



(Technical- Electrical/Mechanical/Automation/Chemical, Behavioral& Soft Skill, Safety, Business Excellence, Safety &Energy Audit)

**Centre For Industrial Solution and Advanced Training**

**AN ISO 9001:2015 CERTIFIED**

**"A complete Training Solution Under One roof"**

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## **TWO DAY`S TRAINING PROGRAM ON Shell and Tube Heat Exchangers**

**(Fundamentals, Thermal Design, Operation & Maintenance)**

**25-26 July 2018@Kolkata; 17-18 Sept 2018@Nagpur**

*Objective of the program:* Shell and Tube heat Exchangers are one of the most important and commonly used equipments in chemical process industry. Thermal design provides key design parameters for the fabrication of heat exchangers. It is thermal design that provides input for mechanical design and later on fabrication of the exchangers. Proper understanding and knowledge related to fundamentals, thermal design, operation and maintenance of shell and tube heat exchangers is extremely necessary and useful for design Process engineers, plant Process engineers as well as manufacturers of heat exchangers for right design and manufacturing and smooth operation of the heat exchangers. It is this objective that this program will try to achieve.

*Learning Outcome:* The attendees of the training program would be able to acquire following learnings from the training Program:

- i) Concept and basics of the thermal design of shell and tube heat exchangers
- ii) Difference between thermal design, rating and simulation
- iii) How to optimize thermal design?
- iv) How to manage pressure drops?
- v) How to tackle flow induced vibrational issues?
- vi) Specifying the configuration/geometry of the exchanger.
- vii) How to specify design pressure and design temperature of the exchanger?
- viii)How the international codes/standards are used in thermal design of the exchangers?
- ix) Various aspects related to operation, maintenance and troubleshooting of shell and tube heat exchangers.
- x) About thermal design checklist and parameters to be specified in Process datasheet of a shell and tube heat exchanger.

**Specific Features of the Program:**

- i) The program focuses on learning through example & illustrations.
- ii) It combines design as well as operational aspects of shell and tube heat exchangers and hence aims at providing comprehensive knowledge and learning to participants.
- iii) The program aims to have interactive sessions for better learning and understanding.



- iv) It explains how the international standards are used in design, operation and maintenance of shell and tube heat exchangers.

### *Who should attend?*

Process engineers & managers, Mechanical engineers & managers in plants and design organizations, heat exchanger vendors and manufacturers.

**Prerequisites:** Anyone who is a graduate Process or Mechanical engineer working in a design engineering organization, plant or Vendor Company preferably with minimum 1-2 year's work experience can attend this training program.

### Contents:

- Concept and basics of thermal design
  - Difference between thermal design, rating and simulation
  - Selection of configuration of the exchanger
- Selecting TEMA type and TEMA class
- Optimizing tube pitch type and value
- Optimizing number of tube passes
  - Optimizing heat transfer area-maximizing heat transfer coefficient and maximizing effective mean temperature difference (EMTD)
- Fluid flow by-passing and channeling
- Managing pressure drop
- Nozzle sizing
- Fixing exchanger tube layout
- Flow induced vibration
- Fixing design pressure and design temperature
- Preparation of heat exchanger Process datasheet
- Exchanger thermal design checklist

**Certification:** Every successful participant will be awarded a course completion certificate.

### **Delivery Methodology (Strategy):**

- Introduction and Objective Setting
- Knowledge Presentations,
- Assignments & Exercise,
- Feedback and Assessment



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- Discussion and Interaction
- Delivery 9:30 AM to 17:30 PM

## About Expert: Mr S K Singh

Professional Qualification: B.Tech. (Honors) in Chemical Technology, MBA,

Professional Membership:

- Fellow of the Institution of Engineers India (IEI),
- Chartered engineer (India),
- Member of All India Management Association (AIMA) and Delhi Management Association

Professional Experience: 24+ Yrs

Area of Expertize: Process design and engineering in areas of oil and gas (off-shore and on-shore), refinery, petrochemicals, fertilizers (Ammonia), LPG, LNG, sulfuric acid.

Mr Satyendra Kumar Singh, has four years of experience as a Head of Process Department. He has worked in some highly reputed engineering consultancy and engineering-procurement-construction (EPC) companies such as Saipem India Projects Limited, Bechtel India Pvt. Ltd., Projects and Development India Ltd.

He has authored twenty papers on engineering and management published in reputed international and national journals including Chemical Engineering, Process Worldwide, Modern Manufacturing India, etc

Training Imparted or specialization:

1. Pressure Safety Valves (PSVs)
2. Control Valves
3. Thermal Design and Rating of Heat Exchangers
4. Piping and Instrumentation Diagram (P&ID)
5. Pumps

He has imparted trainings, mentoring and coaching to many of his subordinates and other engineers from various companies during his more than 24 years of professional career.

Practical Exposure

Throughout his over 24 years of professional experience, Mr. Satyendra has been involved in PSV design and heat exchanger design as part of Process design and engineering for execution of various projects. He has also interacted with heat exchanger manufacturers on critical issues related to heat exchangers. He has guided and trained to many of his subordinates on heat exchanger design.

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## Registration Details:

Dates of the program: **25-26 July 2018@Kolkata; 17-18 Sept 2018@Nagpur**

Participation fees: INR 20000/- Per participant (GST@18% extra) (Nonresidential)

Payment: ECS/NEFT/DD in favor of “Centre for Industrial Solutions and Advanced Training”  
Payable at Nagpur, Maharashtra, India. Account No: 0509102000003353 Bank: IDBI, Wardha-442001, MS, India; IFSC Code: IBKL0000509; Swift Code IBKLINBBNGP; MICR Code 442259001.

Venue: 1. Hotel The Lindsay, Kolkata  
2. KEC International Training Centre, Butibori MIDC, Nagpur

## For Registration,

We prefer on line Registration through our web [www.cisat.co.in](http://www.cisat.co.in).

If not please do send participation confirmation email to,

Vikas - +91-7709012815; 8669546332; [vikas@cisat.co.in](mailto:vikas@cisat.co.in); [cisat.nagpur@gmail.com](mailto:cisat.nagpur@gmail.com);

Mahendra Dhande ; 9168326662

Positively Looking forward to hear from you soon.

With Best Regards and Thanks,

**Vikas S. Wadnerkar** (Contact:+91-7709012815 )

**ME** (Electrical Engg), **BE** (Power Electronics), **PGDHRM**

**PE** (IE India- 700116-4), **IOSH** (UK) Certified, **OHSAS** 18001

**Head Technical Consultant and Expert Training**

[www.cisat.co.in](http://www.cisat.co.in); Email: [cisat.nagpur@gmail.com](mailto:cisat.nagpur@gmail.com); [vikas@cisat.co.in](mailto:vikas@cisat.co.in)

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(Technical- Electrical/Mechanical/Automation/Chemical, Behavioral, Soft Skill, Safety, Out Bound training, Business Excellence, Safety Audit, Energy Audit, Skill Gap Analysis/Automation Solution/Sales & Service; PLC/Drives, Productivity and Time and Motion Study, Improvement Projects, TPM, 5S and Six Sigma Implementation, Technicians Training)