26th Electric Vehicle Symposium 2012

Los Angeles, California, USA
6-9 May 2012

Volume 1 of 4

ISBN: 978-1-62276-421-1
# TABLE OF CONTENTS

## VOLUME 1

### AUXILIARY COMPONENTS

**BRAKING SYSTEMS OF ELECTRIC AND HYBRID ELECTRIC VEHICLES UNDER ERGONOMIC ASPECTS**

K. AUGSBURG, S. KIRCHNER, J. SENDLER

**PERFORMANCE EVALUATION OF Electro-Hydraulic Brake FOR Fuel Cell Vehicles using HARDWARE-IN-THE-LOOP SIMULATION**

J.-H. CHOI, Y. JUN-SANG, S. JAIHYUN, Y. HUN, H. SUNG-HO

### BATTERIES & OTHER ENERGY STORAGE

**AGING EFFECT OF TEMPERATURE GRADIENTS IN LI-ION CELLS - EXPERIMENTAL AND SIMULATIVE INVESTIGATIONS AND THE CONSEQUENCES ON THERMAL BATTERY MANAGEMENT**

M. FLECKENSTEIN, O. BOHLEN, B. BAKER

**AGING EXPERIMENTS OF LiMn2O4 BATTERY AND MODELS FOR PERFORMANCE PREDICTION**

T. GAO, L. CHENGTAO, G. TIAN

**ANALYSIS OF ADVERSE EFFECTS ON VEHICLE PERFORMANCE DUE TO HYBRID VEHICLE BATTERY DETERIORATION**

Y. KAMIYA, F. HUANG, Y. SUMIDA, A. NOMURA, H. MATSUMURA, Y. DAISHO, K. MORITA

**ANALYZING CALENDAR AGING DATA TOWARDS A LIFETIME PREDICTION MODEL FOR LI-ION BATTERIES**

M. GOLUB, J. THOMPSON

**CAPACITY DECREASE VS. IMPEDANCE INCREASE OF LITHIUM BATTERIES. A COMPARATIVE STUDY**

H. POPP, M. EINHORN, F.Y. CONTE

**CASE STUDY OF DUAL ESS FOR A FULL-ELECTRIC BUS COMBINING A LI-ION BATTERY WITH AN ENVIRONMENTALLY-FRIENDLY DLCAPTM**

T. FURUKAWA, L. LI, S. KAZUHIRO

**CHARACTERIZATION OF A BATTERY MODEL USING PARAMETER ESTIMATION TECHNIQUES**

S. SWOLFS, G. WAEYENBERGH, N. DEKEYSER, P. SLAETS

**DEVELOPMENT OF A MODULAR LITHIUM-ION BATTERY FOR A SUB-COMPACT ELECTRIC VEHICLE**

P. KEIL, P. BURDA, A. JOSSEN, M. LIENKAMP

**DEVELOPMENT OF A THERMAL MODEL FOR LITHIUM-ION BATTERIES FOR PLUG-IN HYBRID ELECTRIC VEHICLES**

P. VAN DEN BOSSCHE, N. OMAR, M. AL SAKKA, M. DAOWD, O. HEGAZY, T. COOSEMANS, J. VAN MIERLO

**DEVELOPMENT OF A VERSATILE PLUG-IN AUXILIARY POWER SYSTEM FOR USE IN MEDIUM AND HEAVY DUTY SERVICE VEHICLES**

A. DALAL, J. SMITH

**DEVELOPMENT OF BATTERY PACK AND SYSTEM FOR PLUG-IN HYBRID VEHICLE**

Y. HIROE, K. SUZUI, A. KIYAMA, T. YODA, J. ISHIKAWA, J. ISHIKAWA, K. TAKAHASHI

**DEVELOPMENT OF THE HIGH PERFORMANCE LiFePO4 CELL FOR BEV/PHEV APPLICATION**

T. NAKAMOTO, I. SUZUKI, T. MOCHIZUKI, A. FUNABIKI, T. SUZUKI, Y. UEBO

**ELECTROCHEMICAL PERFORMANCE OF LeFe0.99La0.01PO4 COATED WITH DIFFERENT ORGANIC ACIDS**

T.-K. FEY, Y.-D. CHO, B.-F. CHANG
<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>ELECTROCHEMICAL-CALORIMETRIC STUDIES ON THE THERMAL CHARACTERISTICS OF LiFePO₄/GRAPHITE CELL</td>
<td>130</td>
</tr>
<tr>
<td>J. XU</td>
<td></td>
</tr>
<tr>
<td>ETHYLMETHOXYETHYL SULFONE VIABILITY FOR LITHIUM ION BATTERY ELECTROLYTES</td>
<td>137</td>
</tr>
<tr>
<td>A. PATEL, D. BRUNE, O. UZUN, C. WEIKART, S. KAYE, D. STRAND</td>
<td></td>
</tr>
<tr>
<td>EVALUATION OF BATTERY REQUIREMENTS FOR HYBRID AND ELECTRIC CITY BUSES</td>
<td>140</td>
</tr>
<tr>
<td>A. LAJUNEN</td>
<td></td>
</tr>
<tr>
<td>EVALUATION OF LITHIUM IRON PHOSPHATE BATTERIES FOR ELECTRIC VEHICLE UNDER STRESSFUL CYCLING</td>
<td>150</td>
</tr>
<tr>
<td>D. ANSEAN, G. MANUELA, J.C. VIERA, G.V. Garcia, L.A. JOSE, H. CORTE</td>
<td></td>
</tr>
<tr>
<td>FAST CHARGING TESTS (UP TO 6C) OF LITHIUM TITANATE CELLS AND MODULES: ELECTRICAL AND THERMAL RESPONSE</td>
<td>162</td>
</tr>
<tr>
<td>A. BURKE, M. MILLER, H. ZHAO</td>
<td></td>
</tr>
<tr>
<td>HIGH PERFORMANCE ELECTRIC MOTORSPORT BATTERY PACK IMPROVEMENT BASED ON DISTRIBUTED THERMAL MANAGEMENT WITH THERMOELECTRIC MODULES</td>
<td>172</td>
</tr>
<tr>
<td>B. KRAS</td>
<td></td>
</tr>
<tr>
<td>HV TRACTION BATTERY: FROM LAYOUT TO REALIZATION</td>
<td>176</td>
</tr>
<tr>
<td>HYBRID AND ELECTRIC SYSTEMS R&amp;D AT D.O.E.: FISCAL YEAR 2011-2012 STATUS</td>
<td>186</td>
</tr>
<tr>
<td>S. BOYD, D. HOWELL</td>
<td></td>
</tr>
<tr>
<td>INTRODUCTION TO DOW LI-ION BATTERY MATERIALS: PERFORMANCE, VALUE PROPOSITION, AND COMMERCIALIZATION STATUS OF THE DOW COATED ANODE AND COATED CATHODE MATERIALS</td>
<td>198</td>
</tr>
<tr>
<td>A. PATEL, T. HAN, M. PAQUETTE, J. D ao HANG, W. YAO, A. WALLACE, G. JI, W. STRINGFIELD</td>
<td></td>
</tr>
<tr>
<td>A LARGE-FORMAT LITHIUM-ION BATTERY WITH HEAT-DISSIPATION DESIGN</td>
<td>202</td>
</tr>
<tr>
<td>OPTIMAL BATTERY SIZES FOR PLUG-IN-HYBRID ELECTRIC VEHICLES</td>
<td>209</td>
</tr>
<tr>
<td>P. PLOETZ, F. KLEY, T. GNANN</td>
<td></td>
</tr>
<tr>
<td>OPTIMIZING BMS OPERATING STRATEGY BASED ON PRECISE SOH DETERMINATION OF LITHIUM ION BATTERY CELLS</td>
<td>215</td>
</tr>
<tr>
<td>K. MUELLER, D. TITTEL</td>
<td></td>
</tr>
<tr>
<td>PARAMETERIZATION OF ELECTRICAL BATTERY MODEL FOR USE IN DYNAMIC SIMULATIONS OF ELECTRIC VEHICLES</td>
<td>221</td>
</tr>
<tr>
<td>A. HENTUNEN, T. LEHMUSPELTO, J. SUOMELA</td>
<td></td>
</tr>
<tr>
<td>RECENT ADVANCES IN CEA ON PHOSPHATE, TITANATE AND BIPOLAR LI-ION CELLS FOR EV, HEV OR MICROHYBRID</td>
<td>233</td>
</tr>
<tr>
<td>F. FUSALBA, S. MARTINET, S. JOUANNEAU, S. PATOUX, Y. REYNIER, M. CHAMI</td>
<td></td>
</tr>
<tr>
<td>A123 GRID BATTERY SYSTEM SINGLE RACK EVALUATION</td>
<td>242</td>
</tr>
<tr>
<td>D. COLEMAN, J. ARAIZA, L. GAILLAC</td>
<td></td>
</tr>
<tr>
<td>A SOFTWARE CONFIGURABLE BATTERY</td>
<td>252</td>
</tr>
<tr>
<td>B. LAWSON</td>
<td></td>
</tr>
<tr>
<td>SUPERLIB PROJECT : ADVANCED DUAL-CELL BATTERY CONCEPT FOR BATTERY ELECTRIC VEHICLES</td>
<td>264</td>
</tr>
<tr>
<td>T. COOSEMANS, N. OMAR, P. VAN DEN BOSSCHE, J. VAN MIERLO, J. SALMINEN, H. VOLKER, B. KORTSCHAK, J. MARTIN</td>
<td></td>
</tr>
<tr>
<td>VARIABILITY OF BATTERY WEAR IN LIGHT DUTY PLUG-IN ELECTRIC VEHICLES SUBJECT TO AMBIENT TEMPERATURE, BATTERY SIZE, AND CONSUMER USAGE</td>
<td>270</td>
</tr>
<tr>
<td>E. WOOD, J. NEUBAUER, J. GONDER, A. BROOKER, K. SMITH</td>
<td></td>
</tr>
<tr>
<td>BATTERY ELECTRIC VEHICLES (BEV), GENERAL</td>
<td>282</td>
</tr>
<tr>
