

## DEPARTMENT OF MECHATRONICS AND ELECTRONICS

### 1 General Information

Department of Mechatronics and Electronics (KME) was founded in January 2005 as a result of the restructuring process of the Faculty of Electrical Engineering of the University of Žilina, which was driven by dynamic changes in the nature of industrial production in Slovakia. The development of automotive and electronic industries, including their supporting companies was significant. Some industry firms, such as Power-One Ltd. in Dubnica nad Vahom, began with the creation of research teams and departments, causing significant need for human resources - highly skilled professionals in mechatronics and electronics, including power and automotive applications. Their training in bachelor, master, and doctorate (PhD.) level of university studies has become the main task of Department of Mechatronics and Electronics, which in December 2011 completed the sixth year of its existence.

Like the previous years, the last year could be considered as a very successful one. Within the year the updating of laboratory equipment in the building AB was completed. Significant progress has been made in building of centers of excellence laboratories, specifically undertaken in the project CEEX1 - Activity 1.1 and 3.2

In the last year the research activity of the Department has achieved a significant increasing implemented by means of grant projects. Department staff participated in two international and eighteen national projects. Centers of Excellence CEEX2 and CEKR2 have been built within the frame of which the Department has cooperated with several prestigious Slovak institutions (SAS Košice, The Technical University of Košice and Jesenius Faculty of Medicine of the Comenius University in Martin). These projects represent a very significant support to research which has been done in our Department.

In the year 2011 the Department involves thirteen members of educational staff, six research workers, sixteen internal PhD students and eleven 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.

The Department provides educational process at all three levels of the university study. The bachelor degree is covered by the accredited course of study for Electrical Engineering (specialization in Mechatronic Systems). Master degree includes the accredited course of study for Power Electronic Systems (in Power Electronics specialization and Mechatronic and Automotive Systems specialization). In doctorate study the department staff participated in providing training courses in Powerline Electronics, Automation and Telecommunications.

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 education has been dedicated for different study branches and specializations in the bachelor, magisterial and doctoral studies, both in internal and external ones.

The Department also has 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 analyzing of the failures using image analysis. Topology optimizing 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. 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 power electronics, 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    |

### 2.1 Sections of the Department

#### 2.1.1 Section of Electronics and Control Systems

|                                |  |
|--------------------------------|--|
| Head of the Section            | : Jozef Čuntala  |
| Professors                     | : Branislav Dobrucký, Pavol Špánik   |
| Visiting Professors            | : Alfio Consoli  |
| Associate Professors           | : Jozef Čuntala, Miroslav Hrianka, Libor Hargaš, Jozef Budaj, Jozef Kuchta |
| Research Fellows               | : Peter Drgoňa, Michal Frivaldský, Dušan Koniar                            |
| Senior Lecturers (with PhD)    | : Rastislav Pavlanin, Rastislav Havrila                                    |
| Senior Lecturers (without PhD) | : Ivan Kožehuba, Jozef Lakatoš, Peter Šindler, Anna Kondelová              |

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

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

#### 2.1.3 Postgraduate Students

|                      |  |
|----------------------|--|
| Internal (full-time) | : Michal Praženica, Ondrej Hock, Jozef Kandráč, Stanislav Štofan, Ján Kašša, Martin Priečinský, Miloslav Kolpach, Peter Hurtuk, Roman Radvan, Andrej Rybovič, Tomáš Kapusta, Jozef Sedlák, Slavomír Kaščák, Peter Čuboň (from 2 <sup>nd</sup> September 2011), Marek Valčo (from 2 <sup>nd</sup> September 2011), Jozef Šedo (from 2 <sup>nd</sup> September 2011) |
| External (part-time) | : Peter Šindler, Anna Kondelová, Marek Paškala, Marcel Pčola, Peter Čerňan, Peter Jeck, Erika Polčanová, Ing. Zuzana Ridzoňová, Ing. Daniela Hívešová, Ing. Marián Novota, Anna Holásková  |

### 3 Teaching

#### 3.1 Courses in Bachelor and Master Degree Programmes

##### 3.1.1 Bachelor Degree Programmes

| Code Title  | Lessons-Seminars-Exercises |            | Teachers |
|---|----------------------------|------------|----------|
|   | Semester                   | hours/week |          |
| <i>Courses at the Faculty of Electrical Engineering</i> |                            |            |          |
| 31302 Electronics I                                     | 3                          | 2-0-3      | Čuntala  |
| 31300 Distributed Systems in Industry Automation        | 3                          | 2-0-2      | Kállay   |
| 31402 Automatic Regulation 1                            | 4                          | 2-2-0      | Simonová |
| 31413 Electric Light and Heat                           | 4                          | 2-1-1      | Pavlásek |
| 31414 Electromagnetic Compatibility                     | 4                          | 2-2-0      | Špánik   |
| 31415 Electronics II                                    | 4                          | 2-0-3      | Hrianka  |
| 31426 Measurement of Non-Electric Parameters            | 4                          | 2-0-2      | Kállay   |
| 31427 Power Supplies                                    | 4                          | 2-0-1      | Špánik   |
| 31430 Computers in Industrial Automation                | 4                          | 2-0-2      | Kállay   |
| 31502 Power Electronics                                 | 5                          | 3-1-2      | Špánik   |
| 31511 Microprocessor Technology                         | 5                          | 3-0-2      | Čuntala  |
| 31524 Logical Circuits                                  | 5                          | 3-0-2      | Hrianka  |
| 31528 Multimedia Technology                             | 5                          | 2-0-1      | Pavlásek |
| 31542 Image Processing and Analysis                     | 5                          | 2-0-2      | Hrianka  |
| 31552 Computer and Office Technique                     | 5                          | 2-0-1      | Pavlásek |
| 31557 Automatic Regulation 2                            | 5                          | 2-1-1      | Simonová |
| 31628 Power Semiconductor Systems                       | 6                          | 3-1-1      | Špánik   |
| 31634 Bachelor Project Mechatronic Systems              | 6                          | 0-0-6      | Špánik   |
| <i>Courses at the Faculty of Mechanical Engineering</i> |                            |            |          |
| 2B092 Drives of Mechatronic Systems                     | 5                          | 2-0-1      | Špánik   |
| 2B127 Electronics                                       | 6                          | 2-0-2      | Čuntala  |

