Engineering Staff College of India

Autonomous Organ of The Institution of Engineers (India)

Old Bombay Road, Gachi Bowli, Hyderabad – 500032. TS, India

POWER & ENERGY DIVISION

Classroom Continuing Professional Development Programme on

Power Plant & Process Cooling Towers, Compressors- Performance Optimization

04 – 06 September, 2023

at ESCI, Hyderabad

(An IMS Certified (ISO 9001:2015 QMS, ISO 14000:2015 Envtl. Mgmt., ISO 45001:2018 (OH&SM), ISO 50001:2018 EnM), AICTE & CEA Recognized Institution)

Centre for Promotion of Professional Excellence

INTRODUCTION

Water is commonly used as a heat transfer medium to remove heat from Cooling Towers, refrigerant condensers or industrial process heat exchangers. In the past, this was accomplished by drawing a continuous stream of water from a utility water supply or a natural body of water, heating it as it passed through the process, and then discharging the water directly to a sewer or returning it to the body of water. Water purchased from utilities for this purpose has now become prohibitively expensive because of increased water supply and disposal costs. Similarly, cooling water drawn from natural sources is relatively unavailable because the ecological disturbance caused by the increased temperature of discharge water has become unacceptable, as per recent environmental pollution norms. . Air-cooled heat exchangers cool water by rejecting heat directly to the atmosphere, but the first cost and fan energy consumption of these devices are high and the plan area required is relatively large. They can economically cool water to within approximately 6.5^0 C of the ambient dry-bulb temperature—too high for the cooling water requirements of most refrigeration systems and many industrial processes. Cooling towers overcome most of these problems and therefore are commonly used to dissipate heat from water-cooled refrigeration, air-conditioning, and industrial process systems. The water consumption rate of a cooling tower system is only about 5% of that of a once-through system, making it the least expensive system to operate with purchased water supplies. Additionally, the amount of heated water discharged (blowdown) is very small, so the ecological effect is greatly reduced. This lower temperature improves the efficiency of the overall system, thereby reducing energy use significantly and increasing process output. The combination of flow rate and heat load dictates the range a cooling tower must accommodate. The entering air wet-bulb temperature and required system temperature level combine with cooling tower size to balance the heat rejected at a specified approach& air cooled condensers are needed in areas of water starved areas, hence their optimization needs importance.

Centrifugal/ Reciprocating compressors are some of the most critical assets in a plant. These types of machines can provide higher compression ratios than similar axial or centrifugal compressors. Reciprocating compressors have been in service within industry for decades and are among the oldest compressor designs. They play an essential role in numerous industrial processes, including oil and gas production, refining, enhanced oil recovery, corrosive gas production and cryogenic applications.

Reciprocating compressors in these industries often have different characteristics such as unique construction materials, lubrication system designs, driver unit types, capacity control systems and process features.

The most interest in condition monitoring solutions is in the downstream segment. In these processes, profit is linked directly to reciprocating compressor availability, so plants often categorize these compressors as critical machines.

OBJECTIVE

To sensitize the participants with importance of all types of Cooling Towers & Compressors in power plants and in process industries, design and selection aspects various types and their commissioning, operation and maintenance aspects, performance assessments and case studies.

COURSE COVERAGE

- Types of Process & Power Plant Cooling Towers, their application & selection criteria for Power Station/ Process Industries
- Working principles of different types of Cooling Towers & Operation guidelines
- Design aspects & Const. features of Cooling Towers
- Material selection and installation & commissioning. aspects of Cooling Towers
- Cooling Towers Operation, Preventive & Predictive Maintenance Techniques & trouble shooting and improvement aspects
- Performance assessment techniques, Optimization & Monitoring including Case Studies incl. Chemical treatment
- Classification of various Compressors, their application & selection criteria for Power Station/ Process Industries
- Material selection and installation & commissioning. aspects of Compressors
- Compressors Operation & Trouble shooting, Vibration Analysis
- Preventive & Predictive Maintenance Techniques for Compressors
- Performance Assessment techniques & Monitoring incl. Energy Conservation measures in Compressors
- Energy Conservation Calculations & Case Studies for improvements

METHODOLOGY

The program will be conducted in an interactive environment providing greater scope for discussions. Emphasis will be on a highly participative style of learning. The classrooms are provided with latest audio – visual teaching aids. The ambience in the campus and classrooms facilitate in effective learning by participants.

