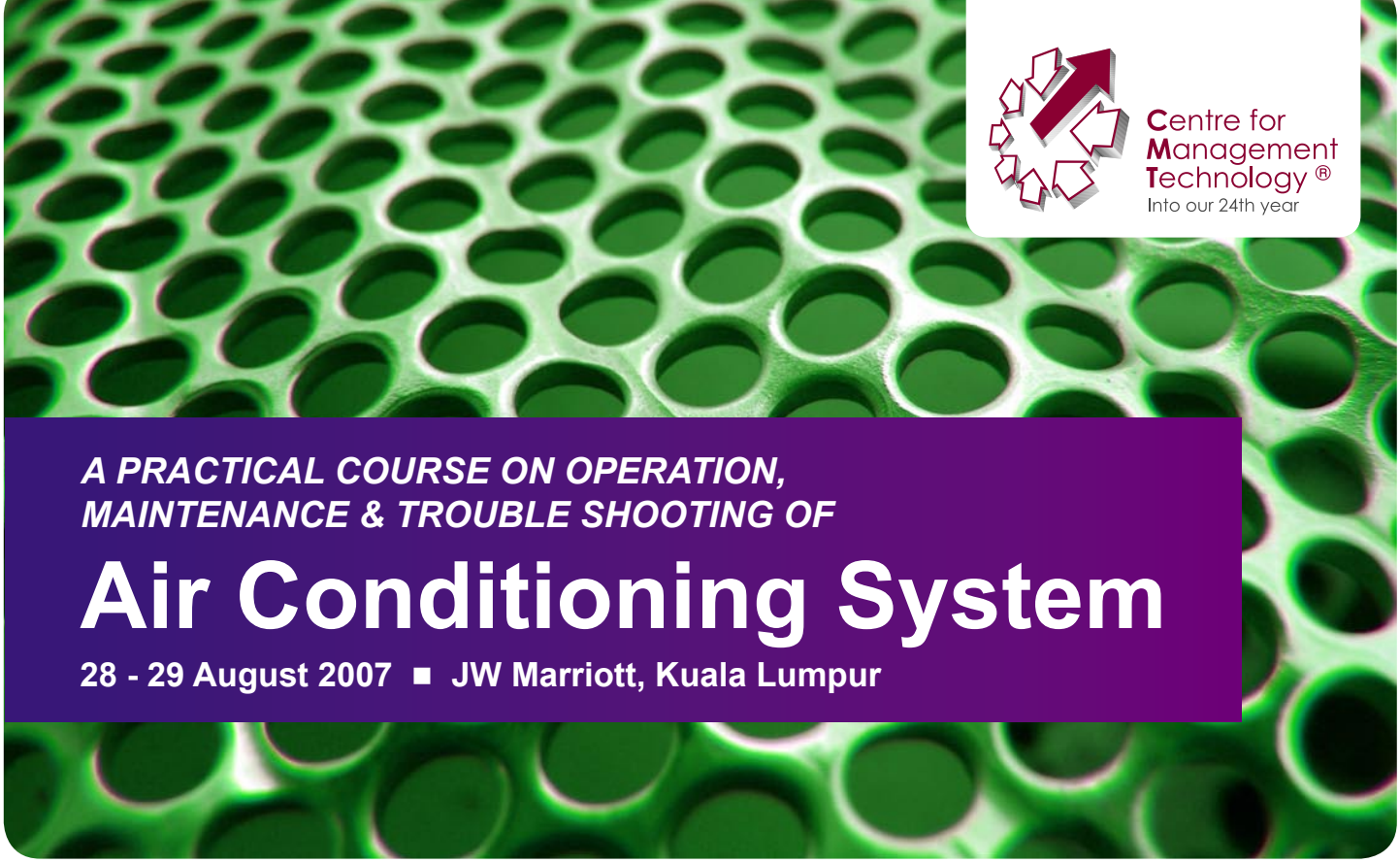

Centre for Management Technology ®
Into our 24th year

A PRACTICAL COURSE ON OPERATION, MAINTENANCE & TROUBLE SHOOTING OF

Air Conditioning System

28 - 29 August 2007 ■ JW Marriott, Kuala Lumpur

Course Highlights:

- INTRODUCTION
- THEORY AND PRACTICE OF AIR CONDITIONING SYSTEM
- THE CONSTRUCTIONS OF AIR CONDITIONING EQUIPMENT
- DIFFERENT TYPES OF AIR CONDITIONING SYSTEMS
- OPERATING PARAMETERS THAT AFFECT PERFORMANCE
- WATER COOLED SYSTEM: COOLING TOWERS & WATER PUMPS
- AIR CONDITIONING CONTROL SYSTEM
- MAINTENANCE OF AIR CONDITIONING SYSTEMS

Plus:

CASE STUDY (1): ***TROUBLE SHOOTING AIR COOLED SYSTEMS***
CASE STUDY (2): ***TROUBLE SHOOTING WATER COOLED SYSTEMS***
CASE STUDY (3): ***TROUBLE SHOOTING AHU PERFORAMANCE***

Course Contents:

1. INTRODUCTION

- How Does Air Conditioning System Cools A Building
- Importance Of Air Conditioning: Energy Usage
- Importance Of Air Conditioning Customer Satisfaction; Factors Affecting Comforts

2. THEORY AND PRACTICE OF AIR CONDITIONING SYSTEM

- How It Cools By Evaporation
- How To Regenerate Refrigerant For Continuous Cooling
- The Basic Refrigeration Cycle Expansion, Evaporation, Compression, Condensation
- The Pressure-Enthalpy Chart For Refrigerants.
- Understanding The Properties Of Refrigerant In The PH Chart.
- Plotting The Refrigeration Cycle On The PH Chart.
- Performance Of The System As Calculated From The PH Chart.
- Understanding: Refrigeration Effect, Cooling Capacity, Heat Of
- Compression, Power Input, Heat Of Rejection.
- The Actual Refrigeration Cycle Subcooling, Superheating, Line Pressure Drops
- Understanding Compression: Polytropic Compression Processes.

