



2010 Annual Meeting
March 21-23 ~ Sheraton Downtown~ Phoenix, Arizona

Technical Session Program Descriptions

ENVIRONMENTAL ISSUES

“Corporate Oversight of EHS Compliance”

AM-10-102 ~ Mark Farley, Pillsbury Winthrop Shaw Pittman

“Ultra Low SO₂ Stack Emissions - What is reality?”

AM-10-101 ~ Steven Meyer, MECS, Inc.; Andrea Trapet, MECS, Inc

This paper will present issues with achieving and measuring SO₂ Stack Emissions lower than 5-10 ppm. Concerns with the accuracy of stack testing for ultra-low emissions, a review of process chemistry which limits achievable emissions and the success of the MECS Dyna Wave wet gas scrubber technology in achieving ultra-low emissions will be explored.

“Using Reliability Analysis Techniques to Determine Environmental Emissions from Refinery Process Units and Utilities”

AM-10-103 ~ Chiron Mukherjee, Det Norske Veritas (DNV)

This paper outlines the use of reliability analysis techniques to assess the environmental emissions created by refinery process units or utility systems. Examples are shown for an FCC unit and for a waste treatment plant. The expected frequency and volume of environmental emissions can be predicted, and these results used to optimize design options of operational decisions with respect to reducing penalties for excess emissions and production interruptions.

“Achieve Significant Emission Reductions from Your Tank Farm”

AM-10-100 ~ Chip Breitweiser, HMT Inc.

“Mercury in Refinery Processes - PURASPEC_{JM} Purification Solutions”

AM-10-105 ~ Tina Moss, Johnson Matthey Catalysts; Raymond Hadden, Johnson Matthey Catalysts

One of the new issues has confronted refinery operators is the impact that mercury can have upon their operations. This containment is gaining a high profile at governmental levels and it is therefore increasingly important for refiners to understand the potential sources for mercury within refinery feedstocks, the fate and distribution of mercury within a typical refinery flowsheet and the technologies which are available to remove this contaminant in an environmentally sound manner. This paper will provide a context for the mercury issue, it will discuss the likely fate of mercury within refinery processes and it will describe Johnson Matthey Catalysts' PURASPEC_{JM} technology which is a proven solution for mercury removal from a variety of intermediate and product streams.

“Wet Air Oxidation Treatment of Spent Caustic in Petroleum Refineries”

AM-10-104 ~ Bryan Kumfer, Siemens Water Technologies and Chad Felch, Siemens Water Technologies and Clay Maugans, Siemens Water Technologies

Spent caustic streams from refineries typically have a high chemical oxygen demand (20 - 500 g/L) and contain chemicals that are hazardous, inhibitory, and/or biorefractory such as sulfides, mercaptans, naphthenic acids, and phenols. Due to the types of chemicals contained in the spent caustic, refinery wastewaters can be environmentally hazardous and difficult to treat with conventional biological treatment. Wet air oxidation can be used as a treatment process to oxidize naphthenic acids, phenols, and reduced sulfur compounds while significantly reducing the chemical oxygen demand and produce a biodegradable effluent. Lab and field data will be presented to show the effectiveness of wet air oxidation for treating spent caustic wastewater.

FCC TECHNOLOGY

“An Overview of the FCCU SCR Experience at CITGO's Lemont Refinery”

AM-10-106 ~ Dennis Salbilla, Haldor Topsoe

“Method to Measure Cyanide in Carbon Dioxide Rich FCC Flue Gas”

AM-10-111 ~ John Quanci, Sunoco, Inc; Matthew Hutchinsn, Sunoco, Inc.

An important method to measure cyanide in FCC flue gas using a modified version of the EPA Conditional Test Method-033 (EPA CTM-033) has been developed and field tested. Current industry methods, EPA CTM-033, NIOSH 7004 and Carb 426 can lead to under reporting of cyanide in FCC flue gas by as much as 90%. This paper reviews the deficiencies of the EPA and NIOSH cyanide methods, outlines the NEW Method to accurately and repeatably measure FCCU stack cyanide, and presents data on application of this new method on an FCCU flue gas.

