**PRACTICAL PLANTWIDE PROCESS CONTROL**

**3-4 APRIL 2014, PULLMAN, PATTAYA, THAILAND**

**April 3, 2014 (1st Day)**

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| 08:30 a.m. – 09:00 a.m. | **Registration** | |
| 09:00 a.m. – 09:10 a.m. | **Opening remark** | Asst. Prof. Soorathep Kheawhom |
| 09:10 a.m. – 10:30 a.m. | **Part 1 Introduction to plant wide control**  Part 1.1 Introduction  - Objective: Put controllers on flow sheet (make P&ID)  - Two main objectives for control: Longer-term economics (CV1) and shorter-term stability (CV2)  - Regulatory (basic) and supervisory (advanced) control layer  Part 1.2 Optimal operation (economics)  - Active constraints  Selection of economic controlled variables (CV1)  - Self-optimizing variables. | Prof. Sigurd Skogestad |
| 10:30 a.m. – 10:45 a.m. | **Coffee Break** | |
| 10:45 a.m. – 12:00 a.m. | Part 1.3 Inventory (level) control structure  - Location of throughput manipulator  - Consistency and radiating rule  Part 1.4 Structure of regulatory control layer (PID)  - Selection of controlled variables (CV2) and pairing with manipulated variables (MV2)  - Main rule: Control drifting variables and "Pair close" | Prof. Sigurd Skogestad |
| 12:00 a.m. – 01:00 p.m. | **Lunch** | |
| 01:00 p.m. – 02:30 p.m. | **Part 2 PID controller tuning: It pays off to be systematic**  - Derivation SIMC PID tuning rules  - Controller gain, Integral time, derivative time  - Obtaining first-order plus delay models  - Open-loop step response  - From detailed model (half rule)  - From closed-loop set point response | Prof. Sigurd Skogestad |
| 02:30 p.m. – 02:45 p.m. | **Coffee Break** | |
| 02:45 p.m. – 04:00 p.m. | **Part 2 PID controller tuning: It pays off to be systematic (cont.)**  - Integrating processes (level control)  - Other special processes and examples  - When do we need derivative action?  - Near-optimality of SIMC PID tuning rules  - Non PID-control: Is there an advantage in using Smith Predictor?  - Examples | Prof. Sigurd Skogestad |
| 06.00 p.m. – 08:30 p.m. | **Dinner (Mum Aroi, Pattaya)** |  |

**April 4, 2014 (2nd Day)**

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| 09:00 a.m. – 10:30 a.m. | **Part 1 (plantwide control). Case studies** | Prof. Sigurd Skogestad |
| 10:30 a.m. – 10:45 a.m. | **Coffee Break** | |
| 10:45 a.m. – 12:00 a.m. | **Part 3 Advanced control layer Design based on simple elements (cont.)**  - Ratio control  - Cascade control  - Selectors  - Input resetting (valve position control)  - Split range control  - Decouplers (including physically based)  When should these elements be used?  When use MPC instead? | Prof. Sigurd Skogestad |
| 12:00 a.m. – 01:00 p.m. | **Lunch** | |
| 01:00 p.m. – 02:30 p.m. | **Part 4 Further Case studies**  Example: Distillation column control  Example: Plantwide control of complete plant | Prof. Nitin Kaistha |
| 02:00 p.m. – 02:45 p.m. | **Coffee Break** | |
| 02:45 p.m. – 04:00 p.m. | **Part 4 Case studies (cont.)**  Example: Plantwide control of complete plant  Recycle processes: How to avoid snowballing | Prof. Nitin Kaistha |
| 04:00 p.m. – 04:10 p.m. | **Closing remark** | Asst. Prof. Soorathep Kheawhom |