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Final Program

Tuesday 25 November

- 8:30 Registration
- 9:15 Welcome address
P. Ungerer (*IFP, France*)

Session 1: On-board Energy Storage Systems (ESS)

Chairmen: M. Morcrette (*Univ. of Picardie, France*) and X. Montagne (*IFP, France*)

- 9:30 **Keynote address: New materials for lithium-ion batteries**
M. Morcrette (*Univ. of Picardie, France*)
- 10:10 **Li-ion battery models for HEV simulator**
M. Debert¹, G. Colin¹, M. Mensler², Y. Chamaillard¹, L. Guzzella³ (*1 Univ. of Orléans, 2 Renault, France ; 3 ETH, Switzerland*)
- 10:35 **Advances in electrochemical models for predicting the cycling performance of traction batteries: experimental study on Ni-MH and simulation**
J. Bernard, A. Sciarretta, Y. Touzani, V. Sauvant-Moynot (*IFP, France*)
- 11:00 Poster session & coffee break
- 11:30 **Frequency and temporal identification of a Li-ion polymer battery model using fractional impedance**
M. Montaru, S. Pelissier (*INRETS, France*)
- 11:55 **Some refinements on HLA system simulation model**
E. Chiappini, D. Di Rocco (*Univ. of L'Aquila, Italy*)
- 12:20 Lunch

Session 2: Optimized energy management

Chairmen: L. Guzzella (*ETH, Switzerland*) and F. Badin (*IFP, France*)

- 13:50 **Keynote address: Implementing supervisory control strategies for Mercedes-Benz hybrid vehicles**
M. Back (*Daimler AG, Germany*)



- 14:30 **On implementation of dynamic programming for optimal control problems with final state constraints**
O. Sundström, D. Ambühl, L. Guzzella (*ETH, Switzerland*)
- 14:55 **Optimal energy management in hybrid electric trucks using route information**
T. van Keulen¹, B. de Jager¹, A. Serrarens^{1, 2}, M. Steinbuch¹ (*1 Eindhoven Univ. of Technology, 2 Drivetrain Innovations B.V., The Netherlands*)
- 15:20 **Automated model generation for hybrid vehicles within a hardware-in-the-loop environment**
N. Verdonck, A. Sciarretta, A. Chasse (*IFP, France*)
- 15:45 **Poster session & coffee break**
- 16:25 **On the use of genetic algorithm to optimize the onboard energy management of a hybrid solar vehicle**
I. Arsie, R. Di Martino, G. Rizzo, M. Sorrentino (*Univ. of Salerno, Italy*)
- 16:50 **Control strategy of speed pulsations on hybrid powertrains**
M. Njeh, S. Cauet, P. Coirault (*Univ. of Poitiers, France*)
- 17:15 **A decoupled controller for fuel cell hybrid electric power split**
D. Di Domenico, G. Fiengo, C. Speltino (*Univ. of Sannio, Italy*)
- 17:40 **Hydraulic hybrid propulsion for heavy vehicles: combining the simulation and engine-in-the-loop techniques to maximize the fuel economy and emission benefits**
Z. Filipi¹, Y.-J. Kim² (*1 Univ. of Michigan, 2 General Motors Corp., USA*)
- 18:05 **Global Stand Point: Will hybrids ever win the race?**
J.-P. Le Denmat, A. Close (*Global Insight, UK*)
- 18.30 **Bus departure to Paris, near the hotels, and to the restaurant**
- 19:30 **Gala dinner at the restaurant "la Maison des Polytechniciens"**
12 rue de Poitiers, 75007 Paris

Wednesday 26 November

8.30 Registration

Session 3: Modeling and support tools for an optimal design

Chairmen: A. Le Douaron (*Renault, France*) and A. Sciarretta (*IFP, France*)

- 9:00 **Keynote address: US hybrid and plug-in hybrid vehicle research programs**
A. Rousseau for L. Slezak (*Department of Energy, USA*)
- 9:40 **A real-time model for the simulation of steady and transient behaviour of automotive engines**
A. Gambarotta, G. Lucchetti (*Univ. of Parma, Italy*)



