

2015 International Conference on Electrical Systems for Aircraft, Railway, Ship Propulsion and Road Vehicles

(ESARS 2015)

**Aachen, Germany
3-5 March 2015**



IEEE Catalog Number: CFP1592L-POD
ISBN: 978-1-4799-7401-6

TABLE OF CONTENTS

COMPARATIVE ANALYSIS OF DIFFERENTIAL DELTA CONFIGURED 18-PULSE ATRU	1
<i>Khan, Shahbaz ; Hui, Gao Zhao ; Ali, Husan ; Habib, Kashif ; Haq, Izhar Ul</i>	
IRON LOSS CALCULATION AND 3-D THERMAL ANALYSIS OF HALBACH ARRAY PERMANENT MAGNET SYNCHRONOUS MOTOR	7
<i>Sadeghi, Siavash ; Isfahani, Arash Hassanpour ; Sedghisigarchi, Kourosh</i>	
STUDY ON THE IMPEDANCE CHARACTERISTICS OF BUNCHED WIRES ON AIRCRAFT	13
<i>Ji, Rui-ping ; Liu, Wen-jie ; Liu, Sha ; Zhang, Xiao-bin ; Gao, Zhao-hui ; Li, Wei-lin</i>	
IMPEDANCE CHARACTERISTICS STUDY OF THREE-PHASE AIRCRAFT POWER WIRES	18
<i>Liu, Sha ; Ji, Ruiping ; Liu, Wenjie ; Zhang, Xiaobin ; Gao, Zhaohui ; Li, Weilin</i>	
DESIGN OF HIGH POWER DENSITY CONVERTER FOR AIRCRAFT APPLICATIONS	24
<i>Nawawi, Arie ; Tong, Chin Foong ; Liu, Yitao ; Sakanova, Assel ; Yin, Shan ; Liu, Yong ; Men, Kai ; See, Kye Yak ; Tseng, K.J. ; Simanjorang, Rejeki ; Gajanayake, Chandana J. ; Gupta, Amit K.</i>	
HEATSINK DESIGN FOR HIGH POWER DENSITY CONVERTER IN AIRCRAFT APPLICATIONS: PARAMETER SENSITIVITY ANALYSIS	30
<i>Sakanova, A. ; Yin, Shan ; Liu, Yong ; Men, Kai ; Zhao, Jiyun ; See, K.Y. ; Tseng, K.J. ; Nawawi, A. ; Tong, C.F. ; Liu, Yitao ; Simanjorang, R. ; Gajanayake, C.J. ; Gupta, A.K.</i>	
FAULT DIAGNOSIS IN POWER LINES USING HILBERT TRANSFORM AND FUZZY CLASSIFIER	36
<i>Rivera-Calle, F.M. ; Minchala-Avila, L.I. ; Montesdeoca-Contreras, J.C. ; Morales-Garcia, J.A.</i>	
AN ADVANCED ACTIVE RECTIFIER BASED ON THE SINGLE-STAR BRIDGE CELLS MODULAR MULTILEVEL CASCADE CONVERTER FOR MORE-ELECTRIC-AIRCRAFTS APPLICATIONS	41
<i>Mastromauro, Rosa A. ; Pugliese, Sante ; Stasi, Silvio</i>	
DESIGN AND TESTING OF A HIGH-SPEED AEROSPACE PERMANENT MAGNET STARTER/GENERATOR	47
<i>van der Geest, M. ; Polinder, H. ; Ferreira, J.A. ; Zeilstra, D.</i>	
ADVANCED AIRCRAFT ELECTRICAL SYSTEMS TO ENABLE AN ALL-ELECTRIC AIRCRAFT	53
<i>Sharma, Akshay ; Kapoor, Geet Krishna ; Chattopadhyay, A.B.</i>	
AN OPTIMIZING SCHEME FOR BEHAVIORAL MODELING OF SOLID-STATE POWER CONTROLLER	59
<i>Dong, Yanjun ; Deng, Daojie ; Zhang, Xiaobin</i>	
REVIEW OF POWER ELECTRONICS OPPORTUNITIES TO INTEGRATE IN THE MORE ELECTRICAL AIRCRAFT	64
<i>Bourdon, Jeremy ; Asfaux, Pascal ; Etayo, Alvaro Morentin</i>	
AUTOMATED STABILITY ASSESSMENT OF MORE ELECTRIC AIRCRAFT ELECTRICAL POWER SYSTEMS	70
