



Reliability Academy

Online Training in Developing and Improving Preventive Maintenance Programs

A fully online, on-demand course that teaches you how to build and improve your Preventive Maintenance Program so you can increase reliability and reduce maintenance costs.



www.reliabilityacademy.com



Are You Wasting Your Scarce Resources On Maintenance That Adds No Value?

Most preventive maintenance programs around the world are pretty poor. You see most of the PM programs were never developed properly, to begin with. As John Moubray, the father of RCM II, pointed out in his book “Reliability Centered Maintenance”, typically between 40% – 60% of the PM tasks in a PM program add little value.

Some of the most common problems are:

- Tasks are duplicated.
- Tasks are done too frequently or not frequent enough.
- Tasks are not effective at addressing the failure mode.
- Too many fixed time, intrusive overhaul tasks that would be more effective, less costly and less disruptive to production if they were condition-based.
- Lack of using existing failure data and experience to set good task frequencies.

The result is that we waste money and time on doing things that do not add value. But far worse is the many preventable high-impact failures that occur. This ultimately keeps so many plants in that dreadful reactive maintenance cycle.

In short, poor PM programs waste time and money, do not effectively address failures and drive our organisations into a reactive, fire-fighting culture.

Less Maintenance That Gives You Better Results

But it doesn't have to be like that. Experience and research show that by creating an effective preventive maintenance program you can increase reliability whilst at the same time you reduce workload and costs.

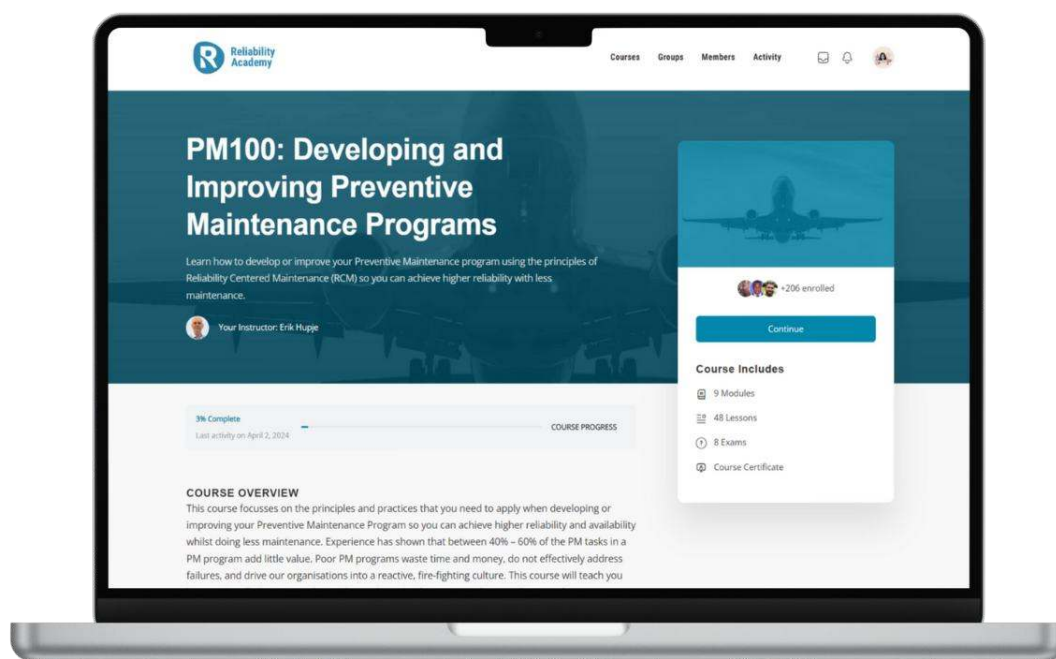
And no, you do not need to buy expensive software or hire consultants to do all this work for you. You can do it yourself, with your own resources. And you can do it with the tools you have.

What you do need is a good grounding in the Principles of a Modern Preventive Maintenance Program and a solid, easy to follow process to analyse and improve your Preventive Maintenance Program.

But this is clearly missing in the market until now... So, after the success of the first Road to Reliability online course focussed on Maintenance Planning & Scheduling, we are excited to announce our next online course:

PM100

Developing & Improving Preventive Maintenance Programs



PM100 Course Aim

After completing this course, you will have the knowledge and tools needed to create an effective and efficient PM Program, and ultimately help you do less maintenance, reduce costs, and increase reliability.