##### 3.1.2 Master Degree Programmes

| Code Title  | Lessons-Seminars-Exercises |            | Teachers |
|---|----------------------------|------------|----------|
|   | Semester                   | hours/week |          |
| <i>Courses at the Faculty of Electrical Engineering</i> |                            |            |          |
| 32107 Electromagnetic Compatibility in Electr.          | 1                          | 2-2-0      | Špánik   |
| 32111 Information and Industrial Networks               | 1                          | 2-0-2      | Kállay   |
| 32117 Design of ASIC                                    | 1                          | 1-3-0      | Čuntala  |
| 32119 Computers in Industrial Automation 2              | 1                          | 2-0-2      | Kállay   |
| 32126 Control of Electric actuators                     | 1                          | 3-1-1      | Dobrucký |
| 32129 Theory of Automatic Control 1                     | 1                          | 2-1-1      | Simonová |
| 32136 Power Semiconductor Converters                    | 1                          | 3-0-3      | Špánik   |
| 32200 Analysis and Synthesis of PE Circuits             | 2                          | 2-2-0      | Špánik   |
| 32211 Measurement and Digit. Data Processing            | 2                          | 2-2-0      | Pavlásek |

|       |   |   |       |                     |
|-------|---|---|-------|---------------------|
| 32216 | Microprocessors, Microcomputers and DSP   | 2 | 2-0-3 | Dobrucký            |
| 32233 | Microproc. and Microcomputer Systems      | 2 | 3-0-3 | Dobrucký            |
| 32236 | Theory of Automatic Control 2             | 2 | 2-1-1 | Simonová            |
| 32300 | Power Electronics Applications in ET & EE | 3 | 3-0-1 | Dobrucký            |
| 32324 | Design and Construction of PE Systems     | 3 | 2-2-0 | Špánik              |
| 32325 | Design of ASIC                            | 3 | 1-3-0 | Čuntala             |
| 32330 | Semiconductor Sensors                     | 3 | 2-2-0 | Kožehuba<br>Lakatoš |
| 32334 | Semestral Project                         | 3 | 0-4-0 | Špánik              |
| 32341 | Virtual Instrumentation                   | 3 | 2-0-2 | Hargaš              |
| 32402 | Diploma Thesis PES                        |   |       |                     |
| 32404 | Diploma Seminar                           | 4 | 0-2-0 | Špánik              |
| 32405 | Discrete Control of Power Systems         | 4 | 6-0-6 | Dobrucký            |
| 32406 | Dispatching Systems                       | 4 | 4-0-4 | Kállay              |
| 32416 | Industrial Informatics                    | 4 | 4-0-4 | Kállay              |

#### Courses at the Faculty of Mechanical Engineering

|       |                                   |   |       |          |
|-------|-----------------------------------|---|-------|----------|
| 2N125 | Electronic Control Elements       | 1 | 2-2-0 | Špánik   |
| 2N244 | Exploitation of Computer Networks | 1 | 2-0-2 | Kállay   |
| 2N246 | Microcomputer Technics            | 1 | 2-0-2 | Čuntala  |
| 2N014 | Information and Industry Networks | 2 | 2-0-2 | Kállay   |
| 2N125 | Electronic Control Elements       | 2 | 2-2-0 | Špánik   |
| 2N140 | Converter Drives                  | 3 | 2-2-0 | Špánik   |
| 2N141 | Control Microcomputers            | 3 | 2-2-0 | Dobrucký |

#### Courses for Foreign Students – LLP/Erasmus Program

| Course / Teacher / Student of University   |  |  |  |
|--|--|--|--|
| 31628 Power Semiconductor Systems, ( <i>Dobrucký</i> ),<br>Pedro Miguel Costa Monteiro Marques, Universidade do Porto, PT<br>Miguel Fonseca Lage, Universidade do Porto, PT                                  |  |  |  |
| 31300 Distributed Systems in Industry Automation, ( <i>Dobrucký</i> ),<br>Salih Cemil Cetin, Uludag University, TR<br>Heval Kalmis, Uludag University, TR<br>Santiago Perez Gomez, Universidad Cantabria, ES |  |  |  |
| 31511 Microprocessor Technology ( <i>Čuntala, Kondelová</i> ),<br>Ersin Altay, Uludag University, TR<br>Heval Kalmis, Uludag University, TR  |  |  |  |
| 31542 Image Processing and Analysis ( <i>Hrianka</i> ),<br>Salih Cemil Cetin, Uludag University, TR  |  |  |  |
| 32136 Power Semiconductor Converters, ( <i>Dobrucký</i> ),<br>Agostinho Manuel Afonso da Rocha, Universidade do Porto, PT  |  |  |  |
| 32405 Discrete Control of Power Systems, ( <i>Dobrucký</i> ),<br>Salih Cemil Cetin, Uludag University, TR<br>Heval Kalmis, Uludag University, TR   |  |  |  |

## 4 Educational, Research and Scientific Projects

### 4.1 Internal Research Projects

*Title: Sophistic-, electronic and mechatronic systems*

Coordinator: Pavol Špánik

Co-operators: Branislav Dobrucký, Pavel Pavlásek, Fedor Kállay, Anna Simonová,  
Michal Frivaldský, Peter Drgoňa, Rastislav Pavlanin,  
Marek Paškala, Roman Radvan, Jozef Čuntala, Anna Kondelová,  
Ivan Kožehuba, Peter Šindler, Jozef Lakatoš, Libor Hargaš, Dušan Koniar

## 4.2 National Projects

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

*Title: Research of Topology and Control of Power Electronic Supply System with Single-Phase HF Input and Two-Phase Orthogonal Output for Two-Phase SM/IM Electrical Motors (VEGA 1/0474/09)*

Coordinator: Branislav Dobrucký

Co-operators: Pavol Špánik, Pavel Pavlásek, Anna Simonová, Peter Šindler, Marek Paškala,  
Rastislav Pavlanin, Peter Jeck, Ján Kašša, Michal Praženica, Peter Drgoňa,  
Slavomír Kaščák

*Title: The Development of Mechanical Subsystem of Tripod and Hybrid Kinematic Structure for Application in the Area of Production Machines and Robots (VEGA 1/0207/10)*

Coordinator: Viera Poppeová

Co-operator: Peter Šindler

*Title: Research of Adaptive Multi-Tank Power System for Renewable Energy Sources (VEGA 1/0943/11)*

Coordinator: Pavol Špánik

Co-operator: Branislav Dobrucký, Fedor Kállay, Jozef Čuntala, Miroslav Hrianka, Libor Hargaš, Peter Šindler, Anna Kondelová, Ivan Kožehuba, Marek Paškala, Michal Frivaldský, Peter Drgoňa, Dušan Koniar, Anna Simonová, Peter Hurtuk, Jozef Kandráč, Martin Priečinský

*Title: Modelling and Simulation of Environment Dynamic Interaction of Driver–Car–Transport Instantiation (VEGA 01/1099/11)*

