Centre of Excellence PELINCEC – One Year After!

In the first part of 2006 our activities were concentrated on closing Report of the European Project (Contract number ENK6-CT-2002-80669), which has been submitted to the Brussel Office on 25 February, 2006. It is my pleasure to inform you that European Commission has accepted our both Technical and Financial Report without any correction, and on 22 December, 2006 has paid back the last part of contracted sum: 42 000 Euro. So, the financial support of the EC has been officially closed. However, our activities as Centre of Excellence are still continued.

PELINCEC Publications 2006

Three Special Sections with papers selected from the presentations on the International Conference on Power Electronics and Intelligent Control for Energy Conservations PELINCEC 2005, Warsaw’, October 15-19, 2005 has been published:

- “Control in Power Electronics and Drives”, Bulletin of the Polish Academy of Sciences, Vol. 54, No. 3, 2006 (Guest Editor: Marian P. Kazmierkowski),
- “Selected Papers on Advanced Control of Electrical Drives and Hybrid Energy Systems”, Przegląd Elektrotechniczny, No 2, 2006, (Guest Editor: Lech M. Grzesiak),

Also, Special Session from the PELINCEC Workshop:
- “Bridges Though Time: Intelligent Control Signal Processing and Real-Time Process Control” has been published in Przegląd Elektrotechniczny, No1, 2006, (Guest Editor: Bartłomiej Beliczynski).

New European Projects 2006

Based on the PELINCEC international contacts four new European projects in the Framework VI has been contracted:

- High Density Power Electronics for Fuel Cell - and Internal Combustion Engine - Hybrid Electric Vehicle Powertrains - HOPE, Project leader: Prof. Włodzimierz Koczara,
- Control of Renewable Integrated Systems Targeting Advanced Landmarks - CRISTAL, Project leader: Prof. Włodzimierz Koczara
- Development and validation of technical and economic feasibility of a multi MW Wave Dragon off-shore wave energy converter - WAVE DRAGON MW, Project leader: Prof. Marian P. Kazmierkowski
- Leonardo da Vinci project Edipe (CZ/06/B/F/PP-168022), Project leader: Prof. Marian P. Kazmierkowski.

Also, a new project funded by Polish Ministry of Science and Education and devoted to hot power electronics: “Investigations of a new prototype converter with SiC components” has been agreed in December, 2006, Project leader: Prof. Roman Barlik.

International Conferences 2007

Two International Conferences are organized in Warsaw in 2007: ICANNGA’07 and IEEE EUROCON2007 (see page 7 and 8, respectively). I invite you cordially to participate in these exciting events.

Marian P. Kazmierkowski

For more information see the Institute website: http://www.isep.pw.edu.pl/
PELINCEC Seminar on
Research Projects in the Department of Electrical Energy,
Free University of Brussels
By Professor Philippe Lataire, VUB, Belgium

Professor Philippe Lataire, Secretary of European Power Electronics and Drive Association (EPE), from Vrije Universiteit Brussel (VUB) visited Institute of Control and Industrial Electronics (ICIE) from 12 till 17 May 2006. Professor Lataire visited research and education Laboratories of the ICIE and provided scientific discussion with PhD student and research staff (Fig.1). During the visit he has presented very interesting lecture entitled "Research Works in the Department of Electrical Energy of the Free University Brussels" (Fig.2). Over 50 participants from ICIE attended his Seminar.

Professor Philippe Lataire was introduced to research and teaching subjects of the WUT by professor Wlodzimierz Koczara and professor Marian P. Kazmierkowski. The main topics of the laboratory demonstration and discussion were: non conventional power generation, power conditioning, brushless permanent magnet drives and control systems. Professor Lataire express his interest in co-operation with our PhD-students and has invited Tomasz Zyskowski for 3 years project carried by VUB in he field of brushless permanent magnet drives.

