

21st International Battery, Hybrid and Fuel Cell Electric Vehicle Symposium & Exhibition 2005

(EVS 21)

**Monoco
2-6 April 2005**

ISBN: 978-1-63266-839-4

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© (2005) by the Electric Drive Transportation Association
All rights reserved.

Printed by Curran Associates, Inc. (2014)

For permission requests, please contact the Electric Drive Transportation Association
at the address below.

Electric Drive Transportation Association
1250 Eye Street NW
Suite 902
Washington, DC 20005

Phone: +1 (202) 408-0774
Fax: +1 (202) 408-7610

info@electricdrive.org

Additional copies of this publication are available from:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: 845-758-0400
Fax: 845-758-2634
Email: curran@proceedings.com
Web: www.proceedings.com

TABLE OF CONTENTS

A Claw Pole TFPMS Drive for Hybrid Bus Propulsion Systems.....	1
<i>Ahmed Masmoudi, Ahmed Elantably</i>	
Recycling of Li-ion and NiMH Batteries: The Unique Umicore Closed Loop Solution.....	14
<i>Daniel Chéret</i>	
A Package Education Method for Solar Cells, Fuel Cells, and Thermoelectric (Seebeck Effect) Generation.....	21
<i>Masaharu Fujinaka</i>	
Fueling our Future: Four Steps to the ‘Revolution in the Garage’	27
<i>Arno A. Evers</i>	
Simulation Based Study of IM Control Strategies for EV/HEV Applications.....	36
<i>Qin Kongjian, Lu Qingchun, Gao Dawei</i>	
Technical Status and Future Prospectives for PEM Fuel Cell Systems at DaimlerChrysler	48
<i>A. Lamm, W. Rau, W. Fleck, A. Docter, G. Frank, Charles Stone</i>	
Market Introduction of Fuel Cell Vehicles: Lessons learned by EV-, HEV- and Alternative Fuel Vehicles Promotion Programmes	59
<i>Sigrid Kleindienst Muntwyler</i>	
PEM Fuel Cell Operational Problems in Cold Weather	66
<i>Gregory Wight, Harold Garabedian</i>	
A Study of EV Induction Motor Controller Based on Rotor Flux Oriented Control	80
<i>Jianguo Song, Quanshi Chen</i>	
Research Of Electric Vehicle IM Controller Based On Direct Torque Control.....	90
<i>Song Jianguo, Chen Quanshi</i>	
Integrated Electric Drives for Use in Automotive Driveline Applications	103
<i>Rao S. Zhou, Fukuo Hashimoto, Mircea Gradu</i>	
The Design and Emulating Analyse of a New Developed Circuit for Measuring Voltages in the Battery Management System in EVs	114
<i>Huang Wenhua, Chen Quanshi, Han Xiaodong</i>	
Preliminary Study on Evaluation System of EV Energy Consumption Economy	124
<i>Wang Zhenpo, Sun Fengchun, Wang Chunli, Mu Xiaohu</i>	
A Bridge to the Hydrogen Highway	131
<i>Greg Hanssen</i>	
Recent FC Boat Developments in Switzerland	136
<i>Jean-François Affolter, Yvan Leuppi, Alessandro Gianinazzi</i>	
ELEDRAVE Project WP6 Techno-Economic Analysis.....	146
<i>Joseph Beretta</i>	
Efficiency of Hybrid Electric Vehicle Powertrain Components using Electric Power-Splitting Synchronous Generator with Permanent Magnets	158
<i>Zdenek Cerovský, Pavel Mindl</i>	
Highly Integrated 75 kW Converter for Automotive Switched Reluctance Traction Drives with Robust 4-Quadrant Torque Control	167
<i>Christian E. Carstensen, Timo Schoenen, Stefan E. Bauer, Rik W. De Doncker</i>	
Training of Qualified Personnel--Booster of the Development of Electric Vehicles.....	179
<i>Zhenglin Yang, Zheng Zhou, Guozhu Zhao</i>	
Development of 2005 Model Year ACCORD Hybrid.....	186
<i>Masaaki Kaizuka, Toshitaka Imai, Susumu Ishikawa, Manabu Niki, Hiromitsu Adachi</i>	
New Electrical Equipment for Light Electric Vehicles in Recreation Areas	198
<i>N. Ilinski, Y. Prudnikova, B. Saratch, Yu. Bogachev, X.F. Ye</i>	
Extended Power by Boosting with Switched Reluctance Propulsion	205
<i>Robert B. Inderka, Stefan Keppeler</i>	
A New Way of Electric Vehicle Speed Control.....	217
<i>Victor Pavlov, Oleg Yurchenko, Gilbert Cazenobe</i>	
Analysis and Identification of Embedded Power System Faults using Wavelet Transform.....	224
<i>F. Charfi, K. Al Haddad, F. Sellami</i>	
A Minimalist Approach to the Design of Electric Vehicles	234
<i>Konstantinos N. Spentzas, Georgios Michael</i>	

