# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>PSEUDO SINGLE STAGE FLYBACK CURRENT SOURCE INVERTER FOR GRID CONNECTED PV APPLICATIONS</td>
<td>1</td>
</tr>
<tr>
<td>Abdel-Rahim, Omar ; Fanato, Hirohito ; Haruna, Junnosuke</td>
<td></td>
</tr>
<tr>
<td>STUDY ON THE 3D PRINTED ROBOTIC FISH WITH AUTONOMOUS OBSTACLE AVOIDANCE BEHAVIOR BASED ON THE ADAPTIVE NEURO-FUZZY CONTROL</td>
<td>7</td>
</tr>
<tr>
<td>Deng, Xin ; Jiang, Dingli ; Wang, Jin ; Li, Mingxu ; Chen, Qiaosong</td>
<td></td>
</tr>
<tr>
<td>NONLINEAR CONTROLLER DESIGN FOR A SENSORLESS MATRIX-CONVERTER IPMSM DRIVE SYSTEM</td>
<td>13</td>
</tr>
<tr>
<td>Chen, Yi ; Liu, Tian-Hua ; Nguyen, Cuong Manh</td>
<td></td>
</tr>
<tr>
<td>TIMING CALCULATIONS FOR THREE LEVEL DODECAGONAL SPACE VECTOR STRUCTURE FROM REFERENCE PHASE VOLTAGES</td>
<td>19</td>
</tr>
<tr>
<td>Kaarthik, R. Sudharshan ; Gopakumar, K. ; Cecati, Carlo ; Nagy, Istvan</td>
<td></td>
</tr>
<tr>
<td>RESEARCH ON DIRECT POWER CONTROL BASED ON SLIDING MODE CONTROL FOR VIENNA-TYPE RECTIFIER</td>
<td>25</td>
</tr>
<tr>
<td>Ma Hui ; Li Wenjing ; Xie Yuexiang ; Chen Bing</td>
<td></td>
</tr>
<tr>
<td>ADAPTIVE BACKSTEPPING NONSINGULAR TERMINAL SLIDING CONTROL OF MEMS GYROSCOPE</td>
<td>31</td>
</tr>
<tr>
<td>Fang, Yunmei ; Fei, Jiantao ; Yan, Weifeng</td>
<td></td>
</tr>
<tr>
<td>EFFECTS AND ANALYSIS OF SUPPRESSING FREQUENCY FLUCTUATIONS IN MICROGRIDS USING VIRTUAL SYNCHRONOUS GENERATOR CONTROL</td>
<td>37</td>
</tr>
<tr>
<td>Hirase, Y. ; Noro, O. ; Sugimoto, K. ; Sakimoto, K. ; Shindo, Y. ; Osaka, T. Ise</td>
<td></td>
</tr>
<tr>
<td>A NEW FAULT DETECTION METHOD FOR MODULAR MULTILEVEL CONVERTER SEMICONDUCTOR POWER SWITCHES</td>
<td>43</td>
</tr>
<tr>
<td>Haghnazari, S. ; Shabbazi, M. ; Zolghadri, M. R.</td>
<td></td>
</tr>
<tr>
<td>APPLICATION OF MULTI-DIMENSIONAL FEEDBACK QUANTIZED MODULATION TO INVERTER-FED TWO CASCADED ELECTRODYNAMIC SHAKERS</td>
<td>50</td>
</tr>
<tr>
<td>Hung-Chi Chen ; Che-Yu Lu ; Cheng-Chiang Yao</td>
<td></td>
</tr>
<tr>
<td>A GRID-CONNECTED SWITCHED PV ARRAY</td>
<td>56</td>
</tr>
<tr>
<td>Elserougui, Ahmed A ; Abdel-Khalik, Ayman S. ; Massoud, Ahmed M. ; Ahmed, Shehab</td>
<td></td>
</tr>
<tr>
<td>CHALLENGES OF SYSTEM INTEGRATION IN THE ENGINEER-TO-ORDER BUSINESS</td>
<td>68</td>
</tr>
<tr>
<td>Foehr, Matthias ; Gepp, Michael ; Vollmar, Jan</td>
<td></td>
</tr>
<tr>
<td>ENERGY MANAGEMENT STRATEGY FOR MEDIUM-VOLTAGE ISOLATED MICROGRID DESIGN AND IMPLEMENTATION OF AN OUTPUT FEEDBACK CONTROLLER FOR THE CUK CONVERTER</td>
<td>73</td>
</tr>
<tr>
<td>Xu, Zhi-Rong ; Yang, Ping ; Chen, Zhu ; Yang, Chun-Meng ; Zheng, Qun-Ru ; Zheng, Cheng-Li</td>
<td></td>
</tr>
<tr>
<td>Equivalents of MMC and VSC: Applications</td>
<td>80</td>
</tr>
<tr>
<td>Wang, C. ; Fazeli, S. M. ; Hew, W. P. ; Rahim, N. Abd ; Ooi, B. T.</td>
<td></td>
</tr>
<tr>
<td>LOAD SHIFTING CONTROL AND MANAGEMENT OF DOMESTIC MICROGENERATION SYSTEMS FOR IMPROVED ENERGY EFFICIENCY AND COMFORT</td>
<td>91</td>
</tr>
<tr>
<td>Anvari-Moghaddam, Amjad ; Vasquez, Juan C. ; Guerrero, Josep M.</td>
<td></td>
</tr>
<tr>
<td>A NEW SINGLE TOOTH WINDING LAYOUT FOR A SINGLE-PHASE INDUCTION MOTOR WITH SEGMENTED STATOR</td>
<td>96</td>
</tr>
<tr>
<td>Abdel-Khalik, Ayman S. ; Diab, Mohamed S. ; Ahmed, Shehab ; Massoud, Ahmed M.</td>
<td></td>
</tr>
<tr>
<td>A FLEXIBLE AND ROBUST POWER MANAGEMENT MECHANISM BASED ON SINGLE-PHASE MODULAR MULTILEVEL CONVERTER WITH INTEGRATED ENERGY STORAGE ELEMENTS</td>
<td>102</td>
</tr>
<tr>
<td>Xu, Minghao ; Tsirinomeny, Martel ; Raufer, Alfred</td>
<td></td>
</tr>
<tr>
<td>DESIGN OF WPT COILS TO MINIMIZE AC RESISTANCE AND CAPACITOR STRESS APPLIED TO SS-TOPOLOGY</td>
<td>108</td>
</tr>
<tr>
<td>Tanzania, Robin ; Choo, Fook Hoong ; Siek, Liter</td>
<td></td>
</tr>
<tr>
<td>TORQUE OBSERVER AND EXTENDED HIN FILTER FOR SENSORLESS CONTROL OF PERMANENT MAGNET GENERATORS TESTED ON A WIND TURBINE EMULATOR</td>
<td>118</td>
</tr>
<tr>
<td>Llano, Danilo ; McMahon, Richard</td>
<td></td>
</tr>
</tbody>
</table>
A NINE-ARM MODULAR MULTILEVEL CONVERTER (9A-MMC) FOR SIX-PHASE MEDIUM VOLTAGE MOTOR DRIVES .......................................................... 129
Elserougi, Ahmed A. ; Abdel-Khalik, Ayman S. ; Massoud, Ahmed M. ; Ahmed, Shehab

α-APPROACH BASED ROBUST VOLTAGE CONTROLLER DESIGN FOR A BOOST CONVERTER USED IN PHOTOVOLTAIC APPLICATIONS .................................................................................................................... 135
Baskin, Mehmet ; Caglar, Bulent

IMPLEMENTATION OF TYPE III CONTROLLER FOR KY CONVERTER BASED ON PSIM .................................................................................... 141
Hwu, K. J. ; Jiang, W. Z. ; Shieh, Jenn-Jong

STUDY AND SIMULATION ON CONTROL-TO-OUTPUT TRANSFER FUNCTION OF KY BOOST CONVERTER .......................................................................................................................... 146
Hwu, K. J. ; Jiang, W. Z. ; Shieh, Jenn-Jong

A NOVEL HIGH VOLTAGE-BOOSTING CONVERTER WITH ACTIVE CLAMP ...................................................................................................................... 150
Yau, Y. T. ; Hwu, K. J. ; Jiang, W. Z.

ONE-COMPARATOR SAMPLING BASED ON POSITIVE-SLOPE AND NEGATIVE-SLOPE SAW-TOOTHED WAVES .......................................................................................................................... 156
Yau, Y. T. ; Hwu, K. J. ; Jiang, W. Z.

ROBUST BUCK CONVERTER DESIGN WITH A HIGH-ORDER SLIDING MODE DIFFERENTIATOR
Zhao, Shengrong ; Huangfu, Yigeng

A COUPLING LIBRARY FOR THE FORCE DIMENSION HAPTIC DEVICES AND THE 20-SIM MODELLING AND SIMULATION ENVIRONMENT .................................................................................. 168
Sanfilippo, F. ; Weustink, P. B. T. ; Pettersen, K. Y.

RESEARCH ON A 4-PHASE WOUND-FIELD DOUBLY SALIENT GENERATOR WITH COMPENSATION CAPACITORS
Zhihui Chen ; Kaidi Zhao ; Xiaofei Yu

IMPEDANCE MODELING OF MODULAR MULTILEVEL CONVERTERS .......................................................................................................................... 180
Lyu, Jing ; Cai, Xa ; Molinas, Marta

THREE-PHASE DUAL-BUCK INVERTER UTILIZING COUPLED INDUCTORS ...................................................................................................................... 186
Lv, Linnu ; Xiao, Lan ; Qi, Qi ; Wang, Huizhen

COMPUTER GUIDED PRODUCT EMC COMPLIANCE ON USER'S WORKSHOP WITH A SMART PHONE — CLOUD COMPUTING ........................................................................................................... 192
Wu, Wei ; Wu, Yuejia

PREVENTING ELECTRICAL HAZARDS UNDER GROUNDING-FAULT CONDITION BY MEANS OF SURFACE LEAKAGE PROTECTION ............................................................................................................. 197
Wu, Wei ; Wu, Yuejia

EVALUATION METHOD OF DEGREE OF FUNCTIONAL RECOVERY ON WALKING REHABILITATION BASED ON SELF-ORGANIZING MAP ...................................................................................................................... 202
Makino, Koji ; Nakamura, Masahiro ; Omori, Hidemori ; Ueda, Shohei ; Terauda, Hidetsugu

OUTLIER MINING OF A VISION SENSING DATABASE FOR SVM REGRESSION IMPROVEMENT .......................................................................................................................... 208
Flores-Fuentes, Wendy ; Hernandez-Balbuena, Daniel ; Rodriguez-Quinonez, Julio C. ; Olgar-Usade, Daniel ; Gonzalez-Navarro, Felix F. ; Sergiyenko, Oleg ; Rivas-Lopez, Moises ; Murrieta-Rico, Fabian N. ; Kartashov, Vladimir M.

FRICITION MODEL FOR PLANAR TWO-DIMENSIONAL MOTION .......................................................................................................................... 220
Kato, Hiroaki

RATIONAL APPROXIMATION PRINCIPLE FOR FREQUENCY SHIFTS MEASUREMENT IN FREQUENCY DOMAIN SENSORS ........................................................................................................................................ 226
Murrieta-Rico, Fabian N. ; Tchernykh, Andrei ; Rodriguez-Quinonez, Julio C. ; Hernandez-Balbuena, Daniel ; Petrovskikh, Vitalii ; Raymond-Herrera, Oscar ; Hipolito, Juan Ivan Nieto ; Kartashov, Vladimir M. ; Sergiyenko, Oleg ; Flores-Fuentes, Wendy ; Tyrsa, Vera

IMPLEMENTATION OF MAXIMUM POWER RECOVERY FOR A DUAL-PMSM SYSTEM .......................................................................................................................... 232
Tseng, Shao-Kai ; Liu, Tian-Hua ; Hsu, Jing-Wei

A NOVEL VOLTAGE MEASUREMENT TECHNIQUE FOR MODULAR MULTILEVEL CONVERTER CAPACITORS .......................................................................................................................... 238
Haghzahari, Saied ; Zolghadri, Mohammad Reza

SHAPE-CONTROLLED PRODUCTION OF ALGINATE HYDROGEL-POLY-L-LYSINE MICROCAPSULES BASED ON ELECTRODEPOSITION METHOD: SHAPE-CONTROLLED MICROCAPSULES ...................................................................................................................... 244
Liu, Zeyang ; Takeuchi, Masaru ; Nakajima, Masahiro ; Hasegawa, Yasuhisa ; Fukuda, Toshio ; Huang, Qiang

SYNCHRONOUS OPERATION OF A ROTATING POWER ELECTRONIC BRUSHLESS DOUBLY-FED GENERATOR ........................................................................................................................................ 250
Malik, Naveed-Ur-Rehman ; Sadarangani, Chandur ; Covic, Alija
ROBUST AND PRECISE PLATOON DRIVING CONTROL OF WELFARE VEHICLES ALONG WHEEL TRACK BY USING MODEL ERROR COMPENSATOR ............................................................ 256
Sugano, Tatsuya ; Okajima, Hiroshi ; Matsunaga, Nobutomo

VOLTAGE CONTROLLER OF DC-DC BUCK CONVERTER USING TERMINAL SLIDING MODE .......................................................... 262
Wang, Yanmin ; Xia, Hongwei ; Cao, Yuqing

A NOVEL SORTING-BASED MULTI-OBJECTIVE MODEL PREDICTIVE CONTROL FOR PMG WIND TURBINES ............................................................................................................................... 267
Yu, Ming ; Wang, Yi ; Li, Yonggang

ACCURACY IMPROVEMENT OF CARRIER SIGNAL INJECTION SENSORLESS CONTROL FOR IPMSM IN CONSIDERATION OF INVERTER NONLINEARITY ......................................................... 273
Wang, Tianhao ; Shi, Bowen ; Xu, John ; Gerada, Chris

DCRL: AN ENERGY MANAGEMENT RULE DEFINITION LANGUAGE FOR CONTEXT-BASED DEVICE CONTROL IN SMART BUILDINGS ............................................................................................... 279
Peng, Xiaohui ; Bessho, Masahiro ; Koshizuka, Noboru ; Sakamura, Ken

A CLOSED-FORM SOLUTION TO FAULT PARAMETER ESTIMATION AND FAULTY PHASE IDENTIFICATION OF STATOR WINDING INTER-TURN FAULT IN INDUCTION MACHINES ................................................. 286
Viethung Nguyen ; Danwei Wang ; Ukil, A. ; Nadarajan, S. ; Vaiyapuri, V. ; Jayampathi, C.

PROGRAMMABLE MASK DESIGN FOR PHASE CONTROLLED THYRISTORS WITH AUTOMATED SHORT POSITIONING ............................................................................................................................... 292
Bellini, Marco ; Vobecky, Jan

TOWARDS AN ABSTRACTION LAYER FOR PLC PROGRAMMING USING OBJECT-ORIENTED FEATURES OF IEC61131-3 APPLIED TO MOTION CONTROL ......................................................................................... 298
Racchetti, Lorenzo ; Fantuzzi, Cesare ; Tacconi, Lorenzo ; Bonfe, Marcello

COMPATIBLE FPGA IMPLEMENTATION OF CAPACITOR VOLTAGE BALANCE CONTROL FOR HALF-BRIDGE AND FULL-BRIDGE MODULAR MULTILEVEL CONVERTER ............................................. 304
Li, Wei

AN IMPEDANCE VOLTAGE COMPENSATION AND VIBRATION VOLTAGE SUPPRESSION CONTROL BY USING INEXACT DIFFERENTIAL IN A SINGLE-PHASE PWM INVERTER .................................................................................. 310
Nakata, A. ; Shiozawa, S. ; Torii, A. ; Mototani, S.

A GRID-CONNECTED ENERGY CONVERSION SYSTEM FOR A TREADMILL WITH AUTO-TRANSFERRING MODES BETWEEN A MOTOR AND A GENERATOR .................................................................................................. 316
Yang, H. T. ; Tseng, T. H. ; Ai, T. H. ; Wu, Y. H. ; Yeh, S. H.

HIGH VOLTAGE PULSE GENERATOR BASED ON DC-TO-DC BOOST CONVERTER WITH CAPACITOR-DIODE VOLTAGE MULTIPLIERS FOR BACTERIAL DECONTAMINATION ......................................................... 322
Elserougi, Ahmed ; Ahmed, Shehab ; Massoud, Ahmed

A STUDY ON LOSS-OF-SYNCHRONISM IN STEPPING MOTORS BASED ON EQUILIBRIUM ROTOR-ANGLES ............................................................................................................................... 327
Yagi, K. ; Hori, N.

MULTI-MODEL DIAGNOSTICS FOR VARIOUS MACHINING CONDITIONS: A SIMILARITY-BASED APPROACH ............................................................................................................................... 333
Geramifard, Omid ; Tung, Le

ADVANCED NONINTRUSIVE LOAD MONITOR FOR EQUIPMENT DIAGNOSTICS ON FAN COIL UNIT ............................................................................................................................... 339
Jing, Buyun ; Chen, Mei

THREE-PHASE POWER QUALITY DEVICE TOR WEAK SYSTEMS BASED ON SRF AND P-Q THEORY CONTROLLER ............................................................................................................................... 345
Javadi, AliReza ; Hamadi, Abdeelhamid ; Al-Haddad, Kamal

MULTI-PROPOSAL UTILIZATION OF ONE-CYCLE CONTROLLER IN PHOTOVOLTAIC SYSTEMS FOR DC APPLICATIONS .................................................................................................................. 351
De Carvalho Neto, Joao T. ; Salazar, Andres O. ; MaiteUi, Andre L.

A SENTIMENT ANALYSIS FRAMEWORK IN IMPLICIT OPINIONS FOR THAI LANGUAGE ............................................................................................................................... 357
Masdisornchote, Masawee

MODEL PREDICTIVE CONTROL OF QUASI-Z SOURCE THREE-PHASE FOUR-LEG INVERTER ............................................................................................................................... 362
Bayhan, Sertac ; Abu-Rub, Haitham

EXTRACTION OF UNCONSCIOUS EMOTIONS WHILE WATCHING TV COMMERCIALS ............................................................................................................................... 368
Nomura, Tomomi ; Mitsukura, Yasue

SIGNAL PROCESSING OF EMG SIGNAL FOR CONTINUOUS THUMB-ANGLE ESTIMATION ............................................................................................................................... 374
Siddiqi, Abdul Rahman ; Sseki, Shahrud Naim ; Khoshidulah, Aida
A NOVEL ENERGY YIELDS CALCULATION METHOD FOR IRREGULAR WIND FARM LAYOUT
Hou, Peng; Hu, Weihao; Soltani, Mohsen; Chen, Zhe

NON-CONTACT MEASUREMENT OF POA IRRADIANCE AND CELL TEMPERATURE FOR PV SYSTEMS
Lin, Li Hong Idris; Ye, Zhen; Yang, Dazhi

HEURISTIC MODEL PREDICTIVE MODULATION IN HIGH POWER MULTI-LEVEL CONVERTERS
Townsend, C. D.; Baraciuarc, R. Alves; Torno, D.; De La Parra, H. Zelaya; Demetriades, G. D.; Agelidis, V. G.

FRAMEWORK FOR MULTIPROFILE SENSING SIMULATION FOR ENERGY EFFICIENT HVAC OPERATION IN BUILDINGS
Zhang, Hanwen; Abhishek

AN OPEN-END WINDING DRIVE WITH A SINGLE DC VOLTAGE SOURCE
Darijiević, M.; Jones, M.; Levi, E.

POTENTIAL OF ELECTRONIC DRIVE AS TRIGGERS FOR ELICITING IMPLICIT KNOWLEDGE
Sugihara, Taro; Sakamichi, Hideki; Gojuku, Akio; Umemoto, Katsuhiro; Suzuki, Muneto; Araki, Kenji

IMPROVED DELAY-DEPENDENT STABILITY CRITERIA FOR NETWORKED CONTROL SYSTEMS VIA DISCRETE WIRTINGER-BASED INEQUALITY
Zhang, Jin; Peng, Chen; Ma, Shaodong; Jiang, Jie

IMPROVED LVRT GRID CODE UNDER ISLANDING CONDITION
Hoseinzadeh, Bakhtiar; Faria Da Silva, Filipe; Bak, Claus Leth

NEW FLEXIBLE HARMONIC COST EFFECTIVE CONCENTRATED WINDING TOPOLOGY
Moros, Oleg; Gerling, Dieter

EVALUATION OF PRIMARY-SIDE POWER SUPPLY COIL SHAPE TO EXPAND THE CHARGING AREA IN A CONTACTLESS POWER TRANSMISSION SYSTEM
Ayano, Hideki; Tanaka, Yuki; Matsui, Yoshihiro; Sagawa, Masato

SERIES-SERIES RESONANT IPT SYSTEM ANALYSIS UNDER FREQUENCY MISMATCH
Bertoluzzo, Manuele; Jha, Rupesh Kr.; Buja, Giuseppe

AIR-GAP FLUX DENSITY MEASUREMENT SYSTEM FOR VERIFICATION OF PERMANENT MAGNET MOTOR FEM MODEL
Haller, Stefan; Cheng, Peng; Oelmann, Bengt

ROBUST PREDICTIVE CURRENT CONTROL FOR PERFORMANCE IMPROVEMENT OF INDUCTION MOTORS WITH PARAMETER VARIATION
Zhang, Bin; Qu, Ronghai; Xu, Wei; Li, Jian

A PERMANENT MAGNET TRACTION MACHINE WITH WIDE HIGH EFFICIENCY RANGE FOR EV APPLICATION
Momayyezan, Milad; Hredzak, Branislav; Agelidis, Vassilios G.

A NEW MULTIPLE CONVERTER TOPOLOGY FOR BATTERY/ULTRACAPACITOR HYBRID ENERGY SYSTEM

FUEL CELLS REMAINING USEFUL LIFE ESTIMATION USING AN EXTENDED KALMAN FILTER
Bressel, Mathieu; Hilairet, Mickael; Hissel, Daniel; Bouamama, Belkacem Ould

A COLORED PETRI NETS MODEL OF THE RISK MANAGEMENT PROCESS BASED ON THE ISO 14971 STANDARD
Sobrinho, A.; Neto, J.; Cunha, P.; Dias Da Silva, L.; Perkusich, A.

COMPUTATIONAL FLUID DYNAMICS-BASED THERMAL MODELING FOR EFFICIENT BUILDING ENERGY MANAGEMENT
Rao, D. M. K. K. Venkateswara; Ukkil, Abhishek

MOTION CONTROL OF A ROBOTIC FISH VIA LEARNING CONTROL APPROACH WITH SELF-ADAPTION
Li, Xuefang; Xu, Jian-Xin; Ren, Qinyuan

RESEARCH OF ADAPTIVE FULL-ORDER SLIDING MODE OBSERVER IN PERMANENT MAGNET SYNCHRONOUS GENERATOR
Zheng, Xuemei; Ding, Dunmei; Song, Rui; Feng, Yong

CAPACITOR CURRENT REDUCING CONTROL OF THE INVERTERS FOR THE DUAL WINDING MOTOR
Suzuki, Takashi; Kabune, Hideki; Ito, Norihisa
WINDING THERMAL MODEL FOR SHORT-TIME THERMAL TRANSIENT: VALIDATION IN MOTOR OPERATIVE CONDITIONS............................................................... 505
Hernando, E. ; Boglietti, A. ; Carpaneto, E. ; Cossale, M. ; Vaschetto, S.

ENERGY MANAGEMENT FOR FUEL CELL-SUPERCAPACITOR HYBRID SYSTEM USING PASSIVITY-BASED CONTROLLER WITH MULTI-EQUILIBRIUM STATES ........................................................... 511
Yang, Fan ; Sheng, Bo ; Fu, Yang

AN AUTOMATIC GLAUCOMA SCREENING ALGORITHM USING CUP-TO-DISC RATIO AND ISNT RULE WITH SUPPORT VECTOR MACHINE....................................................... 517
Ruengkhrinpyo, W. ; Vejjanagroha, P. ; Koonpraveechon, W. ; Kondo, T. ; Bunun, P. ; Kaneko, H.

NETWORK CONSTRAINED OPTIMAL AUTOMATIC GENERATION CONTROL FOR A TWO AREA POWER SYSTEM.................................................................................................................. 522
Patel, Ragini ; Li, Chaojie ; Yu, Xinghuo ; McGrath, Brendan

MULTIPURPOSE OPTIMIZATION OF CAMERA PLACEMENT AND APPLICATION TO RANDOM BIN-PICKING .......................................................... 528
Ito, Akihito ; Tsujituchi, Nobutaka ; Okuda, Yasuke

FLEXIBLE POWER DISTRIBUTION UNIT — A NOVEL POWER ELECTRONIC TRANSFORMER DEVELOPMENT AND DEMONSTRATION FOR DISTRIBUTION SYSTEM .......................................................... 534
Duan, Qing ; Wang, Jianhua ; Ma, Chunjian ; Gu, Binshi ; Ji, Baolian ; Qiu, Peng ; You, Jun

ULTRA HIGH EFFICIENCY ADAPTABLE CLASS-DE INVERTER FOR RESONANT POWER CONVERSION ................................................................................................. 538
Sarnago, Hector ; Lucia, Oscar ; Kimmer, Thomas ; Burdio, Jose M.

INTEGRATED GALVANICALLY ISOLATED MOSFET AND IGBT GATE-DRIVER CIRCUIT WITH SWITCHING SPEED CONTROL ................................................. 544
Lorentz, V. R. H. ; Schwarz, R. ; Heckel, T. ; Marz, M. ; Frey, L.

CLOCK SPEED OPTIMIZATION OF RUNTIME RECONFIGURABLE SYSTEMS BY SIGNAL LATENCY MEASUREMENT .................................................. 550
Meyer, Dominik ; Haase, Jan ; Eckert, Marcel ; Klauser, Bernd

PURSUIT OF SIMPLE POWER CONDITIONER FOR PHOTOVOLTAIC SMALL POWER GENERATION .......................................................................................... 556
Matsui, Keiju ; Oishi, Eiji ; Kawata, Yasutaka ; Yasubayashi, Mikio ; Umeno, Masayoshi ; Uchida, Hideo ; Hasegawa, Masaru

RIPPLE FREE OPERATION OF TWO-STAGE BOOST TYPE DC-DC CONVERTER ............................................................... 577
Hosoki, R. ; Kinjo, S. ; Koizumi, H.

A NOVEL VOLTAGE — CONTROL METHOD IN LOW-VOLTAGE DISTRIBUTION SYSTEMS: COOPERATIVE — AUTONOMOUS SWITCHING CONTROL .......................................................... 583
Shimofuji, Keigo ; Takahashi, Akiko ; Imai, Jun ; Funahaki, Shigeaki

GOSSIP ALGORITHMS FOR CLUSTERING PROBLEMS .................................................................................................................. 589
Nguyen, L. T. H. ; Wada T. ; Masubuchi, I. ; Asai, T. ; Fujisaki, Y.

OPEN-PHASE FAULT OPERATION OF 5-PHASE INDUCTION MOTOR DRIVES USING DTC TECHNIQUES ........................................................................ 595
Bernandez, M. ; Gonzalez-Prieto, I. ; Barrero, F. ; Duran, M. J. ; Kestelyn, X.

A DUAL TANGENT BASED ALGORITHM FOR MAXIMUM POWER POINT TRACKING OF SOLAR PV SYSTEMS .................................................................................. 601
Jain, Anubhav ; Jain, Chinnay ; Singh, Bhim ; Kamal-Al-Haddad ; Chandra, Ambrish

PHASE CURRENT CONTROL OF A TWO PHASE SYNCHRONOUS RELUCTANCE MACHINE .......................................................... 607
Yammine, Samer ; Fadel, Maurice ; Nguyen, Duy-Minh ; Harribey, Dominique ; Albert, Laurent

FIVE-PHASE INDUCTION MACHINE PARAMETER IDENTIFICATION USING PSO AND STANDSTILL TECHNIQUES ...................................................................... 613
Riversos, J. A. ; Reina, D. G. ; Barrero, F. ; Toral, S. L. ; Duran, M. J.

A MODEL-BASED CONTROLLER FOR A DC-DC BOOST CONVERTER WITH AN LCL INPUT FILTER ............................................................... 619
Sosa, Jose M. ; Escobar, Gerardo ; Martinez-Rodriguez, Panfilo R. ; Vazquez, Gerardo ; Juarez, Mario A. ; Navacruz, Juan C.

A REVIEW OF PULSE GENERATION TOPOLOGIES FOR CLINICAL ELECTROPORATION ........................................................................ 625
Bernal, Carlos ; Lucia, Oscar ; Sarnago, Hector ; Burdio, Jose M. ; Iovra, Antoni ; Castellvi, Quim

A SIMPLIFIED APPROACH TO IMPLEMENTATION OF STATE-SPACE CONTROL OF DC/DC CONVERTERS ON LOW-COST MICROCONTROLLERS ........................................................................ 631
Neacsu, Dorin O.

