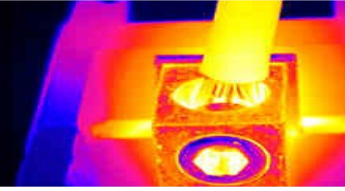


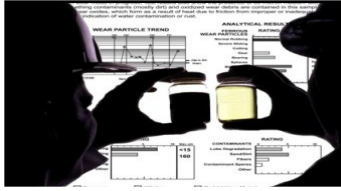
# Condition-Based Maintenance

## Total Approach to Failure Prediction and Analysis

June 28 to 29, 2022, and November 24 to 25, 2022 Online Training – Microsoft Teams



**Thermography**



**Oil Analysis**



**Vibration Analysis**



**Ultrasonics**

### Training Package Includes:

- Training Materials on CBM (Softcopy)
- Online Certificate of Attendance
- E-book (Readable Version) on World Class Maintenance Management – The 12 Disciplines Book (314 pages)
- Lifetime Access to RSA Reliability Newsletters

### Who Should Attend This Course :

- All Maintenance Professionals
- Maintenance Managers
- Maintenance Supervisors
- Lubrication Engineers and Technicians
- Facilities Managers
- Preventive Maintenance Group
- Predictive Maintenance and CBM Group
- Reliability Engineers and Managers
- Maintenance Schedulers and Planners
- Management and Decision Makers

### Brief Course Overview :

- This course shows the importance and benefits 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

### About the Resource Speaker:

Rolly, is a seasoned international reliability and maintenance consultant with 30 years of solid experience in the field. He had been invited in different countries and have conducted reliability and maintenance trainings in United Arab Emirates, India, Malaysia, Indonesia, Nigeria, Bangladesh, Botswana, Brunei, Thailand, China and South Africa. His portfolio of maintenance trainings include Maintenance Management courses on TPM, Lubrication, Tribology, Condition-Based Maintenance, RCM, RCFA, Planned Maintenance, World Class Maintenance Management, The 12 Disciplines, Oil Contamination Control, Maintenance Indices and KPI's, Maintenance Management Strategies and much more. Rolly previously worked w/ Amkor Technology Philippines, as a TPM Senior Engineer, an industry engaged in the manufacture of IC products and spearheaded their Planned Maintenance initiative compose of maintenance managers and engineers. He was also responsible for the dramatic reduction of unplanned breakdowns in their TPM Journey as well as RCM implementation on their Facilities AHU units and as well as their substation equipment. Rolly had written 9 books based on his original book on World Class Maintenance Management - The Twelve Disciplines. Each of the books Rolly wrote details a specific discipline on maintenance.

### What to Expect on this Training

- Why doing Preventive Maintenance is limited and costly ?
- Understand when to use CBM and PdM Strategy
- Learn the basics about the most common type of CBM
- Learn why is Condition-Based Maintenance more cost effective than traditional Preventive Maintenance ?
- What are the advantages and disadvantages on using CBM
- Why knowing the P-F curve in important in performing Condition-Based Maintenance
- How PdM/CBM can save you on maintenance costs



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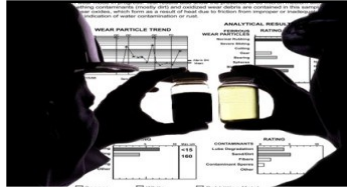
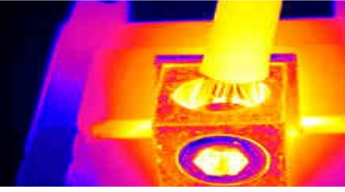


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### DAY 1

#### Module 1 : Why Preventive Maintenance is limited?

- Traditional belief by most maintenance people
- Infant mortality, random and age-related Failures
- Understanding the 6 types of failure pattern
- Understand when Predictive Maintenance is feasible
- Comparing Preventive vs Predictive Maintenance

#### Module 2 : Understanding the Concept of Condition-Based Maintenance

- Predictive Maintenance defined
- Understanding the P-F interval
- Determining potential failure for equipment
- CBM as a maintenance strategy
- Benefits of a CBM program in your plant

