

LPG

Gasoline

Reformer

Jet Fuel
(Kerosene)

Diesel Fuel

LPG

Gasoline

Cracking
UnitAlkylation
UnitJet Fuel
Diesel Fuel

Lubricant

Coker

Heavy Fuel

Asphalt

illation
umn

WE'RE SAVING A
SEAT FOR YOU!

2016 AFPM MEETINGS



AFPM

Annual Meeting
March 13-15, San Francisco, CA

International Petrochemical Conference
March 20-22, Dallas, TX

Security Conference
April 11-13, Houston, TX

Labor Relations/
Human Resources Conference
April 14-15, Houston, TX

National Occupational &
Process Safety Conference
May 17-18, San Antonio, TX

Reliability & Maintenance Conference
May 24-27, San Antonio, TX

Cat Cracker Seminar
August 23-24, Houston, TX

Environmental Conference
TBA

Q&A and Technology Forum
September 26-28, Baltimore, MD

International Lubricants &
Waxes Conference
November 10-11, Houston, TX

2016 | **AFPM**

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Driving Success in a Changing Market

In 2014 the Q&A and Technology Forum focused on both developing and supporting the next generation of technology leaders within the industry and the importance of leadership in driving profitability. The Q&A program continued to focus on safe operations, optimized plant production, equipment reliability and workforce efficiency and specifically addressed the critical need for industry leadership and professional development for the next generation to drive profitability.

The primary goal of the 2015 Q&A and Technology Forum is twofold. First, we are again focusing on the development and support of the next generation of technical leaders within the industry and, second, how to achieve success in a rapidly changing market. In addition to the outstanding technical information that occurs at the meeting, attendees will learn and engage in the forum and in turn provide benefit to their organizations through the knowledge exchange and the development of professional networks. We are providing more opportunities to interact with presenters, panelists, supplier organizations, industry experts, and peers to assist in fueling the growth and abilities of attendees. Each of the Q&A forums will include questions on driving success and a special complementary Fostering Profitability session will be held to provide a more focused look at driving success in our rapidly changing industry market. In addition, for the second year in a row, we will hold a Developing Leaders Town Hall meeting as a peer-to-peer practice sharing and networking event.

The Q&A and Technology Forum program has four major components to give attendees the industry's most comprehensive meeting on refinery operations and process technology. The program includes a table top exhibition which will showcase catalyst, chemical and technology providers, engineering companies, licensors and other industry suppliers in one convenient location. In addition, the Q&A sessions will have

panels of industry experts from refining companies and technology providers who will respond to questions (pages 22-26) and engage attendees in a discussion of today's tough issues. This year, 6 Principles & Practices (P&P) sessions will focus on practical issues, the fundamentals of good operations, the elimination of persistent problems, profitability and developing leaders. The P&P sessions will be ideal for operations superintendents, process engineers, future leaders and others who can benefit from a training session that complements the Q&A sessions.

This conference has had cybersecurity presentations in the past, but this year an entire day will be devoted to cybersecurity. Cybersecurity Day presentations and panel discussions will illustrate the importance of cybersecurity in today's refining and petrochemical industries. You don't have to be an IT or SCADA expert to attend these sessions.

The Plant Automation sessions this year will focus on big data in the industry. More than just a technological issue, big data affects all aspects of supply chain management in a refinery. There will also be presentations on emerging solutions in areas such as optimizing diesel hydrotreater feed content and distillation blending in the industry.

In keeping with the spirit of the presidential debates, there will be a series of "Vendor Debates" on Wednesday. Vendors will describe how they would address an issue or problem. Audience participation is encouraged!

As a registered attendee, you will be able to attend any of the Q&A, P&P, Plant Automation, or Cybersecurity sessions, as well as the luncheons and reception in the exhibit hall. You will have more program choices and be able to structure your own 'individual' program from the diverse elements available in the different sessions.

SCHEDULE OF EVENTS

Sunday, October 4, 2015

3:00 pm – 6:30 pm	Registration – Badge Pick-up	Preservation Hall Foyer
5:30 pm – 6:30 pm	Q&A Kick-off Networking Event	Riverview – 41st Floor

Monday, October 5, 2015

7:00 am – 6:30 pm	Registration	Preservation Hall Foyer
8:00 am – 8:55 am	<ul style="list-style-type: none">• Presentation of the Lifetime Service Awards• Keynote Address	Bissonet
9:00 am – 12:00 pm	<ul style="list-style-type: none">• Gasoline Processes Q&A• Developing Leaders Town Hall Meeting Principles & Practices	Bissonet La Galleries 1-2
9:00 am – 10:00 am	Cybersecurity Day: Featured Speaker	La Galleries 4-5
10:00 am – 10:15 am	Coffee Break	Bissonet Prefunction/ La Galleries Prefunction
10:15 am – 11:00 am	Cybersecurity Day: Cybersecurity Panel	La Galleries 4-5
11:00 am – 12:00 pm	Cybersecurity Day: Cybersecurity Defenses in Refining/ Petrochemicals in 2015	La Galleries 4-5
12:00 pm – 2:00 pm	Lunch in Exhibit Hall	Acadia
2:00 pm – 5:15 pm	<ul style="list-style-type: none">• Hydroprocessing Q&A• Gasoline Processes Principles & Practices	Bissonet La Galleries 1-2
2:00 pm – 3:30 pm	Cybersecurity Day: Industrial Control Systems Cybersecurity	La Galleries 4-5
3:30 pm – 3:45 pm	Refreshment Break	Bissonet Prefunction/ La Galleries Prefunction
3:45 pm – 4:45 pm	Cybersecurity Day: Cybersecurity & Procurement	La Galleries 4-5
5:15 pm – 6:30 pm	Reception in Exhibit Hall	Acadia

SCHEDULE OF EVENTS

Tuesday, October 6, 2015

7:00 am – 5:00 pm	Registration	Preservation Hall Foyer
8:00 am – 10:00 am	<ul style="list-style-type: none">• Crude/Vacuum Distillation & Coking Q&A• Plant Automation: Alarm Management Q&A and DCS Asset Lifecycle Q&A	Bissonet La Galleries 4-5
8:00 am – 12:00 pm	Hydroprocessing Principles & Practices	La Galleries 1-2
10:00 am – 10:15 am	Coffee Break	Bissonet Prefunction/ La Galleries Prefunction
10:15 am – 10:45 am	Plant Automation: Advanced Process Control Q&A	La Galleries 4-5
10:15 am – 12:00 pm	<ul style="list-style-type: none">• Plant Automation: Big Data Part I• Crude/Vacuum Distillation & Coking Q&A Discussion	La Galleries 4-5 Bissonet
12:00 pm – 2:00 pm	Lunch in Exhibit Hall	Acadia
2:00 pm – 5:15 pm	<ul style="list-style-type: none">• FCC Q&A• Crude/Vacuum Distillation & Coking Principles & Practices	Bissonet La Galleries 1-2
2:00 pm – 3:30 pm	Plant Automation: Big Data Part II	La Galleries 4-5
3:30 pm – 3:45 pm	Refreshment Break	Bissonet Prefunction/ La Galleries Prefunction
3:45 pm – 5:15 pm	Plant Automation: Emerging Solutions	La Galleries 4-5

Wednesday, October 7, 2015

7:30 am – 10:00 am	Registration	Preservation Hall Foyer
8:00 am – 11:15 am	<ul style="list-style-type: none">• FCC Principles & Practices• Fostering Profitability Principles & Practices	La Galleries 1-2 La Galleries 3
8:00 am – 11:15 am	Plant Automation: Vendor Debate Part I	La Galleries 5
9:30 am – 9:45 am	Coffee Break	La Galleries Prefunction
9:45 am – 11:15 am	Plant Automation: Vendor Debate Part II	La Galleries 5

Q&A SESSIONS

Industry experts from refining companies and other technology specialists will respond to the selected questions and then engage the attendees in a discussion of the relevant issues. The questions for the Q&A panel are organized into four Operations & Technology sessions:

- Gasoline processes (profitability; safety; best practices; alkylation; sulfuric acid regen; reforming; mercaptan; ISOM and chloride removal);
- Hydroprocessing (profitability; safety; feed poisons and fouling; catalysts; hydrocracking process; hydrogen start-up; optimization; reliability; mechanical integrity; Tier 3; and ULSD);
- Crude/vacuum distillation and coking (profitability; safety; coker; crude distillation; coker preheat units; WWTP; desalting; vacuum distillation);
- Fluid catalytic cracking (FCC) (profitability; safety; environmental process; catalysts; reliability).

In the course of responding, the panelists will cover:

- Success – fostering leadership to drive profitability in this changing market.
- Safety and reliability – Protecting our co-workers, neighbors, and facilities is our first priority.
- Operations – Common (and uncommon) operational problems and how to solve them.
- Technology – Identifying the best technology and applying it appropriately to improve the bottom line.