<td>ASSESSING RANGE AND PERFORMANCE OF ELECTRIC VEHICLES IN NORDIC DRIVING CONDITIONS - PROJECT &quot;REKKEVIDDE&quot;</td>
<td></td>
</tr>
<tr>
<td>J. LAURIKKO, A. HAAKANA, R. GRANSTROM</td>
<td></td>
</tr>
<tr>
<td>Title</td>
<td>Page</td>
</tr>
<tr>
<td>----------------------------------------------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>DEFINITION AND OPTIMIZATION OF THE DRIVE TRAIN TOPOLOGY FOR ELECTRIC</td>
<td>288</td>
</tr>
<tr>
<td>VEHICLES</td>
<td></td>
</tr>
<tr>
<td>T. PESCE, M. LIENKAMP</td>
<td></td>
</tr>
<tr>
<td>DESIGN AND IMPLEMENTATION OF AN ELECTRIC POWERTRAIN FOR THE KIIRA</td>
<td>300</td>
</tr>
<tr>
<td>ELECTRIC VEHICLE</td>
<td></td>
</tr>
<tr>
<td>F. MATOVU, S. TOGBOA, R. MADANDA, P. MUSASIZI, A. ASIIMWE</td>
<td></td>
</tr>
<tr>
<td>DESIGNING THE HUMAN MACHINE INTERFACE TO ADDRESS RANGE ANXIETY</td>
<td>310</td>
</tr>
<tr>
<td>..................................................................................</td>
<td></td>
</tr>
<tr>
<td>T. KHAN, M.A. WILLIAMS, T. WELLINGS, D. ROBERTSON, J. BINERSLEY</td>
<td></td>
</tr>
<tr>
<td>DEVELOPMENT OF AN EV DRIVE TORQUE CONTROL SYSTEM FOR IMPROVING</td>
<td>321</td>
</tr>
<tr>
<td>VEHICLE HANDLING PERFORMANCE THROUGH STEERING IMPROVEMENTS ..........</td>
<td></td>
</tr>
<tr>
<td>Y. SHIOZAWA, Y. KOBATASHI, M. OHTA, T. MURATA, Y. KAGEYAMA, Y. NAKAMURA, H. MISAWA</td>
<td></td>
</tr>
<tr>
<td>DRIVE SYSTEM WITH PERMANENT MAGNET SYNCHRONOUS MOTOR DEDICATED TO</td>
<td>328</td>
</tr>
<tr>
<td>ELECTRIC PLATFORM TRACTOR</td>
<td></td>
</tr>
<tr>
<td>R. ROSSA, J. BERNATT, W. TOMASZKIEWICZ</td>
<td></td>
</tr>
<tr>
<td>ELECTRIC CITY BUS &quot;SMART WHEELS&quot; - A CONCEPT FOR ELECTROMOBILITY IN</td>
<td>334</td>
</tr>
<tr>
<td>PUBLIC TRANSPORTATION</td>
<td></td>
</tr>
<tr>
<td>ELECTRIFICATION OF OFF-ROAD VEHICLES: EXAMINIG THE FEASIBILITY FOR</td>
<td>344</td>
</tr>
<tr>
<td>THE ITALIAN MARKET</td>
<td></td>
</tr>
<tr>
<td>F. VELLIUCI, G. PEDÉ, M. CERAOLO, P. HURIA</td>
<td></td>
</tr>
<tr>
<td>EV R&amp;D ACTIVITIES IN KOREA ELECTROTECHNOLOGY RESEARCH INSTITUTE (KERI)</td>
<td>361</td>
</tr>
<tr>
<td>PRECISE ZERO SPEED POSITIONING CONTROL TECHNOLOGY OF PERMANENT</td>
<td>370</td>
</tr>
<tr>
<td>MAGNET SYNCHRONOUS MOTOR BASED ON DUAL-MOTOR PLANETARY COUPLED</td>
<td></td>
</tr>
<tr>
<td>DRIVING</td>
<td></td>
</tr>
<tr>
<td>..................................................................................</td>
<td></td>
</tr>
<tr>
<td>FLEXIBLE MATCHING DESIGN ANALYSIS OF THE BATTERY AND POWER MODULE FOR</td>
<td>374</td>
</tr>
<tr>
<td>ELECTRIC VEHICLES</td>
<td></td>
</tr>
<tr>
<td>..................................................................................</td>
<td></td>
</tr>
<tr>
<td>C.-M. CHANG, C.-M. CHIU</td>
<td></td>
</tr>
<tr>
<td>FROM LAMPO TO LAMPO3: THE EVOLUTION TO A PURPOSE DESIGNED PREMIUM EV</td>
<td>382</td>
</tr>
<tr>
<td>M. PIFFARETTI, G. GABBA</td>
<td></td>
</tr>
<tr>
<td>GOVERNING THE TRANSITION TO E-MOBILITY: A DUTCH PERSPECTIVE</td>
<td>387</td>
</tr>
<tr>
<td>A.P. VAN DEVENTER, M. VAN DER STEEN, H. DE BRUIJN, M. Van TWIST, E. HEUVELHOF, K.E. HAYNES, Z. CHEN</td>
<td></td>
</tr>
<tr>
<td>THE IMPACT OF DRIVING CYCLE AND CLIMATE ON ELECTRICAL CONSUMPTION AND</td>
<td>401</td>
</tr>
<tr>
<td>RANGE OF FULLY ELECTRIC PASSENGER VEHICLES</td>
<td></td>
</tr>
<tr>
<td>I. WHITTAL, M. CHRISTENSEN</td>
<td></td>
</tr>
<tr>
<td>INTEGRATED ARCHITECTURES FOR THIRD GENERATION ELECTRIC VEHICLES -</td>
<td>412</td>
</tr>
<tr>
<td>INNOVATIVE CONCEPTS TO MEET CUSTOMER REQUIREMENTS</td>
<td></td>
</tr>
<tr>
<td>M. LESEMANN, S. FABBENDER, M. FUNKE, L. ICKERT, L. ECKSTEIN, E.-M. MALMEK, J. WISMANS</td>
<td></td>
</tr>
<tr>
<td>IS THE LACK OF PUBLIC CHARGING INFRASTRUCTURE A BARRIER FOR EV</td>
<td>424</td>
</tr>
<tr>
<td>ADOPTION?</td>
<td></td>
</tr>
<tr>
<td>K. GOPAL, P. THAWRANI</td>
<td></td>
</tr>
<tr>
<td>LIFE CYCLE COST ANALYSIS OF ELECTRIC VEHICLES IN MACAU'S CONTEXT</td>
<td>432</td>
</tr>
<tr>
<td>T.W. CHING, K. LAI</td>
<td></td>
</tr>
<tr>
<td>MEASURING RANGE ANXIETY: THE SUBSTITUTION-EMERGENCY-DETOUR (SED)</td>
<td>438</td>
</tr>
<tr>
<td>Z. LIN, J. DONG</td>
<td></td>
</tr>
<tr>
<td>MEASURING RANGE ANXIETY: THE SUBSTITUTION-EMERGENCY-DETOUR (SED)</td>
<td>438</td>
</tr>
<tr>
<td>T.W. CHING, L. IONG, K. LAI</td>
<td></td>
</tr>
<tr>
<td>PERFORMANCE STUDY OF BATTERY-POWERED ELECTRIC VEHICLES IN MACAU</td>
<td>444</td>
</tr>
<tr>
<td>T.W. CHING, L. IONG, K. LAI</td>
<td></td>
</tr>
<tr>
<td>REALIZATION AND CONTROL OF THE LUPO EL ELECTRIC VEHICLE</td>
<td>453</td>
</tr>
<tr>
<td>P. VAN OORSCHOT, I. BESSELINK, E. MEINDERS, H. NUMEIJER</td>
<td></td>
</tr>
<tr>
<td>RESEARCH PROJECT &quot;E PERFORMANCE&quot; - DESIGN APPROACH FOR A HOLISTIC BEV</td>
<td>463</td>
</tr>
<tr>
<td>S. GINSBERG, C. ALLMANN, M. SCHUSSLER, B. HARTMANN</td>
<td></td>
</tr>
</tbody>
</table>
THE ROLE OF NON-PROFIT MAKING ORGANIZATION ASSOCIATIONS IN THE
PROMOTION & IMPLEMENTATION OF A SUSTAINABLE MOBILITY AT A GLOBAL
LEVEL: THE EXAMPLE OF AVERE.................................................................470
K. SBIRRAZZUOLI

SIM-LEI, THE REVOLUTIONARY EFFICIENT ELECTRIC VEHICLE WITH IN-WHEEL
MOTORS.............................................................486
T. SHINKAI, Y. HIROSHI, K. TAKASHI, H. ICHIRO, H. KATSUYUKI, K. TAKAHISA, S. OSAMU, S. HIROSHI

STUDY OF DIAMOND-SHAPE LAYOUT COMPACT PERSONAL MOBILITY AS A NEW
TRANSPORTATION.............................................................493
H. HIRANO, R. OISHI

ULTRASIM, A TRAFFIC SIMULATOR INCORPORATING SUBMICROSCOPIC BEV, HEV,
ICEV MODELS.................................................................501
M. RICHTER, D. THIERAUF, H. KABZA

VIRTUAL ELECTRIC VEHICLE DESIGN USING REAL-WORLD COUPLED REALTIME
SIMULATION.............................................................508
A. THANHEISER, T.P. KOHLER, H.-G. HERZOG

