Day 1: Monday October 27

Time	Tutorial A	Room A
15:00-18:00	**Life Cycle Assessment of Electric Vehicles** (joint presentation University of Stuttgart and University of Brussels) Daniel Wehner, University of Stuttgart, Germany Michael Baumann, University of Stuttgart, Germany Maarten Messagie, Vrije Universiteit Brussel, Belgium Joeri Van Mierlo, Vrije Universiteit Brussel, Belgium	

Time	Tutorial B	Room B
15:00-18:00	**Optimal Control of Hybrid Powertrain with the Pontryagin's Minimum Principle** Sébastien Delprat, University of Valenciennes, France	

Time	Tutorial C	Room C
15:00-18:00	**Enhancing Power Converter Reliability by Integrated Design** Alberto Castellazzi, University of Nottingham, UK	

Day 2: Tuesday October 28

Time	Opening Session	Amphitheater
9:30-10:00	moderator *MSc. Robert Stussi (past-Pres. of WEVA, AVERE and APVE)*	

Time	Plenary Session	Amphitheater
10:00-11:00	chair *MSc. Robert Stussi (past-President of WEVA, AVERE and APVE)*	

Renaissance and Global Electric Vehicle Development
Prof. C.C. Chan, University of Hong Kong

Time	Regular Track 1	Room A
11:30-13:30	chairs *Dr. Claudio Rossi, University of Bologna, Italy* *Prof. José Carlos Quadrado, Polytechnic Institute of Lisbon, Portugal*	

RT1-1
Contribution of the electric car to the mitigation of CO2 emissions in the city of São Paulo
Evaldo Costa, Júlia Seixas; Universidade Nova de Lisboa, Portugal

RT1-2
Different hybridization rate of a diesel-electric locomotive
Tony Letrouvé, University of Lille 1, L2EP; Walter Lhomme, Lille1 University; Julien Pouget, SNCF; Alain Bouscayrol, Université Lille1, France

RT1-3
e-CVT Power Split Transmission for Off-Road Hybrid-Electric Vehicles
Claudio Rossi, Davide Pontara, Domenico Casadei; DEI - University of Bologna, Italy

RT1-4
Design and Implementation of an Experimental Research and Concept Demonstration Vehicle
Oskar Wallmark, Royal Institute of Technology; Mikael Nybacka, Daniel Malmquist, Magnus Burman, Per Wennhage, Peter Georén, KTH Royal Institute of Technology, Sweden

RT1-5
Operation of an ICE/PM/TTRB APU in a Range Extender Electric Vehicle Power-Train
Yongpeng Shen, Yaonan Wang, Junjie He, Hunan University, China

Time	Regular Track 3	Room B
11:30-13:30	chairs *Mr. Aymeric Rousseau, Argone National Laboratory, USA* *Prof. Sousso Kelouwani, Univ. Québec Trois Rivières, Canada*	

RT3-1-1
Comparison of Active Battery Balancing Systems
Maurice Caspar, Torsten Eiler, Sören Hohmann, Karlsruhe Institute of Technology, Germany

RT3-1-2
Diverse Influence Factors on the Range of Electric Vehicles
Alex Van den Bossche, Ghent University, Belgium

RT3-1-3
Integrated Online Energy and Battery Life Management for Hybrid Long Haulage Truck
T.H. Pham, P.P.J. van den Bosch, Eindhoven University of Technology; J.T.B.A. Kessels, R.G.M. Huisman, DAF Trucks N.V., The Netherlands

RT3-1-4
Analysis of regenerative braking effect for E-REV bus according to driving cycle based on simulation
Jongdae Choi, Jongryeol Jeong, Seoul National University; Yeong-il Park, Seoul National University of Science and Technology; Suk Won Cha, Seoul National University, South Korea

RT3-1-5
Virtual prototyping approach to evaluate the thermal management of Li-ion batteries
Paolo Cicconi, Michele Germani, Daniele Landi, Marco Mengarelli, Università Politecnica delle Marche, Italy

RT3-1-6
Energy Management in Hybrid Electric Vehicles based on Frequency approach compared to Dynamic component method -Lithium-battery and Ultracapacitors
Mamadou B. Camara, University of Havre; A. Tani, University of Le Havre; B.Dakyo, University of Havre, France

Time	Special Session 2	Room C
11:30-13:30	chairs *Prof. Eric Semail, Arts et Métiers ParisTech, France* *Dr. Federico Barrero, University of Seville, Spain*	

SS2-1 **Impact of PWM strategies on RMS current of the DC-link Voltage Capacitor of a dual-three phase drive**
Najib Rouhana, Jean-François Duguey, VALEO-VEM; Eric Semail, Arts et Métiers ParisTech-L2EP, France

SS2-2 **A Fast On-Board Integrated Battery Charger for EVs Using an Asymmetrical Six-Phase Machine**
Ivan Subotic, Emil Levi, N. Bodo, Liverpol John Moore University, UK

SS2-3 **Extension of the DTC Technique to Multiphase Induction Motor Drives using any Odd Number of Phases**
Ramsha Karampuri, Joel Prieto, Federico Barrero, Universidad de Sevilla; Sachin Jain, National Institute of Technology, Spain

SS2-4 **Inductances and back-emf harmonics influence on the Torque/Speed characteristic of five-phase SPM machine**
Franck Scuiller, Naval Academy Research Institute; Eric Semail, Arts et Métiers ParisTech-L2EP, France

SS2-5 **Five-phase EV Drive with Switched-Autotransformer (LCCAt) Inverter**
Marek Adamowicz, Jaroslaw Guzinski, Pawel Stec, Gdansk University of Technology, Poland

SS2-6 **Comparison between 5 and 6 Phases Claw Pole Alternator for Automotive Application**
Bassel Aslan, Olivier Savinois, Jean-Claude Mipo, Philippe-Siad Farah, Valeo EEM, France

Time	Invited Session	Amphitheater
15:00-19:00	chairs *Prof. Marie-Cécile Pera, University of Franche Comté, France* *Prof. Frano Barbir, University of Split, Croatia*	

IS1-1   **Presentation of the SAPPHIRE project**
Federico Zenith

IS1-2   **Analysis of Fuel Cell Stacks Degradation by Polarization Change Curves**
D. Bezmalinovic, G. Magazinovic, B. Simic, V. Mitrovic and F. Barbir

IS1-3   **Controllability of a micro combined heat and power fuel-cell system for lifetime maximisation**
Federico Zenith, Johannes Tjønnås, Ivar J. Halvorsen