Some Insights in the Impact of Financial Incentives for Efficient Vehicles in Switzerland.....	241
<i>Gianni Moreni, Ueli Haefeli, Manuela Oetterli</i>	
Study on the Control Strategy and Simulation for the Power Train of a Parallel Hybrid Electric Vehicle	253
<i>Zhao Ziliang, Liu Minghui, Li Jun, Chu Liang, Wang Qingnian</i>	
An Improved Transient Response of 14/42 Dual Voltage System for Vehicle Electric Power Supply Using Fuzzy Control	258
<i>Nabil Hammad</i>	
A Study on Performance Analysis and Component Sizing Method for Multi-Power Source Fuel Cell Hybrid Armorde Vehicle.....	267
<i>Sang-Jun An, Jae-Kwang Shin, Sang-Uk Kwon, Tae-Jin Kim, Kyoil Lee</i>	
Test with Alternative Driven Heavy Duty Vehicles in Sweden- 1995 to 2005.....	278
<i>Swahn Magnus</i>	
Development and Performance Data of a Lithium Ion Battery for Hybrid Electric Vehicles	299
<i>M. Schweizer-Berberich, P. Pilgram, S. Theuerkauf, F.J. Kruger, A.J. Manning</i>	
Results of Temperature-Dependent LiPB Cell Modeling for HEV SOC Estimation.....	308
<i>Gregory L. Plett</i>	
Dual and Joint EKF for Simultaneous SOC and SOH Estimation.....	318
<i>Gregory L. Plett</i>	
Experiences and Future Prospects for Cooperation in Automotive Research.....	331
<i>Doris Fröhlich</i>	
Versatile Drivetrain Testbed for Hybrid Configurations with xPC Target.....	344
<i>Stephan Rohr, Markus Stiegeler, Herbert Kabza</i>	
Mild Hybrid with Crankshaft Starter Generator	352
<i>Stephan Rohr, Herbert Kabza</i>	
Development and Demonstration of Hydrogen Fuel Cell Vehicle Fleet and Infrastructure at the National Demonstration Center for Alternative Fuel Vehicles at Hickam Air Force Base, Hawaii	361
<i>Thomas Quinn, Don Kang, Mark Schultz, Norman Freeman</i>	
Fault Diagnosis for Electric/Hybrid Vehicle Induction Motor Drive	373
<i>Nabil Hammad, A.M.A.A. Abou-El-Nour, Shawki A. Abouel-Seoud</i>	
An EASY5 Based Research on Simulation of Fuel Cell City Bus	383
<i>Zonghua Li, Guangyu Tian, Weibo Zhou, Quanshi Chen, Yuan Zhu</i>	
Traction System for Heavy Electric Vehicles based on the Wound Rotor Salient Pole Synchronous Machine Drive.....	393
<i>D. Casadei, C. Rossi, A. Pilati, A. Gaetani</i>	
A Vehicle Starter Motor Characteristics Powered by a Simple Architecture 14/42 V Dual Voltage System.....	405
<i>Nabil Hammad</i>	
Selling Neighborhood Electric Vehicles into the USA Automotive Market	414
<i>Lawrence J. Oswald, Richard J. Kasper</i>	
Box-Energy: The Way For Selling (More) Alternative Fuel Vehicles	425
<i>Marco Piffaretti, Giorgio Gabba</i>	
Fault-Tolerant Control System For Multiphase PM Motors With Isolated Magnetic Paths	434
<i>Guohui Yuan</i>	
Testing of a 17kW In-Wheel Propulsion System for Electric Vehicles.....	442
<i>Guohui Yuan, Alexander Gladkov</i>	
Development of New Battery System for Hybrid Vehicles	450
<i>Masanori Ito, Tsuyoshi Hayashi, Teruo Ishishita, Yasuhiro Arase</i>	
Study on the Performance of Lithium Polymer Battery Used on Electric Bus.....	455
<i>Jiang Fachao, Chen Quanshi, Xia Shiliang</i>	
Robust Estimation and Control of Body Slip Angle for Electric Vehicle.....	461
<i>Yoshifumi Aoki, Yoichi Hori</i>	
The Evolution of Electrically Propelled Vehicle Technology and the Multidisciplinary Challenge for Standardization and Regulation.....	473
<i>Peter Van den Bossche, Maggetto Gaston, Van Mierlo Joeri</i>	
Integrated Modelling of the Urban Development, Mobility and Air Pollution Analysis in the Brussels Capital Region: Policy Measures Based on Environmentally Friendly Vehicle Technologies	486
<i>Peter Van den Bossche, Gaston Maggetto, Joeri Van Mierlo</i>	
PSA vision of Fuel Cell vehicle	499
<i>B. Costes</i>	