- 10:05 **Benefits of co-simulation in the development process of hybrid vehicles**
T.-M. Wolter, J. Kitte, S. Kulawik (*IAV, Germany*)
- 10:30 **A complete set of tools for hybrid vehicle design: from cybernetics model to hardware in the loop simulation**
E. Vinot, R. Trigui, B. Jeanneret (*INRETS, France*)
- 10:55 **Poster session & coffee break**
- 11:25 **Fuel economy potential of advanced configurations from 2010 to 2045**
A. Delorme, A. Rousseau, S. Pagerit (*Argonne National Laboratory, USA*)
- 11:50 **Selecting an optimal hybrid car configuration by means of a simulation automation system**
E. Bröcker¹, S. Dominka², F. Schiller¹ (*1Technical Univ. of Munich, Germany ; 2 Univ. of Melbourne, Australia*)
- 12:15 **Modeling and simulation of different hybrid electric vehicles in Modelica using Dymola**
D. Simic, T. Bäuml, F. Pirker (*Arsenal Research, Austria*)
- 12:40 **Lunch**

Session 4: System architectures and specific components

Chairmen: J. van Mierlo (*Vrije Univ., Belgium*) and D. Foster (*TNO, The Netherlands*)

- 14:00 **Keynote address: The PSA hybrid technology**
Y. Agliani (*PSA Peugeot Citroën, France*)
- 14:40 **Towards integrated powertrain control: thermal management of NG heated catalyst system**
J.T.B.A. Kessels, D.L. Foster, W.A.J. Bleuanus (*TNO Automotive, The Netherlands*)
- 15:05 **Parametric modeling of CVT-based hybrid drive trains**
T. Hofman¹, M. Steinbuch¹, R.M. van Druten², A.F.A. Serrarens² (*1 Eindhoven Univ. of Technology, 2 Drivetrain Innovations B.V., The Netherlands*)
- 15:30 **A low cost air hybrid concept**
C.-Y. Lee, H. Zhao, T. Ma (*Brunel Univ., UK*)
- 15:55 **Pneumatic-combustion hybrid engine: a study of the effect of the valvetrain sophistication on pneumatic modes**
P. Brejaud, A. Charlet, Y. Chamailard, A. Ivanco, P. Higelin (*Univ. of Orléans, France*)
- 16.20 **Closing**
- 16.35 **End of the program**

Bus departure to the RER station of Rueil-Malmaison (connections to the airports and the railway stations)



List of Posters

ALIDISSI, a research program to evaluate electrochemical impedance spectroscopy as a diagnosis tool for Li-ion batteries

V. Sauvant-Moynot¹, J. Bernard¹, A. Delaille², F. Mattera², S. Mailley², J.-L. Hognon³, F. Huet⁴ (1 IFP, 2 CEA, 3 Material Mates, 4 CNRS, France)

Energy management strategies for pneumatic-hybrid engine based on sliding window pattern recognition

A. Ivanco, Y. Chamaillard, A. Charlet, P. Higelin (Univ. of Orléans, France)

State constrained optimal control applied to supervisory control in HEVs

L. V. Pérez, G. O. García (National Univ. of Río Cuarto, Argentina)

Efficiency analysis of an electric delivery truck using computer modeling and simulation

A. Mathews¹, S. Ouellette¹, C. Mendes², M. Stevens², P. Radziszewski¹ (1 McGill Univ., 2 CrossChasm Technologies, Canada)

PM axial flux machine design for hybrid traction

O. de la Barrière, H. Ben Ahmed, M. Gabsi (ENS, France)

Interest and feasibility of hybrid electric drive for a military vehicle and choice of technology

R. Moreno (ETAS, France)

Energy and exergy balances for modern diesel and gasoline engines

G. Bourhis, P. Leduc (IFP, France)

Toyota PRIUS : focus on Continuous Variable Transmission and battery costs

D. Chatroux (CEA, France)

Experience feedback on electric vehicles of the French car fleet

B. Béranger, D. Chatroux (CEA, France)