

# Advanced Total Plant Maintenance

22<sup>nd</sup> – 25<sup>th</sup> August 2016 | Ho Chi Minh, Vietnam

How to determine the current state of your existing maintenance and to progress to improved risk based decision making technique.



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## Program Overview

The new standard for equipment maintenance is Advanced Total Plant Maintenance, however, this infers maintenance of equipment during the ownership phase only. Effective equipment performance starts at the equipment acquisition phase. We will start this workshop with an overview of the new standard for Asset Management ISO55000. The principles of the standard places great emphasis on:

- Total, i.e. everyone must be involved to achieve asset management objectives.
- Development of a strategic model
- Use of risk based tools and techniques to support decision making
- The management of data to support decisions
- Gaining value from our assets throughout the life from cradle to grave
- Achieving assurance through auditing

We will discuss the above asset management principles as well discussing delegates and common issues we encounter in the Middle East through consultancy and auditing.

We will cover some key areas where we spent money and how to reduce costs, and then cover many techniques to:

- Improve reliability, eliminate failures using both statistical and team based techniques.
- Selecting maintenance strategies, RCM, FMEA, reverse RCM, developing generic Strategy Guides.
- Optimize preventive maintenance and writing effective job plans.
- Reduce downtime and repair times.
- Improve the effectiveness of RCA & RCFA studies.

**This workshop is very practical and will include many case studies and examples, with many from the Middle East**

### Attend this course to Master:

- Understand Asset Management best practices based on the ISO 55000 Standard.
- Understand common issues in asset management that need to be improved.
- Understand how to improve reliability.
- Understand how to improve downtimes and repair times.
- Understand how to optimize replacement decisions.
- Understand how to apply life cycle costing techniques.
- Understand the different approaches to select the maintenance strategy for different assets.

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## This program is intended

This training course is designed for:

- Maintenance Planners.
- CMMS Clerks/Assistants/Administrators.
- Reliability Engineers.
- Engineers responsible for maintenance of areas of the plant.
- Anyone who is responsible for managing assets.
- Process & Operational Personal who need an understanding of the goals of maintenance.

# Advanced Total Plant Maintenance (4 Days)

## DAY 1 Introduction to Asset Management, ISO55000 & Common Issues

### Topic 1 Introduction to the New Standard for Asset Management ISO55000

ISO55000 provides a framework to develop an asset management system, there are many interpretations, we will show how to develop a functional and hence a practical model

- What is asset management, is it maintenance?
- History to the Standard
- Asset Management Framework according to ISO55000
- Different models for implementing the Asset Management System

Exercise Delegates develop a model for their organization.

### Topic 2 Common Issues in Maintenance & Asset Management

The most common issues in maintenance, reliability and spares management are discussed

- Delegates issues
- Introduce 19 common issues encountered during maintenance effectiveness audits.

### Topic 3 Conducting Audits & Benchmarking

- Different types of audits in-depth, fast track, ISO55000 certification, Reliability Audits
- Value of benchmarking
- Scoring methodologies

Exercise conducting a mini audit

### Topic 4 Achieving CMMS Data Integrity

ISO55000 places great emphasis on managing data. How to implement processes to ensure quality is achieved for new builds as well as upgrades to different CMMS system

- Data management according to ISO55000
- Process for ensuring CMMS quality build
- Where does it all go wrong for Equipment, PMs, Spares & Failure Codes

Exercise Naming equipment and spares

### Topic 5 Life cycle costing

Highlight the importance of LCC and when to apply

- Brief introduction to Life Cycle Costing
- When to use

Exercise LCC as applied to a Bad Actor

## Day 2 How to Improve Reliability of Equipment and Systems

### Topic 6 Basic reliability theory

How reliability techniques are used to improve system and equipment performance

- Results of reliability studies
- Measuring Reliability steady state and time dependant
- Weibull, Exponential and log normal distributions
- What to be aware of when extracting data from CMMS
- Comparing apples with apples

