lokšeninec, Igor Gerek, Peter Čerňan, Róbert Záhoranský, Radoslav Neuirth, Stanislav Vereš, Stanislav Korec, Peter Števkó, Marián Pčola, Roman Holček, Roman Filka, Peter Balažovič, Ján Duda, Tibor Digaňa, Ján Perašin

## 3 Teaching

### 3.1 Courses in Bachelor and Master Degree Programmes

Code	Title	Lessons-Seminars-Exercises		Teachers
		Semester	hours/week	
<i>Courses of the Faculty of Electrical Engineering</i>				
32224	Measurement and Data Processing	4	2-0-2	Kállay
32226	Logical Systems and Microprocessors	4	2-0-2	Hrianka

32227 Control Circuits of Mechatronic Systems	4	2-0-2	Dobrucký
32233 Mechatronics	5	2-0-2	Pavlásek
32237 Dynamic System Modelling and Simulation	5	2-0-2	Špánik
32245 Diploma Seminar	6	0- 4-0	Pavlásek
3B303 Analogue Electronic Systems	3	2-0-3	Čuntala
3B309 Electronics I	3	2-0-3	Čuntala
31096 Electronics II	4	2-0-3	Hrianka
31607 Logical Circuits	5	3-0-2	Hrianka
31256 Power Electronic Devices	5	2-0-2	Špánik
31258 Theory of Automatic Control	5	2-1-1	Príkopová
31297 Electronic Logical Circuits	5	3-0-2	Hrianka
31618 Microelectronics	6	3-0-2	Čuntala
31020 Image Processing and Analysis	6	2-0-2	Hrianka
31260 Power Static Converters	6	4-1-2	Špánik
31261 Microcontroller Control Systems	6	2-0-2	Dobrucký
31298 Analysis and Synthesis of Power El.Circuits6	6	2-0-2	Špánik
31303 Distributed Systems in Industry Automation	6	2-0-2	Kállay
31035 Microcomputers Programming	8	0-2-2	Šindler
31272 Advanced Control Systems	7	2-0-2	Dobrucký
31106 Design of Customer IC	7	1-3-0	Čuntala
31282 Power Semiconductor Systems	8	2-1-1	Dobrucký
31304 Electric Drives for Robotic Systems	8	2-0-2	Dobrucký
31290 Discrete Control of Electric Drives	9	2-1-2	Dobrucký
31295 Real Time Computer Control	9	2-0-2	Dobrucký
31302 Power Electronics Applications in ET & EE	9	3-0-1	Dobrucký
31316 Seminar Project	9	0-4-0	Špánik
31260 Diploma Seminar	10	0-8-4	Špánik

*External Study*

3B309 Electronics I	3	12-0-8	Čuntala
31096 Electronics II	4	12-0-6	Hrianka
31607 Logical Circuits	5	10-0-6	Hrianka

*Courses of the Faculty of Mechanical Engineering*

21416 Electronics	6	2-0-1	Čuntala
21927 Computers at Industry Automation	6	2-0-2	Kállay
21045 Measurement and Diagnostic	7	2-0-2	Paškala
21046 Logical Circuits	7	2-0-2	Hrianka
21047 Theory of Automatic Control I	7	2-0-2	Príkopa
21496 Microelectronics	7	2-0-1	Čuntala
21455 Exploitation of Computer Network	7	2-0-2	Kállay
21072 Microcomputer Technics	8	2-0-2	Čuntala
21074 Sensors of Non-electrical Phenomena	8	2-0-2	Kállay
21075 Technologies of Process Control	8	2-0-2	Príkopová
21073 Information and Industry Networks	8	2-0-2	Kállay
21910 Electronic Control Elements	8	2-1-2	Špánik
21560 Theory of Automatic Control II	8	2-0-1	Príkopová
21217 Semester project	9	0-0-2	Kállay
21682 Mechatronic systems	9	2-0-2	Pavlásek
21218 Systems Theory	10	2-2-0	Príkopová
21287 Application of Automation Technics	10	2-0-2	Kállay

