

**29-30 MARCH 2010**  
CROWNE PLAZA MUTIARA HOTEL  
KUALA LUMPUR

*A 2-day intensive program on*

# Predictive Maintenance & Trouble Shooting - **PUMPS & COMPRESSORS**

## **FOCUSING ON**

- Preventive Maintenance
- Predictive Maintenance
  - Tools And Equipments
    - Oil Analysis
    - Vibration Analysis
    - Thermography
    - Ultrasonics
  - Best Approaches Towards Predictive Monitoring
  - Continuous Improvement Programs
- Designing A Proper Maintenance Mix
- Reliability Centered Maintenance
- Failures
  - Failure Mechanism
  - Types Of Failures
  - Failure Analysis
  - Failure Mitigation Measures

## **COURSE INTRODUCTION**

Pumps and Compressors are the most common equipment found in any operating plant. New advances in maintenance techniques enhance the operability and increases plant uptime. Predictive maintenance practices combined with preventive maintenance best practice solutions offer the course participants a comprehensive and systematic approach to help achieve profit goals and higher reliability.

## **WHO SHOULD ATTEND**

- Consulting Engineers
- Maintenance Engineers
- Project Engineers
- Maintenance Superintendents
- Maintenance Personnel
- Service Engineers
- Operators
- M & E Foremen
- Technical Assistants
- Technical Coordinators
- Purchasing and Materials Control Personnel
- Operation & Maintenance Personnel
- Technicians
- New/Trainee Engineers
- Contractors

## *Day One*

Monday, **29th March 2010**

- 9:00 **COURSE INTRODUCTION**
- The Role Of Condition Monitoring In Pumps And Compressors
  - Capabilities And Limitations Of Condition Monitoring
  - Combined Approaches Of Condition Monitoring
- 10.00 **UNDERSTANDING PREVENTIVE MAINTENANCE COMPONENTS**
- Friction
  - Understanding Wear
  - Mechanical Issues - Alignment, Looseness, Vibration, Imbalance
  - Root Cause Analysis Of Failures - Bearings, Seals, Impeller
- 10.30 Morning Coffee
- 10.45 cont. **UNDERSTANDING PREVENTIVE MAINTENANCE COMPONENTS**
- 1.00 Lunch and Zohor
- 2:00 **PREDICTIVE MAINTENANCE COMPONENTS**
- Lubrication
    - Types Of Lubricants
    - Oil Analysis
  - Vibration Analysis

- Thermography
- Ultrasonics

3.30 Afternoon Tea

3.45 cont. **PREDICTIVE MAINTENANCE COMPONENTS**

5.00 End of Day 1

## *Day Two*

Tuesday, **30th March 2010**

9.00 **DESIGN THE PROPER MAINTENANCE MIX**

10:30 Morning Coffee

10:45 **RELIABILITY CENTERED MAINTENANCE**

- Selected RCM
- Seven Questions In RCM
- Role Of A Facilitator
- Forming The RCM Group

1:00 Lunch and Zohor

2:00 **FAILURES**

- Types Of Failures
- Failure Mechanism
- Failure Analysis
- Failure Mitigation

3:30 Afternoon Tea

3:45 **Case Studies**

5.00 End of Program

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***AFTER ATTENDING THIS COURSE,  
YOU WILL RETURN TO YOUR JOB...***

- Understanding clearly the key aspects of piping systems including design, operation, maintenance, failure prevention, and troubleshooting, including the applicable codes, standards and industry practices.
- Obtaining practical and effective methods and guidelines to assist in achieving, cost-effective operation and maintenance of piping systems with high technical integrity.
- Developing skills in troubleshooting and improving existing piping systems.

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***METHODOLOGY***

Participants learn through lectures with interactive presentation (Questions & Answers). As the subject progresses, active audience participation is encouraged along the entire course.

***LEARNING PARTNER***

**ROBERTO MARAVILLA**, BS in Mech Eng., was acting Consultant to Petronas Plants & Qatar Petroleum on the following subjects; Pipelines & Piping System and Mechanical Equipment Management.

Prior to that, Roberto was a Corporate Assessor attached to a Multinational Oil and Gas company, where he evaluated the competency of engineers, operators and technicians. He was also responsible for identifying, analysing, developing and delivering of courses/training programmes for the staff. Roberto has also customised courses for other clients, notably ESSO Production Malaysia, SUDAN Petroleum and PETRO-VIETNAM oil refinery.

He has taken the lead in the development and delivery of the multinational company initiative on “World Class Plants” with subjects like Reliability Centered Maintenance – A New Approach, Pipelines and Piping Systems, Mechanical Equipment Management, Operations and Maintenance of Boilers, he has also developed and delivered a host of other generic courses like Pumps, Compressors, Furnace, Distilling Columns, Separators, Heat Exchangers, Internal Combustion Engines, Gas Turbines, Storage Tanks.

Roberto also was a Deputy Project Manager responsible for a project implementation, which totalled a contract value of USD 40 million and has also served as a Project Manager in a Nuclear Power Plant overseas.

With his vast experience, he is able to provide hands-on and practical training sessions, which have received excellent feedback from past clients from both the local and international markets.

## PREDICTIVE MAINTENANCE & TROUBLE SHOOTING – PUMPS & COMPRESSORS

29-30 MARCH 2010 | KUALA LUMPUR

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## HOW TO REGISTER

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The Ampwalk, 218 Jalan Ampang,  
50450 Kuala Lumpur

## FEES

The full Registration Fee includes cost of all sessions, luncheon, coffee/tea & documentation.

1 Person	Group fee per person for 3 or more* (from the same company)
RM2695	RM2395 (MIN SAVINGS OF RM900)

\* Terms and conditions apply.

**Cancellations, Refunds & Transfers:** A full refund will be promptly made for all written cancellations 3 weeks before the meeting. Thereafter, cancellations are not refundable. A substitute may be made at any time.

## PAYMENT

### By Telegraphic Transfer

ACCOUNT NAME:

**Centre for Management Technology Sdn Bhd**

A/C No: **3 - 0903390 - 12**

BANK: Public Bank Berhad

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TT must include additional RM75 for Beneficiary's Bank charges. **Delegates must bear all bank charges and local taxes (if applicable). Fees must be NETT of ALL charges.**

CHEQUES: Crossed & payable to  
"Centre for Management Technology Sdn Bhd"

## CERTIFICATE OF COMPLETION

A Certificate of Completion will be awarded upon successful completion of each course. This serves as evidence of your personal and professional commitment to your career.

## COURSE TIMING

Registration: 8.30 am, Course Begins: 9.00 am,  
Morning Coffee: 10.30 am,  
Lunch: 1.00 pm to 2.00 pm,  
Tea Break: 3:30 pm, Course Ends: 5.00 pm