MODELING OF DRIVERS’ DECISION MAKING OF MERGING SPACE ON EXPRESSWAYS ........................................................................ 637
Ueda, S. ; Wada, T.
TWO- AND THREE-DIMENSIONAL CAGING-BASED GRASPING OF OBJECTS OF VARIOUS SHAPES WITH CIRCULAR ROBOTS AND MULTI-FINGERED HANDS ....................................................... 643
Egawa, Tomohiro ; Maeda, Yasuake ; Tsuura, Hideki

INTERLEAVED SOFT-SWITCHING MULTILEVEL BOOST CONVERTER WITH COUPLED INDUCTOR .......................................................... 649
Takiguchi, Taro ; Furusawa, Koichi ; Matsunaga, Koichi ; Koizumi, Hirotaka

DESIGN AND CONTROL PROCESS OF SEPIC CONVERTER FOR MAXIMUM POWER EXTRACTION IN WIND ENERGY CONVERSION SYSTEMS .......................................................... 655
Hussain, Javeer ; Mishra, Mahesh K

LINEARIZED GEAR DRIVE SYSTEM VIA BILATERAL CONTROL BASED TWIN-DRIVE MECHANISM .......................................................... 661
Tian, Dapeng

ANALYSIS AND CONTROL OF FAST SCALE BIFURCATION IN SERIES CONNECTED DC DRIVE OPERATING IN CONTINUOUS CONDUCTION MODE .......................................................... 667
Okefor, Nelson ; Gaiaouris, Damian ; Zahawi, Bashir

A DIMMABLE LED DRIVER WITH PARTIAL POWER REGULATION .......................................................... 672
Moo, Chin-Sien ; Chen, Yu-Jen ; Li, Yong-Jyun ; Yen, Hau-Chen

SLIDING MODE BASED SPACE-VECTOR HYSTERESIS CURRENT CONTROL FOR ACTIVE POWER FILTER
Huang, Jingjing ; Wang, Qian ; Sun, Yanggang ; Tong, Xiangqian

DISTRIBUTED ASYNCHRONOUS PASSIVE FILTERING FOR NONLINEAR MARKOV JUMP SYSTEMS ................. 683
Xu, Zhaowen ; Su, Hongye ; Wu, Zheng-Guang ; Tao, Jie

A MACHINE LEARNING TECHNIQUE IN A MULTI-AGENT FRAMEWORK FOR ONLINE OUTLIERS DETECTION IN WIRELESS SENSOR NETWORKS .......................................................... 688
Martins, Hugo ; Januario, Fabio ; Palma, Luis ; Cardoso, Alberto ; Gil, Paulo

OUTLIERS DETECTION METHOD USING CLUSTERING IN BUILDINGS DATA .......................................................... 694
Habib, Usman ; Zucker, Gerhard ; Blochle, Max ; Judex, Florian ; Haase, Jan

ROTOR CURRENT OBSERVER IN FINITE-STATE MODEL PREDICTIVE CONTROL OF FIVE-PHASE IM .......... 701
Martin, Cristina ; Arahal, Manuel R. ; Barrero, Federico ; Duran, Mario J. ; Toral, Sergio

REDUCING SPECIFIC ENERGY CONSUMPTION BY CONSERVING ENERGY AND INCREASING ENERGY EFFICIENCY IN LOW TENSION DISTRIBUTION AND UTILISATION — A CASE STUDY .......................................................... 713
Suresh, K. ; Devishree, J.

A NEW SWITCHING CELL FOR A FAMILY OF LARGE DC GAIN NON-ISOLATED CONVERTERS ................. 719
Li, Kerui ; Hu, Yafei ; Ioinovici, Adrian

ADAPTIVE DISTANCE PROTECTION FOR MICROGRIDS .......................................................... 725
Lin, Hengwei ; Guerrero, Josep M. ; Vasquez, Juan C. ; Liu, Chengxi

DISTANCE PROTECTION FOR MICROGRIDS IN DISTRIBUTION SYSTEM .......................................................... 731
Lin, Hengwei ; Liu, Chengxi ; Guerrero, Josep M. ; Vasquez, Juan C.

CONTROL OF A CASCADED DOUBLY FED INDUCTION GENERATOR SUPPLYING AN ISOLATED DC GRID .......................................................... 737
Achkar, Maria El ; Mbayed, Rita ; Salloum, Georges ; Le Ballois, Sandrine ; Patin, Nicolas ; Monmasson, Eric

COMPARING SIC MOSFET, IGBT AND SI MOSFET IN LV DISTRIBUTION INVERTERS .......................................................... 743
Roscio, N. M. ; Zhong, Y. ; Finney, S. J.

A DSVM METHOD TO IMPROVE OUTPUT PERFORMANCE FOR MATRIX CONVERTERS .......................................................... 749
Nguyen, Hau-Nhan ; Lee, Hong-Hee

AN ACTIVE-CLAMPING RESONANT FLYBACK DC/DC CONVERTER WITH IMPROVED OUTPUT POWER TRANSFER .......................................................... 755
Tahavorgar, Amir ; Quaicoe, John E.

ROBOTIC TRAJECTORY FOLLOWING CONTROLLER WITH A CAPABILITY FOR GENERATING MICRO VIBRATIONAL MOTION ALONG CURVED SURFACE .......................................................... 765
Nagata, Fusaomi ; Hayashi, Shohei ; Nagatomi, Tomoya ; Otsuka, Akimasa ; Watanabe, Keigo ; Habib, Maki K

IMPROVING POWER QUALITY USING A NEW SINGLE PHASE MULTILEVEL ACTIVE POWER FILTER .......................................................... 771
Haddad, M. ; Rahmani, S. ; Hamadi, Abdelhamid ; Al-Haddad, K.

FINE CURRENT HARMONICS SUPPRESSION CONTROL FOR THE INPUT CURRENT OF ELECTROLYTIC CAPACITOR-LESS INVERTER FOR IPMSM .......................................................... 777
Abe, Kodai ; Ohishi, Kiyoshi ; Haga, Hitoshi
PROPOSAL OF SELF RESONANCE CANCELLATION CONTROL WITHOUT USING DRIVE-SIDE INFORMATION
Yamada, Shota ; Inukai, Kenji ; Fujimoto, Hiroshi ; Omata, Kenji ; Takeda, Yuki ; Makinouchi, Susumu ............................................................................................................................... 783

FAULT ESTIMATION AND FAULT-TOLERANT CONTROL OF VAPOR COMPRESSION CYCLE SYSTEMS
Jaepli, Ban ; Wookyoung, Kwun ; Sangchul, Won ............................................................................................................................... 789

WIDE AREA SURVEILLANCE OF URBAN ENVIRONMENTS USING MULTIPLE MINI-VTOL UAVS
Yang, Yue ; Karimadini, Mohammad ; Xiang, Cheng ; Teo, Swee Huat ; Chen, Ben M. ; Lee, Tong Heng ............................................................................................................................... 795

A CAPACITOR VOLTAGE BALANCING STRATEGY FOR A FIVE-LEVEL HYBRID-CLAMPED INVERTER
Wang, Kui ; Li, Yongdong ; Zheng, Zedong ; Xu, Lie ; Fan, Boran ............................................................................................................................... 801

A MAXIMUM TORQUE CONTROL STRATEGY FOR WOUND-FIELD FLUX SWITCHING MOTOR DRIVES
Yang, Sheng-Ming ; Zhang, Jia-Hao ; Jiang, Jun-Ying ............................................................................................................................... 807

THIRD HARMONIC CURRENT INJECTION TO REDUCE THE PULSATING TORQUE OF A FIVE-PHASE SPM MACHINE
Scuiller, Franck ............................................................................................................................... 811

QUICK TORQUE RIPPLE SUPPRESSION CONTROLLED FAST POSITION SERVO BASED ON HYBRID SYSTEM OF DISTURBANCE OBSERVER AND TORQUE RIPPLE TABLE
Seki, Yoshiaki ; Ohishi, Kiyoshi ; Yokokura, Yuki ; Ide, Yuji ; Kuraishi, Daigo ............................................................................................................................... 817

MVDC MARINE ELECTRICAL DISTRIBUTION: ARE WE READY?
Javaid, Uzair ; Dujic, Drazen ; Van Der Merwe, Wim ............................................................................................................................... 823

HYBRID UAV PATH PLANNING BASED ON INTERFERED FLUID DYNAMICAL SYSTEM AND IMPROVED RRT
Yao, Peng ; Wang, Honglun ; Su, Zikang ............................................................................................................................... 829

ANALYSIS AND POWER SCALING OF A SINGLE-SIDED LINEAR INDUCTION MACHINE FOR ENERGY HARVESTING
Flankl, M. ; Tuysuz, A. ; Kolar, J. W. ............................................................................................................................... 835

SYNCHRONOUS RELUCTANCE MOTOR MULTI-STATIC MEC MODEL
Mariani, G. Bueno ; Besret, A. ; Voyer, N. ; Chillet, C. ; Fassenet, M. ; Garbaio, L. ............................................................................................................................... 843

CONTROL OF A BIDIRECTIONAL DUAL ACTIVE BRIDGE CONVERTER FOR CHARGE AND DISCHARGE OF A LI-ION BATTERY
Taibi, Said ; Malbwe, Augustin Mbanda ; Hajjaji, Ahmed El ............................................................................................................................... 849

COMPARISON OF THE WATER HEATING TECHNIQUE'S IMPACT ON THE SIZING OF A STANDALONE PV-BATTERY BACKUP SYSTEM ASSISTING AN INTERMITTENT PRIMARY ENERGY SOURCE
Javaid, Jawad ; AlBayed, Rida ; Salloum, Georges ; Monmasson, Eric ............................................................................................................................... 857

SENSORLESS SMALL WIND TURBINE WITH A SLIDING-MODE OBSERVER FOR WATER HEATING APPLICATIONS
Senanayaka, J. S. L. ; Karimi, H. R. ; Rubbersmyr, K. G. ............................................................................................................................... 863

ALGORITHM FOR SWARMING AND FOLLOWING BEHAVIORS OF MULTIPLE MOBILE ROBOTS
Otsuka, Akimasa ; Nagata, Fusaomi ; Habib, Maki K. ; Watanabe, Keigo ............................................................................................................................... 869

APPLICATION OF DECOUPLING HYBRID CONTROL FOR COLD ROLLING MILL WITH DISTURBANCE OBSERVER
Suzuki, Atsushi ............................................................................................................................... 875

OPERATING POINT SETTING METHOD FOR WIRELESS POWER TRANSFER WITH CONSTANT VOLTAGE LOAD
Gunji, Daisuke ; Imura, Takehiro ; Fujimoto, Hiroshi ............................................................................................................................... 881

LEAKAGE CURRENT ANALYSIS OF SINGLE-PHASE TRANSFORMER-LESS GRID-CONNECTED PV INVERTERS
Ma, Lin ; Kerekes, Tamás ; Tedorescu, Remus ; Tang, Fen ; Jin, Xinmin ; Tong, Yibin ; Liang, Jinghe ............................................................................................................................... 887

NOVEL FAMILY OF FORWARD MODE THREE-LEVEL DIRECT AC CONVERTERS
Li, Lei ; Guan, Yue ; Ma, Alhua ; Shi, He ; Yao, Kai ; Yan, Jianhu ; Fan, Lili ............................................................................................................................... 893

SUPPRESSION OF ARC GROUNDING OVERVOLTAGE BY USING ZNO NONLINEAR RESISTANCE GROUNDING MODE
Wangjing, Tan ; Qian, Wang ; Jiandong, Duan ; Yan, Ye ; Jingjing, Huang ............................................................................................................................... 899

THE NEW 7TH GENERATION IGBT MODULE WITH HIGH COMPACTNESS AND HIGH POWER DENSITY
Mitamura, Naoki ; Kawabata, Junya ; Kusunoki, Yoshiyuki ; Omozawa, Yuichi ; Kobayashi, Yasuyuki ; Osamu, Ikawa ............................................................................................................................... 905
A RESEARCH ON THE EFFECT OF VOLTAGE DIP STATE ESTIMATION ON DISTRIBUTION NETWORKS BY APPLYING BAYESIAN INFERENCE

Ye, G. ; Xiang, Y. ; Cak, V. ; Cobben, J. F. G.

SLIDING MODE CONTROL STRATEGY FOR THREE-PHASE DVR EMPLOYING TWELVE-SWITCH VOLTAGE SOURCE CONVERTER

Biricik, Samet ; Komurcugil, Hasan ; Basu, Malabika

BIDIRECTIONAL DC-TO-DC CONVERTER FOR MOTOR CONTROL UNIT OF ELECTRIC VEHICLE

Kim, Jin-San ; Kang, Feel-Soon ; Kim, Suo-Phil ; Park, Sung-Jun

CASCADED DC-TO-DC CONVERTER EMPLOYING A TAPPED-INDUCTOR FOR HIGH VOLTAGE BOOSTING RATIO

Choi, Jinsung ; Kim, Jin-San ; Lee, Giyung ; Kim, Ki-Du ; Kang, Feel-Soon

A DESIGN METHOD OF OBSERVERS FOR BILATERAL CONTROL USING DC BRUSHED MOTOR

Kambara, Yoshiyuki ; Ohnishi, Kouhei

EVALUATION OF AUV FIXED AND VECTORIAL PROPULSION SYSTEMS WITH DYNAMIC SIMULATION AND NON-LINEAR CONTROL

Vega, Emanuel Pablo ; Chocron, Olivier ; Ferreira, Janito Vaqueiro ; Benhouzid, Mohamed ; Meirelles, Pablo Siqueira

PERMEANCE BASED MODELLING OF THE CORE CORNERS CONSIDERING MAGNETIC MATERIAL NONLINEARITY

Luo, Min ; Dufic, Drazen

RESONANCE DAMPING IN A SMART TRANSFORMER-BASED MICROGRID

Zou, Zhi-Xiang ; Liseng, Marco ; Wang, Zheng ; Cheng, Ming ; Fan, Shouting

RELIABILITY ASSESSMENT OF AN AUTONOMOUS UNDERWATER VEHICLE PROPULSION BY USING ELECTRICAL MULTI-PHASE DRIVE

Olmi, C. ; Scullier, F. ; Charpentier, J.-F.

SHORT-TERM WIND SPEED FORECASTING MODEL BASED ON ANN WITH STATISTICAL FEATURE PARAMETERS

Ioakimidis, Christos S. ; Genikomsakis, Konstantinos N. ; Dallas, Panagiots I. ; Lopez, Sergio

DYNAMIC MODEL FOR VIENNA RECTIFIER OPERATING IN CONTINUOUS AND DISCONTINUOUS CONDUCTION MODE

Guo, Tiefeng ; Zhao, Jianfeng

SUPPORTING ELECTRO-MOBILITY IN AN URBAN ENVIRONMENT WITH THE NOMADIC AGENT CONCEPT

Genikomsakis, Konstantinos N. ; Moeyersons, Philippe ; Savvidis, Dimitrios ; Ioakimidis, Christos S.

A REDUCED SWITCH-COUNT SEPIC-BASED INVERTER FOR ASYMMETRICAL DUAL THREE-PHASE INDUCTION MACHINES

Diab, M. S. ; Elserougi, A. ; Abdel-Khalik, A. S. ; Massoud, A. M. ; Ahmed, Shehab

AN IMPROVED CURRENT MODE CONTROL OF A THREE-PHASE RECTIFIER BASED ON POSITIVE-SEQUENCE DETECTION

Martinez, P. R. ; Escobar, G. ; Sosa, J. M. ; Vazquez, G. ; Limones, C. A. ; Inurriaga, S.

A KNOWLEDGE-BASED APPROACH FOR THE SELECTION OF ASSEMBLY EQUIPMENT BASED ON FUEL CELL COMPONENT CHARACTERISTICS

Ahmad, Musaavar ; Ahmad, Bilal ; Harrison, Robert ; Ferrer, Borja Ramis ; Lasra, Jose L. Martinez ; Meredith, James ; Bindel, Axel

CONTROL OF THREE-LEVEL NPC CONVERTERS IN DFIG BASED OFF-GRID WIND ENERGY CONVERSION SYSTEMS

Sharma, Shailendra Kumar ; Chandra, Ambrish ; Saad, Maarouf

APPLICATION CONTROL CONFIGURATIONS IN A PHOTOVOLTAIC INVERTER OPERATING IN A MICROGRID

Ortega, Ruben ; Carranza, Oscar ; Sosa, Julio C. ; Garcia, Victor Hugo ; Ortega, Nancy Y.

UNDERSTANDING BUILDING OPERATION FROM SEMANTIC CONTEXT

Schumann, Anika ; Ploennigs, Joern ; Cheon, Bei

H5-HERIC BASED TRANSFORMERLESS MULTILEVEL INVERTER FOR SINGLE-PHASE GRID CONNECTED PV SYSTEMS

Vazquez, G. ; Martinez-Rodriguez, P. R. ; Sosa, J. M. ; Escobar, G. ; Juarez, M. A. ; Valdez, A. A.
DEVELOPMENT OF REAL TIME HOTSPOT DETECTION SYSTEM USING SCAN-METHOD FOR PV GENERATION SYSTEM ................................................................. 1032

Itako, Kazutaka ; Hossam, Bakhh ; Kadok, Tsugutomo ; Huang, Qixin

AN EVENT-TRIGGERED FINITE-TIME CONTROL SCHEME FOR UNICYCLE ROBOTS ................................................................. 1037

Zhang, Hao-Jie ; Lu, Quan ; Zhao, Xiao-Dan ; Wang, Ping

ADVANCED MATHEMATICAL MODEL FOR SURFACE MOUNTED PERMANENT MAGNET MACHINES WITH EQUIVALENT VIRTUAL SALIENT ROTOR .................... 1043

Chen, Junhua ; Qu, Ronghai ; Li, Jian

DISTURBANCE-OBSERVER-BASED ACTIVE QUEUE MANAGEMENT WITH TIME DELAY USING SOFTWARE-DEFINED NETWORKING CONTROLLER .............................................. 1049

Chibana, Hoshio ; Yoshino, Manabu ; Tadokoro, Masashi ; Murayama, Daissuke ; Suzuki, Ken-Ichi ; Kubo, Ryogo

ANALYSIS OF FORCE HARMONICS AND EDDY CURRENT DAMPING FOR 2 DOF MOVING MAGNET LINEAR MOTOR ............................................................................... 1055

Zhu, Haiyue ; Teo, Tat Joo ; Pang, Chee Khiang

TIME-FREQUENCY-BASED ASSESSMENT OF GRID FREQUENCY DEVIATION CAUSED BY WIND POWER FLUCTUATIONS ................................................................. 1061

Islam, Md Moineul ; Kabir, Md Sayid ; Brice, Charles W.

A TWO-STEP PRECOGNITIVE MAINTENANCE FRAMEWORK FOR EQUIPMENT FAULT DIAGNOSIS WITH IMBALANCED DATA ....................................................................... 1067

Yan, Heng-Chao ; Zhou, Jun-Hong ; Pang, Chee Khiang

FUNDAMENTAL STUDY ON CONTROL STRATEGIES TO INCREASE EFFICIENCY OF DUAL ACTIVE BRIDGE DC-DC CONVERTER .............................................................. 1073

Azmeer Bin Ab Malek, Muhhamad Hazarul ; Kakigano, Hiroaki

COST OPTIMIZATION ON WARNING THRESHOLD AND NON-FIXED PERIODIC INSPECTION INTERVALS FOR MACHINE DEGRADATION MONITORING .................................................. 1079

Yan, Heng-Chao ; Zhou, Jun-Hong ; Pang, Chee Khiang

ROBUST SAMPLED-DATA H∞ CONTROL FOR OFFSHORE STEEL JACKET PLATFORMS ................................................................. 1085

Meng, Mao-Mao ; Zhang, Bao-Lin ; Han, Qing-Long ; Zhang, Xiao-Ming ; Wang, Haihong

LONGITUDINAL DIFFERENTIAL PROTECTION BASED ON THE UNIVERSAL LINE MODEL ................................................................................................. 1091

Johannesson, Niclas ; Norrega, Staffan

NINE LEVEL INVERTER FOR OPEN END INDUCTION MOTOR WITH EIGHT SWITCHES PER PHASE ........................................................................................................ 1097

Kshirsagar, Abhjhit ; Kaarthik, R. Sudharshan ; Umanand, L. ; Gopakumar, K. ; Rajashhekar, Kaushik

SPEED CONTROL OF SERVO DRIVES WITH A FLEXIBLE COUPLING USING A MODIFIED Luenberger Observer ........................................................................................................... 1103

Riahi, M. R. ; Esmaeilihaaj, B. ; Tahumi, F.

GEOMETRIC CONDITIONS FOR FEEDFORWARD POSITIONING OF MUSCULOSKELETAL TENDON-DRIVEN STRUCTURE ............................................................................. 1109

Ochi, Hiroaki ; Kino, Hisashi ; Tabara, Kenji ; Matsutani, Yuki

MEDIUM VOLTAGE TO LOW VOLTAGE POWER FLOW SOLUTION USING MODIFIED BACKWARD/FORWARD SWEEP ALGORITHM ...................................................... 1115

Navarro, Bryan B. ; Asakil, Datu Amil Hussien O. ; Navarro, Maricar M.

MPPT CONTROLLED PIEZOELECTRIC ENERGY HARVESTING CIRCUIT USING SYNCHRONIZED SWITCH HARVESTING ON INDUCTOR ............................................................................ 1121

Kawai, Naoki ; Kushino, Yakito ; Koizumi, Hirotaoka

KERNEL-BASED SMOTE FOR SVM CLASSIFICATION OF IMBALANCED DATASETS ................................................................................................. 1127

Mathew, Josey ; Luo, Ming ; Pang, Chee Khiang ; Chan, Hian Leng

COMPLEX-CONJUGATE CONTROL OF A LINEAR MAGNETIC-GEARED PERMANENT-MAGNET MACHINE FOR ARCHIMEDES WAVE SWING BASED POWER GENERATION ........................................................................... 1133

Li, Wenlong ; Chau, K. T.

CASE STORIES OF ADVANCED ROTOR ASSESSMENT IN FIELD MOTORS OPERATED WITH SOFT-STARTERS AND FREQUENCY CONVERTERS ........................................................................ 1139

Antonino-Daviu, J. ; Corral-Hernandez, J. ; Cimente-Alarcon, V. ; Razik, H.

HIGH-VOLTAGE DC TRAILING CABLE SYSTEMS FOR MOBILE MACHINERY ................................................................................................. 1145

Barthel, J. ; Kilian Jung ; Seewig, J.

IMPROVED DFIG CAPABILITY DURING ASYMMETRICAL GRID FAULTS ................................................................................................. 1152

Zhou, Dao ; Blaabjerg, Frede

THERMAL PROGNOSIS OF DRY-TYPE TRANSFORMER: SIMULATION STUDY ON LOAD AND AMBIENT TEMPERATURE IMPACTS ........................................................................ 1158

MELTING PROCESSES

COGGING TORQUE AMPLITUDE

ELECTRIC VEHICLES

ANALYSIS

EFFICIENCY

REGARDS OF THE RELATION BETWEEN DUTY CYCLE, NUMBER OF STAGES AND NATURAL FRAME

HYBRID ENERGY SYSTEM

MACHINE FOR IMPROVED PERFORMANCE

CONVERTER

CONVERTER IN A POWER HARDWARE-IN-THE-LOOP EMULATION SYSTEM

A NOVEL MODULATION SCHEME FOR A MODULAR MULTIPHASE MULTILEVEL CONVERTER IN A POWER HARDWARE-IN-THE-LOOP EMULATION SYSTEM

DYNAMIC MODEL OF A GRID-CONNECTED THREE-PHASE INVERTER WITH SLOPE VOLTAGE CONTROL

AN ARCHITECTURE FOR A DISTRIBUTED SMART GRID REGISTRY SYSTEM

COMPARISON OF MULTISTAGE STACKED BOOST ARCHITECTURE TOPOLOGIES IN REGARDS OF THE RELATION BETWEEN DUTY CYCLE, NUMBER OF STAGES AND EFFICIENCY

CURRENT VARIATION IN A ROTOR BAR DURING TRANSIENTS DUE TO A HOT SPOT

A PORTABLE POINT-OF-CARE DEVICE FOR MULTI-PARAMETRIC DIABETES MELLITUS ANALYSIS

A NEW COMBINED BIDIRECTIONAL BOOST CONVERTER AND BATTERY CHARGER FOR ELECTRIC VEHICLES

DESIGN OPTIMIZATION OF BONDED PM BLDC MOTORS WITH REFERENCE TO THE COGGING TORQUE AMPLITUDE

DETECTION OF ELEVATED REGIONS IN SURFACE IMAGES FROM LASER BEAM MELTING PROCESSES

A NOVEL MODULATION SCHEME FOR A MODULAR MULTIPHASE MULTILEVEL CONVERTER
FULLY FPGA BASED PERFORMANCE-ENHANCED DMPC FOR GRID-TIED AFES WITH MULTIPLE PREDICTIONS ................................................................. 1282
Zhong, Zhenbin; Chen, Zhe; Wang, Fengxiang; Wu, Chun; Kenmel, Ralph

SPLIT-SOURCE INVERTER ......................................................................................................................... 1288
Abdelbakim, Ahmed; Mattavelli, Paolo; Spiazzi, Giorgio

DATA CENTER ENERGY EFFICIENCY AND POWER QUALITY: AN ALTERNATIVE APPROACH WITH SOLID STATE TRANSFORMER ......................................................................................................................... 1294
Zhelnova, Galina; Youvarian, Alireza; Vyatkin, Valery; Huang, Alex Q

DESIGN OF A CLEANING PROGRAM FOR A PV PLANT BASED ON THE ANALYSIS OF SHORT-TERM AND LONG-TERM EFFECTS ......................................................................................................................... 1301
Zapata, Jaime W.; Perez, Marcelo A.; Kouro, Samir

A SPACE VECTOR MODULATION BASED DIRECT TORQUE CONTROL SCHEME FOR A CURRENT SOURCE INVERTER FED INDUCTION MOTOR DRIVE ................................................................................................................. 1307
Gao, Hang; Das, Soumitra; Wu, Bin; Pande, Manish; Xu, David

L2 STABLE TRANSPARENCY OPTIMIZED TWO CHANNEL TELEOPERATION UNDER TIME DELAY ................................................................. 1313
Tumerdem, Ugur; Demir, Muaz

MATHEMATICAL MODEL OF SERIES-SERIES COMPENSATION FOR CONTACTLESS POWER TRANSFER SYSTEM Kashwaha, Ajit Kumar; Rituraj, Gautam; Kumar, Praveen

POWER CONTROL ANALYSIS FOR VARIABLE SPEED PUMPED STORAGE WITH FULL-SIZE CONVERTER. Chang Xin; Han Minxiao; Zheng Chao

AN INTEGRATED TRANSFORMERLESS PHOTOVOLTAIC INVERTER ......................................................................................................................... 1333

MULTIFUNCTIONAL GRID-CONNECTED PHOTOVOLTAIC-SYSTEM CONTROLLED BY SLIDING MODE ......................................................................................................................... 1339

A NOVEL PMSG BASED WECS FOR GRID INTEGRATION USING DMC ................................................................. 1345
Bhattacharya, Avik; Brijwasi, Brijesh; Ahmed, Haris

AN ENHANCED REPETITIVE CONTROL STRATEGY FOR SHUNT ACTIVE POWER FILTER WITH LCL OUTPUT FILTER ......................................................................................................................... 1351
Sun, Biaoguang; Xie, Yunxiang; Ma, Hui

THREE LEVEL Z SOURCE INVERTER BASED PHOTOVOLTAIC POWER CONVERSION SYSTEMS ......................................................................................................................... 1357
Kumar, Ajit; Bhattacharya, Avik

ANALYSIS AND DESIGN OF A MMC BASED WIND POWER CONVERTER FOR OFFSHORE DC GRIDS. Chang, Yiran; Shi, Gang; Zhang, Jianwen; Cai, Xu

STATISTICAL LOCALIZATION EXPLOITING CONVOLUTIONAL NEURAL NETWORK FOR AN AUTONOMOUS VEHICLE ......................................................................................................................... 1369
Ishibashi, Satoshi; Taniuchi, Akira; Takano, Toshiaki; Hugiyama, Yoshinobu; Taniguchi, Tadahiro

A FLYBACK CONVERTER USING POWER MOSFET TO ACHIEVE HIGH FREQUENCY OPERATION BEYOND 13.56 MHZ ......................................................................................................................... 1376
Sato, Nobuo; Otake, Hirotsuka; Nakamura, Takashi; Hikihara, Takashi

A 3.7 KW ON-BOARD CHARGER BASED ON MODULAR CIRCUIT DESIGN ......................................................................................................................... 1382
Schnenger, J.; Zeitner, S.; Kramer, R.; Endres, S.; Marz, M.