21289 Diploma seminar	10	0-0-6	Kállay
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*Courses of the Faculty of Operation and Economics of Transport and Communications*

12P31 Electronics	3	20-0-0	Čuntala
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*Courses for Foreign Students – Socrates/Erasmus Program*

3B309 Electronics I	Čuntala, Kondelová	student of Universidade do Porto, PT
3B409 Electronics II	Hrianka, Kondelová	student of Universidade do Porto, PT
32217 Automatic Control	Pavlásek	3 students of Universidade do Porto
31260 Power Static Converters	Dobrucký	student of Catania University, IT
31249 Unfavourable Influences on PS	Dobrucký,	student of Catania University, IT
3.3. Control Systems	Dobrucký	student of Catania University, IT

## 4 Educational, Research and Scientific Projects

### 4.1 Internal Research Projects

*Title: Sophistic-, electronic and mechatronic systems (9/606)*

Coordinator: Pavol ŠPÁNIK

Co-operators: Branislav Dobrucký, Pavel Pavlásek, Fedor Kállay, Anna Príkopová, Daniel Korenčiak, Robert Šul, Slavomír Drozdy, Branislav Zigmund, Viktor Bobek, Juraj Vereš, Michal Frivaldský, Peter Drgoňa, Rastislav Pavlanin, Štefan Kuchar, Radovan Ovcarčík, Marek Paškala, Roman Radvan

*Title: Simulation and analysis of HMI interfaces (10/606)*

Coordinator: Miroslav HRIANKA

Co-operators: Jozef Čuntala, Anna Kondelová, Ivan Kožehuba, Peter Šindler, Jozef Lakatoš, Libor Hargaš, Tibor Digaňa, Peter Izák, Dušan Koniar

### 4.2 National Projects

#### 4.2.1 Research Projects Funded by the Scientific Grant Agency of the Slovak Republic (VEGA)

*Title: New Methods of Digital Processing of Deterministic and Nondeterministic signals (VEGA 1/0144/03)*

Coordinator: Miroslav Hrianka

Co-operators: Libor Hargaš, Peter Izák, Dušan Koniar

*Title: Research of the new methods of modeling-, control and simulation of mechatronic systems (VEGA 1/3086/06)*

Coordinator: Branislav Dobrucký

Co-operators: Fedor Kállay, Pavel Pavlásek, Valéria Hrabovcová, Pavol Rafajdus, Pavol Špánik, Branislav Zigmund, Róbert Šul, Rastislav Pavlanin, Anna Kondelová, Anna Príkopová, Peter Šindler

*Title: Research of commutation process in power transistor structures at soft switching techniques and control algorithm optimization (VEGA 1/0144/03)*

Coordinator: Pavol Špánik

Co-operators: Peter Bury, Branislav Dobrucký, Fedor Kállay, Jozef Čuntala, Miroslav Hrianka, Pavel Pavlásek, Anna Príkopová, Ivan Turek, Peter Šindler, Anna Kondelová, Roman Radvan, Marek Paškala, Rastislav Pavlanin, Viktor Bobek, Róbert Šul, Michal Frivaldský, Slavomír Drozdy, Peter Drgoňa

*Title: Theoretical apparatus for implementation of e-SAFETY principles to Intelligent Transport Systems (VEGA 1/1044/04)*

Coordinator: Juraj Spalek

Co-operators: Fedor Kállay, Juraj Príkopa, Anna Príkopová

*Title: Interdisciplinary solution of the unconventional combustion engines elements optimisation (VEGA 1/1078/04)*

Coordinator: Pavol Kukuča

Co-operators: Anna Príkopová, Juraj Príkopa

#### 4.2.2 Research Projects Funded by the Science & Development Assistance Agency (APVV)

*Title: Device with internal intelligence for gigacycle fatigue test of construction materials working ultrasonic frequency area (APVV-20-051705)*