Exercise Determine reliability parameters using plotting paper and software

**Topic 7****Improving historical CMMS Data**

How to collect better data from maintainers for the CMMS history

- Examples of poor feedback reports
- Maintainers feedback model
- What is required to ensure good performance
- Using Failure codes

**Topic 8****Tactics to improve reliability**

A number of tactics are presented to improve reliability

- The tools and techniques in the toolbox
- Equipment Betterment Programme 6 step process
- Techniques for Root Cause Analysis and when to use

**Exercise Pump improvement study**

**Topic 9****Brief introduction to Ram Modelling**

A brief introduction to RAM modelling and how it used to conduct what ifs, evaluate high value spares, different design configurations

- Overview of RAM modelling and when to use
- System analysis (series, parallel including hot and cold standby)
- Case study throughput analysis

**Exercise series and parallel systems**

**Day 3 Maintenance Strategy Selection****Topic 10****Overview of the Maintenance Strategy Process**

There are many approaches to develop maintenance strategies we provide a framework for high, medium and low criticality equipment

- Model for developing or reviewing maintenance strategy
- Criticality analysis, the reason companies do this incorrect
- Overview of selection Technique for high, medium and low criticality equipment (RCM, FMEA, Reverse RCM, Generic Strategies, etc)

**Topic 11****Introduction of RCM**

An overview of RCM that is typically applied to the highly critical equipment

- The 7 RCM questions
- Functional Analysis
- FMECA
- Strategy selection and Task Definition
- When to conduct repeat reviews

**Topic 12****Other Strategy Selection or Review Techniques**

- FMEA
- Reverse RCM or how to challenge current strategies
- Layouts for generic maintenance strategies

**Exercise Applying Reverse RCM**

- Topic 13 Writing Effective Job Plans**  
 We have observed many poor quality Job Plans the same rules for writing SOPs are applicable to Job Plans
- Examples of poor CMMS job plans
  - Rules for writing effective job plans

#### Day 4 Reducing Downtimes and Repair Times & Optimising PM

- Topic 14 Understand and Measuring Maintainability**  
 Maintainability we feel is not given the importance it deserves, we discuss many techniques that can be applied to reduce downtime and repair times
- What is downtime
  - Definition of maintainability
  - Activities making up downtime and repair times
  - KPIs for maintainability

- Topic 15 Maintainability Techniques**
- Introduction to Maintainability improvement techniques
  - FI tyre change the different between 1950s and a tyre change today
  - Sequence of events approach
  - Task Analysis & Streamlining
- Exercise Comparison Major airline and the budget short haul airline company**

- Topic 16 Optimising PM**  
 How reliability theory is used to optimise PM frequencies
- Conditions for PM to be appropriate
  - How to optimise PM tasks
  - How MTBF has no value in setting task frequencies
- Exercise Optimising replacement tasks using plotting paper and software**  
**Course Review and Delegates action plans**



PETRO1 provides Oil & Gas Trainings & Consultancy services ranging from Petroleum Engineering, Exploration & Production, Subsurface and business related activities in the oil & gas industry. We had successfully made impact to petroleum professional mainly the Top 50 Oil & gas players in the Asia Pacific Region.

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|-------------------------|------------------------------|---------------------------------|
| ▪ Total E&P             | ▪ Petrofac                   | ▪ SGS                           |
| ▪ Petronas              | ▪ Keppel Corporation         | ▪ PTT EP                        |
| ▪ Murphy Oil            | ▪ Singapore refining Company | ▪ Halliburton                   |
| ▪ JX Nippon             | ▪ Salamander Energy          | ▪ Brunei LNG                    |
| ▪ Scomi Oil             | ▪ Binh Son Refining Vietnam  | ▪ Shell Chemical                |
| ▪ Hess                  | ▪ PTT Global                 | ▪ Worley Parson                 |
| ▪ Saipem                | ▪ Newfield                   | ▪ China university of petroleum |
| ▪ Clough                | ▪ Atkins Australasia         | ▪ Beijing                       |
| ▪ Mubadala Petroleum    | ▪ Brunei Methanol            | ▪ Thairoil                      |
| ▪ Bureau Veritas        | ▪ Curtin univeristy          | ▪ Aker Solutions                |
| ▪ Pertamina             | ▪ Technip                    | ▪ Star Petroleum                |
| ▪ Peritus international | ▪ Premier Oil                | ▪ Jurong Shipyard               |