AN ENHANCED POWER SHARING STRATEGY FOR ISLANDED MICROGRIDS USING ADAPTIVE VIRTUAL IMPEDANCES ......................................................................................................................... 1388
Liao, Yuan Lin; Qian Guo; Jian Hu; Hao Ma

A BASIC EXPERIMENT FOR IMAGE-BASED POSITION MEASUREMENT OF OBJECTS AT SEA ......................................................................................................................... 1394
Takekura, Fumiaki; Sakagami, Norimitsu; Takahashi, Satoru; Ono, Rintaro; Nakanishi, Yumiko; Uechi, Natsuki; Ohara, Kazuma; Kawabata, Kunikatsu; Sagara, Shinichi; Katagiri, Chiaki; Yamamoto, Yuji

REPRODUCTION OF HAPTIC SENSATIONS FOR HIGH-STIFFNESS ENVIRONMENT CONSIDERING MECHANICAL ADMITTANCE ......................................................................................................................... 1400
Asai, Tetsu; Yokoyama, Yuki; Ohishi, Kiyoshi

COMPARISON OF RESONANT POWER CONVERTERS WITH TWO, THREE, AND FOUR ENERGY STORAGE ELEMENTS ......................................................................................................................... 1406
Outeiro, Maria Teresa; Bova, Giuseppe

DB-DTFC AS LOSS MINIMIZING CONTROL FOR SYNCHRONOUS RELUCTANCE DRIVES ......................................................................................................................... 1412
Saur, Michael; Lehner, Bastian; Hentschel, Frank; Gerling, Dieter; Lorenz, Robert D.
MODEL BASED CONTROL OF A PMSM WITH VARIABLE SWITCHING FREQUENCY AND TORQUE RIPPLE CONTROL ................................................................. 1418
Ramirez-Figueroa, Fernando D.; Pacas, Mario

EQUIVALENCE OF RESONANCE RATIO AND I-PD CONTROLLERS IN ZERO STIFFNESS TORQUE CONTROL FOR SOFT ROBOT .................................................................................. 1424
Kawai, Yasuke; Yokokura, Yuki; Ohishi, Kiyoshi; Saito, Kotaro; Shimamoto, Atsushi

A MODIFIED STRUCTURE FOR SYMMETRICAL AND ASYMMETRICAL CONFIGURATION OF MULTILEVEL INVERTER ............................................................................ 1430
Gustam, Shivam Prakash; Kumar, Lalit; Gupta, Shubhrata

COMPARATIVE EVALUATION OF SYNCHRONIZATION TECHNIQUES FOR GRID INTERCONNECTION OF RENEWABLE ENERGY SOURCES ........................................................................... 1436
Shitole, A. B.; Suryawanshi, H. M.; Sathyan, Shelas

SOC AND SOH CHARACTERISATION OF LEAD ACID BATTERIES ......................................................................................................................... 1442
Marchildon, Jacques; Doumbia, Mamadou Lamine; Aghbouzou, Kodjo

OPTIMIZATION OF THE COMPENSATION CAPACITORS FOR MEGAHERTZ WIRELESS POWER TRANSFER SYSTEMS .................................................................................................. 1447
Tang, Zefan; Fu, Minfan; Liu, Ming; Ma, Chengbin

A DISCRETE-TIME CURRENT CONTROLLER FOR PERMANENT MAGNET SYNCHRONOUS MOTOR DRIVES .......................................................................................................................... 1453
Turker, Turker; Buyukkeses, Umit; Mese, Huseyin; Bakan, Faruk

DESIGN AND OPTIMIZATIONS OF SOLENOID MAGNETIC STRUCTURE FOR INDUCTIVE POWER TRANSFER IN EV APPLICATIONS .............................................................................. 1459
Tang, Yunyu; Zhu, Fan; Wang, Yuxi; Ma, Hao

DRIVE TRAIL DESIGN OPTIMIZATION FOR ELECTRICALLY ACTUATED SYSTEMS VIA MIXED INTEGER PROGRAMING ................................................................. 1465
Pawlus, Witold; Hovland, Geir; Choux, Martin; Frick, Damian; Morari, Manfred

LCL TYPE GRID-CONNECTED CONVERTER NO STARTUP INRUSH CURRENT CONTROL METHOD BASED ON CAPACITOR BRANCH VOLTAGE FEEDFORWARD ........................................................................... 1471
Zhou, Shiying; Zou, Xuodong; Zhu, Donghai; Kang, Yong; Tong, Li; Gao, Xiaolu

ON-LINE OBSERVER MODIFICATION OF A SIX-PHASE INDUCTION GENERATOR IN FAULTED MODE .................................................................................................................. 1477

ROBUST CONTROL DESIGN OF MULTIPLE RESONANT CONTROLLERS APPLIED TO THREE-PHASE UPS INVERTER UNDER UNBALANCED AND NONLINEAR LOADS .................................................................................................................. 1483
Barden, A. T.; Alves Pereira, L. F.

A GENERIC VIRTUAL PROTOTYPING TOOL FOR MULTILEVEL MODULAR CONVERTERS (MMCS) .................................................................................................................. 1489
Am, Sokchea; Lefranc, Pierre; Frey, David; Ibrahim, Mahmoud

A NEW ZCS PWM FULL-BRIDGE CONVERTER OF BUCK-TYPE FOR APPLICATIONS WITH VERY HIGH INPUT VOLTAGE ................................................................................................. 1495
Yin, Zhijian; Chen, Mansi; Li, Kerui; Istinovici, Adrian

A MULTI-SURFACE SLIDING-MODE EXTREMUM SEEKING CONTROLLER FOR ALTERNATOR MAXIMUM POWER POINT TRACKING .................................................................................. 1501
Toloue, Shirin Fartash; Moallem, Mehrdad

HUMAN ACTIVITY MODELING AND PREDICTION FOR ASSISTING APPLIANCE OPERATIONS .................................................................................................................. 1507
Koiva, Yuichiro; Miura, Junsuke; Nakagawa, Koki

ENGINE CONTROLLER FOR HYBRID POWERED DUAL QUAD-ROTOR SYSTEM .................................................................................................................. 1513
Lin, Chin E.; Supsukbaworn, Thanakorn; Huang, Ying-Chi; Jhuang, Kai-Ti; Li, Chia-Hsun; Lin, Chin-Yu; Lo, Su-Yu

ESTIMATION OF NEXT HUMAN ACTION AND ITS TIMING BASED ON THE HUMAN ACTION MODEL WITH TIMING PROBABILITY DISTRIBUTION ..................................................................... 1518
Hashimoto, Kohjiro; Doki, Shintaro; Doki, Kae

MODELLING OF IEC 61850 MESSAGE PASSING FOR AUTOMATIC GENERATION OF DISTRIBUTED CONTROL .................................................................................................................. 1524
Yang, Chen-Wei; Vyatkin, Valery

LOSS MINIMIZING AND SATURATION DEPENDENT CONTROL OF INDUCTION MACHINES IN VEHICLE APPLICATIONS ...................................................................................................... 1530
Windisch, Thomas; Hofmann, Wilfried

SENSORLESS BATTERY CELL TEMPERATURE ESTIMATION CIRCUIT FOR ENHANCED SAFETY IN BATTERY SYSTEMS .................................................................................................. 1536
Schwarz, R.; Semmler, K.; Wenger, M.; Lorentz, V. R. H.; Marz, M.
A SIMPLE BRAKING METHOD FOR SIX-PHASE INDUCTION MOTOR DRIVES WITH DIODE FRONT-END RECTIFIER ................................................................. 1542

Duran, Mario J.; Gonzalez-Prieto, I.; Barrero, F.; Mengoni, M.; Zarri, L.; Levi, E.

MODEL-BASED DIAGNOSIS AND FAULT TOLERANT CONTROL FOR MULTI-LEVEL INVERTERS .......................................................................................................................................................... 1548

Alavi, Marjan; Wang, Danwei; Luo, Ming

INVESTIGATION INTO THE POTENTIAL USE OF INTEGRATED SWITCHING REGULATORS FOR LOW-VOLTAGE, LOW-POWER PHOTOVOLTAIC CONVERSION IN SPACE APPLICATIONS .......................................................................................................................................................... 1554

Garrigos, A.; Blanes, J. M.; Gutierrez, R.; Compadre, M.; Clark, C.; MacDonald, M.

DYNAMIC OPTIMAL POWER FLOW INCLUDING ENERGY STORAGE WITH ADAPTIVE OPERATION COSTS .......................................................................................................................................................... 1561

Chengquan, Ju; Peng, Wang

FRIT BASED OPTIMIZED PI TUNING FOR DC LINK VOLTAGE CONTROL OF GRID CONNECTED SOLAR PV SYSTEM .......................................................................................................................................................... 1567

Tripathi, Ravi Nath; Hanamoto, Tsuyoshi

DIODE-CAPACITOR-INDUCTOR NETWORK BASED DC/DC CONVERTERS WITH HIGH POWER DENSITY FOR HIGH VOLTAGE GAIN STEP-UP APPLICATIONS .......................................................................................................................................................... 1573

Yafei Hu; Kerui Li; Maxmin Chen

FEEDFORWARD CURRENT REFERENCE CONTROL FOR DFIG DURING GRID FAULTS .......................................................................................................................................................... 1579

Zhu, Donghai; Zhou, Xiaodong; Huang, Qingjun; Zhou, Shiyi; Gao, Xiaolu; Kang, Yong

A NOVEL CIRCULAR WINDING BRUSHLESS DC(CWBLDC) MACHINE WITH LOW TORQUE RIPPLE .......................................................................................................................................................... 1585

Wang, Dong; Lin, Huangda; Cheng, Siwei; Jia, Zhewu; Zheng, Xiaomin

A STATISTICAL APPROACH FOR TRAJECTORY ANALYSIS AND MOTION SEGMENTATION FOR FREELY MOVING CAMERAS .......................................................................................................................................................... 1592

Li, Jiaxin; Lin, Feng; Chen, Ben M.

A MODEL-BASED CONTROLLER OF A THREE-LEVEL STACKED-CELL GRID CONNECTED CONVERTER .......................................................................................................................................................... 1598

Escobar, G.; Martinez-Rodriguez, P. R.; Pool, E. I.; Pena-Quintal, A. E.; Vazquez, G.; Sosa, J. M.

CURRENT CONTROL OF A THREE-PHASE INVERTER GRID CONNECTED THROUGH AN LCL FILTER .......................................................................................................................................................... 1604

Escobar, G.; Pettersson, S.; Ho, C. N. M.; Lopez-Sanchez, M.; Martinez-Rodriguez, P. R.

MODEL PREDICTIVE CONTROL FOR POWER CONTROL IN ISLANDED DC MICROGRIDS .......................................................................................................................................................... 1610

Yu, T. V.; Paran, S.; Diaz, F.; Meyzani, T. El; Edrington, C. S.

A SOLAR ENERGY HARVESTING SYSTEM FOR A PORTABLE COMPACT LED LAMP .......................................................................................................................................................... 1616

Hyun, Ji Hoon; Ha, Dong Sam; Daeick Han, Daniel; Kyung, Chong-Min

DISCHARGING SCENARIO OF SERIAL BUCK-BOOST BATTERY POWER MODULES WITH FAULT TOLERANCE .......................................................................................................................................................... 1622

Yu, Li-Ben; Ye, Donghai; Luo, Chi-Nien

AN ANALYSIS OF AN ELDERLY DRIVER BEHAVIOUR IN URBAN INTERSECTIONS BASED ON A RISK POTENTIAL MODEL .......................................................................................................................................................... 1627

Akagi, Yasuhisa; Raksincharoensak, Pongsathorn

A NEW ANALYZING SCHEME FOR NON-INTEGER ORDER DC/DC CONVERTERS .......................................................................................................................................................... 1633

Chen, Yanfeng; Chen, Xi; Zhang, Bo; Qiu, Dongyuan

PWM METHOD FOR OPEN-END WINDING MACHINES USING SMALL TRIANGLE SPACE VECTORS WITHOUT INVERTER OUTPUT CLAMPING .......................................................................................................................................................... 1639

Kubo, Hajime; Yamamoto, Yasuhiro; Kondo, Takeshi; Rajeshkara, Kaushik; Zhu, Bohang

INTEGRATED HYBRID OUTPUT CONVERTER AS POWER ROUTER FOR RENEWABLE-BASED NANOGIDS .......................................................................................................................................................... 1645

Ray, O.; Mishra, S.

NOVEL DEAD TIME CONTROLLED GATE DRIVER USING THE CURRENT SENSOR OF SIC-MOSFET .......................................................................................................................................................... 1651

Niwai, Akimasa; Inazawa, Takanori; Kimura, Tomonori; Sasaya, Takanari; Isobe, Takanori; Tadano, Hiroshi

DRIVING ASSIST CONTROL OF ELECTRIC VEHICLE BY STEER-BY-WIRE SYSTEM CONSIDERING COLLISION AVOIDANCE OF TRAVELING BICYCLE .......................................................................................................................................................... 1657

Maejima, Satoshi; Murakami, Toshiyuki

MOTION CONTROL AND TELEOPERATION CHALLENGE .......................................................................................................................................................... 1662

Rojko, Andreja; Hercog, Darko

ACTIVE CONTROLLED SHUTTER FOR EFFECTIVE COOLING OF SERVERS IN DATA CENTER .......................................................................................................................................................... 1668

Noguchi, Tomomichi; Nishi, Hiroaki
<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>MODELING OF THE TAPPED INDUCTOR SEPIC CONVERTER BY THE TIS-SFG APPROACH</td>
<td>1674</td>
</tr>
<tr>
<td>COMPARATIVE INFLUENCE OF ADJACENT AND NON-ADJACENT BROKEN ROTOR BARS ON THE INDUCTION MOTOR DIAGNOSIS THROUGH MCSA AND ZSC METHODS</td>
<td>1680</td>
</tr>
<tr>
<td>NONLINEAR H₂ VELOCITY CONTROL FOR PERMANENT MAGNET SYNCHRONOUS MOTORS</td>
<td>1686</td>
</tr>
<tr>
<td>NONLINEAR ADAPTIVE SPEED CONTROL FOR PERMANENT MAGNET SYNCHRONOUS MOTORS UNDER UNBALANCED RESISTANCES</td>
<td>1692</td>
</tr>
<tr>
<td>A NOVEL SLIDING MODE CONTROLLER FOR DC-DC BOOST CONVERTERS UNDER INPUT/LOAD VARIATIONS</td>
<td>1698</td>
</tr>
<tr>
<td>AN ULTRA-EFFICIENT MAXIMUM POWER POINT TRACKING CIRCUIT FOR PHOTOVOLTAIC INVERTERS</td>
<td>1704</td>
</tr>
<tr>
<td>H₂/H₂- FILTERING OF HYBRID NETWORKS WITH RANDOM PACKET LOSSES</td>
<td>1710</td>
</tr>
<tr>
<td>SYSTEM AIMING AT EXPLORATION IN REAL WORLD</td>
<td>1716</td>
</tr>
<tr>
<td>PHASE-MODULAR THREE-PHASE ISOLATED BRIDGELESS PFC CONVERTER</td>
<td>1723</td>
</tr>
<tr>
<td>ALL-WHEEL-DRIVE ELECTRIC VEHICLE WITH ON-BOARD MOTORS: EXPERIMENTAL VALIDATION OF THE MOTION CONTROL SYSTEMS</td>
<td>1729</td>
</tr>
<tr>
<td>SPECULAR REFLECTION REMOVAL WITH HIGH-SPEED CAMERA FOR VIDEO IMAGING</td>
<td>1735</td>
</tr>
<tr>
<td>SOLID ROTOR INTERIOR PERMANENT MAGNET MACHINES FOR HIGH SPEED APPLICATIONS</td>
<td>1741</td>
</tr>
<tr>
<td>FORCE SENSORLESS CONTROL WITH 3D WORKSPACE ANALYSIS FOR HAPTIC DEVICES BASED ON DELTA ROBOT</td>
<td>1747</td>
</tr>
<tr>
<td>OPTIMAL POWER FLOW IN MTDC NETWORKS FOR LARGE OFFSHORE WIND POWER PLANTS: VALIDATION OF THE DISTRIBUTED VOLTAGE CONTROL STRATEGY</td>
<td>1753</td>
</tr>
<tr>
<td>A METHOD FOR CONVERTING END EFFECTORS OF VARIOUS FORMS INTO TACTILE INTERFACES</td>
<td>1759</td>
</tr>
<tr>
<td>A COMBINED SWITCHED RELUCTANCE MOTOR DRIVE AND BATTERY CHARGER FOR ELECTRIC VEHICLES</td>
<td>1770</td>
</tr>
<tr>
<td>POWER DISTRIBUTION OF A MULTIPLE-RECEIVER WIRELESS POWER TRANSFER SYSTEM: A GAME THEORETIC APPROACH</td>
<td>1776</td>
</tr>
<tr>
<td>A DOUBLE SIGNAL PWM SCHEME FOR NEUTRAL POINT VOLTAGE BALANCING IN THREE LEVEL NPC CONVERTERS</td>
<td>1782</td>
</tr>
<tr>
<td>TRANSIENT ANALYSIS OF DFIG-BASED WECS UNDER THREE-PHASE VOLTAGE DIPS VIA COUPLED SIMULATION</td>
<td>1788</td>
</tr>
<tr>
<td>OPTIMAL ASYMMETRY FOR CASCADED MULTILEVEL CONVERTER WITH CROSS-CONNECTED HALF-BRIDGES</td>
<td>1795</td>
</tr>
<tr>
<td>DYNAMIC STABILITY ANALYSIS OF AUTONOMOUS MEDIUM-VOLTAGE MIXED-SOURCE MICROGRID</td>
<td>1801</td>
</tr>
</tbody>
</table>
UNBALANCED OPERATION OF FIVE-PHASE INDUCTION MACHINES USING STEADY STATE SYMMETRICAL COMPONENTS — PART I: THEORETICAL CONSIDERATIONS ................................................................. 1807
Pereira, Luis A.; Pereira, Luis F. A.; Haffner, Sergio; Nicol, Guillaume
UNBALANCED OPERATION OF FIVE-PHASE INDUCTION MACHINES USING STEADY STATE SYMMETRICAL COMPONENTS - PART II: STUDY OF TYPICAL CASES ............................................ 1813
FINITE CONTROL SET MODEL PREDICTIVE CONTROL OF A STACKED MULTICELL CONVERTER WITH REDUCED COMPUTATIONAL COST .............................................................. 1819
Norambuena, Margaret; Dieckerhoff, Sibylle; Kouro, Samir; Rodriguez-Joffre, Jesus; Tomori, Hiroki; Nakamura, Taro
APPLICATION OF FICTITIOUS REFERENCE ITERATIVE TUNING TO VIBRATION SUPPRESSION CONTROLLER FOR 2-INERTIA RESONANCE SYSTEM ........................................ 1825
Ibedo, H.; Aijishi, H.; Hanamoto, T.
MOBILE ROBOT NAVIGATION IN UNKNOWN CORRIDORS USING LINE AND DENSE FEATURES OF POINT CLOUDS ........................................................................................................ 1831
Qian, Kun; Chen, Zhijie; Ma, Xudong; Zhou, Bo
HARDWARE-IN-THE-LOOP SIMULATION OF A BOOST CONVERTER WITH THE XILINX SYSTEM GENERATOR FROM MATLAB/SIMULINK ........................................................................ 1837
Cherragui, H.; Hilairet, M.; Giurgea, S.
SENSORLESS STATOR FLUX OBSERVER FOR DIRECT TORQUE CONTROLLED INTERIOR PERMANENT MAGNET SYNCHRONOUS MOTOR DRIVES USING THE CURRENT DERIVATIVE APPROACH ............................................................ 1843
Foo, Gilbert; Xinan, Zhang
EQUIVALENT SERIES RESISTANCE-BASED REAL-TIME CONTROL FOR A BATTERY-ULTRACAPACITOR HYBRID SYSTEM .......................................................................................... 1849
Zhao, Chen; Yin, He; Yang, Zhongping; Ma, Chengbin
LEAST SQUARES POSE ESTIMATION OF CYLINDER AXES FROM MULTIPLE VIEWS USING CONTOUR LINE FEATURES ...................................................................................................... 1855
Becke, Mark; Schlegl, Thomas
EDUCATION IN ELECTRIC AND ELECTRONIC ENGINEERING VIA STUDENTS INVOLVEMENT IN INNOVATIVE PROJECTS ......................................................................................... 1862
Dunai, Larisa Dunai; Prieto, Andres; Chillaron, Monica; Antonino-Daviu, Jose A.
AN ANALYSIS OF THE 6-SLOT 2-POLE HIGH-SPEED PERMANENT MAGNET SYNCHRONOUS MACHINES WITH TOOTH-COIL WINDINGS ........................................................................ 1867
Uzhegov, Nikita; Nerg, Janne; Pyrhonen, Juha
EVENT-TRIGGERED NETWORK-BASED SYNCHRONIZATION OF COMPLEX NETWORKS WITH NEUTRAL NEURAL NETWORK NODES ............................................................................. 1873
Zhang, Yijun; Zhang, Buoyong
LANDING METHOD FOR A ONE-LEGGED ROBOT WITH ARTIFICIAL MUSCLES AND AN MR BRAKE ......................................................................................................................... 1879
Ishihara, Hiroki; Nakamura, Taro; Uzhegov, Nikita; Etomo, Takashi; Nakamura, Taro
LOSS MINIMIZATION CONTROL OF VERNIER RELUCTANCE MACHINES WITH DC FIELD WINDINGS IN STATOR ....................................................................................................... 1885
Lu, Hanxiao; Li, Jian; Qu, Biyong; Jia, Shaofeng
UNBALANCED OPERATION OF MULTIPHASE WIND ENERGY CONVERSION SYSTEMS CONNECTED TO MICROGRIDS ........................................................................................................... 1891
Duran, M. J.; Gonzalez-Prieto, J.; Guzman, H.; Barrero, F.; Kim, H. M.
OPTIMAL DESIGN OF AN ELECTRO-MECHANICAL ACTUATOR FOR AEROSPACE APPLICATION ................................................................................................................................. 1903
Sciassera, C.; Giangrande, P.; Brunson, C.; Galea, M.; Gerada, C.
DISTRIBUTED LOW VOLTAGE RIDE-THROUGH OPERATION OF POWER CONVERTERS IN GRID-CONNECTED MICROGRIDS UNDER VOLTAGE SAGS ............................................................ 1909
Zhao, Xin; Meng, Lexuan; Dragicicveic, Tomislav; Savaghebi, Mehdi; Guerrero, Josep M.; Vasquez, Juan C.; Wu, Xiaohua
ONLINE METHOD FOR SIMULTANEOUS EXTRACTION OF INDIVIDUAL HARMONICS IN THREE-PHASE SYSTEMS ........................................................................................................ 1915
Roncero-Sanchez, P.; Del Toro Garcia, X.; Farrero Torroco, A.
DISSIMILARITY METRICS FOR PROBABILISTIC BROADCASTING IN WIRELESS MULTI-HOP NETWORKS ....................................................................................................................... 1922
Reina, D. G.; Toral, S. L.; Barrero, F.; Gueness, M.
TECHNICAL AND ENVIRONMENTAL IMPACTS OF ELECTRIC VEHICLES AND RENEWABLE ENERGY INTEGRATION IN A DISTRIBUTION GRID ........................................................................ 1928
Pirsan, Vanina; Debusschere, Vincent; Bacha, Sedik; Ovalle, Andres
<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>DISTRIBUTED COMPUTING OF ALL-TO-ALL COMPARISON PROBLEMS IN HETEROGENEOUS SYSTEMS</td>
<td>2053</td>
</tr>
<tr>
<td>DISTRIBUTED MPPT PV SYSTEM WITH CURRENT SOURCE INVERTER</td>
<td>2059</td>
</tr>
<tr>
<td>ANALYSIS OF COLOR CATEGORIZATION FOR COLOR VISION DEFICIENT SUBJECTS AT DIFFERENT LUMINANCE LEVELS</td>
<td>2065</td>
</tr>
<tr>
<td>SMOOTH POLYNOMIAL INTERPOLATION FOR POINT-TO-POINT TRAJECTORIES WITH VIBRATION AVOIDANCE</td>
<td>2070</td>
</tr>
<tr>
<td>THRESHOLDS MODIFICATION STRATEGY OF WAYSIDE SUPERCAPACITOR STORAGE CONSIDERING DC SUBSTATION CHARACTERISTICS</td>
<td>2076</td>
</tr>
<tr>
<td>MODELING AND STATE OF CHARGE-BASED ENERGY MANAGEMENT STRATEGY OF ULTRACAPACITOR ENERGY STORAGE SYSTEM OF URBAN RAIL TRANSIT</td>
<td>2082</td>
</tr>
<tr>
<td>SERVICE PERSONALISATION OF ASSISTIVE ROBOT FOR AUTISM CARE</td>
<td>2088</td>
</tr>
<tr>
<td>BASIC ANALYSIS OF WIRELESS POWER TRANSFER SYSTEMS USING SUPER-CAPACITOR AS LOAD</td>
<td>2094</td>
</tr>
<tr>
<td>GAN-BASED CONSUMER APPLICATION DC-DC CONVERTER FOR PCB EMBEDMENT TECHNOLOGY INTEGRATION</td>
<td>2100</td>
</tr>
<tr>
<td>A HYBRID KERNEL PCA, HYPERSONE SVM AND EXTREME LEARNING MACHINE APPROACH FOR NONLINEAR PROCESS ONLINE FAULT DETECTION</td>
<td>2106</td>
</tr>
<tr>
<td>A VIRTUAL SYNCHRONOUS GENERATOR BASED INVERTER CONTROL METHOD FOR DISTRIBUTED GENERATION SYSTEMS</td>
<td>2112</td>
</tr>
<tr>
<td>COMBINED MODEL-BASED SLIDING-MODE CONTROLLER FOR A THREE-PHASE VOLTAGE SOURCE INVERTER FED INDUCTION MOTOR DRIVE</td>
<td>2118</td>
</tr>
<tr>
<td>ANALYSIS OF NONLINEAR OSCILLATION OF FOUR-QUADRANT CONVERTER IN HIGH-SPEED TRIANS BASED ON DISCRETE MODEL</td>
<td>2124</td>
</tr>
<tr>
<td>A NOVEL VIEWPOINT IN BILATERAL CONTROL SYSTEM WITH TIME DELAY AIMING FOR CLEAR CONTROL GOALS</td>
<td>2130</td>
</tr>
<tr>
<td>EFFECTIVE Metering data aggregation for smart grid communication infrastructure</td>
<td>2136</td>
</tr>
<tr>
<td>ENERGY EVALUATION OF DIFFERENT INVERTER TOPOLOGIES AND MODULATIONS USED ON ELECTRICAL VEHICLES</td>
<td>2142</td>
</tr>
<tr>
<td>IMPLEMENTATION AND EVALUATION OF IEMS MANAGEMENT MIDDLEWARE USING XML</td>
<td>2148</td>
</tr>
<tr>
<td>A NOVEL STEERING MECHANISM OF TWO-WHEELED WHEEL CHAIR FOR STABILITY IMPROVEMENT</td>
<td>2154</td>
</tr>
<tr>
<td>CAPACITANCE MINIMISATION &amp; ALLEVIATION OF PER-PHASE POWER IMBALANCES IN CASCADED PV CONVERTERS</td>
<td>2160</td>
</tr>
<tr>
<td>MODULATED POTENTIAL FIELD USING 5 DOF IMPLANT ASSIST ROBOT FOR POSITION AND ANGLE ADJUSTMENT</td>
<td>2166</td>
</tr>
<tr>
<td>REQUIREMENTS ENGINEERING OF INDUSTRIAL AUTOMATION SYSTEMS: ADAPTING THE CESAR REQUIREMENTS META MODEL FOR SAFETY-CRITICAL SMART GRID SOFTWARE</td>
<td>2172</td>
</tr>
</tbody>
</table>
DYNAMIC MOVEMENT PRIMITIVES FOR HUMAN MOVEMENT RECOGNITION .......................................................... 2178

Pehlivan, Alp Burak ; Oeztop, Erkan

TWO-PORT NETWORK BASED BILATERAL CONTROL OF A STEER-BY-WIRE SYSTEM ........................................ 2184
Wu, Xiaodong ; Xu, Li Yang Min

A BIPOLAR-DC-BUS EV FAST CHARGING STATION WITH INTRINSIC DC-BUS VOLTAGES
EQUALIZATION AND MINIMIZED VOLTAGE RIPPLES .......................................................................................... 2190
Tan, Longeheng ; Wu, Bin ; Rivera, Sebastian

HYBRIDISATION TECHNIQUES FOR A SUPERCAPACITOR-ASSISTED TEMPERATURE MODIFICATION APPARATUS FOR INLINE WATER HEATING ................................................................. 2196
Gurusinghe, Nicoloy ; Kalasaratna, Nilai ; Charleston, Sean A ; Fernando, Jayathu ; Round, W Howell

A STEP-UP/DOWN SINGLE-STAGE ZVS INVERTER .............................................................................................. 2201
Kouchi, Behnam ; Safaei, Alireza ; Jain, Praveen ; Bakhshai, Alireza

SAMPLED-DATA CONSENSUS OF NONLINEAR MULTI-AGENT SYSTEMS WITH STOCHASTIC DISTURBANCES .......................................................................................................................... 2207
Zhang, Biao ; He, Wangli

UTILISING REDUNDANT VOLTAGE LEVELS FOR CIRCULATING CURRENT CONTROL IN MODULAR MULTILEVEL CONVERTERS ............................................................................................................ 2213
Konstantinou, Georgios ; Pou, Josep ; Ceballos, Salvador ; Picas, Ricard ; Zaragoza, Jordi ; Agelidis, Vassilios G.