Coordinator: Mikuláš Alexík, FRI KTK

Deputy person: Branislav Dobrucký

### 4.2.2 Projects Funded by the Cultural & Education Grant Agency (KEGA)

*Title: The Development of Specialized Unit for Teaching of Parallel Kinematic Structures Application in the Area of Production Machines and Robots (KEGA 086-051ŽU-4/2010)*

Coordinator: Viera Poppeová

Co-operator: Peter Šindler

### 4.2.3 Research Projects Funded by the Slovak Research and Development Agency (APVV)

*Title: Galvanotechnological System with Synchronous Rectifier (APVV VMSP-P-0085-09)*

Coordinator: Ján Rehuš, Jozef Čuntala

Co-operators: Pavel Pavlásek, Marek Paškala, Libor Hargaš, Peter Hurtuk, Peter Drgoňa,  
Roman Radvan, Michal Frivaldský

*Title: High Frequency Power Electronic Converters (APVV LPP-0366-09)*

Coordinator: Pavol Špánik  
Co-operators: Jozef Kandráč, Martin Priečinský

*Title: Research and Development of the Small Power Drives with Two-phase Motors (APVV LPP-0366-09)*

Coordinator: Pavel Záskalický TUKE, Branislav Dobrucký  
Co-operators: Michal Frivaldský, Peter Drgoňa, Michal Praženica, Ján Kašša, Slavomír Kaščák

#### 4.2.4 Projects of European Structural Funds

*Title: CEEX1 (ITMS 26220120003) Centre of Power Electronic Systems and Materials for their Components, Operational Program Research and Development*

Coordinator: Pavol Špánik, Branislav Dobrucký  
Co-operators: Jozef Čuntala, Miroslav Hrianka, Peter Šindler, Peter Drgoňa, Pavel Pavlásek, Anna Simonová, Marek Paškala, Libor Hargaš, Michal Frivaldský, Andrea Prandová, Ján Davidík, Michal Praženica

*Title: CEEX2 (ITMS 26220120046) Centre of Power Electronic Systems and Materials for their Components, Operational Program Research and Development II*

Coordinator: Pavol Špánik, Branislav Dobrucký  
Co-operators: Jozef Čuntala, Peter Šindler, Peter Drgoňa, Anna Simonová, Marek Paškala, Libor Hargaš, Michal Frivaldský, Pavel Pavlásek, Rastislav Pavlanin

*Title: CEKR1 (ITMS 2622010004) Centre for Experimental and Clinical Respiriology I*

Coordinator: Miroslav Hrianka  
Co-operator: Libor Hargaš, Dušan Koniar

*Title: CEKR2 (ITMS 2622010034) Centre for Experimental and Clinical Respiriology II*

Coordinator: Miroslav Hrianka  
Co-operator: Libor Hargaš, Anna Simonová, Stanislav Štofan

*Title: MKC (ITMS 26220220019) Ciliary Kinetics Measurement of Respiratory Tractus*

Coordinator: Miroslav Hrianka  
Co-operator: Libor Hargaš, Dušan Koniar

*Title: Systemisation of Advanced Technology and Knowledge Transfer between Industrial Sphere and University Environment (ITMS 26110230004)*

Coordinator: Milan Šaga  
Co-operator: Pavol Špánik, Branislav Dobrucký, Michal Frivaldský, Jozef Čuntala

*Title: Flexible and Attractive Education at University of Žilina for Needs of Labour Market, and Knowledge Society (ITMS 26110230005)*

Coordinator: Renáta Švarcová  
Co-operator: Pavol Špánik, Branislav Dobrucký, Pavel Pavlásek, Libor Hargaš, Jozef Čuntal

*Title: Research of High-Economic components of Electric Drive Systems of Driving Traction Vehicles and Urban Mass Transportation Vehicles (ITMS 26220220078)*

Coordinator: Pavol Špánik  
Co-operator: Fedor Kállay, Peter Šindler, Michal Frivaldský, Anna Kondelová, Peter Drgoňa, Marek Paškala

*Title: The Development of Parallel Kinematic Structures Prototypes for Application in the Area of Production Machines and Robots (ITMS 26220220046)*

Coordinator: Viera Poppeová

Co-operator: Peter Šindler

*Title: Applied Research and Development of Inovative Energy Resources for Ultra High Pressure Pulses (ITMS 26220220088)*

Coordinator: Pavol Rafajdus

Co-operator: Branislav Dobrucký

### **4.3 International Projects**

#### **4.3.1 CEEPUS II Projects**

*Title: From preparation to development, implementation and utilisation of joint programs in study area of Production Engineering – contribution to higher flexibility and mobility of students in central European region (CII-SK-0030-06-1011)*

Coordinator: Ivan Kuric

Co-operators: Fedor Kállay

#### **4.3.2 Custom-made Research Projects**

*Title: Analysis of heat fields in power electronic systems (P-103-0007/08)*

Customer: Panasonic Electronic Devices Europe GmbH

Coordinator: Pavol Špánik

Co-operators: Jozef Čuntala, Branislav Dobrucký, Jozef Lakatoš, Libor Hargaš, Michal Frivaldský, Peter Drgoňa, Roman Radvan

## **5 Co-operation**

### **5.1 Co-operation Partners in Slovakia**

EVPÚ a.s Nová Dubnica

Panasonic Electronic Devices Slovakia, s.r.o., Trstená

NES Nová Dubnica

Power-One, Dubnica nad Váhom

Siemens s.r.o., Bratislava, Žilina

Vedeckotechnologický park, Žilina

LJF Martin, UK Bratislava

ABB Slovakia, Bratislava

DataTherm, s.r.o. Žilina

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

MACRO, s.r.o., Žilina

SSE, a.s. Žilina

Súkromná zvaračská 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  
 INA Kysuce, a.s. Kysucké Nové Mesto  
 KIA Motors, s.r.o. Žilina  
 GRANIT, s.r.o. Žilina  
 AAUTO, s.r.o. Žilina  
 VIP AUTO, s.r.o. Žilina  
 TEAM DC, Bratislava  
 GS1 Slovakia, Žilina  
 Htest Slovakia, Banská Bystrica  
 SSC, Bratislava  
 NDS, Bratislava  
 SEMIKRON s.r.o. Vrbové