Coffee Break

IS1-4   **Static and dynamic modeling of a PEMFC for prognostics purpose**
Elodie Lechartier, Rafael Gouriveau, Marie-Cécile Péra, Daniel Hissel, Noureddine Zerhouni

IS1-5   **Performing accelerated stress tests resulting in electrocatalyst degradation in fuel cell stacks**
Merle Klages, Joachim Scholta

IS1-6   **Fuel Cells Remaining Useful Lifetime forecasting using Echo State Network**
S. Morando, S. Jemei, R. Gouriveau, N. Zerhouni, D. Hissel

Time	Dialog Session 1
15:00-16:30	chairs *Dr. Frederico Santos, ISEC – Polytechnic Inst. of Coimbra, Portugal* *Mr. Maxime Boisvert, CTA-BRP, Canada*

DS1-01

A Power Management Strategy for Hybrid Buses Using Measured Driving Route Information

Chunhua Zheng, Guoqing Xu, Automotive Electronics Research Center SIAT, Chinese Academy of Sciences; Jongryeol Jeong, Suk Won Cha, Seoul National University, South Korea

DS1-02

Control System of Series Hybrid Electric Vehicle with Plant Oil Electric Generator

Yoshihiko Takahashi, Kanagawa Institute of Technology, Japan

DS1-03

Possible Ways to Improve the Efficiency and Competitiveness of Modern Ships with Electric Propulsion Systems

Igor Bolvashenkov, Hans-Georg Herzog and Alexander Rubinraut, Technische Universitaet Muenchen, Germany

DS1-04

A Realtime APF Method for Battery Ripple Current Reduction in HESS-Based Electric Vehicles

Xi Zhang, Chengliang Yin, Shanghai Jiao Tong University; Ying Jiang, Sanbo Pan, Shanghai Dianji University, China

DS1-05

Multi-Objective Control of Balancing Systems for Li-Ion Battery Packs: A paradigm shift?

Jorge Barreras, Aalborg University; Diego Davila, CD-adapco; Cláudio Pinto, Universidade do Porto, Portugal; Erik Schaltz, Søren Juhl Andreasen, Aalborg University, Denmark; Rui Esteves Araujo, University of Porto, Portugal

DS1-06

Current Variation in Parallelized Energy Storage Systems

Thomas Bruen, James Marco, University of Warwick; Miguel Gama Jaguar Land Rover, UK

DS1-07

Simultaneous Thermal and State-of-Charge Balancing of Batteries: A Review

Faisal Altaf, Lars Johannesson, Bo Egardt, Chalmers University of Technology, Sweden

DS1-08

Reduction of Current and Rise in Temperature of Lithium Ion Battery Combined with Lithium Ion Capacitor

Masaki Miki and Yoshiaki Taguchi, Railway Technical Research Institute, Japan

DS1-09

Influence of Li-ion Battery Models in the Sizing of Hybrid Storage Systems with Supercapacitors

Cláudio Pinto, Universidade do Porto; Jorge Barreras, Aalborg University; Ricardo de Castro, German Aerospace Center (DLR), Germany; Erik Schaltz, Søren Juhl Andreasen, Aalborg University, Denmark; Rui Esteves Araujo, University of Porto, Portugal

DS1-10

Lithium iron phosphate – Assessment of Calendar life and Change of Battery Parameters

Noshin Omar, Yousef Firouz, Jean-Marc Timmermans, Mohamed Abdel Monem, Vrije Universiteit Brussel, Belgium; Hamid Gualous, Université de Caen Basse Normandie, France; Peter Van den Bossche, Joeri Van Mierlo, Vrije Universiteit Brussel, Belgium

DS1-11

Energy Efficiency and Fuel Economy Analysis of a Parallel Hybrid Electric Bus in Different Chinese Urban Driving Cycles

Jingfu, Chen, Harbin University of Science and Technology; Xiaogang Wu, School of Electrical & Electronic Engineering; Jiuyu Du, Tsinghua University, China

DS1-12

Dry Type Engine Clutch Control for a Parallel HEV at Launch Start Condition

Howon Seo, Suk Won Cha, Seoul National University; Kyo-Bum Lee, Won Sik Lim, Seoul National University of Science and Technology; Kihan Kwon, Daero Park, Hyundai Motor Company, South Korea

DS1-13

Route-Based Online Energy Management of a PHEV and Sensitivity to Trip Prediction

Dominik Karbowski, Namwook Kim, Aymeric Rousseau; Center for Transportation Research; Argonne National Laboratory, USA

DS1-14

Toward On-line Optimized Power Management for a Series Hybrid Hydraulic Powertrain

Mohammad Ali Karbaschian, Dirk Söffker, University of Duisburg-Essen, Germany

DS1-15

Experiences on carbon care conferences

Anne Laure Allègre, L2EP, Université Lille; Stéphan Astie, Université de Toulouse, INPT, UPS, LAPLACE, ENSEEIHT, CNRS; Alain Bouscayrol, Loïc Chevallier, Xavier Cimetière, L2EP, Université Lille; Stéphane Clenet, L2EP, Arts et Métiers ParisTech; Betty Lemaire-Semail, L2EP, Université Lille; Pascal Maussion, Université de Toulouse; INPT, UPS; LAPLACE, ENSEEIHT, CNRS; Jean François Sergent, L2EP, Université Lille, France

DS1-16   **A Multi-Agent Based Energy Management System for Electric Vehicles**
Timo Isermann, Simon Sester, Antonello Monti, RWTH Aachen University, Germany

DS1-17   **Correct Power Flow and Losses in Real-Time Simulation of HEV Powertrains**
Stefan Geng, Manuel Brose, Thomas Schulte, Ostwestfalen-Lippe University of Applied Sciences, Germany

DS1-18   **Game-theoretic Approach for Complete Vehicle Energy Management**
Handian Chen, Eindhoven University of Technology; J.T.B.A. Kessels, DAF Trucks N.V.; M.C.F. Donkers, S. Weiland, Eindhoven University of Technology, The Netherlands

DS1-19   **Modified Algorithms of Synchronized PWM for Six-Phase Traction Drive with Two DC Sources**
Valentin Oleschuk, Vladimir Ermuratskii, Academy of Sciences of Moldova, Republic of Moldova; Federico Barrero, University of Seville, Spain

Time	Special Session 4	Room A
17:00-19:00	chairs *Dr. Manuela González, University of Oviedo, Spain* *Dr. Juan Carlos Viera, University of Oviedo, Spain*	

SS4-1 **Battery Capacity Estimation and Health Management of an Electric Vehicle Fleet**
Anthony Barré, Frédéric Suard, Mathias Gérard, Delphine Riu, CEA, France

