



ELECTROMOBILITY: CHALLENGING ISSUES

ARMAND PEUGEOT CHAIR INTERNATIONAL CONFERENCE

2 – 4 December 2015 | ESSEC Asia-Pacific, Singapore

CONFERENCE OVERVIEW

After two editions in Paris in 2013 and 2014, the 2015 **“Electromobility: Challenging Issues”** conference takes place in Singapore from 2 to 4 December 2015. This conference would not have been possible without the support of Nanyang Technological University and ESSEC Asia-Pacific.

The 2015 conference features **high-level world-speakers and academics from the field of engineering, management, economics, political science**, who will exchange their views and debate about electromobility challenges and related topics.

Through a range of keynote conferences, concurrent sessions and roundtable discussions, our objectives are to provide a unique academic event in the Electric Vehicle (EV) eco-system. We aim to foster conversation between different international specialists, to share expertise, and develop our collective understanding of electromobility issues.



FOREWORD

Dear Guests and Speakers,

A warm welcome to the Third Armand Peugeot Chair Conference at the very heart of Southeast Asia!

This year, the involvement of our academic institutions in designing a new conference on “Electromobility Challenging Issues” is highly representative of the society’s multiple common interests in the development and the success of electric and hybrid vehicles. We choose Singapore as “the gateway to Asia” to discuss the critical challenges and share our knowledge with researchers and experts coming from Asia, Europe and America.

These challenges add pressure to markets, industrial processes, business models, and public policies of the traditional automotive economy. Speakers will present their latest research findings on market evolution and innovation, technical issues, grid-integration and service-aggregator actions, and lastly studies focusing on supportive public policies.

A warm thank you to the teams in Singapore and in Paris who organized the Conference, to our Singaporean academic partner, Nanyang Technological University, to PSA Peugeot Citroën supporting this event, and most importantly to the speakers and chairs for devoting their time and presence for these very insightful days.

Yours Sincerely,

Danielle Attias

Co-Head of Armand Peugeot Chair
Professor of Management Sciences
CentraleSupélec, Paris

Carole Donada

Co-Head of Armand Peugeot Chair
Professor of Management Sciences
ESSEC Business School, Paris

Marc Petit

Co-Head of Armand Peugeot Chair
Professor of Engineering Science
CentraleSupélec, Paris

Yannick Perez

Associated Researcher - Armand Peugeot Chair
Professor of Economics
CentraleSupélec Paris & University Paris-Sud



AGENDA

TUESDAY, 1 DECEMBER 2015

3:00pm **Visiting of Singapore City Gallery URA expo (Meeting at 2:45pm)**
Address: 45 Maxwell Road, The URA Centre, Singapore 069118

WEDNESDAY, 2 DECEMBER 2015

8:00am - 8:30am **Registration and Welcome Coffee**

8:30am - 9:00am
Classroom 1, Level 1
Welcome Address
Martine Bronner, Dean of ESSEC Asia-Pacific
H.E Benjamin Dubertret, Ambassador of France to Singapore
Chair holders of Armand Peugeot Chair

9:00am - 9:45am
Classroom 1, Level 1
Comparing Chinese and EU Electromobility Situation
Eric Champarnaud, Gregoire Mialet- BIPE

9:45am - 10:30am
Classroom 1, Level 1
Shanghai Electric Vehicle Demonstration Promotion and Data Analysis
Xiaohua Ding, Shanghai International Automobile City (Group)

10:30am - 11:00am **Coffee Break**

11:00am - 11:45am
Classroom 1, Level 1
Korea's Strategy in Electromobility 2.0 Competition
Young-suk Hyun, Hannamn U. Korea

11:45am - 12:30pm
Classroom 1, Level 1
Global Trends in New Urban Electric Mobility
Vivek Vaidya, Vice President Asia Pacific Automotive & Transportation, Frost & Sullivan

