

## Track Summary – LDAR

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### Training Classes – February 19 – 21, 2020

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#### OOOOa LDAR

LDAR Auditing – Graham "Buzz" Harris

Surviving an LDAR Audit with Software

LDAR Training (12hr) – Beyond Basics and Underneath the Rules

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### Breakout Presentations – Thursday February 20, 2020

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Understanding Cooled vs Uncooled Optical Gas Imaging

Turnaround LDAR – Jeff Diehl – Think Environmental

Optical Gas Imaging: Examining Detection Limit and the resulting impact to Emissions

EPA AWP Update – Karen Marsh – EPA

Lunch Break in the Exhibit Hall

The Future Technology of LDAR

The Transformation of LDAR: Predictive Leak Management Software

Data Analysis and how it can Improve your LDAR Program

Enhanced LDAR Training; An Unconventional Approach to Training LDAR Technicians

Methods for Enhancing Fugitive Emissions Prevention in Chemical Process Pipelines

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### Oil and Gas Breakout Presentations – Friday February 21, 2020

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Methane Detection using Satellites

MethaneSAT 2021 Satellite Methane Detection Coming Soon

Satellite-based Hyperspectral Analysis for Emissions Detection, Integrity Monitoring and Compliance

Autonomous Mobile Methane Monitoring

Mirage HC OGI / TDLAS Multi-Sensor Aerial OOOOa Inspections

Detailed Agenda Continues on Next Page

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## LDAR – Breakout Presentations

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### Breakout Presentations Room 400 – Thursday February 20, 2020

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- **10:30 AM – 11:00 AM**

- **Understanding Cooled vs Uncooled Optical Gas Imaging – Craig O’Neill – FLIR**

- For over a decade, FLIR Systems has manufactured infrared cameras to visualize gas leaks of various kinds. These Optical Gas Imaging (OGI) cameras are developed to “see” a variety of gases including hydrocarbons, carbon dioxide, sulfur hexafluoride, refrigerants, carbon monoxide, ammonia and more. These imagers are used to mitigate emissions, increase production efficiency, ensure safe work environments and more by a variety of industries. One great advantage of OGI cameras compared to other inspection technologies is the speed in which the technology can locate leaking components while not interrupting the industrial process. Historically OGI cameras have been designed with cooled infrared detectors that offer several advantages over uncooled thermal detectors but often come with a higher cost. Advancements in the technology of uncooled detectors have allowed the OGI camera manufacturers like FLIR to design and develop lower cost OGI solutions for these industries. While these are often lower in cost, there are some limitations versus imagers with cooled detectors. This paper will explain the differences in the two detector technologies and compare advantages/disadvantages of both.

- **11:00 AM – 11:30 AM**

- **Turnaround LDAR Best Management Practices – Jeff Diehl – Think Environmental**
- Abstract Coming Soon.

- **11:30 AM – 12:00 PM**

- **Optical Gas Imaging: Examining Detection Limit and the resulting impact to Emission Inventory – Jon Morris – Providence Photonics**

- Optical Gas Imaging (OGI) has been widely used for detecting gas leaks from process equipment. However, the detection limit of an OGI camera has been an elusive performance metric and has not been systematically characterized and quantified. A substantial body of research has been performed that has shed some light on the OGI detection limits and the factors that dictate the detection limits. The OGI detection limit expressed as ppm–m can be calculated at a pixel level as a function of  $\Delta T$  (differential temperature between the gas plume and the background), the OGI camera type, and the specific gas in question. Furthermore, the OGI detection limit expressed as a minimum mass leak rate (e.g., grams per hour –denoted DLgph) can be calculated based on the  $\Delta T$  and the distance from the OGI camera to the leak location. With an OGI DLgph expressed as a function of  $\Delta T$  and distance, an OGI leak survey protocol can be established that will provide operators a flexibility of using the most suitable combination of  $\Delta T$  and distance in the field to achieve the same minimum detection limit. A numerically defined OGI detection limit will enable establishment of an emission factor for “non–detects” in a Leak Detection And Repair (LDAR) program. The contribution of the non–detects can be a significant contributor to the total fugitive emissions in an emission inventory due to the overwhelming number of components in the non–detect category. If a higher DLgph is adopted

## LDAR – Breakout Presentations

in a leak survey protocol, the emission factor for the non-detects will be higher, and vice versa. If desired, a DLgph value can be mapped to a “leak definition” in a conventional LDAR program, providing a transition from a Method 21 based LDAR program to an OGI based LDAR program for more efficient management of fugitive emissions.

- **12:00 PM – 12:30 PM**
  - **EPA AWP Update – Karen Marsh – EPA**
  - Abstract Coming Soon.
- **12:30 PM – 1:30 PM Lunch Break in the Exhibit Hall**
- **1:30 PM – 2:00 PM**
  - **The Future Technology of LDAR – Joshua Pinter – CNTRAL Inc.**
  - In this presentation we will go over the current state of LDAR technology, including both hardware and software, and showcase emerging technologies that will dramatically shape the future workflows and efficiencies of the LDAR industry. From new mobile devices that allow for far more functionality than past generations to brand new technology that is still 2 – 5 years away from reaching mainstream, such as augmented reality. This presentation is aimed to not only get people prepared for the future and how our workflows will change but also to get people excited about the future of LDAR and the advancements that are coming, including heads up displays so you can have both hands free to monitor.
- **2:00 PM – 2:30 PM**
  - **The Transformation of LDAR: Predictive Leak Management Software – Brian Whitley – Emission Monitoring Service, Inc. (EMSI)**
  - Abstract Coming Soon.
- **2:30 PM – 3:00 PM**
  - **Data Analysis and how it can Improve your LDAR Program – Derrick Mauk – Bureau Veritas**
    1. What data can be analyzed? – A discussion of all LDAR data that is collected and what can be mined.
    2. What data should be analyzed? – A discussion of what LDAR data should we be looking and paying attention to.
    3. How do you perform data analysis? – Methods of how to mine through the Hundreds of Thousands of LDAR Data points.
    4. Proactive Data Mining for Compliance. – How proactive data mining can prevent compliance issues?
    5. Data Analysis to improve productivity. – How to insure good productivity. How to prevent bad productivity.
    6. How can proactive data analysis can improve Inventory Projects? – Discussion on how performing data analysis on inventory projects can provide more accurate data."

## LDAR – Breakout Presentations

- **3:00 PM – 3:30 PM Break to Enjoy the Exhibit Hall Refreshments**
- **3:30 PM – 4:00 PM**
  - **Enhanced LDAR Training; An Unconventional Approach to Training LDAR Technicians – Todd Morrison – Insight Environmental**
  - Is your LDAR training up to date with modern technology? This presentation will detail the process of incorporating technology such as 3D modeling and virtual and augmented reality into your LDAR training.
- **4:00 PM – 4:30 PM**
  - **Opening up the opportunities for performance verification and reliability enhancement of valves. – Dave Anderson – Score Valve**
  - This paper examines the currently adopted technique of in-line testing and compares it directly to a safer, cheaper and faster reliability assurance testing method, which delivers an improved confidence limit in its reported results, making it highly attractive for immediate adoption. Two current case studies will highlight how an alternative testing method has been proven and deployed, which has opened up further reliability testing opportunities on a much larger population of critical and medium criticality process isolation valves, delivering a significant step change in reliability assurance moving forward.
- **4:30 PM – 5:00 PM**
  - **Methods for Enhancing Fugitive Emissions Prevention in Chemical Process Pipelines – Dale Rice – VSP Technologies**
  - Most fugitive emission reduction / elimination efforts in the industrial community, especially at chemical and refining facilities have been focused on component monitoring with the implementation of LDAR (Leak Detection and Repair) programs. USEPA studies have shown that the vast majority (between 80 and 90%) of fugitive emissions are associated with valve and connector leaks . While necessary, LDAR programs are, by definition, concerned with fixing leaks when they are encountered, not preventing them. Further, it could be argued that the greatest contribution to lowering fugitive emission rates from connectors and valves is through the use of consistent time-tested assembly and maintenance procedures, and the selection of the best available technology in terms of lowest emission valve packings, gaskets, torquing equipment, and other equipment. An overview of best practices for achieving lowest fugitive emission rates for bolted flange connectors and valves including a fugitive emissions model for gasketed connectors will be presented.

