The 5th IEEE Vehicle Power and Propulsion Conference (VPPC'09)
September 7-11, 2009, Dearborn, MI 48128

Special Session on

EMR AND OTHER GRAPHIC DESCRIPTIONS

organized by MEGEVH (French national group on HEV)
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Call for Papers

Electric Vehicles (EVs) and Hybrid Electric Vehicles (HEVs) are of growing interest because of the need to reduce pollution and the depletion of petroleum resources. But these kinds of systems are quite complex to study due to the number of various and different devices: engine, electric machines, power electronics and mechanical powertrain.

Simulation with the use of graphical description is of prime importance for developing and testing these vehicles. Different modeling can be used in function of the objective of the study. These graphical descriptions can lead to a synthetic and intermediary step connecting all various physical devices of the whole the system. Design, analysis and energy management are the main concerns of the new modeling way.

Different graphical descriptions have been used for the study of EVs and HEVs such as Power Oriented Graphs, Bond Graph… Among all of existing graphical descriptions EMR (Energetic Macroscopic Representation – http://l2ep.univ-lille1.fr/workshop-emr-2008.htm) is well suited for these vehicles. EMR is a based on physical causality (i.e. integral causality). This dynamic modeling highlights energy properties of the power components such as energy storage, energy conversion and energy distribution. Moreover, an inversion-based control can be systematically deduced from EMR, step-by-step, by inverting the elements.

The aim of this special session is to present different kinds of graphical description like EMR applied to HEVs or/and EVs to highlight the interest of each one.

Topics of interest include, but are not limited to:

- Graphical tools for modeling of vehicles,
- Graphical tools for control of vehicles,
- Graphical toolbox or software for study and/or control of vehicles,
- Graphical interface for simulation of vehicles.