SAE INTERNATIONAL

安亭·上海国际汽车城
Anting • Shanghai International Automobile City

SAE 2014 NEW ENERGY VEHICLE FORUM 新能源汽车国际论坛

September 24 - 26, 2014
Crowne Palaza Shanghai Anting Hotel,
Shanghai, China

Event Guide

Includes Final Program

PROVEN ROAD READY.

OVER A MILLION CARS AND COUNTING.

CONTINENTAL DESIGNERS DIDN'T SET OUT TO WIN A COVETED AWARD for one of Europe's leading auto manufacturer's start-stop modules. Instead, their sights were set on increasing fuel efficiency, reducing emissions, and extending vehicle battery life. Yet, Maxwell ultracapacitors enabled them to achieve it all, leading Autobild Magazine to hail the leaner, greener system – now standard in over 1 million vehicles worldwide and growing – as 2012's "Best Performer." Maxwell ultracapacitors. For consumers, automakers and the environment, they're the right choice for the road ahead.

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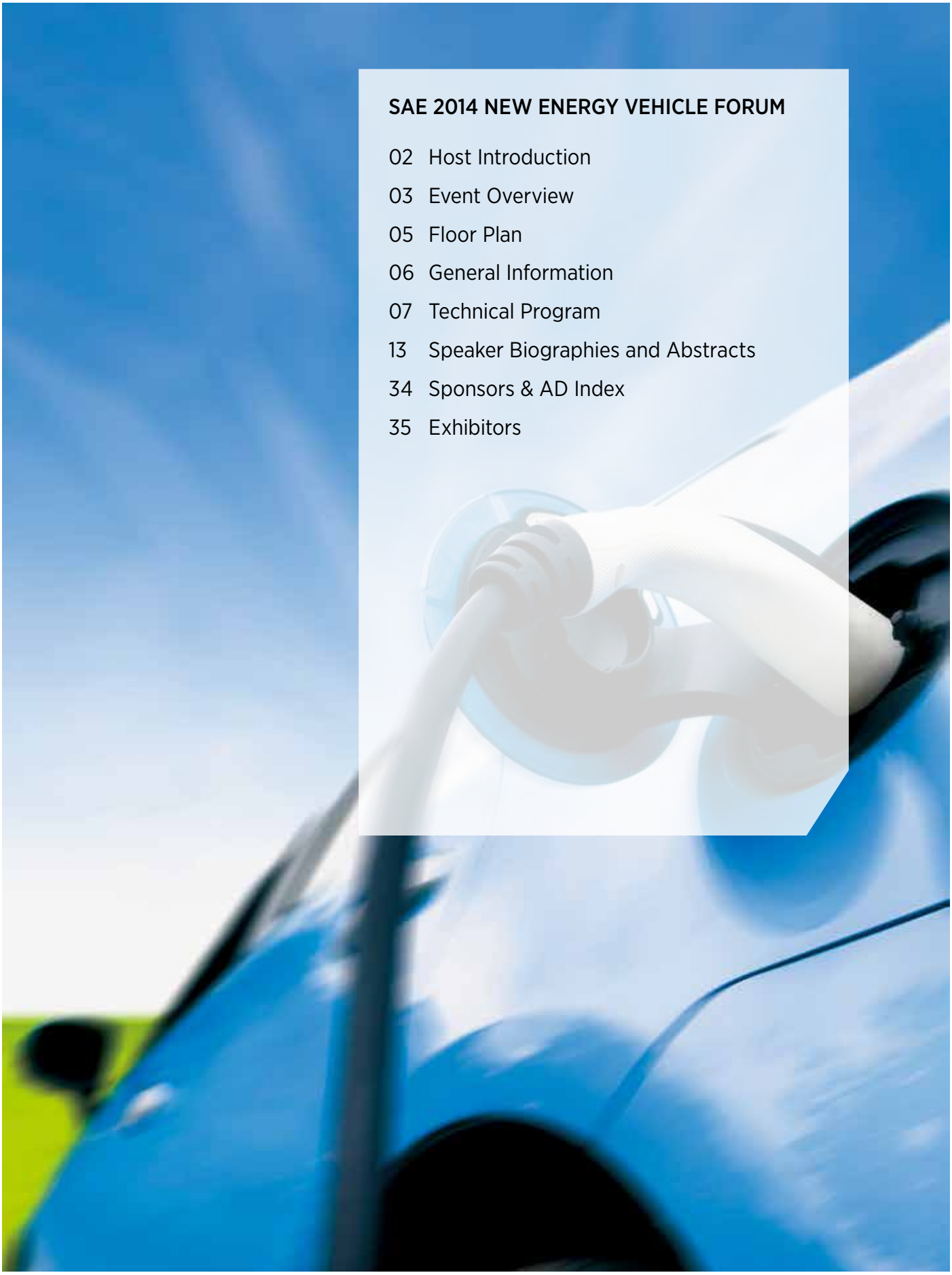
Maxwell® TECHNOLOGIES

Enabling Energy's Future™

Contents



SAE 2014 NEW ENERGY VEHICLE FORUM

SAE International is a global technical association of more than 145,000 engineers and related technical experts in the aerospace, automotive and commercial-vehicle industries. It was founded in 1905 with 30 engineers in New York and now spans more than 100 countries. SAE International is perhaps best known for its technical standards. More than 8,000 technical experts from around the world participate on 600 standards committees to develop a large base of standards and recommended practices that are used to support product design and development. Many government regulations and documents reference SAE International standards.

Anting • Shanghai International Automobile City

Shanghai International Autocity (Group) Co., Ltd. (SIAC Group) is responsible for the overall development of Shanghai International Automobile City (SIAC), located in the Jiading district of Shanghai. At the first Clean Energy Ministerial held in Washington D.C. in July, 2010, the Electric Vehicle Initiative received great support and included the development of International Electric Vehicle Pilot cities. Shanghai was declared the an EV International Pilot city and Jiading as an EV International Demonstration Zone by the Chinese government in January, 2011. The final goal of this zone is to lessen the dependence of social development on oil, reduce vehicle emissions and improve the global environment.

As a key part of this initiative, SIAC is a clustering area for the Research and Development of Automobiles, especially New Energy Vehicles (NEV). It includes:

- Tongji University with a series of R&D centers, including the National Lab for NEV and Power Systems, Wind Tunnels, Technology Center for Electric Vehicles.
- National Center of Supervision and Inspection on Motor Vehicle Products Quality
- EV demonstration fleet, including more than 700 charging stations
- R&D development zone designated as “Auto R&D Harbor” to foster innovation in the automotive industry
- Facilities and support for exhibitions, exchanges and other aspects for promoting the advancement of the automotive industry.

Organizers:

上海滨江会展 RIVERFRONT

Supporting Media:

www.DJEV.com

CSEI 中国战略新兴产业网 China strategic emerging industry

AutoLab

EVENT OVERVIEW

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<tr><td>9:00</td><td colspan="2" rowspan="3">PLENARY SESSION:
Vehicle and Powertrain Technology Trends</td><td>TECHNOLOGY TRACK:
Product Development And Systems Engineering</td><td>BUSINESS DEVELOPMENT TRACK:
The Sustainable Transportation Technology Landscape</td></tr>
<tr><td>9:30</td><td rowspan="2">Tea Break</td></tr>
<tr><td>10:00</td></tr>
<tr><td>10:30</td><td colspan="2" rowspan="3">Tea Break</td><td rowspan="2">TECHNOLOGY TRACK:
Rechargeable Energy Storage Systems</td><td rowspan="2">BUSINESS DEVELOPMENT TRACK:
The Sustainable Transportation Technology Landscape</td></tr>
<tr><td>11:00</td></tr>
<tr><td>11:30</td><td colspan="2" rowspan="2">PLENARY SESSION:
Energy Management</td></tr>
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<tr><td>13:00</td><td colspan="2">Lunch</td></tr>
<tr><td>14:00</td><td rowspan="3">TECHNOLOGY TRACK:
Energy Storage</td><td>BUSINESS DEVELOPMENT TRACK:
Finance, Equity, Investment Capital and services</td><td rowspan="2">TECHNOLOGY TRACK:
Fuel Cells</td><td rowspan="2">BUSINESS DEVELOPMENT TRACK: International Invention & Patent Activity</td></tr>
<tr><td>14:30</td><td rowspan="2">BUSINESS DEVELOPMENT TRACK:
Round Table Discussion</td></tr>
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Connectivity</td><td rowspan="3">BUSINESS DEVELOPMENT TRACK:
International Invention & Patent Activity</td></tr>
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<tr><td>16:00</td><td rowspan="3">TECHNOLOGY TRACK:
Panel Discussion</td><td rowspan="3">BUSINESS DEVELOPMENT TRACK:
Round Table Discussion</td></tr>
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Registration

SEPT	23	Tuesday	17:00-20:00
SEPT	24	Wednesday	8:00 - 17:00
SEPT	25	Thursday	8:00 - 12:00
SEPT	26	Friday	8:00 - 12:00

Contact SAE International China Office

Mr. Rick WANG
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EVENT OVERVIEW

TIME	SEPT 26,2014 FRIDAY Located on Shanghai Automotive Industry Financial Center
9:30	
10:00	IN-DEPTH SESSION ON TECHNOLOGY TRANSFER
10:30	
11:00	Tea Break
11:30	IN-DEPTH SESSION ON TECHNOLOGY TRANSFER
12:00	
12:30	Lunch
13:30	
14:00	IN-DEPTH SESSION ON TECHNOLOGY TRANSFER
14:30	
15:00	Tea Break
15:30	IN-DEPTH SESSION ON TECHNOLOGY TRANSFER
16:00	