## LDAR – Breakout Presentations

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### Oil & Gas Fugitive Emission Monitoring, Inspection and Detection Technologies – Room 616A – Friday February 21, 2020

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- **8:00 AM – 8:30 AM**
  - David Furry, Leaks Surveys, Inc, Quadcopter Drones, Fixed Wing Drone, Helicopters, or Fixed Wing Plane?
- **8:30 AM – 9:00 AM**
  - Methane Detection using Satellites – Stephane Germain – GHGSat
- **9:00 AM – 09:30 AM**
  - MethaneSAT 2021 Satellite Methane Detection Coming Soon – Tom Ingersol – EDF
- **9:30 AM – 10:00 AM Break to Enjoy the Exhibit Hall Refreshments**
- **10:00 AM – 10:30 AM**
  - Space-based Infrastructure of Hyperspectral Sensors to provide Monitoring Services via our Spectral Intelligence Platform. – Tushar Prabhakar – Orbital Sidekick
- **10:30 AM – 11:00 AM**
  - Airborne LIDAR Pipeline Inspection Systems (Helicopter) – Tim Goolsby – Lasen
- **11:00 AM – 11:30 AM**
  - Autonomous Mobile Methane Monitoring – Brendan Smith – SeekOps
- **11:30 AM – 12:00 AM**
  - Mirage HC OGI / TDLAS Multi-Sensor Aerial OOOOa Inspections – Roy Massengale – Enrud
- **12:00 PM – 01:00 PM Break for Lunch in the Exhibit Hall**

## Track Summary – LDAR

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### Training Classes – Wednesday February 19, 2020

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- **Room 400 1:00 PM – 5:00 PM**
  - LDAR Training (12hr) – Beyond Basics and Underneath the Rules – EMSI
- **Room 408 8:00 AM – 12:00 PM**
  - LDAR Auditing – Graham "Buzz" Harris
- **Room 415 AB 8:00 AM – 12:00 PM**
  - OOOOa LDAR – Think Environmental

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### Training Classes – Friday February 21, 2020

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- **Room 400 8:00 AM – 5:00 PM**
  - LDAR Training (12hr) – Beyond Basics and Underneath the Rules – EMSI
- **Room 415A 1:00 – 5:00 PM**
  - Surviving an LDAR Audit with Software – Guideware Systems

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## Track Summary – Air Permitting

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### Training Classes – February 19 – 21, 2020

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Intermediate Air Permitting

Air Permitting for Experts

Air Permitting for Compressor Stations

Essentials of Air Permitting & Compliance for Chemical Plants

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### Breakout Presentations Thursday February 20, 2020

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A False Sense of Security – Shifts in EPA’s Implementation of PSD Capable of Accommodating Determination and The Demand Growth Exclusion

“Once in, Not Always in”

Calculating Project Increases

Recent TCEQ Permitting and Modeling Changes – Lessons Learned and Future Strategies

Air Quality Tools for the 21st Century

Photochemical Modeling for Ozone Inter–Precursor Trading

New Building Downwash Options in AERMOD

EPA NSR Reforms: How to Capitalize Now and Later

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### Oil and Gas Breakout Presentations – Friday February 21, 2020

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Upstream O&G Air Permitting 101

Project Aggregation: PSD Applicability in the Fourth Dimension

Optimizing NG Compressor Station Permitting

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## Air Permitting – Breakout Presentations

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**Thursday February 20, 2020**

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- **10:30 AM – 11:00 AM**
  - **A False Sense of Security – Shifts in EPA’s Implementation of PSD Capable of Accommodating Determination and The Demand Growth Exclusion – Everard Ashworth – Ashworth Leininger Group**
  - The 2002 NSR Reforms provided additional flexibility to exclude emissions from existing operations; however, EPA provided little guidance as to how this emissions calculus is to be performed. Come hear the insight gained by the presenter during recent experience in performing a complex and detailed PSD applicability evaluation in the context of utilizing the Demand Growth Exclusion.
  
- **11:00 AM – 11:30 AM**
  - **“Once in, Not Always in” – Nicholas Petrich – Barr Engineering**
  - The EPA issued new guidance that repealed the “once in, always in” policy, allowing reclassification of a major source of hazardous air pollutants (HAPs) to an area source. Therefore, a major source that obtains federally enforceable limits on its HAP potential-to-emit below the major source thresholds can become an area source. This presentation will provide guidance on how and why a facility can become an area source, including the benefits and challenges. A regulatory overview will be provided, including the common major source standards that would no longer apply, the potentially applicable area source requirements, and why some requirements won’t go away even after reclassification. Also, a technical review will include the critical factors for refining site-specific HAP emissions.
  
- **11:30 AM – 12:00 PM**
  - **Calculating Project Increases – Johnny Vermillion – Spirit Environmental**
  - Abstract Coming Soon.
  
- **12:00 PM – 1:00 PM Lunch Break in the Exhibit Hall**

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## Air Permitting – Breakout Presentations

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**Thursday February 20, 2020**

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- **1:00 PM – 1:30 PM**
  - **Recent TCEQ Permitting and Modeling Changes – Lessons Learned and Future Strategies – Frank Dougherty – ALL4**
  - The Texas Commission on Environmental Quality (TCEQ) has enacted impactful changes to the way it requires permitting and modeling projects to be completed and submitted. These changes, most of which are required by June 2019, include the introduction of several new air permitting and modeling spreadsheets designed to streamline the air permitting process. During this presentation, we will summarize, review lessons learned, and provide examples on how to use these new workbooks, which are intended to significantly reduce the amount of TCEQ spends reviewing applications.
  
- **1:30 PM – 2:00 PM**
  - **Air Quality Tools for the 21st Century – Robert Opiela – NaviKnow**
  - The air quality permitting process is a data-driven process. Federal permit applicability (do you trigger PSD?), netting calculations, rule applicability, emission calculations, etc. require input data. A permit application cannot be prepared or reviewed without access to the necessary information required by the rules and regulations. Finding, retrieving, and manipulating the dozens of available data sets adds days, even weeks to the processes.
  
- **2:00 PM – 2:30 PM**
  - **Photochemical Modeling for Ozone Inter-Precursor Trading – Qi Zhang – GHD**
  - In a typical ozone Nonattainment New Source Review (NNSR) project, one requirement is to offset the project emissions of ozone precursors (nitrogen oxides [NO<sub>x</sub>] or volatile organic compounds [VOCs]) with emissions reduction credits (ERCs) obtained from a source within the nonattainment area. As allowed by many state agencies, sometimes permit applicants choose to offset one ozone precursor with another precursor for various reasons, primary due to the ERCs for one precursor being unavailable or too expensive. To support this inter-precursor trading, state agencies and the United States Environmental Protection Agency (US EPA) require a photochemical grid modeling analysis to demonstrate the inter-precursor trading will not adversely affect the area's attainment demonstration.

## Air Permitting – Breakout Presentations

- **2:30 PM – 3:00 PM**
  - **New Building Downwash Options in AERMOD – Sergio Guerra – GHD Services**
  - The presentation will cover the new building downwash options included in the August 2019 version of AERMOD. The current Plume Rise Model Enhancements (PRIME) formulation in AERMOD has a number of theoretical flaws that have been documented on the treatment of downwash in AERMOD. A renewed interest and scrutiny of these downwash shortcomings fueled a parallel, yet complementary, effort led by industry and EPA. These efforts led to the new experimental Alpha options available in the new version of AERMOD. These Alpha options were developed by the PRIME2 committee and EPA’s Office of Research and Development. The current presentation will cover the new Alpha options developed along with the implications of this new process to add new science to the regulatory model.
  
- **3:00 PM – 3:30 PM Break to Enjoy the Exhibit Hall Refreshments**
  
- **3:30 PM – 4:00 PM**
  - **EPA NSR Reforms: How to Capitalize Now and Later – Kristin Gordon – ALL4**
  - This presentation will provide an overview of the most challenging issues posed by the New Source Review (NSR) construction permitting program for expansion projects. The key aspects of NSR will be summarized along with how they fit in with real world projects (and what makes them most challenging for real world projects). The discussion will then lead to the common sense regulatory and policy reforms that are needed to address these challenges. Finally, we will discuss the current status and anticipated implementation of upcoming reforms to the NSR program by Congress and U.S. EPA. This presentation could serve as an overview for those following the regulatory reform process and also as a primer to those that are attending the in depth NSR workshops.
  
- **4:00 PM – 5:00 PM Panel**

## Air Permitting – Training Classes

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### Training Classes – Wednesday February 19, 2020

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- **Room 412 8:00 AM – 12:00 PM**
  - **Liquids Fuels Terminals – Basics of Environmental Permitting and Compliance – Al Reich, Corey Mead, and Tony Shoberg, Barr Engineering**
  - This 4-hour course will provide an overview of environmental compliance and permitting requirements for liquid fuels terminals. The goal of this course is to provide environmental professionals, terminal operators or managers, and other interested parties a basic understanding of the environmental compliance programs applicable to fuels terminals.
- **Room 412 1:00 PM – 5:00 PM**
  - **Intermediate Air Permitting – Johnny Vermillion, Leah Pulin, Aaron Hebert & Robert Osborn, Spirit Environmental**
- **Room 415 1:00 PM – 5:00 PM**
  - **Oil & Gas Air Regulations – What You Need to Focus on Now – Jay Christopher & Calvin Niss, Trihydro Corporation**
  - This workshop will provide some clarity and direction about what the oil and gas sector should be doing now. While not providing formal legal guidance, the workshop will address the compliance challenges confronting upstream and midstream oil and gas companies in meeting EPA and BLM regulations, as well as some evolving issues at the State level. We will particularly focus on EPA's New Source Performance Standard (NSPS) OOOOa requirements around the implementation of a volatile organic compound (VOC) and methane leak detection and repair (LDAR) monitoring and reporting program as well as associated with the final Bureau of Land Management (BLM) venting and flaring rule (e.g., Waste Prevention) requirements. We will also provide some insights and approaches to recordkeeping and reporting approaches under these programs.

