Foreword and Editorial

We are very happy to publish this issue of an International Journal of Advanced Science and Technology by Science and Engineering Research Support Society.

This issue contains 10 articles. Achieving such a high quality of papers would have been impossible without the huge work that was undertaken by the Editorial Board members and External Reviewers. We take this opportunity to thank them for their great support and cooperation.

The paper “Identification and Elimination of Faults Occurrence in sub-systems by using Resistance Switching for Linear Loads through Distribution Statcom (D-STATCOM)” presents the orientation procedure for diagnosing the power quality problems in different fault occurring conditions by using Distribution STATCOM (D-STATCOM) with linear loads. Here the resistance switching is used to get the pure sinusoidal voltage compensation. This modelling and simulation of D-STATCOM is achieved by using pure sinusoidal Pulse Width Modulation Technique. The major problem is that, during fault conditions there is a probable disturbance in the load side and this problem is diagnosing by utilizing the D-STATCOM at load side, as well as in between source and load. This custom power device is an effective and efficient is used in major portion of power distribution networks. D-STATCOM injects a reactive power to correct the fault conditions at end users. Here the SPWM Technique helps to keep controlling the Voltage Source Converter (VSC). The overall proposed topology is modeled and simulated.

Paper “Economic Emission Load Dispatch with Multiple Fuel Options Using Hopfield Lagrange Network” proposed a Hopfield Lagrange network (HLN) for solving economic emission load dispatch (EELD) problem with multiple fuel options (MFO). Economic load dispatch (ELD) problem with MFO has been solved for recent years. However, it is more realistic to add CO2 emission to objective of ELD problem because generating units not only use fuels but also release emissions to the air. Consequently, ELD problem becomes EELD problem. HLN is a combination of Lagrange function and continuous Hopfield neural network where the Lagrange function is directly used as the energy function for the continuous Hopfield neural network. By using equivalent cost function and HLN, the paper proposed an effective method to solve EELD problem with MFO. The proposed method is tested on one test system consisting of ten generating units with various load demands and compared to other methods. In addition, the best compromise from the set of obtained solutions is found and compared to this from lambda-iteration (LI) method.

In the paper “Analyze of Real Switching Angle Limits in TCSC on Capacitor and Inductor Values and their Selection Factors”, described Practical aspects on sizing of TCSC elements that must be considered to have the fast and reliable switching from capacitor to inductive region and vice versa. The influencing factors on TCSC characteristic, the requirements of L and C, practical and exact limits of firing angle are presented by detailed analyzing and simulations. Also exact firing angle limitation and stable thyristor trigger angle are discussed for the first time.
The paper “Tribological Behavior of WC-Co/NiCrAlY Coatings on Ti-6Al-4V” discussed the Ti6Al4V alloys are widely used in chemical plants, automobile, aerospace industries and medical applications (bone, dental) because of its high specific strength. But, it has poor wear resistance. In the present investigation, duplex coatings were employed to enhance the mechanical and tribological properties. WC-Co Ceramic coatings were deposited on Ti6Al4V substrate with different thicknesses (250μm, 350μm and 450μm) by the detonation spray (DS) while the thickness of the NiCrAlY bond coat (200μm) deposited by High Velocity Oxy Fuel (HVOF), stayed the same. Mechanical properties (hardness and wear resistance) were found for both substrate and duplex coatings. Wear test was performed for different sliding distances (1000m,2000m,3000m and 4000m) at a constant load of 50N by using a pin-on-disc apparatus, and the disc speed was recorded as 600rpm. XRD characterization was performed for substrates and coated samples. SEM analysis showed the wear behavior of coated and uncoated samples. Finally, it was concluded that 450μm ceramic top coat samples resulted maximum hardness and highest wear resistance.

The paper “Design New Artificial Intelligence Base Modified PID Hybrid Controller for Highly Nonlinear System” focuses on the design, implementation and analysis of a new modified proportional-integral-derivative (PID) hybrid fuzzy controller for highly nonlinear dynamic continuum robot manipulator, in presence of uncertainties. In order to provide high performance nonlinear methodology, modified PID controller in presence of boundary derivative part, computed torque controller (CTC) and fuzzy inference system are selected. Linear PID controller can be used to control of partly known nonlinear dynamic parameters of robot manipulator. Pure CTC is used to estimate highly nonlinear parameters, this controller has an important drawback; nonlinear equivalent dynamic formulation in uncertain dynamic parameter. In order to solve the uncertain nonlinear dynamic parameters, implement easily and avoid mathematical model base controller, Mamdani’s performance/error-based fuzzy logic methodology with one input and one output and 7 rules is applied to proposed methodology. The results demonstrate that the proposed method is a partly model-free controller which works well in certain and partly uncertain system.

Paper “Diode Based Ground Bounce Noise Reduction for 3-Bit Flash Analog to Digital Converter” reports the power gating technique to provide the reduction mechanism for suppressing the leakage current effectively during standby mode but it introduces ground bounce noise. It designed a “3” bit flash ADC with power gating technique to reduce leakage current and ground bounce noise in different mode of operation. This diode based power gating technique provides the reduction of leakage current in standby mode, and reduction of ground bounce noise in sleep-to-active mode. The improved power gating technique provides 82% reduction in leakage current, and 73% reduction in ground bounce noise as compared with conventional flash ADC. Flash ADC with diode based stacking power gating technique has been designed with the help of cadence tool at various supply voltages with 45 nm technology.

This paper “A Programming Model for the Cloud Platform” targets to adapt the BSP model into cloud environment. The scheduling of computing tasks and the allocation of cloud resources will be integrated into the BSP model. A BSPCloud programming model with predictable performance is proposed.

In the paper “Improved 3D Multi-View Stereoscopic Video Decoding through Dispersed Flexible Macro-block Ordering and Multi-Dimensional Error Concealment” proposed the
Dispersed Flexible Macro-block Ordering (DFMO) error resilience method in the encoder to aid the proposed Multi-Dimensional EC (MDEC) algorithms in the decoder to conceal the erroneous Macro-Blocks (MBs) of intra and inter coded frames of 3D stereoscopic video. Our extensive simulation results obtained demonstrate that the proposed combination algorithms can significantly improve the objective and subjective 3D video quality.

This paper “Encrypted Data Transmission in a Multiuser MIMO OFDMA Wireless Communication System with Implementation of Pre-RSNA Cryptographic Algorithm” incorporates a comprehensive BER simulation study undertaken on the effectiveness of a multi-user MIMO OFDMA wireless communication system on encrypted data transmission. The channel encoded and spatially multiplexed multi-user MIMO OFDMA system under investigation implements Pre-RSNA cryptographic algorithm. The simulated system deploys three linear signal detection schemes (Equalizers) such as Minimum Mean Square Error (MMSE), Zero Forcing (ZF) and Q-Less QR decomposition under BPSK, DPSK, QPSK and QAM digital modulations. It is anticipated from computer simulation tests with synthetic data transmission that the multi antenna supported OFDMA wireless communication system outperforms in Zero Forcing (ZF) channel equalization scheme with BPSK digital modulation and shows comparatively worst performance in Q-Less QR channel equalization scheme.

Paper “Low Frost Chiller for Domestic Refrigerator” supports the idea that removal of bottom plate nevertheless rises temperature in the chiller compartment but definitely effects power savings by reducing frost formation.

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