

19<sup>th</sup> - 23<sup>rd</sup> November 2007

Melia Hotel, Kuala Lumpur, Malaysia

# Excellence In Hydrocarbon Processing

With Key Contributions From Your International Speaker Faculty:

**Jeff Gray**

Technology Director  
KLM Technology Group,  
Johor Bahru, Malaysia

**Timothy M Zygula**

Senior Process Engineer  
Huntsman Chemical,  
USA

**Dr. Swami Narayanan**

President  
Process Technology Consulting L.L.C.,  
Fulshear, Texas, USA

**Dr. Yuan C. Wan**

Process Engineering Manager  
Titan Chemical,  
Pasir Gudang, Malaysia

**William B Lotz**

Senior Manager  
KLM Technology Group,  
Johor Bahru, Malaysia

**Charles D. Nolidin**

Technical Sales Manager  
Chevron Phillips Chemicals Asia ,  
Singapore

**Stephen J Wallace**

President  
Wallace Consulting,  
Washington D.C. USA



Organized By :

**KLM**

**Technology  
Group**

**PRACTICAL ENGINEERING SOLUTIONS**

**KLM** Technology Group is a technical consultancy group, providing specialized services and equipment to improve process plant operational efficiency, profitability and safety. We provide practical solutions by offering training, technical services, best practices, engineering, and equipment to meet the specific needs of our partner clients.

## **Introduction**

The success of every company depends of each employee's understanding of the business's key components. Employee training and development will unlock the companies' profitability and reliability. When people, processes and technology work together as a team developing practical solutions, companies can maximize profitability and assets in a sustainable manner. Training and development is an investment in future success - give yourself and your employees the keys to success.

# PRACTICAL ENGINEERING SOLUTIONS

**KLM** Technology Group along with their Key Associates and Partners are planning to host an Operations, Maintenance and Engineering Training Conference in Kuala Lumpur, Malaysia during commencing the week 19 November 2007.

Be sure and plan now to attend this special week of training. We have scheduled two sessions of 2 1/2 day courses during the week. You can choose to attend the courses that best meet your training needs.

Instructor	Session One 19 -21 November	Session Two 21- 23 November
Jeff Gray	Petroleum Refining Processes and Economics for Technical Professionals	Introduction to Chemical Engineering for Non Chemical Engineers
Dr. Swami Narayanan	Improving the Performance and Reliability of Fired Furnace Heaters	Advances in Ethylene Pyrolysis Furnace Design, Operation and Optimization
William B Lotz	Introduction to Petroleum Refining Processes and Economics for Non Technical Professionals	Project Management Planning and Control
Karl Kolmetz	Petroleum Refining Catalytic Processes	Refining and Pyrolysis Gasoline Hydrotreating Guidelines
Stephen J Wallace	Hazard Analysis (HAZOP) Team Leader Training	Achieving Zero Accidents
Timothy M Zygula	Distillation Design, Operation, Control and Troubleshooting	Distillation Simulation Software Techniques
Dr. Yuan C. Wan	Process Control and Optimization for Improved Unit Operations	
Charles D Nolidin		Advances in Acetylene Catalyst Design
Omar Majid	Guidelines for Planned and Emergency Distillation Tower Internal Equipment Replacement	Guide Lines for Safe Commissioning of Process Units

## Twin 2 1/2 day conference

### Petroleum Refining Processes and Economics for Technical Professionals

Session One 19 -21 November

**Course Overview :** This seminar focuses on the core building blocks of the refining process systems, equipment and economics. This program will emphasize refining process unit operation fundamentals, safe utilization of these fundamentals by operations and maintenance personnel, and equipment troubleshooting techniques.

**Course Outline :** Introduction  
 Review of Process Incidents  
 Fundamentals of Petroleum Chemistry  
 Characteristics of Crude Oil  
 Crude Oil Distillation  
 Introduction to Refinery Equipment and Flow Sheet  
 Crude Oil Quality and Refinery Flow Sheets  
 Product Blending and Usage

Petroleum Product Markets  
 Gasoline Production Processes  
 Economics of Gasoline Production Processes  
 Fundamentals of Hydroprocessing  
 Options for Heavy Oil Processing  
 Economics of Heavy Oil Production Processes  
 Refining Margins

**Who Should Attend:**

- People who are making day to day decisions regarding operation, design, and economics of processing plants.
- Ideal for veterans & those with only a few years of experience who want to review or broaden their understanding in Processing Plant Operations.
- Other professionals who desire a better understanding of subject matter.

