

31st International Electric Vehicle Symposium & Exhibition and International Electric Vehicle Technology Conference (EVS31 & EVTeC 2018)

Kobe, Japan
1-3 October 2018

Volume 1 of 3

ISBN: 978-1-5108-9157-9

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

Copyright© (2018) by Society of Automotive Engineers of Japan (JSAE)
All rights reserved.

Printed with permission by Curran Associates, Inc. (2019)

For permission requests, please contact Society of Automotive Engineers of Japan (JSAE)
at the address below.

Society of Automotive Engineers of Japan (JSAE)
10-2 Gobancho, Chiyoda City,
Tokyo 102-0076, Japan

Phone: +81 3-3262-8211

<https://www.jsae.or.jp/en/>

Additional copies of this publication are available from:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: 845-758-0400
Fax: 845-758-2633
Email: curran@proceedings.com
Web: www.proceedings.com

TABLE OF CONTENTS

VOLUME 1

[A1 (SPECIAL SESSION)] VEHICLE MOTION CONTROL & DYNAMIC CHARGING

[A-1] DESIGN OF AN MULTIPLE ADAPTIVE SLIDING MODE CONTROLLER FOR IMPROVING HANDLING PERFORMANCE OF 4-IN-WHEEL-MOTORS DRIVEN ELECTRIC VEHICLE.....	1
<i>Minseong Chae, Kanghyun Nam</i>	
[A-2] RIDE BLENDING CONTROL FOR ELECTRIC VEHICLES	8
<i>Valentin Ivanov, Miguel Dhaens, Vincenzo Ricciardi, Dzmitry Savitski, Klaus Augsburg</i>	
[A-3] LATERAL MOTION ESTIMATION OF PRECEDING TARGET VEHICLES FOR OVERTAKING DECISION AND CONTROL	13
<i>Zhisong Zhou, Yafei Wang, Jingkai Wu, Chengliang Yin, Jia-Sheng Hu</i>	
[A-4] MODELLING TECHNIQUES FOR DESIGNING HIGH-PERFORMANCE ON-ROAD DYNAMIC CHARGING SYSTEMS FOR ELECTRIC VEHICLES	20
<i>Giuseppe Guidi, Jon Are Suul,</i>	
[A-5] STUDY OF 450-KW CONDUCTIVE DYNAMIC CHARGING SYSTEM	27
<i>Takamitsu Tajima, Yoshiyuki Tani, Tsutomu Nakamura</i>	
[A-6] EV SYSTEM DEVELOPMENT FOR LARGE VEHICLES TO ACHIEVE EARLY EV PROMOTION IN THE BUS / TRUCK CATEGORY	34
<i>Atsushi Mizukoshi, Toshiro Matsuda, Naoto Kashiwagi, Shinya Miyazaki</i>	

[A2 (SPECIAL SESSION)] POWER ELECTRONIC COMPONENTS & SYSTEM TECHNOLOGIES

[A2-1] A CURRENT DETECTION METHOD FOR AVOIDING SWITCHING NOISE OF INVERTER.....	39
<i>Takeshi Kuroda</i>	
[A2-2] A METHOD TO DESIGN THE DC LINK VOLTAGE CONTROLLER FOR MINIMUM DC LINK VOLTAGE DRIVING METHOD OF HYBRID ELECTRIC VEHICLES	43
<i>Jongwon Heo, Keiichiro Kondo</i>	
[A2-3] HIGH EFFICIENCY CHOPPER BASED EV RANGE EXTENDER.....	49
<i>Ayataro Tamura, Takayuki Ishibashi, Takuro Umihara, Yukinori Tsuruta, Hidemine Obara, Atsuo Kawamura</i>	
[A2-4] EXPERIMENTAL VERIFICATION OF AN ENERGY MANAGEMENT METHOD FOR FUEL CELL HYBRID ELECTRIC VEHICLES WITH EDLC	55
<i>Toshinori Kitamura, Ryosuke Ito, Nobukazu Hoshi, Noboru Katayama</i>	
[A2-5] DEVELOPMENT OF A TRANSMISSION-MOUNTED POWER CONTROL UNIT INCLUDING 12-VOLT DC-DC CONVERTER FOR 3RD GENERATION TWO-MOTOR HYBRID SYSTEMS	61
<i>Toshimitsu Kobori, Ryoji Tomokage</i>	
[A2-6] DEVELOPMENT OF THE ON-BOARD CHARGER FOR PHVS	68
<i>Koji Taki, Jun Takagi</i>	

[A3] BATTERIES 1

[A3-1] HIGH POWER BATTERY MODULE - ANALYSIS AND DESIGN OF A HIGH POWER MODULE FOR 48 V APPLICATIONS	72
<i>Michael Bassett, Jonathan Hall, Christian Vogler, Dave Preece, Adrian Cooper, Martin Berger</i>	
[A3-2] EVOLUTION OF U.S. DEPARTMENT OF ENERGY BATTERY PERFORMANCE TARGETS FOR ELECTRIFIED VEHICLES	80
<i>Ehsan Islam, Ayman Moawad, Namdoo Kim, Ram Vijayagopal, Aymeric Rousseau</i>	
[A3-3] LTO BATTERY PACK APPLICATION WITH ULTRAFAST CHARGING E-BUSES AND TROLLEYBUSES - FIELD RESULTS.....	87
<i>Bartek Kras, Filip Jankun</i>	

[A3-4] BATTERY SIZING FOR ELECTRIC VEHICLES BASED ON REAL DRIVING PATTERN IN THAILAND	91
<i>Bongkotchaporn Duangsrikaew, Jiravan Mongkoltanatas, Preechar Karin, Katsunori Hanamura, Chi-na Benyajati</i>	
[A3-5] THEORETICAL BACKGROUND OF COMPARATIVELY HIGH FREQUENCY PROBING FOR ESTIMATION OF STATE OF HEALTH OF LI-ION BATTERY	98
<i>Atsuo Hatono</i>	
[A3-6] CHARACTERIZATION AND CONCEPT VALIDATION OF LITHIUM-ION BATTERIES IN AUTOMOTIVE APPLICATIONS BY LOAD SPECTRUM ANALYSIS	105
<i>Tanja Gewalt, Christoph Reiter, Xue Lin, Michael Baumann, Thilo Krahl, Alexander Hahn, Markus Lienkamp</i>	

[A4] HEAVY-DUTY VEHICLES 1

[A4-1] HOW TO BUILD A BUS BATTERY CASE	112
<i>Peter Geuting, Daniel Fuss, Hannes Holey, Alexander Betz, Axel Richter, Christian Gloeggler</i>	
[A4-2] JAWORZNO: ACHIEVING FIRST 250 000 KM IN REGULAR E-BUS OPERATION: CHALLENGES AND THE FUTURE	119
<i>Adam Piotrowski, Zbigniew Nosal, Micha? Piku?a, Micha? Sierszy?ski, Franciszek Sidorski</i>	
[A4-3] INTEGRATED TCO ASSESSMENT OF BUS NETWORK ELECTRIFICATION CONSIDERING RESCHEDULING AND DELAYS - MODELLING FRAMEWORK AND CASE STUDY	126
<i>Dominic Jefferies, Dietmar G?hlich</i>	
[A4-4] FROM A VISION TO THE SERIES PRODUCTION SOLARIS EXPERIENCE IN E-MOBILITY	138
<i>Micha? Piku?a, Micha? Sierszy?ski, Adam Piotrowski, Franciszek Sidorski</i>	
[A4-5] ON THE ENERGY COMPARISON OF CONVENTIONAL AND ALTERNATIVE PROPULSION BUSES	148
<i>Carlo Villante, Michele Anatone, Angelo De Vita</i>	

[A5] BATTERIES 2

[A5-1] INTERNAL PREHEAT METHOD FOR NMC BATTERIES AT COLD CLIMATE CONDITIONS	155
<i>Theodoros Kalogiannis, Joris Jaguemont, Noshin Omar, Joeri Van Mierlo, Peter Van Den Bossche</i>	
[A5-2] LITHIUM-LITHIUM BIND BATTERY: INNOVATIVE HYBRID LITHIUM-ION BATTERY WITH HIGH ENERGY DENSITY AND HIGH RATE CAPABILITY	162
<i>Tomohiko Matoba, Diwaker Bandanwal, Naoyoshi Kachi, Kazunari Kobayashi, Hajime Konishi, Hisashi Tsukamoto</i>	
[A5-3] EXPERIMENTAL INVESTIGATION OF REACTION RATES DURING ELECTRODEPOSITION IN LI-SULFUR BATTERY	169
<i>Shovon Goutam, Izaro Laresgoiti, Elixabete Ayerbe, Noshin Omar, Peter Van den Bossche, Joeri Van Mierlo</i>	
[A5-4] 12V BIND BATTERY: SIMPLE AND EFFECTIVE HYBRID BATTERY TECHNOLOGY FOR ADVANCED IDLING REDUCTION SYSTEM	175
<i>Naoyoshi Kachi, Diwaker Bandanwal, Tomohiko Matoba, Hisashi Tsukamoto</i>	
[A5-5] SIMULATION OF LITHIUM PLATING DUE TO SPATIAL INHOMOGENEOUS SEPARATOR STRAIN IN LITHIUM-ION-CELLS	181
<i>Fabian Ebert, Andreas Oberbauer, Maria Angeles Caba?ero, Gerhard Sextl, Markus Lienkamp</i>	
[A5-6] RESEARCH ABOUT INFLUENCE OF SOC ON NATURAL FREQUENCY OF POUCH CELLS	188
<i>Ruihe Li, Zhichao Hou, Languang Lu, Peibao Wu</i>	

[A6] V2X (V2G & V2H) 1

[A6-1] COMMON INFORMATION MODELS FOR STANDARDIZED DISTRIBUTED INTEROPERABLE EV SERVICES	195
<i>Evangelia Portouli, Theodoros Theodoropoulos, Christina Anagnostopoulou, Angelos Amditis</i>	
[A6-2] SUITABILITY OF COMMERCIAL V2G CHADEMO CHARGERS FOR GRID SERVICES V2G HARDWARE TESTS WITH LOCAL AND REMOTE CONTROL SETUP: ASSESSING THE PERFORMANCE FOR QUALITY GRID SERVICES	200
<i>Antonio Zecchino, Andreas Thingvad, Peter Bach Andersen, Mattia Marinelli</i>	

[A6-3] INFLUENCE OF V2G FREQUENCY SERVICES AND DRIVING ON ELECTRIC VEHICLES BATTERY DEGRADATION IN THE NORDIC COUNTRIES	207
<i>Andreas Thingvad, Mattia Marinelli</i>	
[A6-4] CROSS-BRAND VALIDATION OF GRID SERVICES USING V2G-ENABLED VEHICLES IN THE PARKER PROJECT	214
<i>Peter Bach Andersen, Seyedmostafa Hashemi, Tiago Sousa, Thomas Meier Soerensen, Lance Noel, Bjoern Christensen</i>	
[A6-5] THE BUSINESS CASE OF VEHICLE-TO-GRID (V2G) CHARGING WITHIN THE CURRENT DUTCH FREQUENCY CONTAINMENT RESERVE MARKET	219
<i>Tim van Beek, Sjoerd Moorman, Kostas Andriosopoulos</i>	
[A6-6] COMPARISON OF THE CONTRIBUTION OF SMART CHARGING, V2G AND ENERGY DEMAND REDUCTION TO THE ENERGY AUTONOMY OF A BELGIAN CITY DEPOT	226
<i>Bram Rotthier, Bavo Derijcke, Rien Leenders, Nikolaas Van den Steen, Bart Huyck, Jan Cappelle</i>	