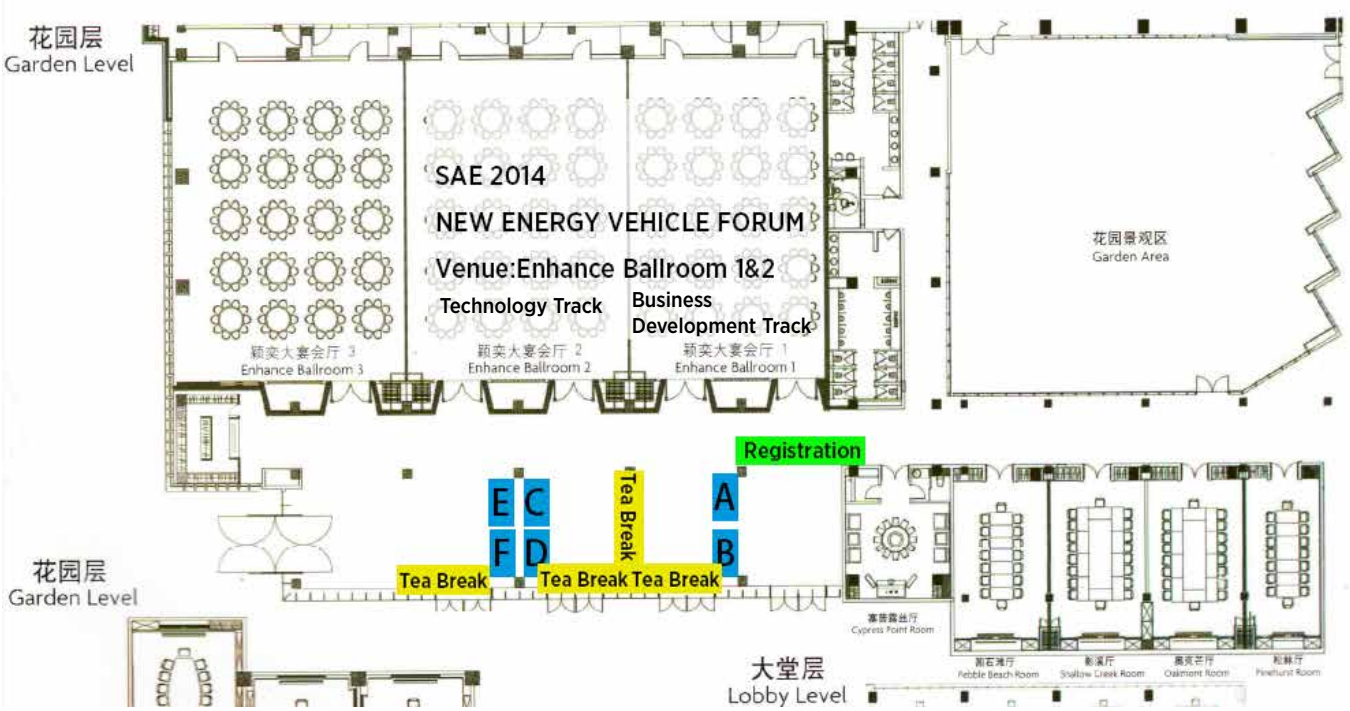
Emergency Procedures During the SAE 2014 New Energy Vehicle Forum

During the SAE 2014 New Energy Vehicle Forum attendees are to follow the established emergency guidelines of the facility where the emergency occurs. Based on the location of the incident, report emergencies to the nearest venue representative and/or security personnel if available, or report to the SAE registration desk.

Should a catastrophic event occur, attendees should follow the safety and security instructions issued by the facility at the time of the event. This includes listening for instructions provided through the public address system and following posted evacuation routes if required.

In the event of an emergency or a major disruption to the schedule of events at the Crowne Plaza Shanghai Anting Golf, attendees and exhibitors may call this number to receive further information about the resumption of this event. Updates will also be provided via the SAE website at www.sae.org.

FLOOR PLAN



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WEDNESDAY SEPT 24

PLENARY: VEHICLE AND POWERTRAIN TECHNOLOGY TRENDS - ENHANCE BALLROOMS 1 & 2

09:15

Development Trend of New Energy Vehicle and Related Policies
Dr. Zhixin WU, Vice President, China Automotive Technology and Research Center (CATARC)

09:45

Challenges and Opportunities of Electric Vehicles
Dr. Zhenxing FU, Director, Powertrain Systems, SAIC

10:15

US Experience in EV Charging Infrastructure
Matt Crossley, Director GM China Engineering and Electrification, General Motors

PLENARY: ENERGY MANAGEMENT - ENHANCE BALLROOMS 1 & 2

11:00

Semiconductors as enablers for Fuel Efficient Powertrains in Traditional and in New Energy Vehicles
Dr. Dusan Graovac, Head of System Engineering, Infineon

11:30

Increasing Efficiency of Electric Vehicle Powertrain using IGBT inverters
Christian Pronovost, Project Strategy Manager, TM4

12:00

How Energy Storage and Power Delivery Solutions Spur Start-Stop Growth
Thomas Puza, Director of Applications Engineering, Maxwell

12:30

Supercapacitors in Hybrid Vehicles: Passenger Cars and Transit Buses
Dr. Andy Burke, Institute of Transportation Studies, UC Davis

WEDNESDAY SEPT 24

TECHNOLOGY TRACK: ENERGY STORAGE- ENHANCE BALLROOM 2

14:00

Simulation of Battery Cells Design to Improve the Understanding Technology and Cost

Markus Hackman, Partner, P3 Automotive GmbH

14:30

Cheaper xEV batteries via Chemistry Standardization

Tae-Kyun Kim, Sales director, Asia Umicore Rechargeable Battery Materials

15:00

Hydrogen and Electrochemical Energy Storage at Oak Ridge National Laboratory: Enabling Widespread Fuel Cell and Battery Electric Vehicle Commercialization

David Wood III, Senior Staff Scientist and the Fuel Cell Technologies Program Manager, Oak Ridge National Lab

15:30

Finally, It's China's Time To Lead

Steven CAI, Assistant To CEO, Contemporary Amperex Technology Limited (CATL)

16:15

Panel Discussion: E-Mobility- Opportunities and Challenges

Moderator: Keith Wilson, SAE International

Panelists: Richard Byczek, Intertek; **Steven CAI,** Contemporary Amperex Technology Limited; **Zhenxing Fu,** SAIC; **Markus Hackman,** P3 Group

BUSINESS DEVELOPMENT TRACK: FINANCE, EQUITYINVESTMENT, CAPITAL AND SERVICES - ENHANCE BALLROOM 1

14:00

In Recent Years China Overseas Technology Mergers and Acquisitions Analysis

Dr. Hui LIN, Operation and General Manager, Shanghai United Assets and Equity Exchange

14:15

Analysis of New Energy Vehicle Industry Chain

Dr. Peng ZHOU, CEO, SINOEV Technologies, Inc.

14:30

Volvo's New Energy Vehicle Strategy

Fang SHUI, R & D center director, Volvo Car (China)

14:45

Panel Discussion: Investment Opportunities in New Energy Vehicle Industry

Panelists: Yingjie LIANG, Partner, KPCB; **Yan ZHU,** Partner, Tsing Capital; **Zhuo CHEN,** Vice President, BAIC Investment; **Junhao ZHAO,** Senior Investment Director, Fosun International; **Junchao ZHANG,** General Manager, International dept. SUAEE

16:15

Panel Discussion: Explore the Effective Development Mode of New Energy Vehicle in China

Panelists: Hanwei XU, CEO, EVBUY; **Chen ZHANG,** CEO, Auto Linked; **Jun ZHU,** CEO, Skyline Automotive; **Fengjuan ZHENG,** eHi Car Services

WeChat Accounts: SAEINTL

THURSDAY
SEPT 25

TECHNOLOGY TRACK: PRODUCT DEVELOPMENT AND SYSTEMS ENGINEERING - ENHANCE BALLROOM 2

09:00
Functional Testing of Complete Vehicle Systems
Thomas Weck , ELE & Powertrain Integration Manager, AVL GmbH

09:30
How to test Hybrid/Electric Vehicle controllers in virtual
Dr. Weiwei XIONG, Project Manager, ETAS

10:00
Abuse Testing of XEVs at the Vehicle Level – Seawater Immersion
Erik Spek , Chief Engineer, TUV SUD Canada

TECHNOLOGY TRACK: RECHARGEABLE ENERGY STORAGE SYSTEMS - ENHANCE BALLROOM 2

10:45
Analysis of Compound Energy Storage System with Lithium Battery and Ultracapacitor for Plug-in hybrid Vehicles
Dr. Jianqiu LI, Professor of the Department of Automotive Engineering, Tsinghua University

11:15
SAE Rechargeable Energy Storage System (RESS) and SAE EV / EVSE Interoperability Cooperative Research Projects
Keith Wilson, Project Manager, Technical Programs Global Ground Vehicle Standards, SAE International

11:45
EV Battery Standards: Stranded Energy and Standards Gap Analysis
Richard Byczek, Global Technical Lead Electric Vehicle & Energy Storage, Intertek

TECHNOLOGY TRACK: FUEL CELLS - ENHANCE BALLROOM 2

13:45
U.S. Department of Energy Hydrogen and Fuels Overview
Fred Joseck, Lead Technology Analyst U.S. Department of Energy

14:15
Fuel Cell Vehicle Development at SAIC Motor Corporation
Dr. Chengdong HUAN, Deputy General Manager SAIC

TECHNOLOGY TRACK: CONNECTIVITIY - ENHANCE BALLROOM 2

15:00
EV Charging Performance Tests: Grid quality and infrastructure compatibility
Erol Guerocak , Senior Consultant, P3 Group

15:30
Big Data Analytics for Connected EVs to enable Service Innovations
Jun ZHU, Senior Technical Staff Member & Senior Manager, IBM

16:00
Overview of Vehicle Package Space Trade-Offs and Interoperability Issues for Multiple Classes of Vehicles Using WPT
Andy Daga, CEO & Co-Founder, Momentum Wireless Power

THURSDAY
SEPT 25

BUSINESS DEVELOPMENT TRACK: The Sustainable Transportation Technology Landscape: Opportunities and Considerations - ENHANCE BALLROOM 1

09:00
Keynote Speech
Mr. Yongqing HONG, Deputy Director General of Shanghai Municipal Administration of Intellectual Property

09:30
Introduction in the Sustainable Transportation
Prof. Michael Palocz-Andresen, Lueneburg University

10:00
Electric Motor and Power Electronics Technology and Linked Landscape
Dr. Xi ZHANG, Professor Jiaotong University

10:45
Biogas Generation from Tertiary Biomass
Dr. Ziyang LOU, Professor Jiaotong University

11:15
BYD's Strength and Experience at Electric Transportation
Mr. Edward ZHOU, Senior PR Manager

11:45
Renewable Energy use and Landscape
Prof. Michael Palocz-Andresen, Lueneburg University

BUSINESS DEVELOPMENT TRACK: INTERNATIONAL INVENTION AND PATENT ACTIVITY - ENHANCE BALLROOM 1

13:45
Patent and Innovation
Prof. Michael Palocz-Andresen, Lueneburg University

14:15
Patent Wars and Electric Vehicles
Asher Bennett, CEO, Teva Motors Ltd

15:00
Experiences of a Shanghai Patent Attorney
Mr. Guozhong Guo, Shanghai Hangsome Intellectual Property Agency co., LTD

15:30
Team Work: How can I write my own patent

FRIDAY
SEPT 26

IN-DEPTH SESSION ON TECHNOLOGY TRANSFER

09:30
Introduction in Technology Transfer from China to Abroad
Prof. Michael Palocz-Andresen, Lueneburg University

10:00
Solar Cells for Alternative Mobility
Mr. Liang XU, SolarZoom

10:30
Technology Transfer in China
Dr. Hui LIN, Operation and General Manager, Shanghai United Assets and Equity Exchange

11:15
Platformization Technologies of Electric Vehicles
Prof. Chengliang YIN , JiaoTong University

