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Clean Tech for Transportation

<http://www.vppc2010.org/>



organized by (French Network on HEVs)

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One of the key issues in the development of Electric Vehicles (EVs) and Hybrid Electric Vehicles (HEVs) is the control design of such complex systems, which are composed of multi-sources and multi-subsystems. Model-based control design approaches provide an efficient mean to meet the challenges in front of designers, such as shrinking development times and growing design complexity. The general steps in model-based control design process are: system modeling, control analysis and tuning, system and control simulation, experimental validation, and finally control deployment.

At the system modeling step, different graphical modeling formalisms can be used, such as Bond Graph, Power Oriented Graph (POG), Causal Ordering Graph (COG) and Energetic Macroscopic Representation (EMR). These graphical formalisms draw on various principles and highlight different properties of multiphysical systems. Using these formalisms, designing and analyzing a system can often be undertaken using only a pencil and paper. Designers can thus focus on the interaction among components or subsystems rather than on the implementation details of their models on particular softwares.

As an energy-based graphical tool, EMR respects integral causality, highlights energy properties of the power components such as energy storage, energy conversion and energy distribution, and provides a global energetic view of systems. Due to the use of EMR, inversion-based control can be implemented. For more information, visit the website: <http://b2ep.univ-lille1.fr/commande/emr-2009/iw-presentation//t-RG11/htm>

The aim of this special session is to present different graphical descriptions, including EMR, applied to

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- All the instructions for abstracts are included in the conference website <http://vppc2010.org/> :
- Special Session title, paper title, authors, affiliation(s), mailing and e-mail address(es),
  - corresponding author clearly identified,
  - Abstract of 100-300 words and digest of 3-5 pages.