WEB MANAGEMENT OF ELECTRIC VEHICLE FLEETS.................................515
C. ROSSI, A. PILATI, M. RAMILLI, F. CALLEGATI

BATTERY MANAGEMENT SYSTEM

AGEING INHOMOGENEITY OF LONG-TERM USED BEV-BATTERIES AND THEIR
REUSABILITY FOR 2ND-LIFE APPLICATIONS........................................525
M. BRAND, D. QUINGER, G. WALDER Georg, A. JOSSEN, M. LIENKAMP

A BEHAVIORAL ALGORITHM FOR STATE OF CHARGE ESTIMATION...............532
A. BALKAN, P. TABUADA, M. GAO, L. HE

CAPACITOR BASED BATTERY BALANCING SYSTEM........................................538
M. DAOUD, N. OMAR, P. VAN DEN BOSSCHE, J. VAN MIERLO

EFFECTS OF BATTERY THERMAL MANAGEMENT SYSTEM IN HEV/EV ON THE
TEMPERATURE AND THE SOC BASED ON SIMULATION..................................547
J. CHOI, G.Y. CHO, J. PARK, S.W. CHA

ON-LINE SOH RECOGNITION FOR LARGE CAPACITY LITHIUM-ION BATTERIES ON
ELECTRIC VEHICLE.............................................................552
D. HA, I. CHO, K. SUNG

SAFETY MANAGEMENT FOR ELECTRIC VEHICLE BATTERIES IN A TROPIC
ENVIRONMENT.............................................................558
P. OSSWALD, N. MARTINY, C. HUBER, A. JOSSEN

A STUDY ON THERMAL MANAGEMENT SYSTEM OF LITHIUM ION BATTERY PACK FOR
HEVs AND EVs.............................................................569
G.Y. CHO, J. CHOI, J. PARK, D. LEE, S. CHA

TOWARDS ONBOARD LI-ION BATTERY STATE-OF-HEALTH DIAGNOSIS BY A VIRTUAL
SENSOR.................................................................574
R. MINGANT, J. BERNARD, V. SAUVANT-MOYNOT

BUSES

FUEL ECONOMY OF SERIES HYBRID ELECTRIC BUS BY MATCHING THE GEAR RATIO
OF DIFFERENT CAPACITY TRACTION MOTORS........................................581
M. KIM, D. JEONG, K. MIN

HEAVY DUTY IN-ROUTE FAST CHARGE TRANSIT BUS: THE FOOTHILL TRANSIT
EXPERIENCE.............................................................588
L. FESTNER, G. KARBOWSKI L. COCHRAN

ON-ROAD PERFORMANCE EVALUATION OF THE "WEB-1 ADVANCED" SHORT RANGE,
FREQUENT CHARGING ELECTRIC MICRO BUS..............................................596
T. PONTEFRAC'T, K. KOBAYASHI, Y. KAMIYA, K. SEKI, Y. SAITO, Y. DAISHO

POWER-SPLIT OPERATION STRATEGY FOR SERIES HYBRID ELECTRIC BUSES BASED
ON A COST FUNCTION.............................................................606
M. RICHTER, S. MARKUS, K. HERBERT
10 MINUTE LTO ULTRAFAST CHARGE PUBLIC TRANSIT EV BUS FLEET OPERATIONAL DATA - ANALYSIS OF 240,000 KM, 6 BUS FLEET SHOWS Viable SOLUTION ............................................................... 612
C. GROESECK

CHARGING & INFRASTRUCTURE

AN AGENT-BASED DECISION SUPPORT SYSTEM FOR ELECTRIC VEHICLE CHARGING INFRASTRUCTURE DEPLOYMENT ............................................................................. 620
D. KLABJAN, D. KLABJAN, S. TIMOTHY

AN ANALYSIS OF CAR AND SUV DAYTIME PARKING FOR POTENTIAL OPPORTUNITY CHARGING OF PLUG-IN ELECTRIC POWERTRAINS ................................................................. 625
Y. ZHOU, D. SANTINI, A. VYAS

ARE TAXPAYER AND PRIVATE DOLLARS CREATING EFFECTIVE ELECTRIC VEHICLE INFRASTRUCTURE? .................................................. 640
T. SAXTON

ASSESSING THE POTENTIAL IMPACT OF PHEV WORKPLACE CHARGING FOR A GROUP OF COMMUTERS .............................................................................. 652
J. DAVIES

THE BUSINESS CASE FOR MATCHING RENEWABLE ENERGY PRODUCTION WITH VEHICLE CHARGING ................. 659
S. LETENDRE, M. PEROTTI

DEMONSTRATION OF WIRELESS CHARGING FOR ELECTRIC SHUTTLE BUSES ................................................................................................. 668
J.R. BAILEY, J. MCBATH, A. CURTIS, M. HAIRR

DEVELOPING A TEST PROCEDURE TO EVALUATE ELECTRIC VEHICLE SUPPLY EQUIPMENT AND CHARGERS ............................................................ 683
R. HODSON, J. SMITH

THE DEVELOPMENT OF A MOBILE EV CHARGE SOLUTION TO SUPPORT THE EV DRIVER AND DELIVERED BY THE GLOBAL AUTOMOTIVE CLUBS .................................................. 689
R. GELL

DEVELOPMENT OF CHARGING SYSTEM FOR PLUG-IN HYBRID VEHICLES ........................................................................................................ 694
K. KONDO, K. KOJIMA, M. SASAKI, K. KOJIMA

THE ECONOMICS OF NON-RESIDENTIAL LEVEL 2 EVSE CHARGING INFRASTRUCTURE ...................................................... 700
C. BOTSFORD

ELECTRIC VEHICLE SERVICE PROVIDER NETWORKS AND MARKET DISTORTIONS ............................................................... 710
D. PETERSON, J. MATUTE

AN ENERGY EFFICIENT BREAKDOWN COVER SERVICE FOR ELECTRIC CARS .................................................................................. 719
J. CAPPELLE, T. VAN MAERHEM, S. VISPOEL

EV CHARGING POINTS IN OSLO - 400 IN 4 YEARS 2008-2011 A CITY’S STRATEGY TO SUPPORT THE USE OF ELECTRIC VEHICLES AND BECOME THE WORLD’S EV CAPITAL ................................................................................................. 727
M. MOLMEN

EXPANDING THE AVAILABILITY OF PUBLIC CHARGING ........................................................................................................ 732
A. HUDGINS, W. SPARKS

A FIRST LOOK AT THE IMPACT OF ELECTRIC VEHICLE CHARGING ON THE ELECTRIC GRID IN THE EV PROJECT .................................................................................. 736
J. SMART, S. SCHET, D. SCOFFIELD

GRID INTEGRATION OF ELECTRIC VEHICLES CONSIDERING THE MOBILITY NEEDS ................................................................................................. 748
M. LITZLBAUER

HYDRO-QUEBEC: A MAJOR NORTH AMERICAN PLAYER IN THE EV WORLD ................................................................................................. 754
P.-L. DESGAGNE

IMPACTS OF HARMONIC DISTORTION FROM CHARGING ELECTRIC VEHICLES ON LOW VOLTAGE NETWORKS .................................................................................. 757
J. DONOGHUE, R. CARTER, A. CRUDEN, D. DENSLEY, T. NICKLIN, A. ROSCOE

IMPACTS OF PHEV CHARGING ON ELECTRIC DEMAND AND GREENHOUSE GAS EMISSIONS IN ILLINOIS .......................................................... 763
Y. ZHOU, A. ELGOWAINY, A. VYAS, P. THIMMAPURAM, M. MAHALIK, D. SANTINI, M. WANG

INDUCTIVE CHARGING - SIMPLIFYING THE CHARGE TO ENABLE MASS ADOPTION ............................................................... 775
J. ZIEGNER, R. KLUTH, R. LARTIGUE
VOLUME 2

INDUCTIVE POWER TRANSFER CHARGING FOR ELECTRIC VEHICLES - A CRITICAL LOOK .......................................................... 783
R. THRUSH

LESSONS AND INSIGHTS FROM EXPERIENCE OF ELECTRIC VEHICLES IN THE COMMUNITY ........................................ 792
I. BRUCE, N. BUTCHER, C. FELL

MULTI-UNIT DWELLING VEHICLE CHARGING EDUCATION ................................................................. 798
J. POINTON

A MUTUAL CUSTOMER: ALIGNING EV STAKEHOLDERS .................................................................................. 803
C. VOURLAKIS

THE NORWEGIAN CHARGING STATION DATABASE FOR ELECTROMOBILITY (NOBIL) .................. 810
H.H. KVISTE

OBSERVATIONS FROM THE INFRASTRUCTURE FRONT LINES - UNDERSTANDING EV ADOPTION AND USAGE HABITS ...................................................... 816
B. HAUSER

ONLINE ELECTRIC VEHICLE (OLEV) FOR PUBLIC TRANSIT AND COMMERCIAL FLEET APPLICATIONS ................................................................. 827
H. LEE

PLUG-IN ELECTRIC VEHICLE FAST CHARGE STATION OPERATIONAL ANALYSIS WITH INTEGRATED RENEWABLES ........................................................................ 833
M. SIMPSON, T. MARKEL

POLY SEGMENT MONORAIL, A CONDUCTIVE METHOD AS AN ALTERNATIVE FOR HIGHWAY ELECTRIFICATION ................................................................. 839
O. OLSSON, S. PETTERSSON, R. SEBESTYEN

ROUTING EV USERS TOWARDS AN OPTIMAL CHARGING PLAN ............................................................. 848
S. BESSLER, J. GRONBAEK

THE SDG&E PEV RATE & TECHNOLOGY STUDY - ONE YEAR PROGRESS REPORT ........................................ 856
J.C. MARTIN, G. HADDOW