**What you can expect to gain:**

- Detailed overview of refinery operations, processes and economics.
- An understanding of the equipment of a refinery, and typical refinery flow sheets.
- Knowledge of refinery chemistry and catalyst
- Methods to estimate refinery margins.

### Introduction to Chemical Engineering for Non Chemical Engineers

Session Two 21-23 November

**Course Overview :** This seminar provides an understanding of chemical process systems, equipment and economics. The seminar identifies the areas of chemical engineering that are most commonly encountered by the non-specialist, with examples that will be drawn from a range of process industries including oil and gas processing, petrochemicals, chemical manufacturing.

**Course Outline :** Introduction  
 Review of Process Incidents  
 Fundamentals of Chemistry  
 Introduction to Unit Operations Equipment  
 Introduction to Fluid Flow and Mixing  
 Introduction to Process Control and Instrumentation

Introduction to the Energy and Material Balance  
 Introduction to Thermodynamics and Equilibrium  
 Introduction to Reaction Engineering  
 Introduction to Separation and Mass Transfer Operations  
 Process Operations and Troubleshooting  
 Introduction to Unit Operations Economics

**Who Should Attend:**

- This program has been designed for non-technical professionals assigned to positions in petroleum refineries, corporate offices, suppliers and other interrelated companies.
- The content of the program is based upon the assumption that those in attendance do not have a formal education in engineering and chemistry and do not work in highly technical environments.
- The program should be used for newly-hired refinery plant personnel and may serve as a prerequisite for those who do not have a technical background but who want to attend the more detailed processing program for technical professionals.

**What you can expect to gain:**

- An overview of chemical engineering operations, safety, processes and economics
- Become familiar with the equipment of a chemical engineer
- Become familiar with the unit operations of chemical engineering.
- Become familiar plant economics.

### Meet Your Instructor



**Jeff Gray** has over twenty-five years of experience in the design, construction, commissioning, and operation of process units from Australia to Asia, through North America. He has a strong background in the manufacturing of a wide variety of chemical process technologies and product categories including; cryogenic liquids, ethylene, propylene, C4 and Gasoline Hydrogenation Units, benzene / toluene extractive extraction, and steam / power plant operations.

He has a detailed understanding of the operational, technical and safety requirements of ethylene plants, gained through assignments in Australia, Malaysia and the USA. His areas of expertise include plant commissioning, equipment performance checks and test runs, process design, project coordination, and operations and technical training.

Mr. Gray was commissioning manager on one of the most successful grass roots ethylene construction projects ever recorded. Thirty-six hours from unit feed introduction to ethylene production, with only one outage during the first twelve months of operation. His attention to detail results in project success. Jeff has a Bachelor of Chemical Engineering from The University of Melbourne.



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## Twin 2 1/2 day conference

### Improving the Performance and Reliability of Fired Heaters

Session One 19 -21 November

**Course Overview :** This seminar focuses on the core building blocks of the fired heater systems, equipment and economics. This program will emphasize fired heater unit operation fundamentals, safe utilization of these fundamentals by operations and maintenance personnel, and equipment troubleshooting techniques.

**Course Outline :** Introduction  
 Fundamentals of Petroleum Chemistry  
 Introduction to Process Equipments  
 Introduction to Fired Heaters  
 Fired Heater Engineering  
 Introduction to Refinery Fired Heaters  
 Introduction to Olefins Fired Heaters  
 Introduction to VCM Fired Heaters

Improve the Efficiency of Fired Heaters  
 Introduction to Fired Heaters Control  
 Introduction to Fired Heaters Boilers  
 Fired Heater Safety  
 Review of Process Incidents  
 Revamping Fired Heaters  
 Reducing NOx Emissions  
 Conclusions

**Who Should Attend:**

- People who are making day to day decisions regarding operation, design, and economics of processing plants.
- Ideal for veterans and those with only a few years of experience who want to review or broaden their understanding in Processing Plant Operations.
- Other professionals who desire a better understanding of subject matter.