## 5.2 International Co-operation Partners

Università degli studi di Catania, IT, DIEES, Prof. Alfio Consoli  
 Panasonic Electronic Devices Co., Ltd., Kadoma, JPN  
 Panasonic Electronic Devices Europe GmbH, Lüneburg, DE  
 Politecnico di Bari, IT, DEE, Prof. Francesco Cupertino  
 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. Annroi de Paor  
 University of Porto, PT, Prof. Maciel Barbosa  
 Technische Universität Dresden, DE, Dr. Peter Büchner  
 Technische Universität Darmstadt, DE, Prof. Andreas Binder  
 Technikum Wien, AT, Prof. Felix Himmelstoss  
 Technische Universität Bochum, DE, Prof. Andreas Steimel  
 National Instruments Czech Republic, s.r.o., CZ, Peter Brieška  
 Technical Univesity RWTH Aachen, DE, Prof. Blazek Vladimír  
 Politechnika Radomska, PL, Prof. Miroslav Luft, Assoc. Prof. Elzbieta Szychta  
 XILINX USA, University program  
 Humusoft s.r.o. Praha, CZ, Karel Bittner  
 TU – VŠB Ostrava, CZ, Prof. Pavel Brandstetter, Prof. Petr Chlebiš  
 FAIRCHILD Semiconductor - Power Franchise, EU  
 FreeScale s.r.o., Rožňov pod Radhoštěm, CZ  
 Rockwell Automotion s.r.o., Praha, CZ  
 Technological & Cultural Park of Lavrion, GR  
 TIM Science Park, Timisoara, RO  
 University Ioan Slavici, Timisoara, RO  
 The University of Strathclyde, Glasgow, UK

## 5.3 Visitors to the Department

| <i>Name</i>               | <i>Institution</i>                       | <i>Length of stay</i> |
|---------------------------|--|-----------------------|
| Titus SLAVICI             | TIM Science Park, Timisoara, RO          | 1 day                 |
| Elzbieta SZYCHTA          | University of Radom, Poland              | 4 days                |
| Miroslav LUFT             | University of Radom, Poland              | 4 days                |
| Wojciech JARZYNA          | Politechnika Lubielska, PL               | 1 day                 |
| Nobuki ITOH               | Panasonic, Japan                         | 1 day                 |
| Norbert GLAPA             | Panasonic, DE                            | 5 days                |
| Miho NISHIGUCHI           | Panasonic, Japan                         | 5 days                |
| Hiroshi TAKAHASHI         | Panasonic, Japan                         | 1 day                 |
| Mahmud Ali Rzig Abdalmula | Univ. of Aljabel Algarbi, Sabrata, Libia | 7 days                |



Vassileios DRAKOPULOS Nat. and Kapodistroian Univ. of Athens, EL1 day

#### 5.4 Visits to Foreign Institutions

| <i>Name</i>        | <i>Institution</i>                       | <i>Length of stay</i> |
|--------------------|--|-----------------------|
| Miroslav HRIANKA   | RWTH – Aachen, DE                        | 7 days                |
| Branislav DOBRUCKÝ | Jules Verne University, Amiens, FR       | 6 days                |
| Pavol ŠPÁNIK       | UNICT Catania, IT                        | 10 days               |
| Andrej RYBOVIČ     | HTW Dresden, DE DAAD                     | 6 months              |
| Martin PRIEČINSKÝ  | Aalto University, Helsinki, FI           | 4 months              |
| Roman RADVAN       | Dep. of Electronics, FEI VŠB-TU, Ostrava | 1 day                 |
| Tomáš KAPUSTA      | Dep. of Electronics, FEI VŠB-TU, Ostrava | 1 day                 |

#### *Participation in Foreign conferences:*

##### *Active:*

|                    |  |        |
|--------------------|--|--------|
| Branislav DOBRUCKÝ | MIC IASTED, Creta, EL                          | 5 days |
| Branislav DOBRUCKÝ | OPSFA, Madrid, ES                              | 6 days |
| Branislav DOBRUCKÝ | LogiTrans, Szczyrk, PL                         | 1 day  |
| Branislav DOBRUCKÝ | TRANSCOMP, Politechnika Radomska, Zakopané, PL | 2 days |
| Peter DRGOŇA       | TRANSCOMP, Politechnika Radomska, Zakopané, PL | 1 day  |
| Pavol ŠPÁNIK       | MMMSE 2011, Orlando, FL, USA                   | 5 days |
| Michal FRIVALDSKÝ  | MMMSE 2011, Orlando, FL, USA                   | 5 days |
| Peter DRGOŇA       | MMMSE 2011, Orlando, FL, USA                   | 5 days |
| Peter ŠINDLER      | MOTSP 2011, Bol, Brač, HR                      | 4 days |
| Michal FRIVALDSKÝ  | TRANSCOM, Praha, CZ                            | 1 day  |
| Slavomír KAŠČÁK    | TRANSCOM, Praha, CZ                            | 1 day  |
| Tomáš KAPUSTA      | TRANSCOM, Praha, CZ                            | 1 day  |
| Libor HARGAŠ       | Applied Electronics, ZČU, Plzeň                | 2 days |
| Ondrej HOCK        | Applied Electronics, ZČU, Plzeň                | 2 days |
| Michal FRIVALDSKÝ  | Applied Electronics, ZČU, Plzeň                | 2 days |
| Peter HURTUK       | Applied Electronics, ZČU, Plzeň                | 2 days |
| Stanislav ŠTOFAN   | 11. workshop doktorandov, Ostrava, CZ          | 1 day  |
| Peter HURTUK       | 11. workshop doktorandov, Ostrava, CZ          | 1 day  |
| Ondrej HOCK        | 11. workshop doktorandov, Ostrava, CZ          | 1 day  |
| Andrej RYBOVIČ     | 11. workshop doktorandov, Ostrava, CZ          | 1 day  |
| Jozef SEDLÁK       | 11. workshop doktorandov, Ostrava, CZ          | 1 day  |
| Miroslav HRIANKA   | Rudnik's days, Zakpane, PL                     | 3 days |
| Libor HARGAŠ       | Rudnik's days, Zakpane, PL                     | 3 days |
| Dušan KONIAR       | Rudnik's days, Zakpane, PL                     | 3 days |

##### *Paper without presentation:*

|                    |                           |        |
|--------------------|---------------------------|--------|
| Pavel PAVLÁSEK     | INTED 2011, Valencia, ESP | 3 days |
| Branislav DOBRUCKÝ | IMCIC 2011, Orlando, USA  | 3 days |
| Branislav DOBRUCKÝ | EVER 2011, Monaco         | 3 days |
| Branislav DOBRUCKÝ | CPEE 2011, Klatovy, CZ    | 3 days |

## 6 Other Activities

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

*Title of Lecture/Course: RFID Identifiers*

Customer: GS1 SLOVAKIA, Department of Mechatronics and Electronics,  
University of Žilina