THE QUESTIONS

Each of these topics is important to the industry and the panel-led discussion will provide valuable guidance in driving profitability, operating safely, solving technical and operational challenges, improving the bottom line, and attaining excellence.

Others in the industry have confronted and solved the problems that you face right now. The AFPM Q&A and Technology Forum is the best place to find those people, whether panelists, technology vendors or other attendees.

PRINCIPLES & PRACTICES SESSIONS

The Principles & Practices (P&P) sessions are discussion-oriented sessions, primarily designed for those whose overall operating experience is less than 15 years. The P&P sessions will complement the information exchange that occurs in the Q&A sessions. Each of the sessions will address the fundamentals of good operation, profitability and the foundational principles for the technologies that are commonly employed. These sessions will usually have short presentations followed by a time where attendees can ask further questions or present their own particular problems and benefit from the collective experience of the other attendees. The six P&P sessions address:

- Young leaders town hall topics: business etiquette; getting the most out of mentoring; displaying your leadership; communication to leaders;
- Gasoline processes topics such as: instrumentation challenges in a sulfuric acid alkylation unit; naphtha hydrotreater pressure drop control; money and molecules: an engineer's guide to refinery economics; NHT and reforming;
- Hydroprocessing topics such as: process safety awareness for hydroprocessing furnaces; optimization of hydrocracker (yields & conversion); preventing and addressing pressure drop issues in a hydroprocessing unit; key performance indicators for monitoring hydroprocessing units;
- Crude/vacuum distillation and coking topics such as: coker ejectors operations; coker heaters 101; best practices for caustic injection; operations with higher TAN feedstocks;
- Fluid catalytic cracking (FCC) topics such as: slurry system operation and reliability; future of FCC catalysts; FCC electrostatic precipitator safety;
- Fostering profitability: a view of current Americas market conditions; model based optimization; optimization tips, tricks, and techniques from an interactive functional industry panel.

CYBERSECURITY DAY

In the past, cybersecurity presentations have fallen under the Plant Automation & Decision Support program. This year, there will be an entire day devoted to cybersecurity. There will be nine separate presentations and a panel discussion all focused on this paramount issue in the refining and petrochemical industries. These are not "Cyber 101" nor does one need to be a process control engineer to understand what is being presented. Cybersecurity subject matter experts who are familiar with the refining and petrochemical industries will be represented.

Cybersecurity Day will have four separate sessions:

- Featured Speaker
- IT/OT Panel Discussion
- Industrial Controls Systems Cybersecurity
- Cybersecurity & Procurement

PLANT AUTOMATION & DECISION SUPPORT

The Plant Automation & Decision Support sessions are for attendees whose responsibilities overlap between process engineering, unit operations, process control, and planning. This year the program will add Plant Automation Q&A sessions answering questions on alarm management, decision control systems and advanced process control. A moderated forum featuring vendors speaking on various topics and answering questions from the audience will round out and conclude the program.

The Plant Automation and Decision Support program will have four separate sessions:

- Plant Automation Q&A
- Big Data
- Emerging Solutions
- Vendor Debate

Conference registrants will be able to attend any session of their choosing in the Cybersecurity Day, Plant Automation or Q&A and Technology programs.

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GENERAL SESSION

8:00 am – 8:55 am
Bissonet

Keynote



Ramon Loureiro
Senior Partner
KBC Advanced Technologies

**2015 Peter G. Andrews
Lifetime Service Award**

The Peter G. Andrews Lifetime Service Award honors members who have made long lasting contributions to the value and vitality of the AFPM Q&A meeting. Recipients of this award have served as Q&A panelists, Screening or Plant Automation & Decision Support committee members, and, most importantly, active participants in the dialogue that is fundamental to the meeting. During their careers, the recipients have demonstrated a willingness to pass on their knowledge and expertise to future generations in this forum, have made significant contributions to the meeting's quality, and have emphasized the importance of sharing knowledge in making continuous improvements.



Jeff Hazle
Senior Director, Refining Technology
American Fuel & Petrochemical
Manufacturers

**CYBERSECURITY DAY:
FEATURED SPEAKER**

9:00 am – 10:00 am
La Galleries 4-5

Presider:
Jason Bottjen, Valero Energy Corporation



Dr. Jerald Dawkins
CEO and Founder
True Digital Security, Inc.

**Moving Beyond IT/OT Security to
a Strategic Security Program**

Developing a culture of security within an organization is one of the greatest challenges for information security professionals. Effectively managing cross-organizational security change from Operational Technology (OT) to Information Technology (IT) and garnering executive buy-in are critical to establishing this culture and implementing a successful security program. This presentation will take a strategic look at implementing a sound security program that focuses on the business' operations while engaging industry standards and best practices, such as the Cyber Security Framework (CSF) or the Cybersecurity Capability Maturity Model (C2M2) as guides.

**PRINCIPLES & PRACTICES:
DEVELOPING LEADERS TOWN HALL**

9:00 am – 12:00 pm
La Galleries 1-2

Presiders:
Steve Perry, Motiva Enterprises
Sam Lordo, NALCO Champion

Business Etiquette

Topic 1: Displaying your leadership as an individual contributor
Topic 2: Communication to leaders
Topic 3: Getting the most of mentoring

**CYBERSECURITY DAY:
PANEL DISCUSSION**

10:15 am – 11:00 am
La Galleries 4-5

Presider:
Blake Larsen, Western Refining Company

**Emerging Roles in IT/OT
Panel Discussion**

Panelists:
Dan Scali, Mandiant, A FireEye Company
Marc Westbrock, Koch Industries

The panel will discuss the silo mentality between ICS and IT personnel in a plant environment and why today it is more important than ever to do away with the “silo mentalities” and work together.

**CYBERSECURITY DAY:
CYBERSECURITY DEFENSES IN
REFINING/PETROCHEMICALS IN 2015**

11:00 am – 12:00 pm
La Galleries 4-5

Presider:
Marc Westbrock, Koch Industries

**Cyberthreats and Subcontractors ...
Could You Be The Next “Target”?**

Paul Plauche, Turner Industries

Cyber threat actors usually leverage the weak points in an IT security program. In Target stores' breach, it was one of their subcontractors. With the proliferation of subcontractors in the industrial space, this presentation will address things to consider for IT security and intellectual property protection.

**Analysis of the Capabilities of
Cybersecurity Defenses**

Michael Firstenberg, Waterfall Security Solutions

The threats to our critical infrastructure continue to evolve. As new cyberattacks are created and discovered, it is incumbent upon us to evaluate the capabilities of our defensive strategies and technologies against these new offensives.

This session will analyze standard Information Security defense technologies including Anti-Virus, Firewalls, Intrusion Detection and Prevention Systems, Encryption, Patch Management, Vulnerability Scanning, along with directive measures such as Risk Management and Security Awareness Training for their effectiveness in preventing cyberattacks on critical infrastructure.

GASOLINE PROCESSES Q&A

9:00 am – 12:00 pm
Bissonet

Charles Burton, Motiva Enterprises
Daryl Dunham, UOP LLC, A Honeywell Company
Emerson Fry, Delek Refining
Ginger Keady, Technip USA
Scott Lambie, KBC Advanced Technologies
Kiran Patel, Valero Energy Corporation

See page 22 for questions.

**CYBERSECURITY DAY:
INDUSTRIAL CONTROL SYSTEMS CYBERSECURITY**

2:00 pm – 3:30 pm
La Galleries 4-5

Presider:
Greg Rogers, Enterprise Products
Operating

**Cybersecurity Monitoring of an
Industrial Control System**

Terry Crain, Tesoro Corporation

This presentation will discuss Security Event Information Management (SIEM) devices that help with the gathering of events from computers, firewalls, and network devices, yet, require configuration to obtain useful information about cybersecurity issues.

**Energy Sector Collaborative
Opportunities in ICS
Incident Management**

Frederick Hintermister, North American
Electric Reliability Corporation (NERC)

The opportunity space for improved energy sector ICS incident response includes people, process, and technology dimensions. This conversation provides a focused look at where some of the most attainable and sustainable areas are to deliver better critical infrastructure resilience value and make a strong impact for the sector.

**Configuring and Maintaining an
ICS Security Architecture**

Terry Crain, Tesoro Corporation

The intent of this presentation is to provide an overview of the design, successes, and monitoring of our Standard Security Architecture (SSA) at Tesoro Refining. Information security architecture is a critically growing skill set that we need in Industrial Control Systems. ICS networks need to allow communication between a defined set of devices that are rarely together on the same network. This includes communications with a business network which has many more computers, people, communications, the Internet, and subsequently, potential malware.

