



ENGINEERING STAFF COLLEGE OF INDIA

Autonomous Organ of The Institution of Engineers (India)
(IMS [ISO 9001:2015, ISO 14001:2015, ISO 50001:2018, ISO 45001:2018],
ISO/IEC 17025:2017 Certified, AICTE & CEA Recognized Institution)
Old Bombay Road, Gachibowli, Hyderabad – 500 032. Telangana, India



Management and Technology Division

Hybrid (Offline & Online) Continuing Professional Development Programme on **Maintenance and Performance monitoring of Centrifugal Pumps and Blowers**

Dates: 07 - 10 December 2026
at ESCI Campus, Hyderabad

INTRODUCTION

Centrifugal pumps and blowers are critical rotating equipment widely used across process, power, chemical, petrochemical, water treatment, and manufacturing industries. Their reliable and efficient operation has a direct impact on plant productivity, energy consumption, process continuity, and overall equipment availability. Understanding their operating principles, performance characteristics, system interaction, and operating limitations is therefore essential for personnel involved in operation, maintenance, and engineering activities.

Effective maintenance and continuous performance monitoring play a vital role in preventing unexpected failures and maintaining equipment efficiency throughout its service life. The programme covers important aspects such as inspection and maintenance practices, condition monitoring, vibration analysis, lubrication, shaft alignment, bearing and seal maintenance, cavitation, imbalance, misalignment, and other common failure mechanisms. Emphasis is also placed on evaluating operating parameters and identifying deviations that can indicate deterioration in equipment performance.

A systematic approach to performance assessment and troubleshooting enables early identification of problems, timely maintenance intervention, and improved equipment reliability. Through practical case studies and application-oriented discussions, participants will develop a better understanding of performance evaluation, fault diagnosis, preventive and predictive maintenance strategies, energy-efficiency considerations, and measures for improving the availability and service life of centrifugal pumps and blowers.

OBJECTIVES

The objective of the Programme are

- Understand the principles and operation of centrifugal pumps and blowers.
- Identify common equipment faults and failure mechanisms.
- Apply effective maintenance and inspection practices.
- Monitor equipment performance and operating parameters.
- Diagnose vibration, alignment, cavitation, and other abnormalities.
- Improve equipment reliability, efficiency, and service life.

COURSE COVERAGE

The contents to be deliberated during the programme are:

1. Fundamentals of Centrifugal Pumps

- Construction, components, and operating principles
- Pump characteristics, system curves, and operating parameters

2. Pump Performance & Assessment

- Performance testing and efficiency evaluation
- Head, flow, power, NPSH, and performance curves

3. Pump Maintenance & Troubleshooting

- Preventive and predictive maintenance practices
- Cavitation, vibration, leakage, bearing, and seal failures

4. Centrifugal Blowers – Fundamentals

- Types, construction, and operating principles
- Blower characteristics, pressure, flow, and power requirements

5. Blower Performance & Monitoring

- Performance evaluation and operating parameter monitoring
- Efficiency assessment and identification of performance deterioration

6. Condition Monitoring & Fault Diagnosis

- Vibration, temperature, lubrication, and alignment monitoring
- Fault identification, root-cause analysis, and troubleshooting

7. Reliability Improvement & Energy Efficiency

- Reliability-centred maintenance and failure prevention
- Energy optimization, operating practices, and equipment life improvement

METHODOLOGY

Methodology of the programme includes class room Sessions with Lecture/discussion with audio visual aid, benched marked practices if any, video shows, Chalk & Talk sessions, group discussions, case studies, debates, sharing of experiences, etc. All the sessions will be interactive demanding active participation from all the members. Case Method of Instructions will be the main method of knowledge facilitation.

TARGET PARTICIPANTS

Senior & Middle Level Engineers, Executives, Managers and Quality Assurance Executives, Scientists, responsible for maintenance & operation of equipment/systems pertaining to Power plants, Refineries, Fertilizers, Pharmaceuticals, Railways, Power Plants, Nuclear Industries Chemical Engineering set ups, Navy, Army Air force, Production and Manufacturing set ups. In addition, faculty from academic institutions will also be benefitted by the course. Defence Establishments like Dockyards, Base Repair Depots, EME Workshops will find it very useful, leading them to excel in their performance.

BENEFIT TO THE PARTICIPANTS

- Improve skills in maintenance, condition monitoring, and troubleshooting of pumps and blowers.
- Develop the ability to assess performance, identify faults, and improve energy efficiency.
- Enhance equipment reliability, availability, and service life through effective maintenance practices.

FACULTY

Faculty consists of experts from Centrifugal Pumps and Compressors manufacturing industry and connected research establishments besides that from ESCI.

PROGRAMME DIRECTOR

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PROGRAMME DATES & TIMINGS

Dates: 07-10 December 2026

Timings: On the first day Registration will commence at **09:00 Hrs.** On all other days the programme timings will be from **09:45-17:15 Hrs** with breaks in between for tea and lunch.

COURSE FEE: **Rs. 22,000/- (Rupees Twenty-Two Thousand only)** per Participant + GST@18% Extra. Fee includes, course material, course kit, twin-sharing/single AC accommodation as per availability, breakfast, lunch, dinner, tea / coffee and snacks during the actual days of training programme.

Online: Webex platform

Rs. 14,000 /- (Rupees Fourteen Thousand only) per participant + GST@18% Extra.

DISCOUNT

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

PAN Card No AAATT3439Q; GST No. 36AAATT3439Q1ZV. H.S. No. 999293 (Under commercial training or coaching services – clause 65(105) (ZZC) of Finance act – 1994).

Programme fee is to be paid in in favor of **“THE INSTITUTION OF ENGINEERS (INDIA) – 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 - **SB A/c No.0432104000039631 with The IDBI Bank Ltd., Gachibowli Branch, Plot No. 2-53/2, JNIBF, IIIT Junction, Gachibowli, Hyderabad-500032 by RTG's/ NIFT / IFSC Code No: IBKL0000432.** While using EFT method of payment, please ensure to communicate us your company name, our Invoice reference and programme title.

CERTIFICATION

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.
- ESCI provides complimentary accommodation and boarding to the participants one day before commencement (Check-in 1200 h) and one day after conclusion (Check-out 1200 h) of the programme duration. Overstay charges will be applicable as per ESCI rules (subject to availability of accommodation).
- Well-developed Information Centre and Internet facilities are available to the participants free of cost.