Condition-Based Maintenance with Preventive and Predictive Technologies

You Can Achieve Measurable Results from PM, PdM and CBM and Begin Your Journey to ISO 55000 Compliance

On-Site Training Opportunities

Put TMEII's expertise in maintenance and reliability training to work in your organization

TMEII is a results-oriented resource and provider of maintenance and reliability initiatives. You can benefit from our experience of presenting hundreds of on-site training and consulting sessions for large and small companies world-wide.

Contact Pete Peters at 919-270-1173 or Pete@PRIDE-in-Maintenance.com for more information!

100% Guarantee

A complete refund is provided if you cannot achieve a 10 to 1 return on investment from this training.

Ralph W. Peters
President, TMEII

12 Key Benefits of Attending this TrueWorkShop™

1. ***APPLY*** Reliability-Centered Maintenance (RCM) to Define Required Maintenance Tasks.
2. ***IMPROVE*** your present Preventive (PM) & Predictive Maintenance (PdM) Programs.
3. ***USE*** Total Productive Maintenance (TPM) with operators performing selected PM tasks.
4. ***INTEGRATE*** Risk Based Maintenance for maximum HSSE.
5. ***LEARN*** how "state of art" wireless CBM gives you a very economical continuous monitoring system.
6. ***USE*** "cloud technology" for wireless data collection, data analysis and reliability solutions.
7. ***DEFINE*** your critical asset repair or replacement problems via life cycle costing.
8. ***UNDERSTAND*** requirements of ISO 55000 for physical asset management.
9. ***DEVELOP*** the optimum strategic maintenance program/plan for ISO 55000.
10. ***OBTAIN*** management buy-in for your strategic maintenance programs.
11. ***DEVELOP*** an improvement plan for successful implementation for your site's Top 5 Areas for Improvement..
12. ***MEASURE*** and ***VALIDATE*** your resulting benefits by benchmarking against best practices.

TMEII CONTACTS:

Pete at 919-270-1173 (Pete@PRIDE-in-Maintenance.com) or
Anne at 919-896-5368 (Anne@PRIDE-in-Maintenance.com)
to coordinate a custom in-house session.

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Ideally we want to take action before a breakdown occurs based upon a condition based maintenance (CBM) approach. This course provides the tools to allow "fixing before failure". We will review Reliability Centered Maintenance (RCM) which defines the maintenance tasks necessary for maximum asset availability and reliability of an asset.

Traditional Preventive Maintenance (**PM**) is the first line of defense for your physical assets but standing alone it may not be the right approach. PM tasks may be some of the tasks defined by RCM and is a very important first step for some assets.

However PM lacks the capability to predict failures which is possible with the use of Predictive Maintenance (**PdM**) that provides a "prediction" of potential failures based upon actual operating conditions. This will lead into CBM and how this technology is being used for real time monitoring with hard wired devices and wireless CBM applications.

This **TrueWorkShop™** is tailored for participants from plant and facilities maintenance operation who want to achieve measureable results from physical asset management. It will help direct you to ISO 55000 compliance.

- Key RCM elements and defining maintenance tasks required
- Present in detail the key elements of effective PM and PdM maintenance in relation to RCM
- Creating a integrated CBM process with effective PM and PdM
- Explain their positive impacts on equipment reliability, productivity, and cost of maintenance

This course is an important "How to Do It Guide" for implementing, measuring results and successfully applying today's best practices for Preventive (PM), Predictive Maintenance (PdM) and Condition Based Maintenance. Also this **TrueWorkShop™** will help ensure you have other basic practices in place for a profit and customer-centered operation.

Even in Good Economic Times Maintenance is Forever!

Who Should Attend

Maintenance's key objective is to increase uptime without over-doing maintenance and the challenge lies in how to determine the right mix of Preventive Maintenance and Predictive Maintenance. Many organizations are also facing key decisions on whether to repair or to replace aging physical assets. In addition, delegates will be introduced to strategies that will enhance and improve PM & PdM - Reliability Centered Maintenance (RCM), Total Productive Maintenance (TPM), and Risk-Based Maintenance (RBM).

- Managers of Engineering, Facility, Maintenance, Operations, Physical Asset, Property, Reliability, Storeroom
- Mechanical and Electrical Engineers, Instrumentation, Plant, Reliability Engineers
- Maintenance Planners
- Maintenance PM/PdM and CBM Coordinators
- Maintenance Managers / Supervisors / Foremen
- Managing Directors, VP of Operations and Maintenance

From Industries including but not limited to:

Mining, Oil & Gas, Utilities, Petrochemicals, Pharmaceutical & Healthcare, Government, Construction, Food & Beverages, Manufacturing, Automotive, Chemicals etc. And ALL other industries seeking ISO Compliance for physical asset management as a factor to business success, such as facilities management and healthcare facilities management operations.