ELCIDIS: Electric Deliveries in the City Centre of La Rochelle	503
<i>Jacques Mollard</i>	
The Vermont Electric Vehicle Demonstration Project	508
<i>Harold Garabedian, Gregory Wight</i>	
Further than Kyoto Goals with a Combined Hybrid Delivery Van	519
<i>Yves Toussaint, Nicolas Naniot</i>	
A Study on the Split-Powered Continuously Variable Transmissions with One Mode	531
<i>Sang-Hoon Seong, Noh-Gill Park</i>	
A New Power Steering System in Fuel Cell Bus	543
<i>Yong Huang, Quanshi Chen, Bin Qiu, Fuhu Chen</i>	
A New Approach in Hybrid Drivetrain Development and Optimisation	548
<i>J.-W. Biermann, H. Meinheit, M. Schüssler</i>	
The Power Capacitors for Realizing the Downsized Hybrid System	559
<i>Yoshihiro Fujita, Youichi Shida, Kentaro Nakaki, Makoto Shimizu, Kanji Ohta, Shigenobu Sasaki</i>	
Liquid Water in PEM Fuel Cell Cathode and Its Influencing Factors	567
<i>Yuhou Wu, Hong Sun, Shizhong Chen, Yong Zhang, Hongtan Liu</i>	
Effect of Operating Conditions on the Performance of PEM Fuel Cells	574
<i>Yuhou Wu, Shizhong Chen, Yong Zhang</i>	
The Concept of Eliica, the 370km/h Max Speed Electric Vehicle	580
<i>Hiroichi Yoshida, Kikuo Emoto, Kenichi Tsutsumi, Kiyomoto Kawakami, Manabu Omae, Taishi Tamura, Kentaro Nagahiro, Takahisa Kamikura, Kei Oda, Raira Tokoi, Hiroshi Shimizu</i>	
SIMVEH: An Architecture Evaluator Tool	589
<i>E. Derlon, O. Pape</i>	
The Development of Eliica, the 370km/h Max Speed Electric Vehicle	599
<i>Hiroshi Shimizu, Kiyomoto Kawakami, Kikuo Emoto, Kentaro Nagahiro, Takahisa Kamikura, Kei Oda, Raira Tokoi, Yasuaki Machino, Hiroichi Yoshida</i>	
FCTESTNET - Testing Fuel Cells for Transportation	609
<i>Rob Winkel, Darren Foster, Richard Smokers</i>	
The ACCEPT Project: Fueling a 2KW Fuel Cell System with Ammonia	621
<i>Peter Coenen, Grietius Mulder, Christoph Gutsch</i>	
Batteries vs Ultracapacitors in Hybrid Electric Buses	630
<i>David Mazaika, Juergen Schulte</i>	
Wheel Hub Motors for Automotive Applications	643
<i>James M. Nagashima</i>	
The Design of Cost Effective, Switched Reluctance Drive Systems for Mild Hybrid-Electric Vehicles	655
<i>Mike McClelland, Peter Moriarty, Stephen Long</i>	
An Equivalent Circuit Model for Simulating Transient Motor Performance in a Hybrid-Electric Powertrain	668
<i>Alan Walker, Peethamparam Anpalahan</i>	
Integration Aspects of NiMH Batteries for HEV	675
<i>Erik Verhaeven, Philippe Coenegracht, Patrick Diepstraten</i>	
Alternative Powertrain Technologies Submitted Towards NHV Testing	687
<i>Antonio Vecchio, Herman Van der Auweraer, Erik Verhaeven</i>	
R&D of Lithium Batteries for Fuel Cell Hybrid Vehicles in National Projects of Japan	699
<i>Tomohiko Ikeya, Hirokazu Miyazaki, Hironobu Kuriyama, Yoshiteru Sato</i>	
Development of New Prismatic Type Ni-MH Battery for HEV	707
<i>Hiroyuki Miyamoto, Takashi Asahina, Tomohiro Matsuura, Shinji Hamada, Toyohiko Eto</i>	
Vehicle Control System Design for a Parallel Hybrid Electric Vehicle	713
<i>Haiou Gao, Shunyu Xu, Xuefeng Gao</i>	
Clean Vehicle Technology Procurement – Lessons Learnt and Guidelines for Future Activities	722
<i>Hans Pohl</i>	
A Comprehensive Tool to Evaluate Well to Wheel Efficiency of Vehicles Using Complex Fuels	729
<i>Yasuko Baba, Hisashi Ishitani</i>	
Development of Power Control Unit for SUVs	741
<i>Takaji Kikuchi, Osamu Shinmura</i>	
Proposal of Practical EV Applicable for Fleet Use in Japan	749
<i>Jun Hyodo, Nobuhito Ohnuma, Eric Marcel Misoe</i>	
Essential Measures to Prevent Global Warming: A Development of Technology for Implementing Li-ion Battery for Traction System of Lightweight Battery EVs	759
<i>Nobuhito Ohnuma, Tamotsu Fukasawa, Tomoyuki Tanabe, Eric Marcel Misoe</i>	