[B1 (SPECIAL SESSION)] IN-WHEEL/INTEGRATED MOTOR TECHNOLOGIES

[B1-1] DEVELOPMENT OF SECOND GENERATION WIRELESS IN-WHEEL MOTOR WITH DYNAMIC WIRELESS POWER TRANSFER.....	233
<i>Hiroshi Fujimoto, Takuma Takeuchi, Kensuke Hanajiri, Katsuhiro Hata, Takehiro Imura, Motoki Sato, Daisuke Gunji, Giuseppe Guidi</i>	
[B1-2] IN-WHEEL POWERTRAIN FUNCTIONS FOR THE AUTONOMOUS AND CONNECTED FUTURE - ADVANCED POWERTRAIN FUNCTIONALITIES ENABLING NEW POSSIBILITIES FOR THE FUTURE OF MOBILITY	240
<i>Blaž Modic, Urška Skrt, Tomaž Motaln, Gorazd Lampi?, Gorazd Gotovac</i>	
[B1-3] SHOCK-LESS SHIFT CONTROL METHOD OF WHEEL HUB MOTOR WITH TWO-SPEED TRANSMISSION.....	247
<i>Takahiro Sushi, Ryuho Morita, Shin Yamamoto, Mitsuru Oike</i>	
[B1-4] DEVELOPMENT OF A HIGH PERFORMANCE & HIGH POWER DENSITY INVERTER INTEGRATED MOTOR UNIT	252
<i>Hiroaki Kakei, Yoshinori Nakano, Junichi Aoki, Tadashi Ashikaga</i>	
[B1-5] INTEGRATED DRIVELINE ELECTRIFICATION WITH AND WITHOUT TRANSMISSIONS	257
<i>Rafel Pascual de la Cruz, Bernd Vahlensieck</i>	
[B1-6] NEWLY DEVELOPED MOTOR COOLING METHOD USING REFRIGERANT	262
<i>Hidemasa Fujita, Atsushi Itoh, Tohru Urano</i>	

[B2 (SPECIAL SESSION)] POWER ELECTRONIC PACKAGES & MODULES

[B2-1] HIGH TEMPERATURE OPERATION OF SEMI-CONDUCTOR DIE ATTACH BY SINTERING OF AG3SN MATERIAL - SYNTHESIS OF SUBMICRON AG3SN PARTICLES BY POLYOL CHEMISTRY AS A NEW SINTERING MATERIAL.....	267
<i>Jean-Michel Morelle, Ky Lim Tan, Roland Mahayri, Frédéric Schoenstein, Noureddine Jouini</i>	
[B2-2] DEVELOPMENT OF TLP-AI TECHNOLOGY TO REDUCE THE THERMAL STRESS AND THERMAL RESISTANCE OF POWER MODULES	274
<i>Rintaro Asai, Hirofumi Ito, Masanori Usui, Masaki Aoshima</i>	
[B2-3] HIGH-POWER-DENSITY DC/DC CONVERTER USING A NOVEL COUPLED INDUCTOR TO REDUCE THE LEAKAGE FLUXES FOR NEW MODEL PLUG-IN HYBRID VEHICLE.....	278
<i>Akitomo Komatsuzaki, Satoshi Hashino</i>	
[B2-4] THE HIGH CAPACITY POWER MODULE WITH OPTIMAL PACKAGE TECHNOLOGY	285
<i>Shoji Saito, Seiichiro Inokuchi, Shinji Hatae</i>	
[B2-5] SCALABLE SI IGBT POWER MODULE SOLUTION FOR GROWING XEV MARKET	290
<i>Kenji Kawada</i>	
[B2-6] AUTOMOTIVE QUALIFICATION ROUTINES FOR POWER ELECTRONICS' MODULES IN ELECTRIFIED POWERTRAINS - THE NEW ECPE WORKING GROUP' AQG 324' STARTED ITS WORK.....	294
<i>Martin Rittner, Markus Thoben, Peter Dietrich, Frank Heidemann</i>	

[B3] ELECTRIC POWERTRAIN

[B3-1] ANALYSIS OF DESIGN-RELEVANT PARAMETERS OF SHIFTABLE GEARBOXES IN ELECTRIC DRIVE SYSTEMS	300
<i>Katharina Bause, Sascha Ott</i>	
[B3-2] A LOW-COST HARDWARE-IN-THE-LOOP TEST BENCH FOR POWERTRAIN OF EXTENDED-RANGE ELECTRIC VEHICLE.....	307
<i>Guangqian Du, Xinrui Yu, Hongyu Rao, Zhixian Fan, Haiming Xie, Guangyu Tian</i>	
[B3-3] EXPERIMENTAL VERIFICATION OF MAN-MACHINE INTERFACE BASED ON ELECTRIC POWER STEERING CONTROL FOR ADVANCED DRIVER ASSISTANCE SYSTEM.....	313
<i>Ryo Minaki</i>	
[B3-4] DEFINITION OF REQUIREMENTS FOR A NEW VEHICLE CONCEPT FOR SUB-SAHARAN AFRICA - LOAD COLLECTIVES FOR BATTERY AND ELECTRIC MOTOR	320
<i>Sascha Koberstaedt, Svenja Kalt, Laura Fürst, Xue Lin, Markus Lienkamp</i>	
[B3-5] POWER SHARING AND SHIFTING STABILITY CONTROL FOR A DUAL INPUT ELECTRIC VEHICLE TRANSMISSION SYSTEM	327
<i>Haiqing Wang, Hanfei Wu, Jiejunyi Liang, Nong Zhang, Paul Walker, Jinchen Ji</i>	

[B4] HEAVY-DUTY VEHICLES 2

[B4-1] TOWARDS NEW CHALLENGES FOR THE MODERN PUBLIC TRANSPORT - DEVELOPMENT OF MANOEUVRE SUPPORTING SYSTEMS FOR THE E-BUSES.....	333
<i>Bartosz Patkowski, Adam Piotrowski, Micha? Piku?a, Micha? Sierszy?ski</i>	
[B4-2] A TWO-DIMENSIONAL PERSPECTIVE ON THE VIRTUALIZATION OF VALIDATION FOR ELECTRIFIED POWERTRAIN GENERATIONS.....	339
<i>Nadim Dudin, Sascha Ott, Albert Albers, Rainer Misch, Andreas Oberting</i>	
[B4-3] MODELING AND CO-DESIGN OPTIMIZATION FOR HEAVY DUTY TRUCKS	351
<i>Dai-Duong Tran, Omar Hegazy, Joeri Van Mierlo, Rafael Smijtink, Jonas Hellgren, Olof Lindgarde, Think Pham, Steven Wilkins</i>	
[B4-4] ECONOMICS OF ELECTRIC VEHICLES FOR CITY LOGISTICS	359
<i>Tariq van Rooijen, Hans Quak</i>	
[B4-5] EVALUATION OF THE STATE-OF-THE-ART OF FULL-ELECTRIC MEDIUM AND HEAVY-DUTY TRUCKS.....	365
<i>Franciscus J.R. Verbruggen, Auke Hoekstra, Theo Hofman</i>	
[B4-6] CO-DESIGN OPTIMIZATION FRAMEWORK FOR ELECTRIFIED BUSES IN CITIES: BRUSSELS CASE STUDY	372
<i>Omar Hegazy, Mohamed El Baghdadi, Thierry Coosemans, Joeri Van Mierlo</i>	

[B5] BATTERIES 3

[B5-1] LI-ION BATTERY MARKET FOR SPECIALTY EVS 2018-2028 - NICHE MARKETS NEED CUSTOM ELECTRODE CHEMISTRIES.....	378
<i>Lorenzo Grande, Franco Gonzalez, Luke Gear</i>	
[B5-2] IN-SITU AND OPERANDO SCANNING PROBE FACILITY FOR THE STUDY OF REDOX PROCESSES ON NANOMETER SCALE IN LITHIUM ION BATTERIES - FIRST MEASUREMENT RESULTS FOR IN SITU AND OPERANDO CHARACTERISATION OF LITHIUM ION BATTERIES BY AFM TECHNIQUES	381
<i>Walter Legerstee, Erik Kelder</i>	
[B5-3] AUTOMATED EVALUATION OF BATTERY MATERIALS FOR MORE EFFICIENT AND EFFECTIVE BATTERY DEVELOPMENT	387
<i>Kai Bockwinkel, Bastian Thiede, Franz Dietrich, Sebastian Thiede, Klaus Dröder, Christoph Herrmann</i>	
[B5-4] PHASE TRANSITION ANALYSIS OF LIFEPO₄ BY USING TIME-RESOLVED X-RAY DIFFRACTION AND IMPROVEMENT OF RATE CAPABILITY	394
<i>Yoshiharu Uchimoto</i>	
[B5-5] CHARGE COMPENSATION MECHANISM OF ANION REDOX FOR LITHIUM-EXCESS CATHODE MATERIALS	397
<i>Hiroyuki Nakaki, Yoshiharu Uchimoto, Kentaro Yamamoto, Naoaki Yabuuchi, Koji Nakanishi</i>	

[B5-6] ASSESSMENT OF BATTERY CELL ASSEMBLY THROUGH NON-INVASIVE CELL CHARACTERIZATION USING X-RAY COMPUTER TOMOGRAPHY	402
<i>Artem Turetskyy, Ruben Leithoff, Wenhao Xu, Sebastian Thiede, Franz Dietrich, Klaus Dröder, Christoph Herrmann</i>	

[B6] V2X (V2G & V2H) 2

[B6-1] PROVIDING V2X SERVICES USING ISO 15118 - EV EQUIPPED WITH ON-BOARD BIDIRECTIONAL CHARGER	408
<i>Thomas Dreumont, Sébastien Gouraud, Arnaud Szewczyk</i>	
[B6-2] A STUDY ON SUPPRESSION METHOD OF SYSTEM OSCILLATION BY OUTPUT VARIATION OF SOLAR POWER GENERATION AT V2H.....	414
<i>Masayoshi Hamanaka, Kazuto Yukita, Toshiro Matsumura, Yasuyuki Goto</i>	
[B6-3] ECONOMIC IMPLICATIONS OF LITHIUM ION BATTERY DEGRADATION FOR VEHICLE-TO-GRID (V2X) SERVICES	418
<i>Andrew W. Thompson</i>	
[B6-4] SMART GRID INTEGRATION OF ELECTRIC BUSES: IMPLEMENTATION OF A UNI- AND BIDIRECTIONAL CHARGING INFRASTRUCTURE	426
<i>Enrico Lauth, Andreas F. Raab, Peter Teske, Dietmar Göhlich, Kai Strunz</i>	
[B6-5] B2B EV SMART CHARGING: RESULTS OF A THREE-YEARS EXPERIENCE TO OPTIMIZE EV CHARGING ON COMPANY SITES	434
<i>Laurent De Vroey, Pierre Moench, Raphaël Gehrenbeck, Eloi Le Bastart de Villeneuve, Youssef Oualmakran</i>	

[B7] EV MARKET DEVELOPMENT AROUND THE GLOBE

[B7-1] MAPPING THE ROAD TO 2035 - TECHNOLOGY REQUIREMENTS FOR FUTURE VEHICLES	438
<i>Jon Beasley, Jon Regnart</i>	
[B7-2] A NEW DECENTRALIZED CONTROL OF EVS FOR LOAD FREQUENCY CONTROL RETAINING EV USERS' CONVENIENCE	442
<i>Nozomu Magome, Shigeru Tamura</i>	
[B7-3] LOW EMISSION VEHICLES CONTESTABLE FUND - SUPPORTING ELECTRIC VEHICLE INNOVATION IN NEW ZEALAND	448
<i>Elizabeth Yeaman, Clem Arlidge, Paul Bull</i>	
[B7-4] NOVEL APPROACH FOR DETERMINING A SUFFICIENT HYDROGEN REFUELING STATION NETWORK	455
<i>Jörn Hartmann, Fabian Grüger</i>	
[B7-5] IMPACTS OF MILEAGE ACCUMULATION AND FAST CHARGING ON EV RANGE AND ENERGY USAGE - PART 3.....	459
<i>Aaron Loiselle-Lapointe, Samuel Pedroso, Michele De Gennaro, Elena Paffumi, Martha Christenson, Mike Safoutin</i>	
[B7-6] EV ACCELERATOR CITIES LEADING THE CHARGE IN THE U.S. DEVELOPING AND SCALING A NATIONAL MODEL	467
<i>Ben Prochazka</i>	