<i>Hill, Christopher Ian ; Areerak, Kongpan ; Yang, Tao ; Bozhko, Serhiy ; Odavic, Milijana</i>	
SIC MOSFET DUAL ACTIVE BRIDGE CONVERTER FOR HARSH ENVIRONMENT APPLICATIONS IN A MORE-ELECTRIC-AIRCRAFT	76
<i>Mastromauro, Rosa A. ; Polisenio, Maria C. ; Pugliese, Sante ; Cupertino, Francesco ; Stasi, Silvio</i>	
A DIRECT DRIVE SOLUTION FOR CONTRA-ROTATING PROPELLERS IN ELECTRIC UNMANNED AERIAL VEHICLE	82
<i>Brando, G. ; Dannier, A. ; Del Pizzo, A. ; Di Noia, L.P.</i>	
FEM ANALYSIS OF A NON-CONVENTIONAL AXIAL FLUX HYBRID EXCITATION MOTOR UNDER FLUX WEAKENING OPERATION FOR ELECTRIC VEHICLE PURPOSE	88
<i>Pelizari, A. ; Chabu, I.E.</i>	
A WYE-DELTA MULTI-FUNCTION BALANCE TRANSFORMER BASED POWER QUALITY CONTROL SYSTEM FOR SINGLE-PHASE POWER SUPPLY SYSTEM	94
<i>Hu, Sijia ; Li, Yong ; Zhang, Zhiwen ; Xie, Bin ; Chen, Mingfei ; Kubis, Andreas</i>	
DEVELOPMENT OF BATTERY SYSTEM FOR RAILWAY VEHICLE	101
<i>Iwase, Tomoki ; Kawamura, Junya ; Tokai, Katsuhito ; Kageyama, Masahisa</i>	
A METHOD OF CALCULATING RUNNING RESISTANCE USING MONITORING DEVICES FOR ENERGY SIMULATORS	107
<i>Manabe, Shinichi ; Ogawa, Tomoyuki ; Imamura, Yoichi ; Minobe, Shingo ; Kawamura, Jyunya ; Kageyama, Masahisa</i>	

INFLUENCE OF MATERIAL ELECTROMAGNETIC PROPERTIES ON HTS LINEAR INDUCTION MOTOR USED IN RAIL TRANSIT	113
<i>Li, Dong ; Li, Weili ; Cao, Junci ; Fang, Jin ; Li, Jinyang ; Shen, Jiafeng</i>	
DEVELOPMENT OF A TRAIN RUNNING ENERGY SIMULATOR FOR COMMERCIAL TRAIN RUNNING	119
<i>Ogawa, Tomoyuki ; Manabe, Shinichi ; Imamura, Yoichi ; Minobe, Shingo ; Kawamura, Junya ; Hiramatsu, Suguru ; Kageyama, Masahisa ; Shimada, Naoto</i>	
OPTIMUM CONTROL STRATEGY FOR PMSM IN FIELD-WEAKENING REGION BY CONSTANT POWER	125
<i>Szenasy, Istvan ; Varga, Zoltan ; Szeli, Zoltan</i>	
DAMPING CONTROL OF INDUCTION MOTOR TRACTION SYSTEM IN SINGLE-PULSE MODE OF FIELD WEAKENING REGION	131
<i>Yokoo, Masashi ; Kondo, Keiichiro</i>	
A NEW GENERIC PROBLEM FORMULATION DEDICATED TO ELECTRIFIED RAILWAY SYSTEMS	137
<i>Desjouis, Boris ; Remy, Ghislain ; Ossart, Florence ; Marchand, Claude ; Bigeon, Jean ; Sourdille, Etienne</i>	
EVOLUTION AND FUTURE OF TRACTION TRANSFORMER ON ROLLING STOCKS	143
<i>Andre-philippe, Chamaret ; Didier, Frudier</i>	
BOOST RECTIFIER PROVIDING DC CONTROLLED VOLTAGE DEDICATED TO AC TRACTION AUXILIARY SUPPLY APPLICATION	149
<i>Koczara, W. ; Balkowiec, T.</i>	
DISTRIBUTION OF STRAY CURRENT BASED ON 3-DIMENSIONAL EARTH MODEL	155
<i>Jabbehdari, S. ; Mariscotti, A.</i>	
ANALYSES ON HEAT TRANSFER AND FLUID FLOWING IN A TRACTION MOTOR USED IN HIGH-SPEED CRH	161
<i>Cao, Junci ; Li, Weili ; Zhang, Yihuang ; Zhang, Xiaochen ; Jiang, Youming ; He, Yunfeng</i>	
