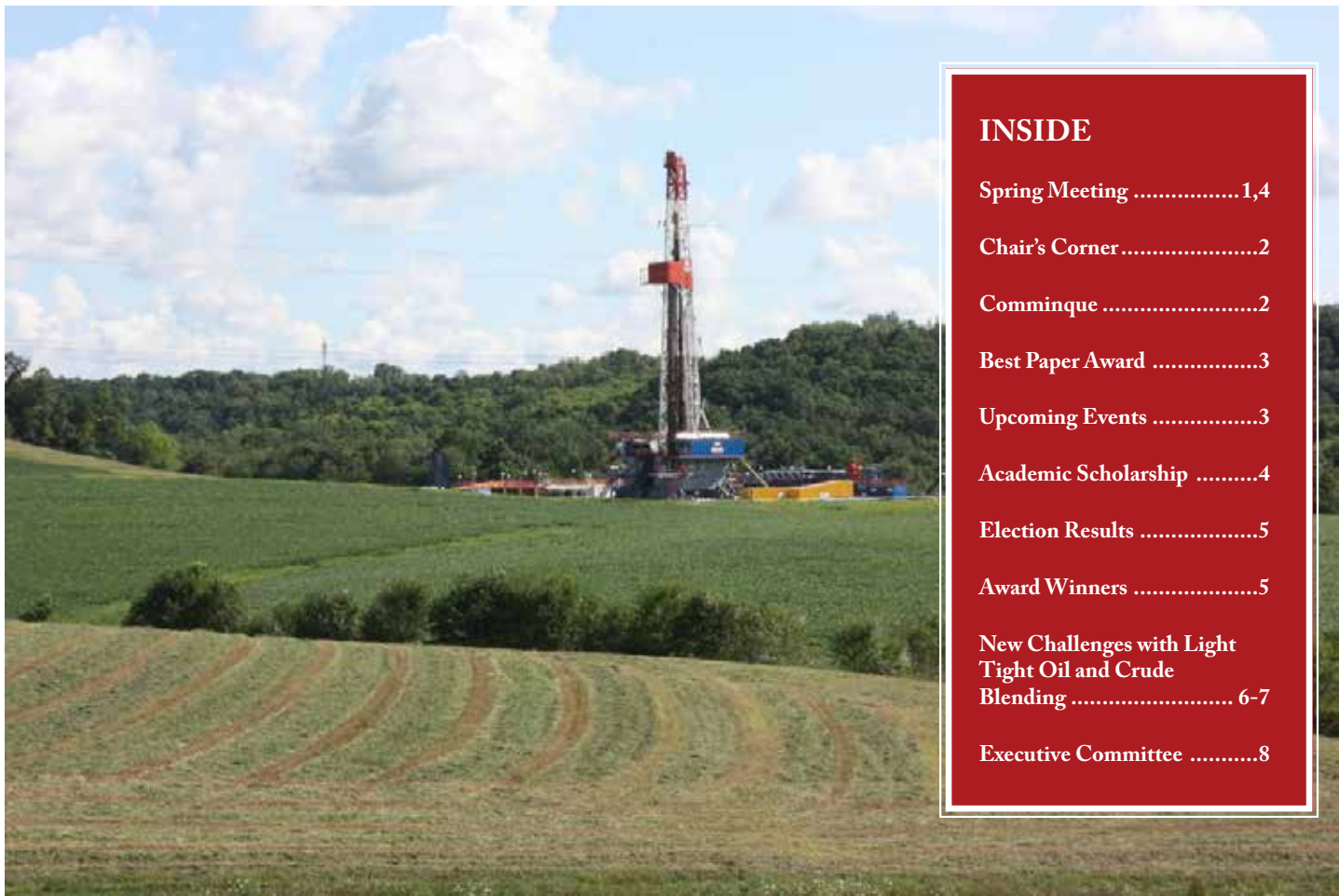


## Spring Meeting in The Big Easy

*Focus on challenges associated with rapid development and production growth of light tight oil and shale gas*