OPTIMIZATION OF DECENTRALIZED ENERGY STORAGE FLEXIBILITY FOR FREQUENCY RESERVES ................................................................................................................................. 2219
Kilkki, O ; Giovanelli, C ; Seilonen, I ; Vyatkin, V.

ILLEGALLY PARKED VEHICLE DETECTION USING ADAPTIVE DUAL BACKGROUND MODEL ................................................................. 2225
Wahyono ; Filonenko, Alexander ; Jo, Kang-Hyun

DELTA-CONNECTED CASCADED H-BRIDGE MULTILEVEL PHOTOVOLTAIC CONVERTERS .............................................................. 2229
Yu, Yifan ; Konstantinou, Georgios ; Townsend, Christopher D ; Aguilera, Ricardo P ; Hredzak, Branislav ; Agelidis, Vassilios G.

A NOVEL ASSIST DEVICE FOR TENSION POLE BASED MOVABLE HANDRAIL ............................................................................. 2235
Hanaoka, Ryo ; Murakami, Toshiyuki

DESIGN AND IMPLEMENTATION OF A 200KHZ SINGLE-PHASE BOOST-INVERTER USING SILICON CARBIDE SEMICONDUCTORS ........................................................................................................... 2241
Jang, Minsoo ; Kim, Takyun ; Agelidis, Vassilios G.

NOVEL POWER RECEIVER FOR DYNAMIC WIRELESS POWER TRANSFER SYSTEM ......................................................... 2247
Jiang, Jinhai ; Zhu, Chunbo ; Song, Kai ; Wei, Guo ; Zhang, Qianfong

RECONFIGURABLE ELEMENTS OF EXECUTION SEMANTICS FOR INDUSTRIAL CYBER-PHYSICAL SYSTEMS ................................................................................................................................. 2252
Dai, Wenbin ; Vyatkin, Valerity

PARALLEL OPERATION OF THREE-PHASE INVERTERS WITH VIRTUAL OSCILLATOR AND MULTI-RESONANT CONTROL ................................................................................................................... 2258
Hu, Jian ; Lin, Lianyuan ; Ma, Hao

A NEW CONTROL STRATEGY OF IRONLESS STATOR AXIAL-FLUX PM MOTOR FED BY INVERTER WITH OUTPUT LC FILTER ......................................................................................................................... 2264
Weiwei Geng ; Zhuoran Zhang ; Kui Jiang

DEAD-BEAT DIRECT TORQUE AND FLUX CONTROL BASED ON SLIDING-MODE STATOR FLUX OBSERVER FOR PMSM IN ELECTRIC VEHICLES ........................................................................ 2270
Chen, Yin ; Sun, Dan ; Lin, Bin ; Ching, T W ; Li, Wenlong

SIMPLE AND FAST SYNCHRONOUS REFERENCE FRAME CURRENT CONTROL FOR SINGLE-PHASE grid-CONNECTED VOTAGE SOURCE CONVERTERS .................................................................................. 2276
Somkun, Sakda ; Chunkag, Viboon

A MULTIPLE MODEL APPROACH TO FAULT DETECTION AND LOCALIZATION IN MULTI-TERMINAL HVDC SYSTEMS ....................................................................................................................... 2282
Ali, Ali Al Hage ; Piespenreiber, Bernhard ; Buchstaller, Dominic ; Engel, Markus

LIMITATION OF DRIVER'S COMPENSATION UNDER VISUAL FIELD CONTRACTION ....................................................... 2288
Lee, Jeun ; Itoh, Makoto ; Imagaki, Toshiyuki

A NEW MULTILEVEL CONVERTER WITH GRANULAR VOLTAGE STEPS AND REDUCED NUMBER OF SWITCHES ................................................................................................................................. 2294
Ziaeezadeh, Saleh ; Mehrizi-Sani, Ali

A STUDY ON PARAMETERS IDENTIFICATION OF ELECTRICAL EMULATOR OF THE FUEL CELL .......................................................................................................................... 2300
Le, Tuan Anh ; Aihoshi, Ryo ; Yamamura, Naoki ; Ishida, Muneaki
EXPERIMENTAL EVALUATIONS OF MOTION STABILIZATION USING IMAGE FEATURE TRACKING FOR BIPED WALKING ROBOT........................................................................................................... 2306
Oda, Naoki ; Yamazaki, Mina

DIRECT POWER CONTROL FOR THREE PHASE GRID CONNECTED INVERTER VIA PORT-CONTROLLED HAMILTONIAN METHOD ............................................................................................................. 2312
Lee, Gil Ha ; Gai, Yonghao ; Kim, Chungyun ; Chung, Chung Choo

A NEW ARM VOLTAGE BALANCING TECHNIQUE FOR THE CONTROL OF MODULAR MULTILEVEL CONVERTERS............................................................................................................................... ..... 2318
Stringfellow, J. D. ; Summers, T. J. ; Betz, R. E.

DESIGN AND IMPLEMENTATION OF FAST PWM BOOST CONVERTER BASED ON LOW COST MICROCONTROLLER FOR PHOTOVOLTAIC SYSTEMS............................................................................................................................... 2324
Radianto, Donny ; Dousoky, Gamal M. ; Shoyama, Masahito

CONDUCTED EMC MODELING FOR ACCREDITATION IN DC-DC CONVERTERS ............................................................................................................................... ....................................... 2329
Grobler, I ; Gitau, M.N

BILATERAL CONTROL USING FUNCTIONAL ELECTRICAL STIMULATION............................................................................................................................... ........................................... 2336
Kitamura, Tomoya ; Sakaino, Sho ; Tsuji, Toshiaki

DIGITAL CONTROL OF A BRIDGELESS SEPIC PFC AC-DC CONVERTER WITH VARIABLE VOLTAGE OUTPUT............................................................................................................................... 2342
Ho, Kuan-Sheng ; Wu, Kao-Chih ; Tsou, Ying-Yu

A MODELING METHOD FOR DYNAMIC V-I CHARACTERISTICS OF SOLID BATTERIES ............................................................................................................................... 2348
He, Zhichao ; Yang, Geng ; Lu, Languang ; Geng, Hu

AN APPROACH TO 3D NYE SENSOR BASED MOTION ANALYSIS IN TENNIS FOREHAND STROKE............................................................................................................................... 2354
Ishikawa, Takahiro ; Murakami, Toshiyuki

A NOVEL STATIC FAULT DIAGNOSIS APPROACH FOR THREE-PHASE FULL-BRIDGE INVERTER............................................................................................................................... 2360
Zhang, Qingchao ; Ma, Ruiqing ; Huangfu, Yigeng ; Zhao, Ben

SELECTIVE SENDING BLOCK DETERMINATION METHOD BASED ON QUAD-TREE STRUCTURE FOR LIVE VIDEO STREAMING SYSTEMS............................................................................................................................... 2367
Zhang, Ning ; Yakoh, Takahiro

A SIMPLE VOLTAGE BALANCING METHOD FOR MODULAR MULTILEVEL CONVERTER............................................................................................................................... 2372
Dong, Peng ; Zhang, Jianwen ; Lv, Jing ; Cai, Xi

POSITION SENSORLESS CONTROL WITH ACCELEROMETER FOR LINEAR AND CURVILINEAR SYNCHRONOUS MOTOR............................................................................................................................... 2378
Takase, Yoshiyasu ; Nakamura, Hiroshi ; Koga, Minoru ; Shikayama, Toru ; Toyota, Akihito

RESEARCH ON MULTI-OBJECTIVE CONTROL STRATEGY OF SPLIT-CAPACITOR-TYPE THREE-PHASE FOUR-WIRE DISTRIBUTION STATIC GENERATOR............................................................................................................................... 2384
Gang, Yao ; Xiaojian, Zhou ; Dongdong, Li ; Gang, Yao ; Lidan, Zhou ; Huayun, Yu

EXPERIMENTAL INVESTIGATION OF NETWORK FREQUENCY CONTROLLED BY WIND POWER PLANTS WITH DOUBLY FED INDUCTION GENERATORS............................................................................................................................... 2390
Suryana, Rahmat ; Hofmann, Wilfried

AN SIC INVERTER FOR HIGH SPEED PERMANENT MAGNET SYNCHRONOUS MACHINES............................................................................................................................... 2397
Novak, Martin ; Novak, Jaroslav ; Sivkov, Oleg

A DESIGN METHOD OF PHASE CONTROL SYSTEM FOR SISO SYSTEM USING HILBERT TRANSFORMER........................................................................................................................................... 2403
Fujii, Naotaka ; Katsura, Seiichiro

AUTOMATIC GENERATION OF SUMMARIZED DRIVING VIDEO WITH MUSIC AND CAPTIONS............................................................................................................................... 2409
Takenaka, Kazuhito ; Bando, Takashi ; Taniguchi, Tadahiro

OPTIMIZATION OF INDUCTOR FOR PRE- AND POST-HEATING METAL PARTS DURING THEIR EDGE LASER WELDING........................................................................................................................................... 2415
Panek, David ; Kotlan, Vaclav ; Hamar, Roman ; Dolezel, Ivo

GENERALIZED IGBT OPEN-CIRCUIT FAULT DIAGNOSIS ALGORITHM WITH NO ADDITIONAL SENSORS FOR GRID-CONNECTED N-LEVEL NPC CONVERTERS........................................................................................................................................... 2421
Caseiro, L. M. A. ; Mendes, A. M. S.

A STUDY ON DAMPING CONTROL METHOD FOR THREE-PHASE-TO-SINGLE-PHASE MATRIX CONVERTER SYSTEM WITH NEUTRAL LINE........................................................................................................................................... 2427
Wang, Qian ; Yamada, Ryosuke ; Yamamura, Naoki ; Ishida, Muneki

MODELLING OF LITHIUM-ION BATTERY AND SOC ESTIMATION USING SIMPLE AND EXTENDED DISCRETE KALMAN FILTERS FOR AIRCRAFT ENERGY MANAGEMENT........................................................................................................................................... 2433
Bester, Jean Ernst ; Hajjaji, Ahmed El ; Mabwe, Augustin Mpanda
ROS+UNITY: AN EFFICIENT HIGH-FIDELITY 3D MULTI-UAV NAVIGATION AND CONTROL SIMULATOR IN GPS-DENIED ENVIRONMENTS ................................................................. 2562

Meng, Wei ; Hu, Yuchao ; Lin, Jiaxin ; Lin, Peng ; Teo, Rodney

CLOSED-LOOP CONTROL EXPERIMENTS FOR A BLIMP ROBOT CONSISTING OF FOUR-DIVIDED ENVELOPES ................................................................. 2568

Watanabe, Keigo ; Okamura, Naoto ; Nogai, Isakau

METHOD TO EVALUATE SIMILARITY OF MUSIC BY MUSIC FEATURES ................................................................. 2574

Tamura, Shu ; Ito, Shin-Ichi ; Ito, Momo ; Fukami, Minoru

BENDING OF MULTI-GRAHENE BY NANOMANIPULATION ASSISTED WITH ELECTRON BEAM IRRADIATION FOR BOX STRUCTURE ................................................................. 2578

Fujiwara, Taka ; Nakajima, Masahiro ; Ichikawa, Akihiko ; Ohara, Kenichi ; Hasegawa, Yasuhisa ; Fukuda, Toshio

RECORDER-PLAYING ROBOT THAT USES VERSATILE VIBRATO TO MIMIC A HUMAN PLAYER ................................................................. 2584

Sakurai, Kazuki ; Cheng, Mingzhao ; Kato, Tomonori

HARDWARE-SECURITY TECHNOLOGIES FOR INDUSTRIAL IOT: TRUSTZONE AND SECURITY CONTROLLER ................................................................. 2589

Lesjak, Christian ; Hein, Daniel ; Winter, Johannes

IMPROVEMENT OF ACTIVITY RECOGNITION FOR CHILD GROWTH MONITORING SYSTEM AT KINDERGARTEN ................................................................. 2596

Kurashima, Shueki ; Suzuki, Satoshi

ROBUST DISTURBANCE COMPENSATION FOR A DUOCOPTER BY GAIN-SCHEDULED NONLINEAR CONTROL AND OBSERVER DESIGN ................................................................. 2608

Aschemann, Harald ; Prahel, Robert

FORMATION CONTROL OF DIFFERENTIAL-DRIVE MOBILE ROBOTS IN THE FRAMEWORK OF FUNCTIONALLY RELATED SYSTEMS ................................................................. 2620

Uzunovic, Tarik ; Sabanovic, Asif

DESIGN OF SEMI-SPARSE MULTI-BAND DIGITAL FILTERS USING BRANCH AND BOUND METHOD ................................................................. 2626

Nakamoto, M. ; Hirukawa, T. ; Yamamoto, T.

NEW HIGH VOLTAGE 2-POLE CONCENTRATED WINDING AND CORRESPONDING ROTOR DESIGN FOR INDUCTION MACHINES ................................................................. 2632

Moros, Oleg ; Dajaku, Gavrila ; Klausmann, Christian ; Gerling, Dieter

ROBUST LOCALIZATION FOR MOBILE ROBOT BY K-L DIVERGENCE-BASED SENSOR DATA FUSION ................................................................. 2638

Doki, Kae ; Suyama, Keita ; Funabora, Yuki ; Doki, Shinji

BINAURAL ASYNCHRONOUS COMPONENT CANCELLATION — AN EXTENSION OF THE SPATIAL WIENER FILTER ................................................................. 2644

Tomita, Yolhei

MODEL-ERROR FEEDBACK DESIGN FOR SYSTEMS WITH TIME-VARYING DELAY BASED ON MIXED H2/H∞ CONTROL ................................................................. 2649

Uchimura, Yutaka ; Suhara, Tooru

MULTI-OBJECTIVE EVOLUTIONARY ALGORITHM FOR NEURAL OSCILLATOR BASED ROBOT LOCOMOTION ................................................................. 2655

Saputra, Azhar Aulia ; Takeda, Takahiro ; Botzheim, Janos ; Kubota, Naoyuki

POWER CONTROL OF LOW FREQUENCY AC TRANSMISSION SYSTEM USING CYCLOCONVERTERS WITH VIRTUAL SYNCHRONOUS GENERATOR CONTROL ................................................................. 2661

Achara, Pichetjamroen ; Ise, Toshifumi

A SERVICE-ORIENTED ARCHITECTURE FOR WIRELESS VIDEO SENSOR NETWORKS: OPPORTUNITIES AND CHALLENGES ................................................................. 2667

Cheng, Bo ; Hancke, Gerhard P.

DISTURBANCE OBSERVER BASED SMALL FORCE DETECTION FOR AN ULTRASONIC MOTOR WITH APPLICATION TO A SURGICAL DEVICE ................................................................. 2673

Liang, Wenyu ; Huang, Sunan ; Chen, Sili ; Tan, Kok Kiong

ON-LINE ADAPTIVE CONTROL FOR MINIMIZING SLIPPAGE ERROR WHILE MOBILE PLATFORM AND MANIPULATOR OPERATE SIMULTANEOUSLY FOR ROBOTICS MOBILE MANIPULATION ................................................................. 2679

Luo, Ren C. ; Tsai, Yueh-Shian

A PUSH-RECOVERY METHOD FOR WALKING BIPED ROBOT BASED ON 3-D FLYWHEEL MODEL ................................................................. 2685

Luo, Ren C. ; Huang, Chao-Wen
Chen, Yuyin ; Vasic, Dejan

Racchetti, Lorenzo ; Fantuzzi, Cesare ; Tacconi, Lorenzo

Salahat, Ehab ; Saleh, Hani ; Sluzek, Andrzej ; Al-Qutayri, Mahmoud ; Mohammad, Baker ; Ismail, Mohammad

Karthikeyan, V. ; Gupta, Rajesh

Fukagawa, S. ; Fujimoto, H. ; Terada, Y. ; Ishii, S.

Chen, Yuyin ; Vasic, Dejan
ADVANCED DESIGN TOOLS FOR THE RELIABILITY OF POWER ELECTRONICS — CASE STUDIES ON A PHOTOVOLTAIC (PV) SYSTEM .............................................................. 2828
Yang, Yongheng ; Salarea, Vassile-Simion ; Ma, Ke ; Blaabjerg, Frede

IMPACT OF THE NUMBER OF ANGLES AND LEVELS ON HARMONIC MITIGATION IN MULTILEVEL CONVERTERS ............................................................... 2834
Buccella, Concettina ; De Santis, Carlo Cecati Elena ; Khaliil, Hassan A.

DOUBLE HANDS MANIPULATION WITH FORCE SENSATION REALIZED BY MULTI DOF FORCEPS ROBOTS ................................................................. 2840
Zhang, Mengni ; Qin, Hailong ; Lun, Menglu ; Lin, Jiuxin ; Wang, Shuai ; Liu, Kaijun ; Lin, Feng ; Chen, Ben M.

A HIGH FIDELITY SIMULATOR FOR A QUADROTOR UAV USING ROS AND GAZEBO ............................................................. 2846
Zhong, Meng ; Qin, Hailong ; Lun, Menglu ; Lin, Jiuxin ; Wang, Shuai ; Liu, Kaijun ; Lin, Feng ; Chen, Ben M.

MODEL OF LASER HEATING WITH INDUCTION PRE- AND POST-HEATING AND ITS EXPERIMENTAL VERIFICATION .............................................. 2852
Kotlan, Václav ; Panek, David ; Hamar, Roman ; Doležel, Ivo

BUILDING DETECTION BASED ON FACET FOR URBAN RECONSTRUCTION ......................................................................................... 2864
Dongwook Seo ; Hernandez, D. C. ; Filonenko, A. ; Kang-Hyun Jo

EVALUATION OF ISOLATION PROPERTY OF UWB 2DC TILE FOR COEXISTENCE WITH RADIO SIGNALS .......................................................... 2868
Okada, Akimasa ; Noda, Akihito ; Shinoda, Hiroyuki

MODIFICATION OF ELECTRIC DRIVE VEHICLES PERFORMANCES USING A DIRECT TORQUE CONTROL WITH OVER-MODULATION ABILITY ........................................ 2874
Ghaderi, Ahmad ; Solhani, Javad ; Ebbruihi, Mohammad ; Nassirvaei, Amir Ali Forough

A NEW DSTATCOM TOPOLOGY USING HYBRID RENEWABLE ENERGY BASED DC-LINK VSI FOR POWER QUALITY APPLICATIONS ...................................... 2880
Gawande, S. P. ; Debre, P. D. ; Ramiteke, M. R.

IMPROVED ACCURACY OF SENSORLESS POSITION ESTIMATION BY COMBINING RESISTANCE- AND INDUCTANCE-BASED SALIENCY TRACKING ............... 2886
Graus, Johannes ; Hahn, Ingo

CLOSED FORM MINIMUM INFINITY-NORM RESOLUTION FOR SINGLE-DEGREE KINEMATICALLY REDUNDANT MANIPULATORS.............................................. 2892
Quirin, Didier ; Salvucci, Valerio ; Kawanobe, Moto ; Baratcart, Travis ; Koseki, Takafumi

DISCRETE CONSENSUS-BASED DISTRIBUTED SECONDARY CONTROL SCHEME WITH CONSIDERING TIME-DELAYS FOR DC MICROGRID ........................................... 2898
Zhenyu Lv ; Zaijun Wu ; Xiaobo Dou ; Minqiang Hu

MODELING INTEGRATED MAGNETIC GEARS USING A MAGNETIC EQUIVALENT CIRCUIT ................................................................................... 2904
Thyroff, Dominik ; Meier, Stefan ; Hahn, Ingo

IC DESIGN OF PULSE-TYPE HARDWARE NEURON MODEL FOR PIEZOELECTRIC ELEMENT IMPACT-TYPE MEMS MICROROBOT ......................................................... 2909
Ishihara, Yuki ; Sugita, Kazuki ; Tatani, Masaki ; Oku, Hirozumi ; Takato, Minami ; Uchihiro, Fumi ; Suiito, Ken

END BARRIER SHAPE OPTIMIZATIONS AND SENSITIVITY ANALYSIS OF SYNCHRONOUS RELUCTANCE MACHINES ..................................................................... 2914
Di Nardo, M. ; Degano, M. ; Gulea, M. ; Gerada, C. ; Palmieri, M. ; Cupertino, F. ; Bianchi, Nicola ; Gerada, David

ANALYZING HUMAN’S CONTINUOUS LEARNING ABILITY WITH THE REFLECTION COST ........................................................ 2920
Yamaguchi, Tomohiro ; Tamai, Yuki ; Takadama, Keishi

A CONTROL METHOD FOR INDUCTOR CURRENT BALANCING IN CURRENT SOURCE MODULAR MULTILEVEL CONVERTER ........................................................................... 2926
Bhesaniya, Mukeshbhar M. ; Shukla, Anshuman ; Demetrakides, Georgios D.

COMBINATION SYSTEM OF VAR COMPENSATION AND PHOTOVOLTAIC POWER GENERATION BASED ON MODULAR MULTILEVEL CONVERTER ........................................... 2932
Tai, Bingyong ; Gao, Congze ; Liu, Xiangdong ; Lv, Jingliang

SMART WORKBENCH: A MULTIMODAL AND BIDIRECTIONAL ASSISTANCE SYSTEM FOR INDUSTRIAL APPLICATION ................................................................. 2938
Niedersteiner, Sascha ; Pohl, Clemens ; Schlegl, Thomas

INVESTIGATION ON THE DYNAMIC PERFORMANCE OF AN INDUCTION MACHINE USING A NOVEL CONCEPT OF A ROTATING CONVERTER WITH A FLOATING CAPACITOR ........................................................................... 2944
Yao, Taimei ; Cosic, Allja ; Sadarangani, Chandur

