

Organised by:



COURSE
CRUDE & PETROLEUM

www.cconnection.org/events/refiningeconomics

An Intensive 3-Day Course on the Fundamentals of Refining Economics

Gain an In-depth Understanding of How Refineries Make Money and What Affects Refining Investment

Hotel Jen Tanglin, Singapore • 17 - 19 September 2018

COURSE DIRECTORS:

Mr. Tod D. McGreevy

Vice President, Muse, Stancil & Co., USA

Dr. Tilak K. Doshi

Managing Consultant, Muse, Stancil & Co. (Asia) Pte Ltd, Singapore

SAVE UP TO US\$320
For Early Bird Or Team Fees
(see back page for details)

WHO SHOULD ATTEND

This course is designed to increase your understanding of petroleum products markets and how they interact with the refining industry and crude oil markets, and is of importance to:

- **Refiners**
- **Financial Analysts**
- **Bankers**
- **Crude Oil Marketers**
- **Petroleum Analysts**
- **Regulators/Government**
- **Refinery Finance Executives**
- **Technology Suppliers**
- **Project Developers**
- **Commercial Business Analysts**
- **Crude & Products Managers**
- **Products Supply and Distribution Executives**
- **Strategic/Business Development Managers**
- **Financial Institutions/Energy Lenders**
- **Investment Analysts**
- **Insurers**
- **E&C Firms/Economic Feasibility Analysts**
- **Crude Producers**

COURSE **(3 DAYS)**

KEY ISSUES TO BE COVERED:

- Crude Oil Supply & Demand
- Crude Oil Types and Quality Assays
- Product Types and Quality
- Tankers, Terminals and Transport
- Crude Oil and Products Pricing
- Crude Oil & Refined Product Pricing Exercise
- Products Manufacturing Technology
- Products Blending Exercise
- Refining Costs and Yields
- Marginal Refinery Configuration
- Refining Capital Costs
- Environmental Compliance
- Forecasting and Outlook
- Refinery Economic Analysis
- Transactions and Closures
- Refinery Valuation Team Exercise



CERTIFICATE OF ATTENDANCE

For all participants who successfully complete the full 3-day course

Visit us at:



ABOUT THE COURSE

The Refining Economics course is designed to teach fundamentals of refining economics to non-refiners or to those newly introduced to refining. A technical background is not necessary to understand course materials and the course should be useful to financing or marketing individuals who have some involvement with refining or petroleum products. Similarly, a marketing background is not critical and the course may be helpful to refinery engineers who would like to understand how commercial and economic factors drive operating and investment decisions that affect their refineries.

WHY YOU SHOULD ATTEND THIS COURSE

- 1. Understand** how location, configuration and crude oil supply contribute to refining profitability.
- 2. Identify** new refinery project opportunities and learn how to maximize their commercial value.
- 3. Discover** how to develop new opportunities and reduce their operating, technical, and commercial risks.
- 4. Find out** how refinery configurations affect petroleum product prices worldwide.
- 5. Improve** your understanding of the role logistics plays in refinery profitability.
- 6. Learn** how to interpret published information on the refining industry and refining companies.
- 7. Identify** key methods of comparing refinery competitive strength.
- 8. Understand** the nature of petroleum markets, market cycles, and their global interconnectivity.
- 9. Discover** how refineries can be modified to become more profitable.
- 10. Learn** why refineries prefer different types of crude oils.
- 11. Find out** how trends in petroleum demand force refineries to invest.
- 12. Hear about** key issues driving refinery investment in the current market.

ABOUT THE COURSE DIRECTORS

Mr. Tod D. McGreevy



Mr. Tod McGreevy has over 28 years industry experience and a diverse background in petroleum refining and manufacturing. Mr. McGreevy currently serves as Vice-President and Director of Muse, Stancil and Co., a global energy consultancy headquartered in Dallas, Texas. He has been with Muse since 2003 and is also a Director of Muse's Singapore affiliate, Muse, Stancil & Co (Asia), PTE, LTD.

During his career, Mr. McGreevy has held various positions that encompass many of the technical/managerial functions found in the downstream sector of the petroleum industry. Previous work assignments have given him a wealth of experience in refinery economics including tactical planning and optimization, long-term, strategic planning, project evaluation, economic justification, and development, budgeting, financial performance measurement and benchmarking, and financial modeling.

Dr. Tilak K. Doshi



Dr. Tilak K. Doshi is Managing Consultant with Muse, Stancil & Co. (Asia) based in Singapore. Dr. Doshi is an industry expert with over 25 years of international work experience in leading oil and gas companies and think tanks.

Dr. Doshi is the author of many articles and three books on energy economics, the most recent of which was "Singapore Chronicles: Energy" (Straits Times Press, 2016). He received his Ph.D. in Economics from the University of Hawaii on a scholarship provided by the East-West Centre. He was one of two candidates which were granted the 1984 Robert S. McNamara Research Fellow award by World Bank, Washington, D.C..