# Principal Program Facilitator

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## David Thompson, RAMsoft UK

David extensive experience covers all aspects in Maintenance, Reliability and Operation management. His area of strength covers specifically in maintenance management audit reports , RCA , Shutdown planning and failure code systems ,CMMS , KPIs , Spares Optimization , RCM and RAM Modelling

### RAMsoft, UK

For the past 40 years, David had been actively involved in:

- Conducted over 400 audits including fast track audits, in-depth audits and distance audits in maintenance management
- Developed Policy and procedures documents for a number of Oil & Gas Companies.
- Currently working for Worley Parsons in UK writing document for a number of FEED projects worldwide.
- Wrote standard and guidelines on many topics on maintainability, RCA, Workpacks, Shutdown planning and failure code systems.
- Wrote over 400 audits reports covering excellence in Maintenance management and in specialist topics spares, CMMS, KPIs and Reliability Management system.
- Presented Papers at several Maintenance & Reliability Symposiums in Europe, Malaysia and Brazil.
- Online distant learning instructor for Robert Gordon University in Assets integrity and Reliability Management.
- Undertaking a major CMMS data Cleansing Project as part of a CMMS upgrading.

### Symposiums

- European & world Maintenance Congress 2007
- Applied Reliability Symposiums – Europe 2009, Brazil 2008, Asia 2006,2007, 2010.
- Presented paper at the Applied Reliability Symposium Singapore 2013 (4<sup>th</sup> Year)

David has worked for many blue chip companies either directly or through a consulting role.

David,s International Clients : Nippon Oil , Talisman , Petrofac , State Oil Dubai Petroleum , Novartis , EGGBOROUGH POWER STATIONS , Chinese Oil & Gas company , worley parsons , sabic, Qatar petroleum , Scottish power , wood group , shell Nigeria , hustsman , ENI oil , Saudi Aramco and SONANDOL P&P

David is a certified instructor in RCA and Reliability Methods and Techniques. He has developed and delivered training programs worldwide including both to offshore and onshore facilities, topics include RCM, FMECA, Weibull Analysis, RAM Modelling, Reliability Growth, Analysis, and Fault Tree Analysis, Incident /Root Cause Analysis, Work Planning and Control, Spares Optimisation & Rationalisation. Recent workshops that have been well received are Achieving CMMS Data Integrity, Implementing Asset Management Systems to support ISO55000 and Reducing OPEX costs.

David has presented papers at several Maintenance & Reliability Symposiums in Europe, Malaysia, and Brazil. He is an Online Distant Learning Instructor for the Robert Gordon University for a distance learning MSc Course in Asset Integrity and Reliability Management. David's workshops include many case studies and examples gaining from working in the Middle East, Africa, and Asia.

David has conducted many reliability studies over the past 20 years. He has a particular interest in helping companies collect better data and to try and make reliability of interest to the regular maintenance engineer by concentrating on applications rather than complex mathematical theory. He has worked for many blue chip companies either directly or through consultants.

### Early days

David initially started in the steel making and mining sectors and for the past 15 years in the oil & gas sector. David was the UK partner for Reliasoft one of the world's leading reliability engineering companies, and is currently part of a team to implement improved Asset Reliability in the Middle East, including RAM and RCM studies.

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## **REGISTRATION DEADLINE**

As an internationally operating training organization, PETRO1 would appreciate receiving registrations at least one (1) month prior to course commencement. Registrations after this date will be accepted provided that places are available. We strongly recommend early enrolment to avoid disappointment!

