



Program 20th Nordic Process Control Workshop, Sigtuna, Sweden, August 25-26 2016

Thursday August 25

08.00-09.00: Registration

09.00-09.15: Welcome to 20th NPCW

09.15-09.30: Nordic Process Control Award presented to Prof Wolfgang Marquardt.
Chair: Sigurd Skogestad, NTNU

09.30-10.15: Award Lecture by Prof Wolfgang Marquardt.

The German “Energiewende” – a Systems and Control Perspective

10.15-10.45: Coffee break

10.45-12.05: Session 1. Industrial Process Control. Chair: Tore Hägglund, LTH

1.1 Future of Control and Operations in the Era of Internet of Things

Iiro Harjunkoski

ABB AG Corporate Research Germany and Aalto University, Finland

1.2 Robust Extremum Seeking Control with application to Gas Lifted Oil Wells

Dinesh Krishnamoorthy, Alexey Pavlov, Qin Li

Statoil Research Centre, Porsgrunn, Norway

1.3 Model Predictive Control for Improved Yield and Throughput of Spray Drying Plants

L.N. Petersen¹, C. Utzen¹, E. Christensen¹, J.B. Jørgensen²

(1) GEA Process Engineering AS, (2) DTU, Denmark

1.4 Experience from more than 10 years with steamnet control in different environments

Tomas Eriksson¹, Andreas Krafft¹, Björn Hultman², Christofer Löwenberg²

(1) Optimization AB, Sweden, (2) Billerud Korsnäs AB, Sweden

12.15-13.30: Lunch

13.30-15.10: Session 2. Model Predictive Control. Chair: Morten Hovd, NTNU

2.1 Tuning Linear Model Predictive Controllers. The Dependence on the Sampling Interval

Morten Hagdrup, Henrik Madsen, Niels Kjølstad Poulsen, John Bagterp Jørgensen

DTU, Denmark

2.2 Tuning advisor Methodology for Model Predictive Controllers

Winston Garcia-Gabin, Michael Lundh

ABB Corporate Research, Sweden

2.3 Fault Tolerant Model Predictive Control of Exothermic Reactions: Challenges and Solution Approaches

Brage Rugstad Knudsen

NTNU, Norway

2.4 Disturbance Handling in Economic Model Predictive Control

Olle Trollberg, Cristian Rojas, Elling W. Jacobsen

KTH, Sweden

2.5 Economic Plantwide Control Performance Benchmarked against Economic MPC

Vladimiro Minasidis, Sigurd Skogestad

NTNU, Norway

15.10-15.30: Coffee break

15.30-16.50: Session 3. Process Control I. Chair: Kurt-Erik Häggblom, Åbo Akademi

3.1 Spray Flow Design for Once-through Circulating Fluidized Bed Boiler Control

Matias Hultgren¹, Jenó Kovacs², Enso Ikonen¹

(1) University of Oulu, (2) Amec Foster Wheeler, Finland

3.2 Pareto Front Based Design of Controllers for the Automotive SCR Catalyst

Andreas Åberg¹, Anders Widd², Jens Abildskov¹, Jakob Kjøbsted Huusom¹

(1) DTU, Denmark, (2) Haldor Topsøe, Denmark

3.3 Improvement of Load-following capacity of Grate Boilers based on the Combustion Power Soft-Sensor

Jukka Kortela, Sirkka-Liisa Jämsä-Jounela

Aalto University, Finland

3.4 Empirical Mode Decomposition, Hilbert Huang Transform and their Application in Controller Performance Monitoring: An Overview

Muhammad Faisal Aftab, Morten Hovd

NTNU, Norway

17.00-18.00: Poster Session with refreshments. See list of posters on last page

18.00-19.00: NPC Working Group Meeting

20.00-24.00: Conference Dinner

Friday August 26

08.30-10.10: Session 4. Bio Applications. Chair: John Bagterp Jørgensen, DTU

4.1 Model-Based Control of a Pilot Scale Fermentation Process Using a Predictive Control Strategy

Lisa Mears¹, Stuart M. Stocks², Mads O. Albaek², Gürkan Sin¹, Krist V. Gernaey¹

(1) DTU, Denmark, (2) Novozymes AS, Denmark

4.2 Improved Dissolved Oxygen Control in Fermentations

Casper W. Lundquist¹, Stuart M. Stocks², Benny Cassells², Lisa Mears¹, Krist V. Gernaey¹, Gürkan Sin¹

(1) DTU, Denmark, (2) Novozymes AS, Denmark

4.3 Investigation of Effects of a Hot-spot in Bioprocess Control

Jan Peter Axelsson

Vascaia AB, Sweden

4.4 Benchmarking of Control Strategies for the Prevention of Nitrous Oxide Accumulation in Wastewater Treatment Plants

Riccardo Boiocchi, Mathias Johansen, Krist V. Gernaey, Gürkan Sin

DTU, Denmark

4.5 Simulation of Recirculating Aquaculture Plants

Simon Pedersen, Torsten Wik

Chalmers, Sweden

10.10-10.30: Coffee Break

10.30-12.10: Session 5. Modeling and Estimation. Chair: Jenő Kovacs, Oulu Univ.