“FCC Reliability: What is Happening Above Your Fluidized Bed?”

AM-10-107 ~ Jeff Sexton, Marathon Oil Company; Dr. S.B. Reddy Karri, PSRI; Ray Cocco, PSRI

Mechanical availability is a key performance driver for FCC units. The unique equipment associated with fluidized bed has a preferred operating window to ensure reliable operation. This paper will show how PSRI is developing tools to monitor and predict entrainment, particle clumping, gas bypassing and cyclone erosion to understand “What is Happening Above Your Fluidized Bed” and allow industry to improve unit performance and reliability.

“Co-Catalysts provide refiners with FCC operational flexibility”

AM-10-110 ~ Timothy McGuirk, BASF

In the present economic climate with ever quicker demand and supply changes, the economic drive for maximizing either gasoline or diesel from the FCC is constantly changing. How does a refiner rapidly respond to these changes to maximize the value of the products from the FCC unit?

Co-Catalysts provide the refiner with flexibility to change the product slate of the FCC without changing the FCC catalyst. Changing from a maximum gasoline co-catalyst to a maximum LCO co-catalyst will allow the refiner to quickly take advantage of the most favorable economics. Obviously the reverse is also true if the economics incentive swings to favoring gasoline production.

“UOP FCC Innovations Developed Using Sophisticated Engineering Tools”

AM-10-109 ~ Lisa Wolschlag, UOP LLC; Keith Couch, UOP LLC

“Winning in the downturn How to improve FCC unit reliability and reduce costs via improved cyclone technology”

AM-10-108 ~ Ye-Mon Chen, Shell Global Solutions; Dr. S.B. Reddy Karri, PSRI; Dr. T.M. Knowlton, PSRI

ENSURING SAFE OPERATIONS

“Unique safety approach to tracking personnel in the plant along with hazardous gas information”

AM-10-116 ~ Ernest Johnson, Accenture ; Kevin Bogard, Marathon

“Why operators keep failing and the DCS must change!”

AM-10-112 ~ Ian Nimmo, User Centered Design Services Inc.; David Lee, User Centered Design Services Inc.

Over the last 20 years we have witnessed a new range of incidents called Organizational Accidents or Human Error related. These accidents have little to do with actual organizations or quality of people. They are more significantly related to systems and design failures within systems. Today's DCS is designed to allow any operator to fail and contribute to a major accident. Symptoms of these latent conditions or resident pathogens have been recorded around the world from major Alarm Management problems to loss of overview or poor and overload displays. The control rooms are often a hindrance and compromise the operators "situation Awareness" due to fatigue, distractions, poor communications and collaboration.

“Practical Steps to Improve Process Safety Culture at Refineries”

AM-10-114 ~ Steve Arendt, ABS Consulting

“Gray Matters in Safety and Reliability”

AM-10-117 ~ James Stephanou, Bayer Material Science

“API Process Safety Metrics Standard”

AM-10-115 ~ Bill Ralph, BP

“Creating a Sustainable, Self-Actualized Safety Culture”

AM-10-113 ~ Hermann Ortega, Celerant Consulting

The petrochemical industry has made very good progress in safety performance over the last decade. However, the improvements are plateauing or in some cases they are not being sustained. This presentation will focus on the role that Senior Management plays in implementing a Safety culture that can achieve zero injuries and eliminate all safety incidents in the work place.

WORKFORCE ISSUES

“Continuous Improvement Achieved through Culture Change”

AM-10-121 ~ Donovan Kuenzli, BP/Premcor

The Continuous Improvement culture created at the BP Lima refinery and the Premcor Port Arthur refinery allowed each of them to achieve transformations that not only led to them becoming highly reliable sites but also increased their value. Hear the plant manager for these two refineries speak on the four policies he employed to accomplish the culture change.

“Meeting Today s Challenges at the Shift Team Level”

AM-10-122 ~ Alex Ibanez, KBC Advanced Technologies, Inc.; Joseph Jacobs, KBC Advanced Technologies, Inc.