Fig. 1. Professor Philipe Lataire in ICIE laboratories - discussion with dr B. Ufnalski

Fig. 2. Seminar of Professor Philippe Lataire on 16 May, 2006

Fig. 3. Professor Lataire in the new modern library of the Warsaw University
International Conference on Adaptive and Natural Computing Algorithms — ICANNGA’07

The ICANNGA series of Conferences has been organised since 1993 and has a long history of promoting the principles and understanding of computational intelligence paradigms within the scientific community. Starting in Innsbruck, in Austria (1993), thence to Alès in France (1995), Norwich in England (1997), Portoroz in Slovenia (1999), Prague in Czech Republic (2001), Roanne, in France (2003) and finally Coimbra in Portugal (2005), the ICANNGA series has established itself as a reference for scientists and practitioners in this area. The series has also been of value to young researchers wishing both to extend their knowledge and experience and also meet experienced professionals in their fields.

In a rapidly advancing world, where technology and engineering change dramatically, new challenges in modern informatics compel us to broaden the Conference themes in order to take into account new developments. Nevertheless we have kept the acronym ICANNGA which, since the Coimbra conference in 2005, stands for International Conference on Adaptive and Natural Computing Algorithms.

The 2007 Conference, the eighth in the ICANNGA series, will take place at the Warsaw University of Technology, drawing on the experience of previous events, and following the same general model. In particular our Electrical Engineering Faculty, Institute of Control and Industrial Electronics and Division of Control are involved in various preparation tasks. More information at http://icannga07.ee.pw.edu.pl/.

We have received 473 submissions from 40 countries. Many of them very high quality papers. They have been carefully evaluated by at least two reviewers chosen among the best experts in their fields. Only the limited number of the papers submitted could have been accepted for presentation at the conference (around 40%). Therefore, many of very good papers had to be rejected taking into account their less then perfect relevance to the conference topics, or their position in the ranking, based on the referees’ opinions. Accepted papers will be included in the Proceedings published by Springer-Verlag in the series Lecture Notes in Computer Science (LNCS).

Our social programme will include a concert in St. Saviour Church, welcome reception at Great Hall in the Building of Physics and conference dinner in the 18th century Jabłonna Palace - on the outskirts of Warsaw.

(Excerpts from PELINCEC Newsletter, No.11, 2006)
Professor Udo Bleimann from the University of Applied Sciences, Darmstadt, Germany visited Institute of Control and Industrial Electronics (ICIE) in frame of the TSE Sokrates/Erasmus Program (06-11 December, 2006). It was his first visit in Poland. At second day of his visit he gave a general lecture on „Extended Blended Learning-Innovative Learning Scenarios for Universities“for the audience of ca. 85 participants (7 Professors plus students) in the room SK 04.

In the next days he had several classes for Ph.D.-students explaining the Project Atlantis University, in which he is involved already for 3 years in close cooperation with Dr Krzysztof Amborski. It started in Darmstadt, where Dr Amborski held the professor position for several years. Currently, in the international group working on this project are also 2 MSc diploma students of Dr Amborski, who have spend one year in Darmstadt on the basis of SOKRATES Program.

During the visit Prof. Bleimann met Director of the ICIE - Professor Marian P. Kazmierkowski, Dean of the Faculty of Electrical Engineering - professor Stanislaw Wincenciak, and visited also the Faculty of Electronics and Information Technology. The discussions were especially interesting for professor Bogdan Galwas, who was the founder of the Warsaw Technical University Centre for Distant Learning (OKNO) and the future cooperation has been founded.

In 21-26 February 2007 a group of German students will come with professor Bleimann to our Faculty to present their results and make the cooperation more vivid. Prof. Bleimann will deliver the lecture on „Bologna Process and Extended Blended Learning – lessons learned in Darmstadt“ to the gremmie of all the Deans of Warsaw Technical University.