### INSIDE

Spring Meeting .....1,4

Chair's Corner .....2

Comminque .....2

Best Paper Award .....3

Upcoming Events .....3

Academic Scholarship .....4

Election Results .....5

Award Winners .....5

New Challenges with Light  
Tight Oil and Crude  
Blending ..... 6-7

Executive Committee .....8

### AIChE Spring Meeting in New Orleans



The Spring meeting is just around the corner, taking place from March 30-April 3 in New Orleans. This is the premier national event for industrial members of AIChE, and the Fuels and Petrochemicals Division is playing a key role in the programming. Our own Tim Olsen will serve as MPC, with Meagan Lewis as Co-MPC. This meeting will have a particular focus on the challenges associated with the rapid development and production growth of light tight oil and shale gas that has occurred over the last five years in North America. A virtual Topical on Shale Gas and Tight Oil (Topical 2) has been created to assist attendees looking for sessions specific to this topic. Panel sessions on Light Tight Oil and Shale Gas Rapid Growth and Development will be a highlight. *Continued on page 4*

## Chair's Corner

by Lori McDowell



It has been almost a year since I took over as chair of the Fuels & Petrochemicals Division and the year has flown by. I had a number of great plans and intentions at the start of the year, and I can only hope that the famous proverb is wrong, because despite my best intentions, I have not achieved everything I had hoped. But some things were accomplished. Since this will be my last "Chairs Corner", I would like to take a few minutes to discuss the year's accomplishments, thanks all those who helped, and welcome those who will come next, and hopefully improve on what I have started.

First-what did we do well? Our programming at the Spring meeting will be fantastic, we have new panel discussions and some great topical conferences planned. If you have not yet signed up for this meeting, I encourage

you to do so now, you won't want to miss it. We have also revamped our programming at the Annual Fall meeting, so next year we should have some topical programming of interest to industry and academia alike. We are in the process of moving our website to the AIChE platform and improving this. We have some great awards, student programs and programs for Young Professionals. We have started a marketing campaign and a membership drive that should bear fruit in the next few months. And we will be proposing a new logo soon! All of this was not done in a vacuum, but with the help of our fantastic volunteers. I would like to thank the entire F&PD Executive committee, but in particular a few people who's help has been invaluable-Tim Olesen, Steve Coleman, Rick Isherwood, Rick Kolodziej, Ian Glasgow, Dennis O'Brien, and Virginia Summer.

But there is still much more to do, and for this we must look to the next leadership

team. I want to welcome Rick Isherwood as the incoming Chair, Dennis O'Brien as First-Vice Chair, Rick Kolodziej as Second-Vice Chair, Sharon Maydak as new Communications Director and Kirtan Trivedi as Programming Chair. I am sure that they will do a fantastic job and ask they we support them as much as we can.

While I will be leaving the post of F&PD Chair, I will not be leaving AIChE or F&PD. I will retain the role of Past Chair, with responsibility for awards and next years executive committee, and I will continue to serve on committees and improve F&PD, for it's members, companies and the profession as a whole. And we still need your help. Tell your friends and colleagues about F&PD membership-a bargain at only \$10, chair a session, join a committee run for office or just send us your ideas-our division is only as strong as it's membership, so let's continue to improve!

See you in New Orleans in April!

## Communique from Communications Director

by Sharon Maydak



I am looking forward to this year and the responsibilities of the communication director. I hope to meet many of you at the Spring National

Meeting in New Orleans this year - it will be nice to start putting names with faces!

Last year was a busy and successful year for our Fuels and Petrochemicals Division. Several new initiatives were started as announced in the Flashpoint Volume 25, Issue 3. We want to thank those who served last year and we look forward to 2014 with the same spirit and commitment to the growth of our division.

### The Communication and Marketing Website Migration

Jayne Mathews and Dennis O'Brien have been working hard to complete the move

of Fuels and Petrochemical Division to the new website, expected to be implemented in the next few weeks. We should congratulate them on this effort. The new URL for the site is <http://www.aiche.org/fpd>. Once completed, we will all be able to post articles and information to this section of the website. We will be adding technical papers and passing on information as the website continues to grow and define itself.

### Innovative Programing

A tool to insure the information presented at the Annual Meeting is relevant to membership needs. The first example output is the Shale Topical Conference which will be explored during the Spring meeting in New Orleans. Please see page 1 of Flash point for details.