FACULTY

Apart from Core Internal Faculty, Domain Experts from various segments of Power sector/ Process industries. will share their experience, besides, faculty from Consulting Firms, Government Organisations, Manufacturing, Academic and Research Institutions etc.

TARGET PARTICIPANTS

O&M Engineers, Managers& Executives from Power Utilities, Independent Power Producers, Chemical & Process Industries.

PROGRAMME VENUE

Engineering Staff College of India (ESCI) Campus, Old Bombay Road, Gachi Bowli, Hyderabad - 500032, Telangana, India.

DATES

04 – 06 September, 2023

TIMINGS

On the first day, registration will commence at 0900 Hrs. On all the other days, the programme timings will be from 0945 to 1715 hrs with breaks in between for tea and lunch.

ACCOMMODATION

Participants will be accommodated in our Executive Hostel located within ESCI Campus. The accommodation will be on twin sharing basis.

COURSE DIRECTOR

Dr. V. Vidyasagar
Sr. Faculty - Power & Energy Division, ESCI
(Mob: 9421801203)

COURSE FEE

Residential Fee is Rs.16,500/- per participant. Residential fee includes Course Material, Course Kit, and Twin-sharing / Single AC accommodation as per availability, Breakfast, Lunch, Dinner, Tea / Coffee and Snacks.

DISCOUNTS

Non-Residential Fee: 10% discount on course fee is allowed for non-residential participants.

Group Discount: 10% discount for three or more participants if sponsored by the same organization.

(All discounts are applicable only if fee is received at ESCI a week before the commencement of the programme)

GST @18% (as applicable) is to be paid extra over and above the training fee.
GST No. 36AAATT3439Q1ZV, PAN Card No. AAATT3439Q.

The course fee is to be paid in favour of **"IE (I) – ENGINEERING STAFF COLLEGE OF INDIA"** in the form of demand draft payable at Hyderabad.

Alternatively the payment may be made by **Electronic Fund Transfer (EFT) to ESCI – Current A/c No. 33705165550** with The SBI, Manikonda Branch, Gachi Bowli, Hyderabad – 500 032 by **NEFT / RTGS / IFSC Code No: SBIN0011076 – MICR No: 500002107.** While using EFT method of payment, please ensure to communicate us your company name, ESCI invoice reference and programme title.

Online registration is available on ESCI website. To register, manually please send your nominations (**10 days** prior to date of commencement of the programme) giving details of name, designation, contact address, email address, mobile number, telephone and fax number of the participant along with the details of mode of payment of fee, addressed to:

Head, Power & Energy Division
Engineering Staff College of India
Gachi Bowli, Hyderabad – 500 032
Phone: 040–6630 4170 to 4176 ; 040-6630 4173 / 4176,
Fax: 040 – 23000336, 66304103
Email:pe.esci@gmail.com / pe@escihyd.org; Website: www.escihyd.org

CERTIFICATE: A certificate of participation will be awarded to each participant on conclusion of the programme.

GENERAL INSTRUCTIONS

- ESCI encourages participants to present case studies from their respective organizations.
- For the convenience of the outstation participants ESCI will facilitate pickup and drop from Airport / Railway Station / Bus Stations, if travel plans are received at least 3 days in advance along with mobile number by fax or email. The charges shall be paid by the participants directly to the cab driver.
- ESCI provides complimentary accommodation to participants a day prior to the commencement and after the conclusion of the programme. (Check in at 12:00 hrs a day prior to the commencement & check out at 12:00 hrs a day after completion of the programme)
- Overstay charges of @ Rs.990/- per day / per head (Food will be charged extra).
- Well developed Information Centre and Internet facilities are available to the participants free of cost.