SALVO
capture the initiative
ENGINEERING AND MAINTENANCE SERIES

ADVANCED MAINTENANCE LEADERSHIP IN RELIABILITY CENTRED MAINTENANCE (RCM)

Improve Reliability, Craft Productivity and Uptime with Total Buy-in from All Stakeholders

7th – 11th September 2014
Manama, Kingdom of Bahrain

FREE TAKE-HOME MATERIALS ON CD, E-BOOKS & FOLLOW UP SUPPORT WORTH WELL OVER USD 2,000!!

ABOUT YOUR INTERNATIONAL EXPERT COURSE LEADER:

RALPH W. "PETE" PETERS

- Over 40 years of experience in the areas of implementing maintenance best practices, developing effective productivity measurement and initiating long term operational improvement processes, within both public and private sectors
- Author of major books and handbook chapters with 200 articles and publications, including Maintenance Benchmarking and Best Practices: A Profit and Customer-Centred Approach.
- Organizations that have benefitted from his extensive experience include Saudi Aramco, Qatargas, Banagas, SABIC, Qatar Petroleum, Nigeria LNG, Sidera Steel, British Petroleum, Petronas, Boeing, Honda, Lafarge Corporation, Caterpillar, Atlas Copco& many more!

CERTIFICATE OF COMPLETION

A Certificate of Completion will be issued to all delegates completing minimum of 90% of the total hours of the course.

TOP LEARNING OBJECTIVES:

1. **Enhance** essential Maintenance Leadership skills to effectively perform change management and cultivate a reliability excellent culture
2. **Improve** craft productivity and Overall Craft Effectiveness (OCE) through better leadership, communication and people management skills
3. **Ensure** successful adaption and implementation of asset management improvements with absolute compliance from artisans, technicians and contractors
4. **Understand** important measurement techniques and framework to define results
5. **Apply** key elements of Reliability Centred Maintenance (RCM)
6. **Systematically analyse** and conduct Failure Mode, Effect and Criticality Analysis (FMECA) to effectively identify criticality of key assets, prioritise tasks and minimise wastage
7. **Utilise** problem-solving techniques of Root Cause Analysis (RCA) for Root Cause Failure Analysis (RCFA) to eliminate repeated failures and decrease failure frequency
8. **Learn** how to conduct effective and modern Preventive, Predictive Maintenance and Conditioned Based Maintenance as well as Risk Based Inspection in RCM
9. **Ensure** management support by making optimal and economically justifiable suggestions based on Value Engineering (VE), Life Cycle Costing and Replacement Analysis
10. **Effectively benchmark** performance against world class best practices and transit from PAS 55:2008 to ISO 55000

BOOK NOW TO SAVE UP TO USD 1,000 OFF THE REGULAR PRICE!

EXCLUSIVE TAKE-HOME MATERIALS ON CD!

- ✓ THE SCORECARD FOR MAINTENANCE EXCELLENCE
- ✓ THE COMPUTERISED MAINTENANCE SYSTEM
- ✓ THE RELIABLE MAINTENANCE EXCELLENCE INDEX
- ✓ THE ACE TEAM PROCESS
- ✓ MAINTENANCE BENCHMARKING AND BEST PRACTICES
- ✓ TWO E-BOOKS: "RELIABLE MAINTENANCE EXCELLENCE PLANNING,ESTIMATING AND SCHEDULING" & "MAINTENANCE BENCHMARKING AND BEST PRACTICES: A PROFIT AND CUSTOMER-CENTRED APPROACH"
- ✓ THE TIME MAINTENANCE AND MRO MATERIALS MANAGEMENT
- ✓ COMPLIMENTARY FOLLOW-UP SUPPORT

REDUCE MAINTENANCE COSTS BY 10% - 20%

IMPROVE CRAFT PRODUCTIVITY BY 20% - 30%

SELECTED TESTIMONIALS ON THE TRAINER:

"Pete has a very good skill in explaining complex topics in a style easy to understand by all." – *Qatar Petroleum*

"It is very good for an instructor to provide so many good electronic references for attendees to use after the session is over." – *Banagas*

WHY ATTEND THIS MASTERCLASS?

If you owned the maintenance operation as a business, what would you differently do?

It is extremely important for today's maintenance leader to operate with a strategy and attitude that maintenance is indeed an internal business. Maintenance leader need to understand the key requirements for profit & customer centered maintenance not only to satisfy operations and higher management, but also to minimise costs through effective management of crafts and contractors. Fortunately for such a demanding position, there are numerous fundamental principles and proven practices that can provide foundation for implementation and improvement.