SERVING MULTI-FAMILY RESIDENTIAL AND COMMERCIAL ELECTRIC VEHICLE CUSTOMERS ................................................................. 862
K. GARCIA, J. KAKUK

SMART CHARGERS FOR PEVS .......................................................................................................................... 872
A. SHOCKET

10 kW CONTACTLESS POWER TRANSFER SYSTEM FOR RAPID CHARGER OF ELECTRIC VEHICLE ................. 878
T. YAMANAKA, Y. KANEKO, S. ABE, T. YASUDA

VEHICLE CHARGING INFRASTRUCTURE DEMAND FOR THE INTRODUCTION OF PLUG-IN ELECTRIC VEHICLES IN GERMANY AND THE US ........................................ 887
P. PLOETZ, T. GNANN, F. KLEY

A WHOLE APPROACH FOR THE ELECTRIC VEHICLE INFRASTRUCTURE IN THE BASQUE COUNTRY ........................................................................ 895
E. ZABALA, A. ARZUAGA, D.P. GARCIA, M. ZAMALLOA, J.A. LOPEZ, J. IZAGIRRE

WISE INVESTMENT IN ELECTRIC VEHICLE CHARGING INFRASTRUCTURE THROUGH REGIONAL PLANNING ........................................................................ 905
R. GRAHAM, J. LIEB, J. SARNECKI, R. ALMAZAN, B. NEAMAN

CODES & STANDARDS

CALIFORNIA'S ZERO EMISSION VEHICLE REGULATION: REDUCING EMISSIONS AND PROMOTING ADVANCED VEHICLE TECHNOLOGIES ............................................. 917
E. KEDDIE, A. WONG, C. CHILDER, K. ELEY, A. BEVAN

CHANGES TO CALIFORNIA'S LOW CARBON FUEL STANDARD IMPACT THE PLUG-IN ELECTRIC MARKET INCLUDING ELECTRIC UTILITIES, CHARGING STATION OPERATORS, WORKPLACES AND FLEETS ................................................................. 921
D. TAYLOR
ELECTRIC VEHICLE WIRELESS CHARGING SAFETY OUTLINE ......................................................... 933
J. BABLO, P. BRAZIS, K. BOYCE, C. PAULY

ROADMAP FOR TESTING AND VALIDATION OF ELECTRIC VEHICLE COMMUNICATION
STANDARDS ............................................................................................................................... 935
K. GOWRI, R. PRATT, F. TUFFNER, M. KINTNER-MEYER

SAFETY CONSIDERATIONS FOR ELECTRIC VEHICLES AND REGULATORY ACTIVITIES ........ 944
C. VISVIKIS

SAFETY DESIGN OF ELECTRIC VEHICLE CHARGING EQUIPMENT .......................................... 958
M.-H. LU, M.-U. JEN

STANDARD DEVELOPMENT PROCESS FOR THE ESTABLISHMENT OF NORTH
AMERICAN HARMONIZED REQUIREMENTS FOR ELECTRIC VEHICLE SUPPLY
EQUIPMENT (EVSE) ..................................................................................................................... 966
P. STEENHOF, C. RONDEAU

A TALE OF THREE PLUGS: INFRASTRUCTURE STANDARDIZATION IN EUROPE ..................... 976
P. VAN DEN BOSSCHE, N. OMAR, J. VAN MIERLO

TOWARD A STANDARD FOR A “UTILITY-DRIVE” CYCLE FOR ELECTRIC VEHICLES. A
MEANS TO REDUCE THE UNCERTAINTIES FOR VEHICLE-TO-GRID APPLICATIONS .............. 987
M. KINTNER-MEYER, R. HAFEN, K. SUBBARAO, S. BAKER

COMMUNICATION PROTOCOL & INTELLIGENT TRANSPORTATION SYSTEMS (ITS)

BUILDING THE BUSINESS CASE FOR TELEMATICS BASED DIAGNOSTICS AT MAHINDRA
REVA ........................................................................................................................................ 996
K. GOPAL, R. PRAKASH

WHY ICT SYSTEMS ARE KEY TO ACCELERATING EV ADOPTION ............................................ 1004
L. MCCLOSKEY, S. FISHER

CONTROL, MEASURING METHODS & EQUIPMENTS

DESIGN OF ADAPTIVE SLIDING MODE CONTROLLER FOR ROBUST YAW
STABILIZATION OF IN-WHEEL-MOTOR-DRIVEN ELECTRIC VEHICLES ........................................ 1013
K. NAM, S. OH, F. HIROSHI, H. YOICHI

ENERGY-SAVING EFFECT OF LONGITUDINAL CONTROL ALGORITHM BASED ON
TRAFFIC STATE OF ELECTRIC VEHICLES ................................................................................ 1023
T. OGITSU, M. OMAE, N. HASEJIMA

THE FLEXRAY IMPLEMENTATION OF BY-WIRE SYSTEM FOR ELECTRIC VEHICLE .................... 1032
D.-C. LIAW, Y.-Z. LIOU, K.-L. CHANG

IMPROVING MOTOR NOISE AND VIBRATION BY SENSOR-BEARING OPTIMIZATION .................. 1039
S. BLOKLAND

MISSION MOTORS CELL-2-SERVER SYSTEM: DESIGN, IMPLEMENTATION, AND
BENEFITS OF A CLOUD-BASED ELECTRIC POWERTRAIN DATA ACQUISITION AND
VISUALIZATION SYSTEM .......................................................................................................... 1046
S. LAFORGE

SURVEY ON FAULT-TOLERANT VEHICLE DESIGN .................................................................... 1054
D. WANNER, A.T. STENSSON, L. DRUGGE, J. JERRELIND

TORQUE VECTORING FOR ELECTRIC VEHICLES WITH INDIVIDUALLY CONTROLLED
MOTORS: STATE-OF-THE-ART AND FUTURE DEVELOPMENTS ............................................ 1065
L. DE NOVELLIS, P. GRUBER, L. SHEAD, V. IVANOV, K. HOEPPING, A. SORNIOTTI

DRIVE & PROPULSION SYSTEMS

ANALYSIS OF DUAL AND QUAD AXLE MOUNTED MOTOR DRIVETRAIN PERFORMANCE .......... 1078
T. FAYER

ANALYSIS OF THE FAULT TOLERANCE OF A SWITCHED RELUCTANCE MACHINE WITH
DISTRIBUTED INVERTER ............................................................................................................. 1087
M. HENNEN, M. BOSING, R.W. DE DONCKER

THE COMBINATION OF EXTENDABLE EV POWER BRACE AND AXIAL-CHANGE POWER
SET ......................................................................................................................................... 1099
Y.-T. LIN, C.-B. WU
DEVELOPMENT OF A PREDICTION METHOD FOR TEMPERATURE RISE IN CONNECTOR TERMINALS UNDER STEADY CURRENT FLOWS ................................................................. 1107
Y. NOMURA, S. KAOI, S. SHIGERU, H. YASUHIRO, S. SHIGEKI

DEVELOPMENT OF FIXED TIME STEP ANALYSIS MODEL FOR AUTOMATIC TRANSMISSION CLUTCH IN HEV ............................................................................................................................ 1114
H. SEO, C. ZHENG, W. LIM, S.W. CHA, J. KONG

DIRECT-DRIVE IN-WHEEL MOTOR REALIZED HIGH PERFORMANCE AND COMFORTABLE DRIVE ............................................................................................................................... 1119
S. OSAMU, E. KENJI, K. NAOTAKE, S. HIROSHI

A DRY CLUTCH CONTROL ALGORITHM FOR AMT SYSTEMS IN A PARALLEL HYBRID ELECTRIC BUS ............................................................................................................................... 1125
C. ZHENG, M. KIM, C.W. SHIN, W. LIM, S. CHA

EFFICIENCY IMPROVEMENT OF REGENERATIVE ENERGY FOR AN EV ............................................................................................................................... 1131
Y. TAKUYA, A. KAN, O. NOBUNORI, N. TETSUYA, K. TERUNAO

ELECTRICAL PROPULSION SYSTEM FOR AVIATION - EXPERIMENTAL VALIDATION OF EFFICIENCY IMPROVEMENTS ............................................................................................................................... 1138
J. BERNATT, P. PISTELOK, E. KROL

ELECTROMECHANICAL COMPONENTS AND ITS ENERGY SAVING DESIGN STRATEGY IN PHEV POWERTRAIN ............................................................................................................................... 1143
Y. CHANG, A. SZUMANOWSKI, Z. LIU

A HIGH EFFICIENT ENERGY CONVERTER FOR A HYBRID VEHICLE CONCEPT ............................................................................................................................... 1152
F. RINDERKNECHT, S. OFFINGER, F. KOCH

ON THE ENERGY PERFORMANCE OF AN ELECTRICALLY-DRIVEN CITY CAR ............................................................................................................................... 1159
C. VILLANTE, E. ROSSI

TRACTION CONTROL METHOD OF HYBRID ELECTRIC VEHICLE BASED ON MULTI-OBJECTIVE DYNAMIC COORDINATION CONTROL ............................................................................................................................... 1173
F. ZHAO, Y. LUO, K. LI

ELECTRIC MOTORS & CONTROL TECHNOLOGIES

AVERAGE-VALUE MODEL OF CLAW POLE MOTOR DRIVE FOR HIL SIMULATION OF INTEGRATED STARTER GENERATOR WITH TORQUE ASSIST FOR MILD HYBRID APPLICATION ............................................................................................................................... 1182
V. RANGANATH, N. BHIWAPURKAR, G. SRINIVASAN