**PELINCEC Biographies**

**Prof. Dr. Udo Bleimann** is Managing Director igdv – Center for Advanced Learning, Media and Simulation Director aida - Institute of Applied Informatics Darmstadt **Education:** 1975 Diploma in mathematics (MSc), University of Frankfurt, Germany; 1981 Doctorate in economics (Dr. rer. pol.), University of Frankfurt, Germany **Experience:** 1969 - 1975 Freelance Consultant in Frankfurt and Munich in the areas IT-advice, programming, mathematical methods in industry, especially for banks; 1975 - 1980 Assistant lecturer, University of Frankfurt, Faculty of Economics; 1981 - 1984 Metallgesellschaft AG, Frankfurt; board assistant for IT, planning; information department; Since 1985 Professor for telecommunication and business computing at Darmstadt University of Applied Sciences and Principal consultant for banks and telecommunication companies; Since 1986 President of scientific society: Zentrum für Angewandte Informatik in Darmstadt. Prof. Bleimann was involved in co-organisation and chair of many conferences and workshops in Human Computer Interaction and Telecommunications M&C 2001-2004, INC 1998-2005. He was the supervisor of more than 500 Diploma, Bachelor and Master dissertations; out of these at least 300 industry projects. Supervisor of eight Ph.D.-projects together with CIT Cork and University of Plymouth and four Masters by research. He was working in the following project management of research projects, e.g. “A Human Factors Based User Interface Design – IDA”, Security and Distant Learning (IClnet and SDLearn), “Virtual University – Mobile Agents and Security”, “Atlantis University – next steps beyond e-Learning”, “Knowledge Broker Network”, “eAgora – Modelling Knowledge Spaces”. Since 1985 he is Member of the Computer Science department’s parlament. In 1989 - 1992 he is Head of Computer Science department and chairman of the parlament. Since 2000 Member of the Senat of the Darmstadt University of Applied Sciences. Since 2001 Member of the Strategic Planning Committee of Darmstadt University of Applied Sciences – since 2004 chairman of this committee Since 2002 Managing Director Institute of Applied Informatics Darmstadt: This institute is organizing R&D projects mainly together with industry partners in a wide area of topics, e.g. Web Technology, E-Learning, Distributed Systems, System Management, Mobility, Knowledge Management. 2003 Founder of “Forum for Knowledge Media Design” at ZGDV Darmstadt for interdisciplinary projects (Designers, Psychologists and IT Experts) Since 2006 Managing Director of igdv – Center for Advanced Learning, Media and Simulation (www.igdv.h-da.de)
ELECTRICAL POWER
QUALITY AND UTILIZATION

Journal

Roman Barlik, Guest Editor
Special Issue on "Power Quality"

Leonardo Rodrigue Lima, Marcelo Cabral Cavalcanti, Francisco de Assis dos Santos Neves,
Gustavo Medeiros de Souza Azevedo
Implementation of a Digital Signal Processor-Controlled Shunt Active Filter

Krzysztof P. Sozański
Harmonic Compensation Using the Sliding DFT Algorithm for Three-Phase Active Power Filter

Henryk Supronowicz, Andrzej Olszewski, Hubert Gawęcki
Control Circuit for Series Active Power Filters Based on Programmable Logic Devices

Miłek Nowak, Juliusz Hildebrandt, Jacek Rabinowski, Roman Barlik
Digitally Controlled Interface Between Supercapacitor Energy Storage and DC Link

Sven Tschirley
Analysis of IGBT Turn-On Transients in Circuit Configurations With Series Connected Diodes

Balak Farhangi, Shahrokh Farhangi
Application of Z-Source Converter in Photovoltaic Grid-Connected Transformer-Less Inverter

Christian P. Dick, Klaus Rigbauer, Harald Rademacher and Rik W. De Doncker
Investigations on the Controllability and the Design of DC/DC Converters connected to PV – Generators