In coming issues of Flashpoint we will be updating the progress of last year's initiatives, which included a membership drive, and a

new look for Flashpoint as seen first in this issue. Look also for the announcing of new initiatives for 2014.

I look forward to publishing Flashpoint with the help and input of everyone in our organization. I want to offer a special thanks to Marc Berger for the new layout and new look to Flashpoint. I also want to thank Lori McDowell and the members of her team for a great 2013. Having the opportunity to continue their success is an honor and we look forward to sustaining and growing this year.

## Best Paper Presentation Award

by Kirtan Trivedi

The AIChE Spring National Meeting is planned from March 30 – April 3, 2014 in New Orleans. Topical 6 (14th Conference on Natural Gas Utilization) will host 11 sessions. Topical 7 (17th Topical on Refinery Processing) will host 21 sessions.

Fuels & Petrochemicals division selects winners for two awards during the Spring meeting, the Best F&PD Paper Award and a number of Best Presentation Awards.

The Best F&PD Paper Award is a \$250 award and a certificate. Honorable mentions will also be recognized and will receive a certificate. To be eligible for this award, the authors must have submitted a full paper by the March 14th deadline. The papers will be scored on the following criteria: - Topic Relevance and Importance, Technical and Logical Validity, Innovation, Writing Style, Accuracy, Clarity, Simplicity and Readability.

In 2013 Randy Stier (Valero) and John Miller (Emerson) won the Best Paper Award for their paper “Detecting Loss of Flame in Oil Refinery Fired Heaters Using Advanced Pressure Diagnostics.” Their paper describes recent technology collaboration between Emerson and Valero utilizing Rosemount 3051S Pressure Transmitters with Advanced Diagnostics in draft installations to monitor and give an early indication of flame instability.

The Best Presentation Awards will be given to the top presentations. Each of the winning presenters will be awarded a \$50 gift card and a certificate. A certificate will also be awarded to each co-author. To be eligible for the award, the authors must have submitted a full paper or the presentation file by the March 14th deadline. These must be approved for publication in the proceedings CD and/or F&PD's website. In addition, to the criteria for best paper award, the best presentation award will take into account the additional criteria: slide design and visual aids, minimal sales and marketing, stage presence, and topic knowledge.

F&PD kicked off this award for the first time at the Spring 2013 meeting in San Antonio. Selecting a best presentation proved very difficult for the judges.

The 7 winning presentations were:

**Optimization of An Industrial Power Plant** (Paper 23E)  
*Ravi Nath—Honeywell*

**Real-Time Optimization of a Gasoline Run-Down Header Blending Operation** (Paper 103f)  
*Shashi Mistry, Craig Manganm Jim Eshpeter, Suncor Energy and Sanjay Sharma, Honeywell*

**How to Get the Best From Your Preheat Train – an UK Refinery Based Case Study** (Paper 24d)  
*Simon Pugh, Edward Isyiyama, James Kennedy, IHS, Ian Wilson, Univ. of Cambridge, Alison Ogden-Quin and Graham Birch, Petroineos*

**Exploiting Hydrogen Plant to Improve Refinery Margins** (Paper 60c)  
*Sanjiv Ratan, Technip*

**An Affordable Non-Linear APC Technology for Distillation Columns Using First Principle Models** (Paper 76f)  
*Bert Plummers and Edwin Weetnik, IPCOS*

**Key Findings of Experimental and Theoretical Studies On Forced Mitigation System for an LNG Spill Emergency** (Paper 131a)  
*Byung Kyu Kim, Ray Mentzer and Sam Mannan, Texas A&M*

**A View of the Evolving LNG Regulations and Associated Exclusion Zones from an Industry Perspective** (Paper 131b)  
*Alfonso Ibarreta, Ryan Hart, Trey Morri-son and Harri Kytomaa, Exponent, Inc.*

**The Mitigation Conundrum: When Reducing One Hazard May Increase Another** (Paper 131d)  
*Filippo Gavelli and Scott Davis, Gexcon*

Go to our site for all award information:

<http://www.aidhe.org/community/sites/divisions/fuels-and-petrochemicals/awards>

### UPCOMING EVENTS

**AIChE 2014 Spring Meeting  
and 10th Global Congress on Process Safety**  
March 30-April 3, 2014  
Hilton, New Orleans-Riverside

