INTRODUCTION TO PETROLEUM REFINING PROCESSING

HYATT REGENCY NORTH HOUSTON
HOUSTON, TEXAS USA
MAY 9, 10, 11, 2017

INTRODUCTION
For over 32 years Refining Process Services has provided technical assistance and offered specialized educational training programs to the worldwide petroleum refining industry. This brochure presents information on our "Introduction To Petroleum Refining Processing" seminar, which was developed specifically for engineering, R & D, and operations personnel who have limited refining experience, but who have substantial technical education or a technical operating background.

PROGRAM
This seminar program was designed to serve as an introduction to petroleum refining processing. The seminar focuses on the core refining processes of fluid catalytic cracking, alkylation, hydrotreating, hydrocracking, and catalytic reforming, although all major processes are covered in detail. The speakers will discuss feedstock properties, process chemistry, process variables, operating conditions, unit configuration, and refinery products. The interaction between yields, operating variables, and product variables will also be covered. In addition, the basic economics associated with petroleum refining and the impact of recent environmental regulations will be discussed. These program sessions will be presented by a knowledgeable, experienced industry professional who is well-versed in all of the major processing areas of petroleum refining.

The program has been designed for personnel recently assigned to positions in the petroleum refining industry or for operations personnel with substantial hands-on experience. It is assumed that those in attendance have backgrounds in engineering and chemistry or have actual refinery operating experience. Interested parties who do not have technical or refinery backgrounds should consider attending our alternate program, "Basics Of Petroleum Refining For Non-Technical Personnel."

PROGRAM OUTLINE

DAY 1
1. OVERVIEW OF THE PETROLEUM REFINERY
   - Refinery Classification, Organization & Process Flow
   - Introduction to Petroleum Chemistry
   - Crude Oil Composition and Properties

2. CRUDE OIL DISTILLATION FUNDAMENTALS

3. REFINERY PRODUCT SLATE
   - Composition of the Gasoline Pool
   - Gasoline and Distillate Properties
   - Gasoline Reformulation Options
   - Use of Renewable Fuels: Effects of Ethanol Blending
   - Lubricating Oils and Other Products

4. HYDROTREATING OF PETROLEUM
   - Hydrotreating Catalysts
   - Chemistry and Process Flow
   - Process Variables and Operating Conditions
   - Hydrotreated Product Yields and Properties

5. HYDROCRACKING OF PETROLEUM
   - Hydrocracking Catalysts, Chemistry & Process Flow
   - Process Variables and Operating Conditions
   - Hydrocracker Yields and Product Properties

6. ISOMERIZATION
   - Catalysts, Chemistry & Operating Conditions
   - Process Flow/Processing Options
   - Isomerization Yields and Product Properties

DAY 2
7. CATALYTIC REFORMING
   - Reforming Catalysts
   - Chemistry and Process Flow
   - Process Variables and Operating Conditions
   - Reformer Unit Configuration
   - Reduction of Aromatics and Benzene in Reformate

8. FLUID CATALYTIC CRACKING
   - Mass, Heat, and Pressure Balance
   - FCC Catalysts, Chemistry & Process Flow
   - FCC Process Variables/Operating Conditions
   - Cracking of Heavy Feedstocks

9. ALKYLATION
   - HF Alkylation Process
   - Sulfuric Acid Alkylation Process
   - Feedstock and Product Properties

10. AUXILIARY REFINERY PROCESSES
    - Sulfur Recovery Plant
    - Caustic Treating Processes
    - Amine Scrubbing Unit
    - Gas Recovery Plant
    - Fired Heaters/Heat Exchangers

DAY 3
11. HEAVY OIL PROCESSES
    - Delayed Coking
    - Visbreaking
    - Solvent Deasphalting
    - Ebullated Bed/Advanced Hydrotreating Technologies

12. PETROLEUM REFINING ECONOMICS
    - Refinery Operating Costs
    - Refinery Profit Margins
    - Conversion Unit Processing Costs
    - Relative Value of Crude Oil versus Products
    - Refining Process Capital Costs

13. PETROLEUM REFINING TRENDS
    - U.S. Refining Capacity
    - Refinery Operating Rates
    - Structure of the U.S. Industry
    - Environmental Issues Affecting Refineries
**PROGRAM FACULTY**

Alan R. English, an independent consultant, has over 39 years of experience in the petroleum refining industry, having worked for Gulf Oil, Chevron, Sun Company and KBC Advanced Technologies. He has provided troubleshooting, technical support, optimization consulting and training to more than 40 refineries in North America, South America, Europe, Asia and the Middle East. While at Gulf and Chevron, Al was involved in the development and commercialization of the Tin additive for Vanadium passivation and the Bismuth additive for Nickel passivation. He has authored or co-authored 13 publications and has served on the NPRA (now AFPM) Q & A Panel twice. He holds three US patents. He has a BS degree in Chemical Engineering from Lehigh University and has an Executive Masters degree in Technology Management from Stevens Institute of Technology. Al is a licensed Professional Engineer in Pennsylvania.