SS4-2 **Online SOC estimation of Li-FePO4 batteries through a new fuzzy rule-based recursive filter with feedback of the heat flow rate**
Luciano Sánchez, Inés Couso, Juan Carlos Viera; Universidad de Oviedo, Spain

SS4-3 **Thermal Modeling and Validation of Lithium-Ion Battery based on Electric Vehicle Measurements**
Dominik Dvorak, Hannes Lacher, Dragan Simic; AIT Austrian Institute of Technology, Austria

SS4-4 **Impact of Cell Replacement on the State-of-Health for Parallel Li-Ion Battery Pack**
Phan-Lam Huynh, Omar Abu Mohareb, Michael Grimm, Hans-Christian Reuss, FKFS; Hans-Jürgen Mäurer, Andreas Richter, Dekra Automobil GmbH, Germany

SS4-5 **Experimental Study of Lithium-ion Battery Thermal Bahaviour for Electric and Hybrid Electric Vehicles**
Zul Hilmi, Che Daud, University of Burgundy; Daniela Chrenko, Luis Le Moyne, University of Bourgogne - ISAT; El-Hassane Aglzim, Alan Keromes, University of Burgundy, France

SS4-6 **Switched Capacitor Balancing Time Estimation and Dependancy**
Philippe Pognant-Gros, Domenico Di Domenico, Dimitri Olszewski, IFP Energies Nouvelles; François Barsacq, easyLi, France

Time	Special Session 5	Room B
17:00-19:00	chairs *Dr. Emmanuel Vinot, IFSTTAR – MEGEVH net., France* *Dr. Theo Hofman, TU Eindhoven, The Nederlands*	

SS5-0

Introduction to the MEGEVH special session on Global Optimization
Emmanuel Vinot, IFSTTAR; Theo Hofman, TU Eindhoven, The Netherlands

SS5-1

Hybrid vehicle optimal control: linear interpolation and singular control
Theo Hofman, TU Eindhoven, The Netherlands; Sebastien Delprat, University of Valenciennes, France

SS5-2

Magnetic circuit model: a quick and accurate sizing model for electrical machine optimization in hybrid vehicles
Vincent Reinbold, University of Grenoble; Emmanuel Vinot, IFSTTAR; Lauric Garbuio, Laurent Gerbaud, G2Elab-University of Grenoble, France

SS5-3

Comparison of Bi-level Optimization Frameworks for Sizing and Control of a Hybrid Electric Vehicle
Emilia Silvas, Erik Bergshoeff, Theo Hofman, Maarten Steinbuch, Eindhoven University of Technology, The Netherlands

SS5-4

Investigation of Correlations Between Driving Patterns and Power Demand of Auxiliary Devices Aboard Military Vehicles
Dominique Dreulle, University of Nantes; Laurence Miègeville, Patrick Guérin, IREENA, University of Nantes, France

SS5-5

An optimal energetic approach for systemic design of hybrid powertrain
Francis Roy, PSA Peugeot Citroën; Florence Ossart, Claude Marchand, Laboratoire de Génie Electrique de Paris, France

Time	Special Session 7	Room C
17:00-19:00	chairs *Prof. Urbano Nunes, University of Coimbra, Portugal* *Mr. Alejandro-Dizan Vasquez-Govea, INRIA, France*	

SS7-1

An open framework for human-like autonomous driving using Inverse Reinforcement Learning
Dizan Vasquez, INRIA, France; Yufeng Yu, Beijing University; Suryansh Kumar, IIIT, China; Christian Laugier, INRIA, France

SS7-2

ICT for mobility pattern and driver behavior characterization: trial case-study in the city of Lisbon, Portugal
Patricia Baptista, Gonçalo Duarte, Gonçalo Gonçalves, Catarina Rolim, IST, University of Lisbon, Portugal

SS7-3

Range Prediction for EVs via Crowd-Sourcing
Stefan Grubwinkler, Tobias Brunner, Markus Lienkamp, Technische Universitaet Muenchen, Germany

SS7-4

Road Detection Using High Resolution LIDAR
Rafael Fernandes, Cristiano Premebida, Paulo Peixoto, Urbano Nunes, ISR, University of Coimbra, Portugal; D. Wolf, University of São Paulo, Brazil

SS7-5

Optimal Autonomous Charging of Electric Vehicles with Stochastic Driver Behavior
Jonathan Donadee, Carnegie Mellon University; Orkun Karabasoglu, SYSU-CMU Joint Institute of Engineering; Marija Ilic, Carnegie Mellon University, USA

SS7-6

A Layout Methodology of Quick Charging Infrastructure for Electric Vechicle by Road Traffic Simulation: Japanese Model Plan of Quick Charging Infrastructure Network
Ryoji Hiwatari, Tetsushiro Iwatsubo, Tomohiko Ikeya, Central Research Institute of Electric Power Industry, Japan

Day 3: Wednesday October 29

Time	Plenary Session	Amphitheater
9:30-11:00	chair *Prof. Christophe Espanet, Univ. F. Comté - MEGEVH net, France*	

EV charging infrastructure, an overview
Eng. Pedro Silva, EFACEC Electric Mobility, S.A., Portugal

European Commission Strategy for Green Car
Eng. Maurizio Maggiore, European Commission - DG Research & Innovation, Belgium

Time	Regular Track 2	Amphitheater
11:30-13:30	chairs *Prof. Joeri Van Mierlo, Vrije University of Brussels, Belgium* *Prof. Qianfan Zhang, Harbin Institute of Technology, China*	

RT2-1
Electro-thermal modeling of new prismatic lithium-ion capacitors
Yousef Firouz, Noshin Omar, Peter Van den Bossche, Joeri Van Mierlo, Vrije Universiteit Brussel, Belgium

RT2-2
Low Temperature Discharge Cycle Tests for a Lithium Ion Cell
Joris Jaguemont, University of Quebec of Trois-Rivières; Loïc Boulon, UQTR; Yves Dubé, University du Québec á Trois-Rivières, Canada

RT2-3
Convex optimization for auxiliary energy management in conventional vehicles
Magnus Nilsson, Viktoria Swedish ICT; Lars Johannesson, Chalmers University of Technology, Sweden

RT2-4
Diversion of Aging of Battery Cells in Automotive Systems
Susanne Rothgang, Thorsten Baumhöfer, Dirk Uwe Sauer; RWTH Aachen University, Germany

RT2-5
Improving the Low-Temperature Performance of Electric Vehicles by Hybrid Energy Storage Systems
Peter Keil, Andreas Jossen, Technical University of Munich, Germany