Against this backdrop, rfiners are expected to improve the operating results in the context of the balanced objectives of HSE performance and reliable operation. These objectives intersect at the operations level where the shift team performance can make the difference. Here, the work process must be designed to support a balanced scorecard environment by meeting the challenges of carbon tracking.

This paper provides an example of how stimulation based unit support these objectives through discussion of the challenges, how the work process addresses these, and an example of a sulfur plant unit monitoring application as part of this work process.

“Practical Situation Awareness for Refining and Petrochemical Process Operators : Not by Technology Alone”

AM-10-118 ~ Charles Bloom , Human Centered Solutions; Del Vernon Reising, Human Centered Solutions; Richard Barreth, Human Centered Solutions; Peter Bullemer, Human Centered Solutions;

In this paper we will discuss the application of the aviation model for situation awareness to improving situation awareness for refining and petrochemical process operators. This paper will discuss the impacts that designing for improved situation awareness can have on tools and training for both console and field operators in five key areas. While the first two areas relate specifically to the use of technology in the operations environment, the other three go to policies and practices.

“API Fatigue Management Standard”

AM-10-123 ~ Ron Rife, Exxon Mobil

“Craft Performance Improvment Using Mentoring Processes”

AM-10-120 ~ CLarnece Trowbridge, BP; Barbara Trautlein, Change Catalysts, LLC

Maintenance organizations have introduced increasingly sophisticated and complex processes in an effort to increase efficiency. The process for training craftpersons must also evolve to develop technicians fully capable to participate in these structures. A key aspect of any model for training craftpersons is the mentor process. The mentoring practices of the past do not support the demands of today’s modern industrial maintenance organizations. In order for maintenance functions to fully capitalize on its investments the craftperson must be up to the challenge, both technically and behaviorally. Often **“the hard stuff is easy and the soft stuff is hard.”** Training programs must emphasize both. A key business solution to accomplish this is a craft training program that includes a new model for mentoring. Mentoring programs offer an effective lever for increased utilization of maintenance systems.

We will discuss:

- Mentoring programs for craftpersons – the business case and results based on case studies and extensive research
- Employee-driven maintenance systems support and usage

Mandated re-qualification of full-rate technicians

Acquisition of business behaviors among craftpersons

Participants may be surprised at what “works” (and what doesn’t work) for craftperson mentoring.

“Recruit, Train and Assess Your Maintenance Organization of Tomorrow”

AM-10-119 ~ David Crockett, CenTec, Inc.

Three factors have now combined to create a brewing crisis for all manufacturers: The growing shortfall of skilled workers, the accelerating number of retiring Baby Boomers and the burgeoning costs related to corporate human resource departments in the attempt to handle these issues. This session will discuss how companies are addressing this crisis and a structured process to develop a more diversified maintenance organization for tomorrow.

CLIMATE CHANGE IMPACTS

“How will climate change and CO2 mitigation policy affect your refinery?”

AM-10-129 ~ Iraj Isaac Rahmim, CO2 Solutions LLC; Frank Elvin, CO2 Solutions LLC

It is likely that US refineries will be subject to CO2 mitigation policy resulting in a need to examine carbon footprints and attempt to minimize direct CO2 release into the air. This paper will examine US legislative proposals (e.g., cap and trade), review the carbon footprint of typical US refineries, evaluate the contribution of the refining industry to CO2 emissions, and discuss some methods and potential costs of CO2 reduction.

Practical Refinery Changes to Best Meet Upcoming Regulations

AM-10-125 ~ Bill Keesom, Jacobs Consultancy

“Crude Oil Quality Consideration under Carbon Cap and Trade”

AM-10-128 ~ Steven D. Graybill, NEXIDEA, Inc.; Philip V. Steed, NEXIDEA, INC.; Kip H. Shore, NEXIDEA, Inc.

The degree of processing required to upgrade a heavy sour crude oil to finished products emits more greenhouse gases than making the same products from a light sweet crude oil. This paper examines how crude oil quality impacts the level of carbon emissions for a range of crude oil qualities. The paper also highlights the relative contribution to the carbon emissions refining processes downstream of the crude unit.

Impact of Climate Change Legislation on U.S. Refiners

AM-10-126 ~ Kurt Barrow, Purvin & Gertz, Inc.