INFLUENCE OF MAGNETIC WEDGE ON ELECTROMAGNETIC FIELD DISTRIBUTION OF PERMANENT MAGNET TRACTION MOTOR	169
<i>Li, Weili ; Cao, Zhaobin ; Cheng, Peng ; Huang, Dongzhu ; Li, Dong ; Shen, Jiafeng ; Tang, Weihong</i>	
LOSS COMPENSATION BY DISTURBANCE OBSERVER ON ENERGY MANAGEMENT CONTROLLER FOR HYBRID TRACTION CIRCUIT	174
<i>Saito, Tatsuhito ; Kondo, Keiichiro</i>	
ROBUST CONTROLLER DESIGN OF A DISTRIBUTED TRANSPORT SYSTEM	178
<i>Celentano, Laura ; Iannuzzi, Diego</i>	
AGENT-BASED ENERGY MANAGEMENT IN RAILWAYS	183
<i>Khayyam, Sara ; Ponci, Ferdinanda ; Lakhdar, Hakima ; Monti, Antonello</i>	
STUDY ON THREE-PHASE FOUR-LEG CONTROL TECHNOLOGY OF PERMANENT MAGNET SYNCHRONOUS MOTOR IN ELECTRIC VEHICLE	189
<i>Hanying, Gao ; Xufeng, Bai ; Weili, Li ; Jiafeng, Shen</i>	
DESIGN AND CONTROL OF FAULT-TOLERANT NON-ISOLATED MULTIPHASE MULTILEVEL DC-DC CONVERTERS FOR AUTOMOTIVE POWER SYSTEMS	195
<i>Gleissner, Michael ; Bakran, Mark-M.</i>	
NUMERICAL MODELING AND SIMULATION ANALYSIS OF VEHICLE THERMAL MANAGEMENT SYSTEM FOR A POWER-SPLIT HYBRID ELECTRIC VEHICLE	201
<i>Shao, Chunming ; Sun, Xiaoxia ; Wang, Guozhu ; Yue, Yusong ; Li, Xin ; Yang, Lining</i>	
A STUDY OF BATTERY POWER FOR A DIFFERENT ELECTRIC VEHICLE PROPULSION SYSTEM	207
<i>Silva, Ludmila C.A. ; Eckert, Jony J. ; Santiciolli, Fabio M. ; Costa, Eduardo S. ; Dedini, Franco G. ; Correa, Fernanda C.</i>	
STUDY ON THE BRAKE RESISTOR AND ENERGY CONSUMING BRAKE PROCESS OF HYBRID ELECTRIC VEHICLE	213
<i>Sun, Xiaoxia ; Shao, Chunming ; Wu, Yufeng ; Yang, Deyou ; Yang, Naifeng ; Li, Yugang</i>	
DESIGN CONSIDERATIONS FOR HIGH PERFORMANCE TRACTION MACHINES: AIMING FOR THE FREEDOMCAR 2020 TARGETS	219
<i>Walker, Adam ; Galea, Michael ; Gerada, Chris ; Mebarki, Abdeslam ; Gerada, David</i>	
OPTIMAL ENERGY MANAGEMENT OF A HYBRID ELECTRIC BUS WITH A BATTERY-SUPERCAPACITOR STORAGE SYSTEM USING GENETIC ALGORITHM	225
<i>Herrera, Victor Isaac ; Saez-de-Ibarra, Andoni ; Milo, Aitor ; Gaztanaga, Haizea ; Camblong, Haritza</i>	
MODELLING AND SIMULATION OF IWD VEHICLE	231
<i>Simonik, Petr ; Mrovec, Tomas ; Takac, Jiri</i>	

CONTROL OF SIC-BASED DUAL ACTIVE BRIDGE IN HIGH POWER THREE PHASE ON-BOARD CHARGER OF EVS	237
<i>Zeljko, Sandra ; Vuletic, Radovan ; Miller, Andreas ; Denais, Alann</i>	
EDDY-CURRENT LOSS ANALYSIS OF COPPER-BAR WINDINGS OF ULTRA HIGH-SPEED PM MOTOR	243
<i>Noguchi, Toshihiko ; Komori, Takehiro</i>	
FPGA IMPLEMENTATION OF AN ADAPTIVE MODULATION METHOD FOR A THREE-PHASE GRID-TIED PV CHB INVERTER	249