Course Objectives

1. Understand the Principles of Effective Preventive Maintenance.
2. Understand the different types of maintenance so that you can apply the right maintenance in the right circumstances.
3. Understand what RCM is, when to use, and how to effectively deploy it.
4. Understand the methodologies you can use to analyse & improve your PM program.
5. Understand the importance of Maintenance Work Instructions.
6. Understand key factors for structuring your PM program in your CMMS so that you have a PM program that is executable.
7. Understand how to run an effective PM project and move towards a Living Program with continuous improvement.

What we'll cover in the course and what you'll learn

- ✓ The principles of an effective and efficient PM program including when to use timebased maintenance and when not. When to use Condition Based Maintenance or when to accept a Run to Failure strategy.
- ✓ The key concepts from Reliability Centered Maintenance (RCM) and when an RCM Study is the right approach and when not. How to successfully execute an RCM study and how to ensure the results get implemented.
- ✓ What the difference is between Preventive Maintenance Optimisation (PMO) and RCM and how to decide which approach to use.
- ✓ How to deal with that incomplete and inconsistent dataset in your CMMS that we call maintenance history. How to clean it up and analyse it so you can use facts and data to make better decisions.
- ✓ Why work instructions are critical to an effective and efficient PM program and how to develop and maintain good quality maintenance work instructions.
- ✓ How to set up your CMMS so you can efficiently execute your new PM program, but also ensure you gather the right data so you can analyse its effectiveness.
- ✓ And a set of bonus content that focusses on good reliability practices like precision alignment, sound lubrication, flange management and more.

Module 1: Introduction

A short module, but very important module. In this module, we'll get you setup for success. We'll cover course objectives, go into the details of exactly what you'll learn, and how we will work together. In addition, I'll give an introduction to the online learning management system. And introduce you to our support staff and where and how to ask for help.

Module 2: Preventive Maintenance Basics

In this module, we start the real work. After a brief introduction of why we do maintenance and how our preventive maintenance program contributes to meeting our overall maintenance objectives, we'll take a short walk back in time to look at how maintenance thinking has changed in the last 70+ years.

We'll then look at the principles that underpin an effective Preventive Maintenance program. I'll summarise what we've learned as an industry from the development of RCM and how you can apply those principles in your PM program without having to do complete RCM studies. You will also learn that no matter what industry you are in, whether that is the manufacturing industry, mining, or oil and gas, these basic principles still apply.

In the remainder of the module we'll delve into more detail of those principles including a discussion on the different types of maintenance, what failure modes are, the importance of the characteristics of a failure mode, the P-F curve and we'll round up the Module with discussion on Consequence of Failure and Operating Context.

Module 3: The Different Types of Maintenance

In this module, we'll discuss the different types of maintenance (e.g. preventive and predictive maintenance), their characteristics, when to use them and when not to.

We will talk in detail through the benefits and drawbacks of Time-Based Maintenance (TBM), Failure Finding Maintenance (FFM), Condition Based Maintenance (CBM), Risk-Based Maintenance (RBM), Predictive Maintenance (PDM) and Run-to-Failure (RTF) Maintenance. We will also discuss practical applications for each of the different types of maintenance. Starting with the familiar concept of a family car, all the way to industrial applications.

Module 4: Introduction to Reliability Centered Maintenance (RCM)

In this module, we're going to unpack what is probably the most famous or infamous acronym in our profession – Reliability Centered Maintenance (RCM). You will discover that RCM is a relatively simple concept, but it takes a lot of experience, expertise and a lot of effort to apply it effectively.

Reliability Centered Maintenance (RCM) is introduced early in this course because it is in many ways, the Gold Standard to maintenance program analysis. It is the benchmark against which all the other approaches are compared against, and more often than not, other approaches are derivatives from RCM.

Module 5: Analysing your Preventive Maintenance Program

In many ways, this is the heart of the course. In this module, we'll talk about the most common flaws in preventive maintenance programs so that you can avoid making them. And we'll explore different improvement techniques and methodologies like preventive maintenance optimisation (PMO), FMEA, and more equipment-specific risk-based maintenance methodologies like RBI or SIL.

We'll talk about what they are, how to use them, when to use them, and I will provide you with practical, actionable frameworks and templates so you can put what you learn to good use!

Module 6: Maintenance Work Instructions

This module will address the importance of documenting your maintenance tasks through sufficiently detailed, and properly controlled Maintenance Work Instructions. With effective work instructions, you will reduce variability in task execution and improve the effectiveness of your preventive maintenance program.

We'll explore the amount of detail you need to include, the techniques on how to structure your work instructions, and even touch on the importance of standardising your writing style and vocabulary using an international standard like ASD-STE 100 – Simplified Technical English.

