

# IEEE TRANSACTIONS ON INDUSTRIAL ELECTRONICS

A PUBLICATION OF THE IEEE INDUSTRIAL ELECTRONICS SOCIETY

OCTOBER 2011

VOLUME 58

NUMBER 10

ITIED6

(ISSN 0278-0046)

## SPECIAL SECTION ON METHODS AND SYSTEMS FOR SMART GRIDS OPTIMIZATION

Guest Editorial ..... *C. Buccella, C. A. Cañizares, C. Cecati, F. Muzi, and P. Siano* 4483

## SPECIAL SECTION PAPERS

- Electricity Smart Meters Interfacing the Households ..... *F. Benzi, N. Anglani, E. Bassi, and L. Frosini* 4487
- Optimal Operation of Distribution Feeders in Smart Grids ..... *S. Paudyal, C. A. Cañizares, and K. Bhattacharya* 4495
- Unbalanced Three-Phase Optimal Power Flow for Smart Grids .....  
..... *S. Bruno, S. Lamomaca, G. Rotondo, U. Stecchi, and M. La Scala* 4504
- Smart Operation of Wind Turbines and Diesel Generators According to Economic Criteria .....  
..... *C. Cecati, C. Citro, A. Piccolo, and P. Siano* 4514
- Optimal Coordination of Energy Resources With a Two-Stage Online Active Management .....  
..... *F. Pilo, G. Pisano, and G. G. Soma* 4526
- Jump and Shift Method for Multi-Objective Optimization ..... *S. X. Chen and H. B. Gooi* 4538
- Online Optimal Reactive Power Control Strategy of PV Inverters .....  
..... *A. Cagnano, E. De Tuglie, M. Liserre, and R. A. Mastromauro* 4549
- A Population Dynamics Approach for the Dispatch of Distributed Generators ..... *A. Pantoja and N. Quijano* 4559
- Provision of Load Frequency Control by PHEVs, Controllable Loads, and a Cogeneration Unit .....  
..... *M. D. Galus, S. Koch, and G. Andersson* 4568
- Energy Management and Operational Planning of a Microgrid With a PV-Based Active Generator for Smart Grid  
Applications ..... *H. Kanchev, D. Lu, F. Colas, V. Lazarov, and B. Francois* 4583
- A Decentralized and Cooperative Architecture for Optimal Voltage Regulation in Smart Grids .....  
..... *A. Vaccaro, G. Velotto, and A. F. Zobaa* 4593
- An Intelligent Auction Scheme for Smart Grid Market Using a Hybrid Immune Algorithm .....  
..... *B. Ramachandran, S. K. Srivastava, C. S. Edrington, and D. A. Cartes* 4603
- Failure Identification in Smart Grids Based on Petri Net Modeling .....  
..... *V. Calderaro, C. N. Hadjicostis, A. Piccolo, and P. Siano* 4613
- Component Minimized AC-DC-AC Single-Phase to Three-Phase Four-Wire Converters .....  
..... *E. C. dos Santos, Jr., C. B. Jacobina, G. A. de Almeida Carlos, and I. S. de Freitas* 4624

## PAPERS

### *Multiphase Systems*

- Design and Implementation of an Energy Feedback Digital Device Used in Elevator .....  
..... *J. He, C. Mao, J. Lu, and J. Yang* 4636

(Contents Continued on Page 4481)

请阅后放回:

排架号 E194 处



Hybrid Flying-Capacitor-Based Active-Neutral-Point-Clamped Five-Level Converter Operated With SHE-PWM . . . . .	<i>S. R. Pulikanti and V. G. Agelidis</i>	4643
<i>Machines and Drives</i>		
Global Learning Position Controls for Permanent-Magnet Step Motors . . . . .	<i>S. Bifaretti, V. Iacovone, A. Rocchi, P. Tomei, and C. M. Verrelli</i>	4654
Control of a Doubly Fed Induction Generator via an Indirect Matrix Converter With Changing DC Voltage . . . . .	<i>R. Peña, R. Cárdenas, E. Reyes, J. Clare, and P. Wheeler</i>	4664
New Multilevel Converters Based on Stacked Commutation Cells With Shared Power Devices . . . . .	<i>D. Floricaeu and F. Richardeau</i>	4675
Adaptive Tuning of the Stator Inductance in a Rotor-Current-Based MRAS Observer for Sensorless Doubly Fed Induction-Machine Drives . . . . .	<i>M. F. Iacchetti</i>	4683
Dynamic Control and Diagnostic Friction Estimation for an SPMSM-Driven Satellite Reaction Wheel . . . . .	<i>M.-C. Chou and C.-M. Liaw</i>	4693
Ultralow-Latency Hardware-in-the-Loop Platform for Rapid Validation of Power Electronics Designs . . . . .	<i>D. Majstorovic, I. Celanovic, N. Dj. Teslic, N. Celanovic, and V. A. Katic</i>	4708
Air-Gap-Power-Vector-Based Sensorless Method for DFIG Control Without Flux Estimator . . . . .	<i>G. D. Marques and D. M. Sousa</i>	4717
A Robust Uncertainty Controller With System Delay Compensation for an ILPMSM System With Unknown System Parameters . . . . .	<i>W.-H. Yao, P.-C. Tung, C.-C. Fuh, and F.-C. Chou</i>	4727
<i>Single-Phase Electronics</i>		
Optimization of a 5-kW Telecom Phase-Shift DC-DC Converter With Magnetically Integrated Current Doubler . . . . .	<i>U. Badstuebner, J. Biela, D. Christen, and J. W. Kolar</i>	4736
Maximizing Air Gap and Efficiency of Magnetic Resonant Coupling for Wireless Power Transfer Using Equivalent Circuit and Neumann Formula . . . . .	<i>T. Imura and Y. Hori</i>	4746
Self-Tuned Feed-Forward Compensation for Harmonic Reduction in Single-Phase Low-Voltage Inverters . . . . .	<i>L. Padmavathi and P. A. Janakiraman</i>	4753
A New Standby Structure Using Multi-Output Full-Bridge Converter Integrating Flyback Converter . . . . .	<i>J.-K. Kim, S.-W. Choi, C.-E. Kim, and G.-W. Moon</i>	4763
Two-Switch Active-Clamp Forward Converter With One Clamp Diode and Delayed Turnoff Gate Signal . . . . .	<i>K.-B. Park, G.-W. Moon, and M.-J. Youn</i>	4768
Analysis and Implementation of a Fixed-Frequency LCLC Resonant Converter With Capacitive Output Filter . . . . .	<i>N. Shafiei, M. Pahlevaninezhad, H. Farzanehfard, and S. R. Motahari</i>	4773
A Simple Two-Channel LED Driver With Automatic Precise Current Sharing . . . . .	<i>X. Wu, J. Zhang, and Z. Qian</i>	4783
<i>Renewable Energy Systems</i>		
A Bidirectional Inductive Power Interface for Electric Vehicles in V2G Systems . . . . .	<i>U. K. Madawala and D. J. Thrimawithana</i>	4789
Mixed PWM for Dead-Time Elimination and Compensation in a Grid-Tied Inverter . . . . .	<i>Y. Wang, Q. Gao, and X. Cai</i>	4797
<i>Robotics and Mechatronics</i>		
Monocular Vision-Based SLAM in Indoor Environment Using Corner, Lamp, and Door Features From Upward-Looking Camera . . . . .	<i>S.-Y. Hwang and J.-B. Song</i>	4804
Parallel Elite Genetic Algorithm and Its Application to Global Path Planning for Autonomous Robot Navigation . . . . .	<i>C.-C. Tsai, H.-C. Huang, and C.-K. Chan</i>	4813
<i>Actuators and Motors</i>		
Optimum Efficiency Control of Traveling-Wave Ultrasonic Motor System . . . . .	<i>J. Shi and B. Liu</i>	4822
60-GHz Full MEMS Antenna Platform Mechanically Driven by Magnetic Actuator . . . . .	<i>Y. Kim, N.-G. Kim, J.-M. Kim, S. H. Lee, Y. Kwon, and Y.-K. Kim</i>	4830
<i>Control and Signal Processing</i>		
Estimating SI Engine Efficiencies and Parameters in Second-Order Sliding Modes . . . . .	<i>Q. Ahmed and A. I. Bhatti</i>	4837
A Fast Recursive Algorithm for the Estimation of Frequency, Amplitude, and Phase of Noisy Sinusoid . . . . .	<i>P. K. Dash and S. Hasan</i>	4847
A Stress-Detection System Based on Physiological Signals and Fuzzy Logic . . . . .	<i>A. de Santos Sierra, C. Sánchez Ávila, J. G. Casanova, and G. Bailador del Pozo</i>	4857
Fault-Tolerant Control Algorithm for a Four-Corner Closed-Loop Air Suspension System . . . . .	<i>H. Kim and H. Lee</i>	4866