Coordinator: Pavol Špánik

Co-operators: Branislav Dobrucký, Peter Palček, Fedor Kállay, Jozef Čuntala, Miroslav Hrianka, Pavel Pavlásek, Rastislav Pavlanin, Róbert Šul, Branislav Zigmund, Slavomír Drozdy, Peter Izák, Libor Hargaš, Jozef Lakatoš, Ivan Kožehuba, Peter Šindler, Anna Príkopová, Otakar Bokúvka, Eva Tillová, František Nový, Marián Činčala, Jozef Kúdelčík, Helena Šamajová

*Title: Popularisation of university study in electronics, mechatronics and IT on secondary schools (APVV LPP -0237-06)*

Coordinator: Pavol Špánik

Co-operators: Branislav Dobrucký, Róbert Šul, Marek Paškala, Miroslav Hrianka, Fedor Kállay, Pavel Pavlásek, Anna Heglasová, Marián Prievozník, Pavol Bagin

#### 4.2.3 State Programme of Research & Development

*Title: Analysis of accommodation conditions of internal research and development postgraduate students up to 35 years age*

Coordinator: Dušan Polonský – FPV ŽU

Co-operators: Branislav Dobrucký

### 4.3 International Projects

#### 4.3.1 Leonardo da Vinci Projects

*Title: „Understand“(2006-2008)*

Coordinator: EC Sweden, sub coordinator VŠB Ostrava

Co-operators: FSE and FEE of ŽU, Branislav Dobrucký, Michal Pokorný, Juraj Altus

#### 4.3.2 Socrates/Erasmus Projects

*Title: Teachers and students mobilities within the frame of Socrates/Erasmus programmes*

Coordinator: Marián DZIMKO

Co-operators: Branislav Dobrucký (UCD Dublin, IR), Pavol Špánik (UNICT Catania, IT), Miroslav Hrianka (TU Aachen, DE), Helder Soares (UP Porto, PT), Pedro Allegro (from UP Porto, PT), João Oliveira (Universidade do Porto, PT)

#### 4.3.3 International Scientific and Technological Co-operation Projects (MVTs)

*Title: Electric Conversion and Conditioning ECON2 – 6FP of EU (MEST-CT-2004-504243)*

Coordinator: Greg ASHER – University of Nottingham

University sub-coordinator: Branislav Dobrucký

Co-operators: Pavol Špánik, Branislav Zigmund, Rastislav Pavlanin, Filippo Chimento, Daniel Spáčil.

#### 4.3.4 6<sup>th</sup> Frame Programme

*Title: Marie Curie Early Stage Training: Electric Energy Conversion and Conditioning (ECON2) EST (MEST-CT-2004-504243)*

Coordinator: Branislav Dobrucký

Co-operators: Pavol Špánik, Valéria Hrabovcová, Ján Vittek, Branislav Zigmund, Rastislav Pavlanin, Filippo Chimento, Ivan Giannelli

## 5 Co-operation

### 5.1 Co-operation Partners in Slovakia

EVPÚ a.s Nová Dubnica

ABB Slovakia, Bratislava

DataTherm, s.r.o. Žilina

Power-One, Dubnica nad Váhom

Robotec s.r.o. Sučany

CONTINENTAL MATADOR s.r.o. Púchov

HAGARD:HALL a.s. Nitra, Žilina

IPESoft s.r.o. Žilina

Považská cementáreň a.s., Ladce

Energo controls s.r.o. Žilina

ControlTech, s.r.o. Trnava

Schneider Electric Slovakia, s.r.o., Bratislava, Žilina

VA TECH ELIN EBG SR, s.r.o., Žilina, Bratislava

ELTECO, a.s. Žilina

VUVT Engineering, a.s. Žilina

ELBATEX Slovakia, s.r.o.