Conference Connection's introductory and advance two to four day courses, executive briefings and country workshops, organized with industry specialists, leading consultants and advisers, think-tanks as well as professional and policy groups, provide intensive learning opportunities and practical solutions across key industry sectors, attracting a global audience. The group has an extensive record of successful events since its inception in 1994 and has held more than 3,000 events, attended by nearly 30,000 participants from 50 countries globally. For full list of courses, conferences and other activities, please email info@cconnection.org or visit our website at www.cconnection.org

COURSE OUTLINE Singapore • 17 - 19 September 2018

Delegates will be required to bring their own laptop

Registration on day 1 at 8.00am.
Sessions start promptly at 9.00am and end at approximately 5.30pm. Lunch will be between 12.30pm and 2.00pm with mid morning and mid afternoon refreshments.

I. INTRODUCTION TO REFINING

(Day 1 Morning Session)

Refining is a highly interconnected, global business yet regional variations persist. This initial workshop module will provide a short overview of the global refining sector.

- History of the industry
- Macro refining trends and drivers
- Supply chain roles and contributors

II. CRUDE OIL BASICS

The cost of crude oil is approximately 70-80% of the cost of operating refineries. Understanding crude oil supply/demand trade patterns is vital to achieving a profitable refining business.

- Global crude supply/demand factors
- Future production trends (including both conventional and unconventional resources)

The next part of the session focuses on crude oil properties, assay interpretation, and blending techniques. The discussion will focus on the relationship between crude oil properties and economic value and how refiners can optimize financial returns by utilizing shrewd blending strategies.

- Bulk crude oil property relationships with refining value
 - Signature properties: API gravity and sulfur content
 - Other commercial value drivers: distillation range, Total Acid Number, etc.

- Crude oil assays
 - Sources and types of assays (commercial/marketing versus project/planning quality)
 - Interpreting assay data
- Crude oil blending exercise (Laptop required!)
 - Weight versus volume-based properties
 - Blending techniques and strategies for maximizing refining returns

III. PETROLEUM PRODUCTS (Afternoon Session)

Environmental concerns are resulting in increasingly stringent transportation fuels specifications, and this has a significant impact on refinery operations and profitability. This session will review product consumption trends and changes to key specifications.

- Product demand trends
 - Gasoline
 - Distillate
 - Fuel oil (IMO 2020 developments)
- Product specification relationships with value

IV. CRUDE OIL AND REFINED PRODUCT PRICING

Determining prices for crude oil and refined products can appear daunting at first. This module removes some of the mystery by introducing basic techniques and methodologies used by refiners around the world to translate reference market prices to the refinery gate. We will also cover some of basic concepts used by forecasters to develop forward prices for various petroleum commodities.

- Basic petroleum market pricing concepts
 - Benchmarks
 - Quality/Location drivers

- Crude oil refining values (Gross Product Worth)
- Key pricing differentials (Light/heavy, sweet/sour, etc.)
- Overview of commercial pricing formulas
- Transportation/Logistics costs
 - Modes of transportation
 - Worldscale tanker costs & Pipeline tariffs
 - Terminal and handling costs
- Refinery gate price forecasting exercise (Laptop required!)
 - Benchmark hub pricing
 - Crude oil parity price determination / Market clearing mechanism
 - Location differentials (Import/export parity)
 - Freight cost calculation
 - Quality adjustments

V. REFINERY CONFIGURATIONS & COMPLEXITY (Day 2 Morning Session)

Refineries vary in configuration type and complexity depending on many factors such as market demand and company investment objectives. We will learn about the four major configuration types and where they tend to be clustered geographically. We will also examine how size and complexity can play a determining role with respect to refinery profitability and competitive positioning.

- Refinery configuration types
 - Topping / Hydro-skimming
 - Cracking / Coking
- Nelson complexity index
- Comparative economics and competitive positioning

VI. ECONOMIC VALUE OF KEY REFINERY PROCESSING TECHNOLOGIES

This module provides a general overview of refining process technology, with a focus on heavy oil conversion options. We will also take a look at the relative economic contribution the various processing technologies contribute to overall refinery profitability.

- Crude oil distillation fundamentals
- Conversion Processes
 - Hydrocracking / Fluid catalytic cracking
 - Coking
 - Vis-breaking / Solvent de-asphalting

- Upgrading Processes
 - Hydrotreating / Benzene reduction
 - Catalytic reforming & Isomerization
 - Alkylation
- Supporting Processes
 - Sulfur recovery
 - Hydrogen production, Utilities and Offsites
- Petrochemicals/Biofuels
 - Aromatics/Olefins
 - Ethanol/Biodiesel/Renewable Diesel

Product blending techniques are similar to those used for crude oil except that there are more factors to consider such as component availability and quality, pricing, and finished product specifications. Here, we will conclude with some simple blending exercises that introduce concepts such as limiting constraints, pricing effects, and optimization.

