



Centre for  
Management  
Technology®  
Into our 24th year

A 2-day intensive course on

# DISTILLATION

- Principles, Operation and Maintenance
- Distillation Simulation
- Basic Computation for Heat and Material Balance

15 - 16 August 2007 ■ Nikko Hotel, Kuala Lumpur

*Course Highlights:*

## **DESIGN CONCEPTS AND DISTILLATION PRINCIPLES**

- Basic Design Concepts
- Simple Distillation
- Fractional Distillation
- Distilling Tower Design And Construction
- Column Installation

## **OPERATIONS**

- Operating Parameters
- Normal Operations
- Operational Problems
- Maintenance, Inspection And Repair
- Hydrotesting
- Introduction To Plant Distillation Simulation

## DAY 1

### DISTILLATION PRINCIPLES

- 08:30 Welcome address and Course Introduction
- 09:00 **BASIC DESIGN CONCEPTS AND PRINCIPLES FOR BINARY COLUMNS**
- Number Of Stages Using VLE
  - Energy Savings Measures
  - Column Diameter
  - Simple Distillation
    - Laboratory Setup For Simple Distillation
    - Multi Stage Distillation
    - Azeotropic Distillation
    - Vapor-Liquid Equilibrium
    - Fractional Distillation
- 10:30 *Tea Break*
- 10.45 **DESIGN AND CONSTRUCTION**
- Types Of Columns
  - Batch, Continuous Columns
  - Column Internals
  - Trays And Packed Columns
  - Typical Distillation Setup For A Refinery
  - Tower Sizing
  - Vapor – Pressure Design
- SIMPLE DISTILLATION**
- Principles
  - Setting Up A Simple Distilling Operation
  - Equipments And Materials Used
- BATCH DISTILLATION**
- Batch Distillation Setup
  - Advantages And Disadvantages
- APPLICATIONS**
- 01:00 *Lunch*

- 02:00 **DISTILLING COLUMN PARTS AND COMPONENTS**
- Trays,
  - Packings
  - Bubble Caps
  - Pall, Rashig Rings
  - Condenser
  - Reflux Drum
  - Reboiler
  - Piping Systems
- 03:30 *Tea Break*
- 03:45 **REBOILERS**
- Design Parameters
  - Operating Parameters
- 04:15 *Review and Q & A*
- 05:00 End Of Day 1

## DAY 2

### DISTILLATION OPERATIONS

- 08:30 **OPERATING PARAMETERS**
- Feed Conditions
  - Internal Liquid And Fluid Flow Conditions
    - Reflux Rate
    - Reboiler Control
  - Steam Or Heat Inputs
  - Weather And Atmospheric Conditions
- NORMAL OPERATIONS**
- Heat And Material Balance
  - Steady State Conditions
- 10:30 *Tea Break*

10:45	<b>OPERATING PROBLEMS</b> <ul style="list-style-type: none"> <li>• Foaming</li> <li>• Entrainment</li> <li>• Weeping/Dumping</li> <li>• Puking</li> <li>• Flooding</li> <li>• Flooding Predictor</li> <li>• Self Cleaning Exchangers</li> </ul>
01:00	<i>Lunch</i>
02:00	<b>MAINTENANCE, INSPECTION AND REPAIR</b> <ul style="list-style-type: none"> <li>• Corrosion On Column Internals <ul style="list-style-type: none"> <li>- Effects Of Corrosion On Caps, Rings And Trays</li> <li>- Corrosion Inhibition Initiatives</li> <li>- Downcomer Inspection And Repair</li> <li>- Alternative Actions When Maintenance Becomes Too Costly</li> </ul> </li> <li>• Leak Test</li> <li>• Angle Of Repose For Tower</li> </ul>
03:30	<i>Tea Break</i>
03:45	<b>INTRODUCTION TO DISTILLATION SIMULATION</b> <ul style="list-style-type: none"> <li>• Computer Aided Simulation</li> </ul>
04:30	<i>Review and Q &amp; A</i>
05:00	End Of Course

## LEARN FROM THE BEST

**ROBERTO BENEDICTO 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, Distillation Columns, Storage Tanks, Mechanical Equipment Management, Operations and Maintenance of Boilers, he has also developed and delivered a host of other generic courses like Pumps, Compressors, Furnace, Separators, Heat Exchangers, Internal Combustion Engines, Gas Turbines.

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.

Roberto has served as a Lecturer at a University in the Philippines lecturing senior students on major subjects such as Power Plant Engineering, Engineering Management, Process Plant Equipment, Project Management and Maintenance Optimisation.

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.

Program topics, speakers and schedules published herein are confirmed as at printing time. Please refer to the event's timetable page at [www.cmtevents.com](http://www.cmtevents.com) for the most up-to-date information.

# REGISTRATION

Name \_\_\_\_\_  
 Position \_\_\_\_\_  
 Email \_\_\_\_\_  
 Name \_\_\_\_\_  
 Position \_\_\_\_\_  
 Email \_\_\_\_\_  
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Company \_\_\_\_\_  
 Address \_\_\_\_\_  
 City/Postcode \_\_\_\_\_ Country \_\_\_\_\_  
 Approving Manager's Name \_\_\_\_\_  
 Position \_\_\_\_\_  
 E-mail \_\_\_\_\_

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

	1 Person	Group fee for 3 or more* (from the same company)
<b>Regular Fee</b>	<b>RM2695</b>	<b>RM2395</b> (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.

Photocopy Registration Form to Preserve Brochure Copy. Aug 2007

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### COURSE TIMING

Registration: 8.00 am, Course Begins: 8.30 am,  
 Morning Coffee: 10.30 am,  
 Lunch & Zohor: 1.00 pm to 2.00 pm, Break: 3:30 pm,  
 Course Ends: 5.00 pm

### 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 you career.

### TO REGISTER

Online : [www.cmtevents.com](http://www.cmtevents.com)  
 Email : [adminkl@cmtsp.com.sg](mailto:adminkl@cmtsp.com.sg)  
 Fax : (603) 2162 6393  
 Tel : (603) 2162 7322  
 Post to : Lot 7.03, 7th Floor, North Block, The Ampwalk,  
 218 Jalan Ampang 50450 Kuala Lumpur  
 Cheques : Crossed & payable to  
 "Centre for Management Technology Sdn Bhd"

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~ CMT'S UPCOMING EVENTS ~

### WHO SHOULD ATTEND

- Consulting Engineers
- Maintenance Engineers
  - Project Engineers
- Maintenance Superintendents
  - Maintenance Personnel
    - Service Engineers
- Plant Distillation Operators
- Operations, Maintenance and Instrumentation Leadmen
  - Chargemen
  - Technical Assistants
  - Technical Co-ordinators
- Operation & Maintenance Personnel
  - Technicians
  - New/Trainee Engineers
    - Contractors

*A 2-day intensive course on*

## STORAGE TANKS

13 - 14 AUGUST 2007 ■ KUALA LUMPUR

- Design Considerations
- Construction, Erection and Commissioning
- Inspection & Maintenance
- Testing and Repairs



**A PRACTICAL COURSE ON  
 OPERATION, MAINTENANCE &  
 TROUBLE SHOOTING OF**

## AIR CONDITIONING SYSTEM

28 - 29 AUGUST 2007 ■ KUALA LUMPUR