MACRO, s.r.o., Žilina

SSE, a.s. Žilina

EMERSON a.s. Nové Mesto n. Váhom

Súkromná zväračská škola, Žilina

Department of el. engineering, mechatronics and industrial engineering, FEI TU Košice

Department of mechatronic systems, FM TUAD, Trenčín

Department of automation and regulation, FEI STU, Bratislava

Department of electric machines and apparatus, FEI STU, Bratislava  
LJF Martin, UK Bratislava

## 5.2 International Co-operation Partners

Università degli studi di Catania -IT, DIEES, prof. Alfio Consoli  
Politecnico di Bari – IT, DEE, prof. Francesco Cupertino  
Technische Universität Graz - AT, FE, IEL, Dr. Manfred Sakulin  
University of Nottingham - UK, prof. Greg ASHER, prof. Pat Wheeler  
University of Picardie – Jules Verne, Amiens - FR, prof. Gérard-André Capolino  
National University of Ireland, Dublin – IRL, prof. Anroi de Paor  
Freescale (Motorola) – CZ, Ing. Ivan Skalka  
University of Porto – PT, prof. Maciel Barbosa  
Technische universität Dresden – DE, Dr. Peter Büchner  
Technikum Wien – AT, prof. Felix Himmelstoss  
Technische universität Bochum – DE, prof. Andreas Steimel  
National Instruments Czech Republic, s.r.o. – Ing. Roman Vala  
Technical Univesity RWTH Aachen - DE  
XILINX USA, University program  
Laboratory Imaging, s.r.o. Praha  
Humusoft s.r.o. Praha – CZ, Karel Bittner

## 5.3 Visitors to the Department

<i>Name</i>	<i>Institution</i>	<i>Length of stay</i>
Alfio CONSOLI	Unict Catania, Italy	1 week
Mario CACCIATO	Unict Catania, Italy	1 week
Elzbieta SZYCHTA	Univerzity of Radom, Poland	1 week
Mahmud Rzig Abdalmoula	Ministry of Education, Libya	1 week

## 5.4 Visits to Foreign Institutions

<i>Name</i>	<i>Institution</i>	<i>Length of stay</i>
Miroslav Hrianka	Technical Univesity RWTH Aachen, DE	7 days
Pavol Špánik	UNICT Catania, IT	7 days
Branislav Dobrucký	UCD Dublin, IRL	7 days
Branislav Dobrucký	EC Office DG 12, Brussels, Belgium	3 days
Branislav Dobrucký	EC Office DG 12, Brussels, Belgium	3 days
Branislav Dobrucký	UNICT Catania, IT	5 days
Branislav Zigmund	Politecnico di Bari, IT	1 year / 4 months
Branislav Zigmund	EU-Japan Centre for Industrial Coop., JP	1 year / 4 months
Rastislav Pavlanin	Politecnico di Bari, IT	8 / 4 months

## 6 Other Activities

### 6.1 Specialized Lectures, Courses Organized by the Department

*Title of Lecture/Course:* AVR Processors  
Customer: Secondary school teachers  
Lecturer: Branislav Dobrucký, Viktor Bobek, Peter Drgoňa  
Date: September – December 2006

*Title of Lecture/Course: Modern Methods of Analysis of Power Electronic Circuits*

Customer: Power One, Nová Dubnica

Lecturer: Branislav Dobrucký, Pavol Špánik, Elena Wisztová, Helena Šamajová

Date: 20<sup>th</sup> December 2006*Title of Lecture/Course: Identification of Goods and Services*

Customer: GS1 SLOVAKIA

Lecturer: Pave Pavlásek

Date: 24<sup>th</sup> – 25<sup>th</sup> October 2006**6.2 Membership in International Institutions/Committees**

- Branislav Dobrucký -European Committee DG 12 – Energy Committee – programme committee  
 -An independent expert for the programme committee 6<sup>th</sup> FP of EC, programme “Integrating and Strengthening the European Research Area”, priority 6: Permanent maintainable development, global changes and ecosystems  
 -Steering Programme Committee of EPE – PEMC, Portorose, Slovenia
- Pavel Pavlásek -member of the Editorial Board of the Journal Strojárstvo (Machinery)
- Pavol Špánik -Member of IEEE Society
- Róbert Šul -Student member of IEEE Society
- Michal Frivaldský -Student member of IEEE Society

