

# Meaningful Measures of Equipment Performance

Understanding MTBF, MTTF, MTBA, MTTR, MTTs, OEE and Failure Rate



Dates: August 30 to 31 and September 19 to 20, 2023, Online Training Platform: ZOOM



## Training Package Includes:

- Training Materials on Meaningful Measures of Equipment Performance in PowerPoint (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

## 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, South Africa and Vietnam recently. His portfolio of maintenance trainings include Maintenance Management courses on TPM, Lubrication, Tribology, OEE, FMEA, 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 12 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.


## Brief Course Overview:

As maintenance professionals we know the importance of these KPI's to our organization goals and objectives. The difficulty is in translating the overall company strategies to a meaningful measure of performance. The old saying that "if you can't measure it, you can't manage it" is as true for performance as for anything else. Much of what is meant by performance often appears to be simply not measurable. It's OK looking at how things happened after the event & traditional measures can do this. What a manager needs is a much more dynamic, real time view of performance as it happens. People are central to this and qualities like motivation, confidence, leadership & perception are what needs to be understood. Getting quantifiable results and dependable measurements is crucial if resource and time are to be used to good effect. As the saying goes we are what we measure and if what we measure is important then our goals will definitely be rewarded.

## Meaningful Measures of Performance IK Academy Online thru MS Teams (June 29, 2021)



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### Objective of the Course :

- Understand the need and importance of measuring performance of our equipment and assets.
- Learn to sell performance measurement as a tool for improvement.
- Learn to use meaningful measures of performance to improve equipment reliability.
- Determine the right measures of performance for your industry.
- Understand the different types of equipment losses and its individual relationship on Overall Equipment Effectiveness

### Who Should Attend:

- Maintenance Managers
- Facilities and Utilities Managers
- Preventive Maintenance Group
- Predictive Maintenance Groups
- Reliability Engineers and Managers
- Operations and Production Managers
- Management and Decision Makers
- Continuous Improvement Groups
- People in charge of their assets
- CMMS and Spare Parts Group
- People in charge of lubrication
- Maintenance Planners
- CMMS Groups
- Decision Makers
- Maintenance Managers
- Reliability Managers
- Continuous Improvement Leaders
- Those in Charge of Reliability and Maintenance

### Feedback from Delegates

We were able to understand more the very basic structure of OEE which I'm sure that will help us a lot in determining different factors affecting our equipment and its performance. *From Ryan Alinsod, EE, Sunpower Corp.,*

The training is so much interesting. It will really benefit every maintenance personnel. Thank you so much to Mr. Rolly Angeles for giving his time and effort to share his knowledge related to the maintenance and sustaining the efficiency and effectiveness of machine/equipment. May God bless him even more. *From Michael Ballesteros equipment Technician, Sunpower Corporation*

I have learned the different means of getting the overall effectiveness of the equipment and how yo improve its availability thru the different methods of analysis regarding breakdowns and losses. *From Eulemar Poyaoan, Sunpower*





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## DAY 1

- 0745 - 0830 - Coffee & Registration
- 0830 - 0900 - Welcome and Introduction of resource speaker
- Define Objective of the course
- Discuss different modules to be covered
- 0900 - 0915 - Take MMP Pre-Test
- 0915 - 1000 - **Module 1 : Why We Need to Measure Performance ?**
- Understand the need and importance of measuring performance
- Leading and Lagging Indicators
- 1000 - 1015 - **Morning Break Time**
- 1015 - 1100 - **Module 2 : Understanding Equipment Losses**
- Breakdown Loss
- Function Loss and Reduction
- Hidden and Evident Failures
- Set-up and Adjustment Loss
- Shigeo Shingo on Change Overs
- Design Speed Loss
- Start-Up Loss
- Idling and Minor Stoppages
- Defect and Rework Loss
- Understanding Chronic Failures
- 1100 - 1130 - Take Quiz on Equipment Loss
- 1130 - 1200 - **Module 3 : Understanding OEE**
- Components of OEE
- Variations in Calculation Availability
- Is OEE a Perfect Measurement?
- 1200 - 1300 - **Lunch**
- 1300 - 1400 - Continue Module 3 Efficiency and Quality Rate
- 1400 - 1500 - Workshop on OEE
- 1500 - 1500 - **Afternoon Break**
- 1515 - 1600 - Answer to OEE Workshop
- 1700 - End of Day 1

## DAY 2

- 0800 - 0830 - Coffee
- 0830 - 1000 - **Module 4 : Mean Time Indicators**
- Reliability Explained
- Formula for Reliability
- **Module 5 : Understanding MTBF**
- What will Constitute a breakdown
- When do we Declare a Breakdown
- How to compute MTBF
- Variations on using MTBF
- Limitations of when to use MTBF
- 6 Patterns of Failure
- When to Use MTBF
- MTTF Explained
- Difference between MTBF and MTTF
- Understanding Failure Rate
- 1000 - 1015 - **Morning Break Time**
- 1015 - 1100 - **Module 6 : Understanding MTTR**
- How to compute MTTR
- Limitations of MTTR
- 1100 - 1200 - **Module 7 : Understanding MTBA**
- Assists and Errors Defined
- Taking MTBA Snapshot Steps
- Case Study : CLF Planned Maintenance Case Study on MTBA (Mean Time Between Assists)
- 1200 - 1300 - **Lunch Break**
- 1300 - 1400 - **Bonus Understanding Mean Time to Set-up**
- 1400 - 1500 - **Module 8: Overview on Weibull Analysis**
- Principles of Weibull Analysis
- Practical Applications of Weibull
- 1500 - 1515 - Afternoon Break Time
- 1515 - 1600 - Workshop on Indices
- 1600 - 1700 - Take Post and Final Test
- Awarding of Certificates
- Closing Remarks, The Need for Maintenance to Measure KPI's
- 1700 - End of Seminar