Lecturer: Pavel Pavlásek

Date: 21<sup>st</sup> November to 25<sup>th</sup> November 2011

*Title of Lecture/Course: Identification of Goods and Services by RFID*

Customer: GS1 SLOVAKIA, Department of Mechatronics and Electronics,  
University of Žilina

Lecturer: Miroslav Štaffen, Pavel Pavlásek

Date: 25<sup>th</sup> November 2011

*Title of Lecture/Course: Control of Tunnel Operation*

*Distant Education for Operators at the Bôrik Tunnel*

Customer: SSC

Lecturer: Fedor Kallay

Date: November 2011

*Competition: The Technical Idea of the Year*

Participants: Secondary school students

Organizers: Pavol Špánik, Michal Frivaldský, Peter Drgoňa, Peter Šindler, Libor Hargaš

Date: 23<sup>rd</sup> June 2011

### 6.2 Membership in International Institutions/Committees

- |                    |   |
|--------------------|---|
| Branislav Dobrucký | - Member of IEEE IE Society<br>- Member of International Association for Science and Technological Development (IASTED), CA<br>- Reviewer for Publishing Company Elsevier, NL<br>- Reviewer for EPE journal, Brussels, BE<br>- Steering Programme Committee of International MIC IASTED 2007-2011 Conference<br>- Steering Programme Committee of International WMC 2011 Conference, Orlando, USA |
| Pavel Pavlásek     | - Member of the Editorial Board of the Strojárstvo (Machinery) Journal<br>- Member of the Editorial Board of the Inžinierske stavby Journal<br>- Member of Brandon Hall Excellence in Learning Technology Awards<br>- Expert of FP7 Programme NMP – 2007 – 3.4 – 1<br>- Expert of Romanian Ministry of Education, Research and Youth  |
| Pavol Špánik       | - Member of IEEE IE Society<br>- Member of the Scientific Board of FEI – TU Ostrava, CZ<br>- Member of the Electronics Committee, FEI – TU Ostrava, CZ  |
| Michal Frivaldský  | - Member of IEEE IE Society   |
| Peter Drgoňa       | - Member of IEEE IE Society   |
| Jozef Kandráč      | - Student member of IEEE IE Society   |
| Peter Hurtuk       | - Student member of IEEE IE Society   |
| Martin Priečinský  | - Student member of IEEE IE Society   |

### 6.3 Membership in National Institutions/Committees

- Branislav Dobrucký - Member of the Common Committee for Electrical Engineering  
 - Steering Programme Committee of ALER 2011 Conf.  
 - Steering Programme Committee of TRANSCOM 2011 Conf.  
 - Member of the Common Committee for Mechatronics
- Pavel Pavlásek - Member 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  
 - Representative of Regional Assembly of Žilina Self-governing Region  
 - Director General of Slovak Road Administration  
 - Member of the Supervisory Board of SSE – Distribúcia a.s. Žilina  
 - Member of the Supervisory Board of Letisková spoločnosť a.s. Žilina
- 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 Board 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 Academic Senate of FEE ZU  
 - Member of the Scientific Board of FEE ZU  
 - Member of the Electrical Engineering Committee, FEE 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
- Libor Hargaš - Member of the Academic Senate of FEE ZU

## 7 Publications

### Monographs

- [1] HARGAŠ, L., KONIAR, D., ŠTOFAN, S.: *Sophisticated Biomedical Tissue Measurement Using Image Analysis and Virtual Instrumentation*, In: *LabVIEW Practical Applications and Solutions*, Edited by Silviu Folea, Published by InTech Janeza Trdine 9, 51000 Rijeka, Croatia July, 2011, Kapitola 8, pp. 155-180, ISBN 978-953-307-650-8
- [2] DRGOŇA, P., FRIVALDSKÝ, M., SIMONOVÁ, A.: *A New Approach of Control System Design for LLC Resonant Converter*, In: *Matlab for Engineers - Applications in Control, Electrical Engineering, IT and Robotics*, Edited by Karel Perutka Published by InTech Janeza Trdine 9, 51000 Rijeka, Croatia, September 2011, Kapitola 13, pp. 321-338, ISBN 978-953-307-914-1
- [3] MAISNAR, V., STRAUB, J., ADAM, Z., HÁJEK, R., ONDERKOVÁ, A., HRIANKA, M.: *Multiple Myeloma- Educational CD for patients and their relatives*, Editor: HK CREDIT spol.s.r.o., Hradec Králové ISBN. 978-80-86780-45-0 (in Slovak)

- [4] SPIŠIAKOVÁ, M., HRIANKA, M.: *Multiple Myeloma – Multimedial Education Course 2011*, Vydal : Slovak Myeloma Society – Patients Club Biomedical Engineering University of Žilina, Slovakia 2011, ISBN 978-80-554-0318-2

#### Books and textbooks

- [5] HRIANKA, M., MASLÁK, A., HARGAŠ, L., KONIAR, D.: *Logic Circuits (Interactive Textbook, Animations and Quizzes on CD-ROM)*. Editor: EDIS - Žilinská univerzita v Žiline, 2011, ISBN 978-80-554-0320-5 (in Slovak)
- [6] SIMONOVÁ, A., DRGOŇA, P., FRIVALDSKÝ, M.: *Automatic Regulation, textbook [Automatická regulácia, vysokoškolská učebnica]*, Editor: EDIS - Žilinská univerzita v Žiline, 2011, 151 pp., ISBN 978-80-554-0381-6 (in Slovak)
- [7] SIMONOVÁ, A.: *Technologies of Process Control [Technológie riadenia procesov]*, (elektronic source), Editor: EDIS - Žilinská univerzita v Žiline, 2011, (CD – ROM), 96 pp., fig., tab., appendixes, ISBN 978-80-554-0438-7 (in Slovak)