**What you can expect to gain:**

- An detailed overview of furnace operations, processes and economics.
- Gain an understanding of the equipment of a process furnaces and how they can be optimized.
- Gain an understanding of the refinery, Olefin and VCM furnace.

### Advances in Ethylene Pyrolysis Furnace Design, Operation and Optimization

Session Two 21-23 November

**Course Overview :** This seminar focuses on the core building blocks of the fired heater systems, equipment and economics. This program will emphasize fired heater unit operation fundamentals, safe utilization of these fundamentals by operations and maintenance personnel, and equipment troubleshooting techniques.

**Course Outline :** Introduction  
 Review of Cracking Process Equipments  
 Fundamentals of Pyrolysis  
 Thermal Cracking of Hydrocarbons  
 Aspects of Furnace Engineering  
 Improve the Operating Efficiency of Furnaces  
 Complex and Multiple Feeds Handling

Introduction to Furnace Control  
 Aspects of Furnace Maintenance  
 Fired Heater Safety  
 Modernizing Old and New Furnaces  
 Reducing Nox Emissions  
 Furnace Technology Developments  
 Conclusions

**Who Should Attend:**

- People who are making day to day decisions regarding operation, design, and economics of processing plants.
- Ideal for veterans and those with only a few years of experience who want to review or broaden their understanding in Processing Plant Operations.
- Other professionals who desire a better understanding of subject matter.

**What you can expect to gain:**

- An detailed overview of furnace operations, processes and economics.
- Gain an understanding of the equipment of a process furnace.
- Gain an understanding of the Olefin furnaces.

### Meet Your Instructor

**Dr. Swami (Sam) Narayanan** has over twenty-five years of detailed experience in the design, construction, commissioning, and operations management of process units from India, Europe, North America and South East Asia. He has a strong background in the manufacturing of a wide variety of chemical process technologies in the Ethylene Olefin Industry.

Dr. Narayanan is an industry specialist in Olefin Pyrolysis Furnaces including hands on design, commissioning and trouble shooting of over 14 units. He has seven US Patents dealing with Ethylene Pyrolysis Furnaces. His experience includes over twenty years of direct Pyrolysis Experience with KTI, Stone & Webster, and Kellogg Brown & Root. Nine years of furnace and plant optimization experience with Furnace Technology Consulting Services and the Westlake Group.

Dr. Sam is fluent in English, Dutch, Hindi and Tamil. He has a PhD in Chemical Engineering from the Indian Institute of Technology and Post Doctoral work in Chemical Engineering at Technical University of Delft, Delft, Netherlands. He is a member of the American Institute of Chemical Engineers and currently lives in Houston, Texas.



## Twin 2 1/2 day conference

### Introduction to Petroleum Refining Processes & Economics for Non Technical Professionals

**Session One 19 -21 November**

**Course Overview :** This seminar focuses on the core building blocks of the refining process systems, equipment and economics.

**Course Outline :** Introduction  
 Review of Process Incidents  
 Fundamentals of Petroleum Chemistry  
 Characteristics of Crude Oil  
 Crude Oil Distillation  
 Introduction to Refinery Equipment  
 Introduction to the Refinery Flow Sheet  
 Crude Oil Quality and Refinery Flow sheets

Petroleum Product Markets  
 Gasoline Production Processes  
 Economics of Gasoline Production Processes  
 Fundamentals of Hydroprocessing  
 Economics of Hydroprocessing Production Processes  
 Options for Heavy Oil Processing  
 Economics of Heavy Oil Production Processes  
 Refining Margins  
 Product Blending and Usage

**Who Should Attend:**

- This program has been designed for non-technical personnel assigned to positions in petroleum refineries, corporate offices, and supplier and other interrelated companies.
- The content of the program is based upon the assumption that those in attendance do not have a formal education in engineering and chemistry and do not work in highly technical environments.
- The program should be used for newly-hired refinery plant personnel & may serve as a prerequisite for those who do not have a technical background but who want to attend the more detailed petroleum refining processing program.