[C1] WIRELESS POWER TRANSFER 1

[C1-1] ANALYSIS OF CIRCUIT FOR DYNAMIC WIRELESS POWER TRANSFER BY STEPPING STONE SYSTEM.....	474
<i>Hiroshi Uno, Jun Yamada, Yasuyoshi Kaneko, Toshiyuki Fujita, Hiroyuki Kishi</i>	
[C1-2] DYNAMIC CONTACTLESS POWER TRANSFER SYSTEM USING PS TOPOLOGY CONSIDERING MUTUAL COUPLING OF TRANSMITTER COILS.....	480
<i>Jun Yamada, Yoshiki Shiozawa, Yasuyoshi Kaneko</i>	
[C1-3] WEIGHT REDUCTION AND HIGH EFFICIENCY OF WIRELESS POWER TRANSMISSION COIL USING MAGNETOCOATED ALUMINUM PLATE	486
<i>Shun Endo, Yinggang Bu, Tsutomu Mizuno</i>	
[C1-4] EFFICIENCY IMPROVEMENT FOR MULTI-POSITION OF RECEIVER IN 13.56 MHZ WIRELESS POWER TRANSFER COUPLING SYSTEM.....	492
<i>Nguyen Tri Cuong, Kan Akatsu</i>	

[C1-5] SNUBBER-LESS ZERO VOLTAGE SOFT-SWITCHING RESONANT CONVERTER FOR INDUCTIVE POWER TRANSFER FEATURING GAN-HFET	496
<i>Tomokazu Mishima, Tatsuya Kido</i>	
[C1-6] ELECTRIC SAFETY CHALLENGES WITH A CONDUCTIVE ELECTRIC ROAD SYSTEM - CHASSIS POTENTIAL MODELING AND MEASUREMENT	501
<i>Francisco J. Márquez-Fernández, Sönke Schuch, Lars Lindgren, Mats Alaküla</i>	

[C2 (SPECIAL SESSION)] ADVANCED COMPONENTS FOR ELECTRIC MACHINES

[C2-1] DEVELOPMENT OF HIGH VOLTAGE INSULATION FOR THE DRIVING MOTOR IN ELECTRIC VEHICLES	508
<i>Shingo Nagai, Keiichi Kaneshige, Keiji Takizawa, Toru Wakimoto, Masahito Shirahase</i>	
[C2-2] ELECTRICAL STEELS AND THEIR EVALUATION FOR AUTOMOBILE MOTORS	515
<i>Kunihiro Senda, Masanori Uesaka, Soichiro Yoshizaki, Yoshihiko Oda</i>	
[C2-3] STUDY OF HIGH-SPEED SRM WITH AMORPHOUS STEEL SHEET FOR EV	521
<i>Taketo Tomioka, Kohei Aiso, Kan Akatsu</i>	
[C2-4] RESEARCH ON MOTOR WITH NANOCRYSTALLINE SOFT MAGNETIC ALLOY STATOR CORES - ACHIEVING BOTH HIGH TORQUE DENSITY AND LOW IRON LOSS	528
<i>Tuyoshi Nonaka, Shogo Makino, Shingo Zeze, Motomichi Ohto</i>	
[C2-5] MOTOR CONTROL TECHNOLOGIES FOR IMPROVING THE DRIVING PERFORMANCE OF ELECTRIC VEHICLES	535
<i>Jun Motosugi, Sho Ohno, Akira Sawada, Kengo Fujiwara</i>	
[C2-6] POSITION SENSORLESS CONTROL FOR WOUND-FIELD SYNCHRONOUS MOTOR WITH DOUBLE THREE-PHASE WOUND STATOR USING NEW EEMF MODEL	540
<i>Koji Imai, Shinji Doki, Kiyoshi Fujii, Sukhawa Jung</i>	

[C3] ENERGY STORAGE SYSTEMS 1

[C3-1] THE IMPACT OF THE VEHICLE-TO-GRID STRATEGY ON LITHIUM-ION BATTERY AGEING PROCESS	547
<i>Yi Li, Maarten Messagie, Maitane Berecibar, Omar Hegazy, Mohamed Abdel-Monem, Noshin Omar, Laurent De Vroey, Joeri Van Mierlo,</i>	
[C3-2] BASIC RESEARCH ABOUT COOLING TECHNOLOGY FOR SEALED-TYPE BATTERY PACK	553
<i>Yoshimitsu Inoue, Kohei Yamaguchi</i>	
[C3-3] OPTIMAL COOLING SOLUTION FOR HIGH-POWER AUTOMOTIVE BATTERY MODULE - DESIGN OPTIMIZATION USING FINITE ELEMENT ANALYSIS AND COMPUTATIONAL FLUID DYNAMICS	560
<i>Ziyi Wu, Albert T. Haugg, Hans Kemper, Stefan Pischinger</i>	
[C3-4] EVALUATION OF A VALIDATION PROCESS FOR A BATTERY COOLING SYSTEM - DIRECT COOLING OF CYLINDRICAL BATTERY CELLS	567
<i>Martin Eisele, Daniel Werner, Sascha Ott</i>	
[C3-5] THE MARKET SURVEY FOR THE LITHIUM-ION BATTERY PRODUCTION IN INDIAN CLIMATE OF HIGH TEMPERATURE AND HUMIDITY	574
<i>Kazuo Chiba, Tatsuji Numata</i>	
[C3-6] STATE OF HEALTH BATTERY ALGORITHM FOR REAL APPLICATIONS	577
<i>Maitane Berecibar, Igor Villarreal, Noshin Omar, Thierry Coosemans, Joeri Van Mierlo, Maarten Messagie,</i>	

[C4] MARKETING & CAR SHARING 1

[C4-1] KEYS TO ELECTRIC VEHICLE MARKET GROWTH IN THE U.S.	583
<i>Peter Slowik, Nicholas Lutsey</i>	
[C4-2] COMPANY CARS AS A CHANNEL FOR ELECTRIFICATION OF THE PASSENGER CAR MARKET	590
<i>Mats Willander, Ann-Charlotte Mellquist, Johan Wedlin, Camilla Stålstad</i>	
[C4-3] USING CITIZEN SCIENCE TO PROMOTE ELECTRIC VEHICLE UPTAKE IN NEW ZEALAND	596
<i>Donald Love, Henrik Moller, Dima Ivanov, Daniel Myall</i>	
[C4-4] PROMOTING ELECTRIC VEHICLES TO NEW ZEALANDERS - A SUCCESS STORY!	603
<i>Dee West, Shawn Moodie, Eva Hakansson</i>	

[C4-5] METHOD FOR PREDICTION OF UTILIZATION RATE OF ELECTRIC VEHICLE FREE-FLOATING CAR SHARING SERVICES USING DATA MINING	610
<i>Cristofer Englund, Henrik Engdahl, Shiva Habibi, Stefan Pettersson, Frances Sprei, Alexey Voronov, Johan Wedlin</i>	
[C4-6] CONSUMER EV EDUCATION LESSONS LEARNED - A PACIFIC NORTHWEST APPROACH TO E-MOBILITY	616
<i>Zachary Henkin, Anne Ramzy</i>	

[C5 (SPECIAL SESSION)] WIDE BAND GAP DEVICES & RELATED ISSUES

[C5-1] CARRIER LIFETIME MEASUREMENTS FOR WIDE GAP SEMICONDUCTORS SIC AND GAN.....	624
<i>Masashi Kato,</i>	

VOLUME 2

[C5-2] ELECTROLUMINESCENCE IN POWER ELECTRONIC APPLICATIONS: UTILIZATION OF P-N JUNCTIONS IN POWER SEMICONDUCTORS AS UNINTENTIONAL LIGHT EMITTING DIODES FOR CURRENT AND TEMPERATURE SENSING	628
<i>Jonathan Winkler, Jan Homoth, Ingmar Kallfass</i>	
[C5-3] SILICON CARBIDE INVERTER FOR EV/HEV APPLICATION FEATURING OPEN-LOOP DRIVE CIRCUIT TECHNOLOGY FOR LOW SWITCHING LOSS AND SURGE VOLTAGE REDUCTION	641
<i>Taku Shimomura, Keiichiro Numakura, Daiki Sato, Tetsuya Hayashi</i>	
[C5-4] ANALYSIS OF THE TRADE-OFF BETWEEN PERFORMANCE AND RELIABILITY OF A SIC POWER MODULE IN ELECTRIC DRIVETRAIN APPLICATIONS	646
<i>Laurent Beurenaut, Thomas Aichinger, Christian Schweikert, Christian Strenger</i>	
[C5-5] POWER MODULE CONCEPTS FOR INNOVATIVE RELIABLE NITRIDE BASED POWER DEVICES AND APPLICATIONS - THE EU PUBLIC FUNDED PROJECT ‘INREL-POWER‘	652
<i>Martin Rittner, Ulrich Kessler, Samuel Araujo, Sebastian Mansfeld, Jörg Naundorf, Kai Kriegel, Martin Schulz, Hideto Miyake, Yoshihiro Kangawa, Gaudenzio Meneghesso</i>	
[C5-6] SIC POWER COMPONENTS - KEY ENABLER FOR THE MARKET EVOLUTION OF GREENER DRIVING.....	659
<i>Manuel Gärtner, Michael Anfang, Maurizio Ferrara, Edoardo Merli, Mario Saggio, Michele Macauda</i>	

[C6] EV CHARGING INFRASTRUCTURE 1

[C6-1] FUTURE CRITICAL INFRASTRUCTURE AND SECURITY CYBERATTACKS ON CHARGING STATIONS.....	665
<i>Christian Esser, Tim Montag, Marko Schuba, Manuel Allhoff</i>	
[C6-2] EV CHARGING EVALUATION AS A RESOURCE OF VPP.....	672
<i>Yukio Shinoda, Osamu Maruta</i>	
[C6-3] SMART CHARGING OF ELECTRIC VEHICLES: INSTITUTIONAL BOTTLENECKS AND POSSIBLE SOLUTIONS	676
<i>Baerte de Brey</i>	
[C6-4] THE SUCCESSFUL BUSINESS MODELS OF EV CHARGING	680
<i>Charles W. Botsford</i>	
[C6-5] VALUATION OF CHARGING TIME FOR ELECTRIC VEHICLES.....	685
<i>Quentin De Clerck, Joeri Van Mierlo, Lieselot Vanhaverbeke</i>	

[C7 (SPECIAL SESSION)] FUEL CELL SYSTEMS

[C7-1] FUEL CELL VEHICLE DEVELOPMENT AND TOWARD HYDROGEN SOCIETY	693
<i>Takashi Moriya</i>	
[C7-2] EFFECTS OF ENVIRONMENTAL CONDITIONS ON CATHODE DEGRADATION OF PEFC DURING POTENTIAL CYCLE	697
<i>Yoshiyuki Hashimasa, Hiroshi Daitoku, Tomoaki Numata</i>	

[C7-3] DEVELOPMENT OF 70MPA HYDROGEN SYSTEM LIGHT-DUTY TRUCK POWERED BY FUEL CELL	702
<i>Kazuya Maita, Osamu Watanabe, Nobuhiko Okawa, Akihiro Yamamoto, Masatoshi Fukuda, Shigeo Kishi</i>	
[C7-4] THE NEW HYBRID SYSTEM APPLIED TO NEW MODEL PLUG-IN HYBRID VEHICLE - FEATURES OF NEWLY DEVELOPED PLUG-IN HYBRID POWER-PLANT	709
<i>Tomoya Yamagishi, Takashi Ishikura</i>	
[C7-5] DEVELOPMENT OF TECHNICAL REGULATIONS FOR FUEL CELL MOTORCYCLES IN JAPAN - HYDROGEN SAFETY	716
<i>Eisuke Yamada, Takehiko Mashiba,</i>	
[C7-6] HIGHLY DURABLE AND HIGHLY ACTIVE CATALYSTS SUPPORTED ON ELECTRONICALLY CONDUCTIVE OXIDE SUPPORTS FOR PEFC	720
<i>Akihiro Iiyama, Katsuyoshi Kakinuma, Makoto Uchida</i>	

