Guest Editorial

Introduction to the Special Issue on Selected Papers from the ELECO'2007 Conference

Welcome to the Special Issue on Selected Papers from the ELECO-2007 Conference!, the fifth International Conference on Electrical and Electronics Engineering, held 5–9 December, 2007, in Bursa-Turkey.

ELECO conferences goes back to 1986, when it was initially organized as an ELMEKSEM Electromechanical Conference by the Bursa Section of the Chamber of Electrical Engineering Turkey (EMO), and upon that success repeated in 1988 and 1993 and 1997. The Bursa section has further gone on to organize a national series of Computer-Telecommunications Conferences. The 5th conference of this series was held in 1998. Until 1999 the conference series remained local, but in 1999 both conferences were united into ELECO and organized as an international Conference. ELECO-1999 was thus the first International Electrical and Electronics Engineering Conference held in Bursa.

ELECO is organized as international conferences in odd numbered years and as national conferences in even numbered years. As such ELECO-2007 is the fifth international conference, with participants coming from various countries, presenting papers from the rich spectrum of electrical and electronics engineering. ELECO-2007 is jointly organized by Uludağ University, Bursa; Istanbul Technical University (ITU); and the Chamber of Turkish Electrical Engineers (EMO), Bursa Section. IEEE-Turkey co-sponsored ELECO-2007.

From the broad scope of the technical program it was probably the largest electrical and electronics engineering conference ever held in Turkey. The scope of the conference covers topics ranging over electric power systems, electrical machines and drives, power electronics, high voltage techniques, electrical materials, electronics, circuits and systems, signal processing, electromagnetics, antennas and propagation, microwave theory, communication systems, mechatronics, control theory, control applications, automation systems, robotics and intelligent control systems.

From the 268 papers submitted to ELECO-2007, 180 papers have been accepted for presentation in the conference. Every paper has been carefully reviewed by the international referees. Some of the accepted papers have been revised on the council of referees. Contributions to ELECO-2007 come from 29 different countries over 4 continents.

Selected papers from ELECO Conferences were invited to be published in extended form in special ELECO issues of international journals, under peer review. The first special issue appeared in 2004 as the ELECO Special Issue of the journal Analog Integrated Circuits and Signal Processing (volume 39, issue 2, 2004) and presented eight selected papers from the ELECO-2001 Conference. Guest Editors were Oğuzhan Çiçekoğlu and Hakan Kuntman.

The second special issue appeared in 2005 as the ELECO Special Issue of the Journal ELEKTRİK: Turkish Journal of Electrical Engineering and Computer Sciences (volume 13, number 1, 2005) containing thirteen selected papers from the ELECO-2003 Conference.

The third special issue appeared in 2006 as the ELECO Special Issue of the Journal ELEKTRİK: Turkish Journal of Electrical Engineering and Computer Sciences (volume 14, number 3, 2006) containing nine selected papers from the ELECO-2005 Conference.

This is the fourth ELECO Special Issue, consisting of eight extended papers selected from the ELECO-2007 Conference in areas of electric power systems, electrical machines and drives, electrical materials and high voltage techniques, power electronics and applications, electromagnetics, microwave, antennas and propagation and biomedical electronics. Two papers are selected from invited talks held by IEEE Fellows during the conference. The other six are chosen from regular submitted manuscripts.

The paper by Mohamad Sawan et al., entitled "Biomedical Circuits and Systems Dedicated for Sensing and Neurostimulation: Case study on Urinary Bladder dysfunctions," was presented at ELECO-2007 as an invited paper. This paper covers circuits and systems techniques for the construction of high reliability biosensing and neurostimulation smart medical devices.

The paper by Chanan Singh and Lingfeng Wang, entitled "Role of Artificial Intelligence in the Reliability Evaluation of Electric Power Systems," was also presented as an invited paper at ELECO-2007. In this paper, concepts concerning reliability evaluation based on population-based intelligent search as well as neural network-enhanced MCS are presented. The paper gives some case studies to demonstrate the effectiveness of the proposed methods.

The paper by Mehmet Kuşaf and Abdullah Y. Öztoprak, "Dispersion Analysis of the ADI-FDTD and S-FDTD Methods," investigates performance of the ADI-FDTD method, with second order and fourth order finite differencing in space. The method is compared with performance of the S-FDTD method.

The paper by Mohammed Al-Husseini et al., "Pattern Synthesis with Uniform Circular Arrays for the Reduction of WCDMA Intercell Interference," investigates the use of UCAs having specially synthesized patterns at the base stations of WCDMA cellular systems. The decrease in the ratio of intercell interference to intracell power resulting from the use of these arrays in a beam-steering scheme will be assessed, and the advantages and disadvantages of each pattern type will be discussed.

The paper by Jan Izykowski and Marcin Bozek is entitled "Distance Relaying Algorithm for Double-Circuit Transmission Line with Compensation for Reactance Effect under Standard Availability of Measurements." This paper deals with non-pilot distance protection of a double-circuit transmission line. Negative impact of the reactance effect, appearing in measuring a fault loop impedance, on operation of the relay is discussed. An adaptive algorithm allowing one to prevent the relay from mis- or mal-operation caused by the reactance effect is introduced.

The paper by Tadeusz Lobos et al., "Power Distortion Issues in Wind Turbine Power Systems Under Transient States," investigates time-frequency methods to model complex transient states in wind power plants.

The paper by A. Şima Uyar and Belgin Türkay, "Evolutionary Algorithms for the Unit Commitment Problem," compares three evolutionary computation techniques, namely steady-state genetic algorithms, evolutionary strategies and differential evolution for the unit commitment problem. The comparison is based on a set of experiments conducted on benchmark datasets as well as on real-world data obtained from the Turkish Interconnected Power System.

The paper by Aysel Ersoy, Yasin Özcelep and Ayten Kuntman, "A Study on the Reliability of Polyester Insulators Blended With Borax," explores the breakdown in polyester resin, observed experimentally, using IPT method for different borax concentrations. Using the Weibull distribution, a new approach was proposed to represent and estimate the breakdown time of polyester insulator.

The guest editor would like to thank Editor-in-Chief, Kemal Leblebicioğlu, for valuable supports, Erol Kılıç for the development of this Special Issue and the staff at TÜBİTAK Elektrik Journal for their assistance in producing this volume. I hope you very much enjoy reading this special issue of ELEKTRİK.

Hakan Kuntman,
İstanbul Technical University
Guest Editor of the Special Issue
on Selected Papers from ELECO'2007