



**GLOBAL
INDUSTRIES
INTELLIGENCE**



RELIABILITY CENTERED MAINTENANCE (RCM)

21 - 25 AUGUST, 2023
GRAND HYATT HOTEL, DUBAI
ONLINE ON ZOOM

▪ Course Overview:

- Reliability Centered Maintenance (RCM) is not another Maintenance Strategy or Maintenance Program, RCM is a systematic approach to maintenance planning and decision-making that aims to ensure the reliability and performance of assets while minimizing costs.
- **Preventive Maintenance (PM) only is not the solution!**
- Preventive maintenance is so institutionalized in many facilities today that facilities engineers don't even stop to question whether their maintenance practices affect system reliability. Up to 50 percent of unplanned downtime occurs in "serviced" systems within the previous 7 days, according to research from the Palo Alto, CA-based Electric Power Research Institute and the U.S. Navy. So, if the goal of the preventive maintenance program is truly to prevent production interruptions, it's time for maintenance engineers to reconsider their approach to maintenance.
- Reliability-centered maintenance is much more than just another way to do maintenance. It's a way of looking at system performance in terms of the impact of a failure and then mitigating those results by design, detection, or effective maintenance.
- "RCM is one of the most powerful asset management processes that can be employed. RCM's principles are so diverse that they can be applied to any asset—an airplane, nuclear power plant, truck, tank, ship, manufacturing plant, offshore oil platform, mobile air conditioning unit, tow tractor, jet engine, a single pump, or an engine control unit. RCM principles can be widely applied to an entire asset or more narrowly applied to select pieces of equipment". The RCM Solution by Nancy Regan
- This comprehensive 5-day course is designed to provide participants with a thorough understanding of RCM principles, methodologies, and practical applications. Through a combination of theoretical lectures and case studies, participants will learn how to implement RCM effectively in their organizations

▪ Course Objectives:

- Provide attendees with an understanding of the RCM methodology defined in the **SAE JA1011 standard**.
- To train the participants on the new techniques that are utilized for Reliability Centered Maintenance in the industry. Work will be focused on the difference between RCM and all other maintenance strategies and the participants will be trained to implement the associated techniques and procedures with RCM philosophies.
- Upon completion of this course attendees will have the knowledge to:

- ✓ Understand the fundamental concepts and principles of Reliability Centered Maintenance.
- ✓ Know how to describe and implement RCM process flow
- ✓ Identify and evaluate critical assets and their failure modes.
- ✓ Apply RCM methodologies to develop effective maintenance strategies.
- ✓ Develop preventive maintenance plans based on RCM analysis.
- ✓ Optimize maintenance resources and reduce costs through RCM implementation.
- ✓ Understand the importance of identifying and categorizing the assets
- ✓ Deliver the higher maintenance performance that the management of any company want
- ✓ Implement the RCM through the CMMS system
- ✓ Improve the CMMS failure codes to enable the implementation of the RCM on the go
- ✓ Implement the Key Performance Indicators for maintenance in general and for RCM specifically
- ✓ RCM implementation best practices and lessons learned
- ✓ The required organizational readiness elements to implement the RCM project
- ✓ Manage and implement the RCM project successfully



▪ Course Outline:

Day 1 – Understanding How RCM Evolved from the Main Maintenance Strategies

- ✓ Where is Maintenance in the Big Picture?
- ✓ Why do we need to understand Maintenance First?
- ✓ RCM Evolution
- ✓ Reactive Maintenance
- ✓ Run to Failure Maintenance
- ✓ Corrective Maintenance
- ✓ Preventive Maintenance (PM)
- ✓ Condition Based Maintenance (CBM)
- ✓ Predictive Maintenance (PdM)

Day 2 – Asset Criticality Assessment as a Key Step for any Maintenance and Reliability Initiative - Understanding Reliability Centered Maintenance (RCM)

