



Class Location: Mississippi State University's CAVS-E
153 Mississippi Parkway, Canton, MS 39046
(601)-407-2746

Reliability Centered Maintenance

with a Focus on Processes and Tools for Immediate Results

Description

This course teaches the fundamentals of Reliability Centered Maintenance (RCM) and focuses on preserving equipment functions by identifying appropriate Preventive Maintenance (PM) tasks, Predictive Maintenance (PdM) tasks, failure finding tasks, and other actions that protect against failure or mitigate the consequences of failure. Examples and exercises give participants "hands on" experience to help them begin to master RCM concepts.

Objectives

- The importance and history of RCM;
- RCM terminology and fundamental RCM philosophies;
- Identifying and allocating resources for a RCM program;
- Preparing for an RCM analysis;
- Techniques for prioritizing systems for analysis;
- Failure Modes and Effects Analysis (FMEA) for RCM;
- How to evaluating failure consequences;
- How to select PM, PdM, and failure finding tasks and intervals;
- What other function protective actions are available;
- When Run-to-Failure (RTF) is appropriate;
- Packaging and implementing RCM analysis results;
- When to use a subject matter expert team; and
- Common barriers to implementation and how to get buy-in from all levels.

Training Methodology

The course is delivered with face to face instructor led instruction that is interactive and is comprised of a lecture, case studies, and application simulations.

Who should attend?

- Reliability Engineers
- Maintenance Engineers
- Technicians
- Maintenance and Reliability Managers

CLASS DURATION: 3 days

COST: \$1,499 per student

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Course Outline

Day 1

Instructor Lead Module #1: The History of Reliability Centered Maintenance

Before we can focus on where we're going we must first understand where we've been. The asset management landscape has changed dramatically over the past 60 years, yet many organizations still manage plant assets based on the belief that all assets eventually "wear out". This module will provide a brief history of how Reliability Centered Maintenance became the basis for physical asset management, and demonstrate the failure patterns associated with rotating, electrical and stationary assets.

Instructor Lead Module #2: Understanding Common Failure Mechanisms

Why assets fail is not a big mystery. Today's Reliability Engineer has years of statistical data and case studies at their fingertips that demonstrate how rotating, electrical and stationary assets fail over a characteristic lifecycle period. Students will learn from this module the common failure mechanisms associated with, but not limited to:

- Pumps, fans and compressors,
- Bearings, couplings and gears,
- Transformers and electrical contractors,
- Tanks, vessels and piping.

Lunch

Instructor Lead Module #3: Facilitating Failure Mode Analysis

The war of Reliability Centered Maintenance is won and lost in the facilitation of Failure Mode Analysis. This module is the heart of this course. Students will be taught how to select the RCM analysis team, engage each team member to provide their perspective, and guide the analysis of failure mode effects relative to overall system function. Each student will have an opportunity to lead a Failure Mode Analysis in class under the instructor's observation, and will receive a "coaching card" that provides immediate feedback to improve skill application.

DAY 2

Continued Instructor Lead Module #3: Facilitating Failure Mode Analysis

Lunch

Instructor Lead Module #4: Quantifying Failure Mode Risks & Making RCM Decisions

Now that we understand how to record failure modes and their impact on system function and performance, it's time to begin prioritizing risk mitigating actions. In this module, students will expand their understanding of the ISO 31000 definition of risk, risk control, and risk management in order to quantify each failure mode risk level and make decisions that impact the Asset Maintenance Plan, organizational budgets and lifecycle costs.

DAY 3

Instructor Lead Module #5: Developing Quantitative vs. Subjective Maintenance Procedures

At every opportunity, Maintenance and Engineering needs to identify the health of plant assets. The objective of this module is to teach students the difference between quantitative and subjective maintenance work procedures, and practice the skills associated with:

- Job mapping,
- Writing task-based preventive maintenance procedures, and
- Selecting quantitative inspection methods.

Lunch

Instructor Lead Module #6: Defining the Focused Improvement Project

Before completing the instructor-led class, students will be expected to draft a focused improvement project charter that outlines how each student plans to deploy Reliability Centered Maintenance within their specific area of responsibility. In this module, students will be taught how to perform a SWOT analysis to define the current state of Asset Management maturity and create an "A3" strategic project charter.