

TRANSACTIONS OF THE SPRING 2006 MEETING OF THE TEXAS TECH PROCESS CONTROL AND OPTIMIZATION CONSORTIUM

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<http://www.che.ttu.edu/pcoc/>

HIGHLIGHTS

- The presentations will be made available to the consortium members at the website, <http://www.che.ttu.edu/pcoc/>. Please contact Professor Hoo as (806) 742-3451 for login and password if assistance is needed.
- **Workshop & Panel Discussion:** The speakers and panel participants on “Closed-Loop MPC Identification” were Erik Ydsie (Carnegie Mellon University), Dirk Thiele (Emerson), John Campbell (Aspentech) and Charlie Cutler (Cutler-Technologies). The speakers presented a wide variety of approaches to this important problem. Their presentations are available to the member companies at our website. A DVD of the workshop and a CD of the presentations will be sent to each member company in approximately one month.
- **The first presentation business day,** “Ethanol” by Bugs Graham (Panda). Bugs gave a very entertaining and insightful glimpse into the issues associated with using ethanol as a transportation fuel.
- **The second presentation business day,** “Wind Power” by Brad Morris (TTU). Brad presented an interesting overview of the history, present status and future potential for wind power. He also discussed the application of wind power for water treatment.
- **Student Presentation:** Vikram Shabde made a presentation on the interpolation between MPC models applied to control a simulation of a batch reactor.
- **Student Presentation:** Hongbin Dong made a presentation on approaches that he has developed to identify unmeasured disturbances that occur during MPC plant tests.
- **Jim Riggs** presented an overview of his research program. He discussed the ongoing work on developing methods for identifying unmeasured disturbances during MPC plant tests, on the study of control of a batch distillation column, and an effort to develop software tools to assist engineers to effectively maintain RTO projects.
- **Naz Karim** presented an overview of his research program. Then he made a presentation on “Disturbance Rejection with MPC: application to pH” .
- **Karlene Hoo** presented two major themes in her research program – the coupling between design and control (IDC) and an intelligent autonomous embedded control (IAEC) structure for fault detection and isolation (FDI). In her approach to IDC she formulated a nested

optimization problem whose objective function is in the outer loop is a function of both the design and control objectives but in the inner loop is a function of only the control objectives. The student involved is Vikram Shabde. In the case of the FDI she proposed using Bond Graph theory, which needs to be extended to include biochemical systems. The latter is the testbed (coupled bioreactors) being used to demonstrate IAEC for human long-duration space exploration. The student involved is Xi Zhang.

- There were representatives from the six of the eight sponsors and four visiting companies in attendance at the meeting. The visitors included representatives from ExxonMobil, Honeywell, Lyondale-Citgo, Aspentech, Panda Energy and Emerson.
- The next workshop will be on “Control of Batch and Semi-Batch Processes.”

ATTENDANCE

Member Representatives

Paul Singh
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Lake Charles, LA 70602

Wesley Linden
Citgo Refining
Lake Charles, LA 70602

Mike Barham
Conoco Phillips Petroleum Co.
Borger, TX 79008-0271

Rahul Bindlish
Dow Chemical
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Oleg Kukar
Alstrom Power Inc
Knoxville, TN

Michael Plunk
Pampa Plant
Celanese
Pampa, TX

Jimmy Caswell
Pampa Plant
Celanese
Pampa, TX

Jerrel Schoenrock
Pampa Plant
Celanese
Pampa, TX

Visitors

Bugs Graham
Panda Hereford Ethanol
Hereford, TX

Don Thorpe
Panda Energy
Dallas, TX

Rogier Pouwer
Honeywell
16404 N. Black Canyon Hwy
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Dirk Thiele
Emerson Process Management
Austin, TX

John Campbell
Aspentech
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Tony Gonzalez
ExxonMobil
Baton Rouge, LA

Claire Hackney
Lyondale-Citgo
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Erik Ydstie
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