11:45
Business Models
Prof. Michael Palocz-Andresen, Lueneburg University

13:30
Technology Transfer From China to Abroad
Prof. Michael Palocz-Andresen, Lueneburg University

14:00
Technology Transfer in the Automotive Industry
Dr. Vasco Schirrmacher, Project Manager for High Voltage Applications IAV Shanghai

14:30
Assessment of Vehicle Emission Contribution and Reduction Potential of Environmental Friendly Vehicles
Dr. Cheng HUANG, Deputy Director, SAES

15:15
Free Discussion Between Professors and Attendees
Interaction between Speakers and audience

* **The September 26th in-depth session on technology transfer will be hosted in Shanghai Automotive Industry Financial Center (SAIFC)**
Address: 5666 Caoan Road, JiaDing District, Shanghai, China
(Nearby Anting Subway Station, Line 11)

Vehicle Lightweighting
Energy Savings &
Emission Reduction

SAE 2014 ENERGY SAVINGS & EMISSION REDUCTION FORUM

节能减排技术论坛

November 5-6, 2014
Shanghai New International Expo Center, Shanghai, P.R. China

Hosted by: SAE International

FORUM HIGHTLIGHTS:

- **California Air Source Board** (CARB) will provide an **in-depth insight on Assembly Bill 32 (AB32)**, and introduce a series of experiences, achievements and future trends from implementing AB 32 in California.
- **Prof. Frank ZHAO** from Tsinghua University will **share with you the fuel economy strategies of Chinese automobile market in 2020**, technology strategies for OEMs to enter Chinese market and the standard that requires the **fuel consumption** of passenger cars to be **lower than 5L/100 km in 2020**.
- **Dr. Robert Wagner** from **Oak Ridge National Laboratory** will share with you future trends and opportunities of combustion and fuel technology.
- **Klaus Denkmayr**, **general manager of AVL Shanghai Tech Center**, will give an elaboration on gasoline engine emission reduction technology for passenger cars.
- How to develop cars with **less weight, better performance and higher fuel efficiency** while not compromising the safety and performance? Professors and experts from **General Motors, University of Michigan, and Alcoa Inc.** will analyze and answer the question in the lightweight section.
- **Optimizing the design of internal combustion engine and improving fuel efficiency** are two most effective methods to save energy. Experts from home and abroad (China, US, Japan, and France) will **share with you the latest technology achievements**, and give you an in-depth insight on problems and corresponding solutions involving application.
- With the vigorous development of industry in China in recent years, **CO2 and PM2.5 emission reduction and exhaust gas recirculation** are the hottest topic and the most serious concerns in this market; **experts from the US and Europe** will discuss on the innovations and requirements of local enterprises and governments from the aspects of emission reduction technology as well as laws and regulation.

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Zhixin WU, Ph.D.
Vice President
China Automotive Technology And Research Center (CATARC)

Development Trend of New Energy Vehicle and Related Policies

SEPT 24

Former Director of CATARC's Electric Vehicle Research Center, Dr. Zhixin Wu also serves as Secretary General of the EV Auto Standard Technology Sub-Committee and was a member of the strategy study for China's 863 Plan's EV Program. His areas of research include EV R&D, standards, and related policy.

Graduated from Internal Combustion Engine at Henan University of Science and Technology in 1984 and entered Luoyang Tractor Institute (LTI) as a R&D engineer in internal combustion engine department, after 3years' study in Jilin University, he got his Master Degree in internal combustion engine in 1990 and enter LTI again, focusing on Diesel engine combustion system research and design, he had been working for LTI for 10 years.

With a PhD in Internal Combustion Engine at Jiangsu University in 1997, He began working for CATARC, China Automotive Technology and Research Center, in the next 17 years, He had engaged in research work on emission control and energy saving in road vehicles and alternative fuel vehicles for 4 years and 1 year study work on automobile standardization as an Automotive Standard Institute Chief Engineer. After that, He served as Chief engineer and CEO for Tianjing Qingyuan Electric Vehicle Co., Ltd (A sub-company of CATARC) for almost 10 years, focusing on BEV and HEV research and production.

Now he is vice president of CATARC in Charge of R&D work of whole CATARC, Director of Standard sub-committee of Electric Vehicle of the State, and member of the expert group of electric vehicle of MOST and MIIT. He has participated in several strategic planning on 863 R&D programs of MOST and Long term plan of New Energy Vehicle Plan of MIIT, and also a lot of incentive NEV related policies research as a consulting expert.

Zhenxing FU Ph.D.
Director
Powertrain Systems SAIC Motors

Challenges and Opportunities of Electric Vehicles

SEPT 24

Dr. Zhenxing Fu currently is Director of Powertrain Systems, SAIC Motors. Prior to joining SAIC Motors,he was a technical specialist, technical fellow abd manager, technical specialist at DaimlerChrysler Co, Visteon, and Ford Motor Co, respectively. He has over 15 year experiences in the development of hybrid and electric powertrain systems specializing in energy storage, energy transmission, and energy conversion systems, as well as vehicle torque security and high voltage safety. He has published over 35 technical papers in the field and hold 6 US patents. He is a senior member of IEEE and a member of Sigma XI.

ABSTRACT

This presentation analyzes the current state of art technologies used in today's electric vehicles and key components, their technology limitations, and challenges encountered by the whole industry, such as power batteries, electric machines, power electronics and motor controls, high voltage safety, powertrain, etc. By using data and known facts, the potential influence and effects of electric vehicles, as a revolutionary product, to people's living style, infrastructure, environment and natural resource preservation, and most importantly to automotive industry are analyzed. Extended analysis is also given to demonstrate why China is perceived by most experts as the most promising region in the world to market electric vehicle products. Predictions are given for where the technological and commercial opportunities are in the electric vehicle industry.

Matt Crossley
Director GM China
Engineering and
Electrifications
General Motors

US Experience in EV Charging Infrastructure

SEPT 24

Matt Crossley was appointed director of Engineering and Electrification for GM China, effective July 1, 2013. He is based at the GM China Advanced Technical Center in Shanghai.

Earlier in his career, Crossley held various positions in North American Planning and Engineering, including chassis development, electrical release and body engineering. He also led the development of new business strategies for Telematics and Hybrid Electric Vehicles for GM Europe.

Prior to moving to Shanghai, Crossley served as director of Canadian Engineering for General Motors of Canada. He had oversight of the Canadian Regional Engineering Center and the Canadian Programs group.

Crossley has an engineering degree from the University of Waterloo.

ABSTRACT

US DOE initiated an EV project in 2013 to understand EV drive and charging behavior. Over 4,000 Leafs and near 2,000 Volts from various regions in the U.S. enrolled the project. The presentation will report some findings from this EV project; discuss home vs. workplace vs. public charging. The presentation will also discuss the combined charging system.

Dr. Dusan Graovac
Head of System Engineering
Automotive Division, Infineon

Semiconductors as enablers for Fuel Efficient Powertrains in Traditional and in New Energy Vehicles

SEPT 24

Dr. Graovac received his PhD, from University of Novi Sad, Serbia. After graduated from University, Dr. Graovac started his professional career in teaching and research at Chair for Power Electronics, Institute for Power- and Electronics Engineering, University of Novi Sad, Serbia in 1995, where his focus was on grid connected power electronics and electric drives. Early 2001. he moved to Germany, where for 5 years he was Research & Development head for Tier 1 companies in power electronics applications like electric motor drives, railway, automotive, airborne systems and superconductors (Baldor Motors and Drives, Atena-MTU, Transtechnik GmbH & Co KG). Graovac joined Infineon Technologies beginning of 2006. First 3.5 years he spent as Principal Engineer for Automotive Application Engineering. Next station of his professional life was Head of Product Marketing for business line Electric Drive Train, Automotive, with global marketing responsibility for Infineon's power products for Hybrid- and Electric Vehicles. Beginning 2013. he was appointed as Head of System Engineering for Automotive Division of Infineon Technologies AG.

Dr. Graovac is IEEE Senior Member and has published over 80 scientific and marketing papers and holds several patents.

ABSTRACT

The aim of this presentation is to present the semiconductors based solutions for fuel efficient powertrains. Special focus is given to CO_2 reduction. Worldwide trends and efforts for CO_2 reduction, including legislations in different countries will be reviewed. After that, an overview of technical solutions for traditional vehicles will be given: engine optimization, Air Drag, Transmission, Power on Demand and Micro Hybridization. The system solutions will be translated into semiconductor requirements and the current and next generation semiconductor technologies will be presented. 48V hybrid, as well as high voltage hybrid and electric vehicles will be reviewed next, where the individual systems (traction, DC/DC and auxiliaries) will be addressed from the semiconductor point of view. In the end, functional safety requirements on the semiconductor components will be presented.

Christian Pronovost
Product Strategy Manager
TM4

Increasing Efficiency of Electric Vehicle Powertrain using IGBT inverters

SEPT 24

Christian Pronovost received a B.S. degree from École Polytechnique de Montréal in Canada in 1992. Mr. Pronovost has been with TM4 since 1998 as senior electrical engineer. He has been involved in the design of the core technology of current motors and inverters for automotive electric powertrain technologies. He is currently working as Product Strategy Manager for TM4's product line; he is acting as lead product engineer defining market needs and innovative solutions.

ABSTRACT

With the rising cost of semiconductors and limited space for power inverters in electric and hybrid vehicle applications, the demand for efficient power electronics is increasing. Greater efficiency has a direct impact on the required size of both the surface area of the semiconductors and the cooling system. Power electronics efficiency also has a great impact on other powertrain components like the battery capacity further increasing the need for higher efficiency.
This presentation discusses the different solutions used today that allows improved IGBT switching losses and expresses the limitations of these solutions. The new Reflex Gate Driver Technology is presented with description on how it can significantly improve IGBT switching losses. Reflex gate driver technology allows up to twice as much output current from the same IGBT die surface area. Additional improvements are presented like the use of variable switching frequency and optimized control algorithms for better energy management.

Thomas Puza
Director of Applications Engineering
Maxwell

How Energy Storage and Power Delivery Solutions Spur Start-Stop Growth

SEPT 24

Thomas Puza is Director of Applications Engineering of Maxwell with over 25 years of experience in the automotive electronics and energy storage industries driving revenue growth, market development, product development and profitability in a variety of general management, engineering and operations leadership positions. Previous to joining Maxwell, Thomas served as COO VP Operations at Premium Power, a flow battery company, and as Chief Operating Officer at International Battery, a Lithium Ion growth business where he corrected engineering issues across the company's projects and ramped up production and sales. Prior to joining International Battery, Thomas was Director of Engineering at EnerDel, another Lithium Ion technology business. At EnerDel, he established Systems Engineering, launched volume EV battery products and secured major business on new transportation customer accounts.