12:30am - 2:00pm **Lunch Break @ Level 5**

2:00pm - 3:30pm
Session 1 & 2
Session 1:
Public Policies for EVs
Chairman: Prof. M Petit
Classroom 2, Level 1
Public Policy and Mobility: The Creation of a New Dynamic
Speaker: Danielle Attias | Authors: Prof. Danielle Attias & Associate Prof. Sylvie Mira Bonnardel
Electromobility in Singapore
Martha Loleit
Electric Vehicles Total Cost of Ownership and Public Health Issues in Brazil
Speaker: Marcos C. Marques | Authors: Marcos C. Marques, Érico P. Silva, Flávio T. Mariotto, Flávia L. Consoni, Marcelo S. G. Oliveira

Session 2:
Sustainable Islands and EVs
Chairman: Prof. V. Frigant
Classroom 3, Level 1
Electric Vehicles in Local Electricity Markets of Small Islands
Speaker: Johannes Schauble | Authors: Johannes Schauble, Patrick Jochem, Wolf Fichtner
Willingness to Paid for EVs in Canarias Islands
Speaker: Yannick Perez | Authors: Prof. Yannick Perez, Gustavo A. Marrero Díaz, Francisco J. Ramos Real, Alfredo J. Ramírez Díaz
Can Sustainable Mobility be Enhanced Through a Multimodal Information Platform?
Speaker: Sophie Dantan | Authors: Sophie Dantan, Julie Bulteau, Isabelle Nicolai

3:30pm - 4:00pm **Coffee Break**

4:00pm - 5:30pm
Session 3 & 4
Session 3:
Business Models for Electromobility
Chairman: Prof. G. Do Campos
Classroom 2, Level 1
A Holistic Approach to Assess the Impacts of the Electric Mobility at a Country Level
Speaker: François Vuille | Authors: Cavdarli Cihan, Vuille François
The Challenges of Defining Business Models in a Nascent Industry
Author & speaker: Carole Donada
Where will Zero Emission Mobility appear first? Comparative policy analysis for the transition towards a hydrogen-based passenger car transport
Author & speaker: Alena Kotelnikova

Session 4:
Distribution Grids & EVs
Chairman: Prof. W. Kempton
Classroom 3, Level 1
Energy Management in an Eco-district with a Flexible EV Fleet
Speaker: Marc Petit | Authors: Paul Codani, Xuan Linh Dang, Marc Petit
Study of Electric Vehicles Penetration in Singapore and its Potential Impact on Distribution Grid
Speaker: Sriram Vaisambhayana | Authors: Sriram Vaisambhayana, Anshuman Tripathi
Distribution Tariff Design with High Penetration of Electric Vehicles
Speaker : Miguel Vazquez | Authors: Miguel Vazquez, Michelle Hallack, Yannick Perez