The refinery is expected to be a key compliance point for carbon emissions in a cap and trade program. While a cap and trade program can provide lower cost of compliance to the overall economy, there will be clear winners and losers. This presentation will discuss how a refiner’s crude slate, configuration and other attributes might affect cost of compliance under proposed legislation and how refineries might best adapt.

“Custody Accounting 101: Special Course for Regulators”

AM-10-130 ~ Patrick Truesdale, Emerson Process Management

This session will identify the challenges and provide practical solutions to ensure compliance together with the benefits that can be achieved using best practice procedures and technology.

“Greenhouse Gas Compliance: A Moving Target”

AM-10-127 ~ Randall Lack, Element Markets LLC; Gauri Patankar, Element Markets LLC

The Congressional Budget Office predicts that federal greenhouse gas legislation (Waxman-Markey) will affect at least 7,400 electricity and industrial facilities across the United States. Under the current bill, refineries will bear a large brunt of the entire economy-wide GHG liability, while receiving almost no allocation of CO₂ allowances to offset this burden. At the same time, EPA regulations to limit GHG emissions and regional cap and trade programs are also underway. This presentation will provide a legislative and regulatory update on the latest GHG regulations, insight into the offset and allowance prices in currently active carbon markets, and highlight considerations for these refiners as they formulate their long term compliance strategies.

STRATEGIC REFINING ISSUES

“Key Factors Influencing Future U.S. Refining Profitability”

AM-10-132 ~ Rick Thomas, Baker & O'Brien; Kevin Waguespack, Baker & O'Brien; Ben Schrader, Baker O'Brien

This paper will examine three of the most important factors expected to influence the profitability and relative competitive positioning of U.S. refineries compared to each other and to offshore refining centers: (1) The Atlantic Basin gasoline-to-diesel price ratio, coupled with different refinery yield patterns, both in the U.S. and Europe, may determine ultimate “winners” and “losers”; (2) The implementation of carbon regulation in the U.S. may make offshore refineries more competitive, especially when considering the margin and cost structure of new export-oriented refineries soon to be in operation; and (3) The long-term price differential between light and heavy crudes will influence the attractiveness of full conversion coking refineries relative to their heretofore less profitable and less complex competitors.

“Filling the Heavy Crude Gap”

AM-10-133 ~ Stephen Jones, Purvin & Gertz, Inc.

Strong US Refining economics of the past few years have been partly attributable to ample heavy crude supplies to fill available coking capacity. With recent declines in production of the more attractive Western hemisphere grades, refiners are aggressively pursuing supply options to fill the developing void. Significant refinery and coker capacity expansions were committed before the economic crisis drove petroleum demand down reduced refinery crude runs. The combination of conversion capacity expansions, low refinery throughput and dwindling heavy crude supply has forced refiners to brace for a widening gap between heavy crude supply and refining capacity. This presentation will cover the global threats to heavy crude supplies by reviewing the decline of crudes preferred by coking refineries along with the potential developments for future supplies. Expectations as to how refiners may adapt to the heavy crude gap will be presented. The presentation will include key implications for the refining industry, including refinery utilization and the potential for future rationalization and optimization of capacity.

“Market Environment, carbon regulation and the implication/opportunities for US refiners”

AM-10-134 ~ Alan Gelder, Wood Mackenzie Inc

This paper will review the key market factors of US transportation demand growth, US Refinery capacity growth crude oil supply evolution, Atlantic Basin refinery utilization outlook and the regulatory environment (involving carbon policy) to highlight the challenges currently facing the US refining sector and the attributes/opportunities for success.

“Managing and Optimizing the Trade-offs in Refinery Turnarounds to Reduce Costs”

AM-10-135 ~ Brett Schroeder, Asset Performance Networks

There are many variables which impact the overall business performance of a turnaround and multiple trade-offs need to be considered in order to optimize performance and minimize turnaround cost. This paper examines the fundamental relationships between the major cost-contributing factors such as labor productivity, indirects, shift-patterns, turnaround duration, quality and lost opportunity costs. Once basic relationships between these variables are established the paper then proposes a generic turnaround tradeoff model and a case study is then presented to illustrate – through the use of sensitivity analysis-the impact of specific trade-off decisions upon overall costs of the turnaround. This research study is based on more than five hundred turnaround events with detailed performance data.