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## Air Permitting – Breakout Presentations

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### Training Classes – Friday February 21, 2020

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- **Room 412 8:00 AM – 12:00 PM**
  - **Air Permitting for Experts – Johnny Vermillion, Leah Pulin, Aaron Hebert, Robert Osborn & Scott Hyden, Spirit Environmental**
  - This course is designed to provide a forum for those who already have considerable air permitting experience an environment to interact with each other and the trainers to share experiences regarding some of the nuances of air permitting policy, regulations, and guidance. The examples provided in the class will provide a framework to explore and discuss some of the “gray areas” that can make air permitting challenging. The primary focus of the training will be federal new source review (NSR).
- **Room 410 8:00 AM – 12:00 PM**
  - **Essentials of Air Permitting & Compliance for Chemical Plants**
- **Room 412 1:00 PM – 5:00 PM**
  - **EPCRA/TRI Training – Bob LaRosa, Aarcher Inc**
  - The course covers current EPCRA applicability and reporting requirements, including multiple chemical lists, applicability thresholds, required reporting, deadlines, available reporting tools, and mandatory documentation. Practical applications of the requirements are provided for various industry sectors and for Federal agencies. Illustrative scenarios are presented on industrial and Federal agency reporting under EPCRA Section 313 to provide a clear understanding of where to focus attention and how to apply the complex guidance of the Toxic Release Inventory (TRI) requirements to actual facility operations.
- **Room 415 1:00 PM – 5:00 PM**
  - **Permitting for Compressor Stations – Joel LeBlanc – Ashworth Leininger Group**

## Track Summary – Emissions Monitoring

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### Training Classes – February 19 – 21, 2020

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Continuous Emissions Monitoring Systems (CEMS)  
Mass Spec Gas Analyzers: Operation and Maintenance  
Continuous Emissions Monitoring Systems (CEMS) For Experts  
Fenceline Monitoring Training

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### Fenceline Monitoring Breakout Presentations – Thursday February 20, 2020

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Fenceline Monitoring with OP-FTIR  
New Applications in Fenceline Monitoring  
Avoiding Under-Reporting and Over-Reporting of Fenceline Plant Emissions  
TCEQ Fenceline Monitoring: Past, Present, & Future.  
New and Emerging Fenceline Monitoring Technologies  
SPOD: Continuous VOC Monitoring for Targeted Grab Sample Acquisition  
Portable GC for Fenceline Monitoring  
Calibration Gas for Fenceline Monitoring

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### CEMS Breakout Presentations – Thursday February 20, 2020

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Live Demo: Improving Sample Probe, Chiller and Filter Performance  
Common CEMS RATA Failures and Risks  
CEMS Lessons Learned  
Reporting of Component and System IDs During Missing Data Periods  
Common CEMS Program Audit Findings  
Simplifying CEM Reporting: The Revolution in Data Acquisition & Handling  
Measuring Low Level Particulate and Eliminating Positive Bias with OTM-37  
Comprehensive CEMS Stack 102: Process Optimization

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### Oil and Gas Breakout Presentations – Friday February 21, 2020

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Methane Detection using Satellites  
MethaneSAT 2021 Satellite Methane Detection Coming Soon  
Satellite-based Hyperspectral Analysis for Emissions Detection, Integrity Monitoring and Compliance  
Large Area Fugitive Monitoring with Laser Dispersion Spectroscopy

Detailed Agenda Continues on Next Page

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## Track Agenda – Fenceline Monitoring

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### Fenceline Monitoring Breakout Room 415B Thursday February 20, 2020

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- **10:30 AM – 11:00 AM**
  - **Fenceline Monitoring with OP–FTIR – Troy Boley – Spectrum Environmental Services**
  - Spectrum's WaveRunIR–OP transmits a safe infrared beam through the air along a clear path. Gas–phase compounds are detected as they drift across the path. Systematic data validation, periodic onsite instrument challenges, and quality assurance audits ensure optimum performance and data quality. WaveRunIR–OP is a versatile and highly efficient means of air monitoring.
- **11:00 AM – 11:30 AM**
  - **New Applications in Fenceline Monitoring – Jesse Miller – CAMSCO**
  - Fenceline Monitoring via passive samplers is a robust, highly sensitive and accurate monitoring technique. While Fenceline Monitoring is best known for Method 325 (Refinery Fenceline Monitoring), this technology is now used in a wide variety of new monitoring applications. We will discuss the history, equipment used (Thermal Desorption, Sampling or Sorbent Tubes) as well as current real–world scenarios, other than refineries, utilizing Fenceline Monitoring.
- **11:30 AM – 12:00 PM**
  - **Avoiding Under–Reporting and Over–Reporting of Fenceline Plant Emissions – James Shinkle – Optical Scientific**
  - Using a point measurement wind sensor for fenceline applications will result in under or over–estimating large body wind movement from your plant. OSI's Long–baseline Optical Anemometer provides path–averaged wind data to give you an honest and accurate picture of plant emissions and can be a valuable tool in the case of an accidental release.
- **12:00 PM – 1:00 PM Lunch Break in the Exhibit Hall**
- **1:00 PM – 1:30 PM**
  - **TCEQ Fenceline Monitoring: Past, Present, & Future. – Sabine Lange – TCEQ**
  - Content Coming Soon
- **1:30 PM – 2:00 PM**
  - **A Sampling of New and Emerging Technologies – Peter Zemek – Montrose**
  - Abstract Coming Soon.
- **2:00 PM – 2:30 PM**
  - **SPOD: Continuous VOC Monitoring for Targeted Grab Sample Acquisition**
  - The SENSIT® SPOD is solar–powered fenceline monitoring system for VOCs. This low–powered, easily deployable system combines wind and VOC measurements to identify and locate emission sources in real–time. When combined with the highly configurable sample acquisition system, the SENSIT SPOD can enable targeted grab sampling using evacuated canisters or sorption tubes for later laboratory VOC analysis.
- **2:30 PM – 3:00 PM Break to Enjoy Exhibit Hall Refreshments**

## Track Agenda – Fenceline Monitoring

- **3:00 PM – 3:30 PM**
  - **Portable GC for Fenceline Monitoring – Chris Schepcoff – SGS**
  - Abstract Coming Soon.
- **3:30 PM – 4:00 PM**
  - **Calibration Gas for Fenceline Monitoring – Phil Midgett – Airgas**
  - The presentation will review the latest updates to the benzene fenceline monitoring refinery sector rule, as stated in the Approved Test Method (ATM-122), as well as practical lessons learned for refineries and consultants engaged in compliance.
- **4:00 PM – 5:00 PM**
  - **CEMS Panel**

**CEMS Detailed Track Agenda Begins Next Page**

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## Track Agenda – CEMS

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### CEMS Breakout Room 404 – Thursday February 20, 2020

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- **10:30 AM – 11:00 AM**
  - **Live Demo: Improving Sample Probe, Chiller and Filter Performance – Donny Klotz – M&C TechGroup North America, Inc.**
  - Live demonstration to teach the audience about the many ways in which various Continuous Emissions Monitoring System components can be improved, optimized and properly specified for various applications. We'll discuss sample transport and conditioning considerations associated with extractive probe configurations, gas chiller options, filtration materials and temperature controls, and help end-users identify and overcome common CEMS challenges.
- **11:00 AM – 11:30 AM**
  - **Common CEMS RATA Failures and Risks – Paula Metz – Alliance Source Testing**
  - This presentation will focus on things that may cause a CEMS RATA to fail and what can be done on the facility side and by the stack tester to reduce the potential for failures.
- **11:30 AM – 12:00 PM**
  - **CEMS Lessons Learned – Ty Smith – Cemtek Environmental**
  - CEMTEK KVB–Enertec is a System Integrator and full service organization that builds & supports continuous emissions monitoring systems (CEMS) to meet EPA 40 CFR Part 60, 64, & 75 regulatory requirements and process control monitoring systems on a variety of applications and sources including chemical, cement, glass, refinery, power, biomass, paper, and many others. In this paper we will discuss lessons learned when testing, purchasing and deploying new monitoring technologies to measure NO<sub>x</sub>, SO<sub>2</sub>, CO, HCl, NH<sub>3</sub>, H<sub>2</sub>S, HF, HCN using lasers & DOAS compared to conventional technologies ranging from Dry Extractive, Dilution, Hot Wet, and In-situ for compliance and process monitoring.
- **12:00 PM – 1:00 PM Lunch Break in the Exhibit Hall**
- **1:00 PM – 1:30 PM**
  - **Reporting of Component and System IDs During Missing Data Periods – Brian Fowler – ESC**
  - As part of EPA's ongoing efforts to improve both the quality of reported emissions data and streamline the reporting process itself, EPA has identified several issues with respect to the tracking of unit/stack operating hours and required QA. To correct these issues, the 2019 Q3 ECMPS release will include several updates to improve the accuracy of emissions evaluations, reduce the number of incorrect errors and/or messages, and result in an overall more efficient reporting process with better data quality. All new related check results will be informational messages. EPA will monitor these results and change the severity of the error messages to Critical Level 1 in the future.
- **1:30 PM – 2:00 PM**
  - **Common CEMS Program Audit Findings – VIM Technologies – Eric Wiley**