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Have understood the importance and benefits of having an established performance monitoring metrics in a company as a best practice and as part of having a world class maintenance strategy. Corrected the traditional thinking between the difference on RCA and RCFA in equipment failures. *From Jeffrey Nepumuceno, Head Reliability Engineering, EDC Generation and Engineering Group*

Very interesting and lots of additional learnings about maintenance measurements which are clearly discussed. I have now understand about MTBA, MTBF, MTTR, MTTF and other maintenance measurements. *From Cris Arnel Magnaye, Test Maintenance Engineer*

The presentation materials was clear and concise. Easy to understand. Facilitator is well experience and clear in explaining the details. Give us an overview of true measures and use of MTBF, MTTR, MTBA, MTTs and how to use each of them. *From Joel Resultay, Plant Engineering Manager, Concepcion Carrier*

There is no dull moment during the training. All questions were entertained well. Training was designed based on actual plant scenario. *From Francis Mark Ramos, Plant Engineering Planner, Concepcion Carrier*

The training is very useful for organization who want to measure a meaningful indicators to manage bad better appreciate their maintenance performance for continuous improvement. This is an excellent course to those organizations who want to aspire to have to have what it takes to be world class. The energy of the facilitator had not change. Knowing Rolly previously, he is still at his best and this is not just about training but more of an advocacy to maintenance practice. *From Gary Tongco, EDC*

Really improved my understanding on maintenance side such as what to use tools and measurements in improving the reliability of the equipment. *From Antonio Ramirez, Test Maintenance Engineer*

Relevant on the field of maintenance. Topics and introduction of maintenance tools are very useful and effective. It open up a mind set of correct and effective maintenance strategy. *From Carlo Tiolo, Maintenance Engineer*

All the topics are discussed well. The instructor gives out information about good and best maintenance activities. He has good slides and presentation. *From John Baulo Jose, Planner, UPPC*

Informative, based on what is really happening at my sight. He kept the class lively and ensure that everyone understand before moving to the next topic. He has a good sense of humor. *The learnings gained and share is helpful to my job. Loui Adriano, UPPC*

Very useful and help us in our daily job activities. The trainer knows well about the subject. The trainer was able to elaborate problems in our daily routine. Good skill on presentation and explanation. *Name Withheld*

Learn how to calculate OEE, MTBF, MTTF and implementation on our workplace. Understand the difference between operating time and loading time. *From Md Hajuperi Bin Md Ali, Tenaga Nasional Berhad, Malaysia*

Sample explanation and easy to understand. Instructor share his industrial experience. Argument and question and answer is very open, instructor delivers on a funny word. Instructor is easy to reach. *From Muhammad Firdaus Bin Muhd Yusuf, Perodua Global Manufacturing Sdn Bhd. Malaysia*

Clear and very good explanation on how to apply MTBF, MTTR, MTBA, MTTA and MTTs in monitoring the performance of equipment, utilities and facilities. Funny but very useful example. Excellent in experienced sharing in several domain industry. *From Zulfiki Ishak, Head of Engineering, Pharmaniaga Manufacturing Berhad, Malaysia*

Good speaker, no he is great. Discussed with a heart. If you think that you are right then you are absolutely wrong. Learned that cutting cost can hurt reliability. *From John Paul dela cruz, MED, UPPC*



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## Training Investment Costs:

- The cost of this MMEP training is @ PHP 20,000.00 per head
- Online Training Platform will either be Zoom or Ms Teams.

## Payment Procedure and Policy:

- Payment can only be accepted through cash, check or wire transfer basis. For payments in check kindly Pay to RSA Reliability and Maintenance Consultancy Firm. Kindly complete the name of the firm on the check.
- An Official Receipt will be provided after issuance of complete payment for this event. Kindly provide BIR 2307.
- Payment should be done during registration, kindly advise the delegates to carry with them the payment for this training. To avoid future problems on our part. No payment, No entry policy would be enforced on this seminar workshop.
- 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

## 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
  - Business Type
  - How is payment to be made Cash, Check, or Wire-Transfer
  - Is your industry VAT or NON-VAT? If your industry is NON-VAT, kindly provide document proof.
- Step 2: Once we have confirmed the names of those you will send, we will provide a confirmation email. Strictly No Walk-in allowed in this training.

## 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 three day seminar and workshop
- In the event that the seminar will be cancelled as a result of unforeseen events such as Acts of God or other uncontrolled reasons, RSA Reliability and Maintenance Consultancy Firm shall assume no liability whatsoever in the event this seminar and workshop be cancelled, postponed, move or rescheduled due to this fortuitous and unforeseen event.
- 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 by email regarding the changes in the name of the delegates.

## 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.

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