THURSDAY, 3 DECEMBER 2015

8:30am - 9:00am	Registration
9:00am - 9:45am <i>Classroom 1, Level 1</i>	The State of Art of the Recycling of Lithium-ion Batteries Thomas S. Spengler, T.U. Braunschweig
9:45am - 10:30am <i>Classroom 1, Level 1</i>	Energy and Environmental Impact of Battery Electric Vehicle Range in China Xinmei Yuan, Jilin University
10:30am - 11:00am	Coffee Break
11:00am - 11:45am <i>Classroom 1, Level 1</i>	EVs Use in Vietnam, Service Issues Nguyen Xuan Truong, University of Science and Technology of Hanoi
11:45am - 12:30pm <i>Classroom 1, Level 1</i>	Autonomous Transport Zones in Singapore: NTU's Use Case Studies and Trials Anshuman Tripathi, National Technological University
12:30pm - 2:00pm	Buffet Lunch @ Level 5
2:00pm - 3:30pm	Session 5 & 6
Session 5: Local Cases Studies Chairman: Prof. C. Donada <i>Classroom 2, Level 1</i>	Innovative Mobility in Rural Areas – The Case of Black Forest Speaker: Guy Fournier Authors: Guy Fournier, Manuel Baumann The Case of Saint-Cyr Satory Link, Paris Region Author & speaker: Nadège Faul EV Owner Smart Grid Involvement Speaker: Peter Bach Andersen Authors: Peter Bach Andersen, Casper Clemmensen
Session 6: Clean Transportation and EVs Chairmen: Prof. D. Attias & Prof. P. Serraferrero <i>Classroom 3, Level 1</i>	Linking Alternative Mobility and Clean Energies Author & speaker: Alex Covarrubias Introduction of Personal Rapid Transit (PRT) into the Mass Transit Systems: A Benchmarking from France Author & speaker: Shadi Sadeghian Understanding the Car Manufacturers' Influence on the Market Success of Electric Vehicles Speaker: Karsten Kieckhäfer Authors: Karsten Kieckhäfer, Katharina Wachter, Thomas S. Spengler
3:30pm - 4:00pm	Coffee Break
4:00pm - 5:30pm	Session 7 & 8
Session 7: Cooperation, Institution and EVs Manufacturer Strategies Chairman: Prof. Y Perez <i>Classroom 2, Level 1</i>	Why do Carmakers Establish International Research Cooperations? Lessons from a Patent Based Analysis of Fuel Cell Technologies Vincent Frigant Mirroring Effect of Modularity and Integrality: Evidence from Integrated Electric Vehicle Industry Yurong Chen, Carole Donada & Yannick Perez Coevolution of Institutions and Technology: The Case of Electric Vehicles Speaker: Michelle Hallack Authors: Miguel Vazquez, Michelle Hallack & Yannick Perez
Session 8: Technological Choices for Electromobility Chairman: Prof. M. Petit <i>Classroom 3, Level 1</i>	A Technical-economic Analysis of EV Batteries Recovery Hakim Idjis Knowledge Based System Engineering of Innovative Mechatronics Systems for Fast Urban Decarbonised Mobility Patrick Serraferrero Lifetime Analyses of Li-ion EV Batteries Speaker: Andreas Jossen Authors: Peter Keil, Simon F. Schuster, Christian von Lüders, Holger Hesse, Raghavendra Arunachala & Andreas Jossen

FRIDAY, 4 DECEMBER 2015

8:30am - 9:00am	Registration
9:00am - 9:45am <i>Classroom 1, Level 1</i>	VtoG Early Commercial Operations in the US and Europe Willett Kempton, University of Delaware
9:45am - 10:30am <i>Classroom 1, Level 1</i>	"EV Smart Grid Integration: OEM Perspectives" Paul Codani, CentraleSupélec
10:30am - 11:00am	Coffee Break
11:00am - 12:45pm <i>Classroom 3, Level 1</i>	Roundtable on Electromobility: Exploring New Development Areas Sylvain Allano - PSA Etienne Drouet - ENGIE Subodh Mhaidalkar - ERIAN NTU Ulf Schlichtmann - TUM CREATE Moderator: Gregory Blokkeel - PSA
1:00pm - 2:00pm	Lunch @ NTU campus
2:00pm - 3:30pm	NTU Visit

**Agenda is subject to change*

CONFERENCE ORGANIZERS



Danielle Attias

Co-Head of Armand Peugeot Chair - Professor of Management Sciences at CentraleSupélec, Member of the Laboratory of Industrial Engineering. Her research focuses on new techno-economic models for which innovation is a key driver.



Carole Donada

Co-Head of Armand Peugeot Chair - Professor at ESSEC Business School in the Management Department. Her work focuses on competitive and collaborative strategies, governance and customer-supplier relationships.



Marc Petit

Co-Head of Armand Peugeot Chair - Professor at CentraleSupélec and head of the power networks research group of GeePs Lab. His research activities focus on power systems: network protection, power quality, demand response, DC networks and electromobility.



Yannick Perez

Research Fellow - Armand Peugeot Chair - Associate professor of Economics at the University of Paris-Sud (since 2003). His special fields of interest include energy market design, innovation policies, and the economics of regulation.