## Track Agenda – CEMS

- The main focus of the course will be to highlight issues of non-compliance and poor system performance that are frequently discovered during CEMS program audits. The presentation will also focus on best practice implementation that can assist facilities in ensuring that their CEMS programs are compliant with applicable regulatory requirements and help utilize limited resources as efficiently as possible. Real world examples of CEMS audit findings will be outlined and ways to avoid such issues will be discussed.
- **2:00 PM – 2:30 PM**
  - **Simplifying CEM Reporting: The Revolution in Data Acquisition & Handling – Brian Fowler – ESC**
  - This session will provide a quick overview of current pressures that are requiring earlier and more accurate data validation, compliance averaging and recordkeeping. Then we'll look at how a Data Acquisition and Handling Systems (DAS or DAHS) makes validated averages available immediately after acquisition for CEMS, COMS and CPMS. How does this change the flow and use of compliance data? Finally we'll dig into passages from the RSR changes to MACT CC to examine the details of how different the recordkeeping and reporting for this rule will be as we enter the first year of compliance. Whatever solution you are planning to use, this session should provide helpful insight.
- **2:30 PM – 3:00 PM Break to Enjoy Exhibit Hall Refreshments**
- **3:00 PM – 3:30 PM**
  - **Measuring Low Level Particulate and Eliminating Positive Bias with OTM-37 – Justin Sullivan – Alliance Source Testing**
  - Certain sources emit particulate matter (PM) at rates which render traditional particulate testing methods (EPA Methods 5, 201A, & 202) inadequate. Another class of sources finds positive bias in EPA method 202 measurements for condensable particulate matter (CPM) as a result of compounds present in process streams. Recently promulgated OTM-37 makes accurate measurement of particulate from these previously problematic source types possible. Larger particles are collected in PM cyclones, and smaller and condensable particulate matter are collected on a 47-mm filter. The sample gas is diluted with cool, dry air to avoid artifact formation while still allowing the measurement of CPM. OTM-37 measurement sensitivity is in micrograms, as opposed to milligram sensitivity in EPA Method 5, 201A, & 202.
- **3:30 PM – 4:00 PM**
  - **Comprehensive CEMS Stack 102: Process Optimization – Dean Kotecki – Envea**
  - Continuous monitoring instruments for bag-house filter performance control, bag leak detectors, flue gas & solid flow moisture monitoring, level detection, reagent injection control, etc. allowing the optimization of your processes: raw material & energy savings, reduction of environmental impacts.
- **4:00 PM – 5:00 PM**
  - **CEMS Panel**

## Track Agenda – Emissions Monitoring

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### Oil & Gas Fugitive Emission Monitoring, Inspection and Detection Technologies – Room 616A – Friday February 21, 2020

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- **8:00 AM – 8:30 AM**
  - David Furry, Leaks Surveys, Inc, Quadcopter Drones, Fixed Wing Drone, Helicopters, or Fixed Wing Plane?
- **8:30 AM – 9:00 AM**
  - Methane Detection using Satellites – Stephane Germain – GHGSat
- **09:00 AM – 09:30 AM**
  - MethaneSAT 2021 Satellite Methane Detection Coming Soon – Tom Ingersol – EDF
- **09:30 AM – 10:00 AM Break to Enjoy the Exhibit Hall Refreshments**
- **10:00 AM – 10:30 AM**
  - Space-based Infrastructure of Hyperspectral Sensors to provide Monitoring Services via our Spectral Intelligence Platform. – Tushar Prabhakar – Orbital Sidekick
- **10:30 AM – 11:00 AM**
  - Airborne LIDAR Pipeline Inspection Systems (Helicopter) – Tim Goolsby – Lasen
- **11:00 AM – 11:30 AM**
  - Autonomous Mobile Methane Monitoring – Brendan Smith – SeekOps
- **11:30 AM – 12:00 AM**
  - Mirage HC OGI / TDLAS Multi-Sensor Aerial OOOOa Inspections – Roy Massengale – Enrud

### Room 616B – Oil & Gas Methane Detection, Quantification and Monitoring Technologies

- **09:00 am – 09:30 am**
  - Jon Morris, Providence Photonics, Applications and Field Results for Quantitative Optical Gas Imaging
- **09:30 am – 10:00 am**
  - Chris Rella & Aaron Van Pelt, Picarro, Methane Data Collection, Gas Infrastructure, Transformational Analytics, & Actionable Results
- **10:00 am – 10:30 am**
  - Handheld TDLAS for Quick, Safe Methane Leak Detection in Difficult to reach Areas – Sensit Technologies
- **10:30 am – 11:00 am Break to Enjoy the Exhibit Hall Refreshments**
- **11:00 am – 11:30 am**
  - Mohammed Belal, Mirico, Laser Dispersion Spectroscopy – Large Area Fugitive Monitoring
- **11:30 am – 12:00 pm**
  - Peter Roos, Bridger Photonics, Gas Mapping LiDAR (GML) Methane Emission Quantification & Operational Efficiency

## Track Agenda – Emissions Monitoring Training Classes

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### Training Classes – Wednesday February 19, 2020

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- **Room 404 1:00 PM – 5:00 PM**
  - **Continuous Emissions Monitoring Systems (CEMS) Fundamentals – Tim Kuiken, M&C TechGroup, Brian Fowler, ESC, Paula Metz, Alliance Source Testing**
  - The training session will cover the fundamentals of continuous emissions monitoring systems (CEMS) from the regulatory drivers requiring CEMS, to CEMS equipment, design, control, and reporting software. The class will discuss the various types of CEMS including fully extractive cold/dry, hot/wet, dilution extractive, and in-situ as well as hardware including probes, sample line, coolers, filters, analyzers, controllers, and data acquisition and handling systems (DAHS).
- **Room 410 1:00 PM – 5:00 PM**
  - **Mass Spec Gas Analyzers: Operation and Maintenance – Extrel**
  - Industrial mass spectrometers are fast, full-composition gas analyzers used for flare gas compliance, trace contaminants in air, and fenceline monitoring. They continuously quantify hydrocarbons, sulfurs, air components, VOCs, and other chemicals in complex, dynamic samples. This course will cover all the basics of operation, maintenance and application. Come see the mass spec, learn how to calibrate and run an analysis, and perform a full PM.

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### Training Classes – Friday February 21, 2020

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- **Room 404 8:00 AM – 12:00 PM**
  - **Continuous Emissions Monitoring Systems (CEMS) For Experts – M&C TechGroup, ESC, Alliance Source Testing**
  - Description Coming Soon.
- **Room 404 1:00 – 5:00 PM**
  - **Fenceline Monitoring Training – ESC**
  - Description Coming Soon.

Register for the Conference Here: <https://bit.ly/32NoEYX>



## Track Summary – Best Practices

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### Training Classes – February 19 – 21, 2020

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**SPCC Training**

**Stormwater Training**

**Advanced Excel Skills for Environmental Professionals**

**PSM Excellence**

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### Breakout Presentations – Thursday February 20, 2020

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**MPV, PRD & MSS Best Management Practices at Refineries & Opportunities for Chemical Plants**

**Integrating Speciation Data For Chemical Plants and Refineries**

**How Do You Feel About Storing Your Emissions Data in the Cloud?**

**Boiler and Process Heater Tuning as a Best Management Practice**

**Process Burner Flames: The Good, the Bad, and The Ugly**

**Contractor Management**

**Eliminating H<sub>2</sub>S & SO<sub>2</sub> Emissions at SRU, Coker and Sulfur Pits of Refineries**

**Conforming to ASTM–D7036: Self–Declaration vs. Third–Party Accreditation**

Detailed Agenda Continues on Next Page

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## Best Practices – Breakout Presentations

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### Best Practices Breakout Room 417A – Thursday February 20, 2020