SELECTIVE OPERATION OF THREE-LEVEL NPC INVERTER BASED ON SYNCHRONOUS REFERENCE FRAME METHOD SUPPLYING NONLINEAR LOADS IN MICROGRID SYSTEM .................................................................................... 2950
Mortezaei, Ali ; Simoes, M. Godoy ; Durra, Ahmed AI ; Muyeen, S. M.
<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>INTRODUCING JITTER BUFFERS IN NETWORKED CONTROL SYSTEMS WITH</td>
<td>2956</td>
</tr>
<tr>
<td>COMMUNICATION DISTURBANCE OBSERVER UNDER TIME-VARYING</td>
<td></td>
</tr>
<tr>
<td>COMMUNICATION DELAYS</td>
<td></td>
</tr>
<tr>
<td>Imai, Ryusuke ; Kabo, Ryogo</td>
<td></td>
</tr>
<tr>
<td>NOVEL CONTROL ALGORITHM FOR A UNIFIED POWER QUALITY CONDITIONER</td>
<td>2962</td>
</tr>
<tr>
<td>CONNECTED TO A RADIAL GRID</td>
<td></td>
</tr>
<tr>
<td>Freitas, Cleiton M. ; Monteiro, Luis F. C. ; Watanabe, Edson H.</td>
<td></td>
</tr>
<tr>
<td>CLASS DE VOLTAGE-SOURCE PARALLEL RESONANT INVERTER</td>
<td></td>
</tr>
<tr>
<td>Kondo, Takeshi ; Koizumi, Hirotaka</td>
<td></td>
</tr>
<tr>
<td>A FAULT DETECTION STRATEGY BASED ON INTELLIGENT PARTICLE FILTER FOR</td>
<td>2974</td>
</tr>
<tr>
<td>NONLINEAR SYSTEMS</td>
<td></td>
</tr>
<tr>
<td>Yu, Han ; Yin, Shen</td>
<td></td>
</tr>
<tr>
<td>APPLICATION OF HYBRID ENERGY STORAGE SYSTEM IN A GRID INTERACTIVE</td>
<td>2980</td>
</tr>
<tr>
<td>MICROGRID ENVIRONMENT</td>
<td></td>
</tr>
<tr>
<td>Nikhil, K. ; Mishra, M. K.</td>
<td></td>
</tr>
<tr>
<td>MODIFIED EFFICIENCY OPTIMIZATION CONTROL FOR FRACTIONAL SLOT</td>
<td>2986</td>
</tr>
<tr>
<td>CONCENTRATED WOUND INTERIOR PERMANENT MAGNET SYNCHRONOUS</td>
<td></td>
</tr>
<tr>
<td>GENERATORS</td>
<td></td>
</tr>
<tr>
<td>Rathnayake, R. M. H. M. ; Dutta, R. ; Fletcher, J. E. ; Xiao, D.</td>
<td></td>
</tr>
<tr>
<td>HIGHLY DYNAMIC DC-VOLTAGE CONTROL BY MEANS OF A BIDIRECTIONAL THREE</td>
<td>2992</td>
</tr>
<tr>
<td>PHASE VOLTAGE SOURCE INVERTER</td>
<td></td>
</tr>
<tr>
<td>Dost, Philip ; Sourkounis, Constantinios</td>
<td></td>
</tr>
<tr>
<td>CLOSED-LOOP CONTROL STRATEGY FOR PM MACHINES WITH NON-SINUSOIDAL</td>
<td>2998</td>
</tr>
<tr>
<td>BACK-EMFS USING DUAL-INVERTER OPEN-END WINDING</td>
<td></td>
</tr>
<tr>
<td>Said, N. A. Mohd ; Xiao, D. ; Dutta, R. ; Fletcher, J. E.</td>
<td></td>
</tr>
<tr>
<td>CONTROL ALGORITHM FOR A PV POWERED BLDC DRIVE FOR AIR CONDITIONER</td>
<td>3004</td>
</tr>
<tr>
<td>APPLICATION</td>
<td></td>
</tr>
<tr>
<td>Kotra, Srikanth ; Mishra, Mahesh K. ; Korada, Nikhil</td>
<td></td>
</tr>
<tr>
<td>AN OPTIMAL HYBRID SUPERCAPACITOR AND BATTERY ENERGY STORAGE SYSTEM IN</td>
<td>3010</td>
</tr>
<tr>
<td>WIND POWER APPLICATION</td>
<td></td>
</tr>
<tr>
<td>Nguyen, Cong-Long ; Lee, Hong-Hee</td>
<td></td>
</tr>
<tr>
<td>STUDY ON KERNEL PARTIAL LEAST SQUARES BASED KEY INDICATOR PREDICTION</td>
<td>3016</td>
</tr>
<tr>
<td>Yin, Sheng ; Wang, Mingyu ; Luo, Hao ; Gao, Huifan</td>
<td></td>
</tr>
<tr>
<td>THE SVPWM MODULATOR WITH ACTIVE VOLTAGE BALANCING CONTROL FOR 4-</td>
<td>3022</td>
</tr>
<tr>
<td>LEVEL FLC CONVERTER</td>
<td></td>
</tr>
<tr>
<td>Janik, Dusan ; Kosan, Tomas ; Peroutka, Zdenek</td>
<td></td>
</tr>
<tr>
<td>THE ELECTRIC ARC AS A CIRCUIT COMPONENT</td>
<td>3027</td>
</tr>
<tr>
<td>Andrea, Jonathan ; Besdel, Patrick ; Zinn, Olivier ; Bouretat, Marcel</td>
<td></td>
</tr>
<tr>
<td>NONLINEAR CONTROLLER-OBSERVER DESIGN FOR AN INVERTED PENDULUM ON A</td>
<td>3035</td>
</tr>
<tr>
<td>CART BASED ON FULL FUZZY MODELING</td>
<td></td>
</tr>
<tr>
<td>Smadi, Issam A. ; Albatran, Sahar</td>
<td></td>
</tr>
<tr>
<td>H∞ CONTROL OF STOCHASTIC SWITCHED NONLINEAR SYSTEMS WITH AVERAGE</td>
<td>3040</td>
</tr>
<tr>
<td>DWELL TIME</td>
<td></td>
</tr>
<tr>
<td>Liu, Yandi ; Yang, Xuebo ; Niu, Ben ; Tang, Yang ; Kaynak, Okayay</td>
<td></td>
</tr>
<tr>
<td>ROBOTIC DIAGNOSIS OF DIRECTIONAL FORCE CONTROL PERFORMANCE AT AN END-</td>
<td>3046</td>
</tr>
<tr>
<td>EFFECTOR OF A LIMB TOWARD PHYSIOTHERAPEUTIC SUPPORT</td>
<td></td>
</tr>
<tr>
<td>Tojo, Naoya ; Toyomasu, Ippei ; Shimono, Tomoyuki ; Ishii, Shinichiro</td>
<td></td>
</tr>
<tr>
<td>ACHIEVING HIGH EFFICIENCY USING SIC MOSFETS AND REDUCED OUTPUT FILTER</td>
<td>3052</td>
</tr>
<tr>
<td>FOR GRID-CONNECTED V2G INVERTER</td>
<td></td>
</tr>
<tr>
<td>Choi, Wooyoung ; Han, Di ; Morris, Casey T. ; Sarlioglu, Bulent</td>
<td></td>
</tr>
<tr>
<td>IMPROVEMENTS ON THE BOOSTER MAGNET POWER CONVERTERS AT ELETTA</td>
<td>3058</td>
</tr>
<tr>
<td>Cautero, Marco ; Ciesla, Tomasz ; Visintini, Roberto</td>
<td></td>
</tr>
<tr>
<td>A SIMPLE CORE LOSS MODELING FOR THREE-PHASE PWM VOLTAGE SOURCE</td>
<td>3063</td>
</tr>
<tr>
<td>CONVERTERS</td>
<td></td>
</tr>
<tr>
<td>Javidi, N. Farideh ; Kouchaki, Alireza ; Nymand, Morten</td>
<td></td>
</tr>
<tr>
<td>LARGE-SIGNAL MODEL AND NONLINEAR CONTROL OF PWM CONVERTERS IN DISCONTINUOUS CONDUCTION MODE</td>
<td>3069</td>
</tr>
<tr>
<td>Panday, Sunjeev Kumar ; Kumar, Amit ; Patil, S. L.</td>
<td></td>
</tr>
<tr>
<td>IDENTIFYING THE DOMINANT SPECIES OF TROPICAL WOOD SPECIES USING</td>
<td>3075</td>
</tr>
<tr>
<td>HISTOGRAM INTERSECTION METHOD</td>
<td></td>
</tr>
<tr>
<td>Ahmad, Azlin ; Yusof, Rabiyah ; Mitsukura, Yasue</td>
<td></td>
</tr>
<tr>
<td>Manuscript Title</td>
<td>Page</td>
</tr>
<tr>
<td>--------------------------------------------------------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>CONTROL STRATEGY OF SOLID STATE POWER ELECTRONIC TRANSFORMER UNDER VOLTAGE DISTURBANCE CONDITIONS</td>
<td>3081</td>
</tr>
<tr>
<td>Jianhua Wang; Binshi Gu; Qing Duan; Chunyan Ma; Baojian Ji; Jun You</td>
<td></td>
</tr>
<tr>
<td>SIMULATION OF A TORQUE BASED HYSTERESIS CONTROL IN STATIC AND LOW DYNAMIC CONDITIONS</td>
<td>3086</td>
</tr>
<tr>
<td>Schueer, Marcel; Dost, Philip; Sourkounis, Constantinos</td>
<td></td>
</tr>
<tr>
<td>A MAGNETIC COUPLED RESONANCE WPT SYSTEM DESIGN METHOD OF DOUBLE-END IMPEDANCE CONVERTER NETWORKS WITH CLASS-E AMPLIFIER</td>
<td>3093</td>
</tr>
<tr>
<td>Wang, Zhenya; Wang, Yuemei; Zhang, Bo</td>
<td></td>
</tr>
<tr>
<td>SIMULATION OF A TORQUE BASED HYSTERESIS CONTROL IN HIGH DYNAMIC CONDITIONS</td>
<td>3104</td>
</tr>
<tr>
<td>Schueer, Marcel; Dost, Philip; Sourkounis, Constantinos</td>
<td></td>
</tr>
<tr>
<td>STABILITY AND ROBUSTNESS ANALYSIS OF A DC/DC POWER CONVERSION SYSTEM UNDER OPERATING CONDITIONS UNCERTAINTIES</td>
<td>3110</td>
</tr>
<tr>
<td>Sumsurooah, Sharmila; Bakhsh, Serhiy; Odavic, Milijana; Boroyevich, Dushan</td>
<td></td>
</tr>
<tr>
<td>ENHANCED BUILDING THERMAL MODEL BY USING CO2 BASED OCCUPANCY DATA</td>
<td>3116</td>
</tr>
<tr>
<td>Imanishi, Tomoya; Tennekoon, Rajitha; Palensky, Peter; Nishi, Hiroaki</td>
<td></td>
</tr>
<tr>
<td>NOVEL FAST AND SCALABLE PARALLEL UNION-FIND ASIC IMPLEMENTATION FOR REAL-TIME DIGITAL IMAGE SEGMENTATION</td>
<td>3122</td>
</tr>
<tr>
<td>Salahat, Ehab; Saleh, Hanzi; Sliezak, Andrezej; Al-Qutayyri, Mahmoud; Mohammad, Baker, Ihsan, Mohammad</td>
<td></td>
</tr>
<tr>
<td>ANALYSIS AND DESIGN OF A WIDE INPUT RANGE DC-DC CONVERTER FOR HIGH-SPEED GENERATOR ENERGY STORAGE SYSTEMS</td>
<td>3126</td>
</tr>
<tr>
<td>Liuchen Tai; Mingyao Lin; Jianhua Wang; Kai Liu; Tiefeng Gao</td>
<td></td>
</tr>
<tr>
<td>FACE DETECTION AND RECOGNITION APPLICATION FOR ANDROID</td>
<td>3132</td>
</tr>
<tr>
<td>Chillaron, Monica; Dunai, Larisa; Fajarnes, Guillermo Peris; Lengua, Ismael Lengua</td>
<td></td>
</tr>
<tr>
<td>DISTURBANCE REJECTION CONTROL METHOD BASED ON COMPOSITE DISTURBANCE OBSERVER FOR PERMANENT MAGNET SYNCHRONOUS MOTOR</td>
<td>3137</td>
</tr>
<tr>
<td>Yan, Yunda; Sun, Zhiyuan; Li, Shihua</td>
<td></td>
</tr>
<tr>
<td>NON-FRAGILE STATIC OUTPUT FEEDBACK CONTROL DESIGN WITH GUARANTEED COST OF UNCERTAIN SYSTEMS WITH APPLICATION TO HELICOPTER SYSTEM</td>
<td>3143</td>
</tr>
<tr>
<td>Yoneyama, Jun; Omura, Masaki; Hoshino, Kenta</td>
<td></td>
</tr>
<tr>
<td>MLR: A NEW CONCEPT TO LAUNCH A PARTIAL DEADLOCK AVOIDANCE POLICY FOR K-TH ORDER SYSTEM OF PETRI NETS</td>
<td>3148</td>
</tr>
<tr>
<td>Chao; Daniel Yuh; Yu, Tsung Hsien</td>
<td></td>
</tr>
<tr>
<td>CONTROL OF A SERVO PRESS USING DISTRIBUTED REFERENCE GOVERNORS</td>
<td>3153</td>
</tr>
<tr>
<td>Ohta, Yazo; Shibutani, Yoshiki; Masubuchi, Izumi</td>
<td></td>
</tr>
<tr>
<td>OVERVOLTAGE PROTECTION SCHEME FOR BACK TO BACK CONVERTER OF CONNECTED DFIG</td>
<td>3159</td>
</tr>
<tr>
<td>Debro, Prashant; Juneja, Rahul; Taitakane, D. R.; Ramteke, M. R.</td>
<td></td>
</tr>
<tr>
<td>A NEW FAULT-TOLERANT FLUX-REVERSAL DOUBLY-SALIENT MAGNETLESS MOTOR DRIVE WITH FOUR-PHASE TOPOLOGY</td>
<td>3163</td>
</tr>
<tr>
<td>Lee, Christopher H. T.; Chau, K. T.; Liu, Chumbua</td>
<td></td>
</tr>
<tr>
<td>MIXED STRATEGIST DYNAMICS APPLICATION TO ELECTRICAL VEHICLE DISTRIBUTED LOAD SCHEDULING</td>
<td>3169</td>
</tr>
<tr>
<td>Ovalle, Andres; Habli, Ahmad; Bacha, Seddik; Pirsan, Vanina</td>
<td></td>
</tr>
<tr>
<td>AUTONOMOUS LANE TRACKING REFLECTING SKILLED/UN-SKILLED DRIVING CHARACTERISTICS</td>
<td>3175</td>
</tr>
<tr>
<td>Koga, Ayame; Okuda, Hiroaki; Tazaki, Yuichi; Suzuki, Tatsuya; Levedahl, Blaine; Haraguchi, Kentaro; Kang, Zibo</td>
<td></td>
</tr>
<tr>
<td>REAL-TIME MULTIPLE IGBT OPEN-CIRCUIT FAULT DIAGNOSIS IN THREE-LEVEL NEUTRAL-POINT-CLAMPED CONVERTERS WITH NO ADDITIONAL SENSORS</td>
<td>3181</td>
</tr>
<tr>
<td>Caseiro, L. M. A. ; Mendes, A. M. S.</td>
<td></td>
</tr>
<tr>
<td>ENHANCED STATE-OF-CHARGE ESTIMATION FOR LITHIUM-ION IRON PHOSPHATE CELLS WITH FLAT OPEN-CIRCUIT VOLTAGE CURVES</td>
<td>3187</td>
</tr>
<tr>
<td>Nejad, S.; Gladwin, D. T.; Stone, D. A.</td>
<td></td>
</tr>
<tr>
<td>DC FAULT ISOLATION STUDY OF BIDIRECTIONAL DUAL ACTIVE BRIDGE DC/DC CONVERTER FOR DC TRANSMISSION GRID APPLICATION</td>
<td>3193</td>
</tr>
<tr>
<td>Harrye, Yassen A.; Ahmed, Khaled H.; Aboulshady, Ahmed A.</td>
<td></td>
</tr>
<tr>
<td>MODEL PREDICTIVE COOPERATIVE CRUISE CONTROL IN MIXED TRAFFIC</td>
<td>3199</td>
</tr>
<tr>
<td>Chin, Hyunmi; Okuda, Hiroaki; Tazaki, Yuichi; Suzuki, Tatsuya</td>
<td></td>
</tr>
</tbody>
</table>
OUTPUT IMPEDANCE MITIGATION AT FILTER RESONANCE FOR SINGLE AND THREE-PHASE UPS SYSTEMS WITH REDUCED SENSOR COUNT .......................................................... 3206
Tolani, S. ; Sensarma, P.

ENERGY MANAGEMENT SYSTEMS BASED ON REAL DATA AND DEVICES FOR APARTMENT BUILDINGS ...................................................................................................... 3212
Kawashima, Akihiko ; Sasaki, Ryosuke ; Yamaguchi, Takuma ; Inagaki, Shinichiro ; Ito, Akira ; Suzuki, Tatsuya

THE POSITION SENSORLESS CONTROL FOR THE WOUND-FIELD SYNCHRONOUS MOTOR WITH DOUBLE THREE-PHASE WOUND STATOR IN STOP/LOW-SPEED DRIVING .................................................. 3218
Li, Kang ; Doki, Shinji ; Fujitsu, Masami

APPLYING PREDICTIVE POWER CONTROL TO BESS FOR MITIGATION OF WIND POWER FLUCTUATIONS .......................................................................................... 3224
Nguyen, T.-T. ; Kim, H.-M. ; Duran, Mario J.

EVALUATION OF DIRECT POSITION ESTIMATION BASED ON α-β AXES INDUCTANCE INFORMATION FOR IPMSM SENSORLESS CONTROL SYSTEMS .......................................................... 3230
Suzuki, Toshihi ; Doki, Shinji ; Hasegawa, Masaru

IMPACT OF PHOTOVOLTAIC GRID-CONNECTED POWER FLUCTUATION ON SYSTEM FREQUENCY DEVIATION IN CONTIGUOUS POWER SYSTEMS .................................................. 3236
Limshakul, Channan ; Songgrakorp, Roongrojana ; Sangswang, Anawach ; Parinya, Panom

BOOST-BASED AMPLIFIER FOR POWER-HARDWARE-IN-THE-LOOP SIMULATIONS OF UTILITY-TIED DG ................................................................................................. 3242
Jha, Kapil ; Mishra, Santanu ; Joshi, Avinash

A STUDY ON DEFINITION OF THE IMITATION MOTION — FROM THE VIEWPOINT OF IMITATED PERSON ........................................................................................................ 3248
Yokota, Sho ; Hashimoto, Hiroshi ; Chugo, Daisuke ; Kawabata, Kunitaki

DESIGN OPTIMIZATION OF SINGLE-PHASE PFC RECTIFIER USING PARETO-FRONT ANALYSIS AND INCLUDING ELECTRO- THERMAL MODELLING .................................................................................. 3253
Ibrahim, Mahmoud ; Lefranc, Pierre ; Frey, David ; Gonnet, Luc ; Ferrieux, Jean-Paul ; Am, Sokchea

MINIMIZING BATTERY WEAR IN A HYBRID ENERGY STORAGE SYSTEM USING A LINEAR QUADRATIC REGULATOR .................................................................................. 3265

SPEED DROOP CONTROL OF INTEGRATED MODULAR MOTOR DRIVES .............................................................................................................................. 3271
Galaissi, Alessandro ; Costabeber, Alessandro ; Gerada, Chris

EIGENVALUE-BASED HARMONIC STABILITY ANALYSIS METHOD IN INVERTER-FED POWER SYSTEMS .............................................................................................. 3277
Wang, Yanbo ; Wang, Xiongfeng ; Blaabjerg, Frede ; Chen, Zhe

DESIGN OF A COMPUTATIONAL NONVOLATILE RAM FOR A GREEDY ENERGY-EFFICIENT VLSI PROCESSOR ...................................................................................... 3283
Mochizuki, Akira ; Yabe, Naoto ; Hanyu, Takahiro

SMART METERING SYSTEM FOR MICROGRIDS ........................................................................................................................... 3289
Palacios-Garcia, Emilito J. ; Guan, Tung ; Savagehghi, Mehrdi ; Vasquez, Juan C. ; Guerrero, Josep M. ; Moren-Manoz, Antonio ; Jepsen, Brian S.

ADAPTIVE DISTURBANCE ESTIMATION AND ROBUST CONTROL FOR BANK-TO-TURN MISSILES AUTOPILOT DESIGN .............................................................................. 3295
Man, Chaoyuan ; Yang, Jun ; Li, Shihua

EVALUATION OF ISOLATED CONVERTER TOPOLOGIES FOR LOW VOLTAGE DC DISTRIBUTION .................................................................................................................. 3301
Mattsson, Alexei ; Vaisanen, Vesa ; Nuutinen, Pasi ; Peltoniemi, Pasi ; Kaipia, Tero ; Silventoinen, Pertti ; Partanen, Jarmo

AN EFFICIENT METHOD OF OCCLUDED SOLDER BALL SEGMENTATION FOR AUTOMATED BGA VOID DEFECT INSPECTION USING X-RAY IMAGES .................................................................................. 3308
Nuanprasert, Somchai ; Baba, Sueki ; Suzuki, Takashi

ACTIVE TOWER DAMPING FOR AN INNOVATIVE WIND TURBINE WITH A HYDROSTATIC TRANSMISSION ............................................................................................ 3314
Aschemann, Harald ; Kersten, Julia

CHIP-SCALE THERMAL ENERGY HARVESTER USING Bi2Te3 .............................................................................................................................. 3326
Cornett, Jane ; Lane, Bill ; Dunham, Marc ; Asheghi, Mehdi ; Goodson, Kenneth ; Guo, Yuan ; Sun, Nian ; Chen, Boxing

A NOVEL DC VOLTAGE CONTROL FOR A CASCADE H-BRIDGE MULTILEVEL STATCOM .............................................................................................. 3330
Baba, N. N. V. Suresh ; Hasani, Khaitifa Al

FPGA-BASED REAL-TIME SIMULATION OF A PSIM MODEL: AN INDIRECT MATRIX CONVERTER CASE STUDY .......................................................................................... 3336
Ould-Bachir, Tarek ; Merdassi, Asma ; Cense, Sebastien ; Blanchette, Handy F. ; Belanger, Jean
FREQUENCY-BASED ENERGY MANAGEMENT OF STAND-ALONE SYSTEMS: DESIGN OF THE CONTROL PARAMETERS FOR HIGH VERSATILITY .......................................................... 3341
Urtasun, Andoni ; Barrios, Ernesto L. ; Sanchis, Pablo ; Marroyo, Luis

A CLOSE FACE-DISTANCE WARNING SYSTEM FOR STRAIGHTEND NECK PREVENTION ............. 3347
Takeshi Toda, Masato Nakai ; Liu, Xinxin

NONLINEAR LOAD SHARING IN LOW VOLTAGE MICROGRID USING NEGATIVE VIRTUAL HARMONIC IMPEDANCE .............................................................. 3353
Sreekumar, Preetha ; Khadkikar, Vinod

DIRECT AND AUTOMATIC MEASUREMENT OF THE OVERLAPPING TIME IN GCB APPLICATIONS ........................................................................................................... 3359
Maret, Y. ; Zlatanski, M. ; Marinkovic, S.

COORDINATED VOLTAGE CONTROL SCHEME FOR DISTRIBUTION GRID WITH ONLOAD TAP-CHANGER AND DISTRIBUTED ENERGY RESOURCES IN A MARKET CONTEXT ............. 3364
Han, Xue ; Bindner, Henrik W. ; Mehmedalic, Jasmin ; Tackie, David V.

FEASIBILITY ANALYSIS OF AUXILIARY WINDING FOR CONDITION MONITORING OF WOUND FIELD BRUSHLESS SYNCHRONOUS GENERATORS .................................................. 3370

SENSORLESS POSITION ESTIMATION FROM PWM-INDUCED TRANSIENT EXCITATION IN INDUCTION MACHINES ................................................................. 3376
Amhof, M. ; Samorin, M. A. ; Wolbank, Th. M.

DIESEL ENGINE NOX EMISSION MODELING WITH AIRPATH INPUT CHANNELS ........................................ 3382
Boz, Talha ; Unel, Mustafa ; Yilmaz, Volkan Aran. Metin ; Gurel, Cetin ; Bayburtlu, Caner ; Koprubasi, Kerem

STABILITY ANALYSIS VIA IQC FOR MULTILATERAL TELE-CONTROL AND APPLICATION TO MULTI-CLIENT/MULTI-COUPLED PHYSICAL MODEL SYSTEM ......................................................................... 3388
Miyoshi, Takanori ; Imamura, Takashi ; Terashima, Kazuhiro

DYNAMIC BALANCE OF HUMANOID ROBOT USING POSE CLASSIFICATION WITH INCREMENTAL PROPORTIONAL DERIVATIVE DEAD-ZONE CONTROL ................................................................. 3393
Hwang, Chih-Lyang ; Wu, Chia-Hsien ; Chen, Bo-Lin

HIGH RESOLUTION M-CELL SYMMETRIC CASCADED H-BRIDGE MULTILEVEL INVERTER WITH ONE TRANSISTOR CLAMPED H-BRIDGE PER PHASE ..................................................................................................................... 3399
Sarkar, Indrajit ; Fernandes, B. G.

WIRELESS POWER SYSTEM APPLING A MICROCONTROLLER DOMINATED MATRIX CONVERTER ...................................................................................................................... 3405
Zhao, Rui ; Gladwin, Daniel T. ; Stone, David A.

GMPPT OF SOLAR PV ARRAY UNDER PARTIAL SHADING CONDITION USING LABVIEW FPGA ................................................................................................................. 3411
Goud, P. Chinna D. ; Gupta, Rajesh ; Singh, Alok Kumar ; Samuel, Paulson

PERFORMANCE COMPARISON OF SENSOR FAULT-TOLERANT CONTROL STRATEGIES FOR PMSMBASED MARINE CURRENT ENERGY CONVERTERS ................................................................................ 3417
Pham, Hau-Tam ; Bouregad, Jean-Matthieu ; Benbouzid, Mohamed

ACTIVE POWER DECOUPLING TOPOLOGY WITH FAULT TOLERANT ABILITY FOR A SINGLE PHASE GRID CONNECTED INVERTER ................................................................. 3423
Kumar, V. V. S. Pradeep ; Fernandes, B. G.

POSITION CONTROL IN NORMAL DIRECTION FOR THE FAST SCREW-TIGHTENING ................................................................. 3429
Ogawa, Shohi ; Shimono, Tomoyuki ; Kawamura, Atsuo ; Nozaki, Takahiro

ASSESSMENT OF A PIEZOELECTRIC ENERGY HARVESTER FOR A SENSOR MODULE ................................................................. 3434
Kulkarni, V. ; Ben-Mrad, R. ; Prasad, S. E.

EVENT-DRIVEN OUTPUT FEEDBACK CONTROL FOR A CLASS OF NONLINEAR SYSTEMS SUBJECT TO DISTURBANCES ................................................................................................................. 3437
Sun, Jiankun ; Yang, Jun ; Li, Shihua ; Chen, Xisong

DEVELOPMENT OF DISTRIBUTED SIMULATION PLATFORM FOR POWER SYSTEMS AND WIND FARMS .......................................................................................................................... 3443
Hu, Rui ; Hu, Weihao ; Chen, Zhe

OPTIMIZATION-BASED ENERGY MANAGEMENT STRATEGIES FOR ELECTRIC VEHICLES ................................................................................................................................. 3449
Aiteur, Imad Eddine ; Vlad, Cristina ; Godoy, Emmanuel

MODELLING AND POWER QUALITY EVALUATION OF POWER TRANSFORMERS ................................................................. 3455
Schael, M. ; Cuvellette, P. ; Sourkounis, C.

VISUAL SERVO SYSTEM FOR BALL DRIBBLING BY USING BIPEDAL ROBOT "NAO" ................................................................................................................................. 3461
Tamura, Kazuya ; Nozaki, Takahiro ; Kawamura, Atsuo
<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>IMPACTS OF INDUSTRIAL BASELINE ERRORS IN DEMAND SIDE MANAGEMENT</td>
<td>3467</td>
</tr>
<tr>
<td>ENABLED ENTERPRISE CONTROL</td>
<td></td>
</tr>
<tr>
<td>VISION BASED CONE ANGLE ESTIMATION OF BUBBLY CAVITATING FLOW AND</td>
<td>3473</td>
</tr>
<tr>
<td>ANALYSIS OF SCATTERED BUBBLES USING MICRO IMAGING TECHNIQUES</td>
<td></td>
</tr>
<tr>
<td>STATOR CURRENT ANALYSIS BY SUBSPACE METHODS FOR FAULT DETECTION IN</td>
<td>3479</td>
</tr>
<tr>
<td>INDUCTION MACHINES</td>
<td></td>
</tr>
<tr>
<td>SOFT-SWITCHING CAPABILITIES OF SAB VS. DAB CONVERTERS</td>
<td>3485</td>
</tr>
<tr>
<td>DESIGN AND IMPLEMENTATION OF AN INTEGRATED BOOST-FLYBACK CONVERTER</td>
<td>3491</td>
</tr>
<tr>
<td>MODULAR POWER CONDITIONER CONCEPT FOR IMPROVING QUALITY OF SUPPLY</td>
<td>3497</td>
</tr>
<tr>
<td>STATE ESTIMATION AND POSITION CONTROL OF A ROBOTIC MANIPULATOR WITH A</td>
<td>3503</td>
</tr>
<tr>
<td>BIARTICULAR ACTUATION MECHANISM</td>
<td></td>
</tr>
<tr>
<td>CONTROL STRATEGY OF FUEL CELL ELECTRIC VEHICLE INCLUDING DEGRADATION</td>
<td>3508</td>
</tr>
<tr>
<td>CHARGING POWER LIMITATION METHOD OF A WIRELESS POWER TRANSMISSION</td>
<td>3525</td>
</tr>
<tr>
<td>PROTECTION OF MV/LV SOLID-STATE TRANSFORMERS IN THE DISTRIBUTION GRID</td>
<td>3531</td>
</tr>
<tr>
<td>REVIEW OF POWER SYSTEM STABILITY WITH HIGH WIND POWER PENETRATION</td>
<td>3539</td>
</tr>
<tr>
<td>IMPEDANCE ANALYSIS OF CONTROL MODES IN CASCADED CONVERTER</td>
<td>3545</td>
</tr>
<tr>
<td>REPETITIVE CONTROLLER WITH LOW-PASS FILTER COMPENSATION APPLIED TO</td>
<td>3551</td>
</tr>
<tr>
<td>UNINTERRUPTIBLE POWER SUPPLIES (UPS)</td>
<td></td>
</tr>
<tr>
<td>OBTAINING USER’S PREFERENCE AND ABILITY FROM HUMAN-ROBOT CONVERSATION</td>
<td>3557</td>
</tr>
<tr>
<td>TOWARDS MUTUAL ASSISTANCE</td>
<td></td>
</tr>
<tr>
<td>EFFICIENCY AND ROBUSTNESS MANAGEMENT FOR IEEE 802.15.4 IN HEALTHCARE</td>
<td>3561</td>
</tr>
<tr>
<td>SENSOR NETWORK</td>
<td></td>
</tr>
<tr>
<td>THE ECONOMICS OF USING ELECTRIC VEHICLES FOR VEHICLE TO BUILDING</td>
<td>3567</td>
</tr>
<tr>
<td>APPLICATIONS CONSIDERING THE EFFECT OF BATTERY DEGRADATION</td>
<td></td>
</tr>
<tr>
<td>EXPERIMENTAL INVESTIGATION OF CONTRIBUTION OF BIARTICULAR ACTUATION</td>
<td>3573</td>
</tr>
<tr>
<td>TO MAPPINGS BETWEEN SENSORY AND MOTOR SPACES</td>
<td></td>
</tr>
<tr>
<td>BUCK DC-AC CONVERTER USING GALLIUM-NITRIDE FETS FOR AMPLITUDE-</td>
<td>3579</td>
</tr>
<tr>
<td>MODULATED CLASS-E RF POWER AMPLIFIERS</td>
<td></td>
</tr>
<tr>
<td>SINGLE-PHASE TO THREE-PHASE AC/DC/AC CONVERTER FOR AN INDUCTION MOTOR</td>
<td>3585</td>
</tr>
<tr>
<td>USING A SEPIC PFC CONVERTER IN DCM AS RECTIFYING STAGE</td>
<td></td>
</tr>
<tr>
<td>A SMALL SCALE PROTOTYPE OF A WAVE ENERGY CONVERSION SYSTEM FOR</td>
<td>3591</td>
</tr>
<tr>
<td>HYDROGEN PRODUCTION</td>
<td></td>
</tr>
</tbody>
</table>
SMALL-SIGNAL ANALYSIS OF PWM BOOST CONVERTER IN CCM WITH COMPLEX IMPEDANCE LOAD ......................................................................................................................... 3597
Saini, Dalvir K.; Ayachi, Agasthya; Kazimierzczuk, Marian K.; Suetugu, Tadashi

MULTI-OBJECTIVE DESIGN OF A MAGNETIC FLUID HYPERTERMIMA DEVICE .............................................................................................................................................. 3603
Bertani, R.; Forzan, M.; Sgarbossa, P.; Sieni, E.; Di Barba, P.; Spizzo, F.; Del Bianco, L.

DAILY OPERATION COST MINIMIZATION OF PHOTOVOLTAIC-DIESEL-BATTERY HYBRID SYSTEMS USING DIFFERENT CONTROL STRATEGIES .............................................................................................................................................. 3609

LIFETIME-ORIENTED SVPWM FOR THERMALLY-OVERLOADED POWER DEVICES IN THREE-LEVEL INVERTERS .............................................................................................................................................. 3614
Aly, Mohktiar; Dousoy, Gamil M.; Shyama, Mahasitho

DYNAMIC SPACE-VECTOR MODEL OF INDUCTION MACHINES WITH STATOR INTER- TURN SHORT-CIRCUIT FAULT .............................................................................................................................................. 3620
Berzoy, A.; Mohammed, A. A. S.; Mohammed, O. A.

EXPERIENCES WITH LONG DISTANCE ELECTROMOBILITY IN METROPOLITAN AREAS .............................................................................................................................................. 3626
Spichartz, P.; Dost, P.; Becker, N.; Sourkounis, C.