Nikolaj Levin, Vladimir Pugachov, Leonid Ribicki, Anastasia Zhiravetska
Contactless Multipolar Doubly-Fed Asynchronous Generator For Windmills

Marcelo C. Cavalcanti, Gustavo M.S. Azevedo, Bruno A. Amaral, and Francisco A.S. Neves
Unified Power Quality Conditioner in a Grid Connected Photovoltaic System

Zbigniew Olszykowski, Andrzej Wasowski
Methods of Voltage Unbalance Estimation in Electric Power Networks

Kyung Soo Kook, Yik Lu, Stan Arcisz
Mitigation of the Wind Generation Integration Related Power Quality Issues by Energy Storage

Zbigniew Fedyczak, Maciej Jankowski, Pawel Szczeniak
Modeling and Analysis of the Quadrature-booster Phase Shifter with PWM AC Bipolar Matrix-reactance Chopper and Passive Load

Elżbieta Szychta
Multiresonant ZVS CLUK Converter

Tadeusz Sobczyk
Extreme Possibilities of Circuital Models of Electric Machines

Jean Claude Vannier, Robert Kaczmarek, Zhu-yun Wang, Andry Randria
Rotor Power Loss in a PM SM by Calculation, Simulation and Measurements, Mutual Verification of Methods

Uwe Schaffenhauer, Hans Küh
Additional Losses by Magnetic Field Harmonics in the Rotor Bars of Asynchronous Machines and their Influence

Christoph Schlessok, Benedict Schmülke, Michael van der Giet, Kay Hameyer
Electromagnetically Excited Audible Noise – Evaluation and Optimisation of Electrical Machines by Numerical Simulation

Conferences

Volume XII • Number 2 • 2006
Message from the Outgoing Editor-in-Chief of the IEEE Transactions on Industrial Electronics

At the end of 2006, I accomplished my three years of service as the Editor-in-Chief of the IEEE TRANSACTIONS ON INDUSTRIAL ELECTRONICS. On January 1, 2007, Prof. Bogdan M. Wilamowski from Auburn University, Auburn, Alabama, USA, came in as the new Editor-in-Chief.

Since 2004, the number of published pages has been increased systematically as follows: 2004-1372; 2005-1740; 2006-1957, giving the total number of 550 published papers. Among them, 13 Special Sections have been published and 15 new have been accepted by the IES Publication Committee. So, the Special Sections have become commonly accepted and attractive contributions in our TRANSACTIONS. Between January 2004 and the end of October 2006, over 2100 manuscripts were handled by the Editor-in-Chief Office Team and Associate Editors.

Therefore, I would like to express my deep thanks to Katarzyna M. Brzozowska, our Journal Administrator (2004-2006) as well as Margaret V. Dylík (2004), Patrycja Kluz (2005) and Patryk Antoniewicz (2006), Administrative Assistants, for their hard work over these years to keep contact with authors and keep the flow of papers publishing smoothly.

Thanks also to Keith H. Edick, Senior Editor, from the IEEE Periodicals Department, who pleasantly interfaced during the production phase of the TRANSACTIONS.

Finally, I would like to express my appreciation to all Associate Editors with their numerous reviewers for continuous support and high-quality evaluations.

MARIAN P. KAZMIERKOWSKI,
Past Editor-in-Chief
Institute of Control and Industrial Electronics
Warsaw University of Technology
00-662 Warsaw, Poland

Prof. Hirofumi Akagi
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Italy
Prof. Andreas Steimel
Germany
Prof. Tore Undeland
Norway
Prof. Vladimir V. Pilinski
Ukraine
Prof. Andrea Vezzini
Switzerland
Prof. Stan Zak
United States
Letter of Intended Cooperation 
with Technical University of Federico Santa Maria, 
Valparaiso, Chile

On 6 November 2006 Rector of Technical University of Federico Santa Maria, Valparaiso, Chile: Professor Jose Rodriguez has visited Warsaw University of Technology. He and Rector of the Warsaw University of Technology, Professor Wlodzimierz Kurnik signed Letter of Intended Cooperation. The Cooperation Coordinator from the Polish side will be Prof. Marian P. Kazmierkowski.

