



**Singapore-Delft  
Water Alliance**



*Presents*

## **Towards Coordinating Local Model Predictive Controllers for Multi-Reservoir Systems**

by

**Dr S. Sundaramoorthy**

**Date: Wednesday , 02<sup>nd</sup> December 2009**  
**Time: 3.00 to 4.00 pm**  
**Venue: E1-08-25 SDWA Conference Room**  
**National University of Singapore**

### **Abstract**

Model Predictive Control (MPC) is one of the most attractive control strategies for the control of large scale systems. MPC are implemented as either centralized or decentralized controllers. While centralized MPC leads to system wide optimum performance, it is computationally intensive, difficult to implement, tune and maintain and is characterized by poor fault tolerance. On the other hand, decentralized MPC is flexible, easy to implement and maintain, but leads to solutions that are not optimum. To achieve optimal operation of large scale systems, decentralized MPC have to be coordinated and driven towards the performance of a centralized MPC.

Large multi-purpose reservoirs spread across a country are usually difficult to control using a centralized strategy due to the enormity and spatially distributed structure of the system. Individual reservoirs are usually interconnected and the interactions are not accounted for when a decentralized strategy is used. To optimize this whole network of multi-reservoir operation, a coordinating MPC is desired at the higher level.

This lecture will highlight various strategies and issues related to the coordination of decentralized MPC and their relevance in the optimal control and operation of multi reservoir system.

### **About the speaker**

Dr. Sundaramoorthy is a Professor at the Department of Chemical Engineering at Pondicherry Engineering College, India, who is currently with Singapore-Delft Water Alliance as a Visiting Research Fellow. He received his Ph.D from Indian Institute of Technology, Madras. He specializes in the area of 'Process Control'. His main research interest includes Nonlinear Model Predictive Controller, PID

controller tuning and modeling of RO systems.

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