

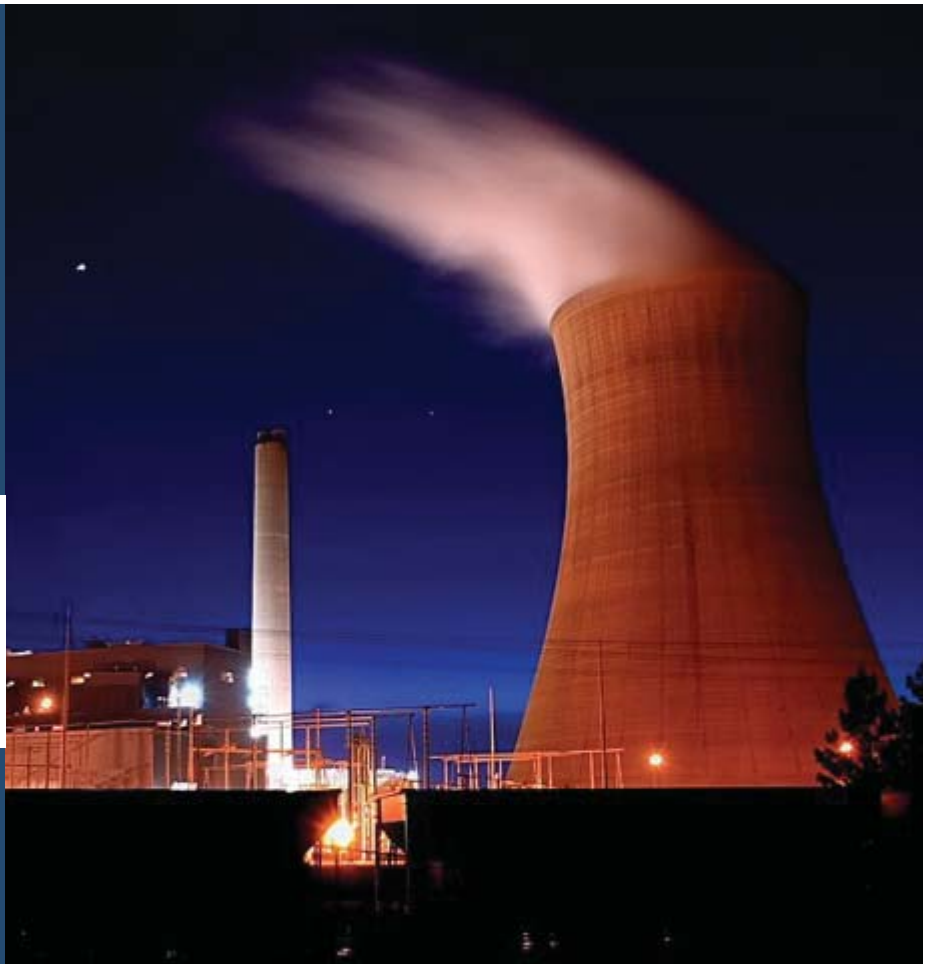
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**26th REINHOLD
Round Table
& Expo**

**Pollution control
from the coal pile to the stack**

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Scrubber, WWT, Hg & Se Control,
SCR, Catalyst, DSI, ELG and CCR**

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2019**

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2019 REINHOLD Round Table

June 24-25, 2019, Sheraton Birmingham Hotel, Birmingham, AL

June 24, 2019 - Monday - REINHOLD Round Table

Registration - Continental Breakfast & Breaks in expo from 7:00 to 8:30 (Birmingham Ballroom)