Why You Should Attend this TrueWorkShop™

You will be able to bring back a comprehensive understanding about how to implement important maintenance tools and concepts that should be a part of your ISO 55000 strategic maintenance plan. In addition to Reliability-Centered Maintenance (RCM) you gain knowledge improving an existing PM, PdM and CBM program with application of Total Productive Maintenance (TPM), and Risk-Based Maintenance (RBM).

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Important Course Work

To wrap-up this **TrueWorkShop™** delegates will draw up specific improvement plans to address their Top 5 Areas for Improvements in power point format. The goal is to achieve implementation when they return to their organizations. Furthermore, after the workshop is over, complimentary follow-up support is provided from TMEII via phone, email or Go To Meeting virtual sessions when needed.

Very Important Pre-Course Work

Each company will be guided through a self assessment audit of their current operation using **The Scoreboard for Maintenance Excellence™.** This will become part of the course practical exercise and also becomes an important baseline as to where a company stands with today's best practices. It is equivalent to an ISO 55000 audit. Attendees will be guided through this self-assessment. Attendees are also asked to define their Top 5 Areas for Improvement.

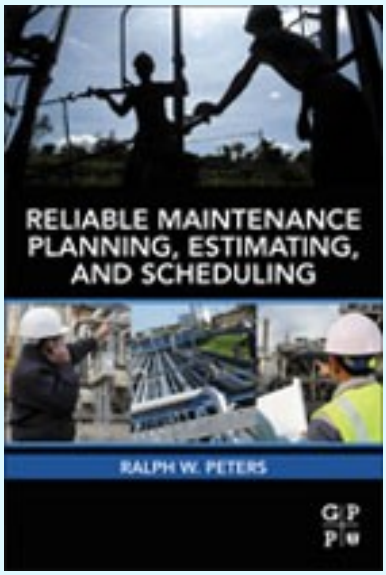
Other TrueWorkShop™ Deliverables

We also provide many *very* important deliverables in an easy to use Excel format in addition to the program outlined below.

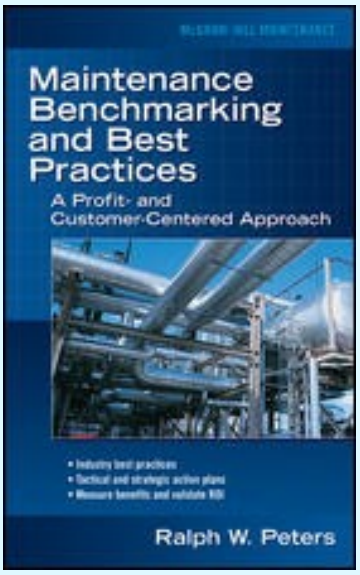
1. **The Scoreboard for Maintenance Excellence** - Today's most comprehensive benchmarking tool for each attendee's operation that benchmarks your site against today's best practices.
2. **The CMMS Benchmarking System** - For gaining maximum value from an existing CMMS
3. **The Reliability & Maintenance Excellence Index** - A powerful measurement process to validate shop level results.
4. Electronic copies of TMEII two major books; **Maintenance Benchmarking and Best Practices (McGraw-Hill-2006) and Reliable Maintenance Planning, Estimating and Scheduling (Elsevier-2015)**

Extensive Knowledge base of References to Take Home:

This workshop is based on Pete's two books:



Reliable Maintenance Planning, Estimating and Scheduling



Maintenance Benchmarking and Best Practices

TMEII provides more electronic references for all TrueWorkShops™ than any other series of courses now being offered from around the world.

Each attendee will receive e-book copies of these two major books plus many, many more valuable topic references on CD. The electronic versions are included to allow easy application and duplication of all course materials. Attendees receive all PowerPoint's used and "one of the largest Maintenance, Reliability and MRO Materials Management Glossary" currently available.

TMEII believes in providing each attendee an extensive knowledge base to support professional development well beyond actual class time.

Take An Important First Step:

This training process is for application and not theory and is for both the public and private sector in plant maintenance and pure facilities maintenance. Remember, we guarantee this **TrueWorkShop™** will help provide you with the important steps to improve the maintenance process and the business side of the maintenance in your operation.

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TrueWorkShop™ Agenda

On-site TrueWorkShops™ are customized to meet your specific goals and objectives. Below is a sample outline which can be modified as needed to ensure the results you are looking for.