The basics of a defense-in-depth zoned network design begins with creating network zones of devices with similar objectives and functionality, as well as using network firewalls to limit the possible risky communications between zones and devices. The zoned and layered design allows added protection depths which help prevent critical ICS attached devices from being exposed directly to more vulnerable devices.

**PRINCIPLES & PRACTICES:
GASOLINE PROCESSES**

2:00 pm – 5:15 pm
La Galleries 1-2

Presiders:
Wayne Woodard, Valero Energy
Corporation
Shane Presley, DuPont
CleanTechnologies

**Instrumentation Challenges in a
Sulfuric Acid Alkylation Unit**

Liza Pacheco and Brian Bouzarth, Dupont
CleanTechnologies

**Naphtha Hydrotreater
Pressure Drop Control**

Wayne Woodard, Valero Energy
Corporation

**Money and Molecules: An Engineer's
Guide to Refinery Economics**

Michael Newton, Roddey Engineering

**NHT and Reforming Feed/Effluent
Exchanger Fouling and Maintenance**

Steve Philoon and Russell Wiltse, UOP LLC,
A Honeywell Company

HYDROPROCESSING Q&A

2:00 pm – 5:15 pm
Bissonet

Paul Epstein, Flint Hills Resources
Scott McArthur, Phillips 66
Andrew Moreland, Valero Energy
Corporation
Michael Pederson, UOP LLC,
A Honeywell Company
Paul Temme, Albemarle Corporation
Samuel Wright, Hunt Refining Company

See page 23 for questions.

**CYBERSECURITY DAY:
CYBERSECURITY & PROCUREMENT**

3:45 pm – 4:45 pm

La Galleries 4-5

Presider:

Jason Bottjen, Valero Energy Corporation

**How to Use ISA Standards
in Procurement**

Paul Forney, Schneider Electric

In the digital world it is not possible to perform a visual inspection of an industrial control system to determine the quality attribute of "security". Hidden behind the fancy graphics and industrial trappings there may be lurking opportunities for mal-actors to insert their own brand of control over your facility, take what they want and leave the rest for their friends in the underworld to devour. Today's asset owners must arm themselves with new tools that fit with the problems of today and those yet undiscovered of tomorrow. ISA in collaboration with IEC has been in the process of working with industry experts to create the set of industrial cyber security standards, ISA/IEC 62443 as a basis for the measurement of this quality attribute. How will you as the owner of the cyber risk in your business, use this standard to evaluate your vendors? ISASecure independently assesses that a product complies with industry standards like 62443. It builds trust between suppliers and asset owners, who may not have the skills to do these types of assessments themselves. Let ISA Security Compliance Institute show you how.

The Myth of "Secure Out of the Box"

*Neil Peterson, Emerson Process
Management*

Customers expect vendors to supply their Industrial Control Systems as "secure out of the box". Industrial Control Systems have a significant number of built-in security capabilities plus additional services that can be implemented and configured based on security requirements of the asset owner. This presentation will provide insight into what is required from each party to get a system properly secured based on the risk environment of the system.

**PLANT AUTOMATION & DECISION SUPPORT:
ALARM MANAGEMENT Q&A PANEL**

8:00 am – 9:00 am
La Galleries 4-5

Stephen Apple,
Schneider Electric



Missy Jones, Senior Alarm Management Specialist, Honeywell Process Solutions has 16 years of industry experience and has been with the Honeywell organization for the past 13 years. Missy has been an Alarm Management consultant for 10 years advising clients on all aspects of the Alarm Management Lifecycle. Her experience includes the development of alarm philosophy documents, alarm analyses, alarm system assessments, alarm rationalization facilitation, as well as alarm management product implementations on multiple control systems across varied industries. Missy is a member of ISA 18.2.



Robert Zapata, PC&A Staff Engineer, Tesoro Corporation is located in Tesoro's San Antonio office with responsibility for process automation, cyber security strategies, standards development, and strategic/tactical control systems planning. His experience includes alarm management, advanced process control, project management, controls systems migration, blender operation improvements, and applied human factors in control rooms. He has actively participated in the Abnormal Situation Management Consortium, ISA technical committees, and Controls Systems Advisory boards.



**PRINCIPLES & PRACTICES:
HYDROPROCESSING**

8:00 am – 12:00 pm
La Galleries 1-2

Presiders:

Brandon Haldeman, Motiva Enterprises
Christine Cavan, UOP LLC, A Honeywell Company

**Process Safety Awareness for
Hydroprocessing Furnaces**

Kevin Proops, Koch Industries

**Improving Hydrocracking Unit
Profitability (Yields and Conversion)**

Dave Vannauker, Haldor Topsoe
John Bigus, Monroe Energy

**Preventing and Addressing Pressure
Drop Issues in a Hydroprocessing Unit**

Austin Schneider, Crystaphase
Jeff Johns, Chevron U.S.A.

**Key Performance Indicators for
Monitoring Hydroprocessing Units**

Amit Kelkar, Criterion Catalysts & Technologies
Brent Lamberg, Valero Energy Corporation

**CRUDE / VACUUM DISTILLATION &
COKING Q&A**

8:00 am – 12:00 pm
Bissonet

Bruce Allred, Suncor Energy
Michael Braden, Nalco Energy Services
Brent Mayo, CITGO Petroleum Corporation
Maureen Price, Fluor Corporation
Ed Watts, LyondellBasell Industries
John Weber, Marathon Petroleum Corporation

See page 24 for questions.

**PLANT AUTOMATION & DECISION SUPPORT:
DCS ASSET LIFECYCLE Q&A PANEL**

9:00 am – 10:00 am
La Galleries 4-5

Marcelo Carugo,
Director, Global
Refining Industry,
Emerson Process
Management
leads the Refining
Programs across
Emerson. Marcelo



has over 25 years of experience within the refining, and petrochemical industry in the Americas and Europe. His experience involves process plants, terminal facilities, and operations. His expertise covers automation systems, advanced control and optimization projects, consulting, and design. Specialties include economic justification, off-sites, blending, and logistics. He holds an Electronic Engineering degree from University of Buenos Aires, and a Masters degree from NUFFIC, The Netherlands.

Lonnie Faucheux
is a Solutions
Consultant in the
Refining Marketing
group of Honeywell
Process Solutions.
He is based in Baton



Rouge, Louisiana
and has over 30 years of experience in process control and information technology. He focuses primarily on automation solutions for refining and petrochemical customers. Prior to his Honeywell career, Lonnie performed various roles in process control and information technology for a major refining company.

Randy Conley,
DCS SIS APC
Implementation
Supervisor, Total
Petrochemicals
& Refining, USA,
Inc. He is currently
architect for PAR's



multiyear refinery-wide DCS and SIS migration projects. He also supervises the advanced control group. Randy's previous employers include Profimatics and CITGO's Lake Charles Louisiana refinery. While at Profimatics, Randy led four refinery-wide pneumatic-to-DCS migration studies at locations in the US, Italy and Germany. While at CITGO, Randy was involved in one of the first commercial pneumatic-to-TDC2000 refinery conversions. Randy is a Registered Professional Engineer (PE) and Project Management Professional (PMP). He holds BS and MS degrees in Chemical Engineering from Lamar University.

**PLANT AUTOMATION & DECISION SUPPORT:
ADVANCED PROCESS CONTROL (APC) Q&A PANEL**

10:15 am – 10:45 am
La Galleries 4-5

Charles Johnston,
Lead Process
Controls Engineer,
Tesoro Corporation,
has been active
in the Advanced
Process Control
area since 1979.



He has held positions at Dynamic Matrix Control Corporation, Aspen Technology, Inc., Control Consulting Inc., Mustang Engineering, and most recently at Tesoro Refining and Marketing Company, LLC. He has held various technical and management positions. He has been involved in all areas of advanced process control, including research, product development, project implementation, business development, and project/program management. In the last thirty years, he has applied model based control to all major refinery units, olefins plants, and specialty chemicals plants. He received an MS degree from Rice University in Mathematical Sciences.

Robert Stott,
Advanced Controls
Engineer, Phillips
66 has worked in
the energy industry
for 34 years, first
as a Process



Design Engineer,
then for the last 27 years in Advanced Process Controls, both as a consultant in a central technology group, as well as a controls engineer in several plants. He has implemented or consulted on APC applications in 7 refineries and on a variety of refining process units, including cokers, FCC's, fractionators, blending applications and HDS units. Robert also has significant experience in alarm rationalization.

Sriram Ramaganesan,
Director, APC
Technology,
Valero Energy
Corporation started
his professional
career with Aspen
Technology, Inc. In



the 12 years he spent with AspenTech, he implemented Advanced Process Control (APC) solutions on most of the key units in a typical refinery in addition to several petrochemical processes. In the 7+ years with Valero Energy Corporation, he has been managing the APC and RTO initiative across the organization and has been responsible for significant value creation through APC/RTO adoption and functions as the subject matter expert in the field of APC. Sriram holds a Ph.D. in Chemical Engineering from the University of Louisville.

