



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

Basic Principles of Vibration Analysis, Condition Monitoring, Leveling, Alignment and Balancing Procedures for High Speed Rotating Machinery in Power Plants and Process Industries

(with Practical Demo)

07 - 10 October, 2024

at ESCI, Hyderabad



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

Centre for Promotion of Professional Excellence

INTRODUCTION

Installation of heavy machinery such as turbo generator sets, vertical hydro units in power plants, rotary compressors or other heavy rotating machinery with induction motors in the industry requires diligent alignment of the drive and driven machinery as otherwise it would result in undesirable stresses and heavy vibrations and shortens the life of the equipment.

Equipments and Machines that are subjected to a lot of noise, heat, shocks and vibrations can badly get damaged, which ultimately not only affects the life span of machinery but also its efficiency & safety. This often leads to parts needing, frequent repairs and replacement, which will prove costly.

Similarly, unbalance of a rotating machine also produces undesirable vibrations and premature failures. So it is necessary to have a thorough knowledge of the procedures for alignment between the two rotating equipments by proper setting of foundations, aligning the shafts by leveling of bearings to ensure trouble free running with high reliability.

Vibration analysis is a process of looking for anomalies and monitoring change from the established vibration signature of a system. The vibration of any object in motion is characterized by variations of amplitude, intensity, phase and frequency. These can correlate to physical phenomena, making it possible to use vibration data to gain insights into the health of equipment. Vibration analysis can be used to:

- Find a developing problem that can be repaired to increase machine lifetime
- Detect and monitor a chronic problem that cannot be repaired and will only get worse
- Establish acceptance testing criteria to ensure that installation/repairs are properly conducted
- 24/7 continuous vibration monitoring can be used to predict failures as part of a predictive maintenance program.

Vibration measurements through latest technologies like SPM and Condition Monitoring will provide us powerful tools to detect the onset of problems to take corrective action.

OBJECTIVE

The objective of the program is to impart thorough understanding of the vibrations, balancing, and alignment 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

- Overview of Program
- Fundamentals of Vibration – Need for Alignment & Methods of Alignments and Catenary
- Condition Monitoring for High Reliability through Vibration Analysis – Fault Identification and Correction – Ferrography Techniques, Wear Debris Analysis.
- SPM & Latest Technologies in Vibration Measurements
- Leveling & Alignment Procedures for vertical and horizontal machines; Laser Alignment, Rotor Level Correction and Dynamic Balancing of Large Machines like Thermal or Hydro Generator Units
- Vibration Measurement Analysis and Balancing of Rotors (Static & Dynamic)
- Vibration, Balancing standards & Guide lines & Limits of Operation
- Field Visit for Live Demonstration of Balancing and Alignment Methods, Videos for Clarity on Vibration issues
- Case Studies and Experience Sharing etc.

METHODOLOGY

The programme 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

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 program.. Professors from Engineering Colleges and any interested individual may also attend the program.

BENEFIT TO THE PARTICIPANTS

- The participants will learn condition monitoring techniques like study of unique characteristics of Vibrations, Balancing, Leveling and Alignment, measures to effectively monitor and control them in rotating machinery. They will be exposed to latest instrumentations techniques to improve the availability and reliability of High Speed rotating machines to meet their target productions.
- The program intends to update and enhance the knowledge & trouble shooting skills of practicing engineers, through condition monitoring.
- Awareness to contemporary concepts and practices.
- Program will provide unique platform to develop networking and sharing of experiences from fellow participants and faculty even after the completion of program.

PROGRAMME VENUE, DATES & TIMINGS

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

DATES

07 - 10 October, 2024

TIMINGS

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

ACCOMMODATION

A.C. Accommodation will be provided to the participants located within ESCI Campus. The accommodation will be on twin sharing basis / single, based on available.

COURSE DIRECTOR

Dr. V. Vidyasagar

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

COURSE FEE

Residential Fee is Rs.22,000/- 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 favor 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 participants shall pay the charges 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.