



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

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

Iiro Harjunkoski

ABB AG Corporate Research Germany and Aalto University, Finland

Robust Extremum Seeking Control with application to Gas Lifted Oil Wells

Dinesh Krishnamoorthy, Alexey Pavlov, Qin Li

Statoil Research Centre, Porsgrunn, Norway

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

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: Torsten Wik, Chalmers

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

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

DTU, Denmark

Tuning advisor Methodology for Model Predictive Controllers

Winston Garcia-Gabin, Michael Lundh
ABB Corporate Research, Sweden

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

Brage Rugstad Knudsen
NTNU, Norway

Disturbance Handling in Economic Model Predictive Control

Olle Trollberg, Cristian Rojas, Elling W. Jacobsen
KTH, Sweden

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

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

Matias Hultgren¹, Jenő Kovács², Enso Ikonen¹
(1) University of Oulu, (2) Amec Foster Wheeler, Finland

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

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

Jukka Kortela, Sirkka-Liisa Jämsä-Jounela
Aalto University, Finland

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

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

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

Investigation of Effects of a Hot-spot in Bioprocess Control

Jan Peter Axelsson
Vascaia AB, Sweden

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

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 Kovács, Oulu Univ.

Surrogate Subsystem Modelling of Chemical Processes

Julian Straus, Sigurd Skogestad
NTNU, Norway

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

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

Tamal Das, Johannes Jäsche
NTNU, Norway

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

J. Klemets, M. Hovd
NTNU, Norway

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

Health-aware Operation and Control of a Subsea Gas Compression Station
Adriaen Verheyleweghen, Johannes Jäsche
NTNU, Norway

Process Design of Solar-Fossil Power Plant Integration including Control Aspects
Istvan Selek, Jeno Kovacs, Enso Ikonen
University of Oulu, Finland

Assessing the Controllability of Heat Exchanger Networks
Fredrik Bengtsson¹, Elin Svensson¹, Torsten Wik¹, Karin Eriksson²
(1) Chalmers, Sweden, (2) CIT Industriell Energi AB, Sweden

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

A Quasi-Model Predictive Control and its Application to a Grinding Circuit
A. Zakharov, S-L Jämsä-Jounela
Aalto University, Finland

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

Modelling and Simulations of Rate-Based Diabatic Distillation System
Morten Jesper Greisen Larsen, Jens Abildskov, Jakob Huusom
DTU, Denmark

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

Status for Process Control in Industry
Pär Sivertsson
ÅF Industry AB, Sweden

Modeling of a Dynamic Adiabatic Trickle-Bed Reactor
Carlos E. Ramirez-Castelan, Anker D. Jensen, Jakob K. Huusom

DTU, Denmark

Effect of Recycle on Control of a Purely Integrating Process

Mohammed Adlouni

Perstorp AB, Sweden

Dynamic Modeling of Heat Exchangers with Phase Change

Adriana Reyes-Lua, Sigurd Skogestad

NTNU, Norway

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

Ioannis Meintanis¹, Kostas Chrysagis¹, Nicos Karcantias¹, Roberto Giovenco²

(1) City University London, UK, (2) Steel Belt Systems Srl, Italy

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

Model Predictive Control for the Modified Quadruple Tank System

S.N. Mohd. Azam, J.B. Jørgensen

DTU, Denmark

Simplified Mechanistic Model of the Multiple Hearth Furnace for Control Development

J.V. Gomez Fuentes, A. Zakharov, S-L Jämsä-Jounela

Aalto University, Finland