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** for the most up-to-date information.

3. THE CONSTRUCTIONS OF AIR CONDITIONING EQUIPMENT

- Compressor Types: Reciprocating, Rotary, Scroll, Screw, Centrifugal
- Condensers: Air Cooled, Water Cooled, Tube-In-Tube, Shell & Tube, Plate
- Expansion Devices: Capillary Tubes, Thermal Expansion Valves, Electronic TXV
- Direct Expansion Coil, Cooler
- FCU & AHU: Types, Construction And Performance

4. DIFFERENT TYPES OF AIR CONDITIONING SYSTEMS

- Split Systems: Single-Splits, Multi-Splits, VRV
- Water Cooled Packages
- Chilled Water System
- District Cooling System: Co-Gen; Thermal Energy Storage

5. OPERATING PARAMETERS THAT AFFECT PERFORMANCE

- Factors Affecting Cooling Capacity And Power Consumption
- Cause And Effect Of Condensing Temperature Changes.
- Cause And Effect Of Suction Temperatures Changes.

6. CASE STUDY (1): TROUBLE SHOOTING AIR COOLED SYSTEMS

7. WATER COOLED SYSTEM: COOLING TOWERS & WATER PUMPS

- Cooling Tower: Working Principle, Construction And Types
- Cooling Tower Performance Factors: Wet-Bulb, Range, Approach And Flowrate

- Water Conditioning: Effects Of Fouling, Water Treatment
- Centrifugal Water Pumps: Functions And Performance Factors.
- Energy Saving Strategies On Pumping: Trimming Impellor, Variable Speed, Compound Pumping System
- Balancing Of Water Circuits

8. CASE STUDY (2): TROUBLE SHOOTING WATER COOLED SYSTEMS

9. CASE STUDY (3): TROUBLE SHOOTING AHU PERFORAMANCE

10. AIR CONDITIONING CONTROL SYSTEM

- Types of control: on-off, floating, modulating, DDC
- Temperature Control: theory and practice
- Relative Humidity Control: theory and practice
- The use of Variable Speed Drives

11. MAINTENANCE OF AIR CONDITIONING SYSTEMS

- Objectives Of Maintenance: Durability, Reliability, Operating Cost Savings
- Types Of Maintenance: Routine, Preventive, Corrective Repair
- Importance Of Monitoring: Operation Data Logging, Maintenance And Repair Records
- Maintenance Of AHUs
- Maintenance Of Chillers
- Maintenance Of Control Systems
- Maintenance Of Auxillary Systems: Cooling Towers, Pumps

LEARN FROM THE BEST

Ir Chua Keng Seng is currently Project Director of an established air conditioning company. Graduated with an Honest Degree in Mechanical Engineering from the University of Malaya, he has since accumulated over 30 years of experience in the air conditioning and building services industry.

Academically, he was part-time Lecturer and an Examiner in Mechanical Faculty of University Malaya from 1976 to 1984 lecturing on the subject of Air Conditioning System Design for the Final Year Mechanical undergraduates. He was also invited to be the External Examiner for the Final Year Mechanical students with the University Technology Petronas, Perak for two consecutive years.

In his professional practice, he worked with Carrier Malaysia Sdn Bhd as Service Manager for 5 years and then in-charge of the Plan-and-Specification team of the Marketing Department for another 4 years. Subsequently, he established his own Contracting business in the Building Industries for over 20 years.

He is always in the fore-front of the air conditioning industries, having involved with the designing of a few District Cooling Plants including Co-generation and Thermal Energy Storage systems. He was contracted to be the in-house Technical Advisor to a Petronas subsidiary company which was the Project Management Consultants for the Putra Jaya District Cooling Plant. This plant has a capacity capable of cooling a total of 30 multi-storey buildings.

He also specialises in Energy Saving Systems for buildings as well as the industrial applications of air conditioning and refrigeration systems. He designed and built environmental controlled systems and dehumidifying systems for food industries, pharmaceuticals, electronic clean rooms hospital operating rooms and research centers.

Mr Chua conducts training sessions to impart his knowledge and experience for the advancement of the industry. 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.

REGISTRATION

Air Conditioning System

Name
Position
Email
Name
Position
Email
Tel Fax

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

Update your details at www.cmtevents.com

070850 A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

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)
Regular Fee	RM2495	RM2095 (MIN SAVINGS OF RM1200)

* 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

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
Email : 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"

(99728-T)

Register online ~ www.cmtevents.com

WHO SHOULD ATTEND

- Building / Complex Managers & Executives
- Building Maintenance Managers & Engineers
- Operations Managers & Supervisors
- Mechanical & Electrical Supervisors & Foremen
- Chargemen & Technical Executives
- Building Management Contractors
- Consulting Engineers
- M & E Contractors
- Building/Complex Owners
- Building Maintenance Planners
- Local Authorities Dealing With All Aspects Of Building Approvals
- Professionals Dealing With Any Aspects Of Building & Complex Management

~ CMT'S UPCOMING EVENTS ~

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 2-day intensive course on

DISTILLATION

15 - 16 AUGUST 2007 ■ KUALA LUMPUR

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