Thomas has significant expertise in transportation sector global sales, automotive product development methods, lean operations methods and value stream management. He spent over 25 years in increasing roles of responsibility at Delphi Electronics & Safety and General Motors including three years resident in Japan where he directed Asia Pacific engineering. Upon his return, he directed the global engineering activities of Delphi's Entertainment and Communications business introducing a number of innovative new products and leading a global staff of engineers. Later he led the P&L for Global Telematics and North/South American Entertainment and Communications business where he rejuvenated Delphi's OEM telematics business, built growth positions with European and Japanese OEM's and turned around unprofitable South American operations. He is a big believer in customer focus, technology application and high performance teams.

Thomas earned a Masters in Business Administration from University of Michigan, Ross School of Business and a Bachelor's degree in Mechanical Engineering at Kettering University.

Dr. Andrew Burke
Institute of Transportation Studies
University of California

Supercapacitors in Hybrid Vehicles: Passenger Cars and Transit Buses

SEPT 24

Dr. Burke holds B.S. and M.S. degrees in Applied Mathematics from Carnegie Institute of Technology, a M.A. degree in Aerospace Engineering and a Ph.D. in Aerospace and Mechanical Sciences from Princeton University. Since 1974, his career work has involved many aspects of electric and hybrid vehicle design, analysis, and testing. Dr. Burke has authored over 120 reports and papers on electric and hybrid vehicles, batteries, and ultracapacitors. He joined the Research Faculty of the Institute of Transportation Studies at UC Davis in July 1994. He has performed research on and taught graduate courses on advanced electric driveline technologies specializing on batteries, ultracapacitors, fuel cells, and hybrid vehicle design, control and simulation.

ABSTRACT

The use of supercapacitors in hybrid vehicles is considered both in place of batteries and in combination with batteries. The performance of commercially available cells and modules and advanced proto-type devices are presented based primarily on test data taken at UC Davis. The energy density of the carbon/carbon EDLC devices is 4-5 Wh/kg and that of hybrid devices is much higher being 10-12 Wh/kg for lithiated graphite/carbon devices and up to 30 Wh/kg using carbon mixed with metal oxides. The power capabilities of all of these supercapacitors are high being 2 kW/kg and higher for 95% charge/discharge pulses. Most of the applications of supercapacitors in vehicles have been in transit buses. In some cases, the vehicles have utilized series-hybrid powertrains with the supercapacitors providing the high currents during acceleration and recovering energy from regenerative braking. In other bus applications, the supercapacitors are used alone for energy storage and they are recharged often when the bus is stopped to transfer passengers. Both types of applications are in service in China. The design and operation of buses in both of these applications are analyzed based on simulations and available test data. The advantages of using high energy density supercapacitors in bus applications are discussed. Computer simulations of passenger vehicles (cars and SUVs) using supercapacitors in both series and parallel hybrid drivelines are presented and the fuel economy improvements are projected for various driving cycles. When comparable test data are available, they are compared with the simulation results. The advantages and disadvantages of using supercapacitors in place of batteries in hybrid vehicles are considered.

Markus Hackmann
Partner
P3 Automotive Group

Simulation of Battery Cells Design to Improve the Understanding Technology and Cost

SEPT 24

M.Eng. Markus Hackmann is leading the e-mobility group at P3 of around 100 technology consultants since 8 years.

He has consulted various customers in the world within the automotive and energy sector due to his longstanding expertise in the field of Lithium batteries, charging of electric vehicles and brought 6 electric cars into the market. Markus Hackmann graduated at Newcastle University.

ABSTRACT

Second generation electric vehicles are currently developed at the leading OEM's. The key component is the battery cell, for which suppliers promise energy densities of up to 250 Wh/kg in 2016 at costs of approximately $200. Using basic cell information and reverse engineering a software tool developed by the P3 Group is used to gain a better technology understanding of the cell and it is fit to the suitable application. With the output data from this tool, a cost model can be used to gain quite precise cost estimations. Benchmark tests have been performed, in the P3 test facilities in Aachen to challenge and improve the simulation model with real life tests. A selection of these results will be presented. This combination gives a unique possibility to reveal in more detail the secrets of first battery cells and later, the entire battery system.

Tae-Kyun Kim
Sales director for Asia
Umicore Rechargeable Battery Materials

Cheaper xEV batteries via Chemistry Standardization

SEPT 24

TaeKyun Kim joined Umicore in 2004 and took a position of sales managers for broader range of products such as brazing alloys, contact materials and sputtering targets. In 2010 he joined to the business unit 'Rechargeable Battery Materials' and now he is leading sales activities in Asia for its cathode materials.

According to Umicore's business strategy he is actively promoting NMC materials for automotive Li-ion batteries and trying to find the way to contribute the growth of electric vehicle industry. He majored in materials engineering in SungKyunKwan University and graduated in 1996.

ABSTRACT

Electric drivetrain cost reduction is considered as the main driver for mass market electric vehicle adaption. However, only after mass market adoption has happened, the necessary production volumes will be present to benefit from the economies of scale.
How to get out of this Catch 22 situation? Increasing use of common platforms and standardization of cells will be one of the most important steps in this process. There is a clear trend in the automotive cell industry towards the usage of NMC based cells in a VDA format for future designs.
The combination of acceptable safety performance in combination with good energy & power densities provide a future-proof platform that will significantly bring down te $/kWh.
This presentation explores the following topics in more detail:

- Presenting Umicore, global leader in active battery materials
- Taking a historic perspective on different mixed chemistries (LMO/NCA/NMC/LCO)
- The Lithium Iron Phosphate case
- NMC as the main development platform for the next decade
- Technical challenges in the next 5 years
- Why the so-called "alternatives" are still not there.

David Wood III
Senior Staff Scientist
the Fuel Cell Technologies Program Manager
Oak Ridge National Laboratory (ORNL)

Hydrogen and Electrochemical Energy Storage at Oak Ridge National Laboratory: Enabling Widespread Fuel Cell and Battery Electric Vehicle Commercialization

SEPT 24

David Wood is researching advanced processing methods, manufacturing science, and materials characterization for secondary lithium ion batteries and low-temperature fuel cells in Oak Ridge National Laboratory (ORNL). He is a well-known polymer electrolyte fuel cell (PEFC) researcher with an industrial and academic career that spanned from 1995 to 2009. From 1997 to 2002, he was employed by General Motors Corporation and SGL Carbon Group, excelling at applied R&D related to automotive and stationary PEFC technology. Later work (2003-2009) at Los Alamos National Laboratory (LANL) and Cabot Corporation focused on elucidation of key chemical degradation mechanisms, development of accelerated testing methods, and component development. He also specializes in experimental design, materials characterization, mass-transport phenomena, porous media characterization, surface chemistry, electrode preparation, corrosion analysis of thin films, and electrochemical measurement techniques. He was part of two LANL research teams that won the DOE Hydrogen Program R&D Award for outstanding achievement in 2005 and 2009. He was also part of the Cabot Corporation Direct Methanol Fuel Cell team, which won the Samuel W. Bodman Award for Excellence in 2008. Dr. Wood was recently the 2011 winner of the ORNL Early Career Award for Engineering Accomplishment and led a team that won both a 2013 R&D 100 award and 2014 Federal Laboratory Consortium (FLC) award with Porous Power Technologies. Dr. Wood has 9 issued patents and patent applications, 33 refereed journal articles and transactions papers, 2 book chapters, 60 technical presentations, and a personal publication impact factor of 70.3. Since 2009, he has managed an average annual ORNL budget of $6-8M related to hydrogen infrastructure issues, polymer electrolyte fuel cells, and lithium ion batteries.

ABSTRACT

Oak Ridge National Laboratory (ORNL) is actively contributing to the materials and component development that will make low-cost battery electric vehicles (BEVs) and fuel cell electric vehicles (FCEVs) available to the general public. For widespread commercialization of BEVs and FCEVs, cost targets of about $200/kWh and $30/kW, respectively, must still be achieved. This presentation will cover two major efforts at ORNL related to lowering the electrode production cost for BEV lithium-ion batteries by up to $111/kWh and reducing the carbon-fiber cost for FCEV on-board composite hydrogen storage tanks by 25-30%.

Finally, It Is China's Turn To Lead

SEPT 24

Steven CAI
Assistant To CEO
Contemporary Amperex Technology Limited

Steven Cai is currently working at Contemporary Amperex Technology Limited as the director of engineering responsible for the design and validation of li-ion battery systems for EV and grid applications. In recent years, Steven has been actively involved in China's battery related standard setting activities and is well respected as one of the battery systems expert in China. Prior to joining CATL in 2012, Steven held a management position at General Motors North America Engineering Center, responsible for the design and release of GM's PHEV and EV battery packs. He has 20 years of automotive experience with a focus of li-ion battery in the past 7 years

ABSTRACT

Driven by heavy air pollution and high price(both economically and politically) that China had to pay to keep the imported oil flow into the country, the central government is now more determined than ever to push the car makers to electrify their fleet. State and local governments are using all the tools at their disposal to encourage the vehicle OEMs to move faster. This presentation will analyze the key market drivers that are enabling this revolution, as well as review the key technology trend of the most important component for vehicle electrification – Li-ion battery.

Dr. Lin HUI
Director of Technology Property Rights Transaction SUAEE

In Recent Years China Overseas Technology Mergers and Acquisitions Analysis

SEPT 24

Dr. Lin Hui holds Bachelor's Degree of Biological Sciences, Master of Laws and a PhD in Sciences , and is a Senior Engineer and Technology Consultant. Now he is Director of Technology Property Rights Transaction and Operation and General Manager of SUAEE. Dr. Lin has long been undertaking theoretical research and practices of technological property rights transaction, commercialization of research findings, protection of IPRs and technology management. He is also in charge of related research on various subjects of different levels, and participates the research and drafting of related national, provincial and departmental policies, and facilitate technology M&As for domestic and abroad enterprises as well as science and technology program financing.

ABSTRACT

Dr. Lin Hui will first review the general background and development history of China's property right market and Shanghai United Assets and Equity Exchange (SUAEE). Then, based on a briefing upon the operation models and functions of SUAEE, he will talk about how has the property right market, which is fundamental but at the same time looking at investors' rights and benefits, helped Chinese enterprises' overseas mergers and acquisitions (M&A) with comprehensive services and trade models. He will also interpret the professional platform of intellectual property right transfer from the perspective of SUAEE and make analysis on some successful cases and share some key points related.

Dr. Peng ZHOU
Chairman, CEO and CTO SINOEV Technologies, Inc.

Analysis of New Energy Vehicle Industry Chain

SEPT 24

Dr. Peng Zhou is Chairman, CEO and CTO of SINOEV Technologies, Inc., a Tier-1 battery systems supplier. Prior founding SINOEV in 2009, Dr. Peng Zhou was Director, Research and Development at Tesla Motors, Inc. (TSLA). Dr. Zhou received his PhD in Mechanical Engineering from Stanford University and MS and BS degree from University of Science and Technology in China.