“Project Capital Costs – Review and Outlook”

AM-10-131 ~ John H. Jenkins, Jacobs Consultancy Inc.

From 2003 to mid 2008, project capital costs in the hydrocarbon processing industry rose by as much as 70%. Then, “the bottom fell out.” In this paper, I would like to opine on what owners should reasonably expect from the current and future construction market.

FLARE OPERATIONS

“Improving Steam Technologies in Flare Systems”

AM-10-139 ~ Robert Cupp, Callidus Technologies

Callidus Technologies has developed a new flare tip design called the Hemisflre. This tip utilizes reduced steam rates and low pressure steam to provide smokeless flaring.

“Flare and Flare Gas Recovery”

AM-10-136 ~ Thomas Kemp, Commonwealth Engineering & Construction

“Assessing the Impact of Safety Instrumented Systems on Column Pressure Relief Loads”

AM-10-138 ~ Abhilash Nair, Invensys; Ian Willets, Invensys

The use of rigorous dynamic simulation has become an accepted methodology to more accurately estimate relief loads when traditional methodologies indicate that an existing flare is at or over capacity. This paper discusses a dynamic simulation study performed to evaluate the peak relief rate for an integrated De-isobutanizer and de-butanizer fractionation system considering that traditional unbalanced heat load approach; rigorous dynamic simulation and rigorous dynamic simulation with a high integrity Safety Instrumented System (SIS) on the fractionator re-boilers. These safety systems are also known as High Integrity Protection Systems (HIPS) or High Integrity Pressure Protection Systems (HIPPS).

“Real-time Compliance Flare Emissions Monitoring and Reporting”

AM-10-137 ~ Richard Hovan, Rockwell Software

Real-time flare emissions monitoring and reporting must include input data qualification, Calculating and storing emissions data rolled up to hourly, daily, year-to-date and/or 12-month substitution, limit testing, alerts, annotations and auditing, data visualization and reports. rolling totals is crucial to eco-friendly operations. Calculation of Flare Emissions based on Measured or Estimated Flare Gas Composition under US EPA rules must be operated within certain limits: minimum heating value of the flare gas and maximum tip exit velocity.

“Flare Metering with Optics From Blue-Sky Technology to the Real World”

AM-10-140 ~ Jody Parker, Gordon Stobie, ConocoPhillips Company

HYDROGEN & HYDROCRACKING

“1+1 = 3: Successful Hardware and Catalyst System Design Results in Expanded Hydrocracker Flexibility”

AM-10-145 ~ Kathy Wu, Criterion Catalysts & Technologies; Greg Wassel, Deer Park Refining Ltd; Steve Perry, Deer Park Refining Ltd; Raul Adarme, Criterion Catalysts & Technologies; Ward Koester, Westhollow Technology Center

This paper reviews the successful application of Criterion/Zeolyst’s catalyst technology an dShell Global Solutions reactor internals at the Deer Park Refining Ltd. Hydrocracker, which has expanded their operating window.

“Hydrocracking Technology Innovations for Seasonal and Economic Flexibility”

AM-10-144 ~ Roger Lawrence, UOP LLC; David Myers, UOP LLC; Jill Meister, UOP LLC; Hemant Gala, UOP LLC; Patrick Sajbel, UOP LLC; Todd Kruse, UOP LLC

“Impact of Greenhouse Gas Legislation on Hydrogen Plant Design and Operation”

AM-10-143 ~ Dennis Vauk, Air Liquide Large Industries US LP

In this paper we will address hydrogen plant design and operation in CO₂ constrained environment. Discussion will include CO₂ emission reduction, hydrogen plant design with carbon capture hydrogen plant availability, and improved hydrogen plant efficiency.