- ✓ Asset Criticality Assessment/Analysis as the first step for any reliability initiative
- ✓ How to perform Asset Criticality analysis?
- ✓ What is Reliability Centered Maintenance (RCM)?
- ✓ RCM History
- ✓ RCM Published Guidelines and Standards
- ✓ RCM Objectives
- ✓ RCM Principles
- ✓ RCM Integrates Maintenance Strategies
- ✓ RCM Benefits
- ✓ Operating Context
- ✓ RCM Process Overview
- ✓ Types of RCM
- ✓ RCM Analysis
- ✓ Building the Strategy Team
- ✓ Assess Current Maintenance Processes
- ✓ RCM Analysis sequence
- ✓ RCM Procedure

Day-3 Reliability Centered Maintenance (RCM) Implementation Steps

- ✓ Step 1: System Selection and Information Collection
- ✓ Step 2: System Boundary Definition
- ✓ Step 3: System Description and Functional Block Diagram
- ✓ Step 4: System Functions and Functional Failures
- ✓ Step 5: Failure Mode and Effects Analysis
- ✓ What is Failure Mode and Effects Analysis (FMEA)?
- ✓ What is Failure Mode?
- ✓ Example of Failure Mode Identification
- ✓ Hidden and Evident Failures
- ✓ What is Failure Cause?
- ✓ Failure Effects
- ✓ Failure Consequences
- ✓ Example of Step 5: FMEA
- ✓ The RCM Decision Process
- ✓ Step 6: Logic Tree Analysis (LTA)
- ✓ Step 7: Selection of Maintenance Tasks
- ✓ Step 8: Task Packaging and Implementation
- ✓ Step 9: Making the Program a Living One – Continuous Improvements
- ✓ Summary of RCM
- ✓ RCM Examples

Day-4 Managing RCM program through the CMMS – KPIs & RCM Metrics – RCM Project Guide

- ✓ What's the difference between FMEA and RCM?
- ✓ FMEA as a Standing Alone Analysis (not part of RCM)
- ✓ FMEA Process
- ✓ Example of FMEA Worksheet
- ✓ FMEA Worksheet details
- ✓ Calculating the RPN
- ✓ Examples of FMEA
- ✓ Example of FMEA from NASA reference

- ✓ Is your CMMS/EAM capable to capture the RCM analysis requirements?
- ✓ Current failure code hierarchy in most CMMS/EAM systems
- ✓ How to configure your system to capture the RCM analysis requirements on the go?
- ✓ Manage used Key Performance Indicators (KPIs)
- ✓ What is KPIs?
- ✓ Leading & Lagging KPIs, what is the Difference?
- ✓ Examples of Key Performance Indicators (KPIs)
- ✓ Relevant RCM Key Performance Indicators (KPIs)

Day-5 RCM implementation best practices and lessons learned - Project Guide

- ✓ **RCM implementation best practices and lessons learned**
 - ✓ **Project Guide for RCM Implementation**
 - ✓ Section-1: Introduction
 - ✓ Section-2: An RCM Primer
 - ✓ Section-3: Deciding to Conduct an RCM Project
 - ✓ Section-4: Valuable Lessons Learned by Other Organizations
 - ✓ Section-5: Completing an RCM Study
 - ✓ Section-6: Implementing the RCM Study
 - ✓ Section-7: Measuring the Benefits
 - ✓ Section-8: Sustaining an RCM Program
- **Wrap up and course evaluation**

Trainer Profile

Mr. Ahmed Kotb

Mr. Ahmed Kotb is a freelance expert facilitator/consultant/trainer and executive coach in delivering strategic courses and masterclasses at corporate level internationally.

He is a very pragmatic trainer through his use of an integrated learning approach which is practical, actionable, life-relevant, competency based and results-oriented.



Work Experience

Mr. Ahmed Kotb is an Asset Management and Reliability Team Leader with more than 36 years of experience in Maintenance and Reliability, Maintenance Planning and Scheduling and Asset Management fields. LinkedIn Professional Profile: <https://www.linkedin.com/in/ahmedsaidkotb/>

Industry Experience

His Industry Experience is more than 36 years which involved more than 26 years of experience in Oil and Gas industry in international leading companies (Shell, BP and Total joint venture companies) including more than 22 years in Maintenance Planning and Scheduling.