Professor Jose Rodriguez signing the Letter of Intended Cooperation during the Meeting in Rectorat. From the left: Prof. Stanislaw Wincewicz, Dean of the Electrical Engineering Department, Prof. Jose Rodriguez, Rector of Technical Univ. of Federico Santa Maria; behind are standing Dr Mariusz Malinowski, Prof. Marian Kazmierkowski (both from the ICIIE), Dr Roman Babut, Head of the WUT's International Relations Office, Dr Krzysztof Amborski (ICIIE).

P E L I N C E C  
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ICANNNGA’07
International Conference on Adaptive and Natural Computing Algorithms
Warsaw, Poland, 11-14 April 2007

Call for papers and participation

The ICANNNGA series of international conferences has a long history of promoting the principles and understanding of computational intelligence paradigms within the scientific community. Starting in 1993, it has established itself as a reference for scientists and practitioners in this area. The series has also been of value to young researchers wishing not only to extend their knowledge and experience but also have a chance to meet established workers in their fields. The 2007 Conference, eighth in the ICANNNGA series, will take place at the Warsaw University of Technology in Poland, combining technical sessions, including plenary lectures by renowned scientists, along with tutorials and workshop panels.

TOPICS
Contributions are sought in the following topic areas list (the list is not exhaustive):

- **Neural Networks**: architectures, algorithms, approximation, complexity, associative memory, biological foundations, computational neuroscience, neurodynamics, neurocomputing.
- **Learning**: kernel methods, support vector machines, supervised and unsupervised learning, reinforcement learning, Bayesian learning.
- **Evolutionary Computation**: genetic algorithms, genetic programming, multi-objective optimization, biological computation, classifier systems, artificial life, artificial immune systems, evolution strategies, ant colony optimization, particle swarm optimization, swarm intelligence, evolvable hardware.
- **Soft Computing**: fuzzy systems, rough systems, uncertain systems, hybrid systems, neurofuzzy controllers, embedded computing for intelligent systems, random search methods, probabilistic computing, chaotic computing, symbolic computing.
- **Bioinformatics and Computational Biology**: molecular computing, DNA computing, bioinformatics databases, computational genomics, computational proteomics, clustering, mapping gene expression and micro arrays, gene identification and annotation, molecular evolution, molecular sequence analysis, protein structure, protein classification.
- **Quantum Computing**: quantum control, supercomputing, autonomic computing.
- **Applications**: medicine, environment, quantitative socio-dynamics, pattern recognition, classification, signal processing, control, simulation, robotics, diagnostics, transport, defense, security, finance and business, data mining and intelligent databases, speech recognition and natural language processing, image processing and computer vision, real-time computational intelligence and games, grid computing.

PROCEEDINGS
The conference proceedings will be published by Springer-Verlag.

DEADLINES
- Tutorials and Invited Session Proposals: 4 June 2006
- Paper Submission: 10 September 2006
- Notification of Acceptance: 7 December 2006
- Camera-ready Manuscripts: 9 January 2007

ORGANISERS
Warsaw University of Technology
Faculty of Electrical Engineering
Institute of Control and Industrial Electronics
Control Division
Conference Chair: Bartłomiej Beliczynski

web-page: http://icannn07.ee.pw.edu.pl

2006 PELINCEC Newsletter, No.11
CALL FOR PAPERS

**TOPICS:**

- **System Design** (TPC-1) Co-Chairs: Michał Mrozowski, Poland & Peter Russer, Germany
  - Computer aided design, modeling and simulation, electromagnetics