New Ni-MH Battery Charging Management Method: ‘Calorific Value Fixed Charging Control’ for Electric Scooter	767
<i>Hikokazu Okaguchi, Masaaki Yoshikawa, Eric Marcel Misoe</i>	
Study on Parameters Matching of Hybrid Drivetrain System.....	776
<i>Yong Chen, Bin Qiu, Quanshi Chen</i>	
Outreach Activities on JHFC Project	782
<i>Chie Watanabe, Izuho Hirano, Shoji Tange</i>	
Control Strategy Choice Influence on Effectiveness of HEV Drive.....	788
<i>Antoni Szumanowski, Piotr Piórkowski, Sun Fengchun, Yuhua Chang</i>	
Performance of Hybrid Drive City Bus Equipped with Li-ion Battery.....	796
<i>Antoni Szumanowski, Yuhua Chang, Piotr Piórkowski, Ewa Jankowska, Maciej Kopeczyk</i>	
Development of the NE Train	806
<i>Hiroshi Nomoto, Tetsuro Omura, Eiichi Toyota, Takashi Kaneko, Kazuo Ohno, Kazuo Aso</i>	
Hybrid Traction System for Railway Vehicles	814
<i>Hiroshi Nomoto, Tetsuro Omura, Eiichi Toyota, Motomi Shimada</i>	
Author Index	