## Investment Packages

Advanced Total Plant Maintenance	Early Bird Full 4 Days	Standard Price Full 4 Days
Per Delegate	USD 1695 ( )	USD 1895 ( )
<b>REGISTER 3 AND SENT THE 4<sup>TH</sup> FREE</b> <ul style="list-style-type: none"><li>Please note that all registration must be made at the same time to qualify.</li><li>Early Bird Promotion Deadline – 26th July 2016</li></ul>		

## Delegate Details

1. Name: \_\_\_\_\_ Mr  Mrs  Ms  Dr

Job Title: \_\_\_\_\_

Email : \_\_\_\_\_

Contact No: \_\_\_\_\_

Department: \_\_\_\_\_

2. Name: \_\_\_\_\_ Mr  Mrs  Ms  Dr

Job Title: \_\_\_\_\_

Email : \_\_\_\_\_

Contact No: \_\_\_\_\_

Department: \_\_\_\_\_

3. Name: \_\_\_\_\_ Mr  Mrs  Ms  Dr

Job Title: \_\_\_\_\_

Email : \_\_\_\_\_

Contact No: \_\_\_\_\_

Department: \_\_\_\_\_

Head of Department: \_\_\_\_\_

## Invoice Details

Invoice Attention to: \_\_\_\_\_

Company: \_\_\_\_\_

Industry: \_\_\_\_\_

Address: \_\_\_\_\_

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Telephone: \_\_\_\_\_ Fax: \_\_\_\_\_

Email: \_\_\_\_\_

Authorized Signature: \_\_\_\_\_

## REGISTRATION FORM

### PROGRAM DETAILS

Venue: Ho Chi Minh, Vietnam

Date: 22<sup>nd</sup> – 25<sup>th</sup> August 2016

#### REGISTER NOW

CONTACT: kelvin

MAIN: +603 7727 3952

FAX: +603 7722 5278

Email: kelvin@petro1.com.my

## Credit Card Payment

Please Debit my credit card:

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Card Number: \_\_\_\_\_ - \_\_\_\_\_ - \_\_\_\_\_ - \_\_\_\_\_

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#### Payment Method

By cheque/ Bank Draft: Made Payable to PETRO1 SDN BHD

By Direct Transfer: Please quote invoice numbers on remittance advice.

ACCOUNT NAME : PETRO1 LIMITED

BANK : MAYBANK

ACCOUNT NO : 7151 2001 3353 (USD)

SWIFT CODE : MBBEMYKL

**All bank charges to be borne by payers. Please ensure that PETRO1 SDN BHD received the full invoice amount.**

**\* Credit card payment will include a charges 2.8%**

**Payment Policy:** Upon receipt of a completed registration form, it confirms that the organization is registering for the seat(s) of the participant(s) to attend the conference or training workshop. Payment is required with registration and must be received prior to the event to guarantee the seat. Payment has to be received 7 working days prior to the event date to confirm registration.

**Venue:** All of our training courses are held in 4 – 5 star venues.

The course fee does not include accommodation or travel cost. It's recommended to book the hotel room early as there are only limited room available at the discounted corporate rate.

#### DATA PROTECTION

The information you provide will be safeguarded by Petro1 that may be used to keep you informed of relevant products and services. We take it seriously when it comes to protection of our client data.

**Cancellation & Substitutions:** Upon receipt of a completed registration form, it confirms that the organization is registering for the seat(s) of the participant(s) to attend the conference or training workshop. Should you be unable to attend, substitutes are always welcome at no additional cost. Please inform us as early as possible. Payment is non-refundable if cancellation occurs 7 working days prior to event commencement. However a substitute is welcome at no additional charges. If cancellation occurs 5 working days prior to the registration date and there is no substitute, the organizer reserves the right to charge 50% of the total investment from your organization.

PETRO1 SDN BHD is not responsible for any loss or damage as a result of a substitution, alteration or cancellation/postponement of an event. PETRO1 SDN BHD shall assume no liability whatsoever in the event this training course is cancelled, rescheduled or postponed due to a fortuitous event, Act of God, war, fire, labor strike, extreme weather or other emergency.

**Walk in Registration:** Walk-in participants with payment will only be admitted on the basis of seat availability at the event and with immediate full payment.

**Program Change policy:** The organizer reserves the right to make any amendments and/or changes to the workshop, venue, facilitator replacements and/or modules if warranted by circumstances beyond its control.