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- **10:30 AM – 11:00 AM**
  - **MPV, PRD & MSS Best Management Practices at Refineries & Opportunities for Chemical Plants – Troy Knutson – Sinclair Oil**
  - Abstract Coming Soon.
- **11:00 AM – 11:30 AM**
  - **Integrating Speciation Data For Chemical Plants and Refineries – John Beath – JBE**
  - Abstract Coming Soon.
- **11:30 AM – 12:00 PM**
  - **Derrick Reese – ExxonMobil**
  - Abstract Coming Soon.
- **12:00 PM – 12:30 PM**
  - **How Do You Feel About Storing Your Emissions Data in the Cloud? – Matthew Radigan – REGS, LLC**
  - Cloud computing means storing and accessing data and programs over the Internet instead of your computer's hard drive. In order to implement a cloud solution, you need some basic tools to connect your data source(s) to the Internet. Connection to the cloud storage needs to be secure, reliable and accessible. Turn on any new WiFi enabled device, click through some prompts and you are connected. Technology has made it so easy that it doesn't even require a conscious thought to participate. Will the same environment that drives my social life translate to my workplace and more importantly, help me successfully manage my critical air emissions compliance data. Required tools, feasibility and practicality of using cloud computing for compliance applications will be covered during the presentation.
- **12:30 PM – 1:30 PM Lunch Break in the Exhibit Hall**
- **1:30 PM – 2:00 PM**
  - **Boiler and Process Heater Tuning as a Best Management Practice – John Bacon – TRC Consulting**
  - While most facilities perceive 40 CFR 63 Subpart DDDDD (Boiler and Heater MACT, or MACT DDDDD) as costly regulation, four years of data compiled from the annually and biennially recurring tune-ups indicates the opposite is true. In fact, regular boiler and process heater tuning for natural gas fired sources can lead to considerable cost savings related to fuel use and a simple payback on the tune-ups services within months. The purpose of this presentation is intended to enlighten the audience on the benefits of boiler and process heater tuning, using data compiled from tune-ups performed on nearly 600 combustion sources, and conducted in accordance with the Boiler MACT work practice standard. Also, how a facility can further benefit from the regular performance of these services beyond the regulatory framework.

## Best Practices – Breakout Presentations

- **2:20 PM – 2:30 PM**
  - **Process Burner Flames: The Good, the Bad, and The Ugly – Doug Basquez & Charles Baukal – HollyFrontier Corporation & John Zink Co. LLC**
  - John Zink Hamworthy Combustion field personnel inspect thousands of burners each year. Too often those flames are not only bad but sometimes potentially dangerous. There are a number of conditions needed for good flames. Burners should be operating at or near their design conditions which includes the excess air and draft levels, and the design firing rate (fuel pressure) and fuel composition. The combustion air must be properly distributed, the fuel must be clean, and both the air and fuel must be properly controlled. The burner and its associated equipment (e.g., tile and pilot) must also be properly installed and maintained. There are some visual indicators that should be checked for proper burner operation. These include uniformity (all flames in a given heater should normally look about the same), proper flame color, no leaning between flames or into process tubes, no pronounced hot spots or dark spots on the burner tiles, no irregular flame movement (e.g., no pulsing), and no unusual sounds (e.g., flashback). Bad flames can lead to increased pollution emissions, reduced thermal efficiency, and unplanned shutdowns. Common reasons for bad flames include improper burner maintenance and operation. Dirty fuel is particularly problematic as it can cause fuel injectors to plug which can create multiple problems. Ugly flames can be dangerous and need to be corrected as soon as possible. Examples of these irregular flames include flame impingement, huffing or pulsing, or severely lifted flames. The purpose of this presentation is to discuss proper burner operation and what good flames look like and then to contrast that with lots of examples of improper burner operation including the causes and corrections. This information can be used in the risk-based inspection and performance monitoring processes. Typically, equipment has a function statement (primary/secondary) and performance objectives and ranges. The consequences when the function of the equipment has failed is documented in the earlier processes.
- **2:30 PM – 3:00 PM**
  - **Contractor Management – Ric Hartung – Process Safety Solutions, LLC**
  - Currently there are a large number of facilities covered by Process Safety Management (PSM) that either use a third party or manage their own contractor safety programs. Numerous compliance audits and National Emphasis Program (NEP) inspections has revealed a serious gap. While these third parties may do an adequate to good job in obtaining contractor information, evaluating statistics, and managing documentation, most fail to meet the requirement outlined in the PSM Regulation regarding contractor evaluations and verification. This gap leaves the host employer vulnerable to significant OSHA & EPA violations and fines. At issue, is the requirements outlined in several sections in the PSM regulation starting in sub-section (f)(4) stating that “the employer shall develop and implement safe work practices to provide for the control of hazards during operations such as lockout-tagout; confined space entry; opening process equipment or piping; and control over entrance into a facility by maintenance,

## Best Practices – Breakout Presentations

contractor, laboratory, or other support personnel. These safe work practices shall apply to employees and contractor employees” (emphasis added). This indicates that the host employer’s safe work practices apply to not only its own employees, but also to the contractors that perform work in the covered process. The host employer responsibilities are further outlined in sub–section (h)(2)(v) such that “The employer shall periodically evaluate the performance of contract employers in fulfilling their obligations as specified in paragraph (h)(3) of this section. For the host to fulfill PSM obligations regarding contractors, it must verify that the contractor has received safe work practice training, including site–specific requirements, such as but not limited to, the potential hazards that may be present in the facility. The contractor may use their own safe work practices, but this would need to be agreed upon beforehand and the host “must” evaluate each safe work practice to ensure that they are equivalent or more stringent, than their own.

- **3:00 PM – 3:30 PM Break to Enjoy Exhibit Hall Refreshments**
- **3:30 PM – 4:00 PM**
  - **Eliminating H<sub>2</sub>S & SO<sub>2</sub> Emissions at SRU, Coker and Sulfur Pits of Refineries – Jim Woodard – Vapor Point, LLC**
  - Vapor Point applies high efficiency liquid scrubbing systems to eliminate Hydrogen Sulfide (H<sub>2</sub>S), Sulphur Dioxide (SO<sub>2</sub>) other Sulfur Species as well as other Hazardous Air Pollutants (HAPs) and Volatile Organic Compounds (VOCs). Specially designed temporary vessels for liquid and vapor phase product management have also been developed and are key elements in some applications. These control system concepts and resulting proven processes were developed with input from refining personnel who needed alternative technologies that would offer operational flexibility eliminating the various sulfur contaminates. The vapor phase emission control systems and specially designed process vessels have met the needs of the refining industry with numerous field implementations.
- **4:00 PM – 4:30 PM**
  - **Conforming to ASTM–D7036: Self–Declaration vs. Third–Party Accreditation – David Fricker – A2LA**
  - Confidence in test data is paramount to acceptance, and both users and customers want assurance of quality. In general, testing bodies that choose accreditation rather than self–declaration demand a higher quality of work to maintain that accreditation and strive to produce more reliable results. In turn, customers have greater confidence in the accuracy and validity of the data from these testing bodies. Accreditation also provides the industry with confidence that a testing body is subject to regular oversight as a motivator to continually improve their operations. The ongoing verification of compliance ensures that the testing body’s results are consistently dependable and defensible.

## Track Summary – Flares

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### Training Classes – February 19 – 21, 2020

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**Flares for Experts Class #1: Flares Essentials**

**Flare for Experts Class #2: Flare Flow Mass and Volume Measurement**

**Flare for Experts Class #3: Flare Composition/Btu Measurement**

**Flare for Experts Class #4: Flare Control**

**Mass Spec Gas Analyzers: Operation and Maintenance – Extrel**

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### Breakout Presentations – Thursday February 20, 2020

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**The Proposed Flare Requirements of Ethylene MACT**

**Reduce Turnaround Duration By Eliminating Flare/Flare Gas Recover Using New Scrubber Technology**

**Natural Draft Low-Emissions Combustors**

**Ultra-Low NOX Burner**

**Eliminating H<sub>2</sub>S & SO<sub>2</sub> Emissions at SRU, Coker and Other Sulfur Handling Units of Refineries**

**The Final Flare Requirements – Latest Update on the Refinery Sector Flare Rule**

**Ultra-Low Steam Consumption, High Capacity Smokeless Flare**

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**On-line GC Solution to Comply with Flare Measurement Requirements**

**Flare Guardian Project**

**Meeting Flare Emissions Regulations with BTU Measurement**

**Optical Flow Sensors for Environmental Compliance and Process Control**

**Flare System Control and Optimization at Refineries and Chemical Plants**

**Measurement & Speciation Using Mass Spectroscopy Flare Gas Composition**

**Flare Gas Measurement Lessons Learned from Refineries & Future of Chemical Plants**

**Does CZNHV Track Flare Performance?**

**Flare Panel Moderated by Spectrum Environmental Solutions, LLC**

Detailed Agenda Continues on Next Page

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## Flares – Breakout Presentations

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### Flares for Regulatory Compliance Breakout Presentations