Module 7: Building Your PM Program in Your CMMS

In this module, we'll discuss some of the key factors when it comes to structuring your preventive maintenance program in your CMMS so that you build a preventive maintenance program that is executable.

If you don't structure your preventive maintenance program well, you can make it really hard for your crew to do preventive maintenance tasks on time, and that will significantly undermine the effectiveness of your preventive maintenance program.

Another consequence of poorly structuring your preventive maintenance program in your CMMS is that you will make life hard for your Maintenance Planner, Scheduler, and Execution Crew—undermining the efficiency of the team and impacting the gathering of the right data for longer-term improvement.

Module 8: Executing a Preventive Maintenance Project

In this module, you will learn how to run a preventive maintenance project, either an improvement project for an existing preventive maintenance program, building a new preventive maintenance program for a new plant, or maybe for a new production line or major piece of equipment.

We will talk about the project management and change management you need to apply, and we will look at how you can measure the effectiveness and efficiency of your preventive maintenance program.

We will wrap up the Module by discussing how to eventually adopt the concept of a Living Program that is driven by incremental continuous improvement, rather than major improvement projects.

Module 9: Bonus Content

This bonus module will provide insight into important reliability practices like lubrication management, precision alignment, flange management, and more.

A state-of-the-art learning management system

To successfully deliver an online training course you need to get many things in place including fantastic content, a great online environment and world class support:

→ **Fantastic Content with International Accreditation**

The content of this course is well-proven, has been derived from decades of real industry experience, is fully aligned with industry practice. The course and its content is accredited by the Society of Maintenance & Reliability Professionals (SMRP) and grants credits towards your CMRP recertification.

→ **Great Online Environment**

The online environment is truly a state-of-the-art solution that has been adopted by industry giants like the University of Washington or the University of Florida. The learning management system is intuitive, easy to navigate and integrated with private discussion groups so you can interact with your instructor and fellow students.

→ **World Class Support**

The course has dedicated support staff in place and the forum is professionally moderated to ensure a safe and welcoming environment.

Meet your teacher



Hi, I am **Erik Hupjé**, founder of the Reliability Academy and I will be your course director. I have over 20 years' experience in asset management, and specifically managing maintenance & reliability. And during those years I've worked in the Netherlands, the United Kingdom, the Philippines, the Sultanate of Oman and Australia.

My passion is for continuous improvement and keeping things simple. Through the Reliability Academy I help Maintenance & Reliability professionals around the globe – people like yourself – improve their plant's reliability and their organisation's bottom line.

I am a Certified Maintenance & Reliability Practitioner (CMRP), Certified Reliability Leader (CRL) and a Chartered Professional Engineer (CPEng).

Delivering value and ensuring a high return on investment

A standard classroom-based preventive maintenance optimisation course lasts anywhere from 3 to 5 days and typically costs anywhere between USD 1500 to USD 4500 - depending on where in the world you are, and who delivers the course.

You walk in and a few days later you walk out. Usually well fed and with a binder full of slides under your arm to remind you of your death-by-PowerPoint experience. 3 weeks later you will have forgotten most of what was covered in those 3 days.

Not with this course.

This course contains 9 modules delivered online over a period of 8 weeks (although you can go faster). Each week you receive new high-quality video lectures. Each module has multiple video lessons each supported by workbooks, audio files, transcripts and slide decks.

We will hold regular 'office hours'. During office hours students can dial into a conference call to ask questions live. And for those that can't make the live calls you can send in your questions ahead of the call and listen to the replay in the student-only course area.

But that's not all, the course will have its own private forum accessible only to students to ask questions, turn in assignments, get support and connect with other students.

You don't get that with classroom-based training.

And finally, if you get a course edition with lifetime access you get access to all future updates of the course. So, if you would like you to retake the course in 3 year's time as a refresher that's not a problem. We'll be happy to have you back. No classroom-based course will let you retake the course several years later without having to pay again.

