International Workshop on Energy, Environment and Propulsion System Control

March 30, 2005, Dalian, China

Organized by Dalian Maritime University
Technical Committee on Control Theory, CAA
Technical Committee on Mathematics and Electrics, CSEE

Conference Venue: International Conference Hall, ZongHe Building
Dalian Maritime University

Letter from IWEEPSC Organizer,

In the last decade, an important criterion to measure the progress of science and technology is how much are they concerning about the energy and environment. Particularly, observing the propulsion system in material flow field, which depends on the energy, the problem of raising the efficiency of energy consuming and reducing environment pollution becomes the topic of first priority for systems and control design. An evidence is the new born hybrid electric vehicle (HEV). Applying advanced control technique, its power driving system can assure the motor and the electric generator to work on their optimal states, which solves the problem of low efficiency and heavy pollution of the propulsion system of engine. The success of HEV in Toyota shows that using multi-power driving system with advanced control technique is a proper way to solve the problem on energy and environment. In the February of 2005 Japan Ministry of Territory and Transportation announced that after three year researches the Institute of Marin Safety has successfully used the hybrid power technique to ship propulsion systems. Testing on an experimented ship (4,000 ton oil tank with mixed multi-distributed engines and motors), 30% energy has been saved while the carbon dioxide generated has been reduced to 1/4. This new researches and technical developments show that hybrid power propulsion is a very promising new topic.

From system and control point of view, the dynamic characteristics of the hybrid power propulsion system has strong non-linearity and uncertainties. In addition, since the system itself consists of multi-power sources such as engines and motors, the energy management and the circuits swift fast, the control problem becomes a typical control of hybrid systems with synthesize on discrete event systems and dynamic models of individual equipments. In one word, appearance of hybrid propulsion systems poses a new challenge as well as a new opportunity for control theory. In fact, in recent years the related researches have also been flourishing in China. For instance, propulsion system of the hybrid power automobile has been included as a research topic of 863 national project. But the investigators are mainly electrical and automobile engineers. Experts in automatic control community are still silent facing this challenge. As we know, there is few reports on the control of hybrid propulsion systems.

The purpose of this workshop is to propagate the hybrid propulsion systems among control community and enhance the involvement of the control engineers and scientists into the fundamental researches in the control of hybrid propulsion systems. The workshop will provide a forum for experts from automatic control, electrical engineering, and propulsion systems to exchange their opinions, prospects, and suggestions for further development and cross discipline collaborations.

The program of the workshop is shown in the following. All the professors, engineers and students who are interested in this topic are welcome to participate the workshop, and to work with us for promoting the development of the advanced control theory and its applications to the hybrid propulsion systems.

We are looking forward to seeing you in Dalian.

IWEEPSC 2005, Secretariat

March 9, 2005

Program of the International Workshop on Energy, Environment and Propulsion System Control

Dalian Maritime University, Dalian, China, 30 March, 2005

AM8:45-9:00	**Welcome Speech** Prof. Z.W. Wang (President of Dalian Maritime University)
AM9:00-9:50	Keynote Lecture I: *Chair: Y.Z. Sun* **Recent Development in Hybrid Electrical Vehicles** Prof. C.C.Chan, Academician, Chinese Academy of Engineering, Fellow, Royal Academy of Engineering U.K., President, World Electric Vehicle Association, Professor, Hongkong University
AM9:50-10:10	**Coffee Break**
AM10:10-11:00	Keynote Lecture II: *Chair: D.Z.Cheng* **Trends of Future Powertrain Development and the Evolution of Powertrain Control Systems** Dr. Akira Ohata, Toyota Motor Co., Powertrain Engineering Div., Project Manager
AM11:00-11:50	Keynote Lecture III: *Chair: C.Guo* **Hardware-In-the-Loop System Technology for Powertrain Controller Development** Dr. Shiva Sivashankar, Vice President for Technology, Emmeskay Inc., USA.
AM11:50-PM1:30	**Lunch Time**
PM2:00-2:50	Keynote Lecture IV: *Chair: X.C.Wang* **Energy Saving and Hybird Power System Technologies in Japan** Dr. Masakazu Sasaki, Senior Chief Engineer for HEV, Nissan Diesel Co.
PM2:50-3:00	**Coffee Break**
PM3:00-4:45	Panel Discussion *Chair: T.Shen* **Challenging to the Environment Problem: a View from Control Engineering** Prof. T.Y. Chai, Prof. Z.C. Wang, Prof. Q. Lu*, Prof. H.F. Chen*, Prof. L. Guo*, Prof. D.Z. Cheng, Prof. Y.Z. Sun，Prof. G. Yang, Prof. Y. Yao, Prof. H.Z. Xu, Prof. G.Y. Li, Prof. W. Wang, Prof. W.Q. Long, Prof. L.Q. Sun, Prof. X.D. Huang, Senior Engineer J.X. Xin, Senior Engineer M.H. Liu
PM6:00	**Banquet**

* *On inviting and to be confirmed later*