<i>Coppola, Marino ; Di Napoli, Fabio ; Guerriero, Pierluigi ; Dannier, Adolfo ; Iannuzzi, Diego ; Daliento, Santolo ; Del Pizzo, Andrea</i>	
HETEROGENEOUS LTE/WI-FI ARCHITECTURE FOR ITS TRAFFIC CONTROL AND INFOTAINMENT	258
<i>Sadek, Noha M. ; Halawa, Hassan H. ; Daoud, Ramez M. ; Amer, Hassanein H. ; Ali, Nora A.</i>	
APPROACH FOR COMPARATIVE ANALYSIS OF ELECTRIC TRACTION MACHINES	264
<i>Kammermann, Jorg ; Bolvashenkov, Igor ; Herzog, Hans-Georg</i>	
GRID CIRCUIT DESIGN USING S.A.N.DY FOR A BATTERY PACK: SWITCHING ALGORITHM AND CELL DYNAMICS (S.A.N.DY), A NOVEL APPROACH FOR OPTIMUM DISCHARGING/CHARGING OF A LITHIUM-POLYMER BATTERY PACK FOR HYBRID/ELECTRIC VEHICLES	269
<i>Mishra, Jainendra</i>	
MODELING AND SIMULATION OF AN LVDC SHIPBOARD POWER SYSTEM: VOLTAGE TRANSIENTS COMPARISON WITH A STANDARD LVAC SOLUTION	276
<i>Bosich, Daniele ; Gibescu, Madeleine ; Fazlagic, Ismir ; Remijn, Nico ; de Regt, Jos</i>	
THERMAL MODELING OF A PERMANENT MAGNET MACHINE BUILT USING LITZ WIRE	283
<i>Nategh, Shafiqh ; Ovrebo, Sigurd ; Mahdavi, Sara ; Wallmark, Oskar</i>	
MEDIUM VOLTAGE MULTILEVEL CONVERTERS FOR SHIP ELECTRIC PROPULSION DRIVES	289
<i>Thantrige, Kalpani ; Rathore, Akshay Kumar ; Panda, Sanjib Kumar ; Jayasignhe, Gamini ; Zagrodnik, Michael Adam ; Gupta, Amit Kumar</i>	
DYNAMIC MODELING OF A SUPPLY VESSEL ELECTRICAL GRID FOR DP3 PROTECTION SYSTEM	296
<i>D'Agostino, F. ; Silvestro, F. ; Fidigatti, A. ; Ragaini, E.</i>	
EFFECT OF SUDDEN CHANGE LOAD ON ISOLATED ELECTRICAL GRID	302
<i>Mirosevic, Marija ; Maljkovic, Zlatko</i>	
FUZZY LOGIC VECTOR CONTROL DESIGN FOR FAULT-TOLERANT CONTROL OF A 15-PHASE INDUCTION MACHINE	306
<i>Liu, Zicheng ; Zheng, Zedong ; Li, Yongdong ; Sudhoff, Scott D.</i>	
ELECTRIC LOADS CHARACTERIZATION IN AN AIRCRAFT CARRIER WITH RING-BUS DISTRIBUTION SYSTEM	312
<i>Lipardi, G. ; Piva, L. ; Piegari, L. ; Tironi, E. ; Lamedica, R. ; Ruvio, A. ; Sulligoi, G. ; Vicenzutti, A.</i>	
FULL ELECTRIC SHIP PROPULSION BASED ON A FLYING CAPACITOR CONVERTER AND AN INDUCTION MOTOR DRIVE	318
<i>Reusser, Carlos A. ; Young, Hector</i>	
APPLICATION OF BACKSTEPPING TO MVDC SHIP POWER SYSTEMS WITH CONSTANT POWER LOADS	324
<i>Cupelli, Marco ; Mirz, Markus ; Monti, Antonello</i>	
HARDWARE IN THE LOOP IMPLEMENTATION OF LINEARIZING STATE FEEDBACK ON MVDC SHIP SYSTEMS AND THE SIGNIFICANCE OF LONGITUDINAL PARAMETERS	330
<i>Cupelli, Marco ; de Paz Carro, Martin ; Monti, Antonello</i>	
EFFICIENCY OPTIMIZATION IN BI-DIRECTIONAL INDUCTIVE POWER TRANSFER SYSTEMS	336
<i>Pellitteri, F. ; Boscaino, V. ; Di Tommaso, A.O. ; Miceli, R.</i>	
TRANSIENT SHORT CIRCUIT ANALYSIS IN DC ON-BOARD DISTRIBUTION SYSTEMS FED BY SYNCHRONOUS GENERATORS THROUGH 6-PULSE DIODE RECTIFIERS	342