RT2-6
Performance Degradation Prediction and Cell Balance Control Algorithm Construction of Lithium Ion Phosphate Battery
Yasuhiro Ueeda, Koichiro Taniguchi, Genki Kaneko, Toshio Hirota, Wei-Hsiang Yang, Yushi Kamiya, Yasuhiro Daisho, WASEDA University; Shoichi Inami, Mitsui Engineering & Shipbuilding, Japan

Time	Special Section 3	Room A
11:30-13:30	chairs *Dr. Daniel Montesino-Miracle, E.T.S. d'Eng. Ind. Barcelona, Spain* *Dr. Tony Letrouvé, University of Lille 1 - MEGEVH net., France*	

SS3-0

Introduction to the MEGEVH special session on EMR
T. Letrouvé, University of Lille1, France ; P. Sicard, Univ Quebec Trois Rivières, Canada

SS3-1

Voltage Stabilization System for Stop-Start Vehicles: Systemic Approach
Guido Chiappori, Ecole Centrale de Lille; Philippe Delarue, University of Lille 1; Philippe Le Moigne, Ecole Centrale de Lille, L2EP; Michael Chemin, VALEO, France

SS3-2

Model and Control Strategy Simulation of a Racing Series Hybrid Car
Zainab Asus, University of Burgundy; Daniela Chrenko, Luis Le-Moyne, University of Bourgogne - ISAT; El-Hassane Aglzim, Athmane Kebairi, Alan Keromes, University of Burgundy, France

SS3-3

Comparison of Different Battery Technologies for Electric Minibuses Using Energetic Macroscopic Representation
Nuno Faria, João Pedro Trovão, Ana F. Ramos, Paulo G. Pereirinha, ISEC, Polytechnic Institute of Coimbra, Portugal

SS3-4

The Power-Oriented Graphs for Modeling Mechanical Systems with Time-Varying Inertia
Roberto Zanasi, Federica Grossi; University of Modena and Reggio Emilia, Italy

SS3-5

A Novel Approach for Simulating the Control of the Traction System of an Automatic Subway
Luis Ignacio Silva, Universidad Nacional de Rio Cuarto; Alain Bouscayrol, University of Lille1; Cristian Hernán De Angelo, GEA, Universidad Nacional de Rio Cuarto; Philippe Delarue, University of Lille 1; Jean Noel Verhille, Siemens Transportation Systems, France

Time	Regular Track 3	Room B
11:30-13:30	chairs *Dr. Sébastien Delprat, Univ. Valenciennes, MEGEVH net., France* *Dr. Stéphane Caux, University of Toulouse, France*	

RT3-2-1

Adaptive Closed Loop State Control System for a Three-Level Z-Source Inverter

Martin Stempfle, Steffen Bintz, Julian Wölfle, J. Roth-Stielow, University of Stuttgart, Gernamy

RT3-2-2

Multivariate judder behavior analysis of dry clutches based on torque signal and friction material

Ivan Roger Scansani Gregori, Carolina Galão Martins, ZF of Brazil; Carlos Eduardo Thomaz, Centro Universitário da FEI, São Paulo, Brazil

RT3-2-3

Modelling an Electric Vehicle Powertrain on Bench

Marco Silva, Polytechnic Institute of Coimbra; Andre P. Gonzalves, Jose Marques, Joao Sousa, Urbano Nunes, University of Coimbra – ISR, Portugal

RT3-2-4

Driver Modeling for Heavy Hybrid Vehicle Energy Management

Julian Stoev, Erik Hostens, Steve Vandenplas, Flanders Mechatronics Technology Centre, Belgium

RT3-2-5

Simulation tool of an Electric Vehicle including thermal aspect using Energetic Macroscopic Representation

Ludovic Horrein, University of Lille 1 - PSA Peugeot Citroen; Alain Bouscayrol, Université Lille 1; Yuan Cheng, PSA Peugeot Citroen, France

RT3-2-6

A Comparison of Different Means to Increase Daily Range of Electric Vehicles - The Potential of Battery Sizing, Increased Vehicle Efficiency and Charging Infrastructure

Simon Funke, Patrick Plötz, Fraunhofer Institute for Systems and Innovation Research ISI, Germany

Time	Regular Track 6	Room C
11:30-13:30	chairs *Dr. Rui E. Araújo, University of Porto, Portugal* *Prof. Braham Ferreira, Delft Univ. of Technology, The Netherlands*	

RT6-1-1

Dynamic Model and Causal Description of a Traction Power Substation Based on 6-Pulse Diode Rectifier

Clément Mayet, L2EP-University of Lille 1/Siemens; Philippe Delarue, Alain Bouscayrol, University of Lille 1; Eric Chattot, Jean-Noel Verhille, Siemens Transportation Systems, France

RT6-1-2

System simulation of automotive high voltage grids

Soeren Schoerle, Eckart Hoene, Stefan Hoffmann, Adam Kuczmik, Fraunhofer IZM; Klaus-Dieter Lang, TU Berlin, Germany

RT6-1-3

Multi-functional Converter with Integrated Motor Control, Battery Charging and Active Module Balancing for Electric Vehicular Application

Laszlo Mathe, Erik Schaltz, Remus Teodorescu, Marcos Rejas Haddioui; Aalborg University, Denmark

RT6-1-4

Modeling the residual common-mode voltage generated by 3-phase inverters with simultaneous- switching PWM strategies

Mehdi Messaoudi, Nadir Idir, Arnaud Videt, University of Lille 1; Heu Vang, Hocine Boulharts, Schneider Electric, France

RT6-1-5

Electric vehicle battery charging algorithm using PMSM windings and an inverter as an active rectifier

Mario Zaja, Matei Oprea, Carlos Gómez Suárez, Laszlo Mathe, Aalborg Universitet, Denmark

RT6-1-6

A Modified Space Vector Modulation for Three-Phase Z-Source Integrated Charger

Qianfan Zhang, Tuopu Na, Weihan Li, Harbin Institute of Technology, China

Time	APVE Session	Amphitheater
15:00-19:00	chairs *Robert Stussi, VP APVE, VPPC 2014 Honorary Chair* *Jorge Vasconcelos, Presidente da APVE*	

Welcome and introduction
P. Pereirinha (VPPC2014 Chair), Jorge Vasconcelos (APVE President)

Research and Development
J. Peças Lopes, INESC TEC, FEUP

Charging infrastructure–past and future
Luis Reis, Inteli, MOBI.E

Industrial perspectives
Pedro Silva, EFACEC

Mobility and smart cities
Miguel Águas, Lisboa E-nova

Coffee break

VEs na administração pública
Pedro Costa, MAOTE

Comercialização de eletricidade para VEs
António Vidigal, EDP Inovação

Instalações Elétricas para Alimentação de Veículos Elétricos em Corrente Alternada: RTIEBT (secção 722) e Guia Técnico
Filipe Pinto, DGEG