**What you can expect to gain:**

- An overview of refinery operations, processes and economics.
- Become familiar with the equipment of a refinery.
- Become familiar with the refinery flow sheets.
- Become familiar with refinery margins and economics.

### Project Management Planning and Control

**Session Two 21-23 November**

**Course Overview :** This seminar focuses on the core building blocks of the project management planning and control. It will guide you to plan and run projects using best practices in a 10 step project management process. Through a simulated case study, in this course you learn how to successfully plan, manage and deliver projects. You also learn how to implement project management processes, develop leadership skills and respond to real-world scenarios. At the end of the course, you take away templates and checklists for use back at the office.

**Course Outline :** Introduction to the Processing Industry  
 Safety For the Processing Industry  
 Introduction to Project Management

Steps of Project Management  
 Conclusions

**Who Should Attend:**

- People who are making day to day decisions regarding project planning and control.
- Ideal for veterans and those with only a few years of experience who want to review or broaden their understanding in Project Management.
- Other professionals who desire a better understanding of subject matter.
- Anyone new to project management or those who wish to refresh their knowledge of fundamental project management techniques.

**What you can expect to gain:**

- An detailed overview of project management guidelines.
- Become familiar with project management triangle.
- Plan and run projects using best practices in a 10 step project management process.
- Have a case study to review all the steps.
- Become familiar with project management control.
- Implement risk management techniques and mitigation strategies.
- Implement monitoring tools and controls to keep you fully in command of the project.

### Meet Your Instructor

**William B Lotz** has over twenty-five years of experience in the construction, operation, and optimization of process units on the US Gulf Coast. Strengths encompass project management skills, ability to complete assigned tasks and out of the box optimization ideas based on economics principles.

Experience includes five (5) years of project management in general housing construction. Twenty Eight (28) of Refining experience in the Charter / Phibro / Valero Refineries in Houston and Texas City, Texas. In the refining companies started at an entry level position and has been progressively promoted through the maintenance, operations laboratory, and marine inspection groups. For the last ten years has been in charge of refinery cost accounting and yield economics. Bill is the Solomon Coordinator for the bi-annual industry refinery benchmarking studies and internally developed a monthly benchmarking review for the Valero Refining System. He has a Bachelor of Science in Accounting from The University of Houston.



## Twin 2 1/2 day conference

### Hazard Analysis (HAZOP) Team Leader Training

Session One 19 -21 November

**Course Overview :** Process Hazard Analysis (PHA) studies are the foundation for process safety and risk management of hazardous process systems. They help companies identify hazard scenarios that could adversely affect people, property, or the environment.

**Course Outline :** Hazard Assessment Definition  
 Review of actual industry hazards  
 PHA Study Objectives  
 Introduction of PHA Techniques / Probability Matrix  
 Team Leader Responsibilities  
 Preparation and Organization of PHA Studies  
 Importance of Business Records / PHA Terminology

Selection of Study Nodes / Design intent of node  
 Guidelines for managing the team  
 Introduction of Guide words  
 Recording Study Results / Maintaining Quality Control  
 Management of Results and Recommendations  
 Communication of Results to Management  
 Workshop – Example HAZOP by team members

**Who Should Attend:**

- People who are making day to day decisions regarding operation, design, maintenance, and economics of process industry plants.
- Engineers, Operating Personnel, PSM Coordinator, HSE Managers and Engineers
- Ideal for veterans and those with only a few years of experience who want to review or broaden their understanding of process safety.
- Other professionals who desire a better understanding of the subject matter.

**What you can expect to gain:**

- How to perform a Process Hazard Analysis to meet Process Safety Management requirements for initial PHAs and management of change analyses.
- How to analyze operating procedures for critical scenarios.
- Realistic workshops

### Achieving Zero Accidents

Session Two 21-23 November

**Course Overview :** When accidents happen, we must learn from them to keep them from happening again. Incident Investigation is a critical aspect of any safety program. The ability to learn from accidents and near-accidents is vital to improving both safety and operability. This course will teach participants to understand the nature of accidents, determine their causes, and prevent future accidents. Several case studies, many of which our instructors personally investigated, will be discussed to emphasize points and allow attendees to practice their skills.