- Product blending exercise (Laptop required!)
 - Specification limits & Pricing considerations
 - Blending techniques

VII. REFINERY ECONOMIC OPTIMIZATION (Day 2 Afternoon Session)

Refining companies around the world depend heavily on optimization models to continuously maximize profitability, yet often, there are few people in the organization that truly understand the power that these tools wield in resolving complex questions of economic direction. This module will provide delegates with a glimpse inside the “black-box” before demonstrating the economic value of a sound refinery planning and optimization program.

- Fundamentals of refinery economics and margin optimization overview
- Refinery modeling discussion
 - Linear Programming basics and other tools (schedulers, price forecast, static models, etc.)
 - Best practices (A Planning-Centered Organization)
- Tactical planning applications for maximizing refinery financial performance
 - Crude oil evaluation / Production planning / Inventory scheduling / Shutdown planning
 - Incremental margins/operating incentives

- Long-range strategic planning applications for improving competitiveness
 - Configuration studies
 - Technology evaluation

VIII. REFINERY MARGINS, COSTS, AND OTHER FINANCIAL METRICS

This module will lay out the basic economic metrics used by companies around the world to evaluate the financial positioning of refining assets. We will discuss several types of refinery margins used to describe profitability and learn how they are calculated. We will then cover the different elements that make up fixed and variable operating costs. The importance of capital spending will be examined, as will the effects of changes in working capital. Various estimation techniques will be presented for determining operating and capital costs when actual data is incomplete or missing.

- Financial Metrics
 - Gross, variable, net margins
 - Fixed and variable cost development
- Capital costs
 - Categories (Sustaining, maintenance, environmental/regulatory versus discretionary)
 - Replacement Cost New (RCN) estimation and uses
- Working capital requirements
- Benchmarking alternatives
- Estimating techniques

IX. ENVIRONMENTAL COMPLIANCE ISSUES AND TRENDS (Day 3 Morning Session)

Environmental compliance is often looked-on as a cost but non-compliance bears heavy costs as well. In this module, we will explore the history of environmental compliance efforts around the world and discuss what new initiatives are in the works.

- Ambient air quality standards
- Product specification standards
- Equator Principals

X. REFINERY CONSTRUCTION, SALES, AND CLOSURES

What factors are considered when a company is making a decision whether to build a new refinery or purchase an existing facility? What drives a company to decide to exit a market by selling a refinery or, perhaps, closing it? In this module, we will explore the different factors executives consider when making these choices. We will learn how to estimate the cost of constructing a greenfield refinery using industry-recognized factoring techniques. We will also examine some of the metrics used to determine transaction values for refinery sales. We will close with a discussion of the costs and ramifications when a decision to idle or permanently close a refinery is made.

- Factored construction cost estimation
 - Processing equipment & Off-sites (utilities, tankage, logistics assets, etc.)
 - Owner's costs
- Refinery purchase/sale transactions
 - Financial metrics (Discounted cashflow modeling, EBITDA multiples, % of RCN, etc.)
 - Comparable sales analysis
- Refinery sale and closure decision-making
 - Financial distress
 - Market changes / Portfolio optimization

XI. REFINERY VALUATION TEAM EXERCISE (Afternoon Session)

You will want to bring your laptop for this session as we pull everything together that we've learned the previous two days! The delegates will be separated into teams, each tasked with determining the fair market value of a refinery asset using the Discounted Cash Flow modeling methodology. Prior to starting we will cover the basic requirements to assemble a working cash flow model to determine the Net Present Value of a simple refinery.

- Global assumptions (Inflation, discount rate, tax rates, depreciation, on-stream factors)
- Charge and yield estimates
- Refinery gate price forecasts
- Fixed and variable operating cost estimates
- Capital cost and working capital adjustments

Organised by:



5 EASY WAYS TO REGISTER



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(ROC No.: 199405166R)



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(65) 6338 4090



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WEB
www.cconnection.org/events/
refiningeconomics

REFINING ECONOMICS

This Contains Your Unique Registration Reference.
Please Do Not Remove Mailing Label.

DATES & VENUE

September 17 - 19 2018, Singapore
Hotel Jen Tanglin Singapore
1A Cuscaden Road, Singapore 249716
Tel: +65 6738 2222 Fax: +65 6831 4314
Email: hjs@hoteljen.com

COURSE FEES

Full Fee	US\$3,165 per person
Early Bird Fee	US\$2,845 per person (payment by 31 July 2018)
Alumni Fee	US\$2,845 per person
Team Fee*	US\$2,845 per person

A 7% Goods & Services Tax (GST) is applicable to all Singapore based companies. (All discounts stated are mutually exclusive and on a per person basis)

Fees include daily luncheon and coffee breaks and over 200 pages of course materials. **Travel and accommodation costs are not included.**

*Team Fee: Apply for second and subsequent delegate from the same company and billing address. Registrations must be received at the same time to qualify. **Not valid with other discounts** i.e. full fee applicable for first delegate.