[D1 (SPECIAL SESSION)] WIRELESS POWER TRANSFER 2

[D1-1] MAGNETIC COUPLER DESIGN OF WIRELESS POWER TRANSFER SYSTEM FOR ROTATING EQUIPMENT	722
<i>Bingqing Ma, Zhenjie Li, Guang Yang, Chunbo Zhu, Kai Song</i>	
[D1-2] ENERGY SAVING AND PEAK POWER CUT EFFECT BY HIGH POWER WIRELESS TRANSMISSION IN RAILWAY VEHICLE TRACTION APPLICATION	726
<i>Toranosuke Uehara, Keiichiro Kondo</i>	
[D1-3] A 1.14 KW MAGNETIC ENERGY HARVESTING NEAR POWER LINE BY CONSIDERING SATURATION EFFECT	730
<i>Bumjin Park, Dongwook Kim, Jaehyoung Park, Yujun Shin, Jay Koo, Okhyun Jeong, Seungyoung Ahn</i>	
[D1-4] ANALYSIS OF THE BATTERY LIFETIME IN WIRELESS CHARGER SYSTEM FOR AGV BY MODEL BASED DEVELOPMENT METHOD.....	735
<i>Hiroshi Yamamoto, Satoru Kikuchi, Shuji Oshida, Shuji Inoue</i>	
[D1-5] THEORETICAL ANALYSIS FOR FUTURE 6.78MHZ AND/OR 13.56MHZ WPT SYSTEMS BASED ON THE ELECTROMAGNETIC THEORY	740
<i>Atsuo Hatono</i>	
[D1-6] COMPARATIVE VERIFICATION OF RADIATION NOISE REDUCTION EFFECT USING SPREAD SPECTRUM FOR INDUCTIVE POWER TRANSFER SYSTEM.....	746
<i>Keisuke Kusaka, Kent Inoue, Jun-Ichi Itoh</i>	

[D2(SPECIAL SESSION)] NEW MOTOR TECHNOLOGIES FOR ELECTRIC VEHICLES

[D2-1] DEVELOPMENT OF MOTOR FOR NEW ELECTRIC VEHICLE - MOTOR SHARED WITH FUEL CELL VEHICLE	753
<i>Hirofumi Suzumori, Akinobu Iwai, Satoshi Honjo, Toshio Okazawa</i>	
[D2-2] VARIABLE MAGNETIC FLUX PM-MOTOR WITH AUTOMATICALLY FLUX WEAKENING TECHNIQUE	760
<i>Ryosuke Akaki, Kazuhiko Matsunami, Tatsuji Mori</i>	
[D2-3] SELF-EXCITED WOUND-FIELD SYNCHRONOUS MOTORS.....	767
<i>Masahiro Seguchi</i>	
[D2-4] HYBRID EXCITATION FLUX SWITCHING MOTOR WITH HIGH FILLING FACTOR WINDINGS	774
<i>Takashi Kosaka, Keisuke Isobe, Nobuyuki Matsui</i>	
[D2-5] STUDY OF ROTOR POLE OPTIMIZATION FOR RMS CURRENT REDUCTION IN SWITCHED RELUCTANCE MOTOR OPERATING IN FLATTENING THE RADIAL FORCE SUM.....	780
<i>Candra Adi Wiguna, Jihad Furqani, Masachika Kawa, Akira Chiba</i>	
[D2-6] 5KW, 120K RPM HIGH POWER DENSITY SYNCHRONOUS MACHINES FOR AN ORC WASTE HEAT RECOVERY SYSTEM.....	786
<i>David Gerada, Zeyuan Xu, He Zhang, Chris Gerada,</i>	

[D3] ENERGY STORAGE SYSTEMS 2

[D3-1] A DATA-DRIVEN PARAMETER AND STATE OF CHARGE ESTIMATION FOR LITHIUM-ION BATTERY CONSIDERING CURRENT SENSOR OFFSET	791
<i>Bo Jiang, Haifeng Dai, Tianjiao Xu,</i>	
[D3-2] STAND-ALONE BATTERY THERMAL MANAGEMENT FOR FAST CHARGING OF ELECTRIC TWO WHEELERS INTEGRATED BUSBAR COOLING	798
<i>Bastian Mayer, Michael Schier, Horst E. Friedrich</i>	
[D3-3] THE WAVELET-BASED ARTIFICIAL NEURAL NETWORK FOR STATE OF CHARGE ESTIMATION: ITS RELIABILITY AND ADAPTABILITY	805
<i>Wassamon Phusakulkajorn, Chi-na Benyajati, Thanya Phraewphiphat, Jiravan Mongkoltanatas</i>	
[D3-4] EXPLORING THE ATTRIBUTES OF PARTICLE FILTER VS NONLINEAR KALMAN FILTER FOR BATTERY STATE OF CHARGE ESTIMATION	811
<i>Kristian Eggereide Roaldsnes, Ørjan Gjengedal, Marta Molinas</i>	
[D3-5] DISRUPTIVE NEW TECHNOLOGY IN EFFECTIVE BATTERY CONTROL - INSTEAD OF BALANCING - FULL CONTROL OF ALL HEALTH PARAMETERS OF EACH INDIVIDUAL CELL	818
<i>Hans Harjung, Thomas Blochberger</i>	
[D3-6] DEVELOPMENT OF HIGH INPUT ENERGY STORAGE DEVICES FOR ENERGY REGENERATION SYSTEMS	825
<i>Shuichi Ishimoto, Yoshihiro Minato, Satoru Tsumeda, Kentaro Nakaaki, Kenji Tamamitsu</i>	

[D4] MARKETING & CAR SHARING 2

[D4-1] INFLUENCES OF PREDICTIVE DRIVING ALGORITHMS ON THE ENERGY DEMAND OF MODERN POWERTRAINS.....	831
<i>Thorsten Plum, Marius Wegener, Markus Eisenbarth, Georg Birnes, Jakob Andert</i>	
[D4-2] EVOLVING ESTIMATES OF EMERGING EMINENCE OF ELECTRIFIED VEHICLES.....	838
<i>Danilo Santini, Andrew Burnham, Paul Nelson, Yan Zhou, Shabbir Ahmed, James Miller, Marcy Rood</i>	
[D4-3] THE TRANSFORMATION OF THE CRADLE: STRATEGIC DIALOGUE FOR THE AUTOMOTIVE SECTOR IN BADEN-WÜRTTEMBERG.....	845
<i>Wolfgang Fischer, Katja Gicklhorn</i>	
[D4-4] GASOLINE SAVINGS FROM ELECTRIC VEHICLE ADOPTION.....	851
<i>Tamara L. Sheldon, Rubal Dua</i>	
[D4-5] A WAY OF SUCCESSFUL EV AND HEV MARKET IN ASIA	861
<i>Shigeyuki Minami</i>	
[D4-6] HOW MIGHT THE GERMAN DISTRIBUTION GRID COPE WITH 100% MARKET SHARE OF PEV?	865
<i>Patrick Jochem, Alexandra März, and Zongfei Wang</i>	

[D5] POWER ELECTRONIC COMPONENTS

[D5-1] NEW SOLUTIONS IN OVER-CURRENT PROTECTION OF HVDC CIRCUIT IN ELECTRIC VEHICLE	873
<i>Mitja Koprivšek</i>	
[D5-2] IMPEDANCE MODELING FOR ACCURATE ESTIMATION OF DC-BUS CURRENT AND VOLTAGE RIPPLE IN ELECTRIC VEHICLES	878
<i>Andreas Henriksson, John Simonsson, Torbjörn Thiringer</i>	
[D5-3] DESIGN ASPECTS OF 11KW ON-BOARD CHARGER BASED ON SIC TECHNOLOGY FOR ELECTRIC VEHICLES.....	885
<i>Hai-Nam Vu, Dai-Duong Tran, Mohamed Abdel-Monem, Mohamed El Baghdadi, Joeri Van Mierlo, Omar Hegazy</i>	
[D5-4] MULTI-MODULAR ISOLATED THREE-PHASE AC-DC CONVERTER FOR RAPID CHARGING WITH AUTONOMOUS DISTRIBUTED CONTROL	890
<i>Masakazu Adachi, Keisuke Kusaka, Jun-Ichi Itoh</i>	
[D5-5] HIGH-POWER SOFT-SWITCHING THREE-LEVEL DC-DC CONVERTER FOR RAILWAY APPLICATIONS	897
<i>Yoshinobu Koji, Tomokazu Mishima</i>	

[D5-6] 800 V CHARGING DRIVES THE INTRODUCTION OF HIGH POWER DCDC CONVERTERS WITH SILICON CARBIDE IN EVS	903
<i>Martin Brüell, Philip Brockerhoff, Markus Höevermann</i>	

[D6] ENVIRONMENTAL IMPACT

[D6-1] ELECTRIC VEHICLES AS A FLEXIBILITY MANAGEMENT STRATEGY IN EUROPE	910
<i>Maria Taljegard, Lisa Göransson, Mikael Odenberger, Filip Johnsson</i>	
[D6-2] REAL-WORLD ENERGY CONSUMPTION AND EMISSIONS OF PLUG-IN HYBRID VEHICLES - ANALYSIS OF THREE VEHICLES UNDER DIFFERENT CONDITIONS	917
<i>Simone Ehrenberger, Marcel Konrad, Franz Philipps, Herbert Hellstern</i>	
[D6-3] ENVIRONMENTAL ADVANTAGES OF ELECTRIC VEHICLES IN TERMS OF WELL TO WHEEL CO2 EMISSIONS - A JAPANESE CASE STUDY	923
<i>Yuki Kudoh, Akito Ozawa</i>	
[D6-4] SCALING SMART EV UTILITY DRIVEN INFRASTRUCTURE	928
<i>Ashley Horvat</i>	
[D6-5] SIMULATION OF FUTURE ELECTRIC VEHICLE CHARGING BEHAVIOR - EFFECTS OF TRANSITION FROM PHEV TO FEV	931
<i>Ignia Vermeulen, Jurjen R. Helmus, Mike Lees, Robert Van den Hoed</i>	
[D6-6] IMPACT OF INCREASED VEHICLE WEIGHT ON ENERGY CONSUMPTION OF DIVERSE POWERTRAIN OPTIONS UNDER REAL-WORLD DRIVING IN BANGKOK	941
<i>Angkee Sripakagorn, Soravas Treenok</i>	

[E1 (SPECIAL SESSION)] WIRELESS POWER TRANSFER 3

[E1-1] ANALYSIS OF ROBUSTNESS OF WIRELESS POWER TRANSFER SYSTEM FOR EVS/PHVS	946
<i>Yoshinobu Sugiyama</i>	
[E1-2] DEVELOPMENT OF A HIGH EFFICIENCY WIRELESS POWER TRANSFER SYSTEM FOR ELECTRIFIED VEHICLES	952
<i>Daisuke Tsukiyama, Joli Nagamatsu, Shuhei Toga, Yoshinori Tsuruda</i>	
[E1-3] WIRELESS CHARGING SYSTEM FOR PASSENGER EVS AND PEVS	956
<i>Naoki Ohmura, Satoshi Yazaki, Kenji Nishimura</i>	
[E1-4] BIDIRECTIONAL INDUCTIVE CHARGING SYSTEMS ECONOMICAL IN THE ELECTRICITY GRID - DEVELOPMENT AND APPLICATION OF A TECHNOLOGY TO BOOST ELECTRIC MOBILITY	960
<i>Philipp Schumann, Daniel Borrmann, Akshay Mahajan, Marco Mittelsdorf, Tim Schember</i>	
[E1-5] VEHICLE INTEGRATION OF WIRELESS POWER TRANSFER SYSTEMS - AN EXPERIMENTAL SAFETY INVESTIGATION OF UNDERFLOOR IMPACT SCENARIOS	967
<i>Steve Zimmer, Sebastian Rothenberg, Benjamin Tattko, Timo Baumer, Karlheinz Baier, Christian Glögger, Anja Winkler, Niels Modler</i>	
[E1-6] 85 KHZ BAND 44 KW WIRELESS RAPID CHARGING SYSTEM FOR FIELD TEST AND PUBLIC ROAD OPERATION OF ELECTRIC BUS	974
<i>Shuichi Obayashi, Tetsu Shijo, Masatoshi Suzuki, Fumi Moritsuka, Kenichirou Ogawa, Koji Ogura, Yasuhiro Kanekiyo, Masaaki Ishida, Toru Takanaka, Nobumitsu Tada, Fumiaki Takeuchi, Shunsuke Take, Yoshihiko Yamauchi, Wei-Hsiang Yang, Yushi Kamiya</i>	