DESIGN OF HIGH TORQUE DENSITY SLIM MOTOR APPLICATION TO ELECTRIC BIKES ............................................................................................................................... 1191
C. SHIH-HSIANG, C. PIN-YUNG, L. KENG-HUNG

EFFICIENCY IMPROVEMENTS OF ELECTRIC MACHINES FOR AUTOMOTIVE APPLICATION ............................................................................................................................... 1196
G. DJAKU, D. GERLING

EXTENDING THE DRIVE RANGE OF ELECTRIC VEHICLES BY HIGHER EFFICIENCY AND HIGH POWER DENSITY TRACTION MOTORS, VIA A NEW GENERATION OF ELECTRICAL STEELS ............................................................................................................................... 1203
S. JACOBS, L. VANDENBOSSCHE, D. VAN HOECKE, W. WEBER, E. ATTRAZIC

IMPLEMENTATION AND VERIFICATION OF 50kW PROPULSION SYSTEM IN ELECTRIC VANS ............................................................................................................................... 1213
S.-H. CHANG, Y.-K. LIN, P.-T. SUNG, Y.-W. SHIH

MAKING THE IMPOSSIBLE, POSSIBLE - OVERCOMING THE DESIGN CHALLENGES OF IN-WHEEL MOTORS ............................................................................................................................... 1219
A. WHITEHEAD, D. KOSTIC PEROVIC

MULTIFUNCTIONAL OPTIMAL DESIGN OF AXIAL-BLUX PERMANENT MAGNET WHEEL MOTORS FOR LIGHT ELECTRIC VEHICLES ............................................................................................................................... 1225
Y.-P. YANG, C.-H. LEE

PARADIGM CHANGE: WHY THE ASM MOTOR COULD BE THE BETTER CHOICE FOR YOUR ELECTRIC VEHICLE PROGRAM ............................................................................................................................... 1233
D. ZECHMAIR

3-D NUMERICAL AND EXPERIMENTAL ANALYSIS OF AN INTEGRATED LIQUID-COOLED IGBT POWER MODULE ............................................................................................................................... 1237
N. LAN, C.-H. CHIEN, T. YUEH-LIN, L. KUO-WEI, C. STEPHEN
<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>TORSIONAL RESONANCE NOISE REDUCTION BY MOTOR TORQUE PHASE ADJUSTMENT</td>
<td>1242</td>
</tr>
<tr>
<td>M. ARATA, N. TAKAHASHI, M. MOCHIZUKI, T. ARAKI, T. HANAI</td>
<td></td>
</tr>
<tr>
<td>TRACTION FAULT ACCOMMODATION SYSTEM FOR FOUR WHEEL INDEPENDENTLY</td>
<td>1248</td>
</tr>
<tr>
<td>DRIVEN EV</td>
<td></td>
</tr>
<tr>
<td>W. CHU, Y. LUO, Y. DAI, K. LI</td>
<td></td>
</tr>
<tr>
<td>USE OF CONDUCTIVE COMPOSITE SENSORS FOR IMPROVED CONDITION MONITORING</td>
<td>1254</td>
</tr>
<tr>
<td>OF ELECTRIC VEHICLE MOTOR INSULATION SYSTEMS</td>
<td></td>
</tr>
<tr>
<td>K. WATKINS, C.P. WONG</td>
<td></td>
</tr>
<tr>
<td>VIRTUAL TEST ENVIRONMENT FOR FAIL-SAFE ALGORITHM DEVELOPMENT OF A MCU</td>
<td>1259</td>
</tr>
<tr>
<td>USING A HIL SIMULATOR</td>
<td></td>
</tr>
<tr>
<td>R. KANG, K. JEONG, H. LEE</td>
<td></td>
</tr>
<tr>
<td>WEIGHT REDUCTION DESIGN OF IN-WHEEL TYPE MOTOR FOR POWER DENSITY</td>
<td>1266</td>
</tr>
<tr>
<td>IMPROVEMENT</td>
<td></td>
</tr>
<tr>
<td>ENERGY EFFICIENCY</td>
<td></td>
</tr>
<tr>
<td>INTEGRATING ELECTRIC VEHICLES INTO THE GERMAN ELECTRICITY GRID - AN</td>
<td>1272</td>
</tr>
<tr>
<td>INTERDISCIPLINARY ANALYSIS</td>
<td></td>
</tr>
<tr>
<td>P. JOCHEM, T. KASCHUB, A.-G. PAETZ, W. FICHTNER</td>
<td></td>
</tr>
<tr>
<td>LIGHT DUTY VEHICLE FUEL CONSUMPTION, COST AND MARKET PENETRATION</td>
<td>1280</td>
</tr>
<tr>
<td>POTENTIAL BY 2020</td>
<td></td>
</tr>
<tr>
<td>J. WARD, A. ROUSSEAU, A. MOAWAD, N. KIM</td>
<td></td>
</tr>
<tr>
<td>OPTIMAL DYNAMIC PREDICTIVE CRUISE CONTROL FOR DIFFERENTIAL DRIVEN</td>
<td>1292</td>
</tr>
<tr>
<td>ELECTRIC VEHICLES</td>
<td></td>
</tr>
<tr>
<td>S. SWOLFS, J. JANSENSWILLEN, R. SWINNEN, P. SLAETS</td>
<td></td>
</tr>
<tr>
<td>OPTIMAL LIGHTWEIGHTING IN BATTERY ELECTRIC VEHICLES</td>
<td>1303</td>
</tr>
<tr>
<td>J. HOFER, E. WILHELM, W. SCHENLER</td>
<td></td>
</tr>
<tr>
<td>ENERGY STORAGE FOR EV CHARGING</td>
<td>1315</td>
</tr>
<tr>
<td>BI-LEVEL CONTROL SCHEME FOR VEHICLE-TO-GRID REGULATION SERVICES</td>
<td></td>
</tr>
<tr>
<td>S. Gao, C.C. CHAN, K.T. CHAU, S. GAO, D. WU</td>
<td></td>
</tr>
<tr>
<td>ENVIRONMENTAL IMPACT</td>
<td></td>
</tr>
<tr>
<td>ELECTRIC CARS IN ARCTIC REGIONS</td>
<td>1322</td>
</tr>
<tr>
<td>M. GOLUB, I. THOMPSON, B. ADAM</td>
<td></td>
</tr>
<tr>
<td>ENVIRONMENT-FRIENDLY MOBILITY</td>
<td>1326</td>
</tr>
<tr>
<td>K. HOFER</td>
<td></td>
</tr>
<tr>
<td>ENVIRONMENTAL LOAD REDUCTION OF SUBSTITUTION OF ELECTRIC VEHICLES BY</td>
<td>1331</td>
</tr>
<tr>
<td>TAKING GEOGRAPHICAL FEATURES INTO ACCOUNT</td>
<td></td>
</tr>
<tr>
<td>N. MIZUSHIMA, T. NIKUNI, H. OHNO</td>
<td></td>
</tr>
<tr>
<td>ESTIMATION OF THE POWER REQUIREMENT OF TWIN-SEATER ULTRA COMPACT</td>
<td>1341</td>
</tr>
<tr>
<td>VEHICLES AND THEIR ENVIRONMENTAL IMPACT, FOR THE JAPANESE MARKET</td>
<td></td>
</tr>
<tr>
<td>Y. KONDO, H. KATO, Y. KARAKAMA</td>
<td></td>
</tr>
<tr>
<td>EVOLVING A CLEANER GRID: USES OF NATURAL GAS IN TRANSPORTATION</td>
<td>1347</td>
</tr>
<tr>
<td>G. BROMAGHIM, J. HINKLE</td>
<td></td>
</tr>
<tr>
<td>GEOGRAPHIC VARIATION IN ENVIRONMENTAL BENEFITS ACHIEVED BY PLUG IN</td>
<td>1363</td>
</tr>
<tr>
<td>ELECTRIC VEHICLES AND ELECTRIC VEHICLES</td>
<td></td>
</tr>
<tr>
<td>Y. KONDO, H. KATO, Y. KARAKAMA</td>
<td></td>
</tr>
<tr>
<td>INFLUENCE OF THE UPTAKE OF ELECTRIC VEHICLES ON THE IMPACT ON CLIMATE</td>
<td>1370</td>
</tr>
<tr>
<td>CHANGE OF AN ENTIRE FUTURE VEHICLE FLEET, A 2020 BRUSSELS PERSPECTIVE</td>
<td></td>
</tr>
<tr>
<td>M. MESSAGIE, K. LEBEAU, J. VAN MIERLO, C. MACHARIS</td>
<td></td>
</tr>
<tr>
<td>A MICROSIMULATION OF ENERGY DEMAND AND GREENHOUSE GAS EMISSIONS FROM</td>
<td>1379</td>
</tr>
<tr>
<td>PLUG-IN HYBRID ELECTRIC VEHICLE USE</td>
<td></td>
</tr>
<tr>
<td>T. STEPHENS, J. SULLIVAN, G. KEOLEIAN</td>
<td></td>
</tr>
</tbody>
</table>
VOLUME 3

CONCEPTION OF ELECTRO-MECHANICAL DIFFERENTIALS IN DBW 4WD PROPULSION MECHATRONIC CONTROL SYSTEMS FOR JOINT LIGHT TACTICAL VEHICLES ........................................... 1532
B. FIJALKOWSKI

DEVELOPMENT OF FUEL ECONOMY IMPROVEMENT BY USING DRIVING CONDITION PREDICTION SYSTEM FOR HYBRID VEHICLE ........................................................................ 1552
I. KIM, T. PARK, B. SUH, S. KIM

EFFECT OF GEAR SHIFT AND ENGINE START LOSSES ON THE CONTROL STRATEGIES FOR HYBRID ELECTRIC VEHICLES ........................................................................... 1559
V. NGO, T. HOFMAN, M. STEINBUCH, A. SERRARENS