#### Room 406 – Thursday February 20, 2020

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- **10:30 AM – 11:00 AM**
  - **The Proposed Flare Requirements of Ethylene MACT – Latest Update – Troy Boley – Spectrum Environmental Solutions, LLC**
  - Abstract Coming Soon.
- **11:00 AM – 11:30 AM**
  - **Reduce Turnaround Duration By Eliminating Flare/Flare Gas Recover Using New Scrubber Technology – Jim Woodard – Vapor Point, LLC**
  - The refining industry is challenged with the development of alternative technologies to control hazardous and regulated emissions such as Hydrogen Sulfide and Total VOC compounds. Federal Agencies, through rule promulgation and Consent Decree, have emphasized a highlighted effort to minimize flare usage as a control device. The current rule promulgation of NSPS subpart Ja, Refinery MACT, and the Refinery Technology Rule each will provide challenges to perform de-inventory and decontamination phases of turnarounds in a timely manner. The direct impact of regulatory action is on the shoulders of those responsible for the planning, execution, and management of turnaround activities. Vapor Point will present case histories on projects at multiple refineries and multiple process units requiring various control requirements. Presentation will demonstrate very common challenges that refiners face under the new EPA regulations and solutions that have been successfully deployed in the field with the new scrubber technology package.
- **11:30 AM – 12:00 PM**
  - **Natural Draft Low-Emissions Combustors – TBD – Ashcor & Clearsign Combustion**
  - ASHCOR's Low Emissions Combustor, powered by ClearSign Core™ technology, achieves the industry's lowest NOx and CO emissions while maintaining a greater than 99.99% destruction efficiency. All units are equipped with ASHCOR flame arresters and Profire burner management controls that improve site safety and add a sense of reliability to the constant risk in the oil and gas industry.
- **12:00 PM – 12:30 PM**
  - **Ultra-Low NOX Burners – Chris Ferguson – Honeywell UOP Callidus**
  - Abstract Coming Soon
- **12:30 PM – 1:30 PM Lunch Break in the Exhibit Hall**
- **1:30 PM – 2:00 PM**
  - **Eliminating H2S & SO2 Emissions at SRU, Coker and Other Sulfur Handling Units of Refineries – Al Christopher/Sean Kirkpatrick – Vapor Point, LLC**
  - "Vapor Point applies high efficiency liquid scrubbing systems to eliminate Hydrogen Sulfide (H2S), Sulphur Dioxide (SO2) other Sulfur Species as well as other Hazardous Air Pollutants

## Flares – Breakout Presentations

(HAPs) and Volatile Organic Compounds (VOCs). Specially designed temporary vessels for liquid and vapor phase product management have also been developed and are key elements in some applications. These control system concepts and resulting proven processes were developed with input from refining personnel who needed alternative technologies that would offer operational flexibility eliminating the various sulfur contaminants. The vapor phase emission control systems and specially designed process vessels have met the needs of the refining industry with numerous field implementations."

- **2:00 PM – 2:30 PM**

- **The Final Flare Requirements – Latest Update on the Refinery Sector Flare Rule – Troy Boley – Spectrum Environmental Solutions, LLC**

- The experts at Spectrum Environmental Solutions, LLC (Spectrum) have been involved with a wide variety of industrial flare related issues within the petroleum and petrochemical related industry sectors. This presentation will lay a solid foundation for the rest of the conference presentation day as Spectrum will highlight the recent Federal flare rules specifically promulgated for the petroleum refinery sector. The intent will be to provide attendees with an understanding of the most likely flare improvement requirements anticipated by industry within future rulemaking for ethylene and chemical facility flares.

- **2:30 PM – 3:00 PM**

- **Ultra–Low Steam Consumption, High Capacity Smokeless Flare – Clayton Francis – Zeeco**

- This paper will introduce the technology behind, test data for, and industry challenges addressed by a new Ultra–Low Steam Consumption, High Capacity Smokeless Flare design developed by Zeeco, Inc. This flare technology is designed to further improve flaring efficiency and reduce steam consumption while continuing to meet the EPA Code of Federal Regulations, Chapter 1, Subchapter C, Part 63, Subpart CC requirements. We will focus on how the design addresses known industry challenges in high capacity, low steam consumption flaring, such as needing the ability to operate at low flare gas pressure since many applications have a maximum flare gas pressure at the flare tip of 3 psig. The paper will detail how this new design can achieve as low as 0.17 lbs. steam / lbs. flare gas at 20% of maximum flow rate, with the maximum flow rate achieved at a flare gas pressure of 3 psig. The above data is based upon a 5 mph wind with less than Ringlemann 1 opacity and a flare gas that is 100% propylene. For smokeless operation with propylene, other current steam assisted flare designs require approximately 0.5 lbs. steam / lbs. flare gas and / or a much higher flare gas pressure at maximum flaring capacity. Ultra–Low Consumption Steam Assisted Flaring is very important since any reduction in the required steam flow rate saves not only money, but also reduces the emissions produced from the production of the required higher steam flows. A key feature of this technology is that the air and steam mixture leave the flare at the same elevation as the flare tip exit, meaning no pre–mixing of air into the flare stream. Other current industry designs mix the air and steam with the flare gas prior to exiting the flare tip, negatively impacting the NHVcz according to the new calculation parameters required by MACT CC. Zeeco’s design more efficiently mixes the steam and air

## Flares – Breakout Presentations

together and then mixes the resulting stream with the flare gas, creating a final mixture with a significantly increased volume of air. When the resulting mixture interacts with the flare gas at the tip exit, the increased air volume is readily available for combustion, meaning the flare is less likely to smoke. Since the design more efficiently mixes the air and steam together, less steam is required to achieve smokeless operation. Furthermore, the inherent efficiency of the mixing delivers a design less dependent upon using flare gas pressure to achieve smokeless operation. The flare can successfully operate at lower gas pressures at maximum flow rate.

- **3:00 PM – 3:30 PM Break to the Exhibit Hall Refreshments**
- **3:30 PM – 4:00 PM**
  - **MSS Support Services – TBD – Gem Mobile**
  - GEM has developed a wide variety of vapor control solutions to assist customers with Maintenance Startup & Shutdown (MSS) permit compliance. Our comprehensive emission management program offers multiple customized options to meet individual facility needs.
- **4:00 PM – 5:00 PM**
  - **Flare Panel Moderated by Spectrum Environmental Solutions, LLC**

**Flare Instrumentation & Analyzers Agenda Begins Next Page.**

## Flares – Breakout Presentations

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### Flare Instrumentation & Analyzer Breakout Presentations

#### Room 408 – Thursday February 20, 2020

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- **10:30 AM – 11:00 AM**
  - **On–line GC Solution to Comply with Flare Measurement Requirements – Ulrich Gokheler – Siemens Industry**
  - On line GC measurement solutions are often utilized to satisfy and comply with a wide variety of flare measurement regulations. 63.670 (RSR), Chapter 115 (TCEQ HRVOC) and Subpart Ja, Rule 1118 (SCAQMD) for example. There are similarities between several regulations permitting to share the same analytical configuration. Often GCs are the default choice because reliability, familiarity and maintainability. Utilizing on–line analyzers successful is not necessarily the analyzer but the knowledge of sample transport and sample conditioning design, validation needs and simplicity of maintenance. This presentation will discuss analytical similarities especially between RSR and HRVOC, explain proven and reliable analytical configuration and possible validation simplifications.
  
- **11:00 AM – 11:30 AM**
  - **Flare Guardian Project – Clayton Francis – Zeeco**
  - Eliminate the inaccuracies and delayed results inherent to indirect flare monitoring. Directly monitors flare performance in real–time rather than determining compliance and combustion efficiency through a time–consuming, repetitive process of measuring inputs, assuming reactions and velocities, and arriving at an assumed operating status.
  
- **11:30 AM – 12:00 PM**
  - **Meeting Flare Emissions Regulations with BTU Measurement – Tom Watson – AMETEK Process Instruments**
  - Learn how mass spectrometer technology can be used to meet emissions requirements by measuring BTU in the flare gas. This session will cover the methods of BTU determination, and will outline the advantages of a mass spectrometer analyzer – speed, accuracy, range, etc. – while discussing application specifics, and total cost of ownership and maintenance needs. There will also be a review of mass spectrometry technology, components, and functions.
  
- **12:00 PM – 12:30**
  - **Optical Flow Sensors for Environmental Compliance and Process Control – Donn Williams – Optical Scientific**
  - OSI's Optical Flow Sensor (OFS) can help you comply with EPA's Organic Liquids Distribution MACT, RSR and Ja regulations. Unaffected by temperature, pressure, density or gas concentration, OFS makes drift–free flow measurements on flare stacks, thermal oxidizers and a host of similar routine and extreme processes alike with no shutdown needed to install.
  