- **Signal and Image Processing** (TPC-2) Co-chairs: Adam Dabrowski, Poland & Marek Domanski, Poland
  - Digital signal processing theory, methods, DSP implementation, estimation and identification techniques, application of specific ICs, image and multidimensional processing, pattern recognition, computer vision, real-time multimedia signal processing

- **Computer Engineering** (TPC-3) Co-Chairs: Bohdan Macukow, Poland & Nicolae Tapan, Romania
  - Computer science, computer networks, computer engineering

- **Measurements and Sensors** (TPC-4) Co-Chairs: Ryszard S. Jachowicz, Poland & Peter Hauptmann, Germany
  - Intelligent sensors actuators, sensor matrix, micro-sensors and micro-actuators, micro-electromechanical systems (MEMS), systems on chip (SoC), wireless microsystem and microsensor interfaces, microsystem applications

- **Computational Intelligence and Control** (TPC-5) Co-Chairs: Andrzej Pacut, Poland & Raul Sanchez-Reillo
  - Artificial intelligence, knowledge-based systems, automatic control, biomedical engineering

- **Telecommunication and Multimedia Systems** (TPC-6) Co-Chairs: Zdzislaw Papir, Poland & George Paunovic, Serbia and Montenegro
  - Communication theory, communication systems, communication networks, wireless communication, information and communication technologies, multimedia systems

- **Photonics** (TPC-7) Co-Chairs: Ryszard R. Romanik, Poland & Jacek Sekutowicz, Germany & Kamel M.M.Hassan, Egypt
  - Photonics theory, optical communications, optical sensing, electron beam optics, high energy photons, free electron lasers, superconducting RF accelerator technology, x-ray optics

- **Power Systems and Power Electronics** (TPC-8) Co-Chairs: Wlodzimierz Koczara, Poland & Marko Delimar, Croatia & Maurice Fadel, France
  - Power system planning, operation and transmission, Distribution networks, Distributed generation, stability, protection, reliability. Economics. Power electronic application to power systems: DFIG and permanent magnet generators, energy storages, fuel cell power sources, FACTS, UPQC, STATCON, voltage restorers, HVDC, PEEB, SVC, UPS, Variable speed power generation, microturbines, alternative energy sources, grid interfaces

- **Electrical Machines and Drives** (TPC-9) Co-Chairs: Lech M. Grzesiak, Poland & Peter Magyar, Germany & Maria Pietrzak-David, France
  - Power electronics converters, modulations techniques, neuronal controllers, sensorless control, power electronic drives, motion control, permanent magnet motor drives

- **Electron Devices** (TPC-10) Co-chairs: Andrzej Napieralski, Poland & Cleyys Cor, Belgium
  - New semiconductor materials, power semiconductor devices

- **Modeling and Simulation** (TPC-11) Co-Chairs: Andrzej Dzieliński, Poland & Yuri Merkurjev, Latvia
  - Methodology, tools, modelling and simulation in engineering, modelling and simulation in education, modelling and simulation in medicine, modelling and simulation in logistics, industrial applications of modelling and simulation

- **Education** (TPC-12) Co-Chairs: Andrzej Filipkowski, Poland & Baldomir Zajc, Slovenia
  - New development approaches for electronic engineering education, software, hardware, e-learning technologies

- **Special Session Proposals** Chair: Mariusz Malinowski, Poland [ malin@isep.pw.edu.pl ]
  - A special session consist of six papers which should present a unifying theme from a diversity of viewpoints

The above listed topics do not exclude submission and presentation of papers from other specific fields close to or related to the general theme of the Conference.

**CONTACT ADDRESS**

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ISEP-Warsaw University of Technology
75 Koszykowa St., Warsaw 00-662, Poland
e-mail: eurocon2007@isep.pw.edu.pl

**DEADLINES**

- **Reception of full papers:** January 31st, 2007
- **Paper acceptance notification:** April 30th, 2007
- **Camera-ready papers and registration:** May 31st, 2007

**http://eurocon2007.isep.pw.edu.pl**