Perspetivas das marcas
António Cavaco, ACAP

Fiscalidade verde e mobilidade
Jorge Vasconcelos, APVE

Time	Dialog Session 2
15:00-16:30	chairs *Prof. Florence Ossart, LGEP-SUPELEC, France* *Dr. Marina Perdigão, Polytechnic Institute of Coimbra, Portugal*

DS2-01

Construction of database on real world uses of electric vehicles – a French case

Paul Kreczanik, Bruno Jeanneret, Serge Pelissier, IFSTTAR, France

DS2-02

A tool for vehicle electrical storage system sizing and modelling for system simulation

Martin Petit, Nicolas Marc, François Badin, Rémy Mingant, Valérie Sauvant-Moynot, IFPEN, France

DS2-03

The Control Algorithm of Three-Level NPC Inverter Under Unbalanced Input Voltage Conditions

Yong-ho Yoo, Nam-Joon Ku, Dong-Seok Hyun; University of Hanyang, South Korea

DS2-04

Application and Comparison of Pressure Control Strategies to a Series Hybrid Hydraulic Powertrain

Mohammad Ali Karbaschian, Dirk Söffker, University of Duisburg-Essen, Germany

DS2-05

Analysis of Vehicle Status in Various Driving Situations for a Separated Axle Torque Combination Parallel Hybrid System using Forward Simulator

Kiyoung Kim, Jongryeol Jeong, Hyungkyoon Kim, Seoul National University; Won Sik Lim, Seoul National University of Science and Technology; Suk Won Cha, Seoul National University, South Korea

DS2-06

Hybrid Power Train with Planetary Transmission Equipped with Clutch-brake Systems

Antoni Szumanowski, Zhiyin Liu, Yuhua Chang, Pawel Krawczyk, Warsaw University of Technology, Poland

DS2-07

Evaluation of independent sensor systems for accurate drive cycle determination

T. Ly, S. Graebener, D. Goehlich; Technical University Berlin, Germany

DS2-08

Anayzing the Capacity Utilization Rate of Traction Motor Drives in Electric Vehicles with Real World Driving Cycles

Sadik Ozdemir, Onur Elma, Fatih Acar, Yildiz Technical University; Ugur Savas Selamogullari, YTU, Turkey

DS2-09 **Driving Pattern Recognition and Energy Management for Extended Range Electric Bus**
Jing Wang, Yong Huang, Haiming Xie, Guangyu Tian, Tsinghua University, China

DS2-10 **Analysis and Modelling of the Losses for the Electrical Drive System of an Electric Vehicle**
Quoc Khanh Nguyen, Jörg Roth-Stielow, University of Stuttgart, Germany

DS2-11 **Hybrid Vehicles Co-Simulation to Evaluate Acceleration Performance and Fuel Consumption**
Jony J. Eckert, Ludmila Silva, Eduardo S. Costa, Fabio Mazzariol Santiciolli, State University of Campinas - UNICAMP; Fernanda Cristina Corrêa, Federal Technological University of Paraná - UTFPR; Franco G. Dedini, State University of Campinas – UNICAMP, Brazil

DS2-12 **Analysing the Impact of Different Electric Traction Drives on the Vehicle's Energy Consumption using HiL Simulation**
Sebastian Jeschke, University of Duisburg-Essen; Holger Hirsch, Duisburg-Essen University, Germany

DS2-13 **Lithium-ion Battery Internal Resistance Model Based on the Porous Electrode Theory**
Jing Yang, Xuezhe Wei, Haifeng Dai, Jiangong Zhu, Tongji University, China

DS2-14 **Simulation and Measurement of an Energy Efficient Infrared Radiation Heating of a Full Electric Vehicle**
Bäuml T., D. Dvorak, Frohner A., Simic D., AIT Austrian Institute of Technology, Austria

DS2-15 **Comparison of Different Powertrain Configurations for Electric City Bus**
Antti Lajunen, Aalto University, Finland

DS2-16 **Sustainable Trolleybus System: Rectifier Substation Technology Improvement for Energy Efficiency and Operational Cost Reduction**
Pedro Santos, João Pedro Trovão, Paulo G. Pereirinha, ISEC, Polytechnic Institute of Coimbra, Portugal

DS2-17 **Event-based Electric Vehicle Mass and Grade Estimation**
Khalil Maalej, Sousso Kelouwani, Yves Dubé, Kodjo Agbossou, Université du Québec à Trois-Rivières, Canada

DS2-18

Parametrisation of operating conditions in cars in the on-board type measurements of pollution emissions

Jerzy Merkisz, Jacek Pielecha, Piotr Molik, Mateusz Nowak, Poznan University of Technology, Poland

DS2-19

On Multifunctional and Robust Sensor Technology used in Electric Vehicle Applications

Philip Dost, Michael Schael, Abdoulkarim Bouabana, Philipp Spichartz, Prof. Constantinos Sourkounis, Ruhr-University Bochum, Germany

DS2-20

Synchronous Reluctance Motor Drive for Electric Vehicles Including Cross-Magnetic Saturation

André Gonçalves, Sérgio Cruz, University of Coimbra; Fernando Ferreira, ISR; André Mendes, University of Coimbra; Anibal Almeida, ISR, Portugal

Time	Regular Track 4	Room A
17:00-19:00	chairs *Dr. André Mendes, University of Coimbra, Portugal* *Dr. Keyu Chen, Valeo Company, MEGEVH net., France*	

RT4-1

An FPGA HIL reconfigurable testing platform for vehicular traction systems
Christian Dufour, OPAL-RT (Canada); Sébastien Cense, Jean Belanger, Opal-RT Technologies, Canada

RT4-2

Reduced-scale Hardware-In-the-Loop Simulation to Study Several Hybridization Rates of Electric Vehicles
João Pedro Trovão, ISEC, Polytechnic Institute of Coimbra; Felipe Machado, Mário A. Silva, Hugo Neves de Melo, INESC Coimbra, Portugal

RT4-3

A Linear Quadratic Integrator approach for a Hydrogen Genset control
Lamoussa Jacques Kéré, Sousso Kelouwani, Kodjo Agbossou, Yves Dubé, University du Québec à Trois-Rivières, Canada

RT4-4

Examination of Potential for Range Extension in Electric Vehicles Based on Fleet Measurements
Philip Dost, Philipp Spichartz, Constantinos Sourkounis, Ruhr-University Bochum, Germany