Day One: Defining a Strategy for ISO 55000

Introductions

- Participants Review Top 5 Areas for Improvement
- Today's Maintenance Challenge and ISO 55000
- Maintenance Around the World
- Proactive vs. Reactive Maintenance
- How to Ensure Other Best Practices are in Place
- Developing Your Maintenance Excellence Strategy
- Using The Scoreboard for Maintenance Excellence to Define "Where You Are Now"

Case Study: *The Anderson model: Best of the Best Using the Scoreboard for Maintenance Excellence*

Determining the Right Maintenance Strategy for Your Equipment

- Reliability - Centered Maintenance (RCM): An Important Tool to Define the Right Maintenance Tasks for Physical Assets
- Lifecycle Costing - Optimizing Repair/Replacement Decisions
- Different Types of Maintenance Strategies and tasks:
  - Run to Failure
  - Preventive Maintenance (PM)
  - Predictive Maintenance (PdM
  - Condition Based Maintenance (CBM)
  - Continuous Monitoring
  - Remove & Rebuild
  - Remove & Replace

How to Develop and Install a Good PM System

- The 6-Step PM Installation Program
  - Phase I Management Awareness
  - Phase II Management Commitment
  - Phase III Plot Program Design
  - Phase IV Evaluate Pilot Program
  - Phase V Expand and Operate the Total Program Evaluation of Total Program
  - Phase VI Continuous Improvement and Evaluation of Total Program
- PM Work Orders/PM Checklists/PM Reports
- Involve Operators in Basic PM Tasks with TPM

Case study: *Best of the Best: A color illustrated PM Task's list*

Day Two: Integrating PM/PdM Along with RCM into an Effective CBM Program

Specific PDM Techniques and Applications

- Overview of PdM Technologies Now Available
- Vibration Analysis/Monitoring
- Shock Pulse Method
- Spectrographic Oil Analysis
- Ferrographic Particle Analysis
- Thermography/Temperature Measurement
- Non-Destructive Testing (NDT)
- Ultrasonic Testing and More

Introduction to and Definition of Condition Based Maintenance (CBM)

- Why Change
- CBM History
- Achieving more Effective Maintenance
- Goals of CBM
- Benefits of CBM

Case study: *Real World PDM Analysis Examples of What You Can Find with CBM*

Background of CBM

- Traditional Maintenance
- How is Maintenance Accomplished Today?
- Less Reactive and More Proactive Maintenance

Essential Elements of CBM

- CBM Policy Doctrine
- Business Strategy and ISO 55000
- RCM Relationship

Technical

- Hardware and Software Infrastructure and Tools Architecture for CBM
- Open Systems and Data Strategy
- CBM Essential Elements Summary

Getting Started - CBM Implementation

- Creating the CBM Environment
- CBM and the Acquisition Life Cycle
- CBM Planning/Technology Selection Phase
- CBM Implementation Phase
- CBM Operations Phase

Forget Hard Wired Control Loops: Getting Started with Wireless Continuous Monitoring

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Day Three: Managing a CBM Initiative or Project

Managing a CBM Initiative or Project

- A CBM Program Review Checklist
- A CBM Management Approach
- CBM Relationships the Other Maintenance Improvement Efforts
- CBM and Total Life Cycle Systems Management
- CBM and Reliability Centered Maintenance
- CBM and Performance Based Logistics
- CBM and Systems Engineering
- CBM and Information Technology Portfolio Management
- CBM and Focused Logistics
- Overcoming Barriers to CBM Implementation
- Twenty Questions a Manager Should Consider

Case study: *Why should you consider CBM Cloud services?*

Measuring Success

- Remember the Goals: Increased Asset Availability & Reliability
- Implementation Metrics - How to Measure Successful CBM Implementation
- Using the Reliable Maintenance Excellence Index to Validate Total Operations Results

Other Important Maintenance Best Practices for Successful ISO 55000 Compliance

- Maintenance Planning, Estimating and Scheduling
- Using Risk-Based Maintenance as a Risk Management Tool
- Maximize the Value of Your CMMS Program
- Equipment Inventory/Numbering System
- Spare Parts Inventory Management

Team Presentations

Presentation of Certificates

Closing Remarks

What is a TrueWorkShop™?

The Maintenance Excellence Institute International believes the principles and practices covered can be taken back and put into practice for a true return on investment for the training we provide:

- Pre course work:-self assessment of attendee's operation
- Extensive knowledge base for each topic
- Extensive practical exercises on key topics
- Extensive idea sharing and instructor's case studies from over 300 plant and facility sites
- Plan of action for attendee's Top 5 Areas for Improvement
- Personal TMEII follow up *after* each session

It's a 'How To' Step-by-Step Approach

This **TrueWorkShop™** will guide you step-by-step through the PM & PdM installation process, helping you to:

- Progress forward to ISO55000 compliance
- Understand how to define maintenance tasks with RCM
- Define criticality of assets, your repair problems, and goals
- Develop the optimum PM & PdM plus CBM program for your operation
- Understand RBM for the optimum safety
- Justify your investment and validate the benefits
- Develop a realistic Plan of Action
- Measure total operations benefits with your Reliable Maintenance Excellence Index
- Sell your program to Top Leaders and continue it long-term.

