



**3 Day`s Nonresidential Training/Workshop on
Industrial Rotating Machineries in Plant: Operation, Maintenance, CBM,
Performance and Efficiency Improvement
Pumps, Air Compressors, Bearings, Seals, Separator`s and Lubrication.
(21-23 Aug and 10-12 Oct 2019 at Goa)**

Workshop Objective and Description:

The objective of this workshop is to provide the participants with latest operation & maintenance strategy for Pump, Compressor & Plant machinery. Maintenance time can be reduced by adopting new techniques and methods including some Predictive maintenance techniques and condition monitoring tools. Knowing in and out will do help in understanding and predicting faults. It will also help in planning O&M activities.

Learning Outcomes:

Identification of the condition of the Pump, Compressor & Plant machinery (plant equipment), Reduction of breakdown time, predictive maintenance implementation, extending the life of the equipment` s, improving the whole plant efficiency.

Who Should Attend? Practicing engineers of all levels, GETs & DETs with Electrical, Electronics, Instrumentation, Mechanical, Production background.

COURSE CONTENT: This intensive workshop will use Interaction with various industrial experts, Instruction, quizzes, case studies and discussions to impart useful and usable knowledge to the participating delegates on:

1. The different types of pumps, compressors and associated equipment, such as bearings, seals, filters, separators, etc.
2. The principles of start-up and operation of these machines and their optimal maintenance, diagnostics and troubleshooting techniques.
3. The efficient and trouble-free operation of pumps, compressors will be discussed in depth along with their ability to control the main operational parameters.



4. The approach to maintenance that emphasizes physical principles and clear technical reasoning.
5. **The best practices for maintenance and repair of rotating equipment.**
6. The measurement and control of performance of these machines.
7. The inspection and diagnosing the root cause of problems including condition monitoring. **CBM Techniques.**
8. The troubleshooting techniques for operational problems of pumps, compressors.

Module 1: Pumps - Operation and Maintenance:

- Pumps - Principles And Characteristics, **Details and Materials**
- **Selection of Pumps, Routine Maintenance of centrifugal Pumps**
- Pumps - Operation , Maintenance and Trouble Shooting
- **Energy Saving in Centrifugal Pumps**
- Pump shaft Couplings – Types and Method of Alignment
- Overview of API 610 and API 674

Module 2: Air compressors & Blowers – Operation and Maintenance,

- Maintenance of Air Compressors; Compressed Air System and Compressor Efficiency; Air Dryers; Energy Conservation and How to save energy?
- Review and Feedback; Final Quiz, Assessment, Feedback,
- Selection and Application of Air Compressors; Reciprocating Air Compressor, Screw Compressors; Centrifugal Air Compressor;
- Shaft Couplings – Types and Method of Alignment

Module 3: Gears & Gear Boxes;

- Type of Gears; Gear Teeth Construction
- Details & Failure Analysis

Module 4: Bearings-

- **Types- Antifriction, Radial, Thrust**
- **Fittings- Care in Bearings fitting and dismounting,**
- **Selection, Bearing Failure Analysis**

Module 5: Type of Lubricants & Selection of Lubricant

- Handling, Storage and Application of lubricants



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- Bearing Lubrication & Method of Applying Lubricants.

Module 6: PPMTand CBM

Quizzes, Review and Feedback and Assessment.

Prerequisite: Basic knowledge of Mechanical Engineering and experience in maintenance will be helpful.

Delivery Methodology:

- Introduction and Objective Setting
- Pre and Post Test,
- Knowledge Presentations,
- Assignments & Exercise,
- Case Study & Learning through Animations.
- Feedback and Assessment
- Discussion and Interaction.
- Delivery 9:30 AM to 17:00 PM including lunch/Tea breaks.

Registration Details:

Dates of the program: 21-23 Aug and 10-12 Oct 2019 at Goa (Mon-Wed for 3 Days).

Participation fees (Non Residential): INR 34500/- per delegate (Excluding GST@18%; Training program includes training material hard copies, Tea, Lunch & snack)

Payment: ECS/NEFT/DD in favor of “Centre for Industrial Solutions and Advanced Training” Payable at Nagpur, Maharashtra, India. Account No: 0509102000003353
Bank: IDBI, Wardha- 442001, MS, India; IFSC Code: IBKL0000509; MICR Code 442259001. (GST Code: 27ABBPW5589J1ZV; SAC Code 99-9293; State Code 27)

Venue: Goa (Venue to be informed before a week of training confirmation)

For Registration please do contact to,

We prefer on line Registration through our web www.cisat.co.in.

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