

IEEE TRANSACTIONS ON INDUSTRIAL ELECTRONICS

MARCH 2016

VOLUME 63

NUMBER 3

ITIED6

(ISSN 0278-0046)

PAPERS

Multiphase Systems

- Steady-State Mathematical Modeling of a Five-Phase Induction Machine With a Combined Star/Pentagon Stator Winding Connection A. S. Abdel-Khalik, S. Ahmed, and A. M. Massoud 1331
- Decoupled DC-Link Capacitor Voltage Control of DC-AC Multilevel Multileg Converters S. Busquets-Monge, R. Griñó, J. Nicolas-Apruzzese, and J. Bordonau 1344
- Carrier-Based Modulation Strategies for Multimodular Matrix Converters Y. Sun, W. Xiong, M. Su, X. Li, H. Dan, and J. Yang 1350
- An Integrated Inductor for Eliminating Circulating Current of Parallel Three-Level DC-DC Converter-Based EV Fast Charger. L. Tan, N. Zhu, and B. Wu 1362
- Three-Phase Bidirectional DC/DC Converter With Six Inverter Legs in Parallel for EV Applications G. Waltrich, M. A. M. Hendrix, and J. L. Duarte 1372

Machines and Drives

- An Altered PWM Scheme for Single-Mode Seamless Control of AC Traction Motors for Electric Drive Vehicles A. Ghaderi, T. Umeno, and M. Sugai 1385
- Timing Calculations for a General N-Level Dodecagonal Space Vector Structure Using Only Reference Phase Voltages R. S. Kaarthik, K. Gopakumar, C. Cecati, and I. Nagy 1395
- Theoretical and Experimental Evaluation of Pulsating Torque Produced by Induction Motor Drives Controlled With Advanced Bus-Clamping Pulsewidth Modulation V. S. S. Pavan Kumar Hari and G. Narayanan 1404
- Comparative Study of Switched Reluctance Machines With Half-and Full-Teeth-Wound Windings W. Hua, H. Hua, N. Dai, G. Zhao, and M. Cheng 1414
- A New Perspective on the Operating Principle of Flux-Switching Permanent-Magnet Machines. Y. Shi, L. Jian, J. Wei, Z. Shao, W. Li, and C. C. Chan 1425
- Online Parameter Estimation Technique for Adaptive Control Applications of Interior PM Synchronous Motor Drives. D. Q. Dang, M. S. Razaq, H. H. Choi, and J.-W. Jung 1438
- A Fault-Tolerant Dual Three-Level Inverter Configuration for Multipole Induction Motor Drive With Reduced Torque Ripple K. K. Nallamekala and K. Sivakumar 1450
- Design and Analysis of a Novel High-Torque Stator-Segmented SRM S. R. Mousavi-Aghdam, M. R. Feyzi, N. Bianchi, and M. Morandini 1458
- A Three-Level Fuzzy-2 DTC of Induction Motor Drive Using SVPWM V. Naik N, A. Panda, and S. P. Singh 1467
- Distributed Coordinated Motion Tracking of the Linear Switched Reluctance Machine-Based Group Control System B. Zhang, J. Yuan, L. Qiu, N. Cheung, and J. F. Pan 1480
- Zero Stator Current Frequency Operation of Speed-Sensorless Induction Motor Drives Using Stator Input Voltage Error for Speed Estimation. W. Sun, X. Liu, J. Gao, Y. Yu, G. Wang, and D. Xu 1490
- Automatic Control Loop Tuning for Permanent-Magnet AC Servo Motor Drives S.-M. Yang and K.-W. Lin 1499

(Contents Continued on Page 1329)



A PUBLICATION OF THE IEEE INDUSTRIAL ELECTRONICS SOCIETY



Single-Phase Electronics

Decoupled Current-Balancing Control With Single-Sensor Sampling-Current Strategy For Two-Phase Interleaved Boost-Type Converters *H.-C. Chen, C.-Y. Lu, and L.-M. Huang* 1507

A New Family of Zero-Voltage-Transition Nonisolated Bidirectional Converters With Simple Auxiliary Circuit *M. R. Mohammadi and H. Farzanehfard* 1519

A Peak-Capacitor-Current Pulse-Train-Controlled Buck Converter With Fast Transient Response and a Wide Load Range *J. Sha, D. Xu, Y. Chen, J. Xu, and B. W. Williams* 1528