KEYNOTE SPEAKERS



Eric Champarnaud, BIPE Partner & Vice President - Before joining BIPE, Éric Champarnaud worked for four years at PSA Peugeot Citroën (Strategic & Planning Department) as an Economist in charge of the world light vehicle market monitoring and forecasts. Eric joined BIPE in 1998 and became Partner & Vice President in 2008. Specialized in Strategic and advanced Marketing & Prospective processes, Eric has assisted numerous companies and public sector organizations to prepare and manage their market intelligence systems and to develop their product and services strategies (decision support and advice on business strategy, definition of products, prices, activities and markets strategies, forward-looking analysis of the business and competitive environments...). He has developed innovative advanced marketing approaches and tools to analyze customers' behaviors and arbitrages (prospective and market studies, lifestyles and product affinities, advertising and media-planning...) for developed and emerging countries. Eric created and leads in BIPE several permanent and leading Clubs and Observatories dedicated to the mobility and to specific consumption markets in their societal, economic, energetic and environmental dimensions. These clubs gather public and private experts and decision-makers from car builders and brands, suppliers, energy and transportation companies, banks and insurances...in order to share and mutualize information, skills and projects. Eric Champarnaud is 46, he holds a Master's degree "Energy and Environment" from IFP School ENSPM (National Petroleum and Engines School) and a Masters in econometrics from University of Paris X.



Willett Kempton is a Professor at the University of Delaware's School of Marine Science and Policy within the College of Earth, Ocean, and Environment. Dr. Kempton is the Research Director for UD's Center for Carbon-free Power Integration. His research interests and areas include: offshore wind power (public reactions, policy framework, large scale implementation), electricity policy, and electric vehicles for grid power storage. He has a joint appointment in the Department of Electric and Computer Engineering. Dr. Kempton is an internationally renowned expert in two renewable energy fields: offshore wind power and electric cars/vehicles. He pioneered vehicle-to-grid (V2G) technology. V2G vehicles work like an electrical sponge, capable of absorbing excess energy when demand for power is low and returning some back to the electric grid when the demand for power is high. Dr. Kempton also research into offshore wind turbines as a source of energy. Focus includes the viability and efficiency of such offshore wind farms, as well as gauging public support and public opposition. He is widely quoted by news outlets on proposed East Coast offshore wind farms off the coasts of Delaware and Cape Cod, amongst other locales.



Thomas S. Spengler is a Professor of Production and Logistics and head of the Institute of Automotive Management and Industrial Production at the Technische Universität Braunschweig. From 2003 to 2008 he was board member and from 2007 to 2008 president of the German Operations Research Society (GOR). Between 2008 and 2012 Dr. Spengler was Vice President for research at the Technische Universität Braunschweig. Since 2008 he is a Board member of the Automotive Research Centre Niedersachsen and since 2014 member of the Graduate School of Engineering of the University of Rhode Island, where he has an appointment as an Adjunct Professor. His research interests are the conceptual development and implementation of techno-economic models and quantitative methods for decision support in the fields of production, logistics, and environmental management. He especially emphasizes interdisciplinary cooperation with research institutes from engineering and natural sciences, industrial partners, and political decision makers. Current research projects for example cover questions of production planning and control in the iron and steel industry, supply chain management in the electronic industry, product related environmental management in the automobile industry, and designing production networks for product recovery.

INVITED SPEAKERS



Paul Codani received the M.Sc. degree in Energy Engineering from CentraleSupélec University, Paris, and the M. Sc. degree in Physics and Engineering of Energy from University of Paris-Sud, Paris, in 2013. He is currently pursuing his PhD on Grid Integrated Vehicles from CentraleSupélec University and PSA Peugeot Citroën. His areas of interest are in Smart Grids, demand response and electrified vehicles.



Xiaohua Ding graduated from Shanghai Jiao Tong University with an MBA Degree and Xian Jiao Tong University with a radio technology Bachelor degree. He is a senior engineer and is now working as Deputy Director of Shanghai Electric Vehicle Public Data Collecting Monitoring and Research Center. Mr. Ding is mainly focusing on behavior research of electric vehicle consumers based on big data, comparative research on electric vehicle demonstration, and planning research on charging infrastructure of electric vehicles. He is also a key participant of international cooperation projects of China Ministry of Science and Technology and the national 863 Programs.