- **12:30 PM – 1:30 PM Lunch Break in the Exhibit Hall**

## Flares – Breakout Presentations

- **1:30 PM – 2:00 PM**
  - **Flare System Control and Optimization at Refineries and Chemical Plants – Dan Johnson – Baker Hughes 2:00 PM – 2:30 PM**
  - The new Refinery Sector Rule (RSR), passed by the EPA in December 2015, extends and strengthens the regulations governing stationary emission sources, specifically flares in refineries. It calls for the control and monitoring of flare systems, including, for example, meeting the specific requirements of Net Heating Value in combustion zone gas (NHVcz), smokeless combustion and actual flare tip velocity ( $V_{tip}$ ) for steam assist flare systems and additional Net Heating Value dilution parameter (NHVdil) for air assist flare systems. A flare control design, which takes live input of speed of sound from flare meters, was implemented to achieve real-time control using measurement of average molecular weight of an unknown hydrocarbon mixture from the sound of speed. This information can be used by the control system to determine the net heating value of vent gas as well as provide a dynamic ratio control for steam, this provides for a more efficient and responsive control scheme. Combined with the requirement of vent gas NHV imposed by  $V_{tip}$ , a continuous, efficient flare operation of supplemental gas will be demonstrated. By utilizing real time control via the speed of sound measurement provided by the flare meter, the risk of having a block of non-compliance is mitigated. Flare control systems using other schemes, such as controls based on feedbacks from Gas Chromatograph (GC) or calorimeters, were discussed in the paper. Practical implementation of this methodology and data are also discussed in this paper.
- **2:00 PM – 2:30 PM**
  - **Measurement & Speciation Using Mass Spectroscopy Flare Gas Composition – Chuck de Carlo – Extrel**
  - As refineries continue to optimize their approach RSR 63.670 compliance, new regulations for flare emissions are set to hit a broad range of industries over the next five years. The goal is to ensure the destruction of Hazardous Air Pollutants (HAPs) prior to release into the atmosphere, but drastic changes in vent gas composition make controlling that efficiency difficult. Getting the full composition of the vent gas quickly allows operations to apply corrections as soon as possible. Flare gas mass spectrometers measure hydrocarbons, carbon oxides, hydrogen, sulfurs, moisture and various volatile organics, and report concentrations and Net Heating Value (NHV) to the control system in seconds. Examples from recent ethylene flare gas regulations and MON sites will be covered in the discussion, along with data from oil refinery flare events.
- **2:30 – 3:00 PM**
  - **Flare Gas Measurement Lessons Learned from Refineries & Future of Chemical Plants – Arnold Griswald – Fluenta Inc**
  - EPA's Refinery Sector Rule is about to come online. The new rule will cover all aspects of combustion efficiency to ensure the flare operation is done in a manner that is safe for the environment and safe for the operation of the facility. Refineries will undoubtedly need to take some actions irrespective of whether they use steam or air assisted flares in order to ensure

## Flares – Breakout Presentations

heating values of at least 300 BTU/scft of gas at the flare. This can be done by monitoring gas composition, steam/air flow and flare gas flow rate. As flow rate is part of the calculation supplied to meet the requirements put forward by the EPA, a gas flow meter will need to be used to provide that piece of the puzzle. This presentation will discuss how ultrasonic flow meters have been used to determine the flowrates in refineries and other facilities. A discussion will follow focused on how this technology helps the facility operator comply with the existing and new EPA regulations, and on how much more can be done from the metering perspective to help the implementation of the new EPA rule.

- **3:00 PM – 3:30 PM Break to Enjoy the Exhibit Hall Refreshments**
- **3:30 PM – 4:00 PM**
  - **Ground Flares, Air Quality Approvals and Requirements – Blake Soyars – Burns & McDonnell**
  - Pressure-assisted multi-point ground flare systems are used to control organic vapor emissions for a growing number of chemical manufacturing facilities. Ground flares serve the same purpose as conventional elevated flares, but current air quality regulations and approval processes are more complicated for ground flares. We will present key steps and challenges in the ground flare approval process, including the TCEQ Alternate Method of Control (AMOC) process and EPA Alternative Means of Emission Limitation (AMEL) process. We will discuss key compliance and permitting implications specific to ground flares at Texas chemical facilities. We will share actual permitting and approval timelines for example Texas ground flare projects.
- **4:00 PM – 5:00 PM**
  - **Flare Panel Moderated by Spectrum Environmental Solutions, LLC**

## Track Summary – Flares

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### Training Classes – Wednesday February 19, 2020

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- **Room 406 8:00 AM – 12:00 PM**
  - **Flares for Experts Class #1: Flares Essentials – Troy Boley, Herman Holm and Rishabh Jaishankar, Spectrum Environmental Solutions**
- **Room 410 1:00 PM – 5:00 PM**
  - **Flare for Experts Class #2: Flare Flow Mass and Volume Measurement – Dan Johnson, BHGE, Donn Williams, Optical Scientific, Julie Valentine, Emerson Automation Solutions**
- **Room 410 1:00 PM – 5:00 PM**
  - **Mass Spec Gas Analyzers: Operation and Maintenance – Extrel**

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### Training Classes – Friday February 21, 2020

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- **Room 400 8:00 AM – 12:00 PM**
  - **Flare for Experts Class #3: Flare Composition/Btu Measurement – Chuck DeCarlo, Extrel, Ulrich Gokeler, Siemens Industry, Robert Paddison, Thermo Fisher Scientific, Troy Boley, Spectrum Environmental Solutions**
- **Room 406 1:00 – 5:00 PM**
  - **Flare for Experts Class #4: Flare Control – Dan Johnson, BakerHughes, A GE Company/Panametrics**

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## Track Summary – Emerging Technologies

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### Breakout Presentations – Thursday February 20, 2020

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**Location Awareness – Improving Safety with Wireless Monitoring**

**Meeting Flare Emissions Regulations with BTU Measurement**

**How Digital Transformation Can Impact Compliance for Environmental and Safety Regulation**

**Advanced Data Collection Technologies for Rugged Field Work**

**Digital Camera Visible Emissions Method (Alternative Method 082) in lieu of Method 9 for Visible Emissions**

**Wireless H2S Monitoring**

**How IoT and Blockchain Technology Can Transform Environmental**

**Improving Safety with Wireless Safety Shower Monitoring**

Detailed Agenda Continues on Next Page

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## Emerging Technologies – Breakout Presentations

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### Best Practices Breakout Room 417A – Thursday February 20, 2020

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- **10:30 AM – 11:00 AM**
  - **Location Awareness – Improving Safety with Wireless Monitoring – Marcio Donnangelo – Emerson Automation Solutions**
  - Think you're covered? Radios aren't always enough. Once a wireless infrastructure is deployed, then a new universe of occupational safety applications can be easily implemented, such as Location Awareness, using industrial wireless technology, that in many cases has already been implemented, is not only cost-effective but can provide instant alerts and quick and effective response time.
- **11:00 AM – 11:30 AM**
  - **Meeting Flare Emissions Regulations with BTU Measurement – Tom Watson – AMETEK Process Instruments**
  - Learn how mass spectrometer technology can be used to meet emissions requirements by measuring BTU in the flare gas. This session will cover the methods of BTU determination and will outline the advantages of a mass spectrometer analyzer – speed, accuracy, range, etc. – while discussing application specifics, and total cost of ownership and maintenance needs. There will also be a review of mass spectrometry technology, components, and functions.
- **11:30 AM – 12:00 PM**
  - **How Digital Transformation Can Impact Compliance for Environmental and Safety Regulation – Marcio Donnangelo – Emerson Automation Solutions**
  - This presentation will give you an overview of how Digital Transformation is eliminating layers of complexity to bring pre-interpreted field data directly to those who need to make decisions and take action. Two examples will be highlighted: • Environmental reporting involves flow measurements which must be verified to be accurate. Discovery of an inaccurate measurement can be costly for operators as they may pay fines from the last date they can prove accurate measurement. Meter verification tools make it simple and convenient to prove accuracy over time. Operators will be notified of problems immediately to avoid misreporting and allowing for immediate corrective action. • PRVs are no longer isolated mechanical devices that rely on manual rounds as part of a preventive maintenance program. Release and leakage alerts can be wirelessly monitored, and then integrated into reporting and analytical systems. Powerful tools are now available to interpret these patterns and predict future releases before they occur.
- **12:00 PM – 1:00 PM Lunch Break in the Exhibit Hall**
- **1:00 PM – 1:30 PM**
  - **Advanced Data Collection Technologies for Rugged Field Work – Craig O'Neill – Juniper Systems**
  - Abstract Coming Soon.
- **1:30 PM – 2:00 PM**

