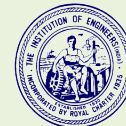




ENGINEERING STAFF COLLEGE OF INDIA

(IMS [ISO 9001:2015, ISO 14001:2015, ISO 50001:2018, ISO 45001:2018],
ISO/IEC 17025:2017 Certified, AICTE & CEA Recognized Institution)
Autonomous Organ of the Institution of Engineers (India)
Old Bombay Road, Gachibowli, Hyderabad – 500032, Telangana, India



Management and Technology Division

Classroom Continuing Professional Development Programme on

Vibrations, Balancing, Alignment and Condition Monitoring of High Speed Rotating Equipment and Auxiliary Systems

16 – 19 October 2023
at ESCI Campus, Hyderabad

INTRODUCTION

Vibration refers to mechanical oscillations about an equilibrium point. The oscillations may be periodic such as the motion of a pendulum or random such as the movement of a tire on a gravel road. More often, vibration is undesirable, wasting energy and creating unwanted sound pollution. For example, the vibrational motions of engines, electric motors, or any mechanical device in operation are typically unwanted. Such vibrations can be caused by imbalances in the rotating parts.

Imbalances in rotating parts are caused by unequal radial mass distribution on a rotor system, a shaft condition where the mass centerline does not coincide with the geometric centerline. Also the effective mass causes the rotor to be out of balance. Other reasons may be uneven friction, the meshing of gear teeth, etc.

Alignment also plays an important role in the health of the rotary equipment. While carrying alignment Skill, time management and place plays a vital role in upkeep, availability and reliability of the rotating equipment.

The Asset Effectiveness relates to extracting maximum profits from the minimum investment in plant and equipment, improving **Equipment Reliability** through the effective prediction (and then avoidance) of equipment failures and minimizing downtime through the integrated planning and scheduling of repairs indicated by **Condition Monitoring** techniques with those indicated by other techniques. The present programme aims at attending to above issues.

OBJECTIVES

The objective of the programme is to impart thorough understanding of the vibrations, balancing and alignments issues in rotating machinery and enhance their trouble shooting skills and monitoring the conditions of the rotating machinery equipment among practicing engineers and managers.

COURSE COVERAGE

- **Vibration Basics**
- **Basic fundamentals of Rotating Machines**
 - Effect of Lubrication on performance
 - Type of Maintenance Plans, Breakdown, Preventive and Predictive
 - Effect of Misalignment and need for Precision Laser alignment
- **Fundamentals of Vibration Analysis.**
 - Vibration Signature
 - Advances in Vibration Measurements and Testing
 - Case studies in Vibration
- **Balancing**
 - Static
 - Dynamic
- **Alignment : Vertical Alignment Procedures**
- **Condition Monitoring Techniques such as, Wear Debris Analysis, Ferrography, Shock Pulse Methods etc.**
 - Condition Monitoring of Power Plant Auxiliary System
 - Modern Trends in Condition Monitoring with a Case Study
- **Fault Identification in rotating machinery using vibration analysis**
- **Managing precision maintenance program**
- **Case studies in rotary equipment such as pumps, turbines and compressors**
- **Failures and the factors which promote the failures, failure mechanisms case studies.**
- **Power Quality industrial case studies**
- Power Quality Impacts in solar & wind renewable energy systems
- Group discussions. Experience sharing

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. Technical Field and Social visits are integral part of the training methodology.

BENEFIT TO THE PARTICIPANTS

- The participants will learn unique characteristics of Vibrations, Balancing and Alignment, measures to effectively monitor and control them in rotating machinery and will be exposed to latest instrumentations techniques to improve the availability and reliability of High Speed rotating machines to meet their target productions.
- Awareness of contemporary concepts and practices.
- The Programme will provide a unique platform to develop networking and sharing of experiences from fellow participants and faculty even after the completion of programme.

FACULTY / RESOURCE PERSONS

The faculty consists of experts from industry, Entrepreneur and academia, besides that from ESCI.

TARGET PARTICIPANTS

Engineering Managers, Engineers, Executives, supervisors Quality Personnel and Inspection Engineers and managers involved in operation and maintenance of power generation units (Thermal, Gas, Hydro), refineries, fertilizers, petrochemicals and steel mills would be largely benefited by attending this programme. Professors from Engineering Colleges and any interested individual may also attend the programme.

PROGRAMME DATES & TIMINGS

Dates: 16 – 19 October 2023

Venue: Engineering Staff College of India (ESCI) Campus, Old Bombay Road, Gachibowli, Hyderabad. 500032. TS, India and Online in WebEx platform.

Timings: On the first day Registration will commence at 09.30 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 DIRECTOR

Dr. PVSS. Sridhar, *M.Tech, Ph.D. (IIT-Guwahati)*
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Ph: 7896172182 / 040-66304111/4112/4105
Email: mtmkt@escihyd.org & mtdiv@escihyd.org

COURSE COORDINATOR

Dr. Katti Bharath, *M.Tech, Ph.D. (NIT-Warangal)*
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Email: mt@escihyd.org/mtmkt@escihyd.org

COURSE FEE:

Rs.20,000/- (Rupees Twenty Thousand only) (Residential Fee) per participant + GST@18% is 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.

DISCOUNTS

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

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

Goods and Service Tax @ 18% is to be paid extra over and above the training. **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 favour 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/ NEFT / IFSC Code No: IBKL0000432.** While using EFT method of payment, please ensure to communicate us your company name, our Invoice reference and programme title.

REGISTRATION

Online registration shall be available on ESCI web portal <https://escihyd.org/division/mt>. To register manually please send your nominations giving details of name, designation, contact address, email address, mobile no, telephone and fax number of the participant along with the details of mode of payment of fee, addressed to: mt@escihyd.org, mtmkt@escihyd.org.

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)
- Nominating authorities are requested to kindly send the contact details of the participant while sending their nomination letter. This will help us in making necessary administrative arrangement for them.