**PLANT AUTOMATION & DECISION SUPPORT:
Q&A QUESTIONS***

Alarm Management

1. What are the recommended best practices after completing alarm rationalization to make sure that alarm rates and alarm flood conditions are kept under control? Who is doing dynamic alarming and what are the critical factors for success?
2. Some companies connect critical alarms directly to the DCS display where it gets mixed in with all other unit alarms. These alarms can be overlooked during unit upsets when they get mingled with the rest of the alarms. Some companies bring these alarms back into a separate system which demands they be viewed and acknowledged separately. Which way is the industry heading concerning this issue?
3. Which department stewards your alarm management system? What are the steward's skill sets (e.g. former operator, etc.)? Is this a part or full time position? Do you allow Operators to change alarm limits, then periodically enforce the Master Alarm Data Base, or require an MOC for all alarm changes?
4. What are the pros and cons of handling alarm rationalization internally vs. using contractors? Which, if any tasks, could you outsource for developing an Alarm Management program?
5. What, in your opinion, are the best ways to sustain Alarm Management?

DCS Asset Lifecycle

6. When is the best time in a lifecycle to begin a DCS upgrade? When new features are available? To be completed before vendor ends parts supply? Continue as long as parts can be sourced from third-parties?
7. Do you keep part of your system hardware/software current (e.g. the HMI) while continuing to use other elements that are mature/ obsolete?
8. What drivers impact DCS lifecycle updates: DCS operating system release, MS Windows version, application release (blending, plant historian), hardware obsolescence, graphics software release, APC platform, other? What cycle do you use? What is the update length? How do you justify the upgrade with other competing capital projects?

**Designing Control Systems to
Meet Industry Standards**

9. What is the ratio of console stations to operators) How was this ratio determined? How is the screen configured (single, dual, quad)? What is the typical screen size being utilized?

HMI/Human Factors

10. What are the best procedures to determine equitable console operator work load? Number of loops, process complexity, number of alarms, interruptions (phone calls, etc.)? Do you compare your results to industry data?

**DCS and Advanced Process Control
(APC) Benefit to Overall Organization**

11. Other than KPIs such as Service Factor or Technical, what other KPIs should be used to evaluate APC performance? Are there any economic indicators? Are these based on post-audit results or on other factors? How is it reported?
12. How can a site best involve stakeholders in promoting and maintaining APC? For example: stakeholder training, lunch-and-learn, quarterly controller meetings (per application), console operator qualification (new and requalification), aligning planning and APC target transfer.

* Answers will not be in the Q&A Answer Book

**PLANT AUTOMATION &
DECISION SUPPORT: BIG DATA PART I**

10:45 am – 11:45 am
La Galleries 4-5

Presider:
Chandra Gannavarapu, LyondellBasell
Industries

**Alarm Management for Non-DOT
Regulated Facilities**
Eric Johnson, The Williams Company

This presentation will discuss the benefits of alarm management and how to use it as a best practice for non-regulated facilities.

**Plant Realtime Integrated
Decision Execution**
Zamel Sulaim, Saudi Aramco

This presentation will discuss an innovative solution for Plant Realtime Integrated Decision Execution (PRIDE) for refinery and petrochemical industries to address the deficiencies in plant decision making by improving the reliability, accuracy and timeliness of decisions to be made by the users; and by increasing availability, utilization and revenues, decreasing utility and fuel costs, and improving the efficiency of task execution to ensure fast execution, compliance with standards and timely response to upsets.

**PLANT AUTOMATION & DECISION SUPPORT:
BIG DATA PART II**

2:00 pm – 3:30 pm
La Galleries 4-5

Presider:
Michael Barham, Tesoro Corporation

**Integrating the Supply Chain at
Sadara Chemical Company**
James Steiner, Sadara Chemical
Company

The competitive landscape continues to evolve for refinery and petrochemical companies, as they face tighter profit margins and advancements in engineering and technology. Companies must explore opportunities to improve work processes and system solutions. KBR received such a challenge on a greenfield project to integrate the systems and solutions across the manufacturing chain through automating data exchanges, optimization, and streamlining activities. This presentation describes the integration methodology used to "glue" the applications together and will provide general information on the supply chain solutions and benefits.

**Making Sense and Cents
from Plant Data**
Doug White, Emerson Process
Management

How can the value of refinery data be maximized? Extensive developments in the area of predictive analytics have greatly improved the potential quality and accuracy of future plant behavior, including potential production and supply chain alternatives, early detection of potential equipment problems, and product quality issues. In this presentation, actual case studies will be used to illustrate the impact of these new tools on refinery productivity and margins.

**Improving Credit Capture of
Modern Predictive Control by
Strengthening its Link to Real-time
Optimization using Synergizer**
Ivan Max Fahrenkopf and William Snow,
ExxonMobil Research and
Engineering

Model Predictive Control (MPC) and Real-Time Optimization (RTO) are expected to work in concert to continuously drive a process toward economic optimality. Linear MPC is designed using empirical, linear, dynamic models that allow for efficient solution of the optimal control problem. MPC is typically implemented in two steps every minute: first a linear program (LP) is solved to find the steady-state targets; then the dynamic move plan is found to optimally approach those targets. The linear program step limits the scope of the MPC to push against constraints rather than toward a true economic objective. In this presentation, Synergizer, which is a new method to link RTO and MPC, is discussed.

**PRINCIPLES & PRACTICES: CRUDE/
VACUUM DISTILLATION & COKING**

2:00 pm – 5:15 pm
La Galleries 1-2

Presiders:

Chris McDowell, Tesoro Corporation
Jim Trigg, GE Water & Process
Technologies

Coker Ejectors Operation

Sim Romero, KBC Advanced
Technologies

Coker Heaters 101

James Doherty, LyondellBasell Industries

Best Practices for Caustic Injection

Wole Olowu, Athlon Solutions

**Operations with Higher
TAN Feedstocks**

Dr. Collin Cross, GE Water & Process
Technologies

FCC Q&A

2:00 pm – 5:15 pm
Bissonet

Bart DeGraaf, Johnson Matthey
Todd Foshee, Shell Global Solutions
Nik Larsen, Marathon Petroleum
Corporation
Mark Reynolds, Phillips 66
Rich Russeff, CVR Energy
Sanjiv Singh, Indian Oil Corporation

See page 25 for questions.

**PLANT AUTOMATION & DECISION SUPPORT:
EMERGING SOLUTIONS**

3:45 pm – 5:15 pm
La Galleries 4-5

Presider:

Randy Conley, Total Petrochemicals &
Refining USA

**Optimizing Diesel Hydrotreater Feed
Content and ULSD Quality While
Respecting Feed Header Hydraulics**

Rahul Admuthé, Applied Manufacturing
Technologies

How does a refinery, manufacturing diesel-finished product without a blender, ensure that the ultra-low sulfur product remains on-specification, still with optimizing a variety of gasoil-like streams being fed to that process unit? This presentation discusses the diesel hydrotreater technical challenges at the Total Port Arthur refinery, and shows the control and optimization solution deployed during the 2013-2015 period. Specific aspects of the projects are described in this presentation, including dynamic modeling of the hydraulic constraints in the feed header, control of ultra-low sulfur specification at the reactor section, and optimization of jet back-blending with maintaining multiple diesel properties on specification.

**Petrobras' Distillation Blending and
Cutpoint Temperature Optimization
in Scheduling Operations**

Brenno Menezes, Technological
Research Institute of São Paulo State

The proposed technique uses monotonic interpolation to blend and cut distillation temperatures and evaporations for petroleum fuel's experimental ASTM collected in the field to allow the distillation curve itself to be adjusted by optimizing its initial (IBP) and final boiling (FBP) points known as cutpoints integrating both optimization of blending distillation curves of streams together with shifting cutpoints of one or more of

the stream's IBP and/or FBP in order to manipulate distillation curves in an either offline or online environment.

**Evaluating Novel Approaches
to LTO Processing**

Mel Larson, KBC Advanced
Technologies

This presentation explores alternate methods of adding light tight oil (LTO) to the refinery process but not in a typical or conventional manner. We will discuss adding or feeding LTO to specific units – not starting with the crude unit but by-passing the crude and vacuum processing units, where some of the compatibility issues reside.

**PLANT AUTOMATION:
VENDOR DEBATE**

8:00 am – 11:15 pm
La Galleries 5

Moderator:
Michael Wroe, Enterprise Products
Operating

**Big Data, Enterprise Intelligence,
and the IoT – Implications,
Opportunities, & Challenges**

There is not a day that goes by that one does not hear about “Big Data”, “Enterprise Intelligence”, “The Industrial Internet”, and the “Internet of Things (IoT)”, “Hadoop enabled analytics”. Terms and buzzwords abound as vendors try to differentiate themselves from the competition. The end result is confusion, a search for practical applications, and dilution of a focused strategy and tactical plan for leverage to drive business value.