<i>Vicenzutti, A. ; De Din, E. ; Sulligoi, G.</i>	
DEPENDABLE ORIENTED DESIGN OF COMPLEX INTEGRATED POWER SYSTEMS ON SHIPS	348
<i>Chianzone, M. ; da Rin, A. ; Menis, R. ; Sulligoi, G. ; Vicenzutti, A.</i>	
INLAND WATERWAY GAS-FUELLED VESSELS: AN INNOVATIVE PROPOSAL OF A HYBRID SHIP FOR THE EUROPEAN NETWORK	354
<i>Bucci, Vittorio ; Marino, Alberto ; Bosich, Daniele ; Sulligoi, Giorgio</i>	

METHOD FOR AUTOMATIC ASSESSMENT OF ELECTRIC MOTOR CONDITION BEFORE ITS STARTUP	360
<i>Grebchenko, N.V. ; Kozhukhar, A.V.</i>	
DYNAMIC BEHAVIOR OF A TROLLEY TRACTION SYSTEM WITH A FLEXIBLE DRIVING ROPE	366
<i>Jianjie, Zhang ; Abba, Gabriel</i>	
HYBRID MODULATED MODEL PREDICTIVE CONTROL FOR THE MORE ELECTRIC AIRCRAFT GENERATOR SYSTEM	372
<i>Yeoh, Seang Shen ; Yang, Tao ; Tarisciotti, Luca ; Bozhko, Serhiy ; Zanchetta, Pericle</i>	
DEVELOPMENT OF LFT-BASED MODELS FOR ROBUST STABILITY ANALYSIS OF A GENERIC ELECTRICAL POWER SYSTEM OVER ALL OPERATING CONDITIONS	378
<i>Sumsurooah, Sharmila ; Odavic, Milijana ; Bozhko, Serhiy</i>	
MTA CONTROL FOR TRACTION IM DRIVES: THEORY AND EXPERIMENTAL RESULTS	384
<i>Bozhko, Serhiy ; Dymko, Serhii ; Kovbasa, Serhii ; Peresada, Sergei</i>	
INTELLIGENT POWER REGULATION USING INNOVATIVE MODULES FOR ENERGY SUPERVISION	390
<i>Guida, Beniamino ; Cavallo, Alberto</i>	
PERFORMANCE ANALYSIS OF WHEEL SLIP RESET CONTROLLER IN BRAKE SYSTEMS	396
<i>Delgado, Emma ; Barreiro, Antonio ; Diaz-Cacho, Miguel ; Falcon, Pablo</i>	
ANALYSIS OF THE EFFECTS OF GEAR TRANSMISSION STRUCTURE ON THE ELECTRIC VEHICLE PERFORMANCES	402
<i>Musio, Claudia ; Damiano, Alfonso</i>	
OPTIMIZATION OF PARALLELIZED POWER INVERTERS USING A DIRECT MODELLING APPROACH FOR MORE ELECTRICAL AIRCRAFT	408
<i>Etayo, Alvaro Morentin ; Bourdon, Jeremy ; Prisse, Lucien ; Meynard, Thierry ; Piquet, Hubert</i>	
INVESTIGATIONS INTO STANDARDS COMPLIANT PARALLELED GENERATION IN CIVIL AIRCRAFT	413
<i>Kostakis, T. ; Norman, P.J. ; Galloway, S.J. ; Burt, G.M.</i>	
FUNCTIONAL MODELLING OF MULTI-PULSE ASYMMETRIC AUTO-TRANSFORMER RECTIFIER UNITS	418
<i>Yang, T. ; Bozhko, S.</i>	
MODELING AND SIMULATION OF A SWITCHED RELUCTANCE GENERATOR FOR AIRCRAFT POWER SYSTEMS	426
<i>Le-Huy, Hoang</i>	
FAULT BEHAVIOUR OF A SUPERCONDUCTING TURBOELECTRIC DISTRIBUTED PROPULSION AIRCRAFT NETWORK: A COMPREHENSIVE SENSITIVITY STUDY	432
<i>Davies, K.M. ; Norman, P.J. ; Jones, C.E. ; Galloway, S.J. ; Burt, G.M.</i>	
DEVELOPMENT OF VOLTAGE STANDARDS FOR TURBO-ELECTRIC DISTRIBUTED PROPULSION AIRCRAFT POWER SYSTEMS	438