INCREASING FUNCTIONALITY OF THE MICRO-HYBRID SYSTEM AT LOW COST ........................................ 1571
A. COOPER

LIGHTWEIGHT BODY IN WHITE DESIGN USING TOPOLOGY-, SHAPE- AND SIZE OPTIMISATION ......................................................................................................................... 1578
B. PORTER, J. CHRISTENSEN, C. BASTIEN, M. BLUNDELL, J. KURAKINS

A METHODOLOGY FOR COMPONENT SIZING OF HYBRID ELECTRIC VEHICLES BASED ON A RANGE OF DRIVING PATTERNS ............................................................................. 1590
H.K. ROY, A. MCGORDON, P. JENNINGS

SAFEDRIVE - A FULL SERIES HYBRID VEHICLE DRIVETRAIN .................................................................. 1599
C. DE CAUWER, T. CROCKER, K. SBIRRAZZUOLI, T. COOSEMANS, J. VAN MIERLO

STUDY OF CONTROL STRATEGY PARAMETERS AND COMPONENT SIZING IN HYBRID ELECTRIC VEHICLES USING PARTICLE SWARM OPTIMIZATION .................................................. 1610
W.-F. LU, J. WANG

HYDROGEN, SUSTAINABLE & RENEWABLE ENERGY

EV AND PV: A WINNING COMBINATION WITH NEW POTENTIAL .................................................................. 1618
U. MUNTWYLER

SUNPLUG: (A SOLAR POWERED ELECTRIC CAR CHARGING SOLUTION) .................................................. 1625
A. OFFNER, A. VANDERPOOL, K. GARRETT

INNOVATIVE CONSUMER BUSINESS MODELS (RENTAL, MOBILITY AS A SERVICE...)

EMERGING BUSINESS MODELS FOR PLUG-IN VEHICLES ......................................................................... 1626
E. CAHILL, D. SPERLING

FULFILLING THE PROMISE TO GO OIL FREE: A NATIONALWIDE NETWORK CASE STUDY .......................... 1648
J. WOLF, J. PROCTOR

SIMPLICITY AND FLEET ELECTRICS--GETTING AROUND THE COST PROBLEM ........................................ 1656
G. DOWER, S. DAMEWOOD

INTERNATIONAL COLLABORATION

ELECTRIC VEHICLE, WHY SPAIN? .................................................................................................................. 1661
P.T. MARTINEZ

ENERGY & TRANSPORT - THE NORDIC COUNTRIES AS A TEST GROUND FOR SUSTAINABLE TRANSPORT SOLUTIONS .................................................................................. 1701
K. NORDBY, V. HACHMANN

THE ROAD AHEAD FOR ELECTRIC VEHICLES: NATIONAL TARGETS, MANUFACTURING PLANS, COSTS, AND THE ROLE FOR INTERNATIONAL COLLABORATION .................................. 1707
T. TRIGG, L. FULTON, H. KANEKO

THE U.S.-CHINA ELECTRIC VEHICLES INITIATIVE .................................................................................... 1718
J. MILLER, D. HOWELL

INTRODUCTION & DEMONSTRATION

CHARGING STRATEGIES FOR A SMART HOME CONNECTED BATTERY ELECTRIC VEHICLE .......................... 1723
R. KOHRS, J. LINK, M. MIERAU, R. KOHRS, C. WITTWER
CREATING A MARKET: THE VICTORIAN ELECTRIC VEHICLE TRIAL ................................................................. 1729  
*K. Handberg, P. Paevere*

ELECTRIC MOBILITY MODEL REGION "ELECTRODRIVE SALZBURG": SCIENTIFIC ACCOMPANYING RESEARCH ACTIVITIES ................................................................................................... 1741  
*A. Schuster*

ELECTROMOBILITY FOR HEAVY-DUTY VEHICLES .......................................................................................... 1747  
*M. Birkner*

INTRODUCTION OF THE FUEL CELL HYBRID LONDON TAXI ............................................................................ 1753  
*A. Kells, J. Mauzy*

REACHING 10% RENEWABLE TRANSPORTATION FUELS IN 2020 BY ELECTRIC-VEHICLES IN STYRIA/AUSTRIA ................................................................................................................................. 1758  
*G. Jungmeier, K.-P. Felberbauer, M. Beermann*

SWITCH-EV: THE NORTH EAST ENGLAND ELECTRIC VEHICLE AND INFRASTRUCTURE TRIALS ...................................................................................................................................................... 1761  
*P. Blythe, G. Hill, Y. Huebner, V. Suresh, J. Austin, L. Grey, J. Wardle*

ULTRA LOW CARBON VEHICLE DEMONSTRATOR PROGRAMME - POST-EXPERIENCE USAGE PATTERNS, DRIVER ATTITUDES AND BEHAVIOURAL CHANGE ....................................................................... 1771  
*A. Everett, C. Walsh, S. Carroll, M. Burgess, M. Harris*

LIFE CYCLE ANALYSIS

NEW TASK ON LIFE CYCLE ASSESSMENT OF ELECTRIC VEHICLES IN IEA 1A-HEV (HYBRID AND ELECTRIC VEHICLES) .......................................................................................................................... 1782  
*G. Jungmeier, M. Van Walwijk, U. Muntwyler*

STRATEGIC SELECTION OF FUTURE EV TECHNOLOGY BASED ON THE CARBON PAYBACK PERIOD .......................................................... 1786  
*J. Patterson, A. Gurr, F. Marion, G. Williams*

MARKETING & MARKET ANALYSIS

THE BUSINESS CASE FOR MASS-MARKET DEPLOYMENT OF PLUG-IN VEHICLES ............................................ 1797  
*B. Neil, R. Reid*

BUSINESS ECOSYSTEM MODEL APPLIED TO THE ELECTRIC VEHICLE MARKET ............................................. 1807  
*E. Couzineau-Zegwaard, M. Barabel, O. Meier*

CAPTURING THE ECONOMIC BENEFITS OF A TRANSFORMATIVE SHIFT TO LOW CARBON AUTOMOBILITY: A CASE STUDY OF THE WEST MIDLANDS, UK ............................................................................. 1815  
*N. Berkeley, D. Jarvis*

A CHOICE-BASED CONJOINT ANALYSIS ON THE MARKET POTENTIAL OF PHEVS AND BEVS IN FLANDERS .......................................................................................................................... 1825  
*K. Lebeau, J. Van Mierlo, P. Lebeau, O. Mairesse, C. Macharis*

COST ANALYSIS OF PLUG-IN HYBRID ELECTRIC VEHICLE INCLUDING MAINTENANCE & REPAIR COSTS AND RESALE VALUES ......................................................................................... 1835  
*B. Propfe, M. Redelbach, D. Santini, H. Friedrich*

EXPLORING THE PATHS TO ONE MILLION PLUG-IN ELECTRIC VEHICLES BY 2015 USING MAST MODEL ................................................................................................................................. 1845  
*J. Dong, Z. Lin*

THE FUTURE PROSPECTS FOR OPEN SOURCE BUSINESS MODELS IN THE WORLD OF ELECTRIC VEHICLES .......................................................................................................................... 1852  
*S. Mamoru, S. Hiroshi*

GLOBAL MARKET FOR HYBRID AND PURE ELECTRIC VEHICLES BY LAND, WATER, AIR 2012-2022 .......................................................................................................................................................... 1857  
*P. Harrop*

INNOVATION TRENDS IN PATENT APPLICATIONS FOR ELECTRIC VEHICLES (EUROPE, ASIA, USA) ...................................................................................................................................................... 1872  
*S. Toergyekes*

OEM'S ELECTRIC VEHICLE STRATEGIES: RISK ASSESSMENT ........................................................................ 1879  
*O. Saperas, E. Legarreta*

REALIZING THE POTENTIAL OF THE LOS ANGELES ELECTRIC VEHICLE MARKET ........................................... 1921  
*J.R. Deshazo, J. Dubin, R. Barney, A. Csontos, J. Um, N. Wu*
SCENARIO ANALYSIS OF TAIWAN COMMERCIAL FLEET ELECTRIFICATION-CASE STUDY: LOGISTIC FLEET
N.-C. SHIUE, S.-C. LIN, Y.-C. CHAO

MEDIUM & HEAVY DUTY VEHICLES

BEST FLEET USES, KEY CHALLENGES AND THE EARLY BUSINESS CASE FOR E-TRUCKS:
FINDINGS AND RECOMMENDATIONS OF THE E-TRUCK TASK FORCE
W. PITKANEN, B. VAN AMBURG

HEAVY-DUTY PHEV YARD TRACTOR: CONTROLLED TESTING AND FIELD RESULTS
E. KELLOGG, J. SMITH

MEDIUM AND HEAVY DUTY HYBRID ELECTRIC VEHICLE SIZING TO MAXIMIZE FUEL CONSUMPTION DISPLACEMENT ON REAL WORLD DRIVE CYCLES
A. ROUSSEAU, V. NAPAL, F. CLEMENT

MEDIUM-DUTY ELECTRIC DRIVE VEHICLE SIMULATION AND ANALYSIS
L. RAMROTH, A. BROOKER, J. GONDER

OPTIMIZING THE POWERTRAIN CONFIGURATION OF A HEAVY-DUTY SERIES-TYPE HEV TO IMPROVE THE FUEL ECONOMY
D. JUNG, H. KANG, H. CHOI, K. MIN

MILITARY VEHICLES

DEVELOPMENT OF DRIVING CYCLE FOR HYBRID ELECTRIC TACTICAL WHEELED VEHICLE
S. JEONG, J. SOONKYU, K. JONGBAE, L. YOONBOK, K. DONGHYUN

QUANTITATIVE ANALYSIS OF A HYBRID HMMWV FOR FUEL ECONOMY IMPROVEMENT
A. Nedungadi, R. Smith, A. Masrur