This panel session will provide leading industry thought leaders the opportunity to summarize their perspectives, offerings, and ideas on the implications, opportunities, and challenges for the PADS stakeholders.

**The Convergence of IT/OT –
Implications, Opportunities,
and Challenges**

Technology continues to evolve and blur the traditional distinction between Information Technology (IT) and Operational Technology (OT) with resulting implications, opportunities, and challenges for the PADS stakeholders. Traditional organizational models and associated roles and responsibilities segregated the OT to the process control network and the IT to the business network. Is this the most efficient and effective structure? What are the opportunities, challenges, and best practices regarding IT/OT convergence to optimize the number of parameters from data/cyber security, knowledge management, decision making, collaboration, and skills development? These and other areas will be explored by our panel of industry thought leaders.

**Best Practices and Perspectives on
Leveraging Technology for Knowledge
Management, Collaboration, &
Managing the Great Crew Change**

The Plant Automation and Decision Support community continues to be challenged by the “great crew change” and the loss of knowledge, experience and wisdom. This panel session will provide vendor perspectives on what they see with the ability to leverage technology such as cloud enabled outsourcing, capturing and codifying knowledge, and enhancing collaboration both within a company and the extended supply chain. Topics such as: the importance of data normalization and quality assurance, capturing and managing meta-data, and “fingertip” information in context will be covered.

**PRINCIPLES & PRACTICES:
FOSTERING PROFITABILITY**

8:00 am – 11:15 pm
La Galleries 3

Presiders:
David Gates, Motiva Enterprises
Robert Ohmes, KBC Advanced
Technologies

**A View of Current Americas
Market Conditions**

Terry Higgins, Higgins Independent

Model-Based Optimization

Chad Jones, Motiva Enterprises
Eric Piazza, Valero Energy Corporation

**Optimization Tips, Tricks, and
Techniques from an Interactive**

Functional Industry Panel

Michael Scott Green, KP Engineering
Sara Hoffman, Motiva Enterprises
Roger Pelham, Pelham Consulting
James Kleiss, Valero Energy Corporation

**PRINCIPLES & PRACTICES:
FCC**

8:00 am – 11:15 pm
La Galleries 1-2

Presider:
Kim Goff, Shell Global Solutions
Darrell Rainer, Albemarle Corporation

FCCU Electrostatic Precipitator Safety

D. Alan Stahl and *Peter A. D. Stahl*,
CSI Engineering

Future of FCC Catalyst

Ann Benoit, Grace Catalysts
Technologies
Blige Yilmaz, BASF Corporation
Ken Bruno, Albemarle Corporation
Bart de Graaf, Johnson Matthey

Slurry System Operation and Reliability

Luis Bougrat, UOP LLC, A Honeywell
Company

Q&A PANELISTS

Bruce Allred is Manager of Production Engineering for Suncor's refinery in Commerce City, Colorado. He manages several process engineers who are responsible for the monitoring, troubleshooting and optimization of daily operations at the refinery. Throughout his 25-year career, Bruce has held leadership roles in operations management, capital project process engineering (large and small), economics and planning, environmental compliance, and numerous special assignments. He has experience at a mid-west refinery, upstream, midstream and pipeline, as well as the current refinery. Bruce holds a BS degree from Brigham Young University and an MBA from Oklahoma State University, and is a registered Professional Engineer in the State of Colorado.



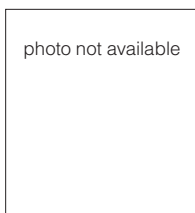
Michael Braden is a Senior Research Scientist for Downstream-Refinery Process at Nalco Champion. His research includes developing new demulsifier chemistries specializing in desalting; removal of heavy metals in crude oil; and, studying asphaltene stabilization in blending crudes. Other areas of expertise are wastewater treatment, focusing on oily wastewater and remediation of slop oils. Michael provides chemical selection for desalters as well as technical support for problematic emulsion issues. Michael joined Nalco in 1986 in the upstream area (Visco), moved to wastewater treatment research in 1990, and began his research in refinery applications in 2004. Michael holds a PhD in physical-organic chemistry from Wayne State University, Detroit, MI.



Charles Burton, Motiva Enterprises



Bart de Graaf is FCC R&D Director for Johnson Matthey. Prior to joining the former Intercat business in Savannah, he joined Johnson Matthey in the UK working on bio feedstock conversion processes. Previously he worked in FCC R&D and technical services for Albemarle Catalysts. Bart holds a MSc in chemical engineering and a PhD in heterogeneous catalysis and chemical processes.



Daryl Dunham is a Service Fellow for UOP in the Alkylation Technical Services group. He has 40 years' experience in the petroleum refining industry. His current responsibilities include customer support, customer training, project support, and refining industry liaison for HF alkylation. Daryl holds a degree from Iowa State University.



Paul Epstein is a Senior Process Engineer Lead for Flint Hills Resources, Pine Bend Refinery in St. Paul, Minnesota. He is responsible for oversight of project process engineering in the crude, coker, light end, and utility areas. Previously, he was a project process engineer in the light end and utility areas, with a focus on hydrogen. Paul holds a BSChE from the University of Notre Dame and a MSChE in Chemical Engineering from the State University of New York at Buffalo.



Todd Foshee is a Senior Technologist in the FCC licensing and design group at Shell Global Solutions in Houston, Texas (STCH). He is part of a team that is responsible for the process design on FCC projects for Shell and third party customers. He is also responsible for the technical support of the cat cracker at Shell's Buenos Aires refinery (SCAPSA). Todd holds BSChE and MSChE degrees with over 20 years of experience in the hydrocarbon processing industry.



Emerson Fry is a Process Engineer for Delek US Inc. at the Tyler, TX refinery. He is responsible for technical support at the refinery's FCC and sulfuric acid alkylation units. He also has experience on the diesel and FCC gasoline hydrotreating units and cryogenic recovery unit. Emerson holds a BSChE from Brigham Young University and has 6 years of experience in the refining industry.



Q&A PANELISTS

Ginger Keady is Manager, Process Engineering for Technip USA, Houston, TX. She has a total of 30 years of process engineering experience: 13 years in technology and business development, 12 years in process design and 5 years in plant operations. Ginger has worked as a technology consultant on multiple grassroots refineries, interfacing with clients and FEED contractors, evaluating and managing licensor packages for naphtha and diesel hydrotreating, reforming and isomerization. Her recent project experience included coordinating licensed units for a RFCC complex in UAE for the production of propylene, FCC gasoline and alkylate.



She has led the process design for multiple FCC recovery sections, both revamps and grassroots projects, developing a process scheme to recover olefins from catalytic cracking units that resulted in a patent award. She was involved in the innovation of a process scheme to recover low level heat from a FCC main fractionator overhead for use in the propylene recovery area, now a standard configuration for high olefins FCC.

Scott Lambie is a Senior Staff Consultant with KBC Advanced Technologies, Inc., Houston, Texas. His primary responsibilities are consulting in profit improvement initiatives in benchmarking, debottlenecking/troubleshooting and optimizing operations in naphtha processing units such as hydrotreaters, isomerization, reforming and aromatics for domestic and international clients. Prior to joining KBC, he worked as a Chief Technical Advisor in the Field Operating Services group for UOP in Des Plaines, IL. Scott also spent four years at UOP in the design group producing schedule A packages for numerous technologies. Scott holds a BSChE from the New Jersey Institute of Technology (NJIT).



Nikolas Larsen is a FCC Subject Matter Expert for Marathon Petroleum Corporation in Findlay, Ohio. As a corporate technologist he provides technical/operational expertise and support for Marathon's eight FCC units. Nik has also held a variety of other technical and supervisory positions within Marathon at different locations. Nik holds a BSChE from the University of Notre Dame.



Brent Mayo is the Process Engineering Group Leader covering the Crude, Vacuum and Delayed Coker for CITGO Petroleum. He joined CITGO in 2004 as a Process Engineer working in the sulfuric acid, amine regeneration, and sour water stripper units. He has held various positions including Operations Supervisor and Coker Process Engineer. Brent holds a BSChE from McNeese State University.



Scott McArthur is a Senior Hydroprocessing Engineer in the Refining Business Improvement department of Phillips 66, Houston, Texas. He supports all of Phillips 66's hydroprocessing units and hydrogen plants at thirteen refineries with technology improvements, best practice development, and catalyst selection. He previously worked at Phillips 66's Los Angeles refinery for fifteen years, primarily as operations engineer on many hydroprocessing units, including commissioning and startup of the plant's ULSD unit. Prior to that, Scott worked for Mobil Oil for seven years in environmental, technical services and short-range planning positions, and for the U.S. Air Force as a Project Engineer for four years after college. Scott holds a Chemical Engineering degree from the University of Arizona.