TOWARDS NON-MECHANICAL WIDE ANGLE FOVEA SENSOR — FUNDAMENTAL DESIGN BY LIQUID CRYSTAL LENS CELL .............................................................................................................................................. 3632
Shimizu, Sota.; Sato, Satoru

MITIGATION OF ELECTRIC DRIVETRAIN OSCILLATION RESULTING FROM ABRUPT CURRENT DERATING AT LOW COOLANT FLOW RATE .............................................................................................................................................. 3638
Achiri, Humphrey Mokom Njawah; Smidl, Vaclav; Peroutka, Zdenek

IMPACT OF NEW ICT TRENDS FOR THE EDUCATIONAL CURRICULUM IN THE AREA OF INDUSTRIAL AUTOMATION AND ENGINEERING .............................................................................................................................................. 3643
Wermann, Jeffrey; Kliesing, Nils; Colombo, Armando Walter; Moreas, Eduardo Cardoso

INVESTIGATION OF ELIMINATING FREE-WHEELING DIODE CONDUCTION OF Z-SOURCE INVERTER USING SIC-MOSFET .............................................................................................................................................. 3649
Iijima, Ryuji; Isobe, Takahiro; Tadano, Hiroshi

ANALYSIS OF GENERALIZED HYBRID PARAMETERS BASED ON MACRO-MICRO BILATERAL CONTROL FOR AVOIDING DESTRUCTION OF MICRO OBJECT .............................................................................................................................................. 3654
Takeyama, Masaki; Katsura, Seijihiro

EVALUATIONS AND MEASUREMENTS OF A HIGH FREQUENCY NANOCRYSTALLINE CORE TRANSFORMER FOR POWER CONVERTERS .............................................................................................................................................. 3660
Jiang, Xiaohua; Xu, Jin; Cui, Bin; Zeng, Yingyu; Li, Zhongyi

DESIGN OF A GRID ADAPTIVE CONTROLLER FOR PWM CONVERTERS WITH LCL FILTERS .............................................................................................................................................. 3664
Andresen, Markus; Liserre, Marco; Schuch, Friederich W.; Hoffmann, Nils

A NOVEL TWELVE LEVEL INVERTER TOPOLOGY FOR ADAPTIVE INPUT SOURCES .............................................................................................................................................. 3672
Allah, Mohamed Khair; Aljuhaishi, Fares; Aljuhaishi, Nasser; Allahdadi, Mahmod; Hess, Herbert

DEVELOPMENT OF A VISUAL COMPRESSIVE TRACKING SYSTEM ENHANCED BY ADAPTIVE BOOSTING .............................................................................................................................................. 3678
Chung, Jau-Zen; Hsu, Ming-Hsi; Wu, Chieh-Tsai; Lee, Shih-Tsong

BATTERY CHARACTERIZATION AND STATE-OF-CHARGE PREDICTION FOR DIFFERENT JOURNEY CONDITIONS WITH THE HELP OF THE "JOURNEY MAPPING" CONCEPT .............................................................................................................................................. 3683
Divakarla, Kavya Prabha; Nanakshah, Shamsudeen; Drennan, Martin; Ahmed, Ryan; Emadi, A.; Razavi, Saeid

INTEGRATION OF MODEL-PREDICTIVE CONTROL IN MEDIUM AND HIGH-VOLTAGE POWER ELECTRONICS PRODUCTS: AN INDUSTRIAL PERSPECTIVE ON GAPS AND PROGRESS REQUIRED .............................................................................................................................................. 3689
Papafotiou, Georgios; Demetriades, Georgios D.; Ageidis, Vassilios G.

MODELING, IDENTIFICATION AND CONTROL OF AN ANTAGONISTICALLY ACTUATED JOINT FOR TELEROBOTIC SYSTEMS .............................................................................................................................................. 3696
Bauer, G.; Grossmann, B.; Schlegl, T.; Kobayashi, H.

A SMALL-SCALE HYBRID ENERGY STORAGE SYSTEM FOR MODELING AND CONTROL VALIDATION PURPOSES .............................................................................................................................................. 3702
Del Toro Garcia, Xavier; De La Cruz, Carlos; Roncero-Sanchez, Pedro; Parreno, Alfonso

HYBRID STANDALONE POWER GENERATION SYSTEM USING HYDRO-PV-BATTERY FOR RESIDENTIAL GREEN BUILDINGS .............................................................................................................................................. 3708
Rezkallah, M.; Sharma, Shailendra; Chandra, A.; Singh, Bhim

NOVEL SPIKE-BASED ARCHITECTURE FOR RFID AND SENSOR COMMUNICATION SYSTEM .............................................................................................................................................. 3714
Machnook, Manjunath; Gaggatur, Javed S.; Sanjeev, K.
<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>SYNCHRONOUS RELUCTANCE MOTOR DESIGN BASED EV POWERTRAIN WITH</td>
<td>3851</td>
</tr>
<tr>
<td>INVERTER INTEGRATED WITH REDUNDANT TOPOLOGY</td>
<td></td>
</tr>
<tr>
<td>Herrera, D. B. ; Galvan, E. ; Carrasco, J. M.</td>
<td></td>
</tr>
<tr>
<td>HUMAN MANEUVER MODEL LEARNING WITH PREDICTION BASED FILTERING</td>
<td>3857</td>
</tr>
<tr>
<td>Igarashi, Hiroshi</td>
<td></td>
</tr>
<tr>
<td>SIX-LEVEL MODULAR MULTILEVEL CONVERTER PROTOTYPE WITH CENTRALIZED</td>
<td>3863</td>
</tr>
<tr>
<td>HARDWARE PLATFORM CONTROLLER</td>
<td></td>
</tr>
<tr>
<td>Moranchel, M. ; Sanchez, F. M. ; Bueno, E. J. ; Rodriguez, F. J.</td>
<td></td>
</tr>
<tr>
<td>A WIRELESS MAC METHOD WITH SUPPORT FOR HETEROGENEOUS DATA TRAFFIC</td>
<td>3869</td>
</tr>
<tr>
<td>Peon, Pablo Gutierrez ; Uhlemann, Elisabeth ; Steiner, Wilfried ; Bjorkman, Mats</td>
<td></td>
</tr>
<tr>
<td>COMPARATIVE OF MODULATION TECHNIQUES FOR MODULAR MULTILEVEL</td>
<td>3875</td>
</tr>
<tr>
<td>CONVERTER</td>
<td></td>
</tr>
<tr>
<td>Moranchel, M. ; Sanz, I. ; Bueno, E. J. ; Rodriguez, F. J.</td>
<td></td>
</tr>
<tr>
<td>FULLY FPGA BASED DIRECT MODEL PREDICTIVE POWER CONTROL FOR GRID-TIED</td>
<td>3881</td>
</tr>
<tr>
<td>AFES WITH IMPROVED PERFORMANCE</td>
<td></td>
</tr>
<tr>
<td>Zhang, Zhenbin ; Fang, Hui ; Kennel, Ralph</td>
<td></td>
</tr>
<tr>
<td>CONTROLLER DESIGN AND VERIFICATION FOR A ROTATIONAL PIEZO-BASED</td>
<td>3887</td>
</tr>
<tr>
<td>ACTUATOR FOR ACCURATE POSITIONING APPLICATIONS IN NOISY ENVIRONMENTS</td>
<td></td>
</tr>
<tr>
<td>Butcher, Mark ; Giustiniani, Alessandro ; Losito, Roberto ; Masi, Alessandro</td>
<td></td>
</tr>
<tr>
<td>BAYES ERROR BASED FEATURE SELECTION: AN ELECTRIC MOTORS FAULT</td>
<td>3893</td>
</tr>
<tr>
<td>DETECTION CASE STUDY</td>
<td></td>
</tr>
<tr>
<td>Ciabattoni, Lucia ; Cimini, Gionata ; Ferracuti, Francesco ; Grisostomi, Massimo ; Ippoliti, Gianluca ; Pirro, Matteo</td>
<td></td>
</tr>
<tr>
<td>INTEROPERABLE INTEGRATION OF BUILDING AUTOMATION SYSTEMS USING</td>
<td>3899</td>
</tr>
<tr>
<td>RESTFUL BACNET WEB SERVICES</td>
<td></td>
</tr>
<tr>
<td>Schachinger, Daniel ; Stampfel, Christoph ; Kastner, Wolfgang</td>
<td></td>
</tr>
<tr>
<td>OPERATION COST MINIMIZATION OF DROOP-CONTROLLED DC MICROGRIDS BASED</td>
<td>3905</td>
</tr>
<tr>
<td>ON REAL-TIME PRICING AND OPTIMAL POWER FLOW</td>
<td></td>
</tr>
<tr>
<td>Li, Chandan ; De Bosto, Federico ; Chaudhary, Sanjay K. ; Gruaels, M. ; Vasquez, Juan C. ; Guerrero, Josep M.</td>
<td></td>
</tr>
<tr>
<td>HYBRID MATRIX CONVERTER BASED ON INSTANTANEOUS REACTIVE POWER THEORY</td>
<td>3910</td>
</tr>
<tr>
<td>Janahi, Ameer ; Wang, Bingsen</td>
<td></td>
</tr>
<tr>
<td>ANALYTICAL SEMICONDUCTOR LOSS CALCULATION OF HYSTERESIS CURRENT</td>
<td>3916</td>
</tr>
<tr>
<td>CONTROLLED 2-LEVEL AND 3-LEVEL ANPC INVERTERS IN GRID IMPEDANCE</td>
<td></td>
</tr>
<tr>
<td>MEASUREMENT AND ACTIVE FILTER APPLICATIONS</td>
<td></td>
</tr>
<tr>
<td>Gunter, Sandra ; Fuchs, Friedrich W.</td>
<td></td>
</tr>
<tr>
<td>PERFORMANCE OF THE MODULAR MULTILEVEL CONVERTER WITH REDUNDANT</td>
<td>3922</td>
</tr>
<tr>
<td>SUBMODULES</td>
<td></td>
</tr>
<tr>
<td>Ahmed, Noman ; Anguquis, Lennart ; Antonopoulos, Antonios ; Harnefors, Lennart ; Norrga, Staffan ; Nee, Hans-Peter</td>
<td></td>
</tr>
<tr>
<td>OPTIMAL DC GAPPED INDUCTOR DESIGN INCLUDING HIGH-FREQUENCY EFFECTS</td>
<td>3928</td>
</tr>
<tr>
<td>Barrios, Ernesto L. ; Urrasuo, Andoni ; Ursua, Alfredo ; Marroyo, Luis ; Sanchis, Pablo</td>
<td></td>
</tr>
<tr>
<td>AUTOMOTIVE LEAD-ACID BATTERY STATE-OF-HEALTH MONITORING SYSTEM</td>
<td>3934</td>
</tr>
<tr>
<td>Kerley, Ross ; Hyun, Ji Hoon ; Ha, Dong Sam</td>
<td></td>
</tr>
<tr>
<td>EXPERIMENTAL VALIDATION OF A PROPOSED SINGLE-PHASE FIVE-LEVEL ACTIVE</td>
<td>3939</td>
</tr>
<tr>
<td>RECTIFIER OPERATING WITH MODEL PREDICTIVE CURRENT CONTROL</td>
<td></td>
</tr>
<tr>
<td>Monteiro, Vitor ; Melendez, Andres A. Nogueiras ; Ferreira, Joao C. ; Couto, Carlos ; Afonso, Joao L.</td>
<td></td>
</tr>
<tr>
<td>DYNAMIC BEHAVIOR OF DC MICROGRIDS UNDER LOAD TYPES AND CONTROLLED-</td>
<td>3945</td>
</tr>
<tr>
<td>DISTRIBUTED ENERGY RESOURCES</td>
<td></td>
</tr>
<tr>
<td>Dat, Mai Tuan ; Driesen, Johan</td>
<td></td>
</tr>
<tr>
<td>TEMPERATURE RISE ESTIMATION OF SUBSTATION CONNECTORS USING DATA-</td>
<td>3957</td>
</tr>
<tr>
<td>DRIVEN MODELS: CASE: THERMAL CONVECTION RESPONSE</td>
<td></td>
</tr>
<tr>
<td>Giacometto, Francisco ; Capelli, Francesca ; Sala, Enric ; Riba, Jordi ; Romeral, Luis</td>
<td></td>
</tr>
<tr>
<td>FUZZY ENERGY MANAGEMENT STRATEGY FOR TRAM WITH SUPERCAPACITORS</td>
<td>3963</td>
</tr>
<tr>
<td>Tall, J. ; Streit, L. ; Perouzlak, Z. ; Drabek, P. ; Blahnik, V.</td>
<td></td>
</tr>
<tr>
<td>TOWARDS FORMAL VERIFICATION OF SMART GRID DISTRIBUTED INTELLIGENCE:</td>
<td>3974</td>
</tr>
<tr>
<td>FREEDM CASE</td>
<td></td>
</tr>
<tr>
<td>Patil, Sandeep ; Zhabelova, Gulnara ; Fyatkin, Valeriy ; McMillin, Bruce</td>
<td></td>
</tr>
<tr>
<td>FAULT-TOLERANT CASCADED H-BRIDGE CONVERTER FOR AN INDUCTION MOTOR</td>
<td>3980</td>
</tr>
<tr>
<td>DRIVE</td>
<td></td>
</tr>
<tr>
<td>Sanz, I. ; Bueno, E. J. ; Moranchel, M. ; Rodriguez, F. J.</td>
<td></td>
</tr>
<tr>
<td>WIRELESS TEMPERATURE SENSOR FOR HARSH INDUSTRIAL ENVIRONMENTS</td>
<td>3986</td>
</tr>
<tr>
<td>Kerezov, Alexander ; Kalharini, Anupama ; Nihatianov, Stoyan</td>
<td></td>
</tr>
</tbody>
</table>
ANALYSIS AND DESIGN FOR SELF-OscILLATING LED DRIVER WITH HIGH FREQUENCY PULSATING OUTPUT CURRENT ................................................................. 3992  
Juarez, M. A. ; Martinez, P. R. ; Vazquez, G. ; Sosa, J. M. ; Ponce, M.

CIRCULATING CURRENT CONTROLLER FOR PARALLEL INTERLEAVED CONVERTERS USING PR CONTROLLERS .................................................................................................................. 3997  
Bede, Lorand ; Golbi, Ghanshyamsinh ; Ciobotaru, Mihai ; Kerekes, Tamas ; Teodorescu, Remus ; Agelidis, Vassilios G.

MODEL PREDICTIVE CONTROL OF CASCADED H-BRIDGE INVERTERS BASED ON A FAST-OPTIMIZATION ALGORITHM ................................................................. 4003  
Aguilera, Ricardo P. ; Baidya, Rok ; Acuna, Pablo ; Vazquez, Sergio ; Mouton, Toit ; Agelidis, Vassilios G.

A SURVEY OF ADAPTIVE SYSTEMS SUPPORTING GREEN ENERGY IN THE BUILT ENVIRONMENT ................................................................................................................ 4009  
Haase, Jan ; Zucker, Gerhard ; Aljuheshi, Fares ; Khair Allah, Mohammad ; Alamoudi, Mahmoud

THERMAL IMPEDANCE CONTROL FOR THERMAL RENDERING TECHNIQUE .................................................................................................................. 4015  
Osawa, Yukiko ; Katsura, Seiichiro

TEST BED TO TEACH POWER QUALITY APPLYING THE B-LEARNING METHODOLOGY .......................................................................................... 4027  
Diaz-Diaz, Irwin A.

AN OPTIMIZATION APPROACH FOR PLANNING ROBOTIC FIELD COVERAGE ............................................................................................................. 4032  
Yu, Xin ; Roppell, Thaddeus A. ; Hung, John Y.

STABILITY ANALYSIS OF HVDC-DIODE RECTIFIER CONNECTED OFF-SHORE WIND POWER PLANTS .................................................................................................................. 4040  
Bernal-Perez, S. ; Ano-Villalba, S. ; Blasco-Gimenez, R.

PARAMETRIC IDENTIFICATION OF MULTI-MASS MECHANICAL SYSTEMS IN ELECTRICAL DRIVES USING NONLINEAR LEAST SQUARES METHOD ................................................................................. 4046  
Luczak, Dominich ; Zawirski, Krzysztof

COVERAGE PATH PLANNING BASED ON A MULTIPLE SWEEP LINE DECOMPOSITION ............................................................................................................. 4052  
Xin Yu ; Hung, J. Y.

NONLINEAR MODELING AND DESIGN OF INITIAL POSITION ESTIMATION AND POLARITY DETECTION OF IPM DRIVES .................................................................................. 4059  
Sun, Yingguang ; Preindl, Matthias ; Sirouspour, Shahin ; Emadi, Ali

ASYMPTOTIC OBSERVER OF THE LINK STATES OF FLEXIBLE JOINT ROBOTS WITH MOTOR-SIDE SENSING ............................................................................................................. 4065  
Ruderman, Michael

GRID CONNECTED PV SYSTEM WITH MAXIMUM POWER POINT ESTIMATION BASED ON REFERENCE CELLS ............................................................................................................. 4070  
Bernal-Perez, S. ; Ano-Villalba, S. ; Blasco-Gimenez, R.

DEVELOPMENT OF REAL-TIME CONTROL EMULATOR IN FPGA USING HILES METHODOLOGY .................................................................................................................. 4076  
Mayorga, Jorge Luis ; Dominguez-Bonilla, Camilo ; Gutierrez, Alonso ; Jimenez, Fernando ; Chamarro, Harold

REAL-TIME FLOOD DETECTION FOR VIDEO SURVEILLANCE ........................................................................................................................... 4082  
Filomenko, Alexander ; Wahyono ; Hernandez, Danilo Caceres ; Seo, Dongwook ; Jo, Kang-Hyun

RECONFIGURABLE BATTERY ENERGY STORAGE SYSTEM FOR UTILITY-SCALE APPLICATIONS .................................................................................................................. 4086  
Wang, Guishu ; Pou, Josep ; Agelidis, Vassilios G.

HIGH EFFICIENCY MPPT BY MODEL PREDICTIVE CONTROL CONSIDERING LOAD DISTURBANCES FOR PHOTOVOLTAIC APPLICATIONS UNDER DYNAMIC WEATHER CONDITION .................................................................................................................. 4092  
Metry, Morcos ; Shadmand, Mohammad B. ; Balog, Robert S. ; Rub, Haitham Abu

VERIFICATION OF ROBUST POSITION CONTROL ON A CROSS-COUPLED 2-DOF DIRECT DRIVE ACTUATOR ............................................................................................................. 4098  
Tanaka, Shodai ; Shimono, Tomoyuki ; Fujimoto, Yasataka

MODELING AND ANALYSIS OF CORE LOSSES OF AN IPM MACHINE FOR ONLINE ESTIMATION PURPOSES ............................................................................................................. 4104  
Nalakath, Shamsuddeen ; Preindl, Matthias ; Yang, Yinye ; Bilgin, Berker ; Cheng, Bing ; Emadi, Ali

A WIRELESS SMART PARKING SYSTEM ........................................................................................................................... 4110  
Orrie, O. ; Silva, B. ; Hancke, G. P.

DESIGN AND ANALYSIS OF A LINEAR PERMANENT MAGNET MACHINE WITH THREE PHASE MULTI-LAYERED STRUCTURE ................................................................................. 4115  
Takano, Shunya ; Tanaka, Shodai ; Yamaguchi, Shuhei ; Shimono, Tomoyuki ; Mizoguchi, Takahiro

FINITE CONTROL SET MPC OF ACTIVE CURRENT-SOURCE RECTIFIER WITH FULL STATE SPACE MODEL .................................................................................................................. 4121  
Michalik, Jan ; Peroutka, Zdenek ; Smidl, Vaclav
MAXIMUM POWER POINT TRACKING FOR THERMOELECTRIC GENERATORS WITH HIGH FREQUENCY INJECTION
Rodriguez, Romina ; Preindl, Matthias ; Emadi, Ali ; Cotton, James .................................................. 4127

PERFORMANCE EVALUATION OF SIC BASED BIDIRECTIONAL DC-DC BUCK-BOOST CONVERTER OPERATING IN CCM USING TEMPERATURE-DEPENDENT L3 SPICE MODEL
Kondrat, Nisha ; Al-Chalah, Mace ......................................................................................................... 4133

TIME-DOMAIN ANALYSIS OF A WIDE-RANGE DUAL-ACTIVE-BRIDGE BIDIRECTIONAL SERIES RESONANT CONVERTER
Safarne, Alireza ; Jain, Praveen ; Bakshbhai, Alireza ........................................................................... 4139

A SELECTIVE POLARITY DC-DC CONVERTER WITH INFINITE OUTPUT VOLTAGE LEVELS
Liu, Kaiyang ; Edpuganti, Amarendra ; Dwivedi, Ankita ; Rathore, Akshay K. ; Srivastava, Rakesh K. .......... 4146

A NEW TEACHING TOOL TO ENHANCE POWER QUALITY ASSESSMENT
Martins, Joao F. ; Pereira, Pedro ; Pires, A. J. ; Pires, V. Fernao .............................................................. 4158

FOOT PRESSURE AND POSTURE INFORMATION-BASED VISUAL FEEDBACK SYSTEM FOR WELL-BALANCED GAIT IN OLDER PEOPLE
Nakashima, Yasutaka ; Matsumoto, Yuuya ; Kobayashi, Yo ; Takizawa, Kazuya ; Miura, Satoshi ; Fujie, Masakatsu G. ................................................................. 4163

ROUTE SPACE DETECTION OF INDUSTRIAL INDOOR VEHICLE WITH JOINT EXTENDED HISTOGRAMS OF ORIENTED GRADIENTS (EHOG)
Shimanuki, Yuuya ; Hidaka, Koichi ................................................................................................... 4169

ADAPTIVE TDMA-BASED MAC PROTOCOL IN ENERGY HARVESTING WIRELESS BODY AREA NETWORK FOR MOBILE HEALTH
Qi, Xin ; Wang, Kun ; Yue, Dong ; Shu, Lei ; Liu, Yan ; Zhao, Huidan ..................................................... 4175

TRANSNATIONAL LIFELONG EDUCATION COURSE IN ROBOTIC SYSTEMS
Leitao, Paulo ; Fraile, Juan Carlos ; Moreno, Vidal ; Harrison, Robert ; Altun, Halis ; Colombo, Armando W. ; Turiel, Javier P. ; Curto, Belen ................................................ 4181

GUARDED STATE MACHINES IN OPC UA
Friehwirth, Thomas ; Pauker, Florian ; Fernbach, Andreas ; Ayatollah, Iman ; Kastner, Wolfgang ; Kiihl, Burkhard .......................................................................................... 4187

FILTERING OF JITTER BASED ON INVERSE RELATED FILTERS AND ERROR CORRECTOR IN NETWORK CONTROL SYSTEMS
Murata, Hiroki ; Kawamura, Yasuho ; Katsura, Seiichiro .................................................................. 4199

DISCONTINUOUS SPACE VECTOR PULSE WIDTH MODULATION TECHNIQUES FOR A FIVE-PHASE QUASI-Z-SOURCE INVERTER

ALL-SIC POWER MODULE-APPLIED SINGLE-STAGE ZVS-PWM AC-AC CONVERTER FOR HIGH-FREQUENCY INDUCTION HEATING
Mishima, Tomokazu ; Morinaga, Souta ; Nakaoka, Mutsuo .............................................................. 4211

COMMAND SHAPING WITH TRANSITION OF STATE FOR SMOOTH FORCE CONTROL
Kono, Tomoki ; Katsura, Seiichiro .................................................................................................. 4217

REALIZATION OF STORAGE AND REPRODUCTION OF WATER POURING TASK BASED ON CONTROLLED VARIABLE OF TASK
Hiramatsu, Daisuke ; Shimono, Tomoyuki ; Kawamura, Atsuho ; Nozaki, Takahiro ; Asano, Yosuke ...... 4223

CHARACTERIZATION OF FPGA-MASTER ARM COMMUNICATION DELAYS IN CYCLONE V DEVICES
Molanes, Roberto Fernandez ; Salgado, Filipe ; Farina, Jose ; Rodriguez-Andina, Juan J. ................. 4229

A GENERALIZED METHOD FOR AUTOMATIC SEGMENTATION OF NEIGHBORING CELLS
Wang, Zhenzhou .......................................................................................................................... 4235

NONLINEAR SYNCHRONIZING CONTROL OF PARALLEL INVERTERS CONNECTED TO THE ELECTRICITY GRID
Rigatos, Gerasimos ; Siano, Pierluigi ; Zervos, Nikos ; Cecati, Carlo .................................................. 4241

FLATNESS-BASED ADAPTIVE FUZZY CONTROL FOR ACTIVE POWER FILTERS
Rigatos, Gerasimos ; Siano, Pierluigi ; Wira, Patrice ...................................................................... 4247

BIDIRECTIONAL NATURALLY CLAMPED SOFT-SWITCHING CURRENT-FED PUSH-PULL DC/DC CONVERTER
Xuewei, Pan ; Rathore, Akshay K. .................................................................................................. 4253

OPTIMAL PULSEWIDTH MODULATION OF CASCADE NINE-LEVEL (9L) INVERTER FOR MEDIUM VOLTAGE HIGH POWER INDUSTRIAL AC DRIVES
Edipoguanti, Amarendra ; Dwivedi, Ankita ; Rathore, Akshay K. ; Srivastava, Rakesh K. ................. 4259
THREE-DEGREE-OF-FREEDOM CONTROL AND ITS APPLICATION TO MOTION CONTROL SYSTEMS
Suzumura, Akihiro ; Fujimoto, Yasutaka ; ................................................................. 4265

VISUAL EXPLORATION PLATFORM DESIGN FOR FINE PROFILE SENSING IN PRECISION MOTION SYSTEMS
Tan, Kok Kioong ; Liang, Wenyu ; Lau, Jun Yik ; Chen, Silu ; Nguyen, Minh Hoang-Tuan ; ................................................................. 4271

APPLICATION OF DESIGN OF EXPERIMENTS TO FEATURE SELECTION IN VENTILATION TUBE APPLICATOR
Lau, Jun Yik ; Nguyen, Minh Hoang-Tuan ; Liang, Wenyu ; Tan, Kok Kioong ; ................................................................. 4277

A DESIGN METHOD OF INITIAL VALUE FOR ADAPTIVE FEED-FORWARD CONTROL USING SUPPORT VECTOR MACHINE
Yabu, Shota ; Atsumi, Takenori ; ................................................................. 4283

GEOMETRY-BASED MODELING OF WIDEBAND INDUSTRIAL INDOOR RADIO PROPAGATION CHANNELS
Ai, Yun ; Hogstad, Bjorn Olav ; Cheffena, Michael ; Patzold, Matthias ; ................................................................. 4299

A HIGH EFFICIENCY AND HIGH RELIABILITY SINGLE-PHASE MODIFIED QUASI Z-SOURCE INVERTER FOR NON-ISOLATED GRID-CONNECTED APPLICATIONS
Meraj, M. ; Iqbal, A. ; Braham, L. ; Alammari, R. ; Abu-Rub, H. ; ................................................................. 4305

MODEL PREDICTIVE CONTROL OF INTERLEAVED DC-DC STAGE FOR PHOTOVOLTAIC MICROCONVERTERS
Zapata, Jaime W. ; Kouro, Samir ; Aguirre, Matias ; Meynard, Thierry ; ................................................................. 4311

ECONOMIC BENEFITS OF PLUG-IN ELECTRIC VEHICLES USING V2G FOR GRID PERFORMANCE-BASED REGULATION SERVICE
Zeng, Wente ; Gibeau, John ; Chow, Mo-Yuen ; ................................................................. 4322

SINGLE-DC-SOURCE 7-LEVEL CHB INVERTER WITH MULTICARRIER LEVEL-SHIFTED PWM
Vahedi, H. ; Sharifzadeh, M. ; Al-Haddad, K. ; Wilamowski, B. M. ; ................................................................. 4328

PUC CONVERTER REVIEW: TOPOLOGY, CONTROL AND APPLICATIONS
Vahedi, Hani ; Kanaan, Hadi Y. ; Al-Haddad, Kamal ; ................................................................. 4344

DEVELOPMENT OF 1-INCH BOILER TUBE INSPECTION ROBOT
Shah, Muhammad Asyraf Azlin ; Sahari, Khairul Salleh Mohamed ; Jalal, Muhammad Fairuz Abdul ; Anuar, Adey ; ................................................................. 4340

A FUZZY LOGIC CONTROLLER TUNED WITH PSO FOR DELTA ROBOT TRAJECTORY CONTROL
Xingguo Lu ; Ming Liu ; ................................................................. 4345

MODELING OF CLAW POLE HELICAL MOTOR
Nguyen, Huy Nhien ; Fujimoto, Yasutaka ; ................................................................. 4358

STRATEGY AND VERIFICATION TO VISUALIZE EXPERIENTIAL VALUES IN SKILL EDUCATION SERVICE: CASE STUDY TO NURSING OPERATION ON BED
Suzuki, Satoshi ; Mitsukura, Yasue ; ................................................................. 4364