Salvo Global's 5-day intensive Masterclass on **"Advanced Maintenance Leadership in Reliability Centred Maintenance (RCM)"** will allow delegates to develop a holistic multi-perspective view and essential leadership skills to effectively manage the different stakeholders. Delegates will also learn critical tools such as RCM, RCFA, FMEA, Life Cycle Costing etc. to be used in conjunction with their leadership transformation journey and quest to build a reliability and profitability centred maintenance culture. **Extensive electronic references for each topic and life-time support to build lasting skills will be provided complimentarily.**

This course is designed as an interactive mix of lectures, case studies, discussions, class exercises and templates. Delegates will develop a personalised action plan for their Top 5 Improvement Areas to bring back for implementation within their respective organisations.

Each delegate is required to bring along a laptop to be used during class exercises.

EXCLUSIVE TAKE-HOME MATERIALS ON CD!

✓ BEST PRACTICE BENCHMARKING TOOLS IN EXCEL FORMAT

- ✓ **The Scorecard for Maintenance Excellence** helps you define where you are with your current maintenance practices against 27 best practice categories and over 300 best practice items. It is today's most comprehensive benchmarking tool going well beyond current PAS 55: 2008.
- ✓ **The Computerised Maintenance Management System** Benchmarking System allows you to rank your current CMMS installation, identify specific improvement needs, and continuously monitor results after the course.
- ✓ **The Reliable Maintenance Excellence Index** provides complete procedures to develop your own world-class methodology to measure maintenance performance including the benefits from PM, PdM, RCM and other best practices.
- ✓ **The ACE Team Process** is today's most progressive and easy to use methodology for determining reliable planning times and quality repair methods. It is a complete how-to manual for implementing this process to improve accuracy of estimates.

✓ TWO COMPLIMENTARY E-BOOKS

Each delegate receives a complete, full-colour and unabridged E-book version of Pete's McGraw-Hill's book "Maintenance Benchmarking and Best Practices: A Profit and Customer-Centred Approach".

Each delegate will receive an E-book version (manuscript) of Pete's upcoming book "Reliable [illegible]ntenance Planning, Estimating and Scheduling" with [illegible]vier BV.

Your organisation receives internal reproduction rights for all course materials.

✓ REFERENCE MATERIALS

These include all Powerpoints used, class exercises, case studies, TMEI articles and references such as **"The TMEI Maintenance and MRO Materials Management Glossary"** (a comprehensive glossary of maintenance and spare parts management terms) collected over many years of experience.

★ COMPLIMENTARY FOLLOW-UP SUPPORT

Even after the course is completed, the trainer's company TMEI provides complimentary follow-up support via phone, email or GoToMeeting virtual sessions when needed.

WHO SHOULD ATTEND?

VPs, Directors, Division Heads, Managers, Superintendents, Specialists, Leaders, Supervisors, Foremen, Planners, Technicians, & Engineers from the following departments:

- Maintenance
- Engineering
- Shutdown & Turnaround
- Reliability
- Preventative Maintenance
- Predictive Maintenance
- Condition Monitoring
- Rotating
- Mechanical
- Physical Asset
- Asset Integrity
- Operations
- Facility Management
- Plant
- Production
- Process
- Inspection

From industries including but not limited to:

- Oil & Gas, Mining, Utilities, Petrochemicals/Chemicals, Manufacturing, Aviation, Transportation & Rail, Pharmaceutical & Healthcare, Government, Construction, Food & Beverages etc.
- All other industries that see leadership skills and physical asset management as a factor to business success such as facilities management and healthcare facilities management operations.

MORE ABOUT YOUR EXPERT COURSE LEADER:

RALPH W. "PETE" PETERS, FOUNDER/PRESIDENT OF THE MAINTENANCE EXCELLENCE INSTITUTE (TMEI) BASED IN U.S.A

Ralph W. "Pete" Peters is a highly recognised author-trainer and leader around the world in the areas of implementing maintenance best practices, developing effective productivity measurement and initiating long term operational improvement processes, within both public and private sectors. His value as a consultant has been enhanced through his direct leadership and profit and loss responsibilities within large maintenance and manufacturing plant operations prior to focusing upon consulting. He has been a managing director of two large manufacturing plants and an author of major books and handbook chapters with 200 articles and publications, including Maintenance Benchmarking and Best Practices: A Profit and Customer-Centred Approach. He is also working on an upcoming book titled Reliable Maintenance Planning, Estimating & Scheduling focusing on Oil & Gas, Petrochemical/Chemicals & Heavy Manufacturing industries. As a frequent speaker, he has delivered speeches and seminars on maintenance-related topics worldwide in over 40 countries.

