

Two-Day Intensive Course

ENERGY AND WATER MANAGEMENT IN PROCESS INDUSTRIES

28 and 29 January, 2005

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PROCESS INTEGRATION

The research in Process Integration through Pinch Technology started in the late 1970s and early 1980s with an emphasis on Energy Conservation. It does not require complex mathematical formulations and is thus relatively easy to use for industrial problems. Pinch Technology comprises a set of simple and elegant tools with a fundamental thermodynamic basis. When applied in a systematic and logical manner, these design principles allow the process engineer to explore alternatives that are economically attractive for grassroots as well as retrofit applications. The technology recognizes the vital necessity to set targets, i.e., to predict the optimum utilisation of different resources (such as energy, water, power, hydrogen, etc.) or the amount of different resources that can possibly be conserved in a process. Process engineers with a sound knowledge of pinch principles could exploit the available options through process integration to arrive at an optimal design that suitably accounts for the intangibles (such as safety, layout, flexibility, controllability and operability).

COURSE OBJECTIVES

The course is planned to equip practicing engineers with the principles of pinch technology and techniques of process integration for better process design (economically attractive designs with optimal resource requirement), through a judicious blend of theory and industrial case studies. The primary focus of this course will be issues related to energy and water

conservation in process industries. The course will consist of lecture sessions; tutorial / hands-on training sessions; software and industrial case-study sessions.

Participants are requested to bring a pocket calculator for the tutorial and hands-on-training sessions.

WHO SHOULD ATTEND?

This course is intended for professionals in the process industries and engineering consulting companies who are involved either with process design, energy auditing and conservation, water management, and/or energy planning decisions.

PROGRAMME VENUE

The programme will be held at the **Institute Guest House, IIT Bombay**. IIT Bombay is a small township in itself. The campus has a green cover, rich in natural flora and fauna. The campus extends over 220 hectares amidst picturesque surroundings with Vihar and Powai lakes on either side.

COURSE CONTENTS

The course will provide a detailed coverage of the basics and fundamentals of process integration techniques through pinch technology with emphasis on energy conservation and water management. It will cover the following topics:

- **Energy Audit and Conservation**
- **Energy Targeting and Pinch Principles**
- **Design of Heat Exchanger Networks**
- **Heat Exchanger Design**
- **Water Conservation and Management**
- **Water Treatment and Regeneration**
- **Energy Conservation in Distillation**
- **Hydrogen Management**
- **Process Integration Techniques**
- **Utility Systems: Steam, Power & Cogeneration**
- **Industrial Case Studies**
- **Tutorial and hands-on training sessions**

Lectures will begin at 9:00am every day.

COURSE FACULTY

Prof. Uday V. Shenoy, Chemical Eng, IIT-Bombay

Dr. Shenoy holds a B. Tech. from IIT-Bombay and a Ph.D. from Carnegie Mellon University, Pittsburgh (USA) in Chemical Engineering. His research interests include process integration, energy optimization, transport phenomena, polymer engineering, and computer applications. He is the sole author of a 642-page book with PC software titled 'Heat Exchanger Network Synthesis' published by Gulf Publishing Company, USA in 1995. He has undertaken consultancy projects for EIL and Reliance Petroleum Ltd. He received the Amar Dye Chem Award in 1995 from IChE, the ISTE-IPCL National Award in 1997 from ISTE, and the Excellence in Teaching Award in 1999 from IIT-Bombay.

Prof. Rangan Banerjee, Energy Systems Eng, IIT-Bombay

Dr. Banerjee holds B. Tech. and Ph.D. from IIT-Bombay in Mechanical Engineering. Dr. Banerjee worked for Cadbury's, TERI-New Delhi, EIL and IGIDR-Bombay before joining the IITB faculty in 1993. He is also adjunct faculty at the Department of Engineering and Public Policy, Carnegie Mellon University, Pittsburgh (USA). His research interests include energy management and energy efficiency, demand side management, energy modelling, power systems planning, cogeneration, energy planning and policy, and technology assessment & forecasting. He has been involved with numerous research and consultancy projects in these areas.

Prof. Santanu Bandyopadhyay, Energy Systems Eng, IIT-Bombay

Dr. Bandyopadhyay received his B.Tech. from IIT-Kharagpur; M.Tech. and Ph.D. from IIT-Bombay in Energy Systems Engineering. Before joining IIT-Bombay, he served the Heat and Mass Transfer Division of Engineers India Ltd., New Delhi. His research interests include Industrial Energy conservation, energy integration, process optimization, mathematical modeling and simulation of various energy systems.

Ms. Sreyasi Bandyopadhyay, Tecnimont ICB Ltd.

Ms. Bandyopadhyay received her B.Tech. from Calcutta University in Chemical Engineering. Before joining Process Dept. of Tecnimont ICB-Mumbai, she served the Heat and Mass Transfer Division of Engineers India Ltd., New Delhi. She has the experience of designing more than 300 heat exchangers for single and two phase flow consisting of normal shells, coolers, reboilers (thermosyphon and kettle type), steam generators, air-coolers, double-pipe, etc.

COURSE FEE

Per participant

- **Rs.7000 for Industry delegates**
- **US\$200 for foreign delegates**

The demand draft should be drawn in favour of The Registrar, IIT Bombay- CEP Account payable at Mumbai. No income tax is to be deducted at source from the course fee, as IIT Bombay is exempt from the same.

The course fee includes course material, free software for energy targeting, breakfast, lunch and coffee/tea.

REGISTRATION

Names of the participants may be forwarded along with the demand draft for the course fee to the address given below on or before 15th January 2005. On January 28, 2005, registration formalities will be completed from 8.30 to 9.00 hrs.

Boarding and Lodging

Accommodation (during the course) can be arranged in the institute guest house for a limited number of participants on advance request. Accommodation charges are not included in the course fee and should be paid directly by the participant.

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SOME REFERENCES

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- Bandyopadhyay S. and Bandyopadhyay, S. (2004) Design of Heat Recovery equipments in Sulfur Recovery Unit, Indo-US joint conference.

Similar Courses Are Also Available In-House At Your Company.

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