RT4-5

Constant Current Controller For Electric Vehicles Chargers Based On IPT Systems
Emanuel G. Marques, Instituto de Telecomunicacoes; André Mendes, University of Coimbra, Portugal

RT4-6

Full-Bridge Topology for IPT System On-Board Charger
Marina Perdigão, Emanuel G. Marques, Instituto de Telecomunicações; João Pedro Trovão, David Abreu, ISEC, Polytechnic Institute of Coimbra; André Mendes, University of Coimbra – IT, Portugal

Time	Regular Track 3	Room B
17:00-19:00	chairs *Dr. John Kessels, DAFT, The Netherlands* *Dr. Rochdi Trigui, IFSSAR, MEGEVH net., France*	

RT3-3-1
Fuel consumption vs pollutant emission trade-off for Hybrid Electric Vehicle. An application of the Pontryagin's minimum principle
Emmanuel Vinot, Bruno Jeanneret, IFSTTAR, France

RT3-3-2
Detailed Modeling of Motor System of Plug-In Hybrid Vehicle
Wei-Hsiang Yang, Hiroki Sato, Yushi Kamiya, Yasuhiro Daisho, Waseda University, Japan

RT3-3-3
Energy Management for Hybrid Electric Tractors Combining Load Point Shifting, Regeneration and Boost
Jochen Barthel, Daniel Görges, Markus Bell, University of Kaiserslautern; Philipp Münch, John Deere GmbH & Co. KG, Germany

RT3-3-4
Minimization of Energy Losses in the Traction Drive of HEV using Optimized Adaptive Control
Mohammed Alnajjar, University of Federal Defense-Munich; Dieter Gerling, UNIBW, Germany

RT3-3-5
Efficiency Map of the Traction System of an Electric Vehicle from an On-Road Test Drive
Clement Depature, Walter Lhomme, Alain Bouscayrol, Université Lille1, France; Pierre Sicard, Loïc Boulon, Université du Québec à Trois-Rivières, Canada

RT3-3-6
Development of PMP-based Power Management Strategy for a Series Hybrid Electric Bus
Jongryeol Jeong, Jongdae Choi, Daeheung Lee, Namwook Kim, Yeong-il Park, Suk Won Cha, Seoul National University, South Korea

Time	Special Session 6	Room C
17:00-19:00	chairs *Dr. Samir Jemei, Univ. of Franche Comté - MEGEVH net., France* *Prof. Loic Boulon, Université du Québec à Trois-Rivières, Canada*	

SS6-0

Introduction to the special session FC vehicles
Loïc Boulon, Université du Québec à Trois-Rivières, Canada; Samir Jemei, Univ. of Franche Comté - MEGEVH net., France

SS6-1

Degraded mode operation of multi-stack fuel cell systems
David Camilo, Toquica Cárdenas, Institut de Recherche sur l'Hydrogène; Neigel Marx, Loïc Boulon, Université du Québec à Trois-Rivières, Canada; Daniel Hissel, Frédéric Gustin, University of Franche-Comte, France

SS6-2

Energy management of an hybrid electric vehicle in degraded operation
Javier Solano, Universidad Industrial de Santander, Colombia; Daniel Hissel, Marie-Cécile Péra, University of Franche-Comté, France

SS6-3

Performing accelerated stress tests resulting in electrocatalyst degradation in fuel cell stacks
Merle Klages, Joachim Scholta, Zentrum fur Sonnenenergie- und Wasserstoff-Forschung, Germany

SS6-4

Hybrid systems energy management using optimization method based on dynamic sources models
Yacine Gaoua, INPT/LAPLACE-LAAS; Stephane Caux, LAPLACE; Pierre Lopez, LAAS/CNRS; C. Raga, Andres Barrado, A. Lázaro, UMCIII, France

SS6-5

Analysis and Implementation of a Zero Input Current Ripple Boost Converter with Boundary-Mode Control for Fuel Cell Power System
Ching-Ming Lai, Ming-Ji Yang, Shih-Kun Liang; National Taipei University of Technology, China

Day 4: Thursday October 30

Time	Plenary Session	Amphitheater
9:00-10:00	chair　*Dr. João Trovão, Polytec. Inst. of Coimbra - INESC Coimbra, Portugal*	

BMW's vision for electric mobility
Eng. Rui Bica, BMW Portugal

Time	Dialog Session 3
10:00-11:30	chairs　*Prof. Humberto Jorge, University of Coimbra, Portugal* *Prof. Shumei Cui, Harbin Institute of Technology, China*

DS3-01

Sensorless control techniques as redundancy for the control of permanent magnet synchronous machines in electric vehicles
Oliver Lehmann, Johannes Schuster, Jörg Roth-Stielow, University of Stuttgart, Germany

DS3-02

Impact of Active Gate Drives on Switching Loss Reduction in Electric Vehicles
Zhiqian Chen and Qiao Zhang, IMRA Europe S.A.S., France

DS3-03

A Case Study on the Convertion of an Internal Combustion Engine Vehicle into an Electric Vehicle
Delfim Pedrosa, Vitor Monteiro, Henrique Gonçalves, João L. Afonso, Júlio S. Martins; University of Minho, Portugal

DS3-04

A Novel Approach to Implement a Single-Stage Step Up/Down Inverter by Using Auxiliary Pumping Circuit
Ming-Ji Yang, Ching-Ming Lai, National Taipei University of Technology, China

DS3-05

Design Optimization for Unified Field Permanent Magnet Dual Mechanical Ports Machine
Shumei Cui, Shouliang Han, Xinxin Zhang, Yuan Cheng, Harbin Institute of Technology, China

DS3-06

A study on the application of the PMSM Vector Control System for High Speed Motor in Inverter Overmodulation Range
Kousuke Kondou, Shinji Doki, Nagoya University, Japan

DS3-07

A Simplified Space-Vector PWM Scheme for N-Level NPC Inverter Based on Two-Level Space-Vector PWM

Li-Suel Lim, Nam-Joon Ku, University of Hanyang; Dong-Seok Hyun, Hanyang University, South Korea

DS3-08

Comparison of control methods for asynchronous motors within electric vehicles

Philip Dost, Michael Schael, Constantinos Sourkounis, Ruhr-University Bochum, Germany

DS3-09

Fault-Tolerant Optimal-Current Torque-Controlled Five-Phase PMSMs with Open-Circuited Phases: Position Self-Sensing Operation

Xavier Kestelyn, L2EP; Frederik De Belie, Ghent University, Belgium; Ngac Ky Nguyen, L2EP, France