Warren S. Letsch is an independent consultant with an extensive FCC background. His prior employment was with Stone & Webster, Inc., a Shaw Group Company, where he was responsible for FCC/DCC technology and business development, and with Refining Process Services where he was involved in licensing of the MagmaCat® Process. He was also Director of Worldwide Sales and Marketing for UOP/Katalistik. He has had experience with Total Petroleum as Manager of Refining Technology and with Davison Chemical and Shell Chemical in research, marketing, and technical support of petroleum catalysts. Warren has authored many articles on refining technology and holds seven US patents in the FCC area. He holds BS and MS degrees in Chemical Engineering from the Illinois Institute of Technology.

**ACCOMMODATIONS / FACILITIES**

The program will be presented at the Hyatt Regency North Houston in Houston, Texas. The hotel is located off Beltway 8 (North Loop) at the Imperial Valley Road Exit, and is a 15-minute drive from the Houston Intercontinental Airport. A block of rooms at special rates has been reserved at the hotel for program participants. Room reservations should be made on our website at www.petroleumrefining.com by clicking on “Seminar Registration,” and selecting the program you will be attending. You can also contact the hotel Group Reservations Desk at (281) 249-1234. Please indicate at the time you make your room reservations that you will be attending this Refining Process Services function. We suggest that you make room reservations as soon as possible but no later than April 24, 2017, to get the function room rate and assure your accommodations. Room reservations can be made after this date, but availability and room rate cannot be guaranteed. Hotel information is available on our website at www.petroleumrefining.com.

All program sessions will begin promptly at 8:00 AM in a meeting room at the hotel. Sessions will be completed by 5:00 PM on May 9 and 10. The sessions on May 11 will end at 12:00 Noon. A deluxe Continental Breakfast will be available at 7:15 AM each day of the program. Breakfasts, beverage breaks, and two lunches are included in the registration fee. Note that there is no lunch on the last program day.

**REGISTRATION INFORMATION**

The Early Registration Fee of US$1,995.00 is payable in U.S. funds via your company’s check drawn on a U.S. bank, an international money order, bank wire transfer, or credit card. To be invoiced or to pay by credit card, you must register on-line at www.petroleumrefining.com. If the registration fee is received after April 11, 2017, the Regular Rate Fee of US$2,195.00 is due, so please register early. Fee includes all program materials, Continental Breakfasts, lunches, and beverage breaks. Lodging is not included and should be handled directly with the hotel. Please note that fee must be paid in advance of program start date in order to hold space. You can forward the form shown below or a copy with a check made payable to: REFINING PROCESS SERVICES, INC., Suite One, 1708 Pittsburgh Street, Cheswick, PA 15024 USA.

ENROLLMENT WILL BE LIMITED. However, registrations will be accepted through May 1, 2017, if space is still available.

Confirmations will be sent to all applicants upon receipt of registration fee. All registrations received after the enrollment is filled will be returned with a full refund. Confirmed registrations canceled within 21 days prior to the start of the program will be subject to a US$200.00 cancellation fee. Those who cancel their registrations within 10 days of the start of the program are subject to the entire fee. There are no refunds for No Shows. Notification of cancellation must be made by email to seminars@petroleumrefining.com or by fax to 412-826-5441. No telephone cancellations. Substitutions may be made at any time. The program directors reserve the right to modify program material, to restrict program attendance, to substitute speakers/panel members without prior notice, or to cancel the presentation with full refund of fee. Sorry, no audio or visual recording equipment is permitted.

If there are any questions, please contact Ms. Kim Wunnenberg at 412-826-5440 (FAX: 412-826-5441).

Please forward your mailing and e-mail addresses if you wish to be in our contact data base.

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**REFINING PROCESS SERVICES, Inc., Suite One, 1708 Pittsburgh Street, Cheswick, PA 15024 USA**

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HYATT REGENCY NORTH HOUSTON / HOUSTON, TEXAS USA / MAY 9, 10, 11, 2017

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Company/Division: ________________________________

Title/Position: ________________________________

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Business Phone: ___________________ FAX: ____________

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