	ESP/FF/Dry Scrubbers	Se/Hg/Arsenic	Ash Ponds/CCR/DSI	ELG/WWT/Wet Scrubbers
	Workshop 1 (Birmingham Ballroom 9)	Workshop 2 (Birmingham Ballroom 11)	Workshop 3 (Birmingham Ballroom 12)	Workshop 4 (Birmingham Ballroom 1&5)
8:00-9:00	Monitoring Performance of Filter Media in a Baghouse <i>by Nathan Schindler, Evonik</i>	Arsenic and Selenium Abatement with Hydrated Lime and Sorbent Trap Methods <i>by Ian Saratovsky, Lhoist NA; Jonathan Cross, Ohio Lumex</i>	Geomembranes and Geotextile Tubes: Case Studies in CCR Applications <i>by Randy Pitt, Geo-Synthetics</i>	FGD ZLD and ZLD Operational Experience <i>by Michael Jaubert, Veolia</i>
	Workshop 5 (Birmingham Ballroom 9)	Workshop 6 (Birmingham Ballroom 11)	Workshop 7 (Birmingham Ballroom 12)	Workshop 8 (Birmingham Ballroom 1&5)
9:15-10:15	ESP O&M Tricks <i>by Tim Mallory, Air Advantage</i>	Technology Update – Measurement and Monitoring of Hg, Se, and As in Flue Gas <i>by Rob Doran, CleanAir</i>	Evaluating DSI System Performance and Balance of Plant Effects <i>by Mark Thomas, Mark Thomas & Associates Consulting</i>	WFGD Concerns in Preparation for ELG <i>by Suzette Puski, Babcock Power</i>
10:15-11:00	Break in Exhibition Hall (Birmingham Ballroom)			
	Workshop 9 (Birmingham Ballroom 9)	Workshop 10 (Birmingham Ballroom 11)	Workshop 11 (Birmingham Ballroom 12)	Workshop 12 (Birmingham Ballroom 1&5)
11:00-12:00	The Future of Remote/Offsite Support, Troubleshooting, & Performance Analysis <i>by Paul Ford, Redkoh Industries</i>	Innovative Measurement Technologies to support Pollution Control: SO ₂ , NH ₃ , As, Se, HCl, HBr, Hg <i>by Jonathan Cross, Ohio Lumex</i>	Lessons Learned from a Fleet of Operating Bottom Ash Continuous Dewatering and Recirculating (CDR) Systems <i>by Kevin McDonough, UCC</i>	Approach for Recovering Extra Heat in the Air Heater to Send to Spray Dryer for Wastewater Vaporization <i>by Blake Stapper, LJUNGSTROM</i>
12:00-1:30	Lunch in Exhibition Hall (Birmingham Ballroom)			
1:30-2:45	General Session (Birmingham Ballroom 1&5) Welcome/Presentation of Round Table Award <i>by Susan Reinhold to Darryl Wall and Curt Biehn</i> Keynote Speaker: Pathways to a Low Carbon Future <i>by Jeffrey A. Bursleson, SCS Environmental & System Planning SVP, Southern Company</i>			
	Regulatory/Safety	SCR/ Sorbent Injection	Ash Ponds/CCR	ELG/WWT/Wet Scrubbers
	Workshop 13 (Birmingham Ballroom 9)	Workshop 14 (Birmingham Ballroom 11)	Workshop 15 (Birmingham Ballroom 12)	Workshop 16 (Birmingham Ballroom 1&5)
3:00-4:00	CCR and ELG Regulatory Update <i>by Tisha Scroggin-Wicker, Burns & McDonnell</i>	Acid Gas Control – Redefining Cultural Practices in Unit Flexibility to Compete in a Changing Environment <i>by Chad Donner, Duke Energy</i>	Advanced Engineering Solutions for Environmental Protection in CCR Closures <i>by Gregory L. Hebler, Golder</i>	A Case Study: FGD ZLD the First Three Years <i>by Joe Tinto & Mark Owens, SUEZ</i>
4:00-4:30	Break in Exhibition Hall (Birmingham Ballroom)			
	Workshop 17 (Birmingham Ballroom 9)	Workshop 18 (Birmingham Ballroom 11)	Workshop 19 (Birmingham Ballroom 12)	Workshop 20 (Birmingham Ballroom 1&5)
4:30-5:30	Safety Issues <i>by Doug Hartman, FirstEnergy</i>	Recent Demonstrations Using Hydrated Lime for Cost Benefits <i>by Cal Lockert, Mississippi Lime</i>	Water Management in the Age of CCR and ELG Regulations <i>by Kate Hobbie, Dewberry and Nitou Makidi, Georgia Power</i>	Sulfite Control of WFGD Systems <i>by Ray Gansley, GE</i>
5:30-6:30	Reception in Exhibition Hall (Birmingham Ballroom)			