“Additional Hydrogen Production by Heat Exchange Steam Reforming”

AM-10-141 ~ Jack Carstensen, Haldor Topsoe A/S

During the past 20 years, Haldor Topsøe have developed a number of steam reforming technologies that can be implemented for additional new hydrogen plant capacity, as well as an add-on to an existing hydrogen plant to provide additional hydrogen. These technologies are based on heat exchange steam reforming and are characterized by efficient heat transfer, resulting in feed and fuels savings of up to 20%, compared to a traditional box type hydrogen plant

“Oxygen Enhanced Reforming: A Low Capital Cost Retrofit Solution to Debottleneck H₂ Plant Production Capacity

AM-10-142 ~ Gregory Panuccio, Praxair

Stricter environmental emissions regulations and increased processing of severe crude oil fractions is causing hydrogen demand to grow across the refining industry. Costs associated with new H₂ plant construction have been escalating, so refiners are increasingly looking for low capital cost retrofit solutions that can expand H₂ production capacity at their existing facilities. In this presentation,

Praxair's patented oxygen enhanced reforming (OER) technology will be discussed which can expand SMR production capacity at a low capital investment.

GASOLINE PROCESSES

"Advances in Naphtha Processing for Reformulated Fuels Production"

AM-10-148 ~ Joseph Ross, Axens North America; Delphine Largeteau, Axens North America; P Y Le-Goff, Axens SA, France; John Cook, Axens North America

The gasoline pool has undergone significant changes in recent years due to Reformulated Fuels regulations and changing feedstocks. This paper will focus on integrated solutions for naphtha processing to address octane, benzene and RVP issues. Examples of benzene control strategies and new CCR reforming catalyst development for increased liquid yield and hydrogen production will be presented. Results from commercial applications will be provided to demonstrate the effectiveness of the technologies.

"A Proven Cost Effective Light Gasoline Isomerization Option"

AM-10-149 ~ Joe Gentry, GTC Technology

"Gasoline Benzene Reduction through ExxonMobil Research and Engineering Company's Reformate Alkylation Catalytic Technology: BenzOUTTM"

AM-10-147 ~ Michael Clark, ExxonMobil; El-Mekki El-Malki, ExxonMobil

"Advances in Alkylation Technology"

AM-10-146 ~ Daniel Aiken, UOP LLC; Dan Sioui, UOP LLC; Keith Couch, UOP LLC

"Conversion of HF alkylation to Sulfuric Acid"

AM-10-150 ~ Todd Vogt, CDTECH; Dr. Will Cross, CDTECH; Chris Kapraun, P.E., CDTECH

This paper discusses the results of an engineering study conducted by CDTECH to evaluate the **conversion** of an existing **hydrofluoric acid alkylation** unit to **sulfuric acid alkylation**. This study compares the major equipment utilized for HF alkylation and highlights required modifications as well as the addition of new equipment to convert to CDTECH's sulfuric acid alkylation process.

DISTILLATE HYDROPROCESSING

"Changing Distillate Supply Patterns for U.S. Refiners"

AM-10-151 ~ Alfred Luaces, Purvin & Gertz, Inc.

This presentation examines the upcoming heating oil specification changes in the Northeast US and other global trends that are likely to affect US Refiners. Increasingly stringent sulfur specifications for heating oil could spur some investments as well as increase competitive pressure on less sophisticated refineries. Development of export markets for diesel could continue to provide a viable options for many refiners.

“ULSD Catalyst Stability: Making the Cycle Length”

AM-10-152 ~ Kimberly Fortelka, BP

The focus of this paper is the importance, relevance, and limitations of pilot plant testing of ULSD catalyst stability in an accelerated deactivation protocol. We have developed a repeatable and reproducible protocol for rapid evaluation of catalyst stability that enables BP to make relative rankings of catalyst stabilities amongst competitive commercial catalysts. This paper presents both the protocol, and the results of a repeatability and reproducibility study done jointly between BP and Axens.

“Increase Your Hydrocracker’s Robustness to Handle Challenging Feeds and Operations”

AM-10-155 ~ Louis Burns, Albemarle Corporation; Steve Mayo, Albemarle Corporation; Mark de Boer, Albemarle Corporation

In this paper we review new developments in hydrocracking pre-treatment catalyst technology. Commercial experience and lab data on several catalysts will be discussed.

