

## Senior Management Development Programme

February 20 – 21, 2012

Royale Damansara

**NOT TO  
BE MISSED**

### INTRODUCTION

Sustainability issues are becoming prevalent in corporate decision-making due to increasingly stringent local and international environmental standards. Thus, companies now find it necessary to use rigorous, systematic approaches to the analysis of their products and processes.

Life cycle assessment (LCA) is one such methodology which emphasises cradle-to-grave perspective to identify opportunities for improving environmental performance. Carbon footprint analysis is a simplified approach that bears similarities to LCA, but focusing on greenhouse gas emissions that are critical in an increasingly climate-conscious global market. Carbon pinch analysis is a novel technique co-developed by both of the course tutors to visualise the distribution of carbon footprints in supply chains. It thus facilitates prioritisation of product or process improvement strategies. Together, these three techniques are delivered as part of this two-day workshop intended to enhance the environmental professional's toolbox.

### CONTENTS

#### Day 1

- Historical Development of Life Cycle Concepts
- LCA Fundamentals and Motivating Examples
- LCA Standards (ISO 14040)
- LCA Components (Goal and Scope Definition; Inventory Analysis; Impact Assessment; Interpretation)
- Basic LCA Calculations
- Carbon Footprint as a Special Case of LCA
- Computational Example (Exercises/Workshop)

#### Day 2

- Carbon Pinch for Visualising Footprints
- Industrial Case Studies (Phytochemical Production; Chlor-Alkali Plant)
- Embedding Sustainability into Product Design Using Systems Approach



### OBJECTIVES

At the end of the programme, participants will be able to:

- perform diagnostic analysis of chemical processes and/or products using life cycle assessment, carbon footprint and carbon pinch analysis
- identify opportunities to enhance the sustainability of chemical processes and/or products using life cycle assessment, carbon footprint and carbon pinch analysis
- develop systematic strategies for visualising reduction of company-wide or plant-wide carbon footprint using carbon pinch analysis
- consider product design from systems perspective and to embed into product design using systems thinking

### WHO SHOULD ATTEND

Senior Management Team, Production Managers, Process Managers, Process Engineers, Product Development Engineers, Researchers and Academics.

### METHODOLOGY

Practical workshop, case study and experience sharing.

### WORKSHOP LEADER



Professor Raymond R. Tan is a University Fellow and full Professor of Chemical Engineering at De La Salle University, Manila, Philippines. He is also the current Director of that Institution's Centre for Engineering and Sustainable Development Research. His main research interests are process systems engineering, life cycle assessment and pinch analysis. Professor Tan received his BSc and MSc in Chemical Engineering and PhD in Mechanical Engineering from De La Salle University, and is the author of more than seventy published articles in chemical, environmental and energy engineering journals. He is member of the editorial boards of the journals Clean Technologies and Environmental Policy, Philippine Science Letters and Sustainable Technologies, Systems and Policies and is co-editor of the forthcoming book Recent Advances in Sustainable Process Design and Optimisation. He is also the recipient of multiple awards from the National Academy of Science and Technology and the National Research Council of the Philippines.

### WORKSHOP LEADER



Ir. Dr. Dominic Foo is a Professor of Process Design and Integration at the University of Nottingham Malaysia Campus. He is a Professional Engineer registered with the Board of Engineer Malaysia. He is a world leading researcher in resource conservation with process integration techniques. He establishes international collaboration with researchers from various countries in the Asia, Europe, American and Africa. He is an active author, having written more than 180 scientific papers and two books waiting to be published. He served as International Scientific Committee for several important conferences (CHISA/PRES, FOCAPD, ESCAPE, PSE, etc.). He is the winner of the Innovator of the Year Award 2009 of Institution of Chemical Engineers, UK (ICHEM), as well as the 2010 Young Engineer Award of Institution of Engineers Malaysia (IEM). He also actively conducts professional training for practising engineers.

