AICTE SPONSORED SHORT-TERM COURSE

ON

PINCH ANALYSIS: A TOOL FOR EFFICIENT USE OF ENERGY

5^{th} - 9^{st} Jan, 2009

DEPARTMENT OF CHEMICAL ENGINEERING
NATIONAL INSTITUTE OF TECHNOLOGY
ROURKELA – 769008, ORISSA

COURSE OVERVIEW

Process Integration (PI) is a general approach for the design of energy efficient process systems and Pinch Technology is a tool to achieve it. In the late 1970s Pinch Technology emerged as a tool for the design of heat exchanger networks against the backdrop of energy crisis. Its key contribution was to provide the engineers with simple concept of heat, power and thermodynamics, which can be used interactively in each stage of design. In 1980s, Pinch Technology received prime attention as a heat exchanger network design tool and it was found that this technology could save around 20–40% of energy bills of the industry. Since then, the method has become broad based. However, its thermodynamic principles, heuristic rules and its key strategy to set targets before design remain intact. With time it has emerged as a powerful, matured integrated design and retrofitting tool for overall process design.

The objective of the present course is to develop concepts for the implementation of Pinch Technology in an integrated process design environment.

COURSE CONTENTS

- ***Process Integration and its building blocks***
  Paradigms of Process Intensification and definition of Process Integration. Application area of PI and Techniques available; Pinch Technology: Basic concepts, benefits of Pinch Technology, problem addressed – creating new designs & retrofitting.

- ***Basic elements of Pinch technology***
  Stream data, Grid representation of process, composite heating and cooling, problem table algorithm, minimum utility requirement, maximum energy recovery, concept of ΔT_{min}, Pinch point, Grand composite curve.

- ***Targetting of Heat Exchange Network (HEN)***
  Energy targeting – role of Thermodynamic laws, Area targeting, Number of Unit target, Number of shell target, Cost targeting- Operating cost, Capital cost, Total annual cost (TAC), Concept of Supertargeting.

- ***HEN Design***
  Pinch design method – Heuristic rules-(i) MC_P criterion (ii) The number of stream criterion, Stream matching, Stream splitting, Design of HEN for MER, Network evolution and identification of loops and paths, Loop breaking and path relaxation, Driving force plot, Remaining problem analysis.

The participants will be given exposure to the state-of-the-art software (SUPERTARGET, ASPEN PINCH) on Pinch Technology.

PARTICIPANTS

The Course is designed for professionals, academicians and industry people who are involved in design of energy efficient processes or are interested in improving the energy efficiency of processes. It will improve their technical skills, enhance their working relationships and gain heightened level of performance through assertiveness and influence.

REGISTRATION FEES

Participants sponsored by Industry / Government / Private Organizations: Rs. 5000/- for Non-resident participants and Rs. 7500/- for residential participants (which includes course materials, boarding and lodging expenses at N.I.T. Rourkela Guest House during the course period). Applicants from AICTE recognized institutes are exempted from Registration Fees.

[Limited number of participants from AICTE recognized institutions will be eligible for sleeper class to and fro railway fare via shortest route and free board and lodging in the Guest House during the course period.]

The payment is to be made by demand draft drawn on any Nationalized Bank in favour of "**Continuing Education, NIT, Rourkela**," payable at **Rourkela** and must reach to the coordinator on or before 15.12.08.

ACCOMODATION

Accommodation will be provided in the Institute Guest House on twin-sharing basis for outstation participants.

RESOURCE PERSONS

The course will be offered by the faculty members of NIT Rourkela. Experts from other premier academic institutions such as IIT Roorkee and IIT Bombay will be invited to share their latest research findings with the participants.

CERTIFICATE

Certificate will be given to the participants after successful completion of the Course under the Continuing Education Programme of the Institute.

DEPARTMENT OF CHEMICAL ENGINEERING

The Department of Chemical Engineering at National Institute of Technology, Rourkela was founded in 1963 with undergraduate program and offered postgraduate program in 1981. The Department is dedicated to lead high quality research programs in a wide spectrum of areas like Fluidization engineering, Process modeling and simulation, Membrane separation, Fluid phase equilibrium, Computational fluid dynamics, Heat transfer, Industrial pollution control, Coal chemicals, Reaction engineering, Nanotechnology and Pinch technology. The Laboratories are equipped with modern and sophisticated instruments as well as state-of-the-art softwares e.g. ASPEN Engineering Suit, FLUENT, Pro2 and SuperTarget in the above areas. An all round development of student is aimed at with emphasis on the applied aspects of Chemical Engineering through practical training, project, seminars and field work.

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REGISTRATION FORM

AICTE Sponsored Short term course
On
Pinch Analysis: A Tool for Efficient Use of Energy
5th - 9st Jan, 2009

1. Name: _____
(Capital Letters)
2. Designation: _____
3. Organization: _____
4. Mailing Address: _____
_____
_____
Telephone _____
FAX _____
E-mail _____

5. Registration Fee Amount:
Rupees _____
6. Enclosed crossed bank draft no. _____
Dated _____ for Rupees _____
On Bank _____

Date Signature of the Participant

Sponsoring Authority

Signature :

Name

Designation:

Organisation:

Date: (seal)