DS3-10

Five-phase version of 12slots/8poles three-phase Synchronous Machine for Marine-propulsion

Hussein Zahr, Arts et Metiers ParisTech; Franck Scuiller, Naval Academy Research Institute; Eric Semail, Arts et Metiers ParisTech-L2EP, France

DS3-11

Model-Based control Design Process Overview - Energetic Macroscopic Representation

Keyu Chen, Olivier Grellier, Antoine Bruyere, VALEO, France

DS3-12

Simulation of an electric racing car using Energetic Macroscopic Representation

Cristian Fontán-Tebar, Daniel Montesinos-Miracle, CITCEA-UPC; Humbert Vidal-Salvia, ETSEIB Motorsport, Spain

DS3-13

Different control schemes of a battery/supercapacitor system in Electric Vehicle

Ali Castaings, Walter Lhomme, Lille1 University; Rochdi Trigui, IFSTTAR; Alain Bouscayrol, Université Lille1, France

DS3-14

Online Parameter Identification for Lithium-ion Cell in Battery Management System

Tiansi Wang, Lei Pei, Rengui Lu, Chumbo Zhu, Guoliang Wu, Harbin Institute of Technology, China

DS3-15

A practical and Accurate SOC Estimation System for Lithium-ion Batteries by EKF

Lei Lin, Naoki Kawarabayashi, Masahiro Fukui, Ritsumeikan University; Shuji Tsukiyama, Chuo University; Isao Shirakawa, University of Hyogo, Japan

DS3-16 **Electric Vehicle Li-ion Battery Evaluation based on Internal Resistance Analysis**
David Anseán, Manuela González, Juan Carlos Viera, Juan Carlos Álvarez, Cecilio Blanco, Víctor Manuel García; University of Oviedo, Spain

DS3-17 **Study on Energy Management Strategies for Series-parallel Plug-in Hybrid Electric Bus**
Jiankun Peng, Hong-wen He, Beijing Institute of Technology, China

DS3-18 **IP@Smart - Energy Management System applied to Eco-Efficient Public Lighting Networks**
Hernâni Pires, Polytechnic Institute of Coimbra; Andreia M. Carreiro, ISA, INESC Coimbra; Guillermo Pereira, Rita Carreira, ISA; João P. Trovão, INESC Coimbra, Jorge Landeck, ISA, Portugal

DS3-19 **Smart Charging Management for Electric Vehicle Battery Chargers**
Vítor Monteiro, J. G. Pinto, Bruno Exposto, João C. Ferreira, João L. Afonso, University of Minho, Portugal

DS3-20 **Information and Communication Technology Solution for the V2G Concept Implementation**
Victor D. N. Santos, João Pedro Trovão, Telmo P. Branco, José M. R. Gonçalves, ISEC, Polytechnic Institute of Coimbra, Portugal

DS3-21 **Speed Optimized Multisinus Stimuli for Electrochemical Impedance Spectroscopy on a Battery Pack**
Reinhold Koch, TUM CREATE, Singapore

DS3-22 **Sensorless Stator Flux Oriented Control of Induction Motors using PLPF with Flux Error Compensator**
Sangsoo Lee, Giyoung Park, Myungkil Jung, Hyundai Heavy Industries, South Korea

Time	Special Session 8	Room A
12:00-13:30	chairs *Prof. João Peças Lopes, University of Porto, Portugal* *Prof. Ghanim Putrus, Northumbria University, United Kingdom*	

SS8-1

Electric Vehicles Charging Management and Control Strategies
F. J. Soares, D. Rua, C. Gouveia, J. A. Peças Lopes, INESC TEC, Portugal

SS8-2

A Modelling Tool for Distribution Networks to Demonstrate Smart Grid Solutions
E. Bentley, G. Putrus, Gill Lacey, Northumbria University, UK

SS8-3

Spatio-Temporal Energy Demand Models for Electric Vehicles
Zonggen Yi, Peter H. Bauer, University of Notre Dame, USA

SS8-4

Optimizing the Coordinated Charging of a Group of Electric Vehicles
Roham Torabi, Álvaro Gomes, University of Coimbra, Portugal

SS8-5

Influence of Electric Vehicle Charging Demands on the Grid Load Based on Fleet Measurements
Philip Dost, F. Einwächter, Philipp Spichartz, Constantinos Sourkounis, Ruhr-University Bochum, Germany

Time	Regular Track 3	Room B
12:00-13:30	chairs *Dr. Fernando JTE Ferreira, University of Coimbra, Portugal* *Prof. Roberto Zanasi, University of Modena, Italy*	

RT3-4-1

Design of an Axial-Flux Interior Permanent-Magnet Synchronous Motor for Automotive Application: Performance Comparison with Electric Motors used in EVs and HEVs

Raouf Benlamine, RENAULT / University of Franche-Comte; Sid-Ali Randi, RENAULT; Frédéric Dubas, University of Franche-Comté; Dominique Lhotellier, RENAULT; Christophe Espanet, University of Franche-Comte, France

RT3-4-2

Nonlinear LQG slip controller based on an empirical model for a three wheel hybrid vehicle

Maxime Boisvert, Philippe Micheau, Université de Sherbrooke; Jonathan Nadeau, Centre de Technologies Avancées, Canada

RT3-4-3

An optimization methodology to pre design an electric vehicle powertrain

Pierre Caillard, L2EP; Frederic Gillon, L2EP, Ecole Centrale de Lille; Michel Hecquet, Université Lille Nord de France, ECLille, L2EP; Sid-Ali Randi, RENAULT; Noelle Janiaud, Supélec (Ecole Supérieure d'Electricité), France

RT3-4-4

A Four-Wheel-Drive Fully Electric Vehicle Layout with Two-Speed Transmissions

Stefano De Pinto, Pablo Camocardi, Aldo Sorniotti, University of Surrey; Giacomo Mantriota, Politecnico di Bari; Pietro Perlo, IFEVS; Fabio Viotto, Oerlikon Graziano SpA, Italy

RT3-4-5

Implementation of a cooperative strategy between a vehicle's mechanical and regenerative brake system

Jonathan Nadeau, Centre de Technologies Avancées; Maxime Boisvert, Philippe Micheau, Université de Sherbrooke, Canada

Time	Regular Track 6	Room C
12:00-13:30	chairs *Prof. Xavier Kestelyn, Arts et Métiers ParisTech, Lille, France* *Prof. Christophe Espanet, Univ. Franche-Comté, France*	

RT6-2-1

Energy-Efficient Model Predictive Speed Control of Permanent Magnet Synchronous Machine Based Automotive Traction Drives
Sabin Constantin Carpiuc, Corneliu Lazar, Technical University "Gheorghe Asachi" of Iasi, Romania