## WORKSHOP LEADER



Dr. Yap Eng Hwa is an Assistant Professor with the University of Nottingham Malaysia Campus. Currently he is the Course Director for MSc Mechanical Engineering. His research work at the University is focused largely on renewable energy and sustainability, carbon capture and storage (CCS) deployment and policy, sustainable transport as well as project management. He joined the Department of Mechanical, Materials and Manufacturing Engineering in 2008 after completing his PhD at University College London. His previous work in marine and offshore engineering involved looking into the generation of clean energy using stranded offshore natural gas with a 'floating power station'.

## Green Technology Workshop: Improving Process & Product Sustainability



Presented by:  
Professor Raymond R. Tan  
Ir. Dr. Dominic Foo  
Dr. Yap Eng Hwa

Organised by



**FMM Institute**  
Centre for Professional Development

In Collaboration with



The University of  
**Nottingham**

UNITED KINGDOM · CHINA · MALAYSIA  
Centre of Excellence for Green Technologies (CEGT)



Nottingham  
**MyRIAD Solutions**

## ADMINISTRATIVE DETAILS

Date: February 20 – 21, 2012 (Monday – Tuesday)

Time: 9.00 a.m. – 5.00 p.m.

Venue: Royale Damansara  
2, Jalan PJU 7/3, Mutiara Damansara  
47810 Petaling Jaya  
Selangor Darul Ehsan

Fees:	FMM Members	RM2,000 per participant
	Non Members	RM2,200 per participant
	International Delegates	USD800 per participant

(Fees include course materials, Certificate of Attendance, lunch and refreshments)

Registration is on a first-come first-served basis. Cheques made in favour of the **FMM Institute** should be forwarded before **February 6, 2012**. Completed registration form, that is faxed, mailed or e-mailed to FMM Institute would be deemed as confirmed.

All cancellations must be made in writing to FMM Institute. There will be no charge for cancellation received 14 or more working days before the start of the programme. Cancellation received 8 – 13 working days before the start of the programme is subject to a cancellation fee of 50% of the course fees. Cancellation received 7 working days and below before the start of the programme is subject to a cancellation fee of 100% of the course fees. If the participant fails to attend the programme, the full course fees are payable. However, replacement can be accepted at no additional cost.

The FMM Institute reserves the right to change the workshop leaders, reschedule or cancel the workshop and all efforts will be taken to inform participants of the changes. Should the event be cancelled or postponed, FMM Institute is not responsible for covering airfare, hotel or other travel costs incurred by the participants.

For further enquiries, please contact:

Ms Ong Li Choo, Ms Ravathi/Pn Hafifah  
**FMM Institute**  
Tel: 03-6286 7200  
Fax: 03-6277 6712  
Visit us at [www.fmm.edu.my](http://www.fmm.edu.my)



## REGISTRATION FORM

### Green Technology Workshop: Improving Process & Product Sustainability

Monday – Tuesday, February 20 – 21, 2012 • Royale Damansara

The Manager  
**FMM Institute**  
Tel: 03-6286 7200 Fax: 03-03-6277 6712

Please tick (✓) accordingly:

SBL  Non Contributor

Require vegetarian meal:

Yes  No

Dear Madam

Please register the following participant(s) for the above workshop.

(To be completed in BLOCK LETTERS)

1 Name \_\_\_\_\_ Designation \_\_\_\_\_ E-mail \_\_\_\_\_

Nationality \_\_\_\_\_ IC No. \_\_\_\_\_

2 Name \_\_\_\_\_ Designation \_\_\_\_\_ E-mail \_\_\_\_\_

Nationality \_\_\_\_\_ IC No. \_\_\_\_\_

(If space is insufficient, please attach a separate list)

Enclosed cheque/bank draft No \_\_\_\_\_ for RM \_\_\_\_\_

being payment for \_\_\_\_\_ participant(s) made in favour of the **FMM Institute**.

Submitted by:

Name \_\_\_\_\_

Designation \_\_\_\_\_ E-mail \_\_\_\_\_

Company \_\_\_\_\_

Address \_\_\_\_\_

FMM Membership No. \_\_\_\_\_ My Corporate Identity No. \_\_\_\_\_

Tel No. \_\_\_\_\_ Fax No. \_\_\_\_\_ Date \_\_\_\_\_