[E2 (SPECIAL SESSION)] ENERGY STORAGE DEVICES 1

[E2-1] AUXILIARY POWER SUPPLY SYSTEM FOR ELECTRIC POWER STEERING (EPS) AND HIGH HEAT-RESISTANT LITHIUM-ION CAPACITOR	981
<i>Takumi Mio, Koji Nishi, Yukihiko Komatsubara, Naoki Ohmi, Yusuke Kimoto, Kentaro Iizuka, Toyoki Sugiyama, Fumihiko Sato, Satoshi Shinoda, Tokuaki Hibino</i>	
[E2-2] DC-LINK CAPACITOR LIFE PREDICTION FOR 48 V MILD HYBRID PASSENGER VEHICLES	984
<i>Daizou Senzai, Kouji Yamaya, Tsubasa Abe, Yuhei Kobayashi, Toshihiko Furukawa</i>	
[E2-3] MILEAGE IMPROVEMENT WITH ELECTROCHEMICAL CAPACITORS WHEN RETROFITTING CLASS 2 VEHICLES FOR HYBRID OPERATION	991
<i>Toshihiko Furukawa, Naoki Akiba, Hiroyuki Wakabayashi, Shin Watanabe</i>	

[E2-4] DEVELOPMENT OF THE HIGH-VOLTAGE BATTERY PACK FOR THE HYBRID ELECTRIC VEHICLE	998
<i>Yu Harada, Yasuaki Matsui, Takashi Ishibuchi, Ryuichi Miyano, Tatsuji Mori</i>	
[E2-5] DEVELOPMENT OF LI-ION BATTERY CELLS FOR HYBRID AND PLUG-IN HYBRID VEHICLES	1004
<i>Machiko Abe</i>	
[E2-6] DEVELOPMENT OF NEW SYSTEM FOR LIGHT DUTY HYBRID TRUCK	1011
<i>Nobutaka Suzuki, Satoshi Kabe, Toshihide Miyajima, Tomohiko Araki, Kunitoshi Shimizu</i>	

[E3] ELECTRIC VECHICLES

[E3-1] THERMAL SIMULATION MODEL FOR DRIVING RANGE IMPROVEMENTS OF ELECTRIC VEHICLES	1016
<i>David Hemkemeyer, Patrick Manns, Daniel Perak, Klaus Wolff</i>	
[E3-2] INTEGRATING ELECTRIC VEHICLES IN ELECTRICITY SYSTEM MODELS - REPRESENTING INDIVIDUAL DRIVING PATTERNS	1020
<i>Mikael Odenberger, Maria Taljegard</i>	
[E3-3] DEVELOPMENT OF NEW GENERATION BATTERY MANAGEMENT ECU	1027
<i>Masakazu Kouda, Masashi Deriha, Syunichi Mizobe</i>	
[E3-4] BATTERY SAFETY FOR UNDERFLOOR IMPACT - HOW TO DEAL WITH UNDERFLOOR PROTECTION	1034
<i>Alexander Betz, Roopesh Chodankar, Steven Lange, Peter Geuting, Christian Glöggler</i>	
[E3-5] STRATEGICALLY TARGETING PLUG-IN ELECTRIC VEHICLE REBATES AND OUTREACH USING CHARACTERISTICS OF “REBATE-ESSENTIAL” CONSUMERS IN 2016-2017	1040
<i>Brett Williams, John Anderson</i>	
[E3-6] THE FUTURE OF ELECTRIC VEHICLES AND AUTONOMOUS DRIVING - REGULATION LEADING TO INNOVATION	1047
<i>Shinichi Yamaki</i>	

[E4] MARKETING & CAR SHARING 3

[E4-1] EXPECTED BENEFITS OF REGULATING ZERO-EMISSION VEHICLES OFFER - QUÉBEC IMPLEMENTS A ZERO-EMISSION VEHICLES STANDARD	1053
<i>Marilou Gosselin</i>	
[E4-2] CORPORATE DEMAND AS A DRIVER FOR EV UPTAKE - EXPERIENCES FROM THE GLOBAL CORPORATE LEADERSHIP INITIATIVE EV100	1057
<i>Sandra Roling</i>	
[E4-3] THE IMPACT OF MARKET ON ADJUSTMENT DIRECTION OF FISCAL AND TAX SUPPORT POLICIES OF GLOBAL ELECTRIC VEHICLES AND FUTURE TREND1	1063
<i>Hong Shi, Bin Liu, Haifeng Fang</i>	
[E4-4] DRIVING THE MARKET FOR PLUG-IN VEHICLES - LESSONS FROM CALIFORNIA'S ZEV MANDATE -	1068
<i>Scott Hardman, Alan Jenn, Jonn Axsen, Tom Turrentine</i>	
[E4-5] META-ANALYSIS OF NEW PASSENGER CAR REGISTRATIONS SCENARIOS - ANALYSIS OF MARKET DEVELOPMENT TOWARDS AN ELECTRIC VEHICLE MARKET PENETRATION	1073
<i>Bent van den Adel, Matthias Kloetzke</i>	
[E4-6] AN IN-DEPTH EXAMINATION OF ELECTRIC VEHICLE INCENTIVES: CONSUMER HETEROGENEITY AND CHANGING RESPONSE OVER TIME	1079
<i>Alan Jenn, Jae Hyun Lee, Scott Hardman, Gil Tal</i>	

[E5] ELECTRIC MACHINES & ADVANCED COMPONENTS FOR TRANSPORTATION SYSTEMS

[E5-1] EXAMINATION OF A LINEAR GENERATOR WITH VARIABLE MAGNETIC FLUX FOR FREE-PISTON ENGINES	1089
<i>Tatsuki Suzuki, Masami Nirei, Mitsuhide Sato, Yuichiro Yamanaka, Takumi Goto, Yinggang Bu, Tsutomu Mizuno</i>	

[E5-2] IMPROVED CORE LOSS MODELLING OF ELECTRICAL TRACTION MOTORS THROUGH SIMULATION OF SKIN-EFFECT IN LAMINATIONS	1095
<i>Jan Rens, Sigrid Jacobs, Lode Vandebossche, Emmanuel Attrazic</i>	
[E5-3] EFFICIENCY CHARACTERISTICS TO THE RATIO OF CAPACITOR VOLTAGE TO SUPPLY VOLTAGE IN VOLTAGE BOOST TYPE SRM DRIVE CIRCUIT	1101
<i>Sae Yamamoto, Nobukazu Hoshi, Kosuke Uchida</i>	
[E5-4] A NOVEL TWO SPEED PLANETARY TRANSMISSION FOR ELECTRIC VEHICLE APPLICATIONS	1107
<i>Paul David Walker, Yang Tian, Jiageng Ruan, Nong Zhang</i>	
[E5-5] MECHATRONIC TRACK GUIDANCE FOR TRAMWAYS - μ-SYNTHESIS CONTROL LOOP AND SPECIALLY DEVELOPED HALL SENSORS	1114
<i>Franz Jost, Yunfan Wei, Peter Gratzfeld</i>	
[E5-6] PERFORMANCE ANALYSIS OF A HEAT PUMP SYSTEM WITH INTEGRATED DESICCANT FOR ELECTRIC VEHICLES	1119
<i>Li Zhang, Katsumi Hashimoto, Hiromi Hasegawa, Michiyuki Saikawa</i>	

[E6] EV CHARGING INFRASTRUCTURE 2

[E6-1] MODES OF FAST CHARGING: ROLLING OUT FAST CHARGERS IN CITIES AND ALONG CORRIDORS TO MEET THE HETEROGENEITY OF NEEDS AMONG EV DRIVERS	1126
<i>Rick Wolbertus, Jurjen Helmus, S.J.F.M. Maase, Robert Van den Hoed</i>	
[E6-2] MONITORING OF USAGE AND EVALUATION OF LITHIUM-ION BATTERY SYSTEM BY TIME BACKTRACKING METHOD	1132
<i>Yu-hung Lin, Shiow-Huey Suen, Chein-Chung Sun, Chun-Hung Chou</i>	
[E6-3] USER PERSPECTIVES ON ELECTRIC ROADS	1135
<i>Conny Börjesson, Martin G. H. Gustavsson</i>	
[E6-4] SUCCESS OR FAILURE: THE GERMAN 300 MILLION € FUNDING PROGRAMME ON CHARGING INFRASTRUCTURE FOR EVS	1140
<i>Sven Lierzer</i>	
[E6-5] CHARGE THE NORTH - CHARACTERIZING ELECTRIC VEHICLE CHARGING PROFILES & ENHANCING CHARGING INFRASTRUCTURE IN CANADA	1147
<i>Eric Mallia, Matthew Stevens, Megan Allen, Mark Goody, Rikki Gibson, Hannah Koke</i>	

[F1 (SPECIAL SESSION)] WIRELESS POWER TRANSFER 4

[F1-1] DESIGN AND IMPLEMENTATION OF SENSORLESS VEHICLE DETECTION SYSTEM FOR IN-MOTION WIRELESS POWER TRANSFER	1152
<i>Katsuhiro Hata, Kensuke Hanajiri, Takehiro Imura, Hiroshi Fujimoto, Yoichi Hori, Motoki Sato, Daisuke Gunji</i>	
[F1-2] A STUDY OF A DYNAMIC WIRELESS POWER TRANSFER SYSTEM BASED ON PARALLEL- SERIES RESONANT TOPOLOGY - BENCH TEST AND REAL CAR TEST	1159
<i>Toshiyuki Fujita, Hiroyuki Kishi</i>	
[F1-3] COMBINED CHARGING SOLUTION FOR HIGH POWER WIRELESS POWER TRANSFER AND CONDUCTIVE CHARGING SYSTEM	1165
<i>Honggi Ko, Kyoungjin Kim, Yongbok Lee, Jeongmyung Seo</i>	
[F1-4] EVALUATION OF LEAKAGE MAGNETIC FIELD FROM TWO WIRELESS POWER TRANSFER SYSTEMS FOR EV / PHV DRIVEN SIMULTANEOUSLY	1170
<i>Toshiaki Watanabe, Yusuke Hakuta</i>	
[F1-5] HARMONIZATION OF TESTING METHODS FOR WIRELESS POWER TRANSFER SYSTEMS FOR PASSENGER CARS AND THE STILLE PROJECT - AN INTERNATIONAL PROJECT SUPPORTING THE GLOBAL HARMONIZATION AND INTEROPERABILITY OF WIRELESS CHARGING SYSTEMS FOR ELECTRIC VEHICLES	1174
<i>Volker Blandow, Michael Lahrsen</i>	

[F2 (SPECIAL SESSION)] ENERGY STORAGE DEVICES 2

[F2-1] DOE BATTERY AND ELECTRIFICATION R&D OVERVIEW FOR FY 2017-2018	1178
<i>Steven Boyd, David Howell</i>	

[F2-2] DEVELOPMENT OF LTO-BASED LITHIUM ION SECONDARY BATTERY WITH BOTH HIGH ENERGY AND HIGH POWER CHARACTERISTICS	1185
<i>Hidesato Saruwatari, Yoshiki Ishizuka, Shun Egusa</i>	
[F2-3] LIB FOR EVS - TRENDS OVERVIEWED BY MATERIALS MANUFACTURERS	1189
<i>Osamu Fujimura, Koji Abe</i>	
[F2-4] SAFETY TEST TECHNOLOGY IN LITHIUM-ION BATTERIES FOR XEV	1192
<i>Arata Okuyama, Soh Suzuki, Takashi Kajihara</i>	
[F2-5] PHENOMENOLOGICAL INVESTIGATION OF OPERANDO LITHIUM-ION BATTERY FOR AUTOMOTIVE APPLICATION	1197
<i>Sohei Suga, Satoshi Takaichi, Junko Kurihara, Takao Nakagaki, Shuichiro Hirai, Yuichiro Tabuchi</i>	
[F2-6] COMPARISON OF PACK AND CELL TESTS OF LITHIUM-ION BATTERIES FOR ELECTRIC VEHICLES	1204
<i>Yukitaka Matsuoka, Tomoyuki Matsuda, Akihiro Kurokawa, Yasumasa Maeda, Daichi Imamura</i>	

