



2014 Annual Meeting  
March 23-25 ~ Hyatt Regency Orlando~ Orlando, FL

**Program Descriptions**

**REFINERY OPERATIONS**

**“Dividing Wall Column Technology for Efficient Hydrocarbon Separations”**

**Ian Elgey, Bhari Singh and Bill Townsend, KBR**

**AM-14-29**

This paper presents KBR’s experience in successfully applying dividing wall column technology in several grassroots and revamp refinery applications. KBR has used this cost effective technology to meet key product constraints for their clients such as controlling benzene in the gasoline pool to comply with MSAT-II regulations. This paper will also demonstrate that a dividing wall column delivers robust and stable performance over a range of operating cases.

**“Increasing Throughput in Existing Separators: New High Efficiency Separator Internals Can Provide Higher ROI for Refinery Facility Upgrades”**

**Dag Kvamsdal, Ankur Jariwala, and John Phillips, Cameron Process Systems**

**AM-14-30**

**“Semantic Procedure Analysis”**

**Thomas Kindervater, Center for Operator Performance; David Strobhar, Beville Engineering, Inc.**

**AM-14-31**

This presentation will discuss the application of semantic analysis to operating procedures as a means to improve procedure content and reduce the procedure maintenance effort. An automated tool can be used to create a library of procedure modules which, when applied to procedures, will improve clarity, expand the depth of content, and increase consistency in procedure terminology.

**“Planning, Design, and Implementation of the Automation System for the Marathon Detroit Refinery Expansion”**

**Edward Bullerdiek, Marathon Petroleum Company**

**AM-14-32**

This paper discusses Marathon Detroit refinery’s experience implementing Foundation Fields instrumentation during a large refinery expansion.



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**“Innovation Leads to New Solids Management Technology**

**Douglas Longtin and Gerald Hoffman, Baker Hughes, Inc.**

**AM-14-33**

The solids routinely found in crude oils present many challenges to the refiner, including fouling of tanks and heat transfer equipment, stabilizing emulsions in desalting equipment, poisoning of downstream catalysts, downgrading of product value and impacts on waste water treatment. Conventional technologies are unable to manage the solids. New Solids Release agent technology by Baker Hughes offers a proven, effective solution to the challenges posed by solids in crude oil.



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**GASOLINE/PETROCHEMICALS**

**“Petrochemical Landscapes: The Blessing and Curse of the Shale Revolution”**

**Jim Foster, Platts**

**AM-14-34**

This paper will focus on the impact of shale developments in the U.S. on petrochemical production, specifically olefins and aromatics. It will examine the impact of unconventional tight oil and shale gas at the refinery and at the ethylene cracker and will look at how these developments will shape the petrochemical landscape going forward.

**“Optimizing Naphtha Complexes in the Tight Oil Era”**

**Mary Wier, Mark Lapinski, and Steve Metro, UOP LLC**

**AM-14-35**

This paper will provide a brief overview of shale crudes and present case studies showing the impact on Naphtha Complex production. Higher naphtha rates make it more difficult to meet gasoline blending specifications and hydraulic fracking can potentially lead to higher contaminant levels which decrease Naphtha Hydrotreating and Isomerization units’ catalyst life, performance, and on-stream availability. Catalyst and process revamp solutions for optimizing a Naphtha Complex will be discussed.

**“Gasoline Production in the Age of Tight Oil, Renewable Fuel Mandates, and Tier 3 Regulations**

**Eric Ye, DuPont Sustainable Solutions; Terry Higgins, Hart Energy Consulting**

**AM-14-36**

This paper examines the supply, demand and economic impacts that the increasing supply of light sweet crude and natural gas liquids, biofuel mandates, and Tier 3 gasoline regulations will have on North American refiners’ gasoline production. The shale oil production surge has provided North American refiners with increasing amounts of crudes and natural gas liquids that favor gasoline production. However, gasoline demand in North America is declining and subject to increasingly stringent regulations. In this environment, individual gasoline components will take on new roles with respect to blending strategies and economics. Unit operations such as traditional high volume FCCs and Catalytic Reformer streams are becoming less attractive as marginal contributors to the gasoline pool while high margin light products such as alkylate are becoming increasingly attractive. Yield, gasoline blending operations and economic analysis will be reviewed and market projections for the future of the gasoline market will be discussed.

**Tier 3 Capital Avoidance with Catalytic Solutions**

**Patrick Gripka**

**Criterion Catalysts and Technologies**

**AM-14-37**



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**Advances in Cracked Naphtha Hydrotreating**

**Geoff Dubin and Delphine Largeteau, Axens North America**

**AM-14-38**

In this paper, Axens will highlight recent advances in silicon and arsenic trapping along with the developments of new high activity catalysts for hydrodenitrogenation function. A review of units processing 10% coker naphtha will be shared. Finally, the paper will outline Prime G+™ processing options to address impending Tier 3 regulations with a focus on co-processing streams other than FCC naphtha.



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**CRUDE OIL SUPPLY**

**“Shale Gas Boom and Tight Oil - A New Era for the Refining Industry”**

**Mark Lockhart and Dominic Varraveto, Burns and McDonnell**

**AM-14-39**

The recent shale gas boom and consequent tight oil that is being produced have afforded refiners with low cost, light sweet crudes resulting in attractive margins which are dependent on geographic location and whether the crude is “stranded”. This paper provides an overview of the variety of projects that are under study or are in various phases of engineering including refinery debottlenecks, crude topping columns, condensate splitters and new crude columns among others.