Renewable Energy Systems

A Novel Pulse-Width Modulation Method for Reactive Power Generation on a CoolMOS- and SiC-Diode-Based Transformerless Inverter *B. Chen, B. Gu, L. Zhang, and J.-S. Lai* 1539

Comprehensive Parameterization of Solar Cell: Improved Accuracy With Simulation Efficiency *P.-H. Huang, W. Xiao, J. C.-H. Peng, and J. L. Kirtley* 1549

Battery Impedance Analysis Considering DC Component in Sinusoidal Ripple-Current Charging *S.-Y. Cho, I.-O. Lee, J.-I. Baek, and G.-W. Moon* 1561

Supercapacitor Electrical and Thermal Modeling, Identification, and Validation for a Wide Range of Temperature and Power Applications *Y. Parvini, J. B. Siegel, A. G. Stefanopoulou, and A. Vahidi* 1574

Energy-Recovery Optimization of an Experimental CDI Desalination System *F. J. Álvarez-González, J. A. Martín-Ramos, J. Díaz, J. A. Martínez, and A. M. Pernía* 1586

Distributed Generation Placement Planning Modeling Feeder's Failure Rate and Customer's Load Type *M. Rahmani-andebili* 1598

Cycle Life Evaluation Based on Accelerated Aging Testing for Lithium-Ion Capacitors as Alternative to Rechargeable Batteries *M. Uno and A. Kukita* 1607

Design of a Superconducting Synchronous Generator With LTS Field Windings for 12 MW Offshore Direct-Drive Wind Turbines *J. Wang, R. Qu, Y. Tang, Y. Liu, B. Zhang, J. He, Z. Zhu, H. Fang, and L. Su* 1618

The Comprehensive Design and Optimization of the Post-Fault Grid-Connected Three-Phase PWM Rectifier *Z. Zeng, W. Zheng, R. Zhao, C. Zhu, and Q. Yuan* 1629

Robotics and Mechatronics

Actuator Backlash Compensation and Accurate Parameter Estimation for Active Vibration Isolation System *C. Chen, Z. Liu, Y. Zhang, C. L. P. Chen, and S. Xie* 1643

Actuators and Motors

Designing a Permanent-Magnetic Actuator for Vacuum Circuit Breakers Using the Taguchi Method and Dynamic Characteristic Analysis *C.-H. Lee, B. H. Shin, and Y.-B. Bang* 1655

Maximum-Force-per-Ampere Strategy of Current Distribution for Efficiency Improvement in Planar Switched Reluctance Motors *S.-D. Huang, G.-Z. Cao, Z.-Y. He, C. Wu, J.-A. Duan, N. C. Cheung, and Q.-Q. Qian* 1665

A Bonded-Type Piezoelectric Actuator Using the First and Second Bending Vibration Modes *Y. Liu, X. Yang, W. Chen, and D. Xu* 1676

A Novel Hybrid Hysteresis Motor With Combined Radial and Axial Flux Rotors *R. Nasiri-Zarandi, M. Mirsalim, and A. Tenconi* 1684

Interturn Fault Diagnosis Strategy for Interior Permanent-Magnet Synchronous Motor of Electric Vehicles Based on Digital Signal Processor *B. Du, S. Wu, S. Han, and S. Cui* 1694

Control and Signal Processing

Proximate In-Phase Current Estimator to Reduce Torque Ripple in Permanent-Magnet Stepping Motor *Y. Lee, D. Shin, W. Kim, and C. C. Chung* 1707

Neural Learning Control of Marine Surface Vessels With Guaranteed Transient Tracking Performance *S.-L. Dai, M. Wang, and C. Wang* 1717

Control Design Strategy for Flying Capacitor Multilevel Converters Based on Petri Nets *F. Salinas, M. A. González, M. F. Escalante, and J. de León Morales* 1728

A Novel Variable Selection Approach for Redundant Information Elimination Purpose of Process Control *J. Li, C. Duan, and Z. Fei* 1737

A Novel Weighted Memory Polynomial for Behavioral Modeling and Digital Predistortion of Nonlinear Wireless Transmitters *A. E. Abdelrahman, O. Hammi, A. K. Kwan, A. Zerguine, and F. M. Ghannouchi* 1745

Practical Active Disturbance Rejection Control: Bumpless Transfer, Rate Limitation, and Incremental Algorithm *G. Herbst* 1754