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SHANGHAI

SAE 2014 Vehicle Electronics and Powertrain Technologies Forum

December 10-11, 2014

Holiday Inn Shanghai Jinxiu Hotel
No.399 Jinzun Road, Pudong New Area, Shanghai, China

FORUM TOPICS

- Market & Challenges for EREV, BEV & FCEV
- Electric/Electrified powertrain technologies
- CAAMC Awards Ceremony
- Electric motor controls advancement
- Battery management
- 48V-hybridization architecture
- Engine control
- Transmission control
- Start-stop applications
- Fuel cell control systems
- Systems Engineering
- Advances in power electronics

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Thomas Reinhold WECK
ELE & Powertrain Integration Manager
AVL GmbH

Functional Testing of Complete Vehicle Systems

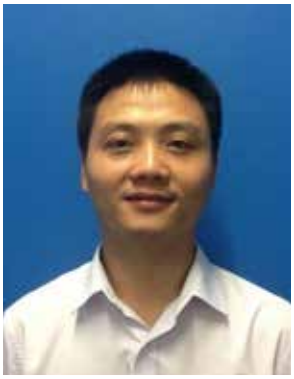
SEPT 25

AVL GmbH Thomas Reinhold WECK joined AVL Graz/Austria in 2010 as E/E & Powertrain Integration Manager of Powertrain and Hybrid System.

Prior to joining AVL Graz/Austria, Thomas Reinhold WECK has served as Transmission & Powertrain Development Engineer, PD, FORD Cologne/ Germany & FORD Dunton/ England. And then Senior Engineer, Global Vehicle Dynamics, Advance Engineering, and Supervisor, Vehicle Control Systems / Vehicle Dynamics, PD, FORD Cologne/Germany. From 2006 through 2010, Thomas Reinhold WECK had served as the Supervisor, Electrical Development, PD, FORD Melbourne/Australia, and Product Manager & Team Leader, Transmission Integration, AVL Graz/Austria.

ABSTRACT

The development of hybrid and plug-in hybrid powertrains for series production requires additional effort in design, specification, integration and testing. The presentation reveals how systems engineering and system simulation contribute to robust and reliable implementation not only in the specification phase, but how systems engineering and simulation can be used and results can be re-used throughout all development stages which is specifically critical for plug-in hybrid applications with larger capacity high voltage batteries.
As an example extensive vehicle level testing on the powertrain test bed was performed to confirm that the hybrid powertrain operates as expected under normal, stress and failure conditions. Important for the test preparations were the system analyze of hybrid functionalities and interactions to other vehicle control systems with the aim to identify all possible internal states and transitions.
Control and noise factors, normally defined during the design and specification phase, are now used to define the test catalog; therefore real-life test coverage is achieved. The methodology requires a respective simulation and test environment with interfaces to the Unit Under Test with regards to automation and efficient execution of very large number of tests. With the development and introduction of plug-in hybrid applications, the vehicle and powertrain is used in different operating modes for extensive periods of time. While the vehicle customer expects performance, fuel economy and a reliable operation, the control systems underneath have to interact with each other and perform diagnostics to make sure emissions and durability are guaranteed. It is obvious that such complex systems require efficient and effective development procedures, methods and tools to be signed-of ready for production.
This requires a highly flexible maneuver- and event based testing environment: The “real Unit Under Test” at the test bed (the powertrain) exchanges real-time information (torque, speed, ...) with the “virtual UUT” (the rest-of-the-vehicle) and the virtual proving ground (road, traffic, environment, driver and maneuver control). A layer called “Test Manager” acts between Requirement Management Systems and test execution. Entire “test catalogues” with thousands of test-runs are managed in a comprehensive and flexible manner.
It is difficult to underestimate the consequences of this approach: New product development and testing economics are at work here. When the differences between real- and virtual world disappear, when it is possible to switch to and from real and virtual components just by one mouse clicks – the entire economics of how we develop powertrains could be changed. It could be switched from an anticipatory, prescriptive style to an adaptive style of development. It could switch from a process based on the traditional “define-design-build” to one based on continuous adaption: “envision-explore-refine”.



Dr. Weiwei XIONG
New Energy Project Department project manager
ETAS Automotive Technology (Shanghai) Co., Ltd.

How to test Hybrid/Electric Vehicle controllers in virtual

SEPT 25

Dr. Weiwei Xiong graduated from Shanghai Jiaotong University in 2009, received his Ph.D. in engineering vehicles. Now he is working for ETAS Automotive Technology (Shanghai) Co., Ltd. (Bosch Group) As New Energy Project Department project manager, in charge of the promotion of new energy automotive business and project management. Prior to joining the Bosch Group, he served as the development manager and project manager in electric vehicle research and development center of Chinese Academy of Science and General Electric. Dr. Weiwei Xiong has 8 years' working experience on development and management in the field of hybrid / electric vehicle system structure, vehicle controllers and battery management systems, etc.

ABSTRACT

Different from the normal Hardware-in-Loop tests on the Electric Control Units in the traditional vehicles, many challenges are introduced for the New Energy Vehicles. For example, the high voltage signals for the Battery Management System, the high-frequency control signals from Motor Control Unit and many special signals with high precious as well the complicated model requests. Target to the application requirements from the virtual test for New Energy Vehicles, ETAS promoted and developed a series of HiL test solutions.

Erik Spek
Chief Engineer
TÜV SÜD Canada

Abuse Testing of XEVs at the Vehicle Level – Seawater Immersion

SEPT 25

Mr. Spek is Chief Engineer for TÜV SÜD Canada, a member of the global TÜV SÜD third party testing services organization for cell and battery manufacturers, vehicle OEMs and utility grid users of energy storage systems. He is also a consultant in the field of energy storage systems focusing on applications, verification testing, cell and battery production facilities safety and sodium ion battery development. Mr. Spek is co-holder of a patent for next generation sodium metal chloride architecture for low cost and very high energy density. He has authored articles on Weibull statistics for battery life and BEV range modeling and has been active in the battery industry since 1984. Mr. Spek is a member of SAE International and is a Certified Manufacturing Engineer with SME. He received an M.A.Sc. from the University of Waterloo and is a registered Professional Engineer in Ontario, Canada.

ABSTRACT

In the Automotive industry, DVP&Rs (Design Verification Plan and Report) consider most conceivable abuse circumstances for xEVs such as electrical, thermal and mechanical abuse. The scope of products which are subjected to these DVP&Rs range from single battery cells up to full vehicles. However, man and nature sometimes present circumstances that have not been tested for or are deemed to be so infrequent that they are insignificant. One of these cases is the immersion of complete xEVs in seawater in circumstances similar to those encountered during Hurricane Sandy in Port Newark, New Jersey. This paper describes immersion tests performed on twelve different xEVs and the consequences of the tests. The tests were performed in both winter and summer. A study of the current related immersion test standards was also completed to help make decisions on the relevance of these tests.

Dr. Jianqiu LI
Professor of the Department of Automotive Engineering, Tsinghua University

Analysis of Compound Energy Storage System with Lithium Battery and Ultracapacitor for Plug-in hybrid Vehicles

SEPT 25

Dr. Li Jianqiu, Professor of the Department of Automotive Engineering, Tsinghua University, member of IEEE, SAE and CSAE. He received his double B.S. (ICE & Automatic Control Engineering) in 1995, got his Ph.D. (Power Machine and Engineering) in 2000, Tsinghua University. In 2004 he was the visitor of RWTH-Aachen, Germany. His main research is focus on the electronic and control system of automotive powertrain. Currently he is the team leader of Fuelcell City Bus Program supported by MOST and Beijing Government. He obtained 2 times of National Invention Award (Class 2), the Award of Outstanding Young Scientist of Chinese Automotive Industry, and the Mao Yi-sheng Beijing Young Scientist Award. He has published about 120 papers and about 80 papers were cited by SCI/EI.

ABSTRACT

In China the ultrocapacitor had been widely used in hybrid city bus as the energy storage system (ESS). Compared to the lithium batteries, the ultrocapacitor is higher charging/discharging efficiency, wider operating temperature range-especially suitable for low temperature conditions, and longer lifecycle and higher power density. But the energy density is significant lower than lithium batteries, which limits its applications in Plug-in hybrid vehicles. How to combined the advantages of battery and ultrocapacitor, and integrate them together to construct a Compound Energy Storage System (CESS) in plug-in vehicles to improve the performance, will be described in this report. The different architecture and configuration of CESS will be analyzed and compared in this presentation. To obtain better fuel consumption, lower cost and longer lifecycle than lithium batteries, a new CESS will be presented in this report.

Richard Byczek
Global Technical Lead,Electric Vehicle & Energy Storage Interek

EV Battery Standards: Stranded Energy and Standards Gap Analysis

SEPT 25

Rich Byczek is the global technical lead for electric vehicle and energy storage at Intertek. He has 19 years of experience in product development and validation testing, ten of which have been spent at Intertek. Rich is also an expert in the areas of energy storage, audio equipment and EMC. Rich sits on several SAE, IEC, UL and ANSI standards panels. He holds a Bachelor of Science in Electrical Engineering from Lawrence Technological University in Southfield, Michigan, and is based at the Intertek facility located in Plymouth, Michigan.

ABSTRACT

What exactly is stranded energy, and why does it matter? After an automobile accident, residual charge is left in an electric vehicle's battery. This stored energy cannot be directly accessed and becomes stranded, posing a potential shock or fire hazard. Secondary responders including tow truck operators, dealerships and vehicle repair shops are all placed at great risk. Ensuring the safety of secondary responders and others that come into contact with stranded energy is crucial. This presentation provides an overview of the gaps identified in current electric vehicle standards and the ongoing efforts by industry and regulators to address these gaps related to Stranded Energy.

Keith Wilson
Project Manager, Technical Programs
Global Ground Vehicle Standards
SAE INTERNATIONAL

SAE Rechargeable Energy Storage System (RESS) and SAE EV / EVSE Interoperability Cooperative Research Projects

SEPT 25

Keith is a Project Manager for Technical Programs at SAE International. Keith coordinates projects and standards activities related to advanced vehicle technologies. He is involved in developing innovative business strategies surrounding various vehicle technologies such as advanced vehicle safety systems, connected vehicle technology, electro-mobility (including hydrogen fuel cell vehicles and lithium ion battery systems), chassis systems and materials/processes. Keith's role at SAE International also includes responsibility for new industry business initiatives including obtaining funding support for verification of new industry standards and the management of government and industry cooperative research programs.

Prior to joining SAE International, Keith has served in automotive engineering and technical leadership positions, including Engineering Group Manager, General Motors Automotive Safety Center. Keith managed engineering/ technical groups responsible for supporting product litigation activities and product defect investigations. In addition, Keith served as Manager, Vehicle Crash Test Operations, for GM Safety and Restraints Center.

Keith earned a Master of Science in Business Administration from Central Michigan University, a Bachelor Degree in Business Management from Cleary University and a Degree in Applied Science from Oakland College.