Impact of Processing Heavy Coker Gas Oils in Hydrocracking Units

AM-10-154 ~ Harjeet Viridi, Chevron Lummus Global; Gary Sieli, Chevron Lummus Global

This paper will provide insights to process coker gasoils in hydrocrackers – how difficult feeds, including heavy coker gasoils (HCGO) pose significant challenges for hydroprocessing units. Challenged with maximizing liquid yields, recent designs of cokers yield a HCGO with a very high boiling (>565 C) range, which have a significant impact on the design of hydrocrackers.

“Ultrasound assisted Oxidative Desulfurization”

AM-10-153 ~ Florian J. Schattenmann, SulphCo Inc; S. William Hoy IV, SulphCo Inc; David Ramage, SulphCo Inc

2ND GENERATION BIOFUELS

“Algae’s Potential as a Major Fuel Producer”

AM-10-156 ~ Bruce Burke Nexant, Inc; Ron Cascone, Nexant, Inc.

This presentation will cover the elements: How Algae Works, Technology Scan and Potential Winners, Fuel and Chemical Products from Algae, Regulatory Compliance – does algae-based fuel meet RFS Requirements? Timing for Commercialization, Economics and Integration with Refining, and Overall Conclusions.

“Turning Over a New Leaf in Renewable Diesel Hydrotreating”

AM-10-158 ~ Rasmus Egeberg, Haldor Topsoe A/S Lyngby, DENMARK; Niels H Egebjerg, Haldor Topsoe A/S Lyngby; Stefan Nyström, Preem AB, Gothenburg, Sweden

By revamping a hydrotreater, Preem AB will be able to co-process up to 30% raw tall diesel and produce a renewable diesel meeting all EN 590 specifications. This paper will show how the challenges of hydrotreating renewable organic material can be mitigated through Haldor Topsoe new process technology based on a series of specialized catalysts that are developed from fundamental studies of reaction chemistry.

“Advances in Pyrolysis Technology Enable 2nd Generation Feedstock Applications for Renewable Power, Heat and Transport Fuels”

AM-10-160 ~ Mark Reno, Envergent TECHNOLOGIES; Monique Streff, Envergent TECHNOLOGIES; Geoff Hopkins, Envergent TECHNOLOGIES;

“Using Isobutanol and its Hydrocarbon Derivatives to Provide Solutions “

AM-10-157 ~ Glenn Johnston, Gevo, Inc.

Non-FAME Biodiesel

AM-10-159 ~ Chad Wocken, Energy & Environmental Research Center; Ted Aulich, UND EERC; Paul Pansgrau, UND EERC

Hydrotreatment of renewable oils can yield naphtha, jet and diesel fuels and blendstock that are functionally indistinguishable from their petroleum-derived counterparts. This presentation will describe fuel chemistry-based technologies and strategies for optimal integration of renewable with refining operations.

RESID CONVERSION TECHNOLOGIES

“Integrating Industry s Best Practice Technology into a New Coke Drum Facility”

AM-10-162 ~ Jeffrey Lewellen, Frontier Oil, El Dorado Refining Company

This presentation describes safety innovations utilized in construction of a new cokedrum facility, compares the significant improvements in operator safety to the pre-revamp equipment, and discusses operational experiences of this system from startup through the first year of operation.

“Mitigation of Delayed Coker Heater Fouling by Applying C2 s MISTTM Technology to the Internal Diameter of Delayed Coker Heater Tubes”

AM-10-161 ~ Roger Pelham, C3 International; Morgan Spears, C3 International; Dr. Mikhal Pozvonkov, C3 International

“Demystifying Vacuum Tower Entrainment”

AM-10-164 ~ Celso Pajaro, Sulzer Chemtech USA, Inc.; Mario Roza, Sulzer Chemtech USA, Inc.