Andrew Moreland is Technology Advisor, Hydroprocessing and Hydrocracking at Valero corporate headquarters in San Antonio, TX. In this role, he provides technical support to over 60 hydrotreaters and 13 hydrocrackers in Valero refineries; including troubleshooting, catalyst selection and optimization, capital projects, best practice networks and annual hydroprocessing courses for Valero engineers. Prior to joining Valero, Andrew previously held hydroprocessing technology positions at Albemarle and ExxonMobil. Andrew holds a BS degree from Abilene Christian University and a PhD in chemistry from the University of Illinois at Urbana-Champaign and has over 15 years of experience in the refining industry.



Kiran Patel, Valero Energy Corporation

photo not available

Q&A PANELISTS

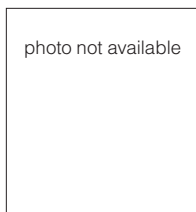
Mike Pedersen is a senior technical service specialist in the Hydroprocessing and Renewables group at UOP LLC, a Honeywell Company, where he is responsible for providing technical support for hydroprocessing operations worldwide. Prior to joining UOP in 2000, Mike gained over 20 years of hydroprocessing experience in process development, technical service and refinery operations support at the Atlantic Richfield Company. Mike holds a BSChE from the University of North Dakota and an MSChE from The Ohio State University.



Maureen Price is a Director II, Process Engineering in the Energy & Chemicals Downstream Business in Fluor Corporation's Southern California office. Maureen provides expert technical consultation for clean fuels, crude and vacuum revamps, heavy oil upgrading, and integration projects. She specializes in revamp work at all levels of front end planning as well as detailed engineering, execution, and construction. In addition to 25 years with Fluor, Maureen worked for Texaco Refining & Marketing Inc, Equilon Enterprises, and as a self employed consultant. She holds a BSc (Chemical Engineering) degree from California State University, Long Beach.



Mark Reynolds is the process engineer on the FCC unit in the Phillips 66 refinery in Billings, MT. He has 7 years of refinery experience in both the capital projects group and in the operating units. For the 3 years he has served as the FCC process engineer his responsibilities have included yields optimization, operations support, catalyst selection and utilization, catalyst additives optimization, process monitoring, project development, mentoring interns and less experienced engineers, and turnaround scope development. Previously in Billings, he was the process engineer on the alkylation, Merox, naphtha reformer, isomerization, and ULSK hydrotreater units. Prior to working in the refining business Mark worked in the corn milling and ethanol industry for 7 years where he held engineering and management positions primarily in the Midwest. He holds a BSChE from Montana State University) and holds a PE in Montana.



Sanjiv Singh, Indian Oil Corporation



Paul Temme is a Hydroprocessing Technical Supervisor for Hydroprocessing Catalyst Technical Service for Albemarle Corporation, Refining/Performance Catalyst Division in Houston, TX. He is responsible for technical and sales support, model assessment and pilot plant assessment for the company's refinery clients. He has hydroprocessing, crude/vacuum/resid processing and FCC/hydrocracking experience. Paul holds a BSChE from the University of Massachusetts and has 17 years of experience in the refining industry.



Ed Watts is a Refinery Technical Team Leader for LyondellBasell's Houston refinery. He leads a group of process engineers that provide support for the crude units, hydrotreaters and gas plants. He has 14 years of experience within the refining and chemical industry. He has provided technical support and leadership for multiple crude unit outages and a recent major revamp of one of the crude units. Earlier this year he worked as a console operator on the crude units during a labor strike. Ed holds a BSChE from Rensselaer Polytechnic Institute and a MBA from the University of Michigan.



John Weber is the Refining Planning Manager for Marathon Petroleum Corporation (MPC) in Findlay, OH. He is responsible for coordination of refinery optimization and planning efforts among the refining, supply, and marketing organizations within MPC. John holds a BSChE from the Colorado School of Mines and has 22 years of experience in the petroleum refining industry.



Samuel Wright is a Senior Process Engineer for Hunt Refining Company, located in Tuscaloosa, AL. He is responsible for a hydrocracker, a CCR Platformer, a hydrogen plant and a utilities plant. Over the past 8 years, Samuel has been responsible for providing process engineering support to a wide variety of units, such as crude units, amine plants, sulfur recovery units, hydrotreaters, and sour water strippers. Prior to that, Samuel held process design positions in Alaska and Kentucky, working in both the upstream and downstream sectors. Samuel holds a BSChE from Purdue University.



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Richard Moskowitz, Attorney, AFPM

GASOLINE PROCESSES

Safety

- 1 When preparing reformer or isomerization vessels for maintenance, do you measure the benzene content of the unit? If so, what methods and locations are monitored and what criteria are used to establish safe levels for work to begin?
- 2 What are your best practices concerning the potential for flash fires in dust collectors and vent drums in a reformer's continuous catalyst regenerator when performing maintenance?
- 3 How have you developed Integrity Operating Windows (IOWs) to follow American Petroleum Institute (API) Recommended Practice (RP) 584? How are the IOWs maintained and communicated to the operating staff?

Conference Theme

- 4 How will increased production of naphtha from light tight oil (LTOs) and Tier 3 regulations affect the economics for alkylate and reformate production? Are there other options for processing light naphtha streams?
- 5 Automobile manufacturers are considering requiring the use of higher octane fuels in order to meet a mandated increase in Corporate Average Fuel Economy (CAFE) standards. What strategies might you employ should demand for higher octane gasolines increase?
- 6 Do LTOs contain higher concentrations of nitrogen; if so, how has this higher concentration affected gasoline processing units?
- 7 Recognizing that on-stream factor is an important component of margin capture, what are common areas of improvement for each of the gasoline processing units to reduce downtime or increase turnaround interval?

EPA Regs

- 8 How will the recently announced EPA regulations on emissions impact your refinery operation and specific technologies (FCC, hydroprocessing, Coking, CDU/VDU, Reforming, etc.)?

Alkylation

- 9 Is there a limit on the amount of time that acid can remain stagnant in the reaction section of an alkylation unit? What adverse affects may occur if this limit is exceeded? What issues could arise on a restart from a stagnant-acid condition?
- 10 Where is carbonyl sulfide found in alkylation units? What effects can it have on the unit and what are the prevalent management strategies?
- 11 What operating variables lead to increases in organic fluorides in LPG product streams in a hydrofluoric (HF) acid alkylation unit? What operating variables lead to increases in organic sulfates in sulfuric acid alkylation units and where do these compounds concentrate?
- 12 What are your best practices for maintaining good reliability of pH analyzers in sulfuric acid alkylation service?
- 13 Is it a common or recommended practice for you to change out all HF alkylation unit pump seals during turnarounds? What strategies do you employ to improve pump seal life in these services?

Sulfuric Acid Regen

- 14 What do you consider when evaluating options for sulfuric acid regeneration? Comment on owned and operated facilities, on-site third party, and off-site third party operations.

Mercaptan Removal

- 15 What are your options for processing of disulfide oil from an extractive mercaptan removal unit? How will this oil affect a naphtha hydrotreater?
- 16 Do you plan to utilize a mercaptan removal unit in conjunction with a gasoline selective hydrotreater to meet Tier 3 gasoline sulfur requirements?

Reforming

- 17 What considerations should you make when contemplating changing catalyst suppliers from the original unit licenser?
- 18 Due to lower product octane requirements, has your strategy for dumping and screening fixed-bed reforming catalyst changed from the standard recommendation of three years or three in-situ regenerations?
- 19 What is the maximum recommended nitrogen content of reformer feed for continuously regenerated units? What is its impact on chloride consumption and ammonium chloride generation?
- 20 What are common causes for platinum agglomeration in the catalyst of continuously regenerated reforming units and what are common solutions to address these issues?
- 21 What is the impact on unit performance when different qualities of hydrogen are used for the reduction step in a fixed-bed reforming unit?
- 22 How frequently do you change the catalyst in reforming units? What are the appropriate economic criteria to evaluate?

23 In continuously regenerated reforming units, are there valves in cyclic service that have demonstrated superior performance compared to the originally installed valves? How can maintenance of these valves have an impact on their long-term performance and reliability?

24 During the oxidation step in the regeneration of fixed-bed catalytic reformers, how does varying the length and oxygen concentration affect the unit performance?

Isom

25 Have you detected any hydrogen chloride (HCl) slip in the stabilizer bottoms for any gasoline units (isomerization or reformer)? What are your best practices to prevent downstream unit corrosion?

26 What is your best practice for packing (material and shape) in isomerization unit off-gas caustic scrubbers?

27 What is your experience with processing benzene in C5-C6 isomerization units? Have there been any issues with higher reactor exotherms associated with benzene saturation?

