REFINERY TROUBLESHOOTING

HYATT REGENCY NORTH HOUSTON
HOUSTON, TEXAS USA
MAY 9, 10, 2016

INTRODUCTION
For over 30 years Refining Process Services has provided engineering services and technical training programs for the worldwide petroleum refining industry. As part of this ongoing effort, we are offering this program on troubleshooting refinery equipment. The presentation will provide participants with a comprehensive review of the most effective techniques for refinery troubleshooting. The program will be presented by Mr. Andrew Sloley, a noted expert in process plant troubleshooting.

PROGRAM
Since day-to-day operation problem solving and optimizing are critical to the profitability of plant operations, troubleshooting is a prime responsibility of refinery and plant engineers. The importance of troubleshooting has grown as plants push to operate at tighter economic margins. Lost profits due to unsolved unit problems can never be recovered. Consistently maintaining smooth operation, maximum capacity, and acceptable product quality are important goals that can be difficult to achieve. Thus, this program has been developed to provide an in-depth yet practical review of the art and science of plant troubleshooting.

The program’s content is both comprehensive and wide-ranging. The sessions begin with a discussion of the fundamentals, including process objectives, equipment behavior, integration of the process and equipment, and troubleshooting techniques. A case study approach covers major equipment found in refineries and petrochemical plants, specifically pumps, heat exchangers, fired heaters, vacuum systems, piping and hydraulics, compressors, distillation towers, and auxiliary equipment. All case studies are developed from actual field case histories. This approach demonstrates the complexity of actual plant operations and how to simplify and identify solvable problems. Once the fundamentals are established, the session moves into the topics of troubleshooting techniques, analysis, and problem solving.

Program participants will have the opportunity to obtain a broad working knowledge of troubleshooting principles and practice, to gain insight into both traditional and advanced techniques, and to interact with others working in plants. The program is ideal for personnel involved in refinery troubleshooting, process engineering, plant operations, and technical services. Process engineers from operating, design and construction companies, as well as others providing services to the petroleum and petrochemical industries, should also find this program beneficial.

PROGRAM OUTLINE

1. INTRODUCTION
   • Objectives and Approach
   • Importance of Troubleshooting
   • Case Studies
2. TROUBLESHOOTING CONCEPTS AND TECHNIQUES
   • Typical Problems
   • Integration of Process and Equipment
   • Troubleshooting Techniques
   • Troubleshooting Tools
3. DISTILLATION
   • Flooding and Its Detection
   • Pressure Surveys
   • Saltation
   • Entrapment
   • Damaged Equipment
   • Entrainment and Product Quality
4. HEAT EXCHANGERS
   • Preheat and Crude Fouling
   • Leaks
   • Hot Vapor Bypass and Sealing
   • Vapor Blanking
   • Heat Integration and Startup
   • Heat Flux Limits
   • Thermosyphon Reboilers
5. HYDRAULICS
   • Gravity Flow and Open-Channel Flow
   • Unstable Systems
   • Compressible Flow / Transfer Lines
   • Nozzles
   • Pressure Balance Systems
6. PUMPS
   • Suction Conditions-NPSH and Suction Specific Speed
   • Multiple Pumps in Parallel
   • Low Head Applications
   • Fan Law Limits
7. FIRED HEATERS
   • Pass Balancing
   • Average Versus Peak Heat Flux and Coking
   • Heat Integration and Air Preheat
   • Environmental Control
8. VACUUM SYSTEMS
   • Ejector Systems
   • Suction Constraints
   • Excessive Load
   • Precondenser Performance
   • Plugged Exchangers
   • Damaged Equipment
   • Liquid-Ring Low-Pressure Operation
9. CENTRIFUGAL COMPRESSORS
   • Suction Conditions
   • Surge Control
10. RECIPIROCATING COMPRESSORS
    • Interstage Pressures
    • Capacity Restrictions
11. CONTROL
    • Instability
    • Impossible Constraints
    • Unsound Control Schemes
    • Trend Analysis and Alarms
    • Advanced Control Problems
12. OTHER EQUIPMENT
    • Coalescers
    • Dryers
    • Salt Dryers
    • Drums
    • Gas Turbines
13. ADVANCED TECHNIQUES
    • Gamma Scans / Uses and Limitations
    • Neutron Backscatter
    • Thermal Scanning
Andrew W. Sloley is a Consultant for Advisian (WorleyParsons Group), Houston, Texas. He has over 35 years of experience in the hydrocarbon processing industry. At Advisian he is primarily responsible for economic analysis and conceptual design of refinery modifications for profit improvement. He has extensively worked on crude, heavy oil and other refining units including FCC, delayed coker, alkylation, hydrotreating, reforming and support units. His other responsibilities include proposal preparation, technical support and system troubleshooting. Andrew has authored or co-authored over 250 publications on petrochemical and refinery operations in the areas of equipment design and troubleshooting. He is currently a contributing editor on equipment and plant design for Chemical Processing magazine. He has a B.S. degree in Chemical Engineering from the University of Tulsa and is a licensed professional engineer in Texas.

**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 25, 2016, 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. The sessions on May 10 will end at 4:00 PM. A deluxe Continental Breakfast will be available at 7:15 AM each day of the program. The Continental Breakfasts, beverage breaks, and the lunches are included in the program registration fee.

**REGISTRATION INFORMATION**

The Early Registration Fee of US$1,450.00 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, 2016, the Regular Rate Fee of US$1,650.00 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 registration 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 2, 2016, 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, 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 database.

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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, 2016

Name: ____________________________________________

Company/Division: ____________________________________________

Title/Position: ____________________________________________

Company Mailing Address: ____________________________________________

City: ___________________________ Postal Code: ___________________________

Province/State: ___________________________ Country: ___________________________

Business Phone: ___________________________ FAX: ___________________________

E-MAIL ADDRESS: ___________________________ Signature: ___________________________ Date: ___________________________