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

Continuing Professional Development Programme on

Industrial bearings Revisited- Maintenance, Condition Monitoring, Analysis and Prevention of Failures

Dates : 23 – 26 June 2025

at ESCI Campus, Hyderabad

INTRODUCTION

Industries all over the world use millions of bearings of various types, made of extreme precision and high standardization, working in demanding applications of high sustainability, extreme reliability, and best performance. Unfortunately, bearings fail, and they fail at most inopportune moment, worryingly, after operating only for 5-10% of their rated life. Often the cost of the bearings is much less than the cost of production, down time, and consequent damages. No doubt, modern precision manufacturing practices and maintenance management techniques such as predictive maintenance have reduced premature bearing failure rate. An effective condition-monitoring schedule can improve a machine's operational efficiency, reduce the maintenance/replacement cost, and prolong the useful lifespan of a machine.

This four-day course begins with a refresher of the bearing knowledge, display and demonstration of several types of rolling element bearings. The course continues with care, lubrication, and prevention of bearing failures. Several actual case histories of bearing failures are presented in the classical failure analysis pattern of observations, possible reasons for failure, argued analysis of failure, inferences and recommendations.

Bearings do give a tell - tale indication of initiation and imminent failure. Thus the course enables the participants to establish a corrective maintenance plan and increase Mean time between failures (MTBF), reduce Mean time to repair (MTTR), decrease Mean Logistics Delay Time (MLTD), and reduce the demand for resources including spares. Avoiding catastrophic failure obviously reduces the safety and environmental risks, and the possibility of secondary damage.

This course focuses on a deeper insight on condition monitoring techniques with the actual machinery diagnostics instruments, and signature analyses which will help the maintenance engineer to perform better and prevent the machinery from unplanned breakdowns.

OBJECTIVES:

The main objectives of the programme are:

- To understand industrial bearings, types, nomenclature, mounting, unmounting, lubrication, and care of bearings.
- To look into wide varieties of rolling element bearings and learn some duplicate detection skills
- To understand why industrial bearings, fail and how to prevent them.
- To learn and practice condition monitoring and machinery diagnostics techniques namaste

COURSE COVERAGE

The following topics will be deliberated during the training programme:

- Fundamentals of Bearing basics, loads and detailed classification
- Various types of ball and roller bearings and their significance and application
- Bearing nomenclature, clearances and alignment
- Techniques of bearing mounting and unmounting
- Lubrication systems, function and components of lubrication
  - Types of Lubrication, Grease, Oils and Special oils
- Bearing care and prevention of catastrophic failures
- Demonstration of types of Ball and Roller bearings and detection of duplicate bearings
- Condition monitoring and fault diagnostics of bearings

- Actual case histories -Why bearings fail?
- Practical session on Condition monitoring

- Data acquisition techniques, major parameters used in bearing condition monitoring, acoustic emission, oil and debris monitoring, ferrography, thermography, signal analysis techniques and use of artificial intelligent tools
- Machinery Diagnostics- Key concepts of vibration analysis and balancing

METHODOLOGY

Methodology of the program includes workshop Sessions with Lecture/discussion with audio visual aids, demonstration of several types of bearings, condition monitoring instruments and practice, bench 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.
We advise the participants to bring damaged bearings for analysis and prevention of repeat failures

TARGET PARTICIPANTS

The programme is highly useful for senior engineering executives and engineering managers working in operation, maintenance, quality control, quality assurance, design, process planning, in manufacturing and process industries, automobile, defense, aeronautical, ordnance factories, public & private sectors enterprises will be highly benefited by attending the programme.

EXPERT FACULTY

Mr. K. Krishna Murthy
Formerly Head Technical Training, Coromandel International Limited.
Author: "Why Industrial Bearings fail?", "All in one of Manual of Industrial Piping Practice and Maintenance", Industrial Press, New York, USA.
The faculty also consists of Eminent Experts from Process Industry, Bearing Manufacturers, and Service providers beside core faculty from ESCI.

PROGRAMME DIRECTOR

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PROGRAMME DATES & TIMINGS

Dates: 23 – 26 June 2025
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. 13,000 /- (Rupees Thirteen Thousand only) per participant + GST@18% Extra.

DISCOUNTS

- **Non-Residential Fee:** 10% discount on course fee is allowed for non-residential participants.
- **Group Discount:** Additional 10% discount for three or more participants if sponsored by the same organization.

Note: GST Nil for Central Govt. Departments (like DRDO, DGQA & Govt. Departments).

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.043210400039631 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.

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