Young-suk Hyun received the B.S. in automotive engineering and MBA from Seoul National University in 1975, 1980 respectively and Ph.D. degree in management science from KAIST in 1988. He is currently Professor of college of business administration, Hannam University in Daejeon Korea. He has focused research in automobile industry for 40 years, participated in IMVP (International Motor Vehicle Program) MIT. His research interests include technology strategy, management of technology, strategic management, lean production, automobile industry.



Nguyen Xuan Truong (1983) was born in Thanh Hoa, Vietnam. He received his Engineer diploma degree in electrical engineering from the Hanoi University of Science and Technology, Vietnam in 2007; M.S degree in electrical engineering from the Grenoble institute of technology, Grenoble, France, in 2009 and Ph.D. degree in electrical engineering from the Paul Sabatier University, Toulouse, France, in 2014. He is currently Assistant Professor of the Department of Energy, of the University of Science and Technology of Hanoi (USTH), Vietnam. His research interests are in the fields of power system analysis, electromagnetic transients, distributed generation, energy management, real time simulation, smart-grid, and grid integration vehicle and service. He works in the Clean Energy and Sustainable Development Laboratory of the USTH.



Anshuman Tripathi is currently a Senior Scientist and Program manager at Energy Research Institute @ NTU (ERI@N). He is also a Teaching Fellow at School of Electrical & Electronics Engineering, NTU. Dr. Tripathi has worked to deliver industrial solutions for GE Global Research, GE Transportation Systems, GE Healthcare and Vestas wind power systems. In his current role at NTU, he is growing the E-mobility domain at the Energy Research Institute by collaborating with various industry partners to provide innovative solutions to the market. He joined GE as an Engineer and went on to establish the Electrical Machines and drives group for GE Transportation Systems which delivered new designs of locomotive propulsion motors. He worked on wireless power transfer systems for GE Healthcare and designed a novel magnetic bearing control system for X-ray machines. As specialist & principal engineer in Vestas wind power systems, Dr. Tripathi led a team that was responsible

to design converter systems for full scale turbine platforms of 2 MW and 3 MW. These turbines have been sold in various global markets and are outperforming the competitive technologies. He has led global teams to design and develop systems that are being used in various industrial products. He has an IP portfolio of 26 patents in the areas of electrical machines, electromagnetics, generator controls and grid connectivity. As an academic, he has published 20 IEEE journal and conference papers.



Vivek Vaidya is Vice President with the Frost & Sullivan Asia Pacific Automotive & Transportation Practice. He is responsible for developing consulting capabilities, acquiring new business and providing consulting solutions - growth strategy, market entry strategy, competitive strategy, market sizing and attractiveness assessments - to leading automotive manufacturers and system suppliers in the region. Vivek has worked with leading clients such as Toyota, Honda, Nissan, Hyundai-Kia Motors, Tata Motors, Bosch, Visteon, Hella, Michelin, Hankook and Hyundai-Mobis. He has more than 19 years of cross functional expertise in strategy and brand management consulting, brand management consulting, sales & marketing. He is well sought after by the media for his views on the Asian automotive and transportation industry. He has been featured regularly on CNBC, Bloomberg TV and BBC. He has also delivered keynote speeches at various automotive conferences

in Asia – Malaysia, Thailand, India, Korea, China, Hong Kong, Taiwan and Singapore. Prior to joining Frost & Sullivan, Vivek led many consulting projects at a leading brand consulting firm. He has also worked with leading automotive firms such as Toyota and Bajaj at key sales and marketing positions.



Xinmei Yuan received the B.S. and Ph.D. degrees in electrical engineering from Tsinghua University, Beijing, China, in 2004, and 2010, respectively. He is currently Associate Professor of College of Automotive Engineering, Jilin University, Changchun, China. His research interests include modeling, control of electric and hybrid electric vehicles, emission control of diesel engines, power electronics and motor control.



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