ENQUIRIES & REGISTRATIONS

Conference Connection Pte Ltd
135 Middle Road, #05-01 Bylands Building
Singapore 188975
Fax: + 65 6338 4090 Tel: + 65 6338 0064
Email: info@cconnection.org

REGISTRATION CONDITIONS

- All registrations must be on the prescribed form or in writing and will be on a confirmed basis unless otherwise notified in writing
- The organisers reserve the right not to accept prior and on-site registrations without payment
- Delegates whose payments are not received before the event are required to furnish proof of payment on-site
- Staff at the event will request a credit card guarantee without proof of payment
- The organisers reserve the right to impose conditions of entry for walk-in delegates

PAYMENTS

- All payments must be made in US Dollars or Singapore Dollars by Inter-Bank Transfers within 14 days of receipt of invoice (Bank details will be provided upon receipt of registration)
- Please quote event name, invoice number and delegate name for bank transfers. Please instruct your bank to remit the full amount, nett of bank charges

CANCELLATION AND SUBSTITUTION POLICY

- No refunds whatsoever will be made for cancellations received after the cut-off dates below, but delegates can be substituted if the organisers receive prior notification (please note that 2 weeks' notice of substitution is required for visa application/cancellation as the case may be):

Venue	1 st Cut Off (Paid Registrations ~ 5% of fee & Unpaid Registrations - 10% of fee)	2 nd Cut Off (50% Refund plus Workbook)
Singapore (17 - 19 September 2018)	27 August 2018	3 September 2018

- Cancellations, notified in writing, received and acknowledged before 1st cut off date will be levied an administrative fee of 5% for paid cancellations and 10% for unpaid cancellations.
- Paid and unpaid cancellations notified between 1st and 2nd cut-off dates, will be charged 50% of the invoiced fee and given one set of course materials (post-event).
- For unpaid registrations which have been invoiced and are subsequently cancelled after 2nd cut off date, 50% of the invoiced fee will be charged and one set of the presentation materials will be given (post event).

HOTEL ACCOMMODATION & VISA APPLICATION

Delegates will be responsible for their own hotel and visa arrangements. Special rates have been secured at the host hotel for confirmed delegates. To take advantage of the special rate, please request for a hotel reservation form upon registration.

DATA PROTECTION

Any client information (name, address and contact details) obtained during your registration/order will be added to our database and may be used by Conference Connection to provide you with further information on its products and services. Conference Connection may make this information available to associated partners for marketing purposes. To restrict or update your particulars, please contact database@cconnection.org

DISCLAIMER - The organisers will not accept liability for non-approval of visas, individual transport delays and transport disruption, and in such circumstances, our normal cancellation rules and penalties apply. Where matters beyond the reasonable control of the organisers impair or prevent the organisers from being able to perform their obligation under this event, the client releases the organisers from any liability, incidental or consequential, to such matters.

REGISTRATION FORM

Yes! Please register me for

REFINING ECONOMICS Singapore, 17 - 19 September 2018

Please Tick (✓) Accordingly:

1. REGISTRATION FEES

Full Fee	<input type="checkbox"/> US\$3,165 per person
Early Bird Fee	<input type="checkbox"/> US\$2,845 per person (payment by 31 July 2018)
Alumni Fee	<input type="checkbox"/> US\$2,845 per person
Team Fee*	<input type="checkbox"/> US\$2,845 per person

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2. PAYMENT

- I am sending payment by telegraphic transfer.
Please send full details.
- I will need an original invoice.

3. ACCOMMODATION

- Please send me a hotel/visa form

4. IN-HOUSE TRAINING

- Please send me further information on in-house training programmes

Please print in block letters and return to:

Conference Connection Pte Ltd

135 Middle Road #05-01, Bylands Building, Singapore 188975.

Tel: (65) 6338 0064 Fax: (65) 6338 4090

Email: info@cconnection.org Website: www.cconnection.org

CA/396/18 WB

First Name (Mr/Ms/Dr) _____

Surname _____

Job Title _____

Nationality _____

Company _____

Address _____

Country _____ **Postal/Zip Code** _____

Tel _____ **Fax** _____

Email _____

Name & Title of Approving Manager _____

Email of Approving Manager _____

Special Dietary Requirements (if any) _____

Main Business Activity _____

ALL REGISTRATIONS MUST BE ACCOMPANIED BY PAYMENT (For more than one delegate, please photocopy registration form)