

SEMINAR TITLE : Understanding Condition-Based Maintenance - An Approach To Failure Prediction & Analysis

Seminar Package Includes

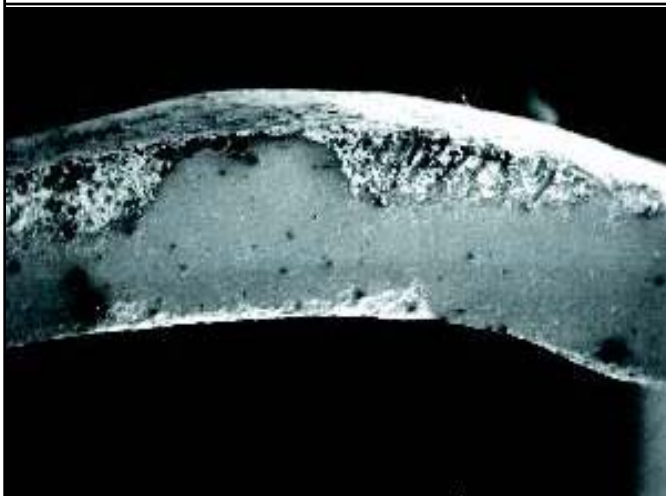
- Morning / Afternoon meals and Lunch
- Complete Handouts on the course
- Articles on Condition-Based Maintenance
- Exercises and Handouts
- Certificate of completion

Who should attend ?

- This course is best suited for those who lead or influence the direction and success of their manufacturing plants including Maintenance Managers / Supervisors, Production Managers / Supervisors, Facilities Managers Key shop floor personnel, those in charge of Continuous Improvement Programs in their Plants, Reliability and Improvement groups, Key people who have the authority or leadership to drive the day to day process for improving their plant's reliability & performance Managers who sees continuous improvement programs as the key to industries survival



- Rolly Angeles is a seasoned technical trainer His portfolio of technical trainings includes TPM, Reliability-Centred Maintenance, Oil Analysis, Condition-Based Maintenance, P-M Analysis, Planned Maintenance, World Class Maintenance Strategies & many more
- Rolly previously worked with Amkor/Anam a multi-national company engaged in the manufacture of IC products and spearheaded Amkor's Planned Maintenance Organization composed of Maintenance Managers. He was responsible for the dramatic reduction of breakdowns in their TPM Journey as well as RCM implementation on Facilities AHU and Sub-stations
- Nominated as Key Technical Person in 1998 Rolly hails from Mapua Institute of Technology Batch 85', a licensed mechanical engineer, he brings with him a wide range of experience on best maintenance practices
- Our mandate is to elevate the knowledge of industries by sharing and adopting the best maintenance practices and the application of advance continuous improvement practices





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Brief Course Overview

- This course shows the importance and benefit of a Condition-Based Maintenance (CBM) program. The benefits of such a program will be realized in greater equipment reliability and longevity while at the same time enhancing budgetary cost containment goals
- Operations and Maintenance will make a sound maintenance and operating decisions based on actual equipment performance rather than relying on the old standard of Time-Based maintenance intervals or even less desirable circumstance or waiting for the equipment to fail in service
- According to maintenance specialists, at least \$250 billion of parts is wasted. Bad maintenance is responsible for equipment failures, disrupted production schedules, delays in deliveries and poor production quality

What you will learn ?

- Why doing Preventive Maintenance is costly ?
- When to use the different maintenance task ?
- Know when to use the different maintenance tasks more effectively
- Why is Condition-Based Maintenance more cost effective than traditional Preventive Mtce ?
- Case studies on Condition-Based Maintenance
- What are the advantages and disadvantages on using Condition-Based Maintenance ?
- Why knowing the P-F curve is important in performing Condition-Based Maintenance

And much, much more !!!

illuminate

the possibilities...



Condition-Based Maintenance

Course Objective

- Understand the principles of Condition-Based Maintenance
- Know the benefits that can be derived from Condition-Based Maintenance Techniques
- Learn why CBM is more effective than the conventional Preventive Maintenance System
- Learn why CBM is more cost effective to use rather than overhauling or servicing equipment's on Preventive Maintenance
- Learn the different CBM techniques on hand (Lubricant Monitoring, Vibration Monitoring and Thermography Monitoring)



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Program Proper

DAY 1

- 0745 - 0815 - Coffee and Registration
- 0815 - 0900 - Take Maintenance Survey form
- Take CBM IQ Quiz
- 0900 - 0905 - Welcome and Introduction of resource speaker
- 0905 - 1000 - **Module 1 : Changing The Way We About Failures**
- Why Maintain
- Facts About Today's Maintenance
- 1000 - 1015 - **Morning Break / Meals**
- 1030 - 1200 - **Module 2 : Why Preventive Maintenance is Limited**
- Common belief, All Parts wear out
- 6 Types of Failure Pattern
- Why Preventive Mtce is limited ?
- Going Beyond Time-Based
- Preventive vs Predictive
- 1200 - 1300 - **Lunch**
- 1300 - 1400 - **Module 3 : Understanding Condition-Based Mtce**
- Predictive Maintenance Defined
- P-F Interval
- Determining Potential Failures
- 1400 - 1500 - **Module 4 : Different Condition Based-Monitoring**
- Module 4a - Oil Analysis Monitoring
- What is Oil Analysis ?
- How Oil is contaminated ?
- Cleanliness Levels
- Filtration and Beta Ratings
- Oil Analysis in 3 levels
- ISO 4406 : 99 Codes
- Checking Oil's Health
- 1500 - 1515 - **Afternoon Break / Meal**
- 1515 - 1700 - Continuation of Module 4
- 1700 - End of Day 1

DAY 2

- 0745 - 0815 - Coffee
- 0815 - 1000 - **Module 4a : Condition Monitoring Through Oil Analysis Technique**
- Common Test for Oils Physical and Chemical Properties
- Test for Oils Metal Wear Analysis
- 1000 - 1015 - **Morning Break / Meals**
- 1015 - 1200 - **Module 4b :Condition Monitoring Through Infra-Red Thermography**
- Electromagnetic Spectrum
- Applications of Infra-Red
- Basic Principles of Heat
- Infra-red thermography for industries
- Importance of Certification Levels
- 1200 - 1300 - **Lunch**
- 1300 - 1400 - **Module 4c - Ultrasonics**
- Heterodyning
- Applications of Ultrasonics
- 1400 - 1500 - **Module 4d - Vibration Monitoring**
- Principles of Vibration
- Frequency and Sine Wave
- FFT Spectrum
- Misalignment
- 1500 - 1515 - **Afternoon Break / Meal**
- 1515 - 1600 - Take Quiz on Type of PdM To Use
- (BONUS) Video Showing
- 1600 - 1700 - Final IQ Quiz on CBM
- Closing Remarks
- 1700 - End of Seminar on CBM**