<i>Bollman, Andrew M. ; Armstrong, Michael J. ; Jones, Catherine E. ; Norman, Patrick J. ; Galloway, Stuart J.</i>	
A PRE-DESIGN SENSITIVITY ANALYSIS TOOL FOR CONSIDERATION OF FULL-ELECTRIC AIRCRAFT PROPULSION ELECTRICAL POWER SYSTEM ARCHITECTURES	444
<i>Jones, C.E. ; Norman, P.J. ; Galloway, S.J. ; Burt, G.M. ; Armstrong, M. ; Bollman, A.</i>	
EMERGING ENERGY STORAGE SOLUTIONS FOR TRANSPORTATION — A REVIEW: AN INSIGHT INTO ROAD, RAIL, SEA AND AIR TRANSPORTATION APPLICATIONS	450
<i>Alahakoon, Sanath ; Leksell, Mats</i>	
SODIUM NICKEL CHLORIDE BATTERIES IN TRANSPORTATION APPLICATIONS	456
<i>Manzoni, Renato</i>	
POWER QUALITY CONDITIONING SYSTEM BASED ON LITHIUM-ION ULTRACAPACITORS FOR ELECTRIC VEHICLES QUICK CHARGING STATIONS	462
<i>Quadrelli, Alessandro ; Gigliucci, Gianluca ; Pasca, Emanuele ; Farnesi, Stefano ; Gambuti, Rino ; Flamingo, Flavio ; Bosia, Giorgio</i>	
ON/OFF-BOARD 42V SWITCH MODE-BASED CHARGER FOR ADVANCED VEHICLES	468
<i>Ahmad, Nauman ; Abid, M.Omer</i>	
COMBINING ENERGY WITH POWER: LITHIUM-ION CAPACITORS	474
<i>Ronsmans, Jan ; Lalande, Benoit</i>	
FABRIC'S APPROACH TOWARDS THE ESTIMATION OF ENERGY STORAGE SYSTEM REQUIREMENTS FOR GRID IMPACT REDUCTION	478
<i>Amditis, Angelos ; Theodoropoulos, Theodoros ; Damousis, Yannis ; Sallan, Jesus ; Bludszuweit, Hans</i>	
FLOW BATTERIES USE POTENTIAL IN HEAVY VEHICLES	483
<i>Campillo, Javier ; Ghaviha, Nima ; Zimmerman, Nathan ; Dahlquist, Erik</i>	

FAST CHARGE AND LOCAL PUBLIC TRANSPORT: AN ITALIAN EXPERIENCE	489
<i>Genovese, Antonino ; Geracitano, Rosario ; Leoncavallo, Luca ; Pede, Giovanni ; Spazzoli, Roberto</i>	
EXPERIMENTATION WITH A ZEBRA PLUS EDLC BASED HYBRID STORAGE SYSTEM FOR URBAN MEANS OF TRANSPORT	496
<i>Capasso, C. ; Sepe, V. ; Veneri, O. ; Montanari, M. ; Poletti, L.</i>	
MACHINE LEARNING FOR WEAR FORECASTING OF NAVAL ASSETS FOR CONDITION-BASED MAINTENANCE APPLICATIONS	502
<i>Coraddu, Andrea ; Oneto, Luca ; Ghio, Alessandro ; Savio, Stefano ; Figari, Massimo ; Anguita, Davide</i>	
RAILWAY MAINTENANCE PURPOSE AND IMPROVEMENT	507
<i>Bianco, Luigi ; Fusco, Lucio</i>	
AN APPROACH TO DESIGN A PROGNOSTIC BASED MAINTENANCE STRATEGY FOR RAILWAY POWER CONVERTER UNIT	511
<i>Fusco, Lucio ; Pagano, Mario</i>	
DETERMINISTIC VS HEURISTIC ALGORITHMS FOR ECO-DRIVING APPLICATION IN METRO NETWORK	517
<i>Calderaro, Vito ; Galdi, Vincenzo ; Graber, Giuseppe ; Piccolo, Antonio</i>	
USE OF FORMAL LANGUAGES TO REPRESENT THE ERTMS/ETCS SYSTEM REQUIREMENTS SPECIFICATIONS	523
<i>Piccolo, Antonio ; Galdi, Vincenzo ; Senesi, Fabio ; Malangone, Raffaele</i>	
TEMPERATURE INFLUENCE ON STATE-OF-THE-ART ELECTRIC VEHICLES' CONSUMPTION BASED ON FLEET MEASUREMENTS	528
