**PRACTICAL PLANTWIDE PROCESS CONTROL**

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

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

|  |  |
| --- | --- |
| 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 layerPart 1.2 Optimal operation (economics)- Active constraintsSelection 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 rulePart 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)**

|  |  |  |
| --- | --- | --- |
| 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 controlExample: 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 plantRecycle processes: How to avoid snowballing | Prof. Nitin Kaistha |
| 04:00 p.m. – 04:10 p.m. | **Closing remark** | Asst. Prof. Soorathep Kheawhom |