PETE HAS HELPED MANY NOTABLE ORGANISATIONS ACHIEVE SUCCESS AND STRONG RETURNS ON PHYSICAL ASSET INVESTMENT, INCLUDING:

- African Barrick Gold
- Anglogold Ashanti
- Atlas Copco Ghana Limited
- Aveng Grindker
- Atomic Energy Canada Ltd
- Banagas
- Boeing Commercial Airplane Group
- Botswana Meat Commission
- Botswana Power Corporation
- British Petroleum
- Bulk Oil Storage and Transport Co. Ltd
- Caterpillar
- Dangote Cement
- DeBeers Marine
- Engro
- Fidelity Bank Ghana Limited
- Ford
- General Foods
- Great River Energy
- Ghana Grid Company (GRIDCO)
- Ghana Ports and Harbours Authority
- Heinz
- Hidroeléctrica de CahoraBassa
- Honda of America
- Konkola Copper Mines
- Lafarge Corporation
- Lonmin PLC
- Marathon Oil Corporation
- Nigeria Liquid Natural Gas
- Olam Ghana Limited
- Petronas
- Polaroid
- Provast Limited
- Qatar Petroleum
- Qatargas
- Rand Water
- Randgold Resources
- SABIC
- Sasol
- Saudi Aramco
- SideraSteel
- Social Security & National Insurance Trust (SSNIT)
- South African Express Airways
- Unilever
- Vale Mozambique
- Volta Aluminum Co. Ltd (VALCO)
- Volta River Authority
- Wyeth-Ayerst

TESTIMONIALS FROM PETE'S PAST COURSES

"No other training company offers free help to attendees like the Maintenance Excellence Institution International after the training is completed that I know about." – SABIC

"Excellent! This is one of the most satisfying reliability course I have participated in. All topics short and point-directed – no useless information, no dressing." – Chevron

"The event was "World Class". This is the best maintenance workshop I have ever attended by far. Congratulations to the organisers!" – Hidroeléctrica de Cahora Bassa, Mozambique

"There are very few people with his total asset management knowledge and the ability to teach like he does around the world." – Nigeria Liquid Natural Gas

"We learnt a great deal on improving use of our CMMS. Pete's experience in evaluating, selecting and implementation of CMMS was well defined in his excellent book; "Maintenance Benchmarking and Best Practice." – Qatargas

"I now see that we must hold contractors more accountable for their productivity. We must develop ways to measure contractor productivity and this course has shown us an excellent method using "The Reliable Maintenance Excellence Index" a very useful Excel tool." – Saudi Aramco

COURSE CUSTOMIZATION TO YOUR PRIORITIES

Pre-Course Questionnaire will be issued to the delegates immediately upon registration to allow the trainer to identify and address their Top 5 specific improvement needs and concerns, which would be reviewed and discussed during the course.

WHY NOT BRING THIS MASTERCLASS INTERNALLY?

This training can be customised into an In-house training programme just for your organisation. To find out more, please contact Felicia at: Tel: +65 6297 8545 or Email: internaltraining@salvoglobal.com

DAY 1 – 7TH SEPTEMBER 2014 (SUNDAY)

OUTCOME OF THE MASTERCLASS

By the end of this 5-day intensive Masterclass, delegates will gain essential leadership skills to manage all stakeholders effectively. Delegates will learn the key steps to successfully incorporate critical tools such as RCM, RCFA, FMECA, Life Cycle Costing etc. into current maintenance regime. They will be able to take back with them a practical action plan to implement within their organisations in order to achieve measurable results in a more efficient plant maintenance, increased operational efficiency, lower operating costs and improved plant availability. Furthermore, even after the course, complimentary follow-up support is provided via phone, e-mail or GoToMeeting virtual sessions when needed.

Course Timings
Registration begins at 08:00. Course sessions will start promptly at 08:30 and end at 16:30. There will be two short breaks at appropriate times for refreshments and the networking lunch break will be from 12:30 to 13:30.

08:15 Registration and Coffee

08:30

Introductions
Course Objectives Overview

PracticalExercise
- Review of Delegates' Top 5 Areas for Improvement

Understanding and Improving Craft Productivity and Overall Craft Effectiveness (OCE)

- Equipment Productivity (OEE)- Effectiveness, Performance, Quality
- People Productivity (OCE) Craft Utilisation- Performance, Craft Service Quality

PracticalExercise
- What is gained value of your possible gains in craft productivity?