“Slurry Phase Residue Hydrocracking - a Superior Technology to Maximise Liquid Yield and Conversion from Residue & Extra Heavy Oil”

AM-10-163 ~ Martin Rupp, BP Oil Marketing GmbH; Richard Spencer, BP International, UK; Bruce Cook, BP Products

This paper present the first exposure to some of the uprated process features of the VCC residue hydrocracking process. VCC was originally developed and demonstrated by VEBA Oel in Germany. Bp became owner of this technology with the 2002 purchase of Veba Oel. The process was reengineered and is now offered for licensing through a cooperation with KBR.

“Refining Solutions to meet North American Emissions Control Area and MARPOL Annex VI Marine Fuel Regulations”

AM-10-165 ~ Dan Gillis, UOP LLC;

HYDROTREATING CATALYSIS

“Crossing frontiers in the performance and economic return of ULSD units”

AM-10-170 ~ Kasper Vogt, Albemarle Corporation; Bob Leliveld, Albemarle Corporation; Steve Mayo, Albemarle Corporation

Optimal catalyst selection and catalyst configuration for ULSD units is determined from multiple drivers, but economic analysis favors fill cost in relation to projected returns. Research work by Albemarle has resulted in novel developments which embody considerable activity credits that can be exploited for economic returns in terms of longer cycle length, increased LCO intake and processing higher nitrogen feeds. In our R&D work we found that striking the right balance in the catalyst formulation between the different types of active sites (hydrogenolysis, hydrogeneration) is crucial to achieving the optimum balance of activity and stability. Unsurprisingly, no single catalyst formulation is able to deliver optimum performance across the wide variety of feeds and process conditions used in ULSD service. By necessity, a series of catalysts, each having its optimal application window, are able to deliver the best balance of superior activity and stable operation. Even within the ULSD unit itself, process conditions vary and, by building on the concept of reaction zones, combinations of catalysts may be applied to further optimize the performance or fill cost of a specific ULSD unit. The overall design should be shown which illustrate the application of these new catalyst formulations to achieve the proper balance between fill cost, performance and economic returns.

Unlocking the Potential of the ULSD Unit: CENTERA is the Key

AM-10-169 ~ Sal Torrisi, Criterion Catalysts & Technologies

Modern Gasoil Hydroprocessing

AM-10-168 ~ Antoine Fournier, Axens North America

“New Resid FCC Catalyst Technology for maximum distillates yield demonstrated in Big West Oil’s Salt Lake City Refinery”

AM-10-171 ~ Martin Kraus, BASF Catalyst LLC;

“Optimizing & Troubleshooting the FCC Regenerator for Reduced Emissions”

AM-10-173 ~ Ray Fletcher, Intercat; Martin Evans, Intercat

This paper presents several techniques for optimizing and troubleshooting the FCC Regenerator for reduced emissions. Multiple examples are provided to indicate how these techniques have been applied in operating units. Attention will also be paid to the selective application of additive technology to further assist in the reduction of FCC Flue Gas Stack Emissions.

Commercialization of GO-ULTRA: Optimization of Kinetic Model, and Review of FCCU Trials

AM-10-175 ~ Bruce Adkins, Albemarle Corporation

Albermarle has introduces a new line of FCC catalysts for VGO units, called GO-ULTRATM. The recognition of GO-ULTRA’s superior performance is spreading. As a result, this priduct is enjoying a blazingly fast market acceptance. In this paper, the impressive performance attributes of GO-ULTRA: low coke make, high gasoline yields, and excellent bottoms conversion – are folowed from the lab to the FCCU.

“Technologies for Improved Refinery Gas Utilization”

AM-10-178 ~ Jeffrey Morrow, Praxair; Ray Drnevich, Praxair; Vasilis Papavassiliou, Praxair; Gregory Panouccio, Praxair; Ram Watwe, Praxair; Ramona Dragomir, Praxair

Recent refinery trends are resulting in ‘fuel long’ refineries which seek to export energy in the form of refinery fuel gas to ‘balance’ the refinery or are looking for other ways to extract value from the refinery fuel gas system. In this work we will discuss potential solutions including PSA H₂ recovery systems, liquids and/or olefins recovery and a new patented refinery gas processor technology based on a short contact time catalyst that can reliably process any refinery gas – even those with high olefin, high C₂₊ and high sulfur content and convert them in SMR suitable feed.