[F3] SIMULATION & ANALYSIS

[F3-1] QUANTITATIVE ANALYSIS ON STANDARDS ABOUT VIBRATION OF BATTERIES IN EVS	1208
<i>Ruixue Liu, Yong Zhang, Zhichao Hou</i>	
[F3-2] HOLISTIC ENERGY MANAGEMENT SYSTEM FOR BATTERY ELECTRIC VEHICLES USING SLIDING WINDOW OPTIMIZATION	1215
<i>Katharina Minnerup, Thomas Herrmann, Matthias Steintraeter, Markus Lienkamp</i>	
[F3-3] COMPREHENSIVE STUDY ABOUT FORCE CONTROL OF ELECTRIC VEHICLES - APPLICATION FOR VEHICLE IN THE HOUSE	1222
<i>Tomoki Enmei, Hiroshi Fujimoto</i>	
[F3-4] SIMULATION OF DYNAMIC STRESSES ON BATTERY PACK HOLDER FROM DIFFERENT ROAD TOPOLOGIES	1227
<i>Piyawat Paetanom, Chi-na Benyajati, Panya Kansuwan, Masaaki Okuma</i>	
[F3-5] DEVELOPMENT OF TRACTION FORCE-SPEED BASED FUEL CONSUMPTION PREDICTION MODEL FOR HYBRID VEHICLES	1234
<i>Siriorn Pitauwat, Hirofumi Aoki, Satoru Iizuka, Takayuki Morikawa,</i>	

[F4] LIFE CYCLE ANALYSIS

[F4-1] EFFECTS OF INTEGRATION OF THE ELECTRIC MOBILITY IN THE ITALIAN ENERGY SECTOR: HOW TO ACCOUNT FOR THEM IN AN LCA PERSPECTIVE	1241
<i>Benedetta Marmioli, Giovanni Dotelli, Joeri Van Mierlo, Maarten Messagie</i>	
[F4-2] ENVIRONMENTAL LIFE CYCLE ASSESSMENT OF NEXT-GENERATION AUTOMOBILES INSTALLING NEW POLYMERS	1248
<i>Mikiaki Hasegawa, Eri Amasawa, Miyuki Ota, Hirokazu Sugiyama, Masahiko Hirao</i>	
[F4-3] WATER ISSUES AND ELECTRIC VEHICLES - KEY ASPECTS AND EXAMPLES IN LIFE CYCLE ASSESSMENT	1251
<i>Gerfried Jungmeier, Amgad A. Elgowainy, Simone Ehrenberger, Gabriela Benveniste Pérez, Pierre-Olivier Roye, Lim Ocktaeck</i>	
[F4-4] LIFECYCLE CLIMATE CHANGE IMPACTS OF BATTERY- AND FUEL CELL ELECTRIC VEHICLES - EFFECTS OF DRIVING RANGE AND FUEL CHAINS	1256
<i>Christine Roxanne Hung, Linda Ager-Wick Ellingsen, Felipe Vásquez, Max Windsheimer, Anders Hammer Strømman</i>	
[F4-5] MAINTENANCE AND REPAIR IMPACTS ON ELECTRIC VEHICLES - PRESENTATION OF STUDY LAYOUT AND FIRST RESULTS	1260
<i>Norbert Schreier, Aljoscha Einspiegel, Ludwing Seibt</i>	

[F5] PROPULSION SYSTEMS & MOTION CONTROL TECHNOLOGIES

[F5-1] PREDICTING POWERTRAIN COSTS FOR BATTERY ELECTRIC VEHICLES BASED ON INDUSTRY TRENDS AND COMPONENT TEARDOWNS	1266
<i>Michael J. Safoutin</i>	

VOLUME 3

[F5-2] IMPROVING ELECTRIC CITY BUS POWERTRAIN EFFICIENCY AND COSTS USING DESIGN SPACE EXPLORATION	1272
<i>Sebastian Krapf, Ganesh Sethuraman, Aditya Pathak, Aybike Ongel, Markus Lienkamp</i>	
[F5-3] APPROPRIATE DESIGN OF PLUG-IN HYBRID ELECTRIC VEHICLE DRIVETRAINS UNDER CONSIDERATION OF USER BEHAVIOUR AND COMPONENT STRESS	1279
<i>André Ebel, Thomas Riemer, Hans-Christian Reuss</i>	
[F5-4] AWD FOR ELECTRIC VEHICLES - A REVOLUTION FOR VEHICLE EFFICIENCY?	1285
<i>Christian Angerer, Nikola Holjevac, Ganesh Sethuraman, Markus Lienkamp</i>	
[F5-5] MOTION CONTROL AND MULTI-SENSOR MODELING OF THE 4-AXIS PROPELLED ELECTRIC SHIP	1291
<i>Hiroshi Kudo, Kazuhiro Miyabara, Tran Thanh Nhan, Toshimasa Miyazaki, Yoshihisa Hojo</i>	
[F5-6] STABILIZATION OF VEHICLE DYNAMICS BY TIRE DIGITAL CONTROL - TIRE DISTURBANCE CONTROL ALGORITHM FOR ELECTRIC MOTOR DRIVE SYSTEM.....	1297
<i>Keizo Akutagawa, Yasumichi Wakao</i>	

[F6] AC & DC CHARGING SYSTEM

[F6-1] CHARIN E.V. - THE PATH TO A GLOBAL EV STANDARD - HARMONIZATION AND HIGH POWER CHARGING	1301
<i>Claas Bracklo, Michael Keller</i>	
[F6-2] TO WHAT EXTENT DOES MOBILITY BEHAVIOR CHANGE THE CHARGING NETWORK? - WILL DC CHARGING BECOME DOMINANT	1307
<i>Frank ten Wolde</i>	
[F6-3] EV POWERTRAIN TOPOLOGIES FOR ELECTRIC ROAD APPLICATIONS.....	1311
<i>Anton Karlsson, Gabriel Domingues-Olavarría, Mats Alaküla</i>	
[F6-4] LOCATION-ALLOCATION OF ELECTRIC VEHICLE FAST CHARGERS - RESEARCH AND PRACTICE.....	1318
<i>Yutaka Motoaki</i>	
[F6-5] PROCESS FOR IDENTIFYING PUBLIC CHARGING STATIONS IN THE COLUMBUS REGION.....	1322
<i>Bud Braughton, Edward Ungar, Katherine Ott Zehnder</i>	
[F6-6] IDENTIFYING HETEROGENEOUS ELECTRIC VEHICLE CHARGING BEHAVIOR - MIXED USAGE OF L1, L2, DC FAST CHARGERS AT DIFFERENT LOCATIONS	1337
<i>Jae Hyun Lee, Debapriya Chakraborty, Scott Hardman, Gil Tal</i>	

[F7] FUEL CELL VEHICLES

[F7-1] NEW TANK VOLUME ESTIMATION METHOD FOR HYDROGEN FUELING	1348
<i>Shigehiro Yamaguchi, Yuzo Fujita, Kiyoshi Handa</i>	
[F7-2] A STUDY ON POWER DISTRIBUTION METHODS BETWEEN FUEL CELL AND LI-ION BATTERY FOR A FUEL CELL GARBAGE TRUCK	1355
<i>Daiki Katagiri, Hosik Lee, Yushi Kamiya, Toshio Hirota, Yuto Ihara, Takuya Yamaura</i>	
[F7-3] CALCULATION ENERGY CONSUMPTION, RANGE AND EFFICIENCY FOR DIFFERENT ELECTRIC, HYBRID AND FUEL CELL VEHICLES	1362
<i>Désirée Alcázar-García, Luis Romeral Martínez</i>	
[F7-4] ELECTRICITY AS AN ENERGY CARRIER IN TRANSPORT - COST AND EFFICIENCY COMPARISON OF DIFFERENT PATHWAYS	1369
<i>Maria Grahn, Maria Taljegard, Selma Brynolf</i>	
[F7-5] DEVELOPMENT OF THE HYDROGEN SYSTEM FOR FUEL CELL SCOOTER - SAFETY VERIFICATION THROUGH VEHICLE TESTING	1376
<i>Tatsuki Sugiyama, Hitoshi Muramatsu, Kengo Ikeya, Toru Eguchi, Ayumi Shimura</i>	
[F7-6] DEVELOPMENT OF ELECTROLYTE MEMBRANES APPLY ON NON-HUMIDIFIED INTERMEDIATE TEMPERATURE FUEL CELLS	1382
<i>Jie Yu, Shojiro Kikuchi, Hirokazu Munakata, Kiyoshi Kanamura</i>	

[DS1] ELECTRICAL DRIVE 1

[DS1-1] REAL-TIME COLLISION WARNING SYSTEM BASED ON VISION AND V2V COMMUNICATION	1388
<i>Jing-Yu Liu, Hao-Yue Ma, Qun-song Wang, Zi-ran Li, Wei Yang</i>	
[DS1-2] DEVELOPMENT AND PROMOTION FOR STANDARDIZATION OF CHARGING TECHNOLOGY ACCOMMODATED TO ELECTRIC SCOOTERS IN TAIWAN	1394
<i>Kao-Hone Chu, Min-Chuan Wu, Tien-Ho Gau, Li-Song Lin, Hung-Teh Tsai, Ping-Hui Shieh, Nai-Jen Chang, Li-Chung Chou, Shan-Li Lien</i>	
[DS1-3] AUTO PARKING SYSTEM - WITH VISION BASED PARKING LOT DETECTION SYSTEM AND MULTI-STEPS CONTROL SYSTEM	1399
<i>Sheng Wei Chan, Tse Lin Lee</i>	
[DS1-4] NUMERICAL STUDY ON HYBRIDIZATION BASED ON DIESEL ICE TO MOTOR ASSIST MILD HEVFOR PRELIMINARY CONCEPT DESIGN.....	1406
<i>Sangjun Park, Eunhee Ko, Wonjun Yoon, Jungsoo Park</i>	
[DS1-5] FIRST MOBILE BLOOD DONATION BUS IN HEALTH SERVICE.....	1411
<i>Micha? Sierszy?ski, Micha? Piku?a, Franciszek Sidorski, Adam Piotrowski</i>	
[DS1-6] ELECTRIC CARGO BIKE WITH A TWIST - A FIELD TEST OF TWO INNOVATIVE BICYCLE CONCEPTS	1418
<i>Anne Yu Faxér, Ellen Olausson, Linda Olsson, Göran Smith, Stefan Pettersson</i>	
[DS1-7] STUDY ON ENGINE POWER GENERATION SYSTEM FOR DPHEBUS - ENGINE POWER GENERATION SYSTEM FOR DIESEL PLUG-IN HYBRID ELECTRIC BUS SATISFYING ALL ELECTRIC RANGE 30KM.....	1425
<i>Taeun Kim, Inho Kim, Soonyong Yang</i>	
[DS1-8] AN EMPIRICAL STUDY ON CO₂ REDUCTION EFFECT MEASUREMENT OF ULTRA-COMPACT ELECTRIC VEHICLE IN JAPAN	1431
<i>Hideki Kato, Hidekazu Suzuki, Yasuhide Nishihori</i>	
[DS1-9] NOVEL NON-INVASIVE SENSOR PROBES FOR CAPTURING “CAN” PHYSICAL SIGNALS FROM OUTSIDE INSULATED SIGNAL CABLES	1435
<i>Tomoharu Sakai, Hiroyoshi Ikeda, Shin Kasai, Koichi Yanagisawa</i>	
[DS1-10] ULTRA-LIGHT VEHICLE (ULV) FOR URBAN MOBILITY	1440
<i>Hugo Gabele, Walter Janach, Martin Ziegler</i>	
[DS1-11] THE DEVELOPMENT OF ELECTRIC POWERTRAIN SYSTEMS TO MAXIMISE EFFICIENCY AND INCREASE ALL-ELECTRIC RANGE (AER)	1445
<i>Puneet Mathur, Kevin Chow, David Bridge, Greg Harris</i>	

