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Recent Advances in Circuits, Systems and Automatic Control

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Proceedings of the 12th WSEAS International Conference on Circuits, Systems, Electronics, Control & Signal Processing (CSECS '13)

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Scientific Sponsors

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Preface

This year the 12th WSEAS International Conference on Circuits, Systems, Electronics, Control & Signal Processing (CSECS '13) was held in Budapest, Hungary, December 10-12, 2013. The conference provided a platform to discuss molecular electronics, optoelectronic devices, neural networks, circuit implementation for fuzzy systems, systems theory, dynamical systems, systems techniques for wireless applications, nonlinear circuits, large scale systems, hierarchical control, embedded systems, filter design and structures, signal reconstruction, signal and system modeling, multidimensional systems, image coding, remote sensing etc with participants from all over the world, both from academia and from industry.

Its success is reflected in the papers received, with participants coming from several countries, allowing a real multinational multicultural exchange of experiences and ideas.

The accepted papers of this conference are published in this Book that will be sent to international indexes. They will be also available in the E-Library of the WSEAS. Extended versions of the best papers will be promoted to many Journals for further evaluation.

Conferences such as this can only succeed as a team effort, so the Editors want to thank the International Scientific Committee and the Reviewers for their excellent work in reviewing the papers as well as their invaluable input and advice.

The Editors

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Plenary Lecture 1

Using the Electrical Signal from Cutting Process to Control Inserts Quality and Temperature of Cutting Area

Professor Valentin Ditu
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Abstract: In the process of cutting in machining metallic materials, there is an electrical signal due to mainly of temperature which appears in the cutting area. In the paper is shown the use of this electrical signal to control the quality of carbide inserts during the process of machining. At the same time is presented the possibility to use this electric signal which appears in machining process in the assessment of the temperature from the cutting field.

Brief Biography of the Speaker: Valentin Ditu is professor at the Faculty of Technological Engineering and Manufacturing Technology Department of Transylvania University of Brasov Romania. He graduated in 1975 and he obtained his PhD in the field of special effects that appears at cutting operations. He is author and co-author of 10 books and more than 100 papers in national and international conferences. He is author of 18 practical achievements and author of some invention licenses. His research interests are in Manufacturing Engineering Processes, Management and Education Technology. He worked in many projects with different factories in the field of cutting tools performances.

Plenary Lecture 2

Automotive Hybrid Systems Used in Traction

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Abstract: In order to ensure a good power supply of a vehicle, different energy sources - from classical to new- are putted together, forming automotive hybrid systems.
From batteries to supercapacitors, fuel cells and solar panels, researchers' efforts in power supply are directed towards achieving a more friendly environmentally vehicle, with high autonomy and reliability.
There are many ways to connect the fuel cells, solar panels, batteries, supercapacitors and vehicle motor to run the vehicle. For example, solar energy has advantages, but is not suitable to run a vehicle directly, on its own. It is needed a fuel, because the driver wants to be independent of the sunlight. Also, there are hybrid vehicles in development and in production that combine classical batteries and fast supercapacitors - as method of propulsion. This presentation deals with hybrid energy systems based on fuel cells and solar panels vs. alternative solution composed by batteries and supercapacitors. Main general parameters as: power, energy and efficiency are compared through theoretical and experimental studies for both hybrid systems. Specific parameters, as: heating value or thermal efficiency for fuel cell, power density for solar panel, life cycle for supercapacitors, state of charge for batteries are also computed and analyzed. Advantages of using both systems are discussed and results obtained trough simulations and experiments come to certify conclusions of each scenario.

Brief Biography of the Speaker: Carmen Mihaela Lungoci is graduated from Politehnica University, Bucharest, Romania, in Automation for Industrial Control field. In 2009 she received the Ph.D. degrees in Electrical Engineering from Transilvania University of Brasov. She is lecturer at this university, on the Electrical Engineering and Applied Psychics Department of the Electrical Engineering and Computers Science Faculty. Her current research area deals with applications of numerical methods in electrical engineering, energy management in automotive systems, hybrid systems used in traction, energy and environment. She published more than 30 articles in proceedings of internationals conferences and journals.