<i>Dost, P. ; Spichartz, P. ; Sourkounis, C.</i>	
EVALUATION OF ELECTRIC RANGE DEMANDS OF EV AND EREV ON THE BASIS OF FIELD TEST DATA	534
<i>Spichartz, P. ; Dost, P. ; Sourkounis, C.</i>	
DYNAMIC WIRELESS EV CHARGING FED FROM RAILWAY GRID: GRID CONNECTION CONCEPT	540
<i>Turki, Faical ; Staudt, Volker ; Steimel, Andreas</i>	
DESIGN OF INTERIOR PERMANENT MAGNET SYNCHRONOUS MACHINE FOR TWO-DRIVE-TRANSMISSION	545
<i>An, Jeongki ; Binder, Andreas</i>	
DYNAMIC WIRELESS EV CHARGING FED FROM RAILWAY GRID: MAGNETIC TOPOLOGY COMPARISON	551
<i>Turki, Faical ; Staudt, Volker ; Steimel, Andreas</i>	
FUEL CELL RANGE EXTENDER FOR BATTERY ELECTRIC VEHICLES	559
<i>Walters, Marius ; Kuhlmann, Axel ; Ogrzewalla, Jurgen</i>	
THE PROPOSAL OF RE-ADHESION CONTROL METHOD WITH THE ADVANTAGE OF INDIVIDUAL CONTROL SYSTEM	565
<i>Yamazaki, Osamu ; Fukasawa, Shingo ; Ohashi, Satoru ; Kondo, Keiichiro</i>	
PROPULSION SYSTEM FOR CATENARY AND STORAGE BATTERY HYBRID ELECTRIC RAILCAR SERIES EV-E301	571
<i>Shiraki, Naoki ; Tokito, Kosuke ; Yokozutsumi, Ryo</i>	
STUDY OF PRACTICAL ENERGY-SAVING OPERATION FOR ELECTRIC RAILWAY VEHICLE	578
<i>Hiramatsu, Suguru ; Kumada, Yoshifumi ; Toukai, Katsuhito ; Sugimoto, Syouichi ; Kawamura, Junya ; Kageyama, Masahisa</i>	
COMPENSATION OF EXCESSIVE ANGULAR MOMENTUM IN A RE-ADHESION CONTROL OF AN ELECTRIC TRAIN	583
<i>Koseki, Takafumi ; Hara, Takafumi</i>	
PARALLEL CONNECTION OF SIC MOSFET MODULES FOR FUTURE USE IN TRACTION CONVERTERS	589
<i>Fabre, Joseph ; Ladoux, Philippe</i>	
A NEW DC-DC CONVERTER WITH HIGH VOLTAGE GAIN AND LOW VOLTAGE STRESS ON POWER SWITCHES	595
<i>Nabati, Yaser ; Babaei, Ebrahim</i>	
CALCULATION OF SWITCHING CURRENT STRESS IN HIGH VOLTAGE GAIN BOOST DC-DC CONVERTER	601
<i>Babaei, Ebrahim ; Mofidi, Azadeh ; Laali, Sara</i>	
VERIFICATION TESTS OF 3.3 KV SIC (SILICON CARBIDE) HYBRID IGBT INVERTER FOR NISHI-NIPPON RAILROAD CO., LTD 3000 SERIES	607
<i>Sugiyama, Akio ; Okitsu, Hiromi ; Ishimaru, Tomohiko ; Kishimoto, Yoshihisa ; Kadooka, Shohei ; Sawakami, Tomoki</i>	

10KV SIC MOSFETS VERSUS 6.5KV SI-IGBTs FOR MEDIUM FREQUENCY TRANSFORMER APPLICATION IN RAILWAY TRACTION	611
<i>Casarin, J. ; Ladoux, P. ; Lasserre, P.</i>	
A REVIEW OF PWM VOLTAGE SOURCE CONVERTERS BASED INDUSTRIAL APPLICATIONS	617
<i>Marzouki, Amira ; Hamouda, Mahmoud ; Fnaiech, Farhat</i>	
RATIONAL SIZING OF ONBOARD EDLC AND PLACEMENT OF CHARGING FACILITIES FOR A LRT SYSTEM WITH INTERMITTENT POWER SUPPLY	623
<i>Endo, Naoto ; Miyatake, Masafumi</i>	
IMPROVED CORE SHAPE OF CONTACTLESS TRANSFORMER FOR LRT SYSTEM.....	629