Offset-Free One-Step Ahead State Predictor for Power Electronic Applications Using Robust Proportional-Integral Observer	S.-K. Kim	1763
<i>Diagnosis and Monitoring</i>		
Detection of Inter-Turn and Dynamic Eccentricity Faults Using Stator Current Frequency Pattern in IPM-Type BLDC Motors	J.-K. Park and J. Hur	1771
Real-Time Diagnosis for Open-Circuited and Unbalance Faults in Electronic Converters Connected to Residential Wind Systems	T. Kamel, Y. Biletskiy, and L. Chang	1781
Motor Bearing Fault Detection Using Spectral Kurtosis-Based Feature Extraction Coupled With K -Nearest Neighbor Distance Analysis	J. Tian, C. Morillo, M. H. Azarian, and M. Pecht	1793
Lebesgue-Sampling-Based Diagnosis and Prognosis for Lithium-Ion Batteries	W. Yan, B. Zhang, X. Wang, W. Dou, and J. Wang	1804
<i>Instrumentation and Sensors</i>		
A Temperature Compensation Technique for Near-Infrared Methane Gas Threshold Detection	J. Leis and D. Buttsworth	1813
Robust Real-Time Bio-Kinematic Movement Tracking Using Multiple Kinects for Tele-Rehabilitation	P. N. Pathirana, S. Li, H. M. Trinh, and A. Seneviratne	1822
A Cascaded Linear High-Voltage Amplifier Circuit for Dielectric Measurement	J. Liu, D. Zhang, M. Wang, L. Huang, and D. Zhao	1834
Novel RFID-Based Pose Estimation Using Single Stationary Antenna	S. S. Saab and H. Msheik	1842
<i>Embedded Systems</i>		
Selective Wireless Power Transfer for Smart Power Distribution in a Miniature-Sized Multiple-Receiver System	Y.-J. Kim, D. Ha, W. J. Chappell, and P. P. Irazoqui	1853
<i>Intelligent Systems</i>		
A Novel Electrohydraulic Brake System With Tire-Road Friction Estimation and Continuous Brake Pressure Control	J. J. Castillo, J. A. Cabrera, A. J. Guerra, and A. Simón	1863
<i>Networking</i>		
Distributed \mathcal{H}_∞ Filtering for a Class of Discrete-Time Markov Jump Lur'e Systems With Redundant Channels	Y. Zhu, L. Zhang, and W. X. Zheng	1876
<hr/> SPECIAL SECTION ON ADVANCED MOTION CONTROL FOR NEXT-GENERATION INDUSTRIAL APPLICATIONS		
Advanced Motion Control for Next-Generation Industrial Applications	Y. Fujimoto, T. Murakami, and R. Oboe	1886
Sensorless Torsion Control of Elastic-Joint Robots With Hysteresis and Friction	M. Ruderman and M. Iwasaki	1889
An Acceleration-Based Robust Motion Controller Design for a Novel Series Elastic Actuator	E. Sariyildiz, G. Chen, and H. Yu	1900
Full-Speed Range Self-Balancing Electric Motorcycles Without the Handlebar	C. Yang and T. Murakami	1911
sEMG-Based Identification of Hand Motion Commands Using Wavelet Neural Network Combined With Discrete Wavelet Transform	F. Duan, L. Dai, W. Chang, Z. Chen, C. Zhu, and W. Li	1923
Motion Matching in Rehabilitation Databases With Force and Position Information	T. Tsuji, T. Kaneko, and S. Sakaino	1935
State Variables of the Arm May Be Encoded by Single Neuron Activity in the Monkey Motor Cortex	E. Miyashita and Y. Sakaguchi	1943
Acceleration Measurement Drift Rejection in Motion Control Systems by Augmented-State Kinematic Kalman Filter	R. Antonello, K. Ito, and R. Oboe	1953
Data Reduction Design Based on Delta-Sigma Modulator in Quantized Scaling-Bilateral Control for Realizing of Haptic Broadcasting	M. Takeya, Y. Kawamura, and S. Katsura	1962
Dynamic Object Manipulation Considering Contact Condition of Robot With Tool	T. Tsuji, J. Ohkuma, and S. Sakaino	1972
Research on Two-Degree-of-Freedom Internal Model Control Strategy for Induction Motor Based on Immune Algorithm	Q. Zhu, Z. Yin, Y. Zhang, J. Niu, Y. Li, and Y. Zhong	1981