June 25, 2019 - Tuesday - REINHOLD Round Table

Registration - Continental Breakfast & Breaks in expo from 7:00 to 8:30 (Birmingham Ballroom)

	Heat Rate/Co-Firing/CCUS/misc	SCR/ Sorbent Injection	Ash Ponds/CCR	ELG/WWT/Wet Scrubbers
	Workshop 21 (Birmingham Ballroom 9)	Workshop 22 (Birmingham Ballroom 11)	Workshop 23 (Birmingham Ballroom 12)	Workshop 24 (Birmingham Ballroom 1&5)
8:00 - 9:00	Cliffside Natural Gas Firing Update <i>by Richard Roy, Duke Energy</i>	Lime Basics, Terminology, and Applications <i>by Carl Laird & Scott Fraley, Carmeuse Lime & Stone</i>	Coal Pile Runoff Treatments for CCR Compliance <i>by Max Swoboda, Evoqua Water Technologies</i>	Wet Flue Gas Desulfurization Wastewater Physical/Chemical Treatment – Lessons Learned <i>by Ralph Cutler, WesTech Engineering</i>
	Workshop 25 (Birmingham Ballroom 9)	Workshop 26 (Birmingham Ballroom 11)	Discussion I (Birmingham Ballroom 1&5)	
9:15 - 10:15	Mercury Oxidation Improvements via Catalyst and Coal Additives <i>by Scott Hinton, WS Hinton Assoc.</i>	Managing the SCR in the New World of Low Load, Cycling, and Reserve Outages <i>by Jared Koliha, Ceram</i>	Scrubber O&M Discussion (cost saving) : moderated by Steve Wolsiffer and Ron Richard, REC Group: Ron Laws, Duke Energy; Roger Ferguson, Ameren; Melissa Allen, TVA	
10:15-11:00	Break in Exhibition Hall (Birmingham Ballroom)			
	Workshop 27 (Birmingham Ballroom 9)	Workshop 28 (Birmingham Ballroom 11)	Workshop 29 (Birmingham Ballroom 12)	Workshop 30 (Birmingham Ballroom 1&5)
11:00-12:00	Effects of Dual Fuel Firing on Backend Equipment <i>by Keith Benton, AECOM</i>	An Economics-Based Approach to SCR Catalyst Cleaning <i>by Carl Wise, Thompson Industrial Services</i>	Beneficial Uses of Coal Ash from Ponds and Landfills <i>by Bill Fedorka, SEFA Group</i>	Impact of Air Pollution Controls on Selenium in FGD and Wastewater Treatment Systems <i>by Sharon Sjoström, Odonata Energy</i>
12:00-1:30	Lunch in Exhibition Hall (Birmingham Ballroom)			
	Workshop 31 (Birmingham Ballroom 9)	Workshop 32 (Birmingham Ballroom 11)	Workshop 33 (Birmingham Ballroom 12)	Workshop 34 (Birmingham Ballroom 1&5)
1:30-2:30	Coal Boiler Issues Related to CCUS <i>by Kevin Davis, REI</i>	Managing SCR Catalyst from Beginning (New/Regeneration) to End of Life Options <i>by Philip Elliott, Cormetech</i>	Treating Bottom Ash Transport Water with Enhanced Wastewater Technologies <i>by Kevin McDonough, UCC</i>	Treating Wastewater from Equipment Washes <i>by Dennis Fink, Worley</i>
	Workshop 35 (Birmingham Ballroom 9)	Workshop 36 (Birmingham Ballroom 11)	Panel I (Birmingham Ballroom 1&5)	
2:45-3:45	Heat Rate Improvement: Boilers, Gas Turbines, and Condensers <i>by Rob Mudry, Airflow Sciences</i>	The Importance of O&M Performance for SCR Asset Management <i>by Xavier Henry, ENGIE Laborelec</i>	Ash Ponds Closing - Lesson Learned from Boots on the Ground <i>Chaired by Ed Healy, Southern Company / Panelists: Keven Harsbarger, R.B. Jergens; Robert Kunzel, GWTT; Anita Perry, Southern Company</i>	
3:45-4:30	Break in Exhibition Hall - drawing Treasure Hunt Winners (Birmingham Ballroom)			
	Panel II (Birmingham Ballroom 1&5)			
4:30 - 5:30	Impacts across the Environmental Equipment Due to Load Cycling <i>Chaired by Pam Orlando, LG&E-KU / Panelists: John Brotherton, Duke Energy; Ian Mylenbusch, Southern Company; Patrick Sadler, Tucson Electric, Matt Wilson, TVA and Darren Hanby, AEP</i>			
6:00 - 10:00	Conference Event / McWane Science Center...Dinner and open museum..... free to all attendees and their families			