**AIChE 2014 Annual Meeting**  
November 16th -21st  
Atlanta Marriott Marquis  
Hilton Atlanta

**6th AIChE Southwest Process Technology Conference**  
October 9-10th  
Moody Gardens Hotel and Conference Center



## Spring Meeting in The Big Easy *(continued from cover)*

by Mike Schultz

The spring meeting will be kicked off with a keynote address by William Banholzer, retired CTO of the Dow Chemical Company, who will talk on 'Possible vs Practical: Engineers Must Lead the Development of Practical Technologies'. F&PD will then host a welcome session with a keynote from UOP's Pete Piotrowski. F&PD will also be hosting a panel session on Infrastructure and Sustainability Issues in Shale Oil and Gas Management.

Topical 6 (14th Conference on Natural Gas Utilization) will host 11 paper sessions with recurring themes such as LNG, Gas Conversion, Gas Separation, Gasification Technologies and Gas Clean-up as well as new sessions on Technology Qualification and Development of Unconventional Oil and Gas Resources. Dr. Harri Kytömaa, Corporate Vice President at Exponent, will be the keynote speaker during the Gas Utilization Luncheon on Wednesday.

Topical 7 (17th Topical on Refinery Processing) will sponsor or co-sponsor 21 sessions, with core refining topics such as troubleshooting,

hydroprocessing, process control, plant simulation and design, and bioprocesses. This topical also features a panel session on Processing Shale Oil and Oil Sands Crudes.

The petrochemicals area will have programming with a particular emphasis on the impact shale gas has played in cheaper feedstock costs and reduced energy costs, resulting in major benefits for producing petrochemicals. This area will have four sessions with topics on aromatics and polymers, bio-petrochemicals, propylene C4 and C5 processing, and process control.

This is also the 10th Global Congress on Process Safety, celebrating the collaboration of these safety focused tracks: 16th Process Plant Safety Symposium, 29th Center for Chemical Process Safety, 3rd Process Safety Management Mentoring, and 48th Annual Loss Prevention Symposium. From its initial meeting in 2005, the Global Congress on Process Safety has grown into the world's largest gathering of process safety experts.

## The Fuels and Petrochemicals Division of AIChE Academic Scholarship

by Ian Glasgow

The Fuels and Petrochemicals (F&PD) Division of AIChE annually sponsors two \$1,000 one-time scholarship awards to exemplary high school seniors who plan on to study engineering or science in college. F&PD is committed to introducing high school students to careers in Fuels & Petrochemicals through its programs, helping to fuel the industry's need for top talent in the future. For over 5 years F&PD has sponsored these scholarships. Previous winners have attended various colleges which include Penn State, Cornell, Texas A&M, and Rice Universities.

The scholarship targets graduating high school seniors with exemplary academic records and demonstrated leadership potential. Eligible applicants must plan to attend an accredited four year university in the fall and plan to major in engineering or science. College acceptance letters and proof of registration must be presented to F&PD's scholarship panel prior to disbursement of awards.

The award is being spread by word of mouth, through AIChE, and through various college scholarship internet sites, such as:

- <http://www.scholarships.com/>
- <http://www.fastweb.com>
- <https://bigfuture.collegeboard.org>
- <http://collegenet.com>

We appreciate AIChE members help in passing along this scholarship opportunity to interested students.

The Scholarship Panel of F&PD, comprising of 4-5 members of the F&PD will review all applications and rank applicants for the award. Award will be based on academic merit, Letters of Recommendation, and creativity/clarity and merit of an essay on a current event in the fuels and petrochemicals industry.

For additional information on this scholarship, please contact Ian Glasgow at [Michael.Glasgow@mustangeng.com](mailto:Michael.Glasgow@mustangeng.com) or William Rooney at [William.Rooney@uop.com](mailto:William.Rooney@uop.com).