ABSTRACT

The presentation will concentrate on a brief overview of SAE International including history, international focus and SAE electro-mobility ground vehicle standards development activities. Additionally, a synopsis of SAE global EV/Hybrid Vehicle and SAE Battery Standards will be provided.
The main focus of the presentation will provide:
An overview of an industry/government collaborative effort for the development of lithium-ion based Rechargeable Energy storage System (RESS) safety performance testing methodologies and appropriate industry metrics to evaluate the safety of Li-Ion RESS systems applicable to HEVs, PHEVs and EVs
An overview of an industry/government cooperative research project to establish requirements, specifications, test procedures and certification processes to ensure the interoperability of PEV's and PHEV's and Electric Vehicle Supply Equipment (EVSE). Attendees will gain an understanding of:
1) What are the electrification challenges SAE technical committees are working to resolve?
2) How is SAE International involved in the whole system of electrification?
3) How is SAE International engaging industry representatives in the development of Lithium-Ion based Rechargeable Energy storage System (RESS) safety performance testing methodologies and appropriate industry metrics to evaluate the safety of Li-Ion RESS systems applicable to HEV, PHEV and EV vehicles?

Fred Joseck
Lead Technology Analyst, U.S. Department of Energy

U.S. Department of Energy Hydrogen and Fuels Overview

SEPT 25

Fred Joseck is the Lead Technology Analyst of the U.S. Department of Energy Fuel Cell Technologies Office. He is responsible for all aspects of system analyses. He directs energy, environmental and economic analyses and provides recommendations on critical technical and financial decisions. Prior to joining DOE in 2004, he was employed in the petroleum refining and petrochemical industry for 28 years. During his career, he has held various engineering, operations and managerial positions. He has a B.S. degree in Chemical Engineering from the University of Pittsburgh and a Masters in Business Administration from Widener University.

ABSTRACT

An overview of the U.S. Department of Energy hydrogen and fuel cell activities will be presented, focusing on key targets and progress towards meeting those targets through the applied research and development program within the DOE Office of Energy Efficiency and Renewable Energy, the demonstration and deployment activities, and H2USA, the public-private partnership that has been formed to address barriers to hydrogen infrastructure in the U.S. The infrastructure developments for the early market launch of fuel cell electric vehicles will be discussed.

Dr. Chendong HUANG
Deputy General Manager
SAIC Motor Corporation
New Energy Vehicle &
Technique Management
Division

Fuel Cell Vehicle Development at SAIC Motor Corporation

SEPT 25

Dr. Chendong Huang received Ph.D from the University of Michigan, USA. After graduated, he joined in AMPs, Inc (a Lockheed Martin subsidiary) as Senior Engineer and involved in NASA Ice & Fire program. Later on, he joined in Ford Motor Company. He started as project Engineer, then promoted to Technical Expert. He has led Ford Fuel cell vehicle development from 2000 till 2008. In 2008 he joined in SAIC Motor Corporation as Director of Fuel Cell Vehicle and Program Management. He has led SAIC Fuel Cell Vehicle and Fuel Cell Bus program including 2010 Shanghai Expo program. In 2010, he was promoted to Deputy General Manager, New Energy Vehicle Division of SAIC Motor. He has received several awards from Ford Motor Company. He was the owner of several US patents and published many journal articles. He received SAIC Motor's President award in 2009 and Shanghai Expo Achievement Award in 2010. In 2011, he was award Shanghai Thousands Returnee Plan. Since 2011, he has led National Innovation Engineering Program on Fuel Cell Vehicle Development. He is also leading 2014-2016 MOST's Fuel Cell Technology Development program.

ABSTRACT

Fuel Cell Vehicle (FCV) has been recognized as one of the key technologies to resolve global warming and national energy security. SAIC Motor as one of the major OEMs in China has also invest heavily in FCVs. SAIC Motor started FCVs development since 2000 and has developed more than 200 FCVs so far. These FCVs have been operated in 2008 Beijing Olympic and 2010 Shanghai Expo. After 2010, SAIC Motor has developed FCV strategic plan. This plan has well established FCV technology and production road map. Following this road map, SAIC has developed 2 prototype FCVs for validation testing. In the meantime, SAIC is working with strategic partner to develop fuel cell stack and system to meet SAIC's demand. This presentation describes Fuel cell system development process including freeze start and reliability, durability test. Furthermore, this presentation gives FCV development process including vehicle freeze start test, reliability test and durability test. Test data shows FCVs are capable to operate at under zero environment. Also, reliability and durability have been significant improved.

Erol Guerocak
Senior Consultant
P3 Group

EV Charging Performance Tests: Grid quality and infrastructure compatibility

SEPT 25

Erol Guerocak has consulted various customers within the automotive and energy sector due to his longstanding expertise in the field of charging infrastructure and charging performance as well as in the development of distribution strategies of electrical vehicles.

Since then, he has supervised multiple projects in Europe, in the USA, in China and in Japan.

Erol Guerocak graduated from RWTH Aachen University as Industrial Engineer (Dipl. Wirt.-Ing.) and specialized in automotive engineering.

ABSTRACT

In view of the charging procedure of electrical vehicles (EV) the conduction of worldwide charging performance tests with a variety of pre-production EVs revealed significant issues and problems. Despite of the evolvement and employment of engineering standardizations and common norms, the operating range of EVs is still limited by the charging infrastructure and hence EVs cannot be used area-wide by customers. In fact, merely 30 percent of all charging procedures are performed sufficiently, i.e. without any incidents or malfunctions, respectively. Thus, the interoperability of the charging procedure is of crucial importance for EV customers, in order to ensure the mobility and reliability during daily operation of EVs. Within the scope of the charging performance, the P3 Group has conducted sophisticated tests on over 1500 charging stations worldwide, which has yield valuable knowledge regarding technical as well as process-related issues.

Jun ZHU
Senior Technical Staff Member
Senior Manager
IBM Research - China (CRL)

Big Data Analytics for Connected EVs to enable Service Innovations

SEPT 25

Jun ZHU is a Senior Technical Staff Member and Senior Manager at IBM Research - China (CRL) in Shanghai heading the Smart Mobility Analytics research division. He joined IBM CRL after graduation from Shanghai JiaoTong University in 2001, and has been focused on a couple of leading edge research projects including model-driven business process analytics, cloud-based service delivery platform, analytics-driven testing planning & optimization, and connected vehicle service platform & data analytics solutions. Most of the projects above were awarded the Technical Accomplishments and Outstanding Technical Accomplishment of IBM, and he has received IBM OTAA and RDA awards personally. Mr. Zhu is an IBM Master Inventor with more than 50 patents filed. He has published more than 30 papers in top international conferences and journals.

ABSTRACT

In this presentation, the speaker will share vision and practices from IBM on the convergence of Connected Vehicle (CV) and Electric Vehicle (EV) with a focus on how big data collected from connected vehicle could be analyzed to generate insights and drive effectiveness and efficiency in electric vehicles. The speaker will start from a general introduction of connected vehicle technical and leading industry practices on analyzing the connected vehicle data, and then focus on illustrating several typical scenarios of leveraging data analytics approaches to provide better experiences to EV users.

Andy Daga
CEO and Co-Founder
Momentum Wireless Power

Overviedw of Vehicle Package Space Trade-Offs and Interoperability Issues for Multiple Classes of Vehicles Using WPT

SEPT 25

Andrew Daga is the CEO and co-Founder of Momentum Dynamics, and a co-inventor of its wireless charging technology. He is a voting member of the SAE J-2954 (Society of Automotive Engineers) taskforce committee on wireless charging interoperability, and a co-chair of the commercial vehicle applications sub-committee of J-2954. He also serves on several related SAE committees which have common standard-setting interests related to wireless charging, including J-247, which has responsibility for Communication between Plug-in Vehicles and the Utility Grid. Mr. Daga has diverse professional background that includes senior corporate management for a major software company (Bentley Systems); Senior Project Engineer for major civil engineering and construction engineering firms (Raytheon, Gilbane) where he worked on diverse projects ranging from factory mega-construction projects to the design of power generation complexes in the US and Thailand. With Master's degree research at the University of North Dakota, and additional thesis work, Mr. Daga has also served as a consultant to NASA and major aerospace companies (Boeing, Lockheed), and the US Department of Defense, for a range of projects and studies, including work on the solar power array mast canister mechanism and structure for the International Space Station (shown above). This work was completed for Lockheed under extraordinary time and budget pressures and delivered in time for a major NASA Critical Design Review, which involved a clever mass-reduction strategy that leveraged the EVA capabilities of astronauts. He has also completed additional work on NASA's Constellation program working with Boeing, and is a recognized expert on astronaut human factors and system design. A study for the DOD on space-based solar power led to the original research for methods to reduce mass by substituting anovel technology for wirelessly transmitting power in space-based projects.

Prof. Michael Palocz-Andresen
Professor at the University West Hungary Sopron (Oedenburg)
Visiting Professor at Luneburg University

• Introduction in the Sustainable Transportation
• Renewable Energy use and Landscape
• Patent and Innovation

SEPT 25

Professor Palocz-Andresen studied mechanical engineering and energy systems at the TU Mining Academy Freiberg. Finishing his PhD in 1978, he later became a scientist at the University of Karlsruhe at the Engler-Bunte-Institute and received his habiliation in 1993. For Maihak AG, Hamburg, he was the head of Environmental Application Analysis. He has been a whole professor for Environment and Climate Protection at the University West Hungary Sopron (Oedenburg) since 2005. For the Leuphana University Lueneburg (Germany) he has been a visiting professor for Sustainable Transportation since 2011. At the TU Budapest he has been a visiting professor since 1997 and at the Shanghai Jiao Tong University he has been a visiting professor since March 2014.

Professor Palocz-Andresen holds 50 German and 3 international patents, which are registered in approximately 40 countries. He directed 35 technical-scientific projects in mobility research, energy industry, gas supply and water and waste water analysis technology, and in micro measurement techniques and in the climate protection.

He is the author of about 200 publications and citations in several countries of the World. Since 2006, he has written 5 books, such as “OBD and OBM Technology in the Automotive, Airplane and Ship Industry” (SAE, Warrendale USA 2012) and “Decreasing Fuel Consumption and Exhaust Gas Emissions in the Transportation” (Springer, Heidelberg Germany 2013). The last one will be published by China Machine Press in September 2014.