**6.3 Membership in National Institutions/Committees**

- Branislav Dobrucký -Member of the National Program Council, Guarantee of the complex young workers up to 35 alter personality development in R&D  
 -Member of the Common Committee for Electrical Engineering
- Pavel Pavlásek -Head of the Commission of Transport and Road Administration port (The Žilina Self-governing region)  
 -Member of the Grant Commission for Education and Culture No.2 of the Ministry of Education of Slovak Republic  
 -Member of the Commission of the Ministry of Education of Slovak Republic for Selection of the Aid of Candidates from Developing Countries and Compatriots  
 -Editorial Board of Strojárstvo / Strojřrenství Journal
- Pavol Špánik -Member of the Common Committee for Mechatronics

**6.4 Membership in University Boards**

- Branislav Dobrucký -Member of the Editorial Board of ZU Scientific Journal – Communication – Scientific Letters  
 -Editorial Board of Publication Committee of ZU  
 -Member of the Scientific Boards of FEE ZU  
 -Member of the Electrical Engineering Committee, FEE ZU  
 -Member of the Automation and Control Committee – Process Control, FEE ZU
- Pavol Špánik -Member of the Senate ZU  
 -Member of the Electrical Engineering Committee, FEI STU Bratislava  
 -Member of the Automation and Control Committee – Process Control, FEE ZU  
 -Member of the Measurement Technique Committee, FEI TU Košice
- Miroslav Hrianka -Member of the Scientific Boards of FEE ZU



-Member of the Academic Senate of FEE ZU

## 7 Publications

### Lecture Notes

- [1] PAVLÁSEK, P.: Didactics of Technical Subjects. (Supplemented Textbook for Supplementary Pedagogical Education Students). University of Žilina, published in the EDIS – Editorial Centre of the University of Žilina, 2006 as 2271<sup>th</sup> publication, No. of copies 180, 38.pp. (In Slovak)