5.1 Surrogate Subsystem Modelling of Chemical Processes

Julian Straus, Sigurd Skogestad

NTNU, Norway

5.2 Modelling Chlorophyll Fluorescence Signals for Greenhouse LED-Lighting Control

A.M Carstensen¹, T. Wik¹, J. Lindqvist², D. Bånkestad²

(1) Chalmers, Sweden, (2) Heliospectra AB, Sweden

5.3 Estimation of Unmeasured Oil and Water Purities for a Continuous Subsea Gravity Separator

Tamal Das, Johannes Jäsche

NTNU, Norway

5.4 Hierarchical State Estimation for Dynamic Real-Time Optimization for a Reactor, Separator and Recycle Process

J. Klemets, M. Hovd

NTNU, Norway

5.5 Sparse Kernel Approximations for Estimation of Waste-Heat Recovery in Ships

Mikael Manngård, Jari M. Böling

Åbo Akademi, Finland

12.15-13.30: Lunch

13.30-14.50: Session 6. Process Control II. Chair: Gürkan Sin, DTU

6.1 Health-aware Operation and Control of a Subsea Gas Compression Station

*Adriaen Verheyleweghen, Johannes Jäsche
NTNU, Norway*

6.2 Process Design of Solar-Fossil Power Plant Integration including Control Aspects

*Istvan Selek, Jeno Kovacs, Enso Ikonen
University of Oulu, Finland*

6.3 Assessing the Controllability of Heat Exchanger Networks

*Fredrik Bengtsson¹, Elin Svensson¹, Torsten Wik¹, Karin Eriksson²
(1) Chalmers, Sweden, (2) CIT Industriell Energi AB, Sweden*

6.4 A Gravity Separator Model for Liquid Level Control and Purity Evaluation of Oil and Water Phases

*Christoph Josef Backi, Sigurd Skogestad
NTNU, Norway*

15.00-15.30: Closing ceremony and welcome to 21st NPCW

LIST OF POSTERS

P1. A Quasi-Model Predictive Control and its Application to a Grinding Circuit

*A. Zakharov, S-L Jämsä-Jounela
Aalto University, Finland*

P2. Model-Based Monitoring of an Industrial Batch Pectin Extraction

*Ricardo Fernandes Caroco¹, Paloma Santacoloma², Jens Abildskov¹, Jakob K. Huusom¹
(1) DTU, Denmark, (2) CP Kelco ApS, Denmark*

P3. Modelling and Simulations of Rate-Based Diabatic Distillation System

*Morten Jesper Greisen Larsen, Jens Abildskov, Jakob Huusom
DTU, Denmark*

P4. Assesment of the Current Application of Plant Wide Control Practices in a Biochemical Production Plant

*F.D. Böhner¹, P.A. Santacoloma², J. Abildskov¹, J.K. Huusom¹
(1) DTU, Denmark, (2) CPCelco, Denmark*

P5. Status for Process Control in Industry

*Pär Sivertsson
ÅF Industry AB, Sweden*

P6. Modeling of a Dynamic Adiabatic Trickle-Bed Reactor

*Carlos E. Ramirez-Castelan, Anker D. Jensen, Jakob K. Huusom
DTU, Denmark*

P7. Effect of Recycle on Control of a Purely Integrating Process

*Mohammed Adlouni
Perstorp AB, Sweden*

P8. Dynamic Modeling of Heat Exchangers with Phase Change

*Adriana Reyes-Lua, Sigurd Skogestad
NTNU, Norway*

P9. Closed-Loop Identification of Twin-Screw Extruder in Powder Coatings Application

*Ioannis Meintanis¹, Kostas Chrysagis¹, Nicos Karcanias¹, Roberto Giovenco²
(1) City University London, UK, (2) Steel Belt Systems Srl, Italy*

P10. Computational Aspects of the UV Flash Problem for Dynamic Optimization and Nonlinear Molde Predictive Control

*Tobias K.S. Ritschel, Andrea Capolei, John Bagterp Jørgensen
DTU, Denmark*

P11. Model Predictive Control for the Modified Quadruple Tank System

*S.N. Mohd. Azam, J.B. Jørgensen
DTU, Denmark*

P12. Simplified Mechanistic Model of the Multiple Hearth Furnace for Control Development

*J.V. Gomez Fuentes, A. Zakharov, S-L Jämsä-Jounela
Aalto University, Finland*