Dr. Xi ZHANG
Associate Professor of Institute of Automotive Engineering Shanghai JiaoTong University, China

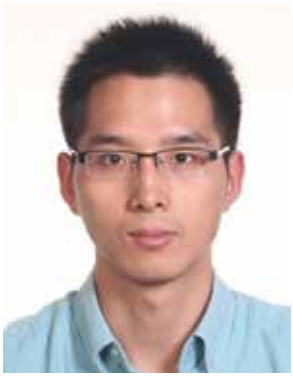
Electric Motor and Power Electronics Technology and linked Landscape

SEPT 25

Prof. Xi Zhang received his Bachelor, Master and Ph.D. degrees from Shanghai Jiao Tong University in 2002, 2004 and 2007, respectively. He joined the University of Michigan-Dearborn as a post doctor in 2007. He is now an associate professor at the Institute of Automotive Engineering of Shanghai Jiao Tong University. His research interests include automotive electronics, EV electric drive systems, battery management systems, etc. He has published a Springer monograph, a textbook and over 40 research papers. The funding of the projects he contributed has been over $10,000,000. He is now an IEEE Senior Member, Editorial Board Member of International Journal of Power and Energy Engineering, and New Energy Power Conversion Technology Committee Member of China Power Supply Society.

ABSTRACT

This speech introduces the up-to-date technologies of power electronics and electric motor drive applied in electric vehicles. The development background and famous device enterprises are described firstly. Switching devices and circuit topologies (DC-DC converter, rectifier, inverter, etc.) are then depicted, taking into account real applications such as the hybrid energy storage system (HESS), auxiliary power unit (APU), traditional/ inductive charger and traction motor controller. Some novel ideas for the topology design (e.g., soft switching, etc.) and control strategies (e.g., advanced field-weakening motor control, battery current ripple reduction control, etc.) for EVs are also given. The future trends of vehicle-class switching devices (e.g., SiC, GaN, etc.), EMC design and modular integration are finally delineated.



Biogas Generation from Tertiary Biomass

SEPT 25

Dr. Ziyang LOU
Associate Professor of Environmental Engineering
School of Environmental Science and Engineering,
Shanghai Jiaotong University, China

Dr. Ziyang Lou obtained his Ph. D in Mar. 2007, and got his Bachelor degree from the Department of Chemical Engineering, Dalian University of Technology (DLUT) in 2001. His current research focuses on the development of landfill technology with low emission, energy recovery from waste biomass, the on site land processing system for high strength waste water, sewage sludge treatment and resources reuse, and waste and climate from LCA perspective.

Dr. Lou is the author of 83 peer-review publications, including 30 international papers (SCI) and 3 books as well. He has been awarded for 7 times, including the first, second and third prizes each from the central people's government of the PRC, the ministry of construction of PRC, Jiangxi Province, PRC and Shanghai Government, PRC, respectively.

ABSTRACT

Generation of the CH4 rich biogas from tertiary biomass and the potential utilization route in transport sector Biomass is the fourth energy resources in the world, and it could be used as the alternative for energy generation with the proper management and suitable technological developments. Currently, bio-energy generation has been extended from the primary homogeneous biomass, i.e. energy crops, to more heterogeneous biomass, i.e. waste and residues from agriculture (including vegetal and animal substances), sewage sludge. Anaerobic digestion could be applied as the feasibility way for the biogas generation from the bio-waste/residues with high water content and heterogeneous. In this lecture, how to get the CH4 rich biogas from the tertiary biomass, i.e. sewage sludge and bio-fractions from municipal solid waste, will be introduced, and the potential purification and utilization of these biogas will also be included. Bio-energy can make an important contribution to the global shift towards sustainable energy systems, and it can be highly effective in mitigating climate change through the replacement of fossil fuels.

BYD's strength and experience at electric transportation

SEPT 25

Edward ZHOU
Senior PR Manager
BYD Overseas Group

Mr. Edward Zhou joined BYD in 2008, and has been assigned as the Assistant to BYD Senior Vice President from 2009 to 2010 while he took over the responsibility for Public Relations ever since 2009 till now.

ABSTRACT

During the process for New Energy Vehicle to replace conventional transportation, the whole industry needs to get a lot of trial to test how the application of New Energy personal and public transportation can reduce the fuel consumption and improve the environment. To prove this, BYD has promoted its EV solution for cities all over the world. To make its solution more efficient, BYD is also making big efforts to develop its core competence – the Fe battery which motivate BYD new energy vehicles. In this case, this presentation will illustrate how BYD EV is merging with the sustainable transportation field, as well as BYD breakthroughs on battery technology development.

Asher Bennett
CEO
Teva Motors Ltd

Patent Wars and Electric Vehicles

SEPT 25

An experienced entrepreneur with more than 18 years of experience in electric vehicles, devising and implementing high value-added production and supply solutions.
- Currently the Funder and CEO of Teva Motors Ltd, a UK based company supplying range-extended truck, an advanced low emission and low cost of ownership solution to logistical companies, chain stores and etc. The company is addressing the medium-duty (GVW 7.5T) urban back-to-base truck market – a £4.5 billion, 150,000 unit market in the EU alone.
- Co-founded Evida, a provider of energy solutions for the EV market; an online construction management software company; and Cyota, an online anti-fraud software company, which was sold for $145m.
- Former submarine naval officer, first in class in Israeli Naval Academy.
- MBA from IMD, Switzerland.

ABSTRACT

Will the patent wars such as in the smart phone industry curtail ingenuity and development of electric vehicles?
1. The current patent status worldwide in the EV industry and the study of the main stream of EV technology/patent roadmap.
2. How can an EV company bypass patent barriers and utilize Tesla's Open Patent Pledge?
3. How Teva Motors, a developer of medium-duty truck fleet electrification solutions, boosts its R&D ingenuity in the global patent environment of EV industry?

Guozhong GUO
Shanghai Hangsome Intellectual Property Agency co., LTD

Experiences of a Shanghai Patent Attorney

SEPT 25

Lawyer, Patent attorney, Trademark attorney, Technology broker, the responsible person of Minhang branch of Shanghai Hangsome Intellectual Property Agency co., LTD, the president of Shanghai Keycreate Intellectual Property Agency co., LTD, the specially-invited expert of the intellectual property rights school of SJTU, the council of Minhang Association For The Protection Of Intellectual Property, has very rich practical experience in writing documents of domestic patent application , applying for patents and defense as well as plenty of experience in PCT patent applications for international stage and foreign patent application.

He has been dealing with more than 6000 patent applications , more than 100 foreign patent applications , more than 1000 trademark applications and about 100 trademark review cases.

Also, as a intellectual property lawyer, he has handled many influential cases of invalid patents and patent infringement including the Iphone camera driving device patent infringement case and Typhoon Shelter trademark patent infringement case.

ABSTRACT

Lecture one : basic knowledge of intellectual property
1. Types of intellectual protection
2. Stipulations of service invention
3. Features of patent right
4. Patent Retrieval and update
5. Emphasis of patent examination
6. Patent strategy layout
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5. Increase the rate of patent licenses
6. Plan patent layout
Lecture four: management and applications of intellectual property
1. Regulate intellectual property system
2. Establish intellectual property strategy
3. Carry out standard of intellectual property
4. Avoid patent infringement
5. Promote intellectual property protection
6. Develop the value of intellectual property

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Prof. Michael Palocz-Andresen
Professor at the University West Hungary Sopron (Oedenburg)
Visiting Professor at Lueneburg University

- **Introduction in Technology Transfer from China to abroad**
- **Business models**
- **Technology Transfer from China to abroad**

SEPT 26

Professor Palocz-Andresen studied mechanical engineering and energy systems at the TU Mining Academy Freiberg. Finishing his PhD in 1978, he later became a scientist at the University of Karlsruhe at the Engler-Bunte-Institute and received his habiliation in 1993. For Maihak AG, Hamburg, he was the head of Environmental Application Analysis. He has been a whole professor for Environment and Climate Protection at the University West Hungary Sopron (Oedenburg) since 2005. For the Leuphana University Lueneburg (Germany) he has been a visiting professor for Sustainable Transportation since 2011. At the TU Budapest he has been a visiting professor since 1997 and at the Shanghai Jiao Tong University he has been a visiting professor since March 2014.

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Liang XU
Solarzoom

Solar Cells for Alternative Mobility

SEPT 26

Mr. Liang Xu graduated from School of Environmental Science and Engineering of Shanghai Jiao Tong University and got his master degree from the international program Environmental Governance at Albert-Ludwig University of Freiburg, Since his studies in Freiburg, he has been China representative of Freiburg GreenCity Initiative and dedicated to transferring German sustainable urban development experiences to Chinese cities, including his ambessedor work at World Expo Shanghai 2010.

Mr. Xu finalized his master thesis on Policy and Financing Analysis of Sustainable Urban Transportation in China with a case study in Hefei, Anhui Province. Meanwhile he was consultant and Sino-German program coordinator at Wuppertal Institute for Climate, Environment and Energy, a top thinktank of sustainability in Germany.

In 2012 Mr.Xu joined German Chamber of Commerce Shanghai office and was responsible for Sino-German technology transfer and industry cooperation of greentech industry (renewable energy, energy efficiency, electric mobility, environmental technologies). He operated marketing activities for German technologies and low carbon solutions and coordinated business development, market research and strategic planning for German companies in China.

In 2014 Mr.Xu joined Solarzoom, the largest PV industry online portal in China. He is responsible for marketing and branding of Solarzoom's rooftop PV system e-commerce service for factories and houses.

Technology Transfer in China

SEPT 26

Dr. Lin HUI
Director of Technology
Property Rights Transaction
SUAEE

Dr. Lin Hui holds Bachelor's Degree of Biological Sciences, Master of Laws and a PhD in Sciences , and is a Senior Engineer and Technology Consultant. Now he is Director of Technology Property Rights Transaction and Operation and General Manager of SUAEE. Dr. Lin has long been undertaking theoretical research and practices of technological property rights transaction, commercialization of research findings, protection of IPRs and technology management. He is also in charge of related research on various subjects of different levels, and participates the research and drafting of related national, provincial and departmental policies, and facilitate technology M&As for domestic and abroad enterprises as well as science and technology program financing.

Platformization Technologies of Electric Vehicles

SEPT 26

Prof. Chengliang YIN
vice director of Automotive Engineering Research Institute
Shanghai JiaoTong University, China

Prof. Chengliang Yin received his Bachelor degree from Huazhong University of Science and Technology in 1986, and received his Master and PhD degrees from Jilin University of Technology in 1996 and 2000, respectively. He joined the School of Mechanical and Power Engineering at Shanghai Jiao Tong University (SJTU) as a Full Professor and Doctoral Supervisor in 2004, and a vice director of Automotive Engineering Research Institute at SJTU since 2006. His research interests include HEV, BEV integration and development, HEV transmission system technology, battery management system and HESS technology, automotive electronic control technology, HEV test standards, etc. So far he has published over 100 publications and been in charge of over 30 major research projects. He is also an editorial member of International Journal of Powertrais (IJPT), evaluation expert for Chinese Education Ministry and Chinese S&T Ministry, EVS technical comittee member etc.

ABSTRACT

Platformization technologies of electric vehicles (Evs) have become the trend of EV design. First, replacing the modulation on traditional vehicles' chasis, EV chasis platformization means brand-new chasis design specially for EV components' configurations suitable for various auto makers. Second, powertrain platformization refer to three aspects including platformization of the mechanical system, electrical system and control system. Meanwhile integration of powetrain components results in reduction of space, cost, configuration complexity and operation faults. Third, platformization of energy storage systems (ESSs) stands for package design invoving the battery cells, cooling system, BMS, power conditioning system, and so on for different EV types. This talk will introduce and explain background and technologies of EV platformization in detail.