#### Journals indexed in a world-wide database (Thomson Scientific Master Journal List, Scopus)

- [8] RADVAN, R., DOBRUCKÝ, B., FRIVALDSKÝ, M., RAFAJDUS, P.: *Modelling and Design of HF 200 kHz Transformers for Hard - and Soft-Switching Application*, In: Electronics and Electrical Engineering, Kaunas 2011, No.4 (110), pp.7-12, ISSN 1392-1215, Thomson index
- [9] DOBRUCKÝ, B., BEŇOVÁ, M., KAŠČÁK, S.: *Transient Analysis and Modelling of 2nd- and 4th- Order LCLC Filter under Non - Symmetrical Control*, In: Electronics and Electrical Engineering, Kaunas 2011, No. 5, (111), pp.89-94, ISSN 1392-1215, Thomson index
- [10] BEŇOVÁ, M., DOBRUCKÝ, B.: *Methodological approach to steady-state and transient investigation of electric circuits using numeral infinite series of two-phase system*, In: Przegląd Elektrotechniczny 5/2011, ISSN 0033-2097, Thomson index
- [11] HARGAŠ, L., KONIAR, D., ŠTOFAN, S., HRIANKA, M.: *Sophisticated Methods for Tissue Perfusion Evaluated*, In: Communications, 1/2011, pp. 42 – 46, ISSN 1335 – 4205, SCOPUS index
- [12] DOBRUCKÝ, B., BEŇOVÁ, M., FRIVALDSKÝ, M., PRAŽENICA, M.: *Choosing Modulation Strategies for 2 – Stage Combine LLC – and Direct Converter – Modelling, Simulation, Application*, In: Communications, 2A/2011, Volume 13, pp. 25 -31, ISSN 1335-4205, SCOPUS index
- [13] DRGOŇA, P., PRÍKOPOVÁ, A., FRIVALDSKÝ, M., PRIEČINSKÝ, M.: *Simulation Based Method for Design and Application of Digital Control System*, In: Communications, 2A/2011 Volume 13, pp. 32 -37, ISSN 1335-4205, SCOPUS index
- [14] HURTUK, P., PRIEČINSKÝ, M., KONDELOVÁ, A.: *Converter with Synchronous Rectifiers for Electroplating*, In: Communications, 2A/2011, Volume 13, pp. 49 – 54, ISSN 1335-4205, Scopus index
- [15] ŠPÁNIK, P., KANDRÁČ, J., FRIVALDSKÝ, M., DRGOŇA, P.: *Verification of Operation Modes of Designed LLC Resonant Converter*, In: Communications, 2A/2011, Volume 13, pp. 67 – 73, ISSN 1335-4205, Scopus index

#### Journals indexed in EBSCO database (DAVID Publishing, AEEE, ...)

- [16] PRAŽENICA, M., DOBRUCKÝ, B., SEKERÁK, P., KALAMEN, L.: *Design, Modelling and Simulation of Two – Phase Two - Stage Electronic system with Orthogonal Output for Supplying of Two - Phase ASM*, In: Advances in Electrical and Electronic Engineering, Volume 9, number 1, March 2011, pp. 56-64, ISSN 1804-3119, EBSCO index

- [17] PRAŽENICA, M., KAŠŠA, J., SEDLÁK, J.: *Investigation of Power Losses of Two-Stage Two - Phase Converter With Two - Phase Motor*, In: *Advances in Electrical and Electronic Engineering*, Volume 9, number 2, June 2011 pp. 77-83, ISSN 1804-3119, EBSCO index
- [18] BYSTRICĀNOVÁ, A., RYBOVIČ, A.: *Data Communication Between Programmable Logic Controllers in the Industrial Distribution Applications*, In: *Advances in Electrical and Electronic Engineering*, Volume 9, number 2, June 2011 pp. 96 -102 , ISSN 1804-3119, EBSCO index
- [19] DRGOŇA, P., BOBEK, V., DOBRUCKÝ, B., FRIVALDSKÝ, M.: *Performance Analysis of PMSM Equations Computation*, In: *JEPE – Journal of Energy and Power Engineering*, Volume 5, Number 1, January 2011, pp. 70 – 74, ISSN 1934 – 8975, EBSCO index

#### Other Reviewed Foreign Journals

- [20] DOBRUCKÝ, B., KAŠŠA, J., ŠPÁNIK, P., PRAŽENICA, M.: *Possibilities of 2-Phase Electronic Converters for Electric Vehicle Drivers*, In: *czasopismo Logistyka nr 3/2011*, pp. 545 – 550, ISSN 1231 – 5478
- [21] DOBRUCKÝ, B., BEŇOVÁ, M., SZYCHTA, E.: *Design procedure for LCTL C converter*, In: *czasopismo Logistyka nr 6/2011*, pp. 705 – 710, na nosiči CD1, ISSN 1231 – 5478
- [22] HARGAŠ, L., ŠINDLER, P., ZÁBORSKÝ, L., SIMONOVÁ, A.: *Overhead contact line parameters measurement*, In: *czasopismo Logistyka nr 6/2011*, pp. 1357 – 1365, na nosiči CD1, ISSN 1231 – 5478
- [23] PRAŽENICA, M., KAŠČÁK, S., RADVAN, R.: *Simulation and verification of two-stage converter with sinusoidal filter*, In: *czasopismo Logistyka nr 6/2011*, pp. 3469 – 3478, na nosiči CD1, ISSN 1231 – 5478

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- [24] KAPUSTA, T., BORIŠ, M.: *Sources of Electromagnetic Interference in Power Electronic Systems and its Elimination*, In: *Elektrotechnika, informatika a telekomunikácie 2011*, ročník 17, október 2011 mimoriadne číslo, pp. 134 -137, ISSN 1335- 2547
- [25] KOLPACH, M.: *Rotary Pallet Changer RPC 5025*, In: *ai magazine – Časopis o automobilovom priemysle, strojárstve a ekonomike [ai magazine - Journal about automotive industry, machine engineering and economics]*, 2/2011, Volume 4, May 2011, pp. 63, ISSN 1337-7612 (in Slovak)
- [26] REPKA, L., KOLPACH, M.: *BOST SK a.s. Productivity and Reliability Improvement in Industry*, In: *ai magazine – Časopis o automobilovom priemysle, strojárstve a ekonomike [ai magazine - Journal about automotive industry, machine engineering and economics]* 3/2011, Volume 4, September 2011, pp. 32, ISSN 1337-7612 (in Slovak)
- [27] REPKA, L., KOLPACH, M.: *Rotary Pallet Changer RPC 5025*, In: *Technológie – Časopis firmy BOST SK [Technologies – BOST SK Journal]*, Volume 9, No 1/2011, ISSN 1337-9429 (in Slovak)
- [28] KOLPACH, M.: *Robotic material machining [Robotické obrábanie materiálov]*, In: *Časopis firmy BOST SK - technológie [Technologies – BOST SK Journal]*, Volume 8, No 2/2010, pp. 12, ISSN 1337- 9429 (in Slovak)
- [29] BEŇOVÁ, M., ABDAMULA, M., DOBRUCKÝ, B.: *Modelling of the 4<sup>th</sup> Order resonant filters LCLC considering non-linearities*, In: *APLIMAT 2011*, 10<sup>th</sup> International conference, February 1- 4, 2011 Bratislava, Slovak Republic, pp. 1133 -1140, ISSN 1337 - 6365

