EDITORIAL

Dear readers,

In front of you is the issue 2/2010 of the journal AUTOMATIKA. It contains eight original scientific papers and one professional paper, which span several areas in modelling control and diagnostics in electromechanical systems, estimation techniques, Power Electronics and e-learning.

First group consists of six papers presented on International Conference on Electrical Drives and Power Electronics, held in Dubrovnik, Croatia on October 12-14, 2009. Authors of these articles are from Japan, Turkey, Russia, Poland, Czech Republic, Slovakia, Slovenia and Croatia and they were invited on the basis of very high quality of their manuscripts submitted to the EDPE 2009. Additional three papers are original scientific papers directly submitted to the Journal.

In the first paper, **Motion Control Systems With Network Delay***, Asif Šabanović et al. propose a new structure of estimation/prediction of the delay in measurement and control channels. The estimation is based on the available data – undelayed control input, the delayed measurement of position or velocity and the nominal parameters of the plant – and does not require a priori knowledge of the delay. The second paper is* **A Takagi-Sugeno Fuzzy Model of Synchronous Generator Unit for Power System Stability Application** *in which Zlatka Tecec et al. propose Takagi-Sugeno (TS) synchronous generator unit model intended for application in an autotuning power system stabilizer. As premise variables the proposed model uses active and reactive power and also line reactance, while in consequence part of the TS model 3rd order models are used, which makes the model appropriate for implementation on simple microprocessor platforms. In the third paper,* **Elimination of the Voltage Oscillation Influence in the 3-Level VSI Drive Using Sliding Mode Control Technique***, Sergej Ryvkin proposes the application of the sliding mode control of the three-level voltage-source inverter, that results in high dynamic feature in combination with robustness against disturbances and plant parameter variations and also it solves the problem of lower-frequency voltage oscillations that appear in the input DC-line voltage. The fourth paper is* **Rotor Fault Analysis in the Sensorless Field Oriented Controlled Induction Motor Drive** *in which Teresa Orlowska-Kowalska et al. introduce a rotor estimator of the induction motor drive with broken rotor bars. Proposed estimator is robust to all motor parameter changes, hence it should work properly in a faulty rotor. In the fifth paper,* **Native and Additional Cogging Torque Components of PM Synchronous Motors – Evaluation and Reduction***, Andrej Černigoj et al. analyze motor design techniques in order to reduce cogging torque components. Detailed analysis has revealed that besides well-know native cogging torque components also additional cogging torque components exist which are provoked by assembly tolerances in mass–production. Since the elimination of the cogging torque components introduces contradictory requirement on motor design, the authors emphasize the importance of optimization actions during the design procedure. The sixth paper is* **Teaching Electrical Drives and Power Electronics: eLearning and Beyond** *in which Pavol Bauer and Viliam, Fedák analyze the state of the art in eLearning in the field of electrical drives and power electronics. Special attention has been given to the results achieved in the development of multimedia based eLearning tools in the field of electrical drives and power electronics as well as distance and virtual laboratories. In the seventh paper,* **Over-modulation phenomena and its influence on the pulse width modulated single-phase inverter output voltage***, David Stojan and Miro Milanovič analyze the pulse width modulated single-phase inverter output voltage. In addition, an influence of the over-modulation on first voltage harmonic and*

THD factor is analyzed. The eighth paper is **Estimation based Individual Pitch Control of Wind Turbine** *in which Mate Jelavić et al. propose a novel induvidual pitch control algoritam in order to reduce blade and hub loading in windturbines. Instead of measured blade loading the estimated ones based on available proces variables are used. In the ninth paper,* **Self-Management Principles in Autonomic Service Architecture Supported by Load Balancing Algorithm**, *Srećko Krile and Danko Kezić analyze the role of heuristic algorithm for load balancing that can be incorporated in Multi-Protocol Label Switching/ Differentiated Services (MPLS/DS) networks based on self-management principles for automated traffic configuration. Proposed algorithm is tested on numerical examples with maximum M routers on the path and with differentiation of N service classes.*

We would like to take this opportunity to thank all the authors for their contributions and also the reviewers for their time and expertise that ensured the highest quality of the papers. Finally, we would like to express our gratitude to Prof. Ivan Petrović, the Editor-in-Chief of AUTOMATIKA, for giving us the opportunity and honour to serve as the guest editors of this issue.

Guest Editors:
Prof. Fetah Kolonić, PhD
Prof. Jadranko Matuško, PhD