[DS2] ELECTRICAL DRIVE 2

[DS2-1] DEVELOPMENT OF DRIVING CYCLE FOR XI'AN CITY BUS LINE BASED ON MARKOV CHAIN	1453
<i>Yaohua Li, Tianyuan Ren, Pandeng Shao, Weiping Song</i>	
[DS2-2] ON WAYS OF INCREASING FUEL ECONOMY IN THE SPREAD OF HYBRIDIZED HEAVY-DUTY VEHICLES.....	1460
<i>Namio Yamaguchi, Kazuo Rokkaku, Shigeyuki Minami</i>	
[DS2-3] DEVELOPMENT OF TYPICAL DRIVING CYCLE OF XI'AN CITY BUS BASED ON THE COMBINATION OF CLUSTERING AND MARKOV METHOD	1466
<i>Yaohua Li, Pandeng Shao, Tianyuan Ren, Weiping Song</i>	
[DS2-4] DRIVING STYLE AND ENERGY CONSUMPTION WITH EVERYDAY USE OF A PLUG-IN HYBRID ELECTRIC VEHICLE.....	1472
<i>Magnus Hjälm Dahl, Christer Ahlström, Per Henriksson, Christofer Sundström</i>	

[DS3] CHARGING

[DS3-1] THE SYSTEM OF DYNAMIC WIRELESS CHARGING FOR TRANSPORT USING TRANSMITTER AND RECEIVER PARAMETERS ADJUSTMENT	1479
<i>Rodions Saltanovs</i>	
[DS3-2] A STUDY ON V2V CHARGING APPLICATION IN A PARK-AND-RIDE	1484
<i>Antonino Genovese, Giancarlo Giuli, Massimo Mancini</i>	

[DS3-3] DC FAST CHARGING INFRASTRUCTURE: EU LEGISLATION AND MARKET EVOLUTION.....	1491
<i>Tomoko Blech, Janka Jurisits, Lauren Harry-Villain</i>	
[DS3-4] MULTI-FUNCTIONAL DETERMINATION OF LOCATIONS FOR AC & DC CHARGING STATIONS IN MUNICIPALITIES AND ALONG THE HIGHWAYS.....	1498
<i>Simon Haverkamp</i>	
[DS3-5] ULTRA-FAST CHARGING INFRASTRUCTURE FOR VEHICLE ON-BOARD ULTRACAPACITORS IN URBAN PUBLIC TRANSPORTATION APPLICATIONS.....	1502
<i>Fernando Ortenzi, Manlio Pasquali, Giovanni Pede, Alessandro Lidozzi, Marco Di Benedetto</i>	
[DS3-6] EMERGENCY CHARGING SYSTEM FOR EV USING PARALLEL OPERATION.....	1508
<i>Jung Hyoun Bae, Young Eun Kim, Young Wook Son, Jae Seok Lee</i>	
[DS3-7] DISTRIBUTION SWITCHBOARD FOR SLOW CHARGER OF EV ABLE TO DISTRIBUTE POWER AS A FUNCTION OF AVAILABLE POWER CAPACITY.....	1512
<i>Jae Seok Lee, Young Wook Son, Young Eun Kim, Jae Eun Kim, Jun Ho Cho</i>	
[DS3-8] BUSINESS MODEL INNOVATION FOR NON-COMMERCIAL CHARGING INFRASTRUCTURE SHARING SYSTEM IN CHINA.....	1518
<i>Xiaoyuan Wu, Baojiang Sun, Zhelun Zuo</i>	
[DS3-9] TOWARDS EU-WIDE INTEROPERABILITY OF CHARGING INFRASTRUCTURE FOR ELECTRIC VEHICLES - THE BELGIAN CASE.....	1525
<i>Cedric De Cauwer, Anne Guillemont, Gilles Cragues, Joeri Van Mierlo, Thierry Coosemans, Maarten Messagie</i>	
[DS3-10] DEVELOPMENT FOR INTEGRATING CHARGING INFRASTRUCTURE AND POWER GRID - A CONCEPT AND A PROTOTYPE DEVELOPMENT OF EV POWER CONDITIONING SYSTEM AND GATEWAY.....	1532
<i>Eiichi Horiuchi, Daigo Takemura, Naohisa Kawahara, Pathom Attaviriyanyapap, Hideaki Tanzan</i>	
[DS3-11] CANCELLATION OF HARMONIC MAGNETIC FIELD EMITTED FROM WIRELESS POWER TRANSFER BY USE OF A FOUR COILS SETUP.....	1536
<i>Takuya Nayuki, Koshichi Nemoto, Tomohiko Ikeya</i>	
[DS3-12] CAPABILITIES TO REDUCE THE GRID CONNECTION POWER OF HIGH POWER CHARGING (HPC) PARKS FOR BATTERY ELECTRIC VEHICLES (EVS) WITH CONNECTION TO THE MEDIUM VOLTAGE GRID.....	1543
<i>Sören Schrader, Christof Bussen, Roman Scholdan, Richard Küsters</i>	
[DS3-13] ELECTRICITY COST FOR ELECTRIC VEHICLE FAST CHARGING.....	1550
<i>Matteo Muratori, Eleftheria Kontou, Emma Elqvist, Dylan Culter, Joshua Eichman</i>	

[DS4] ENERGY STORAGE SYSTEMS 1

[DS4-1] RESEARCH OF PERFORMANCE ON LITHIUM TITANATE BATTERY.....	1554
<i>Jianyu Liu, Zhuo Zhang, Peng Lin, Peng Jin,, Liye Wang, Luping Wang</i>	
[DS4-2] DESIGN AND SIMULATION OF BATTERY PACK EQUIVALENT CIRCUIT MODEL FOR 48V MILD HYBRID SYSTEM.....	1560
<i>Jinhyeong Park, Chang-O Yoon, Pyeong-Yeon Lee, Sungsoo Jang, Jonghoon Kim</i>	
[DS4-3] SOC ESTIMATION FOR MH-NI BATTERIES BASED ON IMPROVED EXTENDED KALMAN FILTERING.....	1566
<i>Shuyu Xiao, Peng Jin,, Cong Xie, Chengxuan Tao</i>	
[DS4-4] FAST CHARGE POWER PREDICTION OF NI - MH BATTERIES.....	1571
<i>Peng Jin,, Shuyu Xiao, Jiaying He, Shun Zhang, Cong Xie</i>	
[DS4-5] INTEGRATED 1D-3D COUPLING ANALYSIS FOR OPTIMIZATION OF BATTERY COOLING AND EV PERFORMANCE DESCRIBING UDDS DRIVING CYCLE - INTRODUCTORY TO THE PRESENT AND THE FUTURE WORK -.....	1576
<i>Wonjun Yoon, Eunhee Ko, Jungsoo Park</i>	
[DS4-6] PREDICTIVE BATTERY THERMAL MANAGEMENT STRATEGY FOR FAST CHARGING ELECTRIC VEHICLES - TYPE THE SUBTITLE OF THE PAPER -.....	1580
<i>Bogdan Rosca, Steven Wilkins</i>	
[DS4-7] BATTERY PACK STATE ESTIMATION ALGORITHMS - MODEL BASED DEVELOPMENT AND ESTIMATION.....	1587
<i>Bogdan Rosca, Steven Wilkins, Erik Hoedemaekers</i>	
[DS4-8] INFLUENCE OF ENVIRONMENTAL STRESS FACTORS ON SOH OF BATTERY FOR ELECTRIC-POWERED SPACE APPLICATIONS.....	1593
<i>Mazhar Abbas, Jonghoon Kim</i>	

[DS4-9] DEVELOPMENT OF HIGH CAPACITY LITHIUM-ION BATTERIES CONSISTING OF NICKLE-BASED POSITIVE ELECTRODE AND SILICON-BASED NEGATIVE ELECTRODE USING IRON-BASED CURRENT COLLECTOR FOIL	1600
<i>Masanori Morishita, Akihiro Yamano, Tetsuo Sakai</i>	
[DS4-10] KEY IMPACT FACTORS ON CYCLING CAPACITY EVOLUTION OF COMMERCIAL LTO BASED POUCH CELLS	1606
<i>Sazzad Hosen, Joris de Hoog, Joris Jaguemont, Noshin Omar, Joeri Van Mierlo, Peter Van Den Bossche</i>	
[DS4-11] EVALUATION METHOD OF BATTERY STATE OF AGING BASED ON POLARIZATION VOLTAGE	1612
<i>Peng Lin, Li Sun, Peng Jin,, Luping Wang, Jichao Hong, Bingxin Liu</i>	

[DS5] PROPULSION SYSTEMS & COMPONENTS

[DS5-1] EVALUATION OF NEW HYBRID ELECTRIC VEHICLE DRIVETRAIN TOPOLOGIES - USE CASE SPECIFIC SYNTHESIS AND RATING	1617
<i>Sebastian Ruoff, Marvin Busch, Katharina Bause</i>	
[DS5-2] IN-WHEEL MOTOR SYSTEM FOR ENHANCED EV PERFORMANCE	1624
<i>Ahmed Othman, Hossam Gabbar</i>	
[DS5-3] A NOVEL DUAL-MOTOR TWO-SPEED DIRECT DRIVE BATTERY ELECTRIC VEHICLE DRIVETRAIN	1630
<i>Jiageng Ruan, Paul Walker, Jinglai Wu, Yang Tian, Nong Zhang</i>	
[DS5-4] VOLTAGE VECTOR SELECTION STRATEGY OF IPMSM-DTC SYSTEM USED IN EVS BASED ON MODEL PREDICTIVE CONTROL	1638
<i>Yaohua Li, Haohao Shi, Xiangzhen Meng, Qidong Yang, Jiayue Ren</i>	
[DS5-5] A VARIABLE AMPLITUDE VOLTAGE VECTOR SELECTION STRATEGY BASED ON PREDICTIVE CONTROL FOR THE DTC IN SPMSM.....	1642
<i>Yaohua Li, Xiangzhen Meng, Haohao Shi, Yafei Qu, Meiting Dang</i>	
[DS5-6] DEVELOPMENT OF TORQUE VECTORING CONTROL LOGIC AND IMPLEMENTATION FOR IN-WHEEL VEHICLE	1648
<i>Yonghee Lee, Sangmoon Lee, Kibok Kim, Donghyun Kim, Jae Wook Jeon</i>	
[DS5-7] ROTOR FIELD ORIENTED CONTROL OF RESONANT WIRELESS ELECTRICALLY EXCITED SYNCHRONOUS MOTOR.....	1655
<i>Zaimin Zhong, Yong Bao, Chengyu Hu, Yijin Qin</i>	
[DS5-8] DEVELOPMENT MODEL OF SYNCHROMESH MECHANISM TO OPTIMIZATION TRANSMISSION'S ELECTRIC VEHICLE	1662
<i>Muhammad Adhitya, Danardono Soemarsono, Fuad Zainuri, Sonki Prasetya, Fachruddin Mochtar, A Apriana, E Ridwan, T Widjatmaka, A Azis, D Mustofa, Imam Wahyudi, G Heryana, R Siregar</i>	
[DS5-9] DEVELOPMENT AND OPTIMIZATION OF CONTROL STRATEGY OF ELECTRIC DRIVING MODE FOR A NOVEL COMPOUND POWER-SPLIT HYBRID ELECTRIC VEHICLE	1668
<i>Dengfeng Shen, Clemens Gühmann, Ka Yao, Tong Zhang</i>	
[DS5-10] DEVELOPMENT OF NEW COMPACT HYBRID SYSTEM.....	1675
<i>Yuichi Uda, Satoshi Ito, Michiyasu Yamamoto</i>	

[DS6] ELECTRICAL DRIVE 3

[DS6-1] CHARGING INTO A SHARED FUTURE - ELECTRIFYING TRANSPORTATION NETWORKING COMPANIES (TNCS)	1681
<i>Catherine Teebay</i>	
[DS6-2] USER-CENTRIC VISION FOR MOBILITY AND TRANSPORT IN EUROPE FOR 2030 BASED ON A PARTICIPATORY APPROACH: THE ROLE OF ELECTRIFICATION	1687
<i>Thierry Coosemans, Imre Keseru, Joeri Van Mierlo, Cedric De Cauwer, Cathy Macharis, Beate Mueller, Gereon Meyer</i>	
[DS6-3] TRANSPORTATION FOR ALL - COMMUNITY ELECTRIC VEHICLE PILOT PROJECT -	1692
<i>Esther Pullido</i>	
[DS6-4] AN AUTOMATIC SEARCH TO EV DESIGN VARIABLES USING REINFORCEMENT LEARNING.....	1696
<i>Tatsuhide Sakai, Takahiro Inabe</i>	