## 2014 F&PD Election Results

During the first of every year, the Fuels and Petrochemicals Division has elections that members can participate to elect new officers. For the elected officers, their term begins at the F&PD Awards Dinner on Monday night during the 2014 Spring Meeting in New Orleans. Congratulations on the following elected officers:

- 2nd Vice Chair, Richard Kolodziej from Mustang Engineering
- Secretary, Virginia Sommer from Fluor Corporation
- 3-Year Director, Nikki Bishop from Emerson Process Management
- 3-Year Director, Frank del Nogal from BP
- 3-Year Director, Helen Lou from Lamar University
- Kirtan Trivedi, from ExxonMobil, will be taking over as Programming Chair for 2014-2015



## 2014 F&PD Award Winners

*The Fuels and Petrochemicals Division acknowledges two award winners at the spring meeting. This year, we want to congratulate Chen-Hwa Chiu from Chevron and Steve Coleman from LyondellBasell.*



**Dr. Chen-Hwa Chiu** is the Fuels and Petrochemicals Division Award winner for his career contributions related to LNG. Dr. Chen-Hwa Chiu is a Senior Technology Advisor of Chevron Energy Technology Company since 1999. He has a Master and a Ph.D. from the University of Oklahoma, and he is a Fellow of AIChE. He is also a registered Professional Engineer at Texas and Pennsylvania. He also presented papers or served as session chair for LNG Conference or Gas Tech.

Dr. Chiu is a past Chair of AIChE Fuels and Petrochemicals Division. He has served as a session chair and organized sessions in the gas processing and LNG sessions for AIChE meetings. He has edited the AIChE Conference Proceedings.

He has taught LNG classes for Texaco, Chevron, University of Texas Petroleum Extension school, and also taught AIChE short course on gas processing. Dr. Chiu has worked for many companies before Chevron.

Dr. Chiu has received the AIChE George Lappin Service Award 2006 and the Fuels and Petrochemicals Division Service Award. Dr. Chiu co-authored the book of "LNG: Basics of Liquefied Natural Gas", published by PETEX (Petroleum Extension Service of the University of Texas) in 2007.



**Steve Coleman** is the Fuels and Petrochemicals Division Distinguished Service Award winner for his activity with the division. Steve is the current treasurer and has also held the position of secretary.

Steve has been an active member of AIChE since 1971. A graduate of Bucknell University with a BS in Chemical Engineering, Steve has over the past 40+ years held a variety of technical and supervisory positions associated primarily with the manufacture of ethylene. He currently holds the position of Senior Advisor within LyondellBasell Industries.

Steve's involvement with the Fuels and Petrochemicals division began in 1994, when he represented Equistar on F&PD's Ethylene Producers' Committee (EPC). During his 13 years on the EPC, he served as a subcommittee chair, session organizer, presenter, conference chair, committee vice chair and committee chair. Steve continues to serve as a member of the EPC's feedstock subcommittee and the NOx subgroup of the safety subcommittee. In 2004 Steve was elected a director of the Fuels and Petrochemicals Division. Following his 3 year term, he was elected secretary (2007-9) and has most recently served as the division's treasurer (2010 – present).

In his spare time, Steve enjoys reading, bowling and travel.

# New Challenges with Light Tight Oil and Crude Blending

by Tim Olsen

Opportunity crudes from shale are more readily available in North America with incentives on cost. However, these typically lighter crude oils don't come without some challenges. For starters, because they are lighter, they need to be blended with other crudes to get the right balance for best utilization of existing downstream units. In addition, having a consistent feed to the crude unit allows opportunity to optimize operation; if inconsistent blends or drastic crude switches, the plant is in reactive mode just trying to operate – not necessarily optimally. If light tight oil feeds are not blended, the lighter oil can bottleneck the crude overhead and naphtha processing units, and limit production for bottom of the barrel processing.

Some refiners are blending more than two crudes to get the right balance of feed qualities which creates unknown issues with crude incompatibilities. When crudes are incompatible, accelerated fouling occurs in the crude unit heat exchanger train due to asphaltene precipitation. Accelerated fouling can lead to additional energy costs with the crude unit fired heater, limited throughput when the fired heater becomes duty limited, or earlier shutdown for cleaning. All these negatively impact the profitability of the refinery. Traditional manual heat exchanger fouling monitoring through Excel spreadsheets does not always catch which crude blends are incompatible, thus the same condition for accelerated fouling can be repeated in the future.