#### Module 3 : CBM through Oil Analysis

- Understanding how oil is being contaminated and its effects
- Does oil really wear out
- Ways to remove contamination in oil
- Understanding nominal and absolute filtration
- Efficiency and beta rating of filters
- Understanding the basics of oil analysis
- Different levels of oil analysis tests
- Level 1 of oil analysis test, checking oil for its health and cleanliness through particle counter
- What is the most important oil analysis instrument
- How a particle counter works understanding ISO:4406:99 code

### DAY 2

#### Module 4 : CBM through Thermography

- Understanding the different lights in the Electromagnetic Spectrum
- Basic Principles of heat transfer, conduction, convection and radiation
- Understanding the principles of infrared
- Application of infrared thermography for non-industries
- Importance of Certification Levels
- Application of infrared thermography for industries

#### Module 5 : CBM through Vibration Monitoring

- What is machine vibration
- Why monitor vibration and how to measure it
- Time waveform analysis
- Fast Fourier Transformation
- Mounting of Accelerometer and sensors
- Causes of rotating machinery failure such as Unbalance, Misalignment, looseness, soft foot and bearing faults
- Collecting and analyzing data on vibration
- Applications and benefits of vibration monitoring

#### Module 6 : CBM through Ultrasonic Monitoring

- Understanding the concept of sound
- Heterodyning, translating ultrasonic to the sonic range
- Application of Ultrasonic monitoring for industries

#### Module 7: How to Start a Condition-Based Maintenance Strategy in your plant

- Roadmap of activities on starting a CBM strategy
- Closing Remarks



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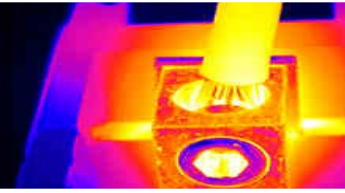


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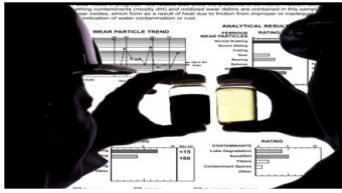
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### Testimonies and Feedback

- Learn the tools to apply CBM in my company. Detail of Oil Analysis, Thermography, Ultrasonic and Vibration Analysis explained. I know how to measure my process and learned the steps to implement CBM. From Lriengsak Songkhram, Assistant Manager, Olic (Thailand) Co., Ltd
- Good presentation. Good slide presentation to present for course CBM. Good trainer, funny and kind. Name withheld
- The trainer is a real experienced in the training topics. He uses his experience combined with international standards to share to the audience. All of this I call "techniques" that are very useful at the present. Thus, I'll carry these techniques to implement at my plant. Name withheld
- I know the basics of thermography, vibration, oil analysis and ultrasonic that can be applied to my work. In this class the trainer choose examples to students for more understanding. Ponlakrit Suttipong, Maintenance Planning, Hogsa Power Co., Ltd, Indonesia
- Before this training I have a little knowledge regarding maintenance (preventive) but the trainer was able to explain well the technical approaches and techniques in performing Preventive Maintenance. I can say that I had a deep understanding of the course and we plan to apply this knowledge in our current work. Kudos to the trainer. From Lovella Mendoza, Senior Engineer, Panasonic Manufacturing
- Able to understand the difference between Preventive and Predictive Maintenance. Understand the different tools that can be use to perform Predictive Maintenance activity. Able to gain knowledge about oil analysis, vibration, ultrasonic and thermography. From Mark Joseph Salalima, Specialists, Panasonic Manufacturing
- Topics are clearly discussed and relayed to the participants. Atmosphere of this seminar was fun so the topics was clearly and was thoroughly absorbed by the attendees. The trainer was knowledgeable within the topic discussed ad provided clear visual guides to the seminar. The difference of Preventive and Predictive Maintenance was understood to our production line. Discussion of oil analysis, thermography, vibration monitoring and ultrasonic monitoring was informative and insightful, From Jaedicke Presenta, Supervisor, Panasonic Manufacturing
- Understand CBM technique that Predictive Maintenance is much more better to use for critical equipment than Preventive Maintenance. Predictive Maintenance is more cost effective to use than Preventive Maintenance. We learned what is the importance of applying CBM technique in the power plant. From Ace Arvin Rosales, Panasonic Manufacturing
- As a good production engineer. I learned a lot on how a maintenance department/section do their job. This training gave me knowledge on how to deal with machine on how to prevent it from malfunction and also having this knowledge can share it with other sections especially those sections that are working with machines. Also help them on how they can improve their performance/skills on how to handle machine trouble. From Jefferson Balita, Production Engineer, Panasonic Manufacturing
- The good points about this training is knowing the difference between Preventive and Predictive Maintenance. Not all machine error can be addressed by PM sometimes it is best to jest let it be. Predictive Maintenance help to at least the lost time of machine breakdown. From Archie Esguerra, Technician, Panasonic
- Excellent point about this Predictive Maintenance seminar is that the instructor Mr. Rolly Angeles can deliver the topic that is easy to understand and to deliver the message more about the meaning of maintenance as well as the do's and don'ts. From Jefferson Lorbis, Technician, Panasonic