[DS6-5] THE PARIS AGREEMENT ON CLIMATE PROTECTION - CONSEQUENCES AND CHALLENGES FOR THE GLOBAL AUTOMOTIVE INDUSTRY - THE USE OF CARBON BASED FUELS HAS TO COME TO AN END AND IT FINALLY MUST HAPPEN MUCH SOONER THAN IT IS REFLECTED BY TODAY'S STRATEGIES OF MOST GLOBAL CARMAKERS	1703
<i>Volker Blandow, Christopher Füss</i>	
[DS6-6] A REAL WORLD DATA BASED POTENTIAL ANALYSIS OF NON-DRIVING-RELATED IN-VEHICLE ACTIVITIES IN THE CONTEXT OF AUTOMATED DRIVING	1708
<i>Michael Haag, Carsten Binz, Sebastian Stegmüller</i>	
[DS6-7] RAMPING UP THE INFRASTRUCTURE - FRAMEWORK CONDITIONS AND NEW BUSINESS OPPORTUNITIES IN GERMANY	1715
<i>Juliane Bielinski, Tillmann Groth, Johannes Pallasch</i>	
[DS6-8] JEJU ELECTRIC VEHICLE CALL CENTER - ASSISTING LOCAL ELECTRIC VEHICLE USERS AND ELECTRIC VEHICLE RENTAL CAR USERS	1721
<i>Sanghoon Son, Suwan Kim</i>	
[DS6-9] DRIVERLESS ELECTRIC VEHICLES AT BUSINESSPARK RIVIUM NEAR ROTTERDAM (THE NETHERLANDS): FROM OPERATION ON DEDICATED TRACK SINCE 2005 TO PUBLIC ROADS IN 2020	1726
<i>Reanne Boersma, Dennis Mica, Bart van Arem, Frank Rieck</i>	

[DS7] ELECTRICAL DRIVE 4

[DS7-1] INHERENTLY SAFE DESIGN FOR AUTONOMOUS DRIVING VEHICLES AGAINST CYBER ATTACKS	1732
<i>Kenji Sugihara, Satoko Tsuru</i>	
[DS7-2] A FRAMEWORK FOR DESIGNING AND PERFORMING OF VIRTUAL TEST DRIVES CONCERNING AUTONOMOUS DRIVING	1738
<i>Martin Kehrler, Gerd Baumann, Hans-Christian Reuss</i>	
[DS7-3] UNDERSTANDING THE ADOPTION OF AUTOMATED VEHICLE TECHNOLOGY: - A CASE-STUDY OF TESLA OWNERS	1742
<i>Rosaria Berliner, Scott Hardman, Gil Tal</i>	
[DS7-4] AUTONOMOUS VEHICLES AS A SERVICE CRITICAL REVIEW - CAN AUTONOMOUS VEHICLES AS A SERVICE COMPETE WITH FUTURE TRANSPORT SOLUTIONS AND WHAT DEMANDS DO THESE PLACE ON EXISTING INFRASTRUCTURE	1746
<i>Richard William Merrett</i>	

[DS8] INFRASTRUCTURE

[DS8-1] A STUDY OF EVALUATING METHOD IN DURABILITY TEST OF EV COUPLERS FOR BATTERY-SWAPPING SYSTEM	1751
<i>Kwangmin Kim, Ju Lee, Sanggon Lee</i>	
[DS8-2] SMART MANAGEMENT OF ELECTRIC FLEET - USE OF RENEWABLE RESOURCES FOR EFFECTIVE GREEN TRANSPORT	1756
<i>Franciszek Sidorski, Justyna Michalak, Adam Piotrowski, Michał Sierszyński, Bartłomiej Walczak</i>	
[DS8-3] RELEVANCE OF RARE EARTHS RECYCLING FROM PERMANENT MAGNETS - CURRENT AND FUTURE USE OF RARE EARTH METALS IN PERMANENT MAGNETS FOR (ELECTRIC) VEHICLES AND THE COLLECTION POTENTIAL FOR RECYCLING TO PROVIDE A FEEDSTOCK FOR THE REE4EU INDUSTRIAL SCALE RARE EARTH RECYCLING PROCESSES	1763
<i>Bert Witkamp,</i>	
[DS8-4] DRIVING STYLE COMPARISON OF PLUG-IN HYBRIDS AND FOSSIL FUELED VEHICLES BASED ON DATA COLLECTION OF FAST SAMPLED SIGNALS	1769
<i>Stefan Pettersson, Susanne Bjärsvik, Cristofer Englund, Robert Eriksson, Veikko Koponen, Urban Kristiansson, Hans-Göran Milding, Christofer Sundström, Johan Wedlin</i>	
[DS8-5] MAKING AN ELECTRIFICATION ANALYSIS TOOL FOR MULTIPLE TYPES OF TRANSPORTATION	1776
<i>Joakim Nyman, Oscar Enerbäck, Stefan Pettersson</i>	
[DS8-6] DEVELOPMENT OF THE ELECTROMAGNETIC DESIGN METHOD FOR THE AUTOMOTIVE EMC PROBLEMS	1783
<i>Yuki Natsume, Yuji Ohori, Shota Inudo</i>	

[DS8-7] ENERGY CONSUMPTION OF ELECTRIC CITY BUSES	1788
<i>Alexander Bunzel, Martin Ufert, Bernard Bäker</i>	
[DS8-8] LOW CARBON VEHICLES IN 2030: MULTICRITERIA ANALYSIS OF COST COMPETITIVENESS AND ENVIRONMENTAL IMPACTS	1793
<i>Anne Bouter, Cyprien Ternel, Fabrice Le Berr, Joris Melgar Sossa, François Badin, Maxime Pasquier</i>	
[DS8-9] MEASURING THE SERVICE QUALITY OF EV CHARGING POINT OPERATORS	1800
<i>Lieselot Vanhaverbeke, Quentin De Clerck, Joeri Van Mierlo</i>	
[DS8-10] A NOVEL ENERGY SYSTEM USING ELECTRIC VEHICLES FOR EXPANDING RENEWABLE ENERGY	1802
<i>Yoshiki Tomura, Tsuguhiko Nakagawa</i>	
[DS8-11] SMART MANAGEMENT OF ELECTRIC FLEET -USE OF RENEWABLE RESOURCES FOR EFFECTIVE GREEN TRANSPORT	1804
<i>Maarten Linnenkamp</i>	

[DS9] ENERGY STORAGE SYSTEMS 2

[DS9-1] SUPERCAPACITORS HEALTH PROGNOSIS FOR VEHICULAR APPLICATIONS	1807
<i>Asmae El Mejdoubi, Hamid Gualous, Hicham Chaoui, Jalal Sabor</i>	
[DS9-2] MODEL DEVELOPMENT OF ELECTRIC VEHICLES BASED ON TEST DATA ANALYSIS	1813
<i>Namwook Kim, Do Hyun Park, Woong Lee, Haeseong Jeong, Chunhua Zheng</i>	
[DS9-3] QUICK CHARGING STRATEGY BASED ON TEMPERATURE CHARACTERISTICS	1817
<i>Jiaxing He, Peng Jin, Shuyu Xiao, Cong Xie</i>	
[DS9-4] SUPPRESSION-EFFECT OF THE BUBBLES IN HYDROGEN REACTOR FUELED BY NABH₄ UNDER HIGH PRESSURE CONDITION	1822
<i>Yuri Naito, Nobukazu Hoshi, Yusuke Oka</i>	

[DS10] ELECTRIC MACHINES & CONTROL TECHNOLOGIES

[DS10-1] SEMI-ANALYTICAL APPROACH TO STEADY-STATE TORQUE ESTIMATION OF SYNCHRONOUS RELUCTANCE MACHINES - BY HARMONIC ANALYSIS OF PHASE INDUCTANCES	1829
<i>Yassine Benômar, B Raes, Björn Verrelst, Joeri Van Mierlo, Omar Hegazy</i>	
[DS10-2] DEMYSTIFYING RARE EARTHS SUPPLY - RARE EARTHS SUPPLY AS AN ENABLER OF PERMANENT MAGNET TECHNOLOGY ADOPTION FOR ELECTRIC VEHICLE DRIVETRAINS	1834
<i>Pol Le Roux, Jose Ramon Garcia Santamaria</i>	
[DS10-3] ENHANCED OUTPUT POWER CHARACTERISTICS OF A SWITCHED RELUCTANCE MOTOR DESIGNED FOR HIGH POWER ELECTRIC VEHICLES	1839
<i>Nanaho Kawata, Akira Chiba</i>	
[DS10-4] DEVELOPMENT OF DOUBLE-ROTOR VERNIER PERMANENT-MAGNET MACHINE FOR ELECTRIC VEHICLE APPLICATIONS	1846
<i>Christopher H. T. Lee, K. T. Chau, L. B. Cao, T. W. Ching, C. C. Chan</i>	
[DS10-5] A HIGH POWER DENSITY PM MOTOR FOR ELECTRIC VEHICLE APPLICATION	1853
<i>Rama Lakshmi Suresh Nimmana, Akira Chiba</i>	
[DS10-6] PROBLEMS OF TEMPERATURE DISTRIBUTION IN ELECTRIC WHEEL HUB MOTORS - APPLICATION OF TOOTH-TIPS SHAPE IN STATOR	1856
<i>Piotr Dukalski, Bartłomiej B?dkowski, Tomasz Wolnik, Tomasz Jarek</i>	
[DS10-7] PERFORMANCE COMPARISON STUDY OF WOUND FIELD SYNCHRONOUS MOTOR AND INTERIOR PERMANENT MAGNET SYNCHRONOUS MOTOR	1863
<i>Shigeo Sakurai, Takeshi Suwazono, Takayuki Mizuno, Koji Nagata, Tadashi Ashikaga</i>	
[DS10-8] DESIGN OF FLUX-SWITCHING DC-FIELD MACHINES WITH HARMONICS SUPPRESSION	1870
<i>Libing Cao, K. T. Chau, Christopher H. T. Lee, C. C. Chan, T. W. Ching</i>	
[DS10-9] DEVELOPMENT OF VEHICLE COLLISION AVOIDANCE SYSTEM BASED ON IMPEDANCE CONTROL APPROACH	1876
<i>Chun-Lin Chen, Mi-Ching Tsai, Ko-Lin Wang, Jia-Sheng Hu, Yen-Chen Liu</i>	

[DS11] POWER ELECTRONIC COMPONENTS

[DS11-1] A STUDY OF THE PACKAGING DESIGN FOR THE POWER CONTROL UNIT USING SIC POWER SEMICONDUCTOR DEVICES FOR ELECTRIC VEHICLE..... 1882
Seongjun Lee, Namgyu Lim, Jonghoon Kim

[DS11-2] OPTIMIZATION OF A LOW WEIGHT ELECTRONIC DIFFERENTIAL FOR LEVS - EFFICIENT DESIGN FOR INDEPENDENT ONE AXIS TWO IN-WHEEL ENGINES 1886
Alfonso Gago-Calderon, Jose Fernandez-Ramos, Jose Ramon Andres-Diaz

[DS11-3] SMART INVERTER FOR MICRO EV CAPABLE OF DRIVING AND CHARGING..... 1893
Young Eun Kim, Young Wook Son, Jae Seok Lee, Jun Ho Cho

[DS11-4] DEVELOPMENT OF A 400V/1000A INVERTER FOR TESTING ELECTRIC DRIVETRAINS 1898
Zoltan Szeli, Gabor Szakallas

[DS11-5] SIC BASED ONBOARD CHARGER USING PEAK CURRENT MODE CONTROL..... 1904
Kaoru Koketsu, Shinya Goto, Tsuyoshi Hosoda, Kimikazu Nakamura, Kazuhiro Shirakawa, Keiichi Ando, Yuichi Handa, Yuki Yamada, Yuji Hayashi, Seiji Iyasu

Author Index