Learn more:
**[https://reliabilityacademy.com/training/
preventive-maintenance/pm100-
developing-preventive-maintenance](https://reliabilityacademy.com/training/preventive-maintenance/pm100-developing-preventive-maintenance)**

This training is delivered by

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PM100: Developing & Improving Preventive Maintenance Programs – Course Outline

Module	Lesson	Video Duration	Assignment	Effort
Module 1 – Introduction	No individual lessons	-	-	-
	Expected effort to complete Module Approx 30 min			
Module 2 – Preventive Maintenance Basics	2.1 – Why We Do Preventive Maintenance	09:22	-	-
	2.2 – A Brief History of Maintenance	14:45	-	-
	2.3 – The Principles of an Effective Maintenance Program	27:18	Yes	-
	2.4 – The Types of Maintenance	17:45	Yes	-
	2.5 – Failure Modes	16:30	-	-
	2.6 – Age Related Failures	10:26	Yes	-
	2.7 – Hidden Failure Modes	09:10	-	-
	2.8 – The P-F Curve	22:57	-	-
	Expected effort to complete Module 2 hrs of video Approx 12 hrs total effort			
Module 3 – The Different Types of Maintenance	3.1 – Time Based Maintenance	15:49	-	-
	3.2 – Failure Finding Maintenance	18:27	-	-
	3.3 – Condition Based Maintenance	36:50	-	-
	3.4 – Risk Based Maintenance	17:55	-	-
	3.5 – Predictive Maintenance	14:23	-	-
	3.6 – Run-to-Failure	11:30	-	-
	Expected effort to complete Module 2 hrs of video Approx 8 hrs total effort			

PM100: Developing & Improving Preventive Maintenance Programs – Course Outline

Module	Lesson	Video Duration	Assignment	Effort
Module 4 – Introduction to RCM	4.1 – What is RCM	49:28	-	-
	4.2 – When to do RCM	11:28	-	-
	4.3 – How to do RCM	23:16	-	-
	4.4 – Most Common Mistakes in RCM	18:06	-	-
	Expected effort to complete Module		2 hrs of video Approx 6 hrs total effort	
Module 5 – Analysing Your PM Program	5.1 – Risk, Reliability & Preventive Maintenance	24:18	-	-
	5.2 – Common Flaws in PM Programs	20:41	-	-
	5.3 – Selecting a Methodology	29:45	-	-
	5.4 – Bad Actors	24:46	-	-
	5.5 – Criticality Analysis	25:27	-	-
	5.6 – Preventive Maintenance Optimisation (PMO)	46:31	-	-
	5.7 – Failure Modes and Effects Analysis (FMEA)	26:05	-	-
	5.8 – Risk Based Methodologies	41:50	-	-
	5.9 – Leveraging Generic Strategies	15:16	-	-
	5.10 – How to Document Your PM Program	21:13	-	-
	Expected effort to complete Module		4.5 hrs of video Approx 24 hrs total effort	

PM100: Developing & Improving Preventive Maintenance Programs – Course Outline

Module	Lesson	Video Duration	Assignment	Effort
Module 6 – Maintenance Work Instructions	6.1 – Why You Need Work Instructions	26:20	-	-
	6.2 – Work Instructions That Work	20:23	-	-
	6.3 – Level of Detail	26:56	-	-
	6.4 – Acceptable Limits	10:18	-	-
	6.5 – Standardised Language	13:05	-	-
	6.6 – Creating & Managing Work Instructions	29:14	-	-
	Expected effort to complete Module		2 hrs of video Approx 8 hrs total effort	
Module 7 – Building Your PM Program in Your CMMS	7.1 – Dates	21:42	-	-
	7.2 – Structuring PM Tasks	22:41	-	-
	7.3 – Grouping of Work	13:36	-	-
	7.4 – Workload Smoothing	15:54	-	-
	7.5 – Bills of Material	16:06	-	-
	7.6 – Failure Modes and Failure Codes	14:02	-	-
	7.7 – History Capture	7:46	-	-
	7.8 – Creating a CMMS Build Standard	12:04	-	-
	Expected effort to complete Module		1 hr of video Approx 3 hrs total effort	

PM100: Developing & Improving Preventive Maintenance Programs – Course Outline

Module	Lesson	Video Duration	Assignment	Effort
Module 8 – Running a PM Project	8.1 – Running a PM Improvement Project	TBA	-	-
	8.2 – Building a PM Program for a New Plant	TBA	-	-
	8.3 – Metrics to Manage Your PM Program	TBA	-	-
	8.4 – A Living PM Program	TBA	-	-
	8.5 – TBA	TBA	-	-
	8.6 – TBA	TBA	-	-
	Expected effort to complete Module		40 min of video Approx 2 hrs total effort	
	Bonus #1 – The Fundamentals of an Effective Lubrication Program	TBA	-	-
	Bonus #2 – Introduction to Precision Maintenance Practices	TBA	-	-
	Bonus #3 – Introduction to Flange Management	TBA	-	-
	Bonus #4 – Rules of Thumb for PM Programs	TBA	-	-
	Expected effort to complete Module		2 hrs of video Approx 9 hrs total effort	