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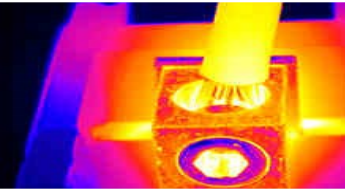


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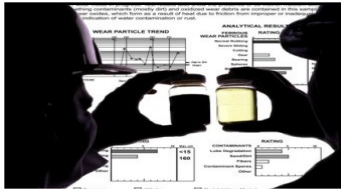
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### Training Investment Costs:

- The cost of this training is @ PHP 15,500.00 per head
- Online Training Platform will either be Zoom or Ms Teams.

If your company is **NON-VAT** send us your supporting documents.

### Payment Procedure and Policy:

- Since this is an Online training, we accept bank or wire transfer or cheque payments. For check payment kindly pay to RSA Reliability and Maintenance Consultancy Firm. Do not shortcut my company name to avoid problems with the bank..
- Official Receipt will be provided after issuance of the complete payment together with BIR form 2307 for Philippine clients only.
- Payment should be done during the day of the training. If this is not possible, provide us a clear date on when we can get the payment.
- 10% Tax can be deducted from the total cost of training provided industry joining the training to provide BIR form 2307 together with the payment

### 100% Money Back Guarantee



• If for any reasons you were not happy or satisfied with the outcome of the training. Our small firm offers you **Unconditional 100% Payment Back** and you keep the WCM Book and all the materials provided during the training provided payment had been received during the registration period.

### Cancellation, Postponement Policy

- For delegates who will not complete the duration of the training, seminar and workshop, RSA Reliability and Maintenance Consultancy Firm will offer no refunds regarding this matter, certificates of attendance will only be provided to those delegates that will complete the whole training.
- In the event that the seminar will be cancelled as a result of unforeseen events such as Acts of God or blackouts or problems on internet connectivity. We shall resume the training the following day or we shall send you an email on the date that the training will be resumed.
- In case of a low turn out of delegates for this event, RSA Reliability and Maintenance Consultancy Firm reserves the right to cancel the event. An email will be sent to concerned parties regarding the cancellation.
- In the event you would like to cancel your participation in this seminar, kindly send us an email one week before the event is due. If you have made an advance payment and your delegates did not attend and have not informed us one week before the event, you will be charged with the full amount of the training fee.
- In case the delegate register for this event will not make it on this event, kindly notify us through email regarding the changes in the name of the delegates.

### How To Register for this Event:

Step 1: Send us an email on the following:

- Full Name of Delegates: (FN, MI, LN)
- Email of participating delegates
- Position or Designation / Department
- Name of Industry
- Type of Industry
- How is payment to be made Cash or Check
- Is your industry VAT or NON-VAT

Step 2: Once we have confirmed the names of those you will send, we will provide a confirmation email. Strictly No last minute registration will be allowed .