He led several Teams such as Maintenance Planning and Scheduling Teams (thrice), Asset Management Team, Asset Management System Project Team, and Reliability and Data Management Team.

He planned more than 40 major Shutdowns / Turnarounds and several major overhauls.

He has also the experience of EPC Mega Projects.

Mr. Ahmed Kotb led several CMMS/AMS system Implementations.

He led the asset management team to achieve one of the largest Asset Management System implementation projects in middle east and the world in EPC mega projects for ADNOC Offshore new fields (in UAE) involving over 180,000 assets.

Educational Qualification / Affiliations

Mr. Ahmed Kotb received his degree (BSc in Mechanical Engineering) from the Faculty of Engineering, Cairo University in 1985.

He is a Certified Maintenance and Reliability Professional (CMRP), Certified Asset Reliability Practitioner (ARP CAT-A) & Certified Mobius Institute Instructor for the Asset Reliability Practitioner (ARP-A) Course.

He is also a Member of Egyptian Engineering Syndicate (EES), the Society for Maintenance and Reliability Professionals (SMRP) and Gulf Society for Maintenance and Reliability (GSMR).

He has earned several certificates from appreciations, conducted presentations/courses/webinars, and attended courses/webinars. His certificates can be found at his LinkedIn profile and SlideShare channel: <https://www.slideshare.net/AhmedSaidKotb>

Publications

Mr. Ahmed Kotb is a public speaker who conducted presentations, workshops, masterclasses, and webinars in major international conferences (e.g., Reliability, Asset Integrity Management (AIM), Operational Excellence (OPEX), Shutdowns and Turnarounds (STO), Process Safety, and Petrochemicals) around the world.

He is a Published Author on [reliabilityconnect.com](https://www.reliabilityconnect.com) website powered by Mobius Institute where he wrote several articles (in maintenance, reliability, and asset management) and conducted webinars, some of his publications are available at this link:

<https://www.reliabilityconnect.com/?s=kotb>

Examples of training courses recently conducted by Mr. Ahmed Said Kotb

Certified Maintenance and Reliability Professional (CMRP), Asset Reliability Practitioner ARP-A (A Mobius Institute Course), Certificate in Maintenance (in Arabic), Certified Maintenance Planner, "World Class Maintenance Planning, Scheduling and Control", Reliability Centered Maintenance (RCM), Modern Maintenance Management, Optimization of Equipment Utilities/ Operations Techniques, Advanced Maintenance Planning and Scheduling, "Maintenance Planning, Scheduling and Work Control", Effective Reliability and Maintenance, Preventive and Predictive Maintenance, Advanced Maintenance Leadership & Technology, "Reliability Centered Maintenance (RCM) & Root Cause Failure Analysis (RCFA)", Plant Reliability and Integrity, Managing Efficient Shutdowns and Turnarounds, Practical Shutdown and Turnaround Management for Engineers, Successful Asset Management System Implementation Approach and Methodology (webinar), Maintenance Excellence (webinar to Saudi Electricity Company), Building an Effective Computerized Asset Management System - Insights, Best Practices & Lessons Learnt (online virtual conference in Malaysia), Challenges and Lessons Learned in Asset Management (Masterclass in Kuala Lumpur), Maintenance Planning and Scheduling (interview), Maximizing the Role of Asset Management System (AMS)/CMMS in Supporting and Managing Shutdowns and Turnarounds (Masterclass in Abu Dhabi and a Workshop in Amsterdam), Ensuring Successful Implementation of an Asset Management System for Major Oil & Gas Projects (workshop in Kuala Lumpur), and Maintenance Data Management (Webinar).

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REGISTRATION DETAILS

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REGISTRATION FEE:

Book and Pay Before 26 July 2023 @GBP 3995 per person

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AUTHORIZATION SIGNATORY MUST BE AUTHORIZED TO SIGN ON BEHALF OF CONTRACTING ORGANISATION