**“Has The Boom Gone Bust?”**

**Skip York, Wood Mackenzie**

**AM-14-40**

**“The Effect of Crude by Rail on Refining and Logistics”**

**David Hackett, Stillwater Associates LLC**

**AM-14-41**

**“Changing Crude Qualities and Their Impacts on U.S. Refinery Operations”**

**John Mayes, Turner, Mason & Company**

**AM-14-42**

Crude oil production on the U.S. is rapidly increasing, but the quality of the incremental crude will bring about significant changes in the U.S. refining industry. The abundance of very light crudes will require substantial capital investment and will yield higher quantities of gasoline and LPG while reducing yields of diesel, gas oil and resid.

**“Tracking and Auditing the Impact of New Crudes on Refinery Operability and Profitability”**

**M. Scott Green, Robert Ohmes, Ralph Goodrich, and Mel Larson, KBC**

**AM-14-43**

Whether it is **light tight oils** (LTOs) or **opportunity crudes** from Canada, introduction of these new crudes requires significant manpower, analysis, and, potentially, capital to evaluate and handle them. Less effort is spent understanding the resulting effects of the new crudes on the facility once they are being processed. This paper examines **impacts** of alternate crude slates on the **refinery** and how to incorporate key findings into the regular business processes.



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**SULFUR RECOVERY & UTILITIES**

**“Capital Project Breakpoints for Recovering Light Hydrocarbons and Hydrogen from Refinery Fuel Gas”**

**Lily Bai, Jie Yu, Sudhir Golikeri, Guang Lee, and Benjamin Klein, Bechtel**

**AM-14-44**

Selecting the optimal refinery off-gas improvement project is complex due to trade-offs of product recoveries versus capital and operating costs. A systematic approach evaluates project economic breakpoints in terms of balancing product recoveries against additional process changes. Since high recovery of lower boiling products affects both cryogenic system pressure and refrigeration system capacity, proper evaluation of breakpoints is essential to making good decisions.

**“Cooling Towers: Hidden Gems of Profitability”**

**Nikki Bishop, Emerson Process Management**

**AM-14-45**

**Cooling towers**, present in almost every process facility, have the important job of providing cooled water to the process. Cooling towers are unable to perform this important job if the **fans** and **pumps** associated with the tower are underperforming or inoperable. When water chemistry is imbalanced, **corrosion** or scaling can occur, leading to reduced cooling capacity. This presentation will explore cooling tower measurements for monitoring cooling tower **health**. A case study from a major refiner will be presented to illustrate the benefits of adding measurements and **monitoring** solutions for cooling towers.

**“The Seven Deadly Sins of Sour Water Stripping”**

**Michael Sheilan, Sulphur Experts**

**AM-14-46**

In this paper we will be discussing seven deadly sins of sour water stripping complete with actual plant problems.

**“Amine System Improvements Drive Refinery Gains**

**Jeffrey Zurlo and Patricio Ayala, GE Water & Process Technologies; Scott Simon, Marathon Petroleum Corp.**

**AM-14-47**



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**“Caustic Scrubber Designs for H<sub>2</sub>S Removal from Refinery Gas Streams”**

**Darryl Mamrosh, Ken McIntush, and Kevin Fisher, Trimeric Corporation**

**AM-14-48**

Caustic can be used to remove hydrogen sulfide from various refinery gas streams potentially creating a marketable product (NaHS). Different scrubber designs are capable of meeting different H<sub>2</sub>S removal goals and dealing with the presence of other components in the gas such as CO<sub>2</sub> and ammonia. This paper discusses the design issues and other variables that are important in refinery caustic scrubber designs.



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## STRATEGIC CAPITAL INVESTMENTS

### **“Trends in U.S. Refined Product Supply/Demand Balances”**

**Andrew Hill, Turner, Mason & Co.**

**AM-14-49**

This paper will present an analysis of recent trends in major **refined product** supply and demand balances and the estimated impacts on these balances from evolving U.S. crude slate changes and various **U.S. government policy** initiatives including RFS requirements and new CAFE standards. The paper will also provide an assessment of the shift in **net exports** for four defined petroleum products and will analyze, based on market fundamentals, the prospect for exporting these products to other world regions in this **global economy**.

### **“Canadian Tidewater Access – Implications for the U.S.”**

**Neil Earnest, Muse, Stancil & Co.**

**AM-14-50**

This paper analyzes the medium term outlook for the North American regional oil markets, using Muse’s Crude Market Optimization Model. This analytical tool is a highly detailed crude oil distribution model for Canada and the U.S. that seeks to maximize the netback to the crude producer, while simultaneously satisfying crude oil transportation and refinery constraints. This is a powerful quantitative methodology for exploring the implications of differing supply levels and transportation infrastructure options on the North American oil markets, including the impact of pipeline connectivity to the Pacific markets.

### **“World Best Refinery”**

**Eric Hutchins, Solomon Associates**

**AM-14-51**

The presentation will focus on the **key performance metrics** of a group of World Best Refineries from the HSB **Solomon Associates’** Worldwide Fuels Refinery Performance Analysis. The information presented will highlight the areas which have the greatest impact on overall performance as well as paths to improvement for refiners all over the world.

### **“Improving Refinery Asset Flexibility for Addressing Changes in Crude Slate and Product Mix”**

**Rashid Iqbal and Gautham Krishnaiah, KBR**

**AM-14-52**

New crude oils, including tight oils, will have an impact on refinery operation and margins some of which may be negative. This paper will address potential methods for mitigating negative impacts.





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**“Can U.S. Refiners Invest for Success?”**

**Samuel Davis, Wood Mackenzie**

**AM-14-53**

In this paper we will examine the shift in U.S. refining investments in light of tight oil developments. We will also look at recent trends in crude oil input quality and the significance of complexity in determining refining profitability. Finally, we will conclude by exploring future investment opportunities for U.S. refiners.