MODELING & SIMULATION

COMPARISON OF ECMS AND OPTIMAL CONTROL IN FCHVs
C. ZHENG, C.W. SHIN, Y.I. PARK, S.W. CHA

A CONSIDERATION OF HIGH-FREQUENCY EFFECTS ON POWER HARNESSES FOR HYBRID ELECTRIC VEHICLES
A. HAYASHI, T. KEISHI, Y. MIZUTANI

DEVELOPMENT AND VALIDATION OF DYNACAR RT SOFTWARE, A NEW INTEGRATED SOLUTION FOR DESIGN OF ELECTRIC AND HYBRID VEHICLES
A. PENA, I. IGLESIAS, A. MARTIN, J.J. VALERA

DEVELOPMENT OF A SOFTWARE PLATFORM FOR TAIWAN'S ELECTRIC VAN

DEVELOPMENT OF BACKWARD SIMULATOR BASED ON DYNAMIC PROGRAMMING FOR THE MULTIPLE POWER SOURCES OF SERIES HYBRID ELECTRIC VEHICLE
J. EONG, S. CHANGWOO, L. WOINSIK, C. SUK WON, J. EON

DEVELOPMENT OF DYNAMIC MOTOR SYSTEM MODELING FOR HEV DRIVE AND STUDY ON OPERATING CHARACTERISTIC OF DYNAMIC MOTOR SYSTEM APPLYING HIL SIMULATOR
M. YOON, J. LEE, J.-P. HONG

DEVELOPMENT OF OPEN-SOURCE HEV MODEL FOR HILS CERTIFICATION TEST METHOD
A. KUROKAWA, K. MORITA

EARLY SIMULATION AND TESTING OF VIRTUAL ECUS FOR ELECTRIC VEHICLES
L. STOCKMANN, D. HOLLER, D. SPENNEBERG

ELECTRIC VEHICLE PARAMETER IDENTIFICATION
E. WILHELM, R. BORNATICO, R. WIDMER, L. RODGERS, G.S. SOH

ENERGY CONSUMPTION PREDICTION OF A VEHICLE ALONG A USER-SPECIFIED REAL-WORLD TRIP
D. KARBOWSKI, S. PAGERIT, A. CALKINS
<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENERGY MANAGEMENT CONTROL OF A HYBRID ELECTRIC VEHICLE WITH TWO-MODE ELECTRICALLY VARIABLE TRANSMISSION</td>
<td>2093</td>
</tr>
<tr>
<td>HARDWARE-IN-THE-LOOP SIMULATION ON A HYBRID POWER SYSTEM IN PLUG-IN HYBRID ELECTRIC VEHICLES</td>
<td>2106</td>
</tr>
<tr>
<td>IMPACT OF PASSENGER THERMAL COMFORT AND ELECTRIC DEVICES TEMPERATURE ON RANGE: A SYSTEM SIMULATION APPROACH</td>
<td>2111</td>
</tr>
<tr>
<td>MATHEMATICAL MODELING AS A TOOL FOR UNDERSTANDING LITHIUM-ION BATTERIES IN ELECTRIC VEHICLES</td>
<td>2119</td>
</tr>
<tr>
<td>MODEL-BASED SYSTEM DESIGN FOR MIL, SIL, AND HIL</td>
<td>2123</td>
</tr>
<tr>
<td>POWER FOR TRACTION CHARACTERIZED BY NORMAL DISTRIBUTIONS</td>
<td>2133</td>
</tr>
<tr>
<td>TESTING ELECTRIFIED POWERTRAINS WITHOUT THE BATTERY OR ENGINE</td>
<td>2142</td>
</tr>
<tr>
<td>VIRTUAL INTEGRATED DEVELOPMENT ENVIRONMENT FOR THE COMPONENTS DESIGN OF ECO-FRIENDLY VEHICLES</td>
<td>2152</td>
</tr>
<tr>
<td>ON-BARD GENERATORS</td>
<td>2160</td>
</tr>
<tr>
<td>DEVELOPMENT OF A FREE-PISTON LINEAR GENERATOR FOR USE IN AN EXTENDED-RANGE ELECTRIC VEHICLE</td>
<td>2166</td>
</tr>
<tr>
<td>PASSENGER CARS</td>
<td></td>
</tr>
<tr>
<td>ENERGY SAVING AND COST PROJECTIONS FOR ADVANCED HYBRID, BATTERY ELECTRIC, AND FUEL CELL VEHICLES IN 2015-2030</td>
<td>2178</td>
</tr>
<tr>
<td>THE APPLICATION OF RESONANT SOFT SWITCH TECHNOLOGY ON ELECTRIC VEHICLE: INVENTION, REVOLUTION, AND SOLUTION</td>
<td></td>
</tr>
<tr>
<td>MODEL-BASED SYSTEM DESIGN OF A 2013 CHEVROLET MALIBU</td>
<td>2192</td>
</tr>
<tr>
<td>PEAK POWER SYSTEMS &amp; CAPACITORS</td>
<td></td>
</tr>
<tr>
<td>NANO-HYBRID CAPACITOR USING NANO-Li4Ti5O12/CNF COMPOSITES: HIGH ENERGY SUPERCAPACITORS FOR AUTOMOTIVE APPLICATIONS</td>
<td>2199</td>
</tr>
<tr>
<td>ULTRACAPACITOR TEST SYSTEM</td>
<td>2205</td>
</tr>
<tr>
<td>ULTRACAPACITORS IN HYBRID VEHICLE APPLICATIONS: TESTING OF NEW HIGH POWER DEVICES AND PROSPECTS FOR INCREASED ENERGY DENSITY</td>
<td>2213</td>
</tr>
<tr>
<td>VOLTAGE STABILITY AND SYSTEM BEHAVIOR OF CYBERNETIC LOADS IN VEHICULAR POWER NETS</td>
<td>2221</td>
</tr>
<tr>
<td>VOLTAGE STABILITY IN VEHICLE POWER NETS BY POWER DISTRIBUTION MANAGEMENT</td>
<td>2233</td>
</tr>
<tr>
<td>PLUG-IN HYBRID ELECTRIC VEHICLES (PHEV), GENERAL</td>
<td>2244</td>
</tr>
<tr>
<td>EFFECTIVENESS OF PHEV IN REDUCING THE DEMAND FOR GASOLINE</td>
<td></td>
</tr>
</tbody>
</table>
ESTIMATING THE PHEV POTENTIAL IN SWEDEN USING GPS DERIVED MOVEMENT PATTERNS FOR REPRESENTATIVE PRIVATELY DRIVEN CARS ................................................................. 2265
  I.-H. KULLINGSJO, S. KARLSSON

VOLUME 4

EVALUATING PLUG-IN VEHICLES (PLUG-IN HYBRID AND BATTERY ELECTRIC VEHICLES) USING STANDARD DYNAMOMETER PROTOCOLS .......................................................... 2274
  M. DUOBA, L.-B. HENNING, E. RASK

EVALUATING THE EFFECTS OF AMBIENT TEMPERATURE AND DRIVING CYCLE ON THE PERFORMANCE OF A PHEV PRIUS DRIVEN ON ROAD AND ON A CHASSIS DYNAMOMETER .......................................................... 2288
  A. CONDE, A. LOISELLE-LAPOINTE, D. KARMAN

FORD ESCAPE PHEV ON-ROAD RESULTS FROM US DOE’S TECHNOLOGY ACCELERATION AND DEPLOYMENT ACTIVITY ................................................................. 2299
  R. CARLSON, J. D’ANNUNZIO, C. FORTIN, M. SHIRK

FUEL CONSUMPTION POTENTIAL OF DIFFERENT PLUG-IN HYBRID VEHICLE ARCHITECTURES IN THE EUROPEAN AND AMERICAN CONTEXTS ...................................... 2308
  A. DA COSTA, M. NICOLAS, F. LE BERR, F. BADIN, A. ROUSSEAU, N. KIM

INFLUENCE OF THE PREDICTION HORIZON LENGTH OF A PHEV ENERGY MANAGEMENT ON FUEL CONSUMPTION .................................................................................. 2322
  B. BADER, O. TORRES, J.L. ROMERAL, J.A. ORTEGA, G. LUX

AN INVESTIGATION ON THE EFFECT OF DRIVER STYLE AND DRIVING EVENTS ON ENERGY DEMAND OF A PHEV ............................................................. 2330
  P.R.B. VENNYOD, A. MCGORDON, P. JENNINGS

OPTIMAL CONTROL STRATEGY FOR PHEVs USING PREDICTION OF FUTURE DRIVING SCHEDULE .............................................................................................. 2339
  D. LEE, S. CHA, N. KIM, N. KIM, A. ROUSSEAU

A PLUG-IN HYBRID DIESEL-ELECTRIC VEHICLE .................................................................................................................. 2349
  D.G. MARINESCU, I. TABACU, F. SERBAN, S. TABACU, V. NICOLAE, I. VIERU

PLUG-IN HYBRID SYSTEMS NEWLY DEVELOPED BY HYUNDAI MOTOR COMPANY ........................................................... 2356
  B. SUH, K. MIN, S.J. KIM, J.H. LEE

PLUG-IN HYBRIDS MADE EASY - SELECTABLE EV DRIVE USING IN-WHEEL MOTORS ........................................................ 2361
  A. WHITEHEAD

POWER ELECTRONICS, MICRO ELECTRONICS & ELECTRIC EQUIPMENT

BIDIRECTIONAL POWER FACTOR CORRECTION CONVERTER CONTROL OF AN EV ON-BOARD CHARGER FOR V2G APPLICATION .............................................................. 2373
  Y.-H. CHIANG, C.Y. TSENG, C.-P. CHIEN