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Workshops and Panels

2020 REINHOLD/PCUG Conference

Hosted by LG&E-KU

June 22-25, 2020

Griffin Gate Marriott Resort & Spa, Lexington, KY

Round Table Lifetime Achievement Awardees



**Darryl Wall, Curt Biehn
John Brotherton, Blake Stapper
Melissa Allen; Sharon Sjostrom
Randy Fields; Gary Tonnemacher
Doug Hartman; Dan Steinhaur
Darren Hanby; Nate White
Melanie McCoy; Per Ranstad;
Tony Engelmeyer; Connie Senior;
Scott Thomas; Robert Crynack; Paul Ford;
Michael O'Connor; Cindy Khalaf; Ron Richard;
John Walker; Gordon Maller; Steve Wolsiffer;
George Valentine; James Chaney; Nancy Stephenson;
Bruce Salisbury; Greg Betenson; Greg Bielawski;
Gerry Klemm; Hans Hartenstein;
Ed Healy; Russ Ridgeway; Robert Taylor;
Rick Collins; Rob Mudry;
Scott Williams; Tony Licata;
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Workshops and Panels

Monday, June 24, 2019

8:00 to 9:00 am

Workshop 1: Monitoring Performance of Filter Media in a Baghouse by *Nathan Schindler, Evonik* (Birmingham Ballroom 9)

Filter media performance is about more than bag life. In this workshop, operating and maintenance personnel will learn what key real-time and long term indicators they should be monitoring in order to achieve the best performance of their Flue Gas Treatment Systems. We will also provide information to help your plant quantify the impact of poor performance on the plant's bottom line, including energy use, production reliability, operating costs, and maintenance costs.

Workshop 2: Arsenic and Selenium Abatement with Hydrated Lime and Sorbent Trap Methods by *Ian Saratovsky, Lhoist NA; Anthony Schneider, Jonathan Cross, Ohio Lumex* (Birmingham Ballroom 11)

The Effluent Limitation Guideline (ELG) regulates arsenic and selenium concentrations in aqueous effluent streams from power plants. Dry sorbent injection of hydrated lime ahead of wet flue gas desulfurization (wFGD) units can be effective at reducing gas-phase arsenic and selenium concentrations, prior to dilution in thousands of gallons of water that must be treated. This workshop will discuss gas-phase arsenic and selenium capture results from several combustion units, background and theory of capture, ultimate fate and leaching results, and available gas-phase measurement techniques to quantify results.

Advances in sorbent trap technology have opened the door to high-quality, economical gas-phase measurements at a variety of sources and sample locations. Promulgated EPA Test Methods such as Method 8/8A, Method 26/26A, and Method 29 were developed specifically for measuring pollutant concentrations at stacks. In addition to being used for stack measurements, sorbent trap methods have been designed for upstream sampling environments which are often more troublesome due to high temperature and potential interferents. Traps are available for HgT, HgOX, NH₃, HCl/HBr, SO₃, and As/Se measurements. These methods are covered in detail with a focus on arsenic and selenium traps. Comparison data will be presented.

Workshop 3: Geomembranes and Geotextile Tubes: Case Studies in CCR Applications by *Randy Pit, Geo-Synthetics* (Birmingham Ballroom 12)

Geomembranes have been used in various containment and closure applications. Two studies will show how these uses apply to coal ash. The third study will show the use of geotextile tubes to dewater dredged coal ash.

Workshop 4: A Review of the Lessons Learned on the Design and Operations of Thermal Zero Liquid Discharge (ZLD) Systems by *Michael Jaubert, Veolia* (Birmingham Ballroom 1&5)

Veolia is a global leader in the engineering, design, and operations