Chlorides

28 What are your best practices for measuring chlorides in LPG streams? What criteria do you use to determine when to change LPG chloride treater media?

HYDROPROCESSING

Safety

29 What are the likely causes for temperature excursion events in a hydrogen plant?

30 What factors influence your decision to conduct air versus inert reactor entry for catalyst changeout? For air entry, what methods do you use to avoid stress corrosion cracking?

31 What are your current safe practices for sour water monitoring? What are your preferred analytical methods/sampling frequency used to measure NH₃/NH₄HS?

Feed Poisons and Fouling

32 What is your suggested minimum temperature required to achieve adequate metals removal in the de-metalization catalyst to protect primary treating catalyst in FCC and hydrocracker pretreaters?

33 Phosphorus-based chemicals are used to neutralize naphthenic acids. Drilling and completion fluids also can contain phosphorus, so it may be in crude oil. What are your best practices to protect active hydrotreating catalyst from phosphorus poisoning?

34 Hydroprocessing reactor pressure drop can increase due to feed particulates, corrosion byproducts and polymerization reactions. How can bed design and loading method be optimized to avoid pressure drop limiting the cycle length or throughput?

Hydrocracking Catalysts

35 What important parameters do you consider in designing a post treat bed for a hydrocracker? What are the advantages and disadvantages between Type I and Type II catalyst when used as a post treat bed in a hydrocracker?

36 What has been your experience regarding selectivity and activity when using regenerated hydrocracking catalysts versus fresh catalysts? How do results vary with catalyst type, unit objectives, and conversion targets?

37 Can you provide insight to best practices for prevention and repair as it relates to chloride stress cracking and polythionic acid stress cracking of stainless steel equipment in hydroprocessing units?

Hydrocracking Process

38 What are some strategies of your strategies to manage gas oil streams during outages of conversion units for refiners with vacuum gas oil hydrocracking and FCC units?

39 What are your concerns with processing FCC heavy cycle oil or slurry in a hydrocracker unit?

40 In terms of hydrocracking, what different definitions of conversion do you use?

41 What has been your experience regarding time required for hydrocracking operations to recover from temporary poisoning by organic nitrogen in the feed? What operational changes can be made to reduce the chance of permanent deactivation?

42 How do you manage operating flexibility to maximize profits in a changing margin environment during a hydrocracker cycle?

Hydrogen

43 Is the investment justified to convert an older hydrogen production unit from a solvent CO₂ removal system to a pressure swing adsorption (PSA) system?

44 For PSA units, what are the typical inspection techniques, frequency of inspections, and issues discovered? What are the criteria for retiring an adsorber?

Optimization

45 What is your best practices for co-processing streams in hydrotreating units?

46 What are the recent improvements in hydroprocessing units' advanced process control? What is your experience with their reliability?

Reliability/Mechanical Integrity

47 What are the mechanical integrity implications for reactor effluent air coolers (REAC) after experiencing high temperature exposure during emergency shutdowns or trips?

48 How does recycle compressor driver type (steam turbine vs. electric motor) affect compressor availability in hydroprocessing units? How reliable are variable speed drives?

Start-Up

49 What is your experience on bringing hydrocracking catalyst online without ammonia attenuation? Are there alternative methods or technologies to temper catalyst activity without adding ammonia?

50 Each hydroprocessing unit has an optimum strategy for full load catalyst replacement - oxidized vs. pre-sulfided. How does the strategy change for a partial reload (e.g. top bed skim or replacement)? Are there other situations when pre-activation is justified?

Tier 3

51 How is your company planning to meet Tier 3 gasoline regulations?

ULSD

52 What is your best method to monitor salt level in a diesel salt dryer? What are your guidelines for salt usage and capacity? What are your best practices for loading and monitoring salt dryer performance?

53 What approaches are effective for you to reduce aromatic levels in ULSD product streams?

CRUDE / VACUUM DISTILLATION & COKING

Safety

54 What are your best practices used to minimize the time needed to prepare a crude storage tank for safe entry?

55 What are your options and best practices for routing liquids in a desalter pressure relief scenario? If routed to crude fractionator, how should one avoid damage caused by water?

Desalting/WWTP

56 What strategies do you employ to purge solids from recovered oil at the waste water treatment plant to avoid recycling solids back to the crude unit?

Crude Distillation

57 Light slop oils are frequently collected and routed back to the crude unit with fresh crude. In a capacity limited crude unit, this results in backing down crude rate. What are your considerations for injecting slop/recovered oils into process units that avoid backing out crude feed?

Desalter

58 What are the desalter conditions that may require acidification? If needed, what types of acids do you use and what issues arise downstream?

WWTP

59 What issues have you seen in your waste water treatment plant caused by crudes containing biocides? If so, what parameters have you established to control these effects?

Crude Preheat

60 What is your experience with hot preheat train and heater fouling attributed to waxy crudes? What methods can be used to identify fouling that is specific to wax in crudes?

Crude Distillation

- 61 Please describe your experience with the occurrence of phosphorus and barium fouling in the distillate section of the crude tower. What steps have you taken to identify and mitigate the problem?
- 62 What are the advantages and disadvantages of pre-flash/pre-topping columns in crude units in terms of operational flexibility to process different API crudes? Please comment on overall energy efficiency and reliability (corrosion).

Vacuum Distillation

- 63 When increasing the vacuum tower cut point, what measures have you employed to mitigate the impact of chlorides in the overhead, diesel or light vacuum gas oil sections of the vacuum tower?

Vacuum Distillation/Coker

- 64 What type of facilities have you used to cool hot vacuum residue going to storage to avoid plugging problems and facilitate reprocessing?

Coker

- 65 What are acceptable make-up water streams that can be used for coke cutting that will not affect the coke quality?
- 66 Discuss operating conditions and economic drivers to produce maximum diesel from the coker.
- 67 Concerning new regulations for lower coke drum pressure prior to opening, what changes will you make?

Town Hall Discussion Breakout

- A Assay vs. Real World Constraints
- B Turnaround Strategies Crude and Coking
- C Finding the Sweet Spot
- D Experiences in New Crude Oil Contaminants

FCC

Safety

- 68 The industry continues to experience process safety incidents associated with FCC electrostatic precipitators. What are you doing to prevent these incidents?
- 69 How does your organization share operational and process safety information to foster an environment of continuous improvement?
- 70 What criteria do you follow to decide installation of remote operated isolation valves to arrest loss of containment from vessels, column bottoms, etc.? Do you recommend any safeguards to avoid spurious activation of these remote operated valves?

Environmental

- 71 With environmental regulations becoming more stringent on FCC Stack emissions what are your available options to achieve the required level of SOx and NOx emissions?
- 72 Describe your practices for minimizing flaring and flue gas emissions during startup, shutdown and malfunction operations?

Process

- 73 The FCC is LPG constrained and the refinery is octane short. What are your suggested options to increase FCC gasoline octane while minimizing any associated increase in LPG yield?
- 74 Octane may become an issue as refiners increase severity on the FCC gasoline post treatment units. What are your options available to address octane debits?
- 75 For a unit targeting low vapor pressure gasoline, which variables have the greatest impact on isopentane production?

76 What do you recommend to either prevent the formation of carbonyl sulphide or to remove it from the propylene stream? At what level does this become a concern?

77 What has been your experience with respect to FCC flue gas analyzers using tunable diode lasers or alternatives? Any specific advantages of tunable diode laser analyzers with respect to installation, operational service requirements & reliability?

78 When relying primarily on FCC feed pretreating to meet FCC gasoline sulfur specifications (current or future Tier 3), how do you manage feed pretreater outages?

Catalyst

79 Under what conditions do gasoline sulfur reduction additives and catalysts reduce sulfur in gasoline, and by how much? What is the lowest gasoline sulfur level for which the gasoline sulfur reduction products are effective? At this gasoline sulfur level, please quantify the gasoline sulfur reduction and the amount of additive/catalyst required.

80 For units that have experienced elevated losses leading to coarse inventory, what options exist to improve catalyst properties during turnaround? Describe your experience with purchasing external or classifying spent catalyst?

81 What are your best practices to address increased levels of conventional and “new” metals (V, Ni, Fe, Ca, Cu etc.) in the FCC that come from Tight Oil processing in the refinery?

82 Under what conditions is iron on FCC catalyst mobile, and how does this affect catalyst performance?

Reliability

83 What are typical and max targets for FCC unit main fractionator bottoms and wet gas scrubber water for wt.% solids? Also, what are typical for pounds per barrel of catalyst losses to each and particle size distributions?

84 Can a slurry pump run at or below 1,000 rpm? If not, what is the lowest speed to minimize pump erosion?

85 What operating condition and equipment monitoring have you been practicing to avoid sulfidation corrosion problems in main fractionator bottoms circuits? What guidelines have you established? How does sulfur type contribute to these guidelines?