Dr. Vasco Schirrmacher
Project manager for high voltage applications, IAV Shanghai.

Technology Transfer in the Automotive Industry

SEPT 26

Dr. Vasco Schirmacher Joined IAV in 2007 after researching the thermodynamics of carbon condensation processes in stellar winds at the Faculty of Physics at the Technical University of Berlin. First focus of his work in the automotive industry was the simulation of combustion engines aimed at methodology development for model based calibration of ECUs in IAV's office in Tokyo, Japan. Since 2012, Dr. Schirrmacher works in IAV's Shanghai Office for the competence center E-Mobility with focus on HV battery development for BEV and PHEV.

ABSTRACT

Technology and know-how transfer is part of the core business of an engineering service provider like IAV. Since 1984 IAV is providing engineering solutions for the automotive industry. Alternative drive concepts have been part of the portfolio since the beginning. Benefitting from an extensive experience with gas, bi-fuel, and multi-fuel vehicles as well as electric drivetrains in BEVs, PHEV's, HEV's and fuel cell vehicles – sometimes as prototypes, but also for series productions – IAV is selling know-how and engineering services to its customers.

In the talk, typical problems of technology transfer in China are addressed: for everyday engineering business in China, the question of technology transfer is often paired with the issue of protection of intellectual property. While local Chinese OEMs are often purchasing engineering services for the main reason of buying as much know-how and intellectual property as possible with it, the communication in projects between Chinese and international partners is often dominated by the requirements of the latter to have their intellectual property safeguarded.

Dr. Cheng HUANG
deputy director in Atmospheric Environmental Institute Shanghai Academy of Environmental Sciences

Assessment of vehicle emission contribution and reduction potential of environmental friendly vehicles

SEPT 26

Huang Cheng, Ph.D, senior engineer, graduated from automobile department of Tongji University. Now he is the deputy director in Atmospheric Environmental Institute of Shanghai Academy of Environmental Sciences. He mainly works on vehicle pollution control and air pollutant emission studies. In these years, he conducted almost 20 projects from Ministry of environmental protection (MEP), Shanghai science and technology committee (SSTC), Shanghai construction and transportation committee (SCTC) and Shanghai environmental protection bureau (SEPB), respectively. In his studies, he erected real world vehicle emission measurement system, built dynamic vehicle emission model and vehicle pollution control polices analysis. The research outcomes were awarded by Shanghai municipal policy-making and consultant prize. He publically presses 30 papers, including 8 SCI papers.

ABSTRACT

Now China is suffering from high PM2.5 pollution, especially for the key regions like the Yangtze River Delta. Vehicle has been recognized as a major pollution source of PM2.5 in the atmosphere. To improve air quality in the key regions, more and more environmental friendly vehicles are introduced in these years, such as e-car, bio-diesel, LNG, etc. This presentation will introduce the emission contribution of traditional fuel vehicle, assess the emission reduction potential of new energy vehicles, and then introduce the policies of Shanghai to promote the new energy vehicles.

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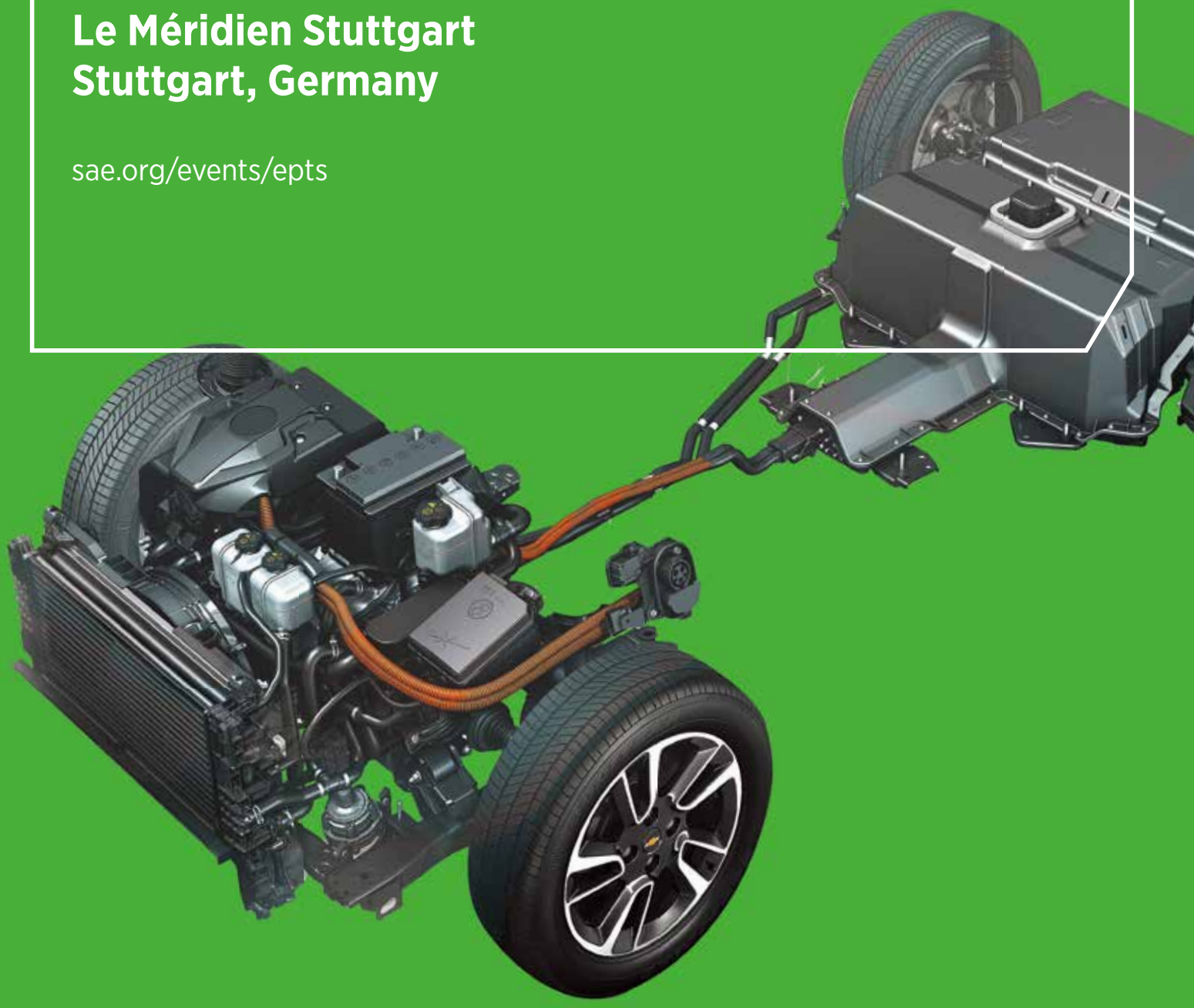

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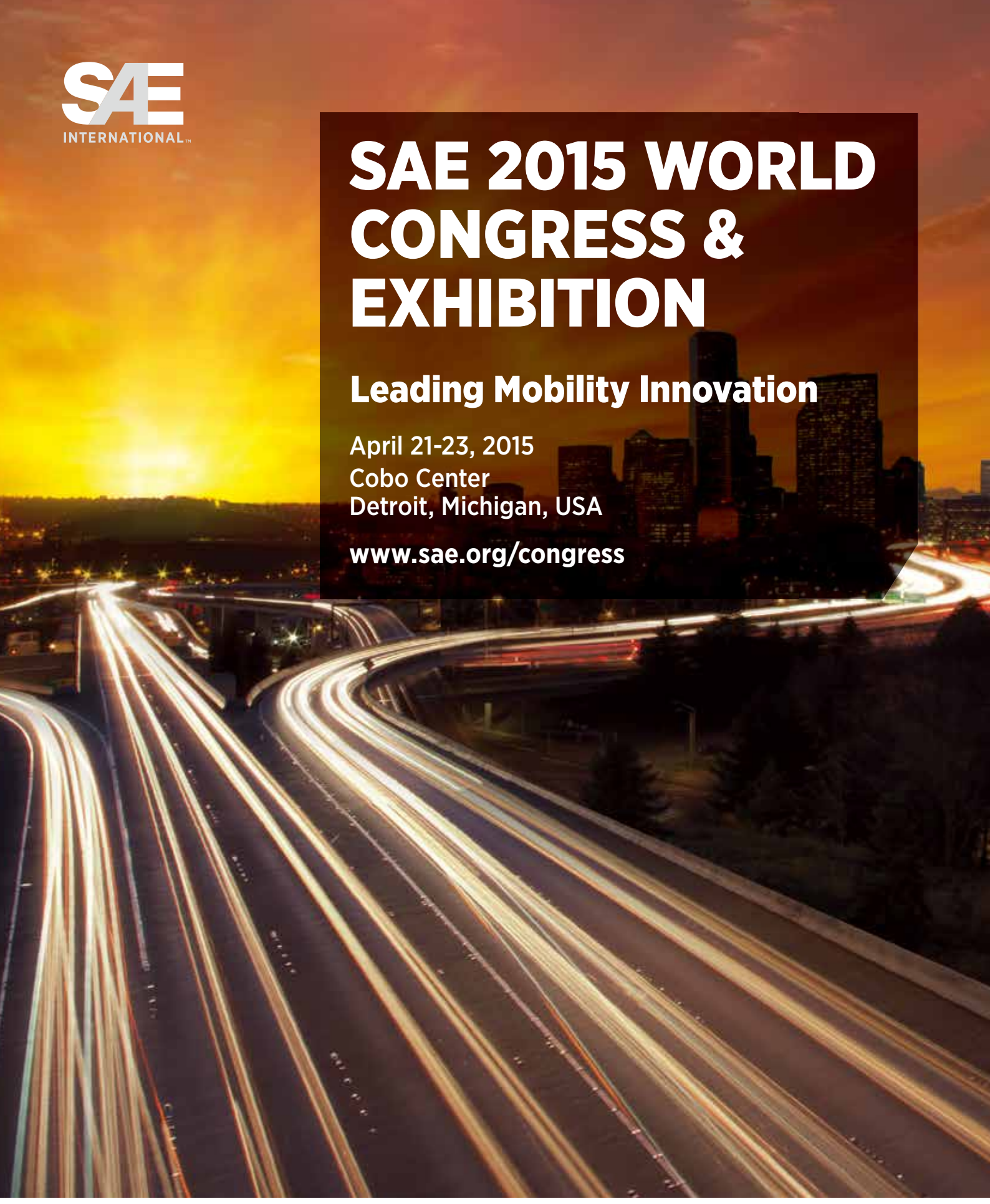

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