RT6-2-2

Modeling of an Axial Flux PM Motor using a 3D Magnetic Equivalent Circuit
Romain-Bernard Mignot, Christophe Espanet, University of Franche-Comte, FEMTO-ST Institute, ENISYS Department; Didier Chamagne, University of Franche-Comté; Thierry Martin, Syntex NP Company, France

RT6-2-3

Automatic MTPA Tracking using Online Simplex Algorithm for IPMSM Drives in Vehicle Applications
Thomas Windisch, Wilfried Hofmann, Dresden University of Technology, Germany

RT6-2-4

New Direct Torque Control Scheme for BLDC Motor Drives Suitable for EV Applications
Duy-Dinh Nguyen, Minh C. Ta, Hanoi University of Science and Technology, Vietnam

RT6-2-5

Comparison of Backstepping Control and Inversion-Based Control of a Range Extender Electric Vehicle
Clement Depature, Université Lille1; Pierre Sicard, Université du Québec à Trois-Rivières, Canada; Alain Bouscayrol, Walter Lhomme, Lille1 University, France; Loic Boulon, Université du Québec à Trois-Rivières, Canada

General Information

Coimbra

The third-largest urban centre in Portugal (after the much larger cities of Lisbon and Porto), it is the largest city of the district of Coimbra, the Centro region and the Baixo Mondego subregion. About 460,000 people live in the Região de Coimbra, comprising 19 municipalities and extending into an area 4,336 square kilometres.

Although it served as the nation's capital in the High Middle Ages, it is better known for the University of Coimbra, one of the oldest in Europe and the oldest academic institution in the Portuguese-speaking world.

Among the many archaeological structures date back to the Roman era, when Coimbra was the settlement of *Aeminium*, are its well-preserved aqueduct and *cryptoporticus*. Similarly, buildings from the period when Coimbra was the capital of Portugal (from 1131 to 1255) still remain. During the Late Middle Ages, with its decline as the political center of the Kingdom of Portugal, Coimbra began to evolve into a major cultural center, helped by the university finally established there in 1537. The university, one of the oldest in Europe, apart from attracting many European and international students, is visited by tourists for its monuments and history.

A center of learning, par excellence, the University of Coimbra was founded in 1290 and is one of the oldest in Europe, and was classified World heritage site by UNESCO; this classification includes also the Uptown and Sofia Street.

Amaze yourself with the wonder landscapes and horizons always different. Come discover the unique sensations that only the center of Portugal can present you…

Conference Venue

The University of Coimbra spreads through many areas of Coimbra, but mainly around three key campuses, named Polo I, Polo II and Polo III.

VPPC 2014 will take place at Polo II of the University, at:

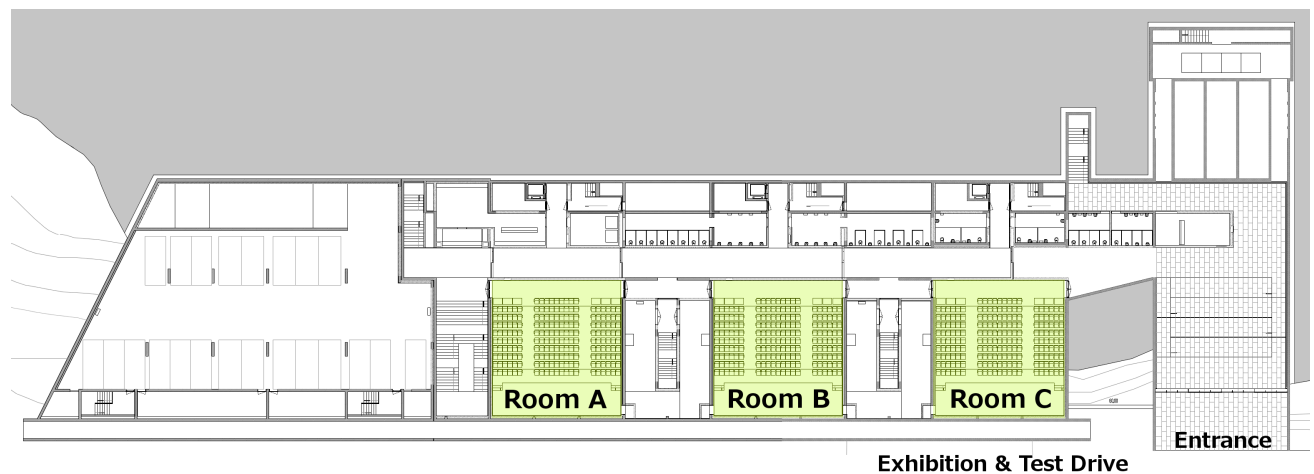Edifício Central da Faculdade de Ciências e Tecnologia da Universidade de Coimbra

Pólo II da Universidade de Coimbra

Rua Sílvio Lima

GPS: 40°11'11.0"N 8°24'43.2"W

1st floor

2nd floor

Social Events

Welcome Reception

Paços do Concelho (City Hall)

Câmara Municipal de Coimbra

Praça 8 de Maio, 3000 Coimbra

GPS: 40º12'40.3"N 8º25'45.0"W

http://www.cm-coimbra.pt/

Gala Dinner

Pavilhão Centro de Portugal

Av. da Lousã (Parque Verde do Mondego)

3000 Coimbra

GPS: 40º11'58.0"N 8º25'22.8"W

http://www.orquestraclassicadocentro.org/

The Pavilion is an exhibition space carried out for Hannover 2000 Expo, being removable, which facilitates its reuse. Today is assembled in Coimbra, claiming the City hall to use it for exhibitions, music, etc…

The building was made in the midst of these typical international fairs, not as the one from Lisbon, where there was a plan and a purpose to transform the area into a new urban area, but as an Expo pavilions to dismount, a bunch of things with the most varied expressions, some interesting, others dull. There was therefore no contextual relationship planned in this case. As such, it is an independent pavilion, now installed within a park in Coimbra. In fact, from scratch was a pavilion in a park, only at first; the park was a bunch of other pavilions. The Pavilion has a shape of an "L", organizing the forecourt, being the largest volume a big showroom. The covering is wavy, has an organic form and is made of synthetic double screen to allow the entry of light as well as thermal insulation and create good acoustical conditions. Exteriorly, the Pavilion is coated with cork, as there is still a part clad in tiles. The agglomerated cork offers good conditions for outdoor durability, providing a thermal insulation, which gives an unusual picture. That rude cork, dark, with time will become gray; we will see how it evolves.