ESCAPE-16 / PSE 2006 Conference

– Post Conference Workshop, July 13, 2006 –

Hybrid Control in the Processing Industries: Status Report from the Network of Excellence HYCON

The Network of Excellence HYCON:

The network *HYbrid CONtrol – Taming Heterogeneity and Complexity of Networked Embedded Systems* is funded by the European Union since September 2004 and aims at establishing a research community which investigates all aspects of hybrid systems as an integrated approach to control system design. Hybrid systems were identified as a suitable paradigm to model the combination of heterogeneous system dynamics, digital devices for signal processing and control, and logical constraints for system operation. They can thus lay the foundation for designing, simulating, analyzing, and optimizing controlled embedded systems for a wide range of application domains - one of these domains investigated in HYCON is *industrial controls*, i.e. control structures used (predominantly) in the processing industries to improve an efficient and safe operation. Two foci of research are the optimization of large transitions, i. e. the procedures of product change-over, start-up, or shutdown, and the analysis and design of safety-related controls, i. e. routines that ensure the prevention of critical process states.

Aims and Scope of the workshop:

The objectives of this workshop are to demonstrate the industrial relevance of techniques of hybrid control and to report on current results obtained within the HYCON network. In detail, the workshop will:

- present a number of challenging case studies provided by industrial partners,
- motivate the use of hybrid control and introduce into the corresponding modelling techniques,
- describe methods for analyzing, designing and optimizing processes equipped with hybrid controllers,
- demonstrate the benefits of hybrid control for some of the case studies,
- stimulate the discussion between industry and researchers inside and outside of the network HYCON.

The workshop is mainly intended for experts from the chemical and processing industries who want to learn about the capabilities and industrial relevance of hybrid control techniques and for researchers and students who want to become familiar with the challenging field of hybrid control, or who want to get information about the activities of the European Network of Excellence HYCON.

Program:

14:00 – 14:10	Welcome and Introduction (S. Engell, University of Dortmund)
14:10 – 14:30	Examples of Hybrid Control Problems in Industrial Processes (S. Engell)
14:30 – 15:00	A Short Overview of Hybrid Modeling (O. Stursberg, Technical University of Munich)
15:00 – 15:30	Systematic Design and Verification of Logic Controllers for a Multiproduct Batch Plant (S. Lohmann, University of Dortmund)
15:30 – 16:00	Coffee Break (with tool demonstrations)
16:00 – 16:30	Optimal Start-Up of a Multistage Evaporator (C. de Prada, University of Valladolid)
16:30 – 17:00	Optimal Operation of a Refrigeration System (L. Larsen, Danfoss)
17:00 – 17:15	Coffee Break (with tool demonstrations)
17:15 – 17:45	Production Planning and Control for a Multiproduct Batch Plant – A Formal Synthesis Approach (J. Raisch, Technical University of Berlin)
17:45 – 18:00	Discussion and Farewell (S. Engell)

Date and Time:

Thursday, July 13, 2006, 14:00 - 18:00 hrs

Location:

The workshop takes place at the venue of the ESCAPE-16 / PSE 2006 conference in the Kongresshaus Garmisch-Partenkirchen (Richard-Strauss-Platz 1a, D-82467 Garmisch-Partenkirchen).

See http://events.dechema.de/General_Information-page-434.html for further information and travelling directions.
For information on accommodation, please visit:
http://events.dechema.de/Accommodation-page-74628.html

Registration:

Please register online at: http://events.dechema.de/Online_Registration-page-103228.html

Registration fee: 100 EUR (students: 50 EUR)

Please note that the registration for the workshop does **not** require a registration for the ESCAPE-16 / PSE 2006 conference.

Contact information:

Prof. Dr.-Ing. Sebastian Engell

University of Dortmund, Dept. of Biochemical and Chemical Engineering (BCE)
Emil-Figge-Str. 70, 44227 Dortmund, Germany

Phone: +49 (0)231-755-5126
Fax: +49 (0)231-755-5129
Email: s.engell@bci.uni-dortmund.de