CURRENT CONTROL SYSTEM BASED ON REPETITIVE CONTROL AND DISTURBANCE OBSERVER FOR SINGLE-PHASE FIVE-LEVEL INVERTER
Haga, Hitoshi ; Sayama, Kenta ; Ohishi, Kiyoshi ; Shimizu, Takayuki ; ................................................................. 4370

FINE MOTOR CURRENT CONTROL BASED ON NEW CURRENT RECONSTRUCTION METHOD USING ONE DC-LINK CURRENT SENSOR
Matsura, Kei ; Ohishi, Kiyoshi ; Haga, Hitoshi ; Ando, Itaru ; ................................................................. 4376

THE CONTROL SCHEME OF UNDERACTUATED MASTER SYSTEM IN BILATERAL CONTROL FOR OPERATION OF FRAGILE ENVIRONMENT
Tomizuka, Daisuke ; Ohishi, Kouhei ; ................................................................. 4382

PHOTOVOLTAIC DC-DC CONVERTER FOR DIRECT POWER INTERFACE TO COPPER ELECTROREFINING PROCESS
Castillo, Paz ; Kouro, Samir ; Rojas, Christian A. ; Muller, Nicolas ; ................................................................. 4388

EVENT-TRIGGERED H$\text{\textsubscript{\infty}}$ CONTROLLER DESIGN FOR NETWORKED CONTROL SYSTEMS WITH NONLINEAR PERTURBATIONS
Zhang, Xian-Ming ; Han, Qiong-Long ; ................................................................. 4394

TROTTON CONTROL OF A QUADRUPED ROBOT USING PID-ILC
Sutayasadi, Petrus ; Parnichun, Manusuk ; ................................................................. 4400

DYNAMIC SIMULATION OF A WIND FARM INCORPORATED WITH HIGHLY-RESOLVED WIND PREDICTION DATA
Raak, Fredrik ; Suzuki, Yoshishiko ; Morita, Ryosuke ; Wada, Takayuki ; Tsukuki, Kazuo ; Uyeda, Hiroshi ; Fujisaki, Yasunasa ; Hikishara, Takashi ; ................................................................. 4406
<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>DESIGN OF BILATERAL CONTROL BASED ON COMPLEMENTARY SENSITIVITY</td>
<td>4412</td>
</tr>
<tr>
<td>FUNCTION USING VELOCITY INFORMATION</td>
<td></td>
</tr>
<tr>
<td>Tajiri, Masahiro ; Fujimoto, Yasutaka</td>
<td></td>
</tr>
<tr>
<td>MODIFIED MODULATION SCHEME OF THE BUCK-BOOST VOLTAGE SOURCE INVERTER</td>
<td>4418</td>
</tr>
<tr>
<td>FOR DIRIRECTIONAL POWER FLOW CAPABILITY</td>
<td></td>
</tr>
<tr>
<td>Abdelhakim, Ahmed ; Mattaveli, Paolo ; Spiazzi, Giorgio</td>
<td></td>
</tr>
<tr>
<td>DDPWM-BASED POWER CONVERSION SYSTEM USING THREE TO FOUR PHASE MATRIX</td>
<td>4424</td>
</tr>
<tr>
<td>CONVERTER FOR STAND-ALONE POWER SYSTEM</td>
<td></td>
</tr>
<tr>
<td>Hanamoto, Tsuyoshi ; Mizron, Norkisam Bin ; Toosi, Saman</td>
<td></td>
</tr>
<tr>
<td>ADVANCED TORQUE CONTROL OF PERMANENT MAGNET SYNCHRONOUS MOTOR</td>
<td>4430</td>
</tr>
<tr>
<td>USING FINITE ELEMENT ANALYSIS BASED MOTOR MODEL WITH A REAL-TIME</td>
<td></td>
</tr>
<tr>
<td>SIMULATOR</td>
<td></td>
</tr>
<tr>
<td>Tanabe, Ryo ; Akatsu, Kan</td>
<td></td>
</tr>
<tr>
<td>BASIC STUDY OF POWER REDUCTION FOR SHAPE MEMORY ALLOY ACTUATOR DRIVE</td>
<td>4436</td>
</tr>
<tr>
<td>Yamano, Akio ; Shintani, Atsuhiko ; Ito, Tomohiro ; Nakagawa, Chihiro</td>
<td></td>
</tr>
<tr>
<td>ADAPTIVE TRACKING CONTROL WITH PARTIAL REGRESSOR FOR MULTI-JOINT</td>
<td>4441</td>
</tr>
<tr>
<td>ROBOT</td>
<td></td>
</tr>
<tr>
<td>Uemura, Mitsunori ; Hirai, Hiroaki ; Miyazaki, Fumio</td>
<td></td>
</tr>
<tr>
<td>DESIGN OF THREE-PHASE THREE-LEVEL CIC T-SOURCE INVERTER WITH MAXIMUM</td>
<td>4447</td>
</tr>
<tr>
<td>BOOST CONTROL</td>
<td></td>
</tr>
<tr>
<td>Shultz, Tatiana ; Husev, Oleksandr ; Roncero-Clemente, Carlos ; Blaabjerg, Frede ; Strzelecki, Ryszard</td>
<td></td>
</tr>
<tr>
<td>ANALYSIS AND COMPENSATION OF NONLINEAR FRICTION EFFECT ON FREQUENCY</td>
<td>4453</td>
</tr>
<tr>
<td>IDENTIFICATION</td>
<td></td>
</tr>
<tr>
<td>Li, Chao ; Yao, Bin ; Zhu, Xiaocong</td>
<td></td>
</tr>
<tr>
<td>CALCULATING LEAKAGE REACTANCE OF 9-WINDING TRANSFORMER USING TIME-</td>
<td>4459</td>
</tr>
<tr>
<td>DEPENDENT 3D FEM ANALYSIS</td>
<td></td>
</tr>
<tr>
<td>Fukumoto, Hisao ; Furukawa, Tatsuya ; Itoh, Hideaki ; Ohchi, Masashi</td>
<td></td>
</tr>
<tr>
<td>REMOTE COMMUNICATION SUPPORT SYSTEM AS COMMUNICATION CATALYST FOR</td>
<td>4465</td>
</tr>
<tr>
<td>DEMENTIA CARE</td>
<td></td>
</tr>
<tr>
<td>Goto, Satoru ; Matsuda, Yoshimi ; Kikugawa, Toshiki ; Kobayashi, Yoshinori ; Kuno, Yoshinori</td>
<td></td>
</tr>
<tr>
<td>ANALYSIS OF DIFFERENT FORCED CONVECTION COOLING SYSTEMS FOR BELT-</td>
<td>4471</td>
</tr>
<tr>
<td>DRIVEN STARTER-GENERATOR</td>
<td></td>
</tr>
<tr>
<td>Boglietti, A. ; Bojoi, R. ; Cavagnino, A. ; Cossale, M. ; Tenconi, A.</td>
<td></td>
</tr>
<tr>
<td>NUMERICALLY DESIGNED OPTIMAL TRAJECTORIES OF INDUCTION MOTOR FOR</td>
<td>4477</td>
</tr>
<tr>
<td>ENERGY-SAVING AND JERK SUPPRESSION BASED ON 3-DIMENSIONAL LOSS MAP</td>
<td></td>
</tr>
<tr>
<td>Inoue, Kaoru ; Arizono, Takuma ; Kato, Toshiji</td>
<td></td>
</tr>
<tr>
<td>A NEW PROSPECTIVE OF SMART TRANSFORMER APPLICATION: DUAL MICROGRID</td>
<td>4482</td>
</tr>
<tr>
<td>(DMG) OPERATION</td>
<td></td>
</tr>
<tr>
<td>Kumar, Chandan ; Liserre, Marco</td>
<td></td>
</tr>
<tr>
<td>TOWARDS SECURITY ASSURANCE FOR HETEROGENEOUS INDUSTRIAL NETWORKS</td>
<td>4488</td>
</tr>
<tr>
<td>Ray, Apala ; Akerberg, Johan ; Bjorkman, Mats ; Gidlund, Mikael</td>
<td></td>
</tr>
<tr>
<td>SINGLE-DC-SOURCE FIVE-LEVEL CHB INVERTER WITH SENSOR-LESS VOLTAGE</td>
<td>4494</td>
</tr>
<tr>
<td>BALANCING</td>
<td></td>
</tr>
<tr>
<td>Vahedi, Hani ; Al-Haddad, Kamal</td>
<td></td>
</tr>
<tr>
<td>REALTIME PROPERTIES FOR DESIGN OF HETEROGENEOUS INDUSTRIAL</td>
<td>4500</td>
</tr>
<tr>
<td>AUTOMATION SYSTEM</td>
<td></td>
</tr>
<tr>
<td>Grünner, Sten ; Épple, Ulrich</td>
<td></td>
</tr>
<tr>
<td>REAL-TIME PERFORMANCE OF FPGA-BASED MMC VALVES FOR HVDC SYSTEMS</td>
<td>4506</td>
</tr>
<tr>
<td>Wierckx, Rudi ; Elimban, Samek</td>
<td></td>
</tr>
<tr>
<td>NETWORKED PFC DRIVE FOR SPPSCIM AIR CONDITIONERS TO ENABLE ELASTIC</td>
<td>4513</td>
</tr>
<tr>
<td>LOAD OPERATION IN CONSTRAINED POWER SYSTEMS</td>
<td></td>
</tr>
<tr>
<td>Ibrahim, S. ; Zaffar, N. A.</td>
<td></td>
</tr>
<tr>
<td>SLIDING MODE CONTROL FOR THREE-PHASE UNITY POWER FACTOR RECTIFIER</td>
<td>4519</td>
</tr>
<tr>
<td>WITH VECTOR OPERATION</td>
<td></td>
</tr>
<tr>
<td>Morales, Javier ; De Vicuna, Luis Garcia ; Guzman, Ramon ; Castilla, Miguel ; Miret, Jaume ; Torres-Martinez, Javier</td>
<td></td>
</tr>
<tr>
<td>A MANY-CORE BASED EXECUTION FRAMEWORK FOR IEC 61131-3</td>
<td>4525</td>
</tr>
<tr>
<td>Becker, Matthias ; Sandstrom, Kristian ; Behnam, Moris ; Nolte, Thomas</td>
<td></td>
</tr>
<tr>
<td>ACOUSTIC NOISE REDUCTION IN VSI-DFIM FOR ELECTRICAL NAVAL PROPULSION</td>
<td>4531</td>
</tr>
<tr>
<td>Debbou, Mustapha ; Pietrzak-David, Maria</td>
<td></td>
</tr>
</tbody>
</table>
OPTIMIZING OF SAMPLING IN A LOW-COST SINGLE-PHASE INSTANTANEOUS AC-GRID SYNCHRONIZATION UNIT WITH DISCRETE CALCULATION OF DERIVATIVE FUNCTION ........................................ 4538
Galkin, I.; Foroobyev, M.

OPTIMAL ELECTRICAL DRIVE CONFIGURATION TO USE IN A DO 128-6 AIRCRAFT TAKING INTO ACCOUNT THE ELECTROMAGNETIC, MECHANICAL AND AERODYNAMIC DESIGNS ................................................................................................................................. 4544
Donea, Marius-Silviu; Gerling, Dieter

DATA-FUSION FOR INCREASING TEMPORAL RESOLUTION OF BUILDING ENERGY MANAGEMENT SYSTEM DATA ........................................................................................................... 4550
Wijayasekara, Dunidu; Manic, Milos

EXPERIMENTAL VERIFICATION OF STABILITY REGION OF BALANCING A SINGLE-WHEEL ROBOT: AN INVERTED STICK MODEL APPROACH .................................................................................................................. 4556
Lee, S. D.; Jung, S.

MOTION PREDICTION AND HUMAN DETECTION USING A SINGLE 2D LASER RANGE FINDER ............................................................................................................................................. 4562
Sadamura, Satoshi; Fujimoto, Yasutaka

AN IMPLEMENTATION METHOD OF WORKSPACE OBSERVER CONSIDERING FLUCTUATION OF EQUIVALENT MASS MATRIX .......................................................................................................................... 4568
Motoi, Naoki; Kubo, Ryogo

AUTONOMOUS AERIAL REFUELING PRECISE DOCKING BASED ON ACTIVE DISTURBANCE REJECTION CONTROL ......................................................................................................................... 4574
Su, Zikang; Wang, Honghun; Shao, Xingling; Yao, Peng

NEW TRENDS IN THE DEVELOPMENT OF WIDE-AREA DAMPING CONTROL SYSTEMS ........................................................................................................................................................................... 4579
Zhu, Kun

3-DIMENSIONAL ANALYSIS OF HUMAN ARM STIFFNESS IN REACHING MOVEMENT USING ARM ROBOT .................................................................................................................................................. 4591
Tani, Yukako; Yamada, Chiharu; Fukazawa, Kazuyoshi; Katsura, Seiichiro; Itozuchi, Yoshitomo

FAST-SCALE AND SLOW-SCALE INSTABILITIES OF PHOTOVOLTAIC INVERTER ......................................................................................................................................................................................... 4597
Sun, Li-Xia; Li, Yun-Feng; Wen, Zheng-Geng

USE OF LOAD-SIDE MEMS ACCELEROMETERS IN SERVO POSITIONING OF TWO-MASS-SPRING SYSTEMS .................................................................................................................................................. 4603
Oboe, Roberto; Pilastro, Davide

BENCH TEST OF MINIMUM TIME AUTONOMOUS DRIVING FOR ELECTRIC VEHICLE BASED ON OPTIMIZATION OF VELOCITY PROFILE CONSIDERING ENERGY CONSTRAINT .................................................................................................................................................. 4609
Ikezawa, Yuta; Fujimoto, Hiroshi; Kawano, Daizuke; Gojo, Yuichi; Tsuchimoto, Misaki

A NEW SWITCHING ALGORITHM FOR AN AC-AC CONVERTER WITH HIGH FREQUENCY LINK ........................................................................................................................................................................... 4615
Nair, Harish Sudhekar; Ramchand, Rijil

USING LARGE-SCALE LOCAL AND CROSS-LOCATION EXPERIMENTS FOR SMART GRID SYSTEM VALIDATION ........................................................................................................................................................................... 4621
Buscher, Martin; Lehnhoff, Sebastian; Rohjans, Sebastian; Andre, Filip; Strasser, Thomas

PART-LOAD CONTROL STRATEGY OF A 20KW SIC POWER CONVERTER FOR EMBEDDED PEMFC MULTI-STACK ARCHITECTURES ........................................................................................................................................................................... 4627
Kolli, A.; De-Bernardinis, A.; Khatri, Z.; Gaillard, A.; Beihoux, O.; Hissel, D.

METHOD OF POSITION ERROR COMPENSATION IN CONSIDERATION OF SYMMETRIC STRUCTURE FOR BILATERAL CONTROL SYSTEM UNDER TIME DELAY ........................................................................................................... 4633
Shimizu, T.; Matsunaga, T.; Ohnishi, K.

FORCE CONTROL AND FORCE OBSERVER DESIGN OF SERIES ELASTIC ACTUATOR BASED ON ITS DYNAMIC CHARACTERISTICS ........................................................................................................................................................................... 4639
Oh, Sehoon; Lee, Chan; Kong, Kyunchul

A LYAPUNOV FUNCTION NEURO-ADAPTIVE CONTROLLER FOR LFC IN TWO-AREA POWER SYSTEM ........................................................................................................................................................................... 4645
Aftab, Muhammad Saleheen; Shafiq, Muhammad; Aftab, Fakhra

REAL-TIME COUPLING COEFFICIENT ESTIMATION AND MAXIMUM EFFICIENCY CONTROL ON DYNAMIC WIRELESS POWER TRANSFER USING SECONDARY DC-DC CONVERTER ........................................................................................................................................................................... 4650
Kobayashi, Daita; Imura, Takehiko; Hori, Yoichi

LOWCOST CONTROL OF SWITCHED RELUCTANCE MOTOR USING SINGLE CURRENT SAMPLING RESISTANCE ........................................................................................................................................................................... 4656
Dai, Shangjian; Liu, Chuang; Zhou, Cong; Guan, Minjun; Han, Shouyi; Ren, Lei
EQUALIZATION ALGORITHM FOR DISTRIBUTED ENERGY STORAGE SYSTEMS IN ISLANDED AC MICROGRIDS ................................................................. 4661

Diaz, Nelson L.; Luna, Adriana C.; Vasquez, Juan C.; Guerrero, Josep M.

ALMOST PARAMETER-FREE SENSORLESS CONTROL OF PMSM ................................................................. 4667

Tejar, Hakim; Chauou, Hicham; Sicard, Pierre

AN ERROR MODEL FOR SAFE INDUSTRIAL COMMUNICATION ................................................................. 4672

Platschek, A.; Thiemann, B.; Zeilinger, H.; Sauter, T.

GRID CONNECTED SOLAR PV FED CASCADED MULTILEVEL INVERTER IMPLEMENTATION USING XSG PLATFORM ................................................................. 4678

Krishna, P. Venkata; Singh, Alok Kumar; Gupta, Rajesh

PREDICTIVE DATA ANALYTICS FOR AGENT-BASED MANAGEMENT OF ELECTRICAL MICRO GRIDS ................................................................. 4684

Queiroz, Jonas; Dias, Artur; Leitao, Paulo

OPTIMAL EFFICIENCY CONTROL OF SYNCHRONOUS RELUCTANCE MOTORS-BASED ANN CONSIDERING CROSS MAGNETIC SATURATION AND IRON LOSSES ................................................................. 4690

Truong, Phuoc Hoa; Fließer, Damien; Nguyen, Ngoc Ky; Merckle, Jean; Dat, Mai Tuan

PETRI NET APPLICATION IN SIMULATION OF AMBULATORY PROCESSES ................................................................. 4696

Lima, Fabio; Cortez, Matheus F. R.; Schmidt, Patricia P.; Silverio, Ana Karoline; Chang, Joao

HYPERCONIC MULTILAYER PERCEPTRON FOR FUNCTION APPROXIMATION ................................................................. 4702

Serrano-Rubio, Juan Pablo; Herrera-Guzman, Rafael; Hernandez-Aguirre, Arturo

DEVELOPMENT OF AN ENDOSKELETON TYPE POWER ASSIST SUIT USING PNEUMATIC ARTIFICIAL MUSCLES WITH AMPLIFICATION MECHANISM ................................................................. 4708

Inose, H.; Yokoyama, K.; Imamura, H.; Kikutani, I.; Nakamura, T.

IMPROVING START-UP OPERATION OF SENSORLESS DTC OF INDUCTION MACHINES USING SIMPLE FLUX REGULATION ................................................................. 4714

Alsowfani, I. M.; Idris, N. R. N.; Aziz, M. J.; Yatim, A. H. M.

EVENT-TRIGGERED DISTRIBUTED $H_{\infty}$ FILTERING OVER SENSOR NETWORKS UNDER ROUND-ROBIN SCHEDULING................................................................. 4720

Liu, Bo; Zhang, Xian-Ming; Han, Qing-Long

OPTIMAL SCHEDULING OF DIESEL GENERATORS IN OFFSHORE SUPPORT VESSELS TO MINIMIZE FUEL CONSUMPTION ................................................................. 4726

Rao, K. Srinivas; Chasban, Priyesh J.; Panda, Sanjib K.; Wilson, Gary; Liu, Xiong; Gupta, Amit Kumar

ANALYSIS OF COGGING TORQUE IN SURFACE PERMANENT MAGNET MACHINE WITH MANUFACTURING TOLERANCES ................................................................. 4732

Wu, Leilei; Qu, Ronghui; Song, Bao; Bi, Haisheong; Jing, On; Yang, Guowei; Du, Chengfei

ON ASYMPTOTIC MERIT FACTOR OF LOW AUTOCORRELATION BINARY SEQUENCES ................................................................. 4738

Ukil, Abhishek

ONLINE BATTERY MODELING FOR STATE-OF-CHARGE ESTIMATION USING EXTENDED KALMAN FILTER WITH BUSSE'S ADAPTIVE RULE ................................................................. 4742

Yao, Low Wen; Aziz, J. A.; Idris, N. R. N.; Alsowfani, Ibrahim M.

MULTIPLE TEMPERATURE CONTROL WITH DETECTION OF CONTACTING POINTS FOR RENDERING THERMAL SENSATION ................................................................. 4748

Osuwa, Y.; Katsura, S.

RANGE EXTENSION AUTONOMOUS DRIVING FOR ELECTRIC VEHICLES BASED ON OPTIMAL VELOCITY TRAJECTORY AND DRIVING BRAKING FORCE DISTRIBUTION CONSIDERING ROAD GRADIENT INFORMATION ................................................................. 4754

Yoshida, Hidenori; Fujimoto, Hiroshi; Kawano, Daisuke; Goto, Yuichi; Tsuchimoto, Misaki

NOVEL METHOD FOR HIGH SPEED FORCE CURVE MEASUREMENT CONSIDERING CANTILEVER DYNAMICS FOR ATOMIC FORCE MICROSCOPY ................................................................. 4760

Ennei, T.; Fujimoto, H.; Hori, Y.

INTEGRATION OF A TOPIC PROBABILITY DISTRIBUTION INTO SURGICAL PHASE ESTIMATION WITH A HIDDEN MARKOV MODEL ................................................................. 4766

Dinh Tuan Tran; Sakurai, R.; Joo-Ho Lee

A NEW CONTROL TECHNIQUE FOR DUAL STATOR INDUCTION GENERATOR USED IN STANDALONE APPLICATIONS ................................................................. 4772

Basak, Saptarshi; Chakraborty, Chandan

IMPROVED PHASE-LOCKED LOOP UNDER HEAVILY DISTORTED GRID CONDITION ................................................................. 4778

Zeng, Liyan; Geng, Hua; Yang, Geng

VECTOR CONTROL OF A HIGH SPEED INDUCTION MACHINE SUPPORTED BY MAGNETIC BEARINGS ................................................................. 4784

Fumagalli, Marco Antonio; Lima, Fabio; Rosa, Fabiano Camargo
NOMINAL CHARACTERISTICS TRAJECTORY FOLLOWING CONTROL AS PRACTICAL CONTROLLER: A REVIEW ................................................................. 4790
Cheng, Shih-Horng ; Sato, Kaji
POWER CONDITIONING APPLICATIONS OF 700V GAN-HEMTS CASCODE SWITCH ................................................................. 4796
Cheng, Stone ; Chou, Po-Chien
DEEP FLUX WEAKENING CONTROL OF A SEGMENTED INTERIOR PERMANENT MAGNET SYNCHRONOUS MOTOR WITH MAXIMUM TORQUE PER VOLTAGE CONTROL ................................................................. 4802
Ekanayake, Sithumini ; Dutta, Rukmi ; Rahman, M. F. ; Xiao, D.
PATIENT SIMULATOR USING WEARABLE ROBOT: REPRESENTATION OF IN Variant SITTING-DOWN AND STANDING-UP MOTIONS OF PATIENTS WITH KNEE- OA ......... 4808
Kubo, Ryu ; Okamoto, Shogo ; Nezaki, Shogo ; Yamada, Naomi ; Akiyama, Yasuhiro ; Yamada, Yoji
AUTOMATING REMOTE GRID ACCEPTANCE AND ENERGY SERVICES TESTS SUITED FOR LARGE DEPLOYMENTS OF PV SYSTEMS IN ACTIVE DISTRIBUTION NETWORKS ........ 4814
Sandulescu, M. ; Martins, J. F. ; Pires, V. Fernao
MINIORIZATION AND DRIVE EVALUATION OF MODULAR ROBOT BY 3D PRINTER ........ 4819
Mitsubishi, Kaoru ; Ohyama, Yasuhiro ; Hashimoto, Hiroshi
SECONDARY-SIDE-ONLY SIMULTANEOUS POWER AND EFFICIENCY CONTROL FOR TWO CONVERTERS IN WIRELESS POWER TRANSFER SYSTEM ................................. 4824
Lovison, Giorgio ; Sato, Motoki ; Imura, Takehiro ; Hori, Yoichi
A DECISION ALGORITHM TO SELECT A PROPER CONTROL METHOD FOR A CASCADED MULTILEVEL INVERTER UNDER FAULTY CONDITION ........................................ 4830
Ouni, Saeed ; Schmeisser, Andres Ulloa ; Zolghadri, Mohammadreza ; Oraee, Hashem ; Rodriguez, Jose ; Lezana, Pablo
IMPROVEMENTS ON EXPERIMENTAL MODELING OF THE LOSSES IN INDUCTION MACHINE WITH TAGUCHI ORTHOGONAL PLAN ...................................................... 4836
Chrin, P. ; Daqyes, B. ; David, M. ; Maussion, P. ; Ban, L.
INFLUENCE OF PARASITIC COMPONENTS ON MHZ-LEVEL FREQUENCY LLC RESONANT DC-DC CONVERTER ........................................................................ 4842
Hariya, Atsushi ; Tanagi, Hiroshi ; Ishizuka, Yoichi ; Matsuura, Ken ; Tomioka, Satoshi ; Ninomiya, Tamoitsu
DUAL INPUT-DUAL OUTPUT SINGLE INDUCTOR DC-DC CONVERTER .............. 4848
Rehman, Zubair ; Al-Bahadly, Ibrahim ; Mukhopadhyay, Subhas
GAIT PATTERN ACQUISITION FOR FOUR-LEGGED MOBILE ROBOT BY GENETIC ALGORITHM ........................................................................ 4854
Kato, Tatsuya ; Shiromi, Kai ; Nagata, Masanobu ; Nakashima, Hidetoshi ; Matsu, Kazunori
ENHANCED GRID INTEGRATION OF RENEWABLE POWER PLANTS BY GRID IMPEDANCE MEASUREMENT ...................................................................................... 4858
Do, Thanh Trung ; Langkowksi, Hauke ; Jordan, Michael ; Schulz, Detlef
QUADROTOR TUNING FOR ATTITUDE CONTROL BASED ON DOUBLE-LOOP PID CONTROLLER USING FICTITIOUS REFERENCE ITERATIVE TUNING (FRIT) .................. 4865
Julkannasarsa, Arithth ; Nikkhahmang, Istiehsek
FRICITION-BASED SLIP DETECTION IN ROBOTIC GRASPING ..................... 4871
Dzitac, Pavel ; Mazid, Abdul Md ; Ibrahim, M. Yousuf ; Appuhamillage, Gayan Kanhadawa ; Choudhury, T. A.
FRICITION-BASED SLIPPAGE AND TANGENTIAL FORCE DETECTION IN ROBOTIC GRASPING .................................................................................. 4875
Dzitac, Pavel ; Mazid, Abdul Md ; Ibrahim, M. Yousuf ; Choudhury, T. A. ; Appuhamillage, Gayan Kanhadawa
ANOMALIES IN EXPERIMENTAL MEASUREMENT OF OPERATIONAL INDUCTANCES OF A CONCENTRATED-WOUND IPM MACHINE UNDER FIELD-WEAKENING REGION ........................................................................ 4880
Farshadnia, M. ; Cheema, M. A. M. ; Dutta, R. ; Fletcher, J. E. ; Rahman, M. F.
MOBILE BASED BIG DATA DESIGN PATENT IMAGE RETRIEVAL SYSTEM VIA LP NORM DEEP LEARNING APPROACH ................................................................. 4886
Su, Jing ; Ling, Bing direction ; Dai, Qingyun ; Xiao, Jun ; Tsang, Kim-Fung
A PREDICTIVE CONTROL OF A TURBOCHARGED DIESEL ENGINE FOR EXHAUST EMISSION MITIGATION .................................................................................. 4890
Nademi, Hamed ; Tahami, Farzad
BINAURAL WIND NOISE DETECTION, CANCELLATION AND ITS EVALUATION FOR HEARING AIDS BASED ON HRTF CUES .............................................................. 4896
Nakashima, Hidetoshi ; Koyama, Ryosuke ; Hiruma, Nobuhiko ; Fujisaka, Yoh-Ichi
DYNAMIC PHYSICAL LIMITS OF A PHASE-SHIFTED FULL BRIDGE CIRCUIT FOR POWER SUPPLY OF MAGNETIC RESONANCE IMAGING GRADIENT AMPLIFIERS ............... 4900
Shi, Hongliang ; Cui, Bin ; Zeng, Yingya ; Xu, Jing ; Jiang, Xiaohua
MODELING AND ANALYSIS OF WIRELESS ELECTRO-MECHANICAL ENERGY TRANSFER AND CONVERSION USING RESONANT INDUCTIVE COUPLING .......................................................... 4905
Fujimoto, Yasutaka

A NOVEL MODULATION METHOD APPLIED IN QUASI-Z-SOURCE BASED CASCADED PV SYSTEM SUFFERING MODULE MISMATCH ........................................................... 4911
Wang, Cheng ; Zhang, Kai ; Liu, Liming ; Liu, Wencin

CALCULATION OF GRASPING FORCE TO ADAPT MASS VARIATION OF OBJECT CONSIDERING HUMAN MOTION .......................................................................................... 4923
Honjo, Ryutaro ; Katsura, Seiichiro

OPTIMAL DISPATCH OF ELECTRIC TAXIS AND PRICE MAKING OF CHARGING STATIONS USING STACKELBERG GAME ................................................................. 4929
Zhou, Hongbin ; Liu, Chensheng ; Yang, Bo ; Guan, Xiping

STRAIGHT DRIVING CONTROL FOR ELECTRIC TILLER CONSIDERING HUMAN DRIVING INPUT .................................................................................................................. 4935
Ikoma, Hirofumi ; Yoshihara, Ken ; Kato, Wataru ; Miyazaki, Toshimasa ; Ohishi, Kiyoshi

EXPERIMENTAL FAULT ASSESSMENT ON MULTIPHASE PM GENERATORS WITH FRACTIONAL-SLOT CONCENTRATED WINDINGS ................................................. 4941
Bojoi, R. ; Cavagnino, A. ; Odhano, S. A. ; Tenconi, A. ; Vaschetto, S.