<i>Dias, Joao Victor Pinon Pereira ; Miyatake, Masafumi</i>	
HANDLING SYSTEM HARMONIC PROPAGATION IN A DIESEL-ELECTRIC SHIP WITH AN ACTIVE FILTER.....	635
<i>Ardal, Atle Rygg ; Skjong, Espen ; Molinas, Marta</i>	
VARIABLE DC-LINK VOLTAGE POWERTRAIN FOR ELECTRIFIED MOBILE WORK MACHINES	641
<i>Pohlandt, Christian ; Geimer, Marcus</i>	
RESEARCH OF A NEW STRUCTURE OF HTS DC MOTOR	646
<i>Peng, Cheng ; Xiangling, Kong ; Geng, Wang ; Weili, Li</i>	
STATE SPACE MODEL OF A MODULAR SPEED-DROOPED SYSTEM FOR HIGH RELIABILITY INTEGRATED MODULAR MOTOR DRIVES.....	651
<i>Galassini, Alessandro ; Costabeber, Alessandro ; Gerada, Chris ; Buticchi, Giampaolo ; Barater, Davide</i>	
A REVIEW ON TURN-TURN SHORT CIRCUIT FAULT MANAGEMENT	657
<i>Arumugam, Puvan ; Gerada, Chris ; Hamiti, Tahar ; Hill, Christopher ; Bozhko, Serhiy</i>	
HIGH EFFICIENCY SHAFT GENERATOR DRIVE SYSTEM DESIGN FOR RO-RO TRAILER-PASSENGER SHIP APPLICATION	662
<i>Sarigiannidis, A. ; Kladas, A. ; Chatzinikolaou, E. ; Patsios, C.</i>	
RELIABILITY ANALYSIS FOR A WASTE HEAT RECOVERY POWER ELECTRONIC INTERFACE APPLIED AT ALL-ELECTRIC AIRCRAFTS.....	668
<i>Saridakis, Stefanos ; Papanikolaou, Nick ; Voglitsis, Dionisios ; Koutroulis, Eftichios ; Tatakis, Emmanuel ; Christidis, Georgios ; Karatzaferis, Ioannis</i>	
SELECTION OF SLOT-POLE COMBINATION OF PERMANENT MAGNET MACHINES FOR AIRCRAFT ACTUATION	674
<i>Dusek, Jiri ; Arumugam, Puvan ; Hamiti, Tahar ; Gerada, Chris</i>	
CONTRIBUTION TO A DETAILED MODELING AND MORE RELIABLE SIMULATION OF A SHIP'S SHAFT MACHINE.....	679
<i>Dermentzoglou, John Ch. ; Prousalidis, John M.</i>	
POWER QUALITY ANALYSIS FOR THE HIGHLY-ELECTRIC ASSET WITH DC POWER DISTRIBUTION.....	685
<i>Kourmpelis, T. ; Prousalidis, J. ; Spathis, D. ; Dallas, S. ; Kanellos, F. ; Korn, Milton</i>	
SHORT-CIRCUIT PROTECTION IN DC SHIP GRIDS BASED ON MMC WITH FULL-BRIDGE MODULES	692
<i>Staudt, Volker ; Jager, Martin Kleine ; Rothstein, Axel ; Steimel, Andreas ; Meyer, Daniel ; Bartelt, Roman ; Heising, Carsten</i>	
MULTIFUNCTIONAL MEGAWATT SCALE MEDIUM VOLTAGE DC TEST BED BASED ON MODULAR MULTILEVEL CONVERTER (MMC) TECHNOLOGY	697
<i>Steurer, M. ; Bogdan, F. ; Bosworth, M. ; Faruque, O. ; Hauer, J. ; Schoder, K. ; Sloderbeck, M. ; Soto, D. ; Sun, K. ; Winkelkemper, M. ; Schwager, L. ; Blaszczyk, P.</i>	
FAULT TOLERANT SHIPBOARD MVDC ARCHITECTURES	703
<i>Cuzner, Robert M. ; Esmaili, Daniel Ali</i>	
SMALL-SIGNAL IMPEDANCE MEASUREMENT IN MEDIUM-VOLTAGE DC POWER SYSTEMS	709
<i>Shen, Zhiyu ; Jaksic, Marko ; Cvetkovic, Igor ; Burgos, Rolando ; Boroyevich, Dushan</i>	
Author Index	