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- [31] HARGAŠ, L., ŠINDLER, P., ZÁBORSKÝ, L.: *Device for overhead contact line height and stagger measurement*, In: Proceedings of 2011 International Conference on Applied Electronics, Pilsen, 7. – 8. September, 2011, Czech Republic, ISBN 978-80-7043-987-6, ISSN 1803-7232, pp.: 145 – 147, IEEEExplore, Scopus index
- [32] HOCK, O., ŠINDLER, P., ČUNTALA, J.: *QDEC machine increased reliability in programmable FPGA circuit* In: Proceedings of 2011 International Conference on Applied Electronics, Pilsen, 7. – 8. September, 2011, Czech Republic, ISBN 978-80-7043-987-6, ISSN 1803-7232, pp.: 157 – 159, IEEEExplore, Scopus index
- [33] HURTUK, P., RADVAN, R., FRIVALDSKÝ, M.: *Full Bridge Converter with Synchronous Rectifiers for Low Output Voltage Application*, In: Proceedings of 2011 International Conference on Applied Electronics, Pilsen, 7. – 8. September, 2011, Czech Republic, ISBN 978-80-7043-987-6, ISSN 1803-7232, pp.: 173 – 176, IEEEExplore, Scopus index
- [34] ŠTOFAN, S., KONIAR, D., HARGAŠ, L., HRIANKA, M., RADVAN, R.: *Design of lighting unit for inverse microscope with high-speed video capture*, In: Proceedings of 2011 International Conference on Applied Electronics, Pilsen, 7. – 8. September, 2011, Czech Republic, ISBN 978-80-7043-987-6, ISSN 1803-7232, pp.: 367 – 370, IEEEExplore, Scopus index

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- [35] BEŇOVÁ, M., DOBRUCKÝ, B., POKORNÝ, M.: *Non-linear modelling and simulation of high order resonant filter-inverter system in transient and steady states*, In: IASTED Applied Simulation and Modeling (ASM 2011), June 22-24, 2011 Crete, Greece, pp. 131 – 136, ISBN 978-0-88986-884-7, Scopus index
- [36] PRAŽENICA, M., DOBRUCKÝ, B.: *New Propulsion System with Using Two Phase Orthogonal Converter with Two Phase ASM*, In: IASTED Applied Simulation and Modeling (ASM 2011), June 22-24, 2011 Crete, Greece, pp. 185 – 192, ISBN 978-0-88986-884-7, Scopus index
- [37] DOBRUCKÝ, B., DRGOŇA, P., ŠPÁNIK, P., BOBEK, V.: *Using Power PC-MPC for Real-Time VHFIM Sensorless Drive Control* In: The 2<sup>nd</sup> International Multi-Conference on Complexity, Informatics and Cybernetics 27-30 march 2011-Orlando, Florida, USA, pp. 167-172, ISBN-13: 978-1-936338-20-7, EBSCO
- [38] ŠPÁNIK, P., DRGOŇA, P., FRIVALDSKÝ, M.: *Simulation based method for mathematical model design of LLC power converter*, In: The 2<sup>nd</sup> International Multi-Conference on Complexity, Informatics and Cybernetics 27-30 march 2011-Orlando, Florida, USA, pp. 269-274, ISBN-13: 978-1-936338-20-7, EBSCO
- [39] FRIVALDSKÝ, M., ŠPÁNIK, P., ČUNTALA, J., GLAPA, N.: *Development and comparisons of the thermal simulation models with various complexity of the electrolytic capacitor for functional verification purposes of super capacitor in different conditions of use*, In: The 2<sup>nd</sup> International Multi-Conference on Complexity, Informatics and Cybernetics 27-30 march 2011-Orlando, Florida, USA pp. 283-288 ISBN-13: 978-1-936338-20-7, EBSCO
- [40] PAVLÁSEK, P., POLČANOVÁ, E., RIDZONOVÁ, Z., NOVOTA, M., HIVESOVÁ, D.: *Digital Learning Kontent: The E- Books as a Support for Technology Education with Students Assistance*, In: Conference Proceedings INTED 2011 5th Edition-Valencia (Spain), 7-9th March 2011, pp. 001516- 001524, ISBN 978 84 614-7423-3

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- [41] BEŇOVÁ, M., DOBRUCKÝ, B.: *Analysis and simulation of LCTLC Resonant inverter with Multifunction output*, In: AMTEE 2011 – Advanced Methods in the Theory of Electrical Engineering, Klatovy, Czech Republic, 2011, pp. III -3-4, ISBN 978-80-7043-993-7
- [42] PRAŽENICA, M., DOBRUCKÝ, B.: *Converter Design for Two – Phase IM or SM Load*, In: AMTEE 2011 – Advanced Methods in the Theory of Electrical Engineering, Klatovy, Czech Republic, 2011, pp. III -7-8, ISBN 978-80-7043-993-7
- [43] KAPUSTA, T., RYBOVIČ, A., PAŠKALA, M.: *Galvanic Coupling Effect in EMC and EMI of Switching Mode Power Supply*, In: International Conference Czech and Slovak Teachers of Electrical Engineering and Computer Science SEKEL 2011 – Green, 7-9 September 2011, Horní Lomná, Czech republic, pp. 151-154, ISBN 978-80-248-2451-2
- [44] KAŠČÁK, S., RADVAN, R., SEDLÁK, J.: *Modelling and Simulation of Unsymmetrical Two-Phase Induction Motor*, In: International Conference Czech and Slovak Teachers of Electrical Engineering and Computer Science SEKEL 2011 – Green, 7-9 September 2011, Horní Lomná, Czech republic, pp. 155-158, ISBN 978-80-248-2451-2
- [45] RYBOVIČ, A., KAPUSTA, T.: *Cooperation PLC controller with model of the system in MATLAB/SIMULINK*, In: International Conference Czech and Slovak Teachers of Electrical Engineering and Computer Science SEKEL 2011 – Green, 7-9 September 2011, Horní Lomná, Czech republic, pp. 166 -168, ISBN 978-80-248-2451-2
- [46] BRANDT, M., SEEWALD, R., SEDLÁK, J., FAKTOROVÁ, D.: *Measurement and analysis of railway traction transformer using by SFRA method 2* In: Diagnostika 2011, Kašperské Hory 6-8 September 2011, Czech republic, Published by University of West Bohemia, pp. 57-60, ISBN 978-80-261-0020-1
- [47] ČUNTALA, J., FRIVALDSKÝ, M., ŠPÁNIK, P., DRGOŇA, P.: *Mimimization of Number of Active Components for COMSOLS Thermal Simulation*, In: Technical Computing Prague 2011, 19<sup>th</sup> Annual Conference Proceedings , 8. November 2011, Praha, pp. 32, ISBN 978-80-7080-794-1
- [48] DOBRUCKÝ, B., BEŇOVÁ, M., GOMBÁRSKA, D.: *Comparison of Eulers – and Taylors Expansion Methods for Numerical Solution of Non-Linear System of Differentia Equation*, In: Technical Computing Prague 2011, Sborník příspěvku 19. ročníku conference 19<sup>th</sup> Annual Conference Proceedings, 8. November 2011, Praha, pp. 34, ISBN 978-80-7080-794-1
- [49] KAPUSTA, T.: *Prediction of Conducted Interference (EMI) and Total EMC in Matrix Converters*, In: Technical Computing Prague 2011, 19<sup>th</sup> Annual Conference Proceedings, 8. November 2011, Praha, pp. 63, ISBN 978-80-7080-794-1
- [50] KAŠČÁK, S., PRAŽENICA, M., DOBRUCKÝ, B.: *Vector Control of Two Phase Induction Motor*, In: Technical Computing Prague 2011, 19<sup>th</sup> Annual Conference Proceedings, 8. November 2011, Praha, pp. 64, ISBN 978-80-7080-794-1
- [51] FIBICH, P., RADVAN, R., HOCK, O.: *Application of Photovoltaic Cells in Street Lighting*, In: Proceedings of 9<sup>th</sup> international conference VSACKÝ CÁB 2011, 29-31 August 2011 Czech Republic pp. 37-40 ISBN : 978-80-214-4319-8
- [52] HURTUK, P.: *Simulation Analysis of Full Bridge Converter with Synchronous Rectifiers*, In: Proceedings of 9<sup>th</sup> international conference VSACKÝ CÁB 2011, 29-31 August 2011, Czech Republic, pp. 49-52, ISBN 978-80-214-4319-8
- [53] PRIEČINSKÝ, M., KANDRÁČ, J.: *Simulation Analysis of the LLC Resonant Converter Using PSPICE SLPS Interface*, In: Proceedings of 9<sup>th</sup> international conference VSACKÝ CÁB 2011, 29-31 August 2011, Czech Republic, pp. 113-116, ISBN 978-80-214-4319-8
- [54] DOBRUCKÝ, B., BEŇOVÁ, M., ABDALMULA, M., KAŠČÁK, S.: *Design Analysis of LCTLC Resonant Inverter for Two–Stage 2-Phase Power Electronic Supply*