OPTIMIZED 4-COIL INDUCTOR SYSTEM ARRANGEMENT FOR INDUCTION HEATING APPLIANCES .................................................................................................................. 4948
Carretero, Claudia ; Alonso, Rafael ; Acero, Jesus ; Burdio, Jose M.

WIDE VOLTAGE RANGE OPERATION OF ISOLATED MODULAR MULTILEVEL DC-DC CONVERTER .................................................................................................................. 4953
Sun, Changjiang ; Zhang, Jianwen ; Chang, Yiran ; Shi, Gang ; Cai, Xu

OFFSHORE WIND ENERGY SYSTEMS USING HIGH FREQUENCY ISOLATED CURRENT-FED MODULAR CONVERTERS .................................................................................. 4959
Modeppalli, Kumar ; Parsa, Leila

ANALYSIS AND EXPERIMENT ON HARMONIC CURRENT DISTORTION IN WIRELESS POWER TRANSFER SYSTEM USING A DIODE RECTIFIER ................................................. 4965
Hata, Katsuhiko ; Imura, Takehiro ; Hori, Yoichi

STABILIZATION AND ENERGY MANAGEMENT IN A DC GRID BY A VARIABLE STRUCTURE PLATNESS-BASED CONTROLLER ........................................................................... 4971
Fayaz, Akram M. ; Hamache, Djawad

IMPACT OF TRANSCUTANEOUS ENERGY TRANSFER ON THE ELECTRIC FIELD AND SPECIFIC ABSORPTION RATE IN THE HUMAN TISSUE ................................................. 4977
Knecht, O. ; Kolar, J. W.

HARMONICS AND INTERHARMONICS ESTIMATION OF WIND POWER PLANT USING SLIDING WINDOW MATRIX PENCIL .................................................................................. 4984
Agarwal, Sanjiv ; Mohanty, Sourya R. ; Agarwal, Vineeta

HIGH EFFICIENCY THREE-PHASE INTERLEAVED BUCK-TYPE PFC RECTIFIER CONCEPTS ................................................................................................................................ 4990
Ancuti, Mihaela-Codruta ; Sorandaru, Ciprian ; Maseuroi, Sorin ; Olarescu, Valeriu-Nicola

DESIGN OF A HIGH-EFFICIENCY PERMANENT MAGNET SYNCHRONOUS MOTOR AND INVERTER SYSTEM ........................................................................................................... 4996
Hanzhou Liu ; Zhigang Gao ; Wei Wu ; Chow, L. ; Wu, T.

DESIGN AND MODELING OF A PARALLEL ROBOT FOR ULTRASOUND GUIDED PERCUTANEOUS NEEDLE INTERVENTIONS ................................................................. 5002
Orhan, Sabri Orcun ; Yildirim, Mehmet Can ; Bebek, Ozkan

CONTROL AND ANALYSIS OF MULTI-LEVEL TYPE MULTI-PHASE RESONANT CONVERTER FOR WIRELESS EV CHARGING ................................................................. 5008
Bojarski, Mariusz ; Asa, Erdem ; Outeiro, Maria Teresa ; Czarkowski, Dariusz

QDEVS NATURAL COUPLED SIMULATION OF A MICROGRID ................................................................................................................................. 5014
Benigni, A. ; Brown, M. ; Leonard, R. A. ; Dougal, R. A.

DEVELOPMENT OF A SIMULATOR-TO-SIMULATOR INTERFACE FOR GEOGRAPHICALLY DISTRIBUTED SIMULATION OF POWER SYSTEMS IN REAL TIME ............................... 5020
Stevic, Marija ; Monti, Antonello ; Benigni, Andrea

PASSIVE UHF FAR-FIELD RFID BASED LOCALIZATION IN SMART RACK ................................................................................................................................. 5026
Huang, Sheng ; Gan, Oon Peen ; Huang, Zhi Qin ; Song, Hongsheng ; Xie, Lihua

TORQUE/FORCE CONTROL OF WAVE SYSTEM BASED ON REFLECTED WAVE REJECTION AND WAVE-BASED LOAD DISTURBANCE OBSERVER ........................................ 5038
Saito, E. ; Katsura, S.
OPTIMAL MANAGEMENT STRATEGY OF ENERGY STORAGE SYSTEMS FOR RES-BASED MICROGRIDS ................................................................. 5044
Mastio, Maura ; Serpi, Alessandro ; Masi, Claudia ; Damiano, Alfonso
MODELING AND DESIGN OF AN OPTIMAL LINE MANAGER OF A PACKAGING SYSTEM WITH MILP ........................................................................................................ 5050
Ferrari, G. ; Ferrarini, L. ; Petretti, A. ; Pizzi, E.
CALORIMETRIC FLOW SENSORS BASED ON THICK-FILM PRINTED THERMOPILES FOR AIR CONDITIONING SYSTEM MONITORING .................................................................................................................. 5057
Cerimovic, Samir ; Kepplerger, Franz ; Sauter, Thilo
ON FLATNESS-BASED CONTROLLER FOR SHUNT-CONNECTED VSC WITH LCL-FILTER FOR VOLTAGE DIP MITIGATION IN A WEAK GRID ........................................................................................................ 5062
Buccella, C. ; Khalid, H. A. ; Cecati, C. ; Xu, D.
PROPOSAL OF VISUAL SERVOING USING PHASE-ONLY-CORRELATION (POC) .......................................................................................... 5068
Ri, Y. ; Fujimoto, H.
HIGH RESOLUTION POSITION ESTIMATION FROM HALL EFFECT SENSOR ........................................................................................................ 5074
Ortiz, Jurgen ; Sanchez, Vianey Guadalupe Cruz ; Villegas, Osslan Osiris Vergara ; Abad, Angel Flores ; Nandayapa, Manuel
AERO-BEAM: AN OPEN-ARCHITECTURE TEST-BED FOR RESEARCH AND EDUCATION IN CYBER-PHYSICAL SYSTEMS .................................................................................................................. 5080
Pittermann, Martin ; Drabek, Pavel ; Bednar, Bedrich
SHORT-TERM LOAD FORECASTING USING CARTESIAN GENETIC PROGRAMMING: AN EFFICIENT EVOLUTIVE STRATEGY: CASE: AUSTRALIAN ELECTRICITY MARKET ........................................................................................................ 5087
Giacometto, Francisco ; Sala, Enric ; Kampouropoulos, Konstantinos ; Romeral, Luis
A FUZZY-BASED HYBRID PLL SCHEME FOR ABNORMAL GRID CONDITIONS ........................................................................................................ 5095
Beheshtadin, Siavash ; Savaghehi, Mehdi ; Guerrero, Josep M.
SINGLE PHASE HIGH-VOLTAGE MATRIX CONVERTER FOR TRACTION DRIVE WITH MEDIUM FREQUENCY TRANSFORMER ........................................................................................................ 5101
Pittermann, Martin ; Drabek, Pavel ; Bednar, Bedrich
POWER FLOW CONTROL USING A DC-DC MMC FOR HVDC GRID CONNECTED WIND POWER PLANTS .................................................................................................................. 5107
Vidal, Ricardo ; Belenguer, Enrique ; Pesce, Cristian ; Soto, Diego ; Pena, Ruben ; Blasco-Gimenez, Ramon ; Riedemann, Javier
NON-CONTACT ARC STUDY FOR DC POWER SYSTEMS ........................................................................................................ 5113
Li, Jing ; Sumner, Mark ; Thomas, David W. P. ; Christopher, Edward ; Jia, Ke ; Zhang, He
SECOND ORDER SLIDING MODE CONTROL FOR THREE-LEVEL NPC CONVERTERS VIA EXTENDED STATE OBSERVER ........................................................................................................ 5118
Vazquez, S. ; Juansing Liu ; Huijun Guo ; Franquelo, L. G.
ADAPTIVE PHASE-SHIFTED PWM FOR MULTILEVEL CASCADED H-BRIDGE CONVERTERS FOR BALANCED OR UNBALANCED OPERATION ........................................................................................................ 5124
Marquez, Abraham ; Leon, Jose I. ; Portillo, Ramon ; Vazquez, Sergio ; Franquelo, Leopoldo G. ; Kouro, Samir
PROTOTYPE DESIGN OF ENERGY MANAGEMENT SYSTEM FOR MOBILE DEVICE VIA WIRELESS CHARGING ROBOT ........................................................................................................ 5130
Nakamura, Sousuke ; Kakinuma, Yoshinori ; Kikusui, Keita ; Hashimoto, Hideki
OPERATION OF MODULAR MATRIX CONVERTER UNDER CLOSE INPUT AND OUTPUT FREQUENCY BY USING VOLTAGE SPACE VECTOR MODULATION ........................................................................................................ 5136
Miura, Yushi ; Inubushi, Keiji ; Yoshida, Tomoaki ; Fujikawa, Takaya ; Ise, Toshifumi
ENHANCEMENT OF ATTACHMENT BEHAVIOR MODEL FOR SOCIAL ROBOT TO ADAPT IN DAILY LIVING ENVIRONMENTS ........................................................................................................ 5142
Takahashi, Yohei ; Niitsuma, Mihoko
DECISION ON FAILURE DIAGNOSIS AND CONDITION MONITORING TECHNIQUE FOR WIND CONVERSION SYSTEM ........................................................................................................ 5148
Beating, Anisxia ; Mourtouk, Chantal ; Moubayed, Nazih ; Kaddah, Fouad
TRANSMISSION TORQUE LINEARIZATION OF QUADRUPELED ROBOT WITH A TWO-JOINT SIMULTANEOUS DRIVE MECHANISM FOR GRAVITY COMPENSATION ........................................................................................................ 5156
Ueda, Keisuke ; Miyazaki, Toshihisa ; Ohtsuka, Kiyoshi
SYNCHRONIZATION CONTROL FOR TWO-AXES TABLE DRIVE SYSTEM ........................................................................................................ 5162
Tsunoda, Kazuhiko ; Ojiro, Tetsuya ; Honda, Hideki
A MULTI-PORT CONVERTER BASED RENEWABLE ENERGY SYSTEM FOR RESIDENTIAL CONSUMERS OF SMART GRID ........................................................................................................ 5168
Jafari, Mohammad ; Malekjamshidi, Zahra ; Platt, Glenn ; Zhu, Jian Guo ; Dorrell, D. G.
<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>THE EFFECT OF MANUFACTURING TOLERANCES ON A TUBULAR LINEAR FERRITE MOTOR</td>
<td>5174</td>
</tr>
<tr>
<td>Boscaino, V.; Cipriani, G.; Di Dio, V.; Corporea, M.; Curto, D.; Franzitta, V.; Trupaneze, M.</td>
<td></td>
</tr>
<tr>
<td>THE RELATIONSHIP BETWEEN CLASSICAL AND MPC HORIZON 1 BASED CURRENT REGULATORS</td>
<td>5178</td>
</tr>
<tr>
<td>Mirzaee, Galina; Goodwin, Graham C.; McGrath, Brendan</td>
<td></td>
</tr>
<tr>
<td>AN INNOVATIVE ENERGY PREDICTIVE PROCESS PLANNING TOOL FOR ASSEMBLY AUTOMATION SYSTEMS</td>
<td>5184</td>
</tr>
<tr>
<td>Ahmad, Majid H.; Ahmad, Bilal; Yusa, Daniel; Harrison, Robert</td>
<td></td>
</tr>
<tr>
<td>DESIGN TO MAXIMIZE TORQUE-VOLUME DENSITY OF AXIAL-FLUX SRM FOR IN-WHEEL EV</td>
<td>5191</td>
</tr>
<tr>
<td>Goto, Hiroki; Murakami, Shin'ya; Ichinokura, Osamu</td>
<td></td>
</tr>
<tr>
<td>INVESTIGATION OF WIRELESS POWER TRANSFER SYSTEM WITH SPACED ARRANGED PRIMARY H-SHAPED CORE COILS FOR MOVING EVS</td>
<td>5197</td>
</tr>
<tr>
<td>Kato, Chihiro; Kaneko, Yasuyoshi; Tsuda, Kazuma; Fujita, Toshiyuki; Matsumura, Tsuyoshi; Yasuda, Tomio</td>
<td></td>
</tr>
<tr>
<td>MULTIAGENT-BASED DISTRIBUTED CONTROL FOR OPERATION COST MINIMIZATION OF DROOP CONTROLLED DC MICROGRID USING INCREMENTAL COST CONSENSUS</td>
<td>5202</td>
</tr>
<tr>
<td>Li, Chendan; Vasquez, Juan C.; Guerrero, Josep M.</td>
<td></td>
</tr>
<tr>
<td>EEMD BASED ANALYSIS OF VEHICLE CRASH RESPONSES</td>
<td>5206</td>
</tr>
<tr>
<td>Wei, Zuolong; Karimi, Hamid Reza; Robbersmyr, Kjell G.</td>
<td></td>
</tr>
<tr>
<td>CURVATURE BASED VELOCITY CONTROL SYSTEM FOR MOBILE ROBOT</td>
<td>5211</td>
</tr>
<tr>
<td>Wang, Pengfei; Sekiyama, Kosuke</td>
<td></td>
</tr>
<tr>
<td>APPLYING SCANNING TECHNIQUES TO CREATE 3D MODEL</td>
<td>5217</td>
</tr>
<tr>
<td>Riamnora, Suchada; Nuamchit, Kittiphan; Vanasribulai, Natthakarn; Tantripiched, Porupim; Rammbuth, Apisit</td>
<td></td>
</tr>
<tr>
<td>EXPERIMENTAL STUDY ON PERFORMANCE IMPROVEMENT OF FORCE CONTROL BY USING MULTI-LEVEL CONVERTERS</td>
<td>5223</td>
</tr>
<tr>
<td>Obara, Hidemine; Natori, Kenji; Sato, Yukihiko</td>
<td></td>
</tr>
<tr>
<td>MODELING AND DESIGN OF DYNAMIC WIRELESS POWER TRANSFER SYSTEM FOR EV APPLICATIONS</td>
<td>5229</td>
</tr>
<tr>
<td>Song, Kai; Zhu, Chunbo; Koh, Kim-Eun; Kobayashi, Daito; Imura, Takehiro; Hori, Yoichi</td>
<td></td>
</tr>
<tr>
<td>ENERGY EFFICIENCY OF LITHIUM-ION BATTERY USED AS ENERGY STORAGE DEVICES IN MICRO-GRID</td>
<td>5235</td>
</tr>
<tr>
<td>Li, Kaiyuan; Tseng, King Jet</td>
<td></td>
</tr>
<tr>
<td>OPTIMAL DESIGN OF PHOTOVOLTAIC BASED SUBMERSIBLE PERMANENT MAGNET BLDC MOTOR USING FEM</td>
<td>5241</td>
</tr>
<tr>
<td>Sachidhar, S.; Fernandes, B. G.</td>
<td></td>
</tr>
<tr>
<td>PERMANENT MAGNET HEATER FOR ALUMINUM BILLETS: EXPERIMENTAL RESULTS</td>
<td>5247</td>
</tr>
<tr>
<td>Dughiero, Fabrizio; Forzan, Michele; Zerbetto, Marcello</td>
<td></td>
</tr>
<tr>
<td>PROTECTION OF AC AND DC MICROGRIDS: CHALLENGES, SOLUTIONS AND FUTURE TRENDS</td>
<td>5253</td>
</tr>
<tr>
<td>Beheshtaein, S.; Vasquez, J.C.; Guerrero, J.M.</td>
<td></td>
</tr>
<tr>
<td>CLOSED-LOOP SHE-PWM TECHNIQUE FOR POWER CONVERTERS THROUGH MODEL PREDICTIVE CONTROL</td>
<td>5261</td>
</tr>
<tr>
<td>Aguilera, Ricardo P.; Lecana, Pablo; Konstantinou, Georgios; Acuna, Pablo; Wu, Bin; Bernet, Steffen; Agelidis, Vassilios G.</td>
<td></td>
</tr>
<tr>
<td>EVALUATION METHOD OF ENERGY CONSUMPTION FOR PERMANENT MAGNET SYNCHRONOUS MOTOR DRIVE SYSTEM</td>
<td>5267</td>
</tr>
<tr>
<td>Sato, Daisuke; Itoh, Jun-Ichi</td>
<td></td>
</tr>
<tr>
<td>A UNIFIED NONLINEAR CONTROLLER DESIGN FOR ON-GRID/OFF-GRID WIND ENERGY BATTERY-STORAGE SYSTEM</td>
<td>5273</td>
</tr>
<tr>
<td>Housseini, Boubacar; Okou, Francis Aime; Beguenane, Rachid</td>
<td></td>
</tr>
<tr>
<td>ANALYSIS AND COMPENSATION OF MODELING ERROR FOR SYNCHRONIZED BILATERAL TELEOPERATION</td>
<td>5279</td>
</tr>
<tr>
<td>Nishimura, Satoshi; Katsura, Seiichiro</td>
<td></td>
</tr>
<tr>
<td>STABILITY AND ACCURACY EVALUATION OF A POWER HARDWARE IN THE LOOP (PHIL) INTERFACE WITH A PHOTOVOLTAIC MICRO-INVERTER</td>
<td>5285</td>
</tr>
<tr>
<td>Nizamko, Onyinyechi; Wierckx, Rudi</td>
<td></td>
</tr>
<tr>
<td>MODEL PREDICTIVE CONTROL OF A DUAL OUTPUT SEVEN-LEVEL RECTIFIER</td>
<td>5292</td>
</tr>
<tr>
<td>Sleiman, Mohamed; Blanchette, Handy Fortin; Gregoire, Luc-Andrè; Kanaan, Hadi; Al-Haddad, Kamal</td>
<td></td>
</tr>
<tr>
<td>RIDE THROUGH CAPABILITY OF MATRIX CONVERTER FOR GRID CONNECTED SYSTEM UNDER SHORT VOLTAGE SAG</td>
<td>5298</td>
</tr>
<tr>
<td>Takahashi, Hiroki; Itoh, Jun-Ichi</td>
<td></td>
</tr>
</tbody>
</table>
LOW-COST INTEGRATION OF HARDWARE COMPONENTS INTO CO-SIMULATION FOR FUTURE POWER AND ENERGY SYSTEMS ................................................................. 5304
Nannen, Okko ; Piech, Klaus ; Lehnhoff, Sebastian ; Rohjans, Sebastian ; Schlogl, Florian ; Velasquez, Jorge ; Andren, Filip ; Strasser, Thomas

DESIGN METHOD OF STABLE FORCE CONTROL SYSTEM USING NEW RESONANCE RATIO CONTROL AND INSTANTANEOUS STATE OBSERVER ................................................................. 5310
Yabuki, Akinori ; Toshioka, Takashi ; Ohsuki, Kiyoshi ; Miyazaki, Toshimasa ; Yokokura, Yuki

REVELATION OF SOFT-SWITCHING OPERATION FOR ISOLATED DC TO SINGLE-PHASE AC CONVERTER WITH POWER DECOUPLING ................................................................. 5316
Takaoa, Naqisa ; Itoh, Jun-ichi

CURRENT CONTROL LOOP DESIGN AND ANALYSIS BASED ON RESONANT REGULATORS FOR MICROGRID APPLICATIONS ................................................................. 5322
De Bosio, F. ; Pastorelli, M. ; Ribeiro, L. A. De S. ; Lima, M. S. ; Freijedo, F. ; Guerrero, J. M.

ANN-BASED DIAGNOSIS OF INCipient STATOR WINDING TURN FAULTS FOR THREE-PHASE INDUCTION MOTORS IN THE PRESENCE OF UNBALANCED SUPPLY VOLTAGE ................................................................. 5328
Refaat, Shady S. ; Abu-Rab, Hailham

ROBOT COMMUNICATION BASED ON RELATIONAL TRUST MODEL ................................................................. 5335
Ono, Saika ; Obo, Takenori ; Kiong, Loo Chu ; Kabota, Naoyuki

UNIVERSAL STATE OF CHARGE ESTIMATOR FOR BATTERY PACKS OF BATTERY ENERGY STORAGE SYSTEMS ................................................................................................................................. 5339
Sepasi, Saeed ; Roose, Leon R. ; Matsuura, Marc ; Jou, Hsun

MECHANICAL DESIGN OF AN ACTIVE-CASTER ROBOTIC DRIVE WITH DUAL-WHEEL AND DIFFERENTIAL MECHANISM ................................................................................................................................. 5345
Nasu, Shota ; Wada, Masayoshi

SIMULTANEOUS CONTROL OF TOOL POSTURE AND POLISHING FORCE ON UNKNOWN CURVED SURFACE FOR SERIAL-PARALLEL MECHANISM POLISHING MACHINE ................................................................................................................................. 5351
Oba, Yuta ; Yamada, Yuki ; Kakinuma, Yasuhito

QUANTITATIVE COMPARISON OF PERMANENT MAGNET LINEAR MACHINES FOR ROPELESS ELEVATOR ................................................................................................................................. 5357
Fan, Hua ; Chau, K. T. ; Liu, Chunhua ; Zhang, Zhen ; Qiu, Chun

NINE SWITCH MULTI-CHANNEL DUAL CONVERTER FOR WECS ................................................................................................................................. 5363
Reusser, Carlos A. ; Kouro, Samir

PERFORMANCE ENHANCEMENT OF A FLYBACK PHOTOVOLTAIC INVERTER USING HYBRID MAXIMUM POWER POINT TRACKING ................................................................................................................................. 5369

A NEW SINGLE-STAGE HIGH-EFFICIENCY PHOTOVOLTAIC(PV)/GRID-INTERCONNECTED DC CHARGING SYSTEM FOR TRANSPORTATION ELECTRIFICATION ................................................................................................................................. 5374
Singh, Siddhatha A. ; Azeez, Najath A. ; Williamson, Sheldon S.

DESIGN CONSIDERATIONS TO OBTAIN A HIGH FIGURE OF MERIT IN CIRCULAR ARCHIMEDEAN SPIRAL COILS FOR EV BATTERY CHARGING APPLICATIONS ................................................................................................................................. 5396
Aditya, Kunwar ; Youssef, Mohamed ; Williamson, Sheldon S.

ANALYSIS OF SERIES-PARALLEL RESONANT INDUCTIVE COUPLING CIRCUIT USING THE TWO-PORT NETWORK THEORY ................................................................................................................................. 5402
Aditya, Kunwar ; Youssef, Mohamed ; Williamson, Sheldon S.

STANDALONE DC LEVEL-1 EV CHARGING USING PV/GRID INFRASTRUCTURE, MPPT ALGORITHM AND CHADEMO PROTOCOL ................................................................................................................................. 5408
Pathipati, Vamsi Krishna ; Azeez, Najath Abdul ; Williamson, Sheldon S.

IMPROVED HYBRID SHIM-SHE MODULATION TECHNIQUE FOR FOUR-LEG THREE-LEVEL NPC INVERTERS ................................................................................................................................. 5415
Portillo, Ramon ; Sharifzadeh, Mohammad ; Vahedi, Hani ; Franquelo, Leopoldo G. ; Al-Haddad, Kamal

ARTIFICIAL NEURAL NETWORKS BASED THERMAL ENERGY STORAGE CONTROL FOR BUILDINGS ................................................................................................................................. 5421
Amarasinghe, K. ; Wijayasekara, D. ; Carey, H. ; Manic, M. ; Dawei He ; Wei-Peng Chen

PERFORMANCE OF A WEB TRANSPORT SYSTEM WITH TENSION CONTROL SUBSYSTEM USING SPEED AS CONTROL INPUT ................................................................................................................................. 5427
Giannoccaro, Nicola Ivan ; Uchitomi, Issel ; Sakamoto, Tetsuzo

COMPARISON OF STATE AND PARAMETER ESTIMATORS FOR ELECTRIC VEHICLE BATTERIES ................................................................................................................................. 5433
Morello, R. ; Zamboni, W. ; Baronti, F. ; Di Rienzo, R. ; Roncella, R. ; Spagnuolo, G. ; Saletti, R.

TOPOLOGY DISCOVERY OF HIERARCHICAL ETHERNET LANS WITHOUT SNMP SUPPORT ................................................................................................................................. 5439
Nowicki, Krzysztof ; Malinowski, Aleksander
SERIES RESONANT MULTI-INVERTER PROTOTYPE FOR DOMESTIC INDUCTION HEATING ............................................................................................................................ 5444

Perez-Tarragona, Mario ; Sarnago, Hector ; Lucia, Oscar ; Burdio, Jose M.

STUDENT FORUM: SESSION 1

ACTIVE THERMAL CONTROL OF IGBT POWER ELECTRONIC CONVERTERS ........................................ 5450
Falck, J. ; Andresen, M. ; Liserre, M.

PERFORMANCE EVALUATION OF A 650V E-HEMT GAN POWER SWITCH ........................................ 5456
Czyz, Piotr

STUDY ON POWER LOSSES OF THE FULL SOFT-SWITCHING CURRENT-FED DC/DC CONVERTER WITH SI AND GAN DEVICES ............................................................................................................................. 5462
Chub, A. ; Rabkowski, J. ; Blinov, A. ; Vinnikov, D.

A NOVEL DIAGNOSIS METHOD BASED ON FLEXIBLE ERROR VOLTAGE FOR IGBTs OPEN-CIRCUIT FAULTS IN VOLTAGE-SOURCE INVERTERS .......................................................... 5468
Wang, Yuxi ; Li, Zhan ; Lin, Liaoyuan

DC-BIASED SPWM VOLTAGE CONTROL FOR SIX-PHASE SWITCHED RELUCTANCE MOTOR DRIVE BASED ON N+2 POWER ELECTRONIC CONVERTER .......................................................... 5474
Dai, Shangjian ; Zhou, Cong ; Liu, Chuang

FAST EQUIVALENT MODEL OF ISOLATED BIDIRECTIONAL DC-DC CONVERTERS FOR DC MICROGRID STUDY ............................................................................................................................... 5480
Ge, Junjie ; Huang, Xing ; Xie, Hailian

EXPERIMENTAL RESEARCH ON MODEL PREDICTIVE CONTROL OF 3-LEVEL 4-LEG FLYING CAPACITOR CONVERTER OPERATING AS SHUNT ACTIVE POWER FILTER ...................................... 5485
Antoniewicz, Kamil ; Jasinski, Marek ; Kazmierkowski, Marian P. ; Malinowski, Mariusz

STUDENT FORUM: SESSION 2

A NEW CURRENT CONTROL OF HIGH INSTANTANEOUS POWER IMPULSE CONVERTER ................... 5491
Zajac, L. ; Malinowski, M. ; Stynski, S. ; Jasinski, M.

A GLOBAL OPTIMIZATION FRAMEWORK FOR PARAMETER ESTIMATION OF A WIND GENERATION UNIT MODEL ................................................................................................................................. 5497
Fang, Qing

AN ALGORITHM FOR VISUALIZATION OF BIG DATA IN A TWO-DIMENSIONAL SPACE ................. 5502
Wu, Bo ; Wilamowski, B. M.

A JUST-IN-TIME LEARNING APPROACH FOR SEWAGE TREATMENT PROCESS MONITORING WITH DETERMINISTIC DISTURBANCES ........................................................................... 5508
Yu, Han

A HARDWARE ACCELERATOR FOR REAL-TIME EXTRACTION OF THE LINEAR-TIME MSER ALGORITHM ................................................................................................................................. 5514
Alyammihi, Sohailah ; Salahat, Ehab ; Saleh, Hani ; Sluzek, Andrzej

MODERN DESIGN OF CLASSICAL CONTROLLERS: CONTINUOUS-TIME FIRST ORDER CONTROLLERS ................................................................................................................................. 5519
 Diaz-Rodriguez, Ivan D.

EXPERIMENTAL EVALUATION OF HARDWARE-BASED GLOBAL MAXIMUM POWER POINT SEARCHING METHODS ........................................................................................................ 5525
Kot, Radoslaw ; Stynski, Sebastian ; Malinowski, Mariusz

Author Index