86 What operating practices or technology upgrades are you using to manage coking in the reactor overhead line at the main fractionator inlet?

87 With more refiners upgrading to packing in the reactor stripper, what has been your experience with reliability? When do you consider removing packing for inspection during turnaround? How much of the packing does one spare?

88 What has been your experience with gas and/or catalyst bypassing behind monolithic refractory linings? What are the possible approaches to prevent or correct this issue?

89 Describe your approach to repair and improvement (i.e. materials, design, installation, anchors) to areas that have seen repeated refractory failures?

90 For an equipment revamp/replacement, what are the factors you consider when choosing between hot-wall and cold-wall refractory design, including advantages and disadvantages of each?

91 We are planning to purchase a new flue gas steam generator. What is your preferred configuration? What are the critical operating parameters you employ to ensure reliable operation? What is your sparing philosophy?

92 What are your top 3 causes of unit slowdowns and what is the loss in on-stream factor for each? Please provide the same information for your top 3 causes of unit shutdowns

EXHIBITION INFORMATION

EXHIBITION HOURS

Monday, October 5

Lunch / Tabletop Exhibition Open

12:00 pm – 2:00 pm

Reception / Tabletop Exhibition Open

5:15 pm – 6:30 pm

Tuesday, October 6

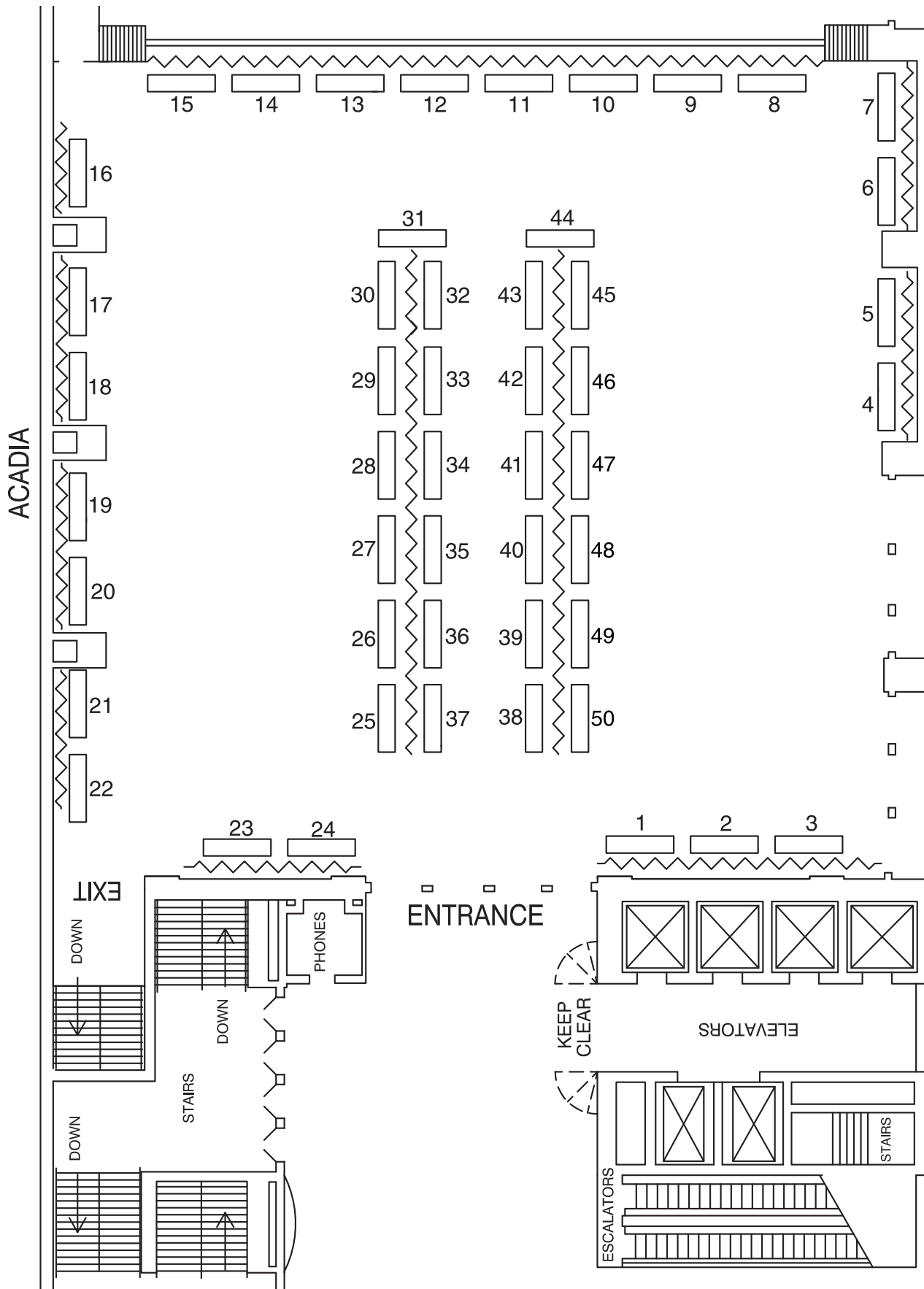
Lunch / Tabletop Exhibition Open

12:00 pm – 2:00 pm

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Advanced Refining Technologies (36)

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Refined Technologies (14)

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281-848-5150
Becky Kennedy
bkennedy@technip.com
<http://www.technip.com>
Technip Stone & Webster Process Technology provides world leading ethylene, refining, hydrogen and petrochemical technologies. Services include Technology Licensing, Process Design/Engineering, Procurement and Construction, Proprietary Equipment including Cracking Furnaces, Project and Construction Management and Feasibility Studies.

TRACERCO (23)

4106 New West Drive
Pasadena, TX 77507
281-291-7769
Andy Burleigh
andy.burleigh@tracerco.com
<http://www.tracerco.com>
Tracerco FCC Studies measure velocity, distribution and residence time of the catalyst and/or vapor phase through any part of the FCC system. Tracerco can investigate the performance of termination devices, cyclones and distribution devices. Tracerco's new InDepth™ tool measures refractory thicknesses of operating vessels, risers, and standpipes.

Unicat Catalyst (6)

1600 E. Highway 6, Suite 320

Alvin, IL 77511-2560

832-621-9804

Lewis Ludwig

Lewis.Ludwig@unicatcatalyst.com

<http://www.unicatcatalyst.com>

Hydrogen plant catalysts, absorbents,
topping materials for fixed bed reactors.

VEGA Americas, Inc. (12)

4170 Rosslyn Drive

Cincinnati, OH 45209

800-367-5383

Jack Rodgers

j.rodgers@vega.com

<http://www.vega-america.com>

VEGA offers level, pressure, and density
measurement instrumentation solutions
and support services for the refining and
petrochemical industries.

HOSPITALITY DIRECTORY

This guide is a directory of the companies who host hospitality functions at the Q&A and Technology Forum. Open hours are determined by the individual host in compliance with AFPM's policy not to conflict with regularly scheduled Association sessions and activities and to close by 1:00 am.

Company	Location and Dates	Company	Location and Dates
Advanced Refining Technologies	Studio 10 10/5, 6	DuPont Sustainable Solutions	Studio 1 10/5
Albemarle	Studio 5 10/5	Emerson Process Management	Suite ____ 10/5
Athlon Solutions	Studio 8 10/5	Grace Catalysts Technologies	Studio 10 10/5, 6
Axens North America, Inc.	Studio 3 10/5	Haldor Topsoe, Inc.	Studio 6 10/5, 6
BASF Corporation	Studio 2 10/6	Hoekstra Trading LLC	Suite ____ 10/5
CB&I	Studio 9 10/5	Johnson Matthey Process Technologies/Tracerco	Studio 4 10/4, 5, 6
Chevron Phillips Chemical Company and Reactor Resources	Studio 2 10/5	Solenis/Dorf Ketal Chemicals	Suite ____ 10/4, 5
Criterion Catalysts & Technologies	Studio 7 10/5	Technip Stone & Webster, Process Technology	Suite ____ 10/5
Dow Oil, Gas and Mining	Suite ____ 10/6	UOP LLC, A Honeywell Company	Suite ____ 10/4, 5, 6

Advanced Refining Technologies
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Columbia, MD 21044-4009
Phone: 832-554-0710
Portia.sharp@grace.com

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Athlon Solutions

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Axens North America, Inc.
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rkores@axensna.com

Baker Hughes

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BASF Corporation

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CB&I

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Chevron Phillips Chemical Company and
Reactor Resources
Dana Burns
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Criterion Catalysts & Technologies
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Dorf Ketal Chemicals

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Dow Oil, Gas and Mining
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Solenis

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