CUSTOM POWER MODULE SOLUTIONS FOR AUTOMOTIVE TRACTION INVERTERS .......................................................................................................................... 2380
  S. HAUMANN, K. OLESEN, J. HOLST

DEVELOPMENT OF A POWER/CONTROL MODULE FOR URBAN INTELLIGENT ELECTRIC VEHICLES .................................................................................................. 2391
  J.-C. JUANG, Y.-C CHEN

EFFECTIVE THERMAL SIMULATION OF POWER ELECTRONICS IN HYBRID AND ELECTRIC VEHICLES .............................................................. 2398
  K. LIU, J. DROBNIK, T. HAUCK

ELECTRIC VEHICLE COST REDUCTION BEYOND THE COMPONENT LEVEL .............................................................................................. 2405
  J. BEREISA, M. BRUBAKER

EXPERIMENTAL INVESTIGATIONS ON VOLTAGE STABILITY IN MULTILEVEL POWER NETS ...................................................................................... 2438
  T. KOHLER, A. THANHEISER, A. WANK, J. FROESCHL, H.-G. HERZOG

HIGH THERMAL CONDUCTIVITY AND RELIABILITY, DOWNSIZED IGBT MODULE FOR AUTOMOTIVE APPLICATIONS ............................................................................. 2449
  F. NAGAUNE, S. ADACHI, T. HITACHI, H. GOHARA, A. MOROZUMI, A. NISHIURA
NEW DEVELOPMENTS IN POWER ELECTRONICS ................................................................. 2459

G. CAMERON, M. HAYES, H. LEE, R. TAYLOR

PIPE SHIELD HIGH-VOLTAGE WIRING HARNESS ....................................................... 2468

A. HAYASHI, O. WEISS, Y. MIZUTANI

QUASI-RESONANT FLYBACK DC/DC CONVERTER USING GaN POWER TRANSISTORS .......... 2475


STUDY ON THE HIGH VOLTAGE ELECTRIC SAFETY OF ELECTRIC VEHICLE ................ 2482

J. WU, X. YANG, L. XIAOKANG, F.CHUN

PUBLIC AWARENESS & ACCEPTANCE

DEPLOYING EV CHARGERS: THE GAP BETWEEN EXPECTATIONS AND REALITIES ............. 2491

J. KALB

FORESIGHT SCENARIO ANALYSIS OF MOTOR SYSTEM OF ELECTRIC VEHICLE .................. 2496

Y.-C. SHUE, P.-J. CHEN, C.-F. LEE, C.-C. YU, C.-W. CHEN

INVESTIGATING THE POTENTIAL TO INFLUENCE THE BEHAVIOUR OF ELECTRIC VEHICLE USERS' RECHARGING BEHAVIOUR TO REDUCE WELL TO WHEEL CARBON EMISSIONS ................................................................. 2503

Y. HUEBNER, A. ROBINSON, P. BLYTHE, G. HILL, M. BELL

SUMMER VACATION WITH AN EV ....................................................................................... 2510

E. SUNNERSTEDT

PUBLIC EDUCATION

AN ELECTRO-DRIVEN SYSTEM DESIGN ON FORMULA STUDENT RACING CAR .............. 2512

Z. WANG, Z. CHANGFU, Y. LEI

INTERCOLLEGIATE MOTORSPORTS COMPETITION AS MOTIVATOR TO DEVELOP AND SHOWCASE ELECTRIC VEHICLE TECHNOLOGY AND PERFORMANCE, PUBLIC AWARENESS AND ACCEPTANCE AND TECHNICAL TRAINING OF PERSONNEL ................................................................. 2520

J. MAJOR, S. JETLEY, A. PALUMBO

PLUG-IN ELECTRIC VEHICLE RESOURCE CENTER ........................................................ 2532

L. CHILADAKIS, M. MEUSER

RESULTS OF 2011 EcoCAR PLUG-IN HYBRID ELECTRIC VEHICLE ON-ROAD TESTING .......... 2536

D. NELSON, R.J. ALLEY, J. KING, P.C. MANNING, E. WHITE, D.J. NELSON

TECHNOLOGY EVOLUTION IN FORMULA ELECTRIC AND HYBRID ITALY ....................... 2548

G. BRUSAGLINO

PUBLIC POLICY & PROMOTION

ANALYZING THE ROLE OF SUBSIDIES IN MOTOR VEHICLE ELECTRIFICATION IN THE US ................................................................................................................................. 2554

C. LIU, DAVID L. GREENE

CALIFORNIA’S CLIMATE POLICY FOR TRANSPORTATION AND ELECTRIC-DRIVE VEHICLES ................................................................................................................................. 2561

D. SPERLING, M. NICHOLS

CHALLENGING THE PORTFOLIO OF POWERTRAINS PERSPECTIVE: TIME TO CHOOSE SIDES ................................................................................................................................. 2571

S. BAKKER, A. VAN DER VOOREN

ELECTRIC VEHICLE INTEGRATION INTO RENTER-OCCUPIED AND MULTIFAMILY .......... 2576

J. BALMIN, M. KIRKEBY, G. BONETT

ELECTRIFICATION ROADMAP AND RESEARCH PROJECTS OF THE EUROPEAN GREEN CARS INITIATIVE ................................................................................................................................. 2627

G. MEYER, B. MULLER, G. HENNEQUET

EUROPEAN KNOWLEDGE TRANSFER NETWORK ON URBAN ELECTRIC VEHICLE STRATEGIES ................................................................................................................................. 2632

S. KNEESHAW

FRANCE SPEEDS UP WITH EVS ........................................................................................ 2637

J. BERETTA, P. AUSSOURD
THE IMPLEMENTING AGREEMENT IA "HYBRID- AND ELECTRIC VEHICLE" OF THE INTERNATIONAL ENERGY AGENCY (IEA) THE INTERNATIONAL COOPERATION PROGRAMME WITH A NEW RECORD OF MEMBER COUNTRIES ................................................................. 2643

U. MUNTWYLER

INFRASTRUCTURE PLAN FOR CHARGING STATIONS FOR ELECTRIC VEHICLES IN RIO DE JANEIRO .......................................................................................................................................................................................... 2649

L.A. PECORELLI PERES, J.F.M. PESSANHA, F. PARTICELLI, A.C. CALDAS

LEVERAGING EV/PHEV CONSUMER ADVOCACY TO INFLUENCE PUBLIC POLICY ................................................................................................................................. 2660

J. FRIEDELAND

LIVING LABS FOR ELECTRIC VEHICLES IN FLANDERS .......................................................................................................................................................................................... 2664

T. COOSEMANS, K. LEBEAU, C. MACHARIS, B. LIEVENS, J. VAN MIERLO

THE NEW CHANCE OF ELECTRIC SCOOTER EQUIPPED WITH LITHIUM ION BATTERY IN TAIWAN .................................................................................................................................................................................. 2670

S.H. SUEN, L. BING MING, J.J. SHIAN CHING

POWERTRAIN ELECTRIFICATION AND THE GLOBAL RACE FOR BATTERY INDUSTRY DOMINANCE: A TECHNOMETRIC ANALYSIS .......................................................................................................................................................................................... 2675

A. BEAUDET, E. ARCHAMBAULT, D. CAMPBELL

PROMOTING TOMORROW'S TECHNOLOGIES TODAY: AN INSIGHT INTO THE UK TECHNOLOGY STRATEGY BOARD'S INNOVATION LANDSCAPE .................................................................................................................................................................................. 2679

J. LAUGHLIN

PUBLIC POLICY AND PROMOTION OF ELECTRIC VEHICLES .................................................................................................................................................................................. 2690

B. BLANNING, E. SCHNEIDER

SWEDISH PROCUREMENT OF EVs AND PHEVs ................................................................................................................................................................................................. 2695

E. SUNNERSTEDT

THE TRANSFORMATIONAL IMPACT OF PLUG-IN ELECTRIC VEHICLES ON THE ENERGY SECTOR .................................................................................................................................................................................. 2698

A. DINI

UK ELECTRIC VEHICLE CASE STUDIES - FLEET INTEGRATION .................................................................................................................................................................................. 2708

C. WALSH, S. CARROLL

THE WINDING ROAD FOR ELECTRIC VEHICLES IN CHINA .................................................................................................................................................................................. 2720

T. EDWARDS

PUBLIC TRANSPORT & RAILWAY VEHICLES

NEW ENERGY MANAGEMENT AND HYBRID ENERGY STORAGE IN METRO RAILCAR .................................................................................................................................................................................. 2734

I. SZENASY

RECREATION & LIGHT VEHICLES

INTERACTION BETWEEN SELF-BALANCED DICYCLE AND RIDER .................................................................................................................................................................................. 2743

D. SHAW, T. HSIEH

SAFETY & SECURITY

AN ENGINE SOUND REPLICATION DEVICE FOR ELECTRIC AND HYBRID VEHICLES TO ALERT PEDESTRIANS .................................................................................................................................................................................. 2755

J. DUNN

HYDROGEN AND FUEL CELL EDUCATION FOR EMERGENCY RESPONDERS AND PERMITTING OFFICIALS: GOING GLOBAL .................................................................................................................................................................................. 2763

J. HAMILTON

SMART GRID

EFFECT OF DEMAND RESPONSE ON THE MARGINAL ELECTRICITY USED BY PLUG-IN ELECTRIC VEHICLES .................................................................................................................................................................................. 2766

D. DALLINGER, W. MARTIN, D. SANTINI

ELECTRIC VEHICLES AND THE SMART GRID: SPATIAL MODELLING OF IMPACTS AND OPPORTUNITIES .................................................................................................................................................................................. 2775

P. PAEVERE, A. HIGGINS, G. GROZEV, Z. REN, M. HORN