- System, In: 17<sup>th</sup> International Conference on Electrical Drivers and Power Electronics EDPE 2011, 28-30 September 2011, the High Tatras, Slovakia, pp. 182-187, ISBN 978-80-553—0734-3
- [55] KAŠŠA, J., PRAŽENICA, M.: *New Concept of Two-Stage Two Phase Orthogonal Converter with Two-Phase Motor*, In: 17<sup>th</sup> International Conference on Electrical Drivers and Power Electronics EDPE 2011, 28-30 September 2011, the High Tatras, Slovakia, pp. 188-193, ISBN 978-80-553—0734-3
- [56] BEŇOVÁ, M., DOBRUCKÝ, B., GOMBÁRSKA, D., RADVAN, R.: *Using fictitious exciting functions method for non-linear differential equation system solving*, In: Mathematics 2011, Liberec Czech Republic, October 20 -21 2011, pp.15-20, ISBN 978-80-7372-773-4

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- [58] DOBRUCKÝ, B.: *Complex Time Function of Converter Output Quantities as Orthogonal Polynomials and their Analysis*, In: 2011- th International Symposium on Orthogonal Polynomials, Special Functions and Applications, Universidad Carlos III de Madrid, 29 August to 2 September 2011
- [59] DOBRUCKÝ, B., BEŇOVÁ, M., SZYCHTA, E.: *Design procedure for LCTLC converter*, In: 15<sup>th</sup> International conference TRANSCOMP 2011, Zakopané, 5. – 8. 12. 2011, PLR, ISBN 978-83-7789-654-7
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- [61] PRAŽENICA, M., KAŠČÁK, S., RADVAN, R.: *Simulation and verification of two-stage converter with sinusoidal filter*, In: 15<sup>th</sup> International conference TRANSCOMP 2011, Zakopané, 5. – 8. 12. 2011, PLR, ISBN 978-83-7789-654-7

#### Reviewed Conference Proceedings in Slovakia

- [62] ŠTOFAN, S., KONIAR, D., HARGAŠ, L., HRIANKA, M.: *The analysis of kinematic parameters in biomechanical systems using virtual instrumentation*, In: TRANSCOM 2011, 9-th European International Conference of Young Research and Scientific Workers – Žilina, June 27-29 2011, Slovak Republic, sekcia 3, pp. 221-224, ISBN 978-80-554-0372-4
- [63] HOCK, O., ŠINDLER, P., Čuntala, J.: *Reliability simulation of QDEC machine in programmable FPGA circuit*, In: TRANSCOM 2011, 9-th European International Conference of Young Research and scientific Workers - Žilina June 27-29 2011, Slovak Republic, sekcia 4, pp. 39-42, ISBN 978-80-554-0372-4
- [64] KAŠČÁK, S., SEDLÁK, J.: *Synthesis of LCLC Type Power Resonant Filter with Integrated Transformer*, In: TRANSCOM 2011, 9-th European International Conference of Young Research and scientific Workers – Žilina, June 27-29 2011, Slovak Republic, sekcia 4, pp. 59-64, ISBN 978-80-554-0372-4
- [65] KAŠŠA, J., SEKERÁK, P., PRAŽENICA, M.: *Design Analysis of Two-Stage Power Electronic Converter for Feeding of 2 – Phase PMSM*, In: TRANSCOM 2011, 9-th European International Conference of Young Research and scientific Workers – Žilina, June 27-29 2011, Slovak Republic, sekcia 4, pp.65-72, ISBN 978-80-554-0372-4
- [66] RYBOVIČ, A., BYSTRÍČANOVÁ, A.: *Real Time Communication Between Programmable Logic Controller*, In: TRANSCOM 2011, 9-th European International Conference of Young Research and scientific Workers – Žilina, June 27-29 2011, Slovak Republic, sekcia 4, pp. 117-120, ISBN 978-80-554-0372-4



- [67] HARGAŠ, L., KONIAR, D., ŠTOFAN, S., HRIANKA, M.: *Software Equipment for Biomechanical System Analysis*, In: MMaMS The 4th International conference on Modelling of mechanical and mechatronic systems, 20-22 september 2011, Herľany, Slovak Republic, pp. 180-185, ISBN 978-80-553-0731-2
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