Use of Leadership Driven, Self-Managed Teams

- Advantages
- Best Practices for Successful Cross Functional Team Building

PracticalExercise
- Break into Teams and Develop Your Team Charter and Team Leader

Leadership and Maintenance Culture

- Reliability and Maintenance Excellence Model & Leadership
- The Vision-Mission-Values
- Difference between Management and Leadership
- The Benefits of a Reliability and Maintenance Excellence Culture

PracticalExercise
- What are your main obstacles to maintenance process improvement?

Overview: New International Standards for Asset Management Strategy Development

- PAS 55:2008 and ISO55000 Overview
- The Scorecard for Maintenance Excellence: Going beyond current PAS 55:2008 and Preparing for ISO55000.

Benchmarking

- Measuring efficiency and implementation progress of new/existing programs

16:30 End of Day One

DAY 2 – 8TH SEPTEMBER 2014 (MONDAY)

Course Timings
Registration begins at 08:00. Course sessions will start promptly at 08:30 and end at 16:30. There will be two short breaks at appropriate times for refreshments and the networking lunch break will be from 12:30 to 13:30.

08:15 Registration and Coffee

Asset Management and Asset Integrity

- Asset Management versus Asset Integrity
- Defining Asset Criticality
- Risk Assessment Techniques
- Life Cycle Costing

Case Study:
- BP Texas City Refinery Explosion

Leadership Elements: Developing Individuals in Maintenance (I)

- Building and Leading an Effective Maintenance Team
- Empowering the Maintenance Leader
- Different Sources of Power
- Leader Philosophy, Characteristics & Behaviour
- Opportunities for Leaders

Developing your Reliable Maintenance Excellence Index

- Provides Multi-Purpose Measurement Tool across Total Operation
- Define Baseline Measurement and Define Targets
- Measures Progress in Achieving Implementation of Best Practice

Leadership Elements: Developing Individuals in Maintenance (II)

- Setting Expectations and Standards
- Coaching & Feedback: How to be a Winning Coach
- Three types of Motivation: Fear, Incentive & Attitude
- How to Improve Communication
- Craft Skills Development of Your People Assets

Leadership Strategies for Reliability and Maintenance Excellence

- Change Management in Maintenance
- Effectively Dealing with Resistance to Change
- Facilitating a Cultural Change
- Mapping the Improvement Journey
- Problem Solving and Troubleshooting: Root Cause Analysis (RCA)

Motivating Artisans to Carry Out Relevant Job Orders

- Developing PRIDE in Maintenance
- Work Control and Good Scheduling
- Accurate Data Collection via the Work Order
- Why the Work Order is So Important
- Ensure that critical task specifications are understood done to high standards

16:30 End of Day Two

DAY 3 – 9TH SEPTEMBER 2014 (TUESDAY)

08:15 Registration and Coffee

Course Timings
Registration begins at 08:00. Course sessions will start promptly at 08:30 and end at 16:30. There will be two short breaks at appropriate times for refreshments and the networking lunch break will be from 12:30 to 13:30.

Effective Preventive Maintenance Programs

- Effective Framework in Improving or Starting a New Program
- The 6-step Installation Program

Phase I	Management Awareness
Phase II	Management Commitment
Phase III	Pilot Program Design
Phase IV	Evaluate Pilot Program
Phase V	Expand and Operate the Total Program
Phase VI	Continuous Improvement and Evaluation of Total Program

- Keeping an effective and useful equipment history

Understanding Predictive Maintenance Technologies that are Available

- Review of today's available predictive maintenance technologies
- Up-to-date information on low-cost, high-technology predictive maintenance techniques

Condition Based Maintenance (CBM) and Monitoring

- Predictive Maintenance Technologies are Key Elements of Continuous CBM
- CBM Examples of Using Predictive Maintenance
- Review of the Predictive Maintenance Matrix
- Going Wireless with Continuous Condition Monitoring

Case Study:

- Predictive Systems Engineering Case Studies

Planning & Scheduling of Major Maintenance Work Orders and Shutdowns

- Planning & Scheduling for Proactive Maintenance
- Effective Scheduling Methods and Work Execution
- Work Breakdown Structure
- Critical Path Method (CPM)
- Resource Scheduling and Leveling

Controlling and Monitoring Maintenance Work

- Measuring Performance
- Sources of Data
- Backlog Indices
- Schedule Compliance
- PM and Emergency Indices
- Productivity Indicators

16:30 End of Day Three

DAY 4 – 11TH SEPTEMBER 2014 (WEDNESDAY)

08:15 Registration and Coffee

Course Timings
Registration begins at 08:00. Course sessions will start promptly at 08:30 and end at 16:30. There will be two short breaks at appropriate times for refreshments and the networking lunch break will be from 12:30 to 13:30.