### Journals (SK)

- [2] SEČ, M. – MIŠUTH, J. – ČUNTALA, J. – HARGAŠ, L. – KONDELOVÁ, A.: Protected Microcomputers from VÚVT-Engineering, In: AEEE, Vol. 5, Žilina, Slovakia, May 23-24, 2006, pp. 162-165
- [3] HARGAŠ, L. - ČUNTALA, J.: New Method of LCD Display Viewing Angle Designation, In: AEEE, Vol. 5, Žilina, Slovakia, May 23-24, 2006, pp. 23-26
- [4] LAKATOŠ, J. – ČUNTALA, J. – KONDELOVÁ, A.: Simulation of Heat Transfer and Electromagnetic Fields of Protected Microcomputers, In: AEEE, Vol. 5, Žilina, Slovakia, May 23-24, 2006, pp. 281-286
- [5] OVČARČÍK, R. – ŠPÁNIK, P. – ŠUL, R. – CHIMENTO, F.: Unequal Input Voltages Distribution between the Serial Connected Halfbridges. In: AEEE, Vol. 5, Žilina, Slovakia, May 23-24, 2006, pp. 51-54
- [6] PAVLANIN, R. – MARINELLI, M. – ZIGMUND, B.: Different View on pq Theory Used in the Control Algorithm of Active Power Filters, In: AEEE, Vol. 5, Žilina, Slovakia, May 23-24, 2006, pp. 55-60
- [7] ŠUL, R. - DOBRUCKÝ, B. – OVČARČÍK, R.: New Possibilities of Power Electronic Structures Using SiC Technology, In: AEEE, Vol. 5, Žilina, Slovakia, May 23-24, 2006, pp. 64-67
- [8] GARCIA, X. D. T. – ZIGMUND, B. – TERLIZZI, A. – PAVLANIN, R. – SALVATORE, L.: Comparison between FOC and DTC Strategies for Permanent Magnet Synchronous Motors, In: AEEE, Vol. 5, Žilina, Slovakia, May 23-24, 2006, pp. 76-81
- [9] ZIGMUND, B. – TERLIZZI, A. – GARCIA, X. D. D. – PAVLANIN, R. – SALVATORE, L.: Experimental Evaluation of PI Tuning Techniques for Field Oriented Control of Permanent Magnet Synchronous Motors, In: AEEE, Vol. 5, Žilina, Slovakia, May 23-24, 2006, pp. 114-119
- [10] HARGAŠ, L. – HRIANKA, M. – ŠPÁNIK, P.: Application of Communication Systems in Biomedical Engineering, Komunikácie, Scientific letters of the University of Žilina, 1/2006, pp. 43-47
- [11] DOBRUCKÝ, B. – ŠPÁNIK, P. – ŠUL, R.: Improvement of Power Electronic Structure Characteristics Using SiC Technology - Overview, Komunikácie, Scientific letters of the University of Žilina, 1/2006, pp. 34-38
- [12] POPPEOVÁ, V. – URÍČEK, J. – ZAHORANSKÝ, R. – ŠINDLER, P. – HAVLAS, P.: Development of Software for Simulation of Hexapodic Kinematical Structure, In: Acta Mechanica Slovaca, Vol. 10, Jasná - Nízke Tatry, Slovakia, 31.05.-02.06. 2006, pp. 395-402 (in Slovak)
- [13] PRIKOPOVÁ, A. – PALKOVÁ, Z.: Multi-purpose Program Model of Final Automata – Theoretical Basis, In: AT&P Journal – automation equipment and informatics, 8/2006, pp. 59-60 (in Slovak)
- [14] PALKOVÁ, Z. – LUKÁČ, P. – PRIKOPOVÁ, A.: Application of Simulation Models for more effective Using Artificial Humidification, In: Acta technologica agriculturae (The scientific Journal for agricultural engineering), 3/2006, pp. 73-75 (in Slovak)
- [15] LIPTÁK, M. - HRABOVCOVÁ, V. - RAFAJDUS, P. – ZIGMUND, B.: Switched Reluctance Machine with Asymmetric Power Converter in Generating Mode, In: Acta

- Electrotechnica et Informatica, Fakulta elektrotechniky a informatiky TU Kosice, (in press)
- [16] ŠPÁNIK, P. – KÁLLAY, F.: Progress Trends in Power Supplies for Welding Machines, In: Strojárstvo, 11/2006, pp. 76-77 (in Slovak)
- [17] KÁLLAY, F. – PENIAK, P.: The Communication in Mechatronics Systems, In: Komunikácie, Scientific letters of the university of Žilina, 1/2007 (in press)
- [18] FILKA, R - BALAZOVIC, P. – DOBRUCKÝ, B.: A Sensorless PM Synchronous Motor Drive for Electric Washers, In: Komunikácie, Scientific letters of the university of Žilina, 1/2007 (in press)
- [19] PAVLÁSEK, P.: E-mechatronics: Digital Content in Transformation of Teaching and Learning, Komunikácie, Scientific letters of the university of Žilina, 1/2007 (in press).
- [20] IZÁK, P – SMETANA, M. – HARGAŠ, L. – HRIANKA, M. – ŠPÁNIK, P.: 3D Reconstruction of NMR Images, In: AEEE, (in press)

### Foreign Journals

- [21] DUDRIK, J. – ŠPÁNIK, P. – TRIP, N.-D.: Zero-Voltage and Zero-Current Switching Full Bridge DC-DC Converter with Auxiliary Transformer, In: IEEE transaction on POWER ELECTRONICS (a publication of the IEEE power electronics society), September 2006, Vol. 21, No. 5, ITPEE8, pp. 1328-1335
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