After this **TrueWorkShop™** you will know how to reevaluate your maintenance situation periodically with **The Scoreboard for Maintenance Excellence™**, how to improve top priority areas, and how to get the results you want.

We Personally Guarantee This TrueWorkShop™!

We will give you the firepower and knowledge needed to implement a successful PM program, to use the Predictive Maintenance and Conditioned-Based maintenance technologies that apply to your operation. We will reinforce your current maintenance needs to the top leaders in your organization. We will help you be "the maintenance messenger" to get action from Top Leaders.

We can personally help you make a difference in the total operations success of your organization after you attend this event! Top Leaders must clearly understand your needs and the consequences of gambling with maintenance costs and a bad PM and PdM program.

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Your Instructor Team

Ralph W. (Pete) Peters the Founder/President of The Maintenance Excellence Institute International is your primary instructor. His experience of over 40 years has included being a manufacturing plant manager at two sites; director of facilities management. He has had extensive maintenance experience within the US Army beginning in Vietnam (1970) and with the US Army Corps of Engineers building what is now called, the National Highway. He consults and provides maintenance best practice training in over 30 countries, written maintenance chapters in four books as well as a book on *Maximizing the Value of Your CMMS*. In 2006, he wrote and published *Maintenance Benchmarking & Best* Practices for McGraw-Hill's professional book division. In 2015 he completed Reliable Maintenance Planning, Estimating and Scheduling for Elsevier's Gulf Publishing Division. Pete's positive approach and his experience from consulting, allows him to be an excellent coach for today's top leaders, maintenance leaders and craft leaders. His worldwide ***PRIDE-in-Maintenance*** initiative will be highlighted in his next book with key topics from this universal book included in all of his worldwide **TrueWorkShops™**.

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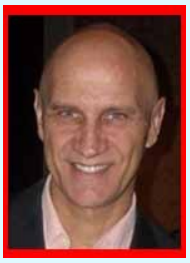

Sergio Rossi founded RPM4M in 2000, after having worked as a plant engineer, a maintenance manager, a corporate reliability manager and a senior engineer in the food, plastics, and aerospace industries. He learned, hands-on, how to implement Continuous Improvement Processes such as TPM, RCM, OBM, and PdM. After experiencing these implementations, he saw the need to simplify, adapt, and improve existing approaches while creating new processes exclusively developed for solving all machine related issues. His vision was to become a complete and single provider of an integrated maintenance, reliability, and performance solution for minimizing reactive maintenance losses in machine-critical manufacturing industries. Finite Element Manufacturing (FEMsm), a process proven to minimize downtime, was the final result of his development efforts. Sergio holds a degree in electrical engineering from the University of Colorado, several patents, and speaks fluent Spanish.

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Dennis Delsanter provides over 25 years experience in the design and implementation of reliability maintenance and manufacturing process work management systems. Some examples: With client participation Dennis has led the development of management systems for warehousing, preventive/predictive maintenance, operator based maintenance, planning, estimating, scheduling, and asset management. Dennis also provides the necessary skills training and management development to ensure sustainability. This requires establishing relationship of trust with those who will be the most affected by change. Typical assignments, resulting in increased reliability, work efficiency and profitability, have included: Exxon Mobil, Ashland Marathon, Koch Industries, Hercules Chemical, American Cyanamid, Beliot Manufacturing plus other companies in the paper making, food processing, steel, pharmaceutical and automotive sectors. Prior to his current career as a consultant, Dennis spent 20 years in all levels of Pharmaceutical Manufacturing. He has experience is in both human and veterinary products. Held positions in quality control, research, and manufacturing. His last position was Director of Operations for a mid-western pharmaceutical company.

Training is Not Over When it's Over!

Your company will benefit most if you attend with a 3 or 4 person company team which will work together. You return to your organization with the new knowledge and team support for PM and PdM along with your new plans for reliability and maintenance excellence. We invite your Top Leaders, Maintenance Leaders and Craft Leaders to attend as a team. The workshop **"is definitely not over when it's over." Yogi Berra once said, "It ain't over until it's over!"**

Your session is definitely not over when it's over! Following completion of this **TrueWorkShop™** a personalized follow-up will be scheduled for each attending organization. Our one-on-one coaching is to help you apply the key topics and to implement your plan of action. Implementation is your key to results and we want to help you make that happen!

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