**Who Should Attend:**

- People who are making day to day decisions regarding operation, design, maintenance, and economics of process industry plants.
- Engineers, Operating Personnel, PSM Coordinator, HSE Managers and Engineers.
- Ideal for veterans and those with only a few years of experience who want to review or broaden their understanding of process safety.
- Other professionals who desire a better understanding of the subject matter.

**What you can expect to gain:**

- How to develop effective incident investigation systems that can be smoothly integrated into existing management programs in large or small organizations.
- How to define near-misses.
- How to analyze accident trends and take proactive steps to prevent future problems.
- How to determine root and contributing causes of accidents using various methods, and how to choose an appropriate method depending on the nature of the accident.
- How to secure, collect, and analyze evidence and testimony, including effective interviewing techniques.
- How to make cost-effective recommendations and follow them to completion.
- How to tailor investigation techniques to cover environmental, safety, health, quality, and productivity mishaps.
- Common “traps” in investigations and how to avoid them.
- How to report findings and observations.
- Aspects of human factors to consider in incident investigations.

### Meet Your Instructor



**Stephen J Wallace PE, CSP**, has several years of experience conducting risk assessments in the chemical industry. He has been a production manager, and managed health, safety, and environmental departments in the public and private sectors. He has led numerous investigations and safety studies for the U.S. government. He has led process audits and hazard studies in companies throughout the United States and in Southeast Asia. He has taught these techniques to students throughout the world.

Considered an expert in the field of safety analysis and risk assessment, he has written numerous articles and given presentations on these subjects. He is also a co-author of the upcoming American Society of Safety Engineer’s Handbook. Mr. Wallace has a Bachelor of Science in Chemical Engineering from the University of Kentucky in the U.S. He is a registered Professional Engineer and a Certified Safety Professional.



## Twin 2 1/2 day conference

### Distillation Design, Operation, Control and Troubleshooting

Session One 19 -21 November

**Course Overview :** This course will guide the participants to develop key concepts and techniques to design, operate and troubleshoot a distillation system. These key concepts can be utilized to make design and operating decisions.

**Course Outline :** General Introduction  
Thermodynamics and Equilibrium  
Column Design

Process Control  
Troubleshooting  
Fouling Service

**Who Should Attend:**

- People who are making day to day decisions regarding operation, design, maintenance, and economics of process industry plants.
- An engineer or chemist who must troubleshoot and solve distillation problems in a plant, an engineering office or laboratory.
- Technical Engineers, Operating Engineers, Process Support Personnel, Chemist, and Managers.
- Ideal for veterans and those with only a few years of experience who want to review or broaden their understanding of distillation.

**What you can expect to gain:**

- The operation, control and trouble shooting of a distillation columns and it's associated equipment.
- An overview of distillation, practical solutions as well as theory.
- An understating of essential distillation concepts.
- Valuable practical insights for trouble free design and field proven techniques for commissioning, start up and shutdown of distillation operation.
- The fundamental knowledge of distillation control.
- To tailor your approach to specific design, analysis and trouble shooting problems.

### Distillation Simulation Software Techniques

Session Two 21-23 November

**Course Overview :** This course will guide the participants to develop key concepts and techniques that confirm their process engineering simulation software results can be utilized in the field (real world). A conversed solution can be very far from reality. The correct selection of actual field efficiencies, vapor and liquid equilibrium data, feed modeling, and hydraulic behavior will influence the accuracy of the model's results.

**Course Outline :** General Introduction  
Thermodynamics and Equilibrium

Design Techniques  
Workshops (which are mixed in the lectures)

**Who Should Attend:**

- An engineer or chemist who must troubleshoot and solve distillation problems in a plant, an engineering office or laboratory.
- Engineering graduates/technologists who will be using simulation software in their daily work.
- Technical Process engineers doing process design and optimization projects and studies that need advanced skills for more complex modeling tasks.
- Plant Operation Support Engineers checking plant performance under different operating conditions, and who are involved in design of new facilities or revamps of existing facilities.
- Other professionals who desire a better understanding of the subject matter.