Power Efficiency Estimation-Based Health Monitoring and Fault Detection of Modular and Reconfigurable Robot .....	<i>J. Yuan, G. Liu, and B. Wu</i>	4880
Sliding Mode Control of a Stand-Alone Wound Rotor Synchronous Generator .....	<i>R. S. Muñoz-Aguilar, A. Dòria-Cerezo, E. Fossas, and R. C. Papal</i>	4888
Adaptive Sliding Mode Control for Attitude Stabilization With Actuator Saturation .....	<i>Z. Zhu, Y. Xia, and M. Fu</i>	4898
Gain-Scheduled Robust Fault Detection on Time-Delay Stochastic Nonlinear Systems .....	<i>Y. Yin, P. Shi, and F. Liu</i>	4908
<i>Diagnosis and Monitoring</i>		
A New Portable, Self-Powered, and Wireless Instrument for the Early Detection of Broken Rotor Bars in Induction Motors .....	<i>M. F. Cabanas, F. Pedrayes, C. H. Rojas, M. G. Melero, J. G. Norriella, G. A. Orcajo, J. M. Cano, F. Nuño, and D. R. Fuentes</i>	4917
Ageing and Failure Modes of IGBT Modules in High-Temperature Power Cycling .....	<i>V. Smet, F. Forest, J.-J. Huselstein, F. Richardeau, Z. Khatir, S. Lefebvre, and M. Berkani</i>	4931
Surge Capability Testing of Supercapacitor Families Using a Lightning Surge Simulator .....	<i>N. Kularatna, J. Fernando, A. Pandey, and S. James</i>	4942
A Web-Based Remote Laboratory for Monitoring and Diagnosis of AC Electrical Machines .....	<i>A. Yazidi, H. Henao, G.-A. Capolino, F. Betin, and F. Filippetti</i>	4950
<i>Instrumentation and Sensors</i>		
Selective Spectrum Analysis for Analog Measurements .....	<i>J. Qin, J. D. Cali, B. F. Dutton, G. J. Starr, F. F. Dai, and C. E. Stroud</i>	4960
<i>Embedded Systems</i>		
Investigation of Methods for Data Communication and Power Delivery Through Metals .....	<i>D. J. Graham, J. A. Neasham, and B. S. Sharif</i>	4972
<hr/>		
LETTERS		
Consistency Between Two Adaptive Detection Methods for Harmonic and Reactive Currents .....	<i>Z. Li</i>	4981

**T** hydro... and m... basic... flows... contex... genera... but no...  
 1) ...  
 2) ...  
 3) ...  
 4) ...  
 s...  
 The...  
 summa...  
 a large...  
 source...  
 and so...  
 by sop...  
 design...  
 maxim...  
 cost; th...  
 voltage...  
 balanc...  
 innova...  
 resultin...  
 are de...  
 manag...  
 This...  
 power...  
 tinct a...  
 electro...  
 The...  
 taking...  
 econor...  
 ageme...  
 inform...  
 capabl...  
 inform...