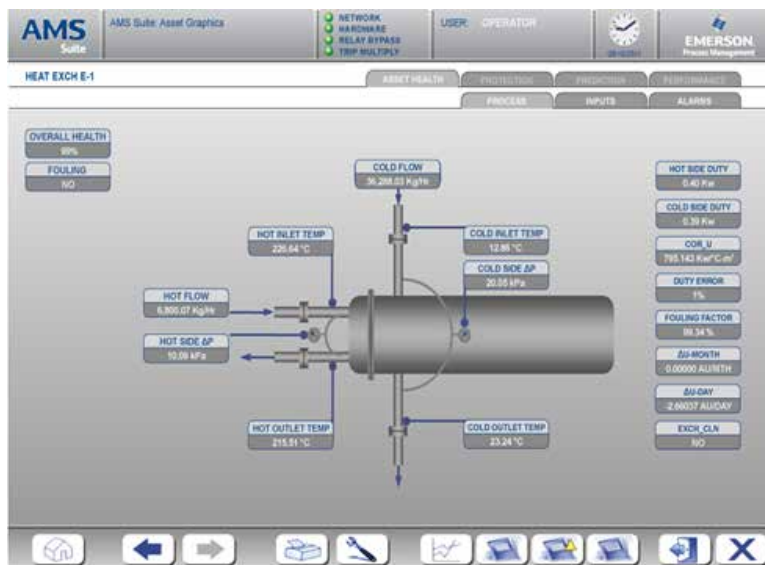
Today, refiners are taking advantage of new temperature measurements around all crude unit heat exchanger bundles along with software

applications to monitor heat exchanger fouling to better understand accelerated fouling due to crude incompatibilities, and identify which tube bundles require cleaning and when it makes economic sense to clean. Typically there are temperature measurements in and out of a group of tube bundles, but not in-between bundles. Fouling across the bundles is not linear, so determining which bundle is fouled and needs cleaning can be difficult to determine without all the process measurements like temperature, flow, and differential pressure.

One solution available is to add wireless temperature and differential pressure measurements for online process conditions throughout the crude unit heat exchanger train. Wireless technology has considerably lowered cost barriers to implementation, making it easy to implement and monitor the condition or “health” of process equipment – be it a process pump, heat exchanger, control valve, or other assets. However, having the process measurements online is just the first step. There still needs to be analysis, alerts (awareness), and finally action. The action for heat exchangers would be to identify when there is accelerated fouling, and when it makes economic sense to clean a heat exchanger bundle based on cleaning costs versus additional fuel use in the fired heater downstream. Some refiners have bypasses available to cut back on production to allow tube bundle cleaning without shutting down, but this is not typical. Most refiners will reduce throughput and wait to clean until the next scheduled turnaround unless the fouling is severe enough to warrant a shutdown for cleaning.



***Data collection alone is not sufficient for a monitoring strategy. A combination of data collection, analysis, awareness and action is necessary for a successful program***



This article has been published Hydrocarbon Processing and the AFPM Q&A daily newspaper



*New Challenges with Light Tight Oil and Crude Blending cont...*

When faced with selecting an asset management strategy, the ideal approach for increased reliability and minimal maintenance costs is an automated monitoring strategy—one that provides online indication of an asset's health. Online indication of asset health provides advanced warning and allows enough time for spare equipment to be safely brought online, eliminating process upsets, off-spec product and safety incidents that result from an unexpected trip. Advanced warning arms maintenance staff with the information they need to determine when servicing is necessary to prevent a failure, even on assets that do not have spares. An automated monitoring strategy can bring asset management where needed – crude unit process engineer, turnaround manager, reliability engineer, or maintenance.

Manual data collection in the field can be minimized. This is important for the crude unit heat exchanger train as many refiners use an infrared gun where metal is exposed (not always the right place or accurate temperature) or using a step ladder around hot heat exchangers to use a handheld thermocouple in available empty thermowells. The latter provides more accurate temperatures, but generates a higher probability of safety incident. Also, those refiners using a differential pressure survey require opening and closing available access points which may not always close properly after use – potential for leak. These manual checks are typically done if there is suspect of accelerated fouling or prior to a turnaround to determine which tube bundles should be pulled for cleaning. The better option would be to have online measurements and history, automated analysis, and automated alert for abnormal operation. Those solutions are available today with the use of added wireless process measurements and monitoring and analysis software.



## EXECUTIVE COMMITTEE

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