**What you can expect to gain:**

- Development of key concepts for simulation in the real world.
- How to select the proper input data, and estimate realistic stage efficiencies.
- Variables affecting separation, and how to make difficult operations converge.
- Hydraulic analysis techniques, Methods to cross check the results, and Troubleshooting guidelines.

### Meet Your Instructor



**Timothy M Zygula** has over ten years of progressive experience in the design, construction, commissioning, and operation of process units from the US Gulf Coast. He has a strong background in the manufacturing of a wide variety of chemical process technologies and product categories including; ethylene, propylene, styrene monomer, vinyl chloride monomer.

His experience includes five years as a process engineer with Glitsch, Inc., responsible for field troubleshooting fractionating equipment, process design and fractionating equipment design for a variety of petrochemical applications. He was also a research and development engineer where he was responsible for fractionating equipment testing and development. Seven years of petrochemical production/design experience. Mr. Zygula presently has 3 years of Ethylene operation/design experience and four years of Styrene production/design experience in both Louisiana and Texas.

Tim has a Master of Science in Chemical from McNeese State University and a Bachelor of Science in Chemical Engineering from The University Of South. Tim is also a member of the American Institute of Chemical Engineers.



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# Who Should Attend

- Plant Managers, Engineers, Chemists and Process Support Personnel.
- People who are making day to day decisions regarding operation, design, maintenance, and economics of process industry plants.
- Process Engineers or Chemists who must troubleshoot and solve distillation problems in a plant, an engineering office or laboratory.
- Ideal for veterans and those with only a few years of experience who want to review or broaden their understanding of process safety.
- Other professionals who desire a better understanding of the subject matter.

Course Fee	Single	2 Or More
Local Participant (RM)	2250	2000
International Participant (USD)	1750	1500

\* Accommodation And Transportation Are Not Included.

### Method Of Payment

Please kindly complete and return the reply form together with:

#### Local Participants

- By cheque/ Bank draft which are made payable to **KLM Technology Group Sdn. Bhd.**

#### International Participants

- By Direct Transfer/Bank Draft:  
Maybank details: **Maybank Berhad Pasir Gudang SSC, Johor, Malaysia**
- Account No : **50124450759-1**
- Please instruct your bank to remit us the full amount, net of bank charges.

#### Cancellation & Substitutions

A full refund will be promptly made for all written cancellations 2 weeks before the meeting. 50% refund will be made for written cancellations received 7 days before the meeting. A substitute may be made at any time.

#### Note

- The organizer has the right to make any amendments that they deem to be in the best interest of the course and to cancel the course if insufficient registrations are received a week before course commencements date.
- CERTIFICATE OF ATTENDANCE** will be awarded at the end of the course.

**Early Bird Discount**  
Save 10% by paying before  
15<sup>th</sup> October 2007

### Reply Form

Excellence In Hydrocarbon Processing  
19<sup>th</sup> - 23<sup>rd</sup> November 2007  
Kuala Lumpur, Malaysia

**Yes ! I would like to register the following participants**

Name 1 \_\_\_\_\_  
Job Title \_\_\_\_\_  
Session Title \_\_\_\_\_  
\_\_\_\_\_  
Name 2 \_\_\_\_\_  
Job Title \_\_\_\_\_  
Session Title \_\_\_\_\_  
\_\_\_\_\_

#### Company Information

Company \_\_\_\_\_  
Address \_\_\_\_\_  
\_\_\_\_\_  
Town \_\_\_\_\_ State \_\_\_\_\_  
Tel \_\_\_\_\_ Fax \_\_\_\_\_  
**Authorized Signatory** (\*This registration is invalid without signature from an authorized officer)  
Name \_\_\_\_\_  
Job Title \_\_\_\_\_  
Tel \_\_\_\_\_ Fax \_\_\_\_\_

Over the past three years **KLM** Technology Group has trained over 400 personnel from companies around the world. Some of these companies are:



## OPERATIONS TRAINING

Organized By :



Venue of Conference



Physical Address  
KLM Technology Group Sdn. Bhd. (692986-M)  
Unit 23-04, Mailbox 253, Level 23, Menara Landmark,  
No. 12, Jalan Ngee Heng ,  
80000 Johor Bahru, Johor,  
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