## Emerging Technologies – Breakout Presentations

- **Digital Camera Visible Emissions Method (Alternative Method 082) in lieu of Method 9 for Visible Emissions – Shawn Dolan – Virtual Technologies**
- ASTM D7520–16 and US EPA Alternative Method 082, have revolutionized Visible Emission Management practices over the last 7 years. Community Air Quality Awareness has become a litigation boiling pot, as smart phones, and low cost Particulate and Ozone monitors, have flooded the monitoring markets, making monitoring readily available to everybody everywhere. The exponential growth of the community monitoring market over the last two years will be reviewed and strategies to embrace community monitoring as a means of compliance assurance will be discussed in this presentation.
- **2:20 PM – 2:30 PM**
  - **Wireless H2S Monitoring – Marcio Donnangelo – Emerson Automation Solutions**
  - The toxicity of H<sub>2</sub> S gas is extremely high. Its flammable level is actually much lower than it's toxic level for humans. Fortunately, having the distinct odor of rotten eggs allows plant workers to detect H<sub>2</sub> S gas in the relatively safe range of parts per billion. This is well below the danger level, however exposure to very low concentrations (30 parts per million or greater) can actually paralyze a workers ability to smell H<sub>2</sub> S. Training for rig and plant personnel includes extensive coverage of H<sub>2</sub> S gas dangers and what to do if detected but in some cases all the training in the world cannot help with a sudden high level exposure.
- **2:30 PM – 3:00 PM Break to Enjoy Exhibit Hall Refreshments**
- **3:00 PM – 3:30 PM**
  - **How IoT and Blockchain Technology Can Transform Environmental Monitoring – Philip Black – Wood Group**
  - While the US EPA's Next Generation Compliance Initiative has concluded, the focus generated a number of conversations about the potential of small consumer devices in air quality monitoring. It also attracted the attention in the Middle East and Asia where accurate monitoring and reporting have historically been challenging. The global focus on compact sensors collecting more data, commonly referred to as the internet of things (IoT), means that more monitoring can be accomplished, but how can the information be trusted? Learn how other countries are investigating the combination of IoT with blockchain technology to increase confidence in their environmental reporting frameworks.
- **3:30 PM – 4:00 PM**
  - **Improving Safety with Wireless Safety Shower Monitoring– Marcio Donnangelo – Emerson Automation Solutions**
  - Think you're covered? Radios aren't always enough. Find out how to improve safety by monitoring safety shower and eye-wash stations, as well as comply with OSHA without incurring complex installation and deployment costs. A safety shower system integration using wireless technology is not only cost-effective but can provide instant alerts and quick and effective response time.

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## Track Summary – BWON

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### Training Classes – February 19 – 21, 2020

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**BWON Fundamentals – Implementing a Comprehensive BWON Program**

**BWON Auditing for Experts**

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### Breakout Presentations – Thursday February 20, 2020

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**On-Going BWON Compliance Concerns**

**A Wastewater Solution for an Air Pollution Problem**

**BWON Auditing**

**BWON Masterclass**

**Benzene Waste Operations NESHAP In the FLIR Age**

**Vapor Lock Scrubber Technology Reducing Carbon Usage for BWON Compliance and Temporary Tank Storage**

**Downstream Confirmation of Benzene Loading**

**BWON Process and Best Practices**

Detailed Agenda Continues on Next Page

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## BWON – Breakout Presentations

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### BWON Breakout Room 402 – Thursday February 20, 2020

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- **10:30 AM – 11:00 AM**
  - **On-Going BWON Compliance Concerns – Ken Garing – Ken Garing & Associates**
  - Compliance issues with the BWON requirements have evolved since the regulation was introduced in the 90's. In the early 2000's, numerous deficiencies, ranging from the identification of regulated waste streams to the proper operation of control equipment, resulted in enhanced BWON requirements being included in the refinery global consent decrees. Since that time, a tremendous amount of work has been directed to this effort and the refining sector has made great strides in improving compliance with the BWON regulation. Mr. Garing will present his thoughts on where current efforts could be focused to further improve compliance.
- **11:00 AM – 11:30 AM**
  - **A Wastewater Solution for an Air Pollution Problem – Todd Lusk – SLR Consulting**
  - The regulatory requirements for managing benzene- and VOC-laden streams from wastewater treatment units require refineries to implement vapor control technologies that are often expensive to implement and/or operate. This session presents another option – the VOC BioTreat™ process, an alternative control technology that utilizes unit operations already in place at most wastewater treatment facilities and can substantially reduce the costs associated with BWON compliance. The presentation will provide information on the necessary steps to evaluate, model, test, and implement the VOC BioTreat™ process, and will describe case studies to support the economic and environmental benefits.
- **11:30 AM – 12:00 PM**
  - **BWON Auditing – Bart Leininger – Ashworth Leininger Group**
  - The National Emission Standard for Benzene Waste Operations (BWON or Subpart FF) is a complex regulation that is difficult to assess in the context of a due diligence assessment. These assessments are conducted within compressed schedules, essential documentation is typically limited or unavailable, and the liabilities for non-compliance are significant. Given the complexity of the BWON regulation, even a seasoned practitioner can miss a significant compliance issue, which could result in a costly corrective actions and potential enforcement

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## BWON – Breakout Presentations

exposure for a new owner. Further complicating the due diligence are Subpart FF enhanced requirements mandated in Consent Decrees. Assessing compliance with these enhanced requirements is just as important as compliance with the regulation itself. Given this complex backdrop, Subpart FF assessment during a due diligence must have a laser focus on those requirements of most importance for the acquisition. This presentation draws upon the presenter's experience in performing detailed Subpart FF assessments in the context of a due diligence and from litigation related to BWON compliance. The presentation uses case study examples to illustrate key areas of inquiry that should be part of the assessment and provides helpful and practical recommendations for evaluating key aspects of a Subpart FF compliance program. This presentation will also be of interest to BWON professionals with ongoing operations as it provides a "mental checklist" of areas of potential exposure in their BWON compliance program.

- **12:00 PM – 12:30 PM**
  - **BWON Masterclass – Ruth Benning – 4C Marketplace**
  - Abstract Coming Soon.
- **12:30 PM – 1:30 PM Lunch Break in the Exhibit Hall**
- **1:30 PM – 2:00 PM**
  - **Benzene Waste Operations NESHAP In the FLIR Age – Calvin Niss – Trihydro**
  - By now, most petroleum refineries and chemical plants that are affected facilities have mature Benzene Waste Operations NESHAP (BWON) and Consent Decree compliance programs. Affected petroleum refineries and chemical plants should have a reasonable and accurate accounting of their total annual benzene and uncontrolled benzene waste generation rates. If this is the case, then BWON compliance at these facilities should focus on effective benzene emission controls (i.e. complying with NESHAP waste management standards). Pursuant to rule requirements, these standards are straight– forward and include installing controls, completing periodic inspections, repairing equipment if necessary, and reporting deficiencies. This presentation will focus on a review of the current equipment standards. We will also discuss recent enforcement actions and EPA's use of a forward looking infrared (FLIR) camera to look for volatile organic compound (VOC) leaks from wastewater treatment waste management units.
- **2:00 PM – 2:30 PM**
  - **Vapor Lock Scrubber Technology Reducing Carbon Usage for BWON Compliance and Temporary Tank Storage – Sean Kirkpatrick – Vapor Point, LLC**
  - Vapor Point's VaporLock™ control technology has been utilized within many areas of BWON operations, while also providing for the elimination of other HAPs such as Hydrogen Sulfide and Ammonia. Common applications include API Sumps and Separators, Dissolved Air/Nitrogen Floatation Systems, Tank Vent Emissions Controls, Sludge Processing Operations, Vacuum Truck and Frac Tank Controls and we have even designed equipment for the complete by–pass of existing sump systems.

## **BWON – Breakout Presentations**

- **2:30 PM – 3:00 PM**
  - **Downstream Confirmation of Benzene Loading – Bruce Douglas – Trinity Consultants**
  - Downstream flow rates and concentrations can reflect the characteristics of the total wastewater throughput managed at the facility, where all seweraged wastewaters have come together into one stream. Experience indicates that downstream characterization can provide the most accurate values for facility wastewaters. However, the BWON citations emphasize the need to characterize wastes upstream, at the points of generation (POGs), because the rule-writers were concerned that benzene could volatilize from the waste as it flowed through the waste management system. Thus, the TAB quantification must be based on the upstream POG characterizations. It is valuable to assess the accuracy of POG results by comparing the downstream values with the sum of upstream POG values in the seweraged streams. Although benzene is dynamic in a refinery sewer system—potentially volatilizing or transferring between the oil and water phases—it is reasonable to expect downstream loadings to be similar to the values derived from summing POG numbers. Agreement in the upstream–downstream evaluation lends confidence to the TAB quantification, the 6BQ or 2–Mg quantification (if needed), and the overall claim of the facility that the BWON wastes were properly identified.
- **3:00 PM – 3:30 PM Break to Enjoy the Exhibit Hall Refreshments**
- **3:30 PM – 4:00 PM**
  - **BWON Compliance Sampling – Chad Vogeles – Think Environmental**
  - Abstract Coming Soon.
- **4:00 PM – 5:00 PM Panel**

Register for the Conference Here: <https://bit.ly/32NoEYX>



## BWON – Training Classes

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### Training Classes – Wednesday February 19, 2020

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- **Room 416AB 8:00 AM – 12:00 PM**
  - **BWON Fundamentals – Implementing a Comprehensive BWON Program – Trihydro Corporation – Calvin Niss & Erin Novini**

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### Training Classes – Friday February 21, 2020

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- **Room 416A 8:00 AM – 5:00 PM**
  - **BWON Auditing for Experts – Ken Garing, Steve Probst, 4C Marketplace, Cal Niss, Trihydro**

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