The ACE Team Benchmarking Process for Reliable Maintenance Planning Times

- Selecting Benchmark Jobs
- Developing A CONSENSUS of EXPERTS (ACE) on Wrench Time
- Developing Spreadsheets for Use by Planners
- Developing Reliable Planning Times with Appropriate Allowances

Equipment Failure Patterns

- Distinguishing between repairable and non-repairable equipment
- Types of equipment failure
- Review why equipment fails
- Areas of the Bath-tub curve
- Actual equipment failure patterns
- Actions to minimise failure effect

Reliability Centered Maintenance (RCM)

- Determining Criticality of Equipment
- Principles of RCM and Key Elements of RCM to Define Equipment Strategies
- Equipment Functions and Performance Standards
- Functional Failure
- Failure Modes
- Failure Effects
- Consequences of Failure
- Considerations for Risk and Risk Based Maintenance within RCM
- Operating Risk Reduction

PracticalExercise

- Gas Turbine Exhaust Stack (FMECA)

Understanding the Math of Reliability and Probabilities for Failures

- Major Machine Components
- Component Condition Monitoring
- Trending
- Rotary Pump
- Thrust Bearings
- Seals
- Auxiliary Systems

Review- OREDA Database Available for Offshore Operations

- How it applies to All Operation Types Doing Maintenance of Major Equipment

Root Cause Failure Analysis (RCFA)

- Structured problem solving and RCFA
- Cause analysis
- Two-track approach
- Failure types
- The three level of cause
- Collecting failure data
- Parts and position
- Describing the process
- Data analysis
- Human root causes
- Solution to human root cause
- Stewardship of RCFA results

Maximising and Managing Contractors

- Outsourcing decision making
- Key criterion for contractor selection
- Building reliability requirements and quality standards into engineering contracts and document
- Improving contractor performance: Ten Key Steps

16:30 End of Day Three

DAY 5 – 11TH SEPTEMBER 2014 (THURSDAY)

08:15 Registration and Coffee

Course Timings
Registration begins at 08:00. Course sessions will start promptly at 08:30 and end at 16:30. There will be two short breaks at appropriate times for refreshments and the networking lunch break will be from 12:30 to 13:30.

Why Risk Based Inspection (RBI) May be Needed

- What is Risk Based Inspection (RBI)
- Which API requirements does RBI cover
- The benefits of RBI

Case Study:

- The Major Failure Consequences When Not Using RBI

The CMMS Benchmarking System

Practical Exercise:

- Evaluates existing CMMS' support to reliability of equipment
- Why CMMS implementations fail to achieve planned benefits

Discussions and Team Exercise

- Is CMMS providing data or true reliability information?

Discussions and Team Exercise

- Is data routinely analysed and used for decision-making?
- What kind of analysis is done?

Gaining Commitment from Top Management

- How to communicate with top management to get them to adopt your suggestions
- How to back decisions with sound economic justification

Value Engineering (VE) for Maximum Return on Investment

- What is Value Engineering
- Application to maintenance decisions
- Key steps in the Value Engineering process
- Why cross functional team are absolutely necessary for Value Engineering

Life Cycle Costing of Equipment

- Replacement Policy to Support the Capital Budgeting Process
- Accounting Rate of Return (ARR)
- Payback Method
- Net Present Value Method (NPV)
- Weibull Analysis

Case Study:

- Reliability Study for Optimum Boiler Operations Strategy

Benchmarking and Performance Indicators: Teams Present Current Measures & New Ones

- Developing our Reliable Maintenance Excellence Index: What will yours look like?
- Workload Performance Indicators
- Planning Performance Indicators
- Effectiveness of Performance Indicators
- Cost of Performance Indicators
- Management Reports

Final Exercise :

- Attendees Presentations of their Team's Recommended Plan of Action for Improving Maintenance and Reliability in their Organisation

16:30 Presentation of Certifications and End of Masterclass

"Great learning experience.Very practical with real case studies to illustrate the learning from best practices."
– Exterran Nigeria Ltd

"Your Reliable Maintenance Excellence Index is a terrific tool for us to finally measure the true value of maintenance"
– BP Texas City Refinery

"Case studies combined with exercises that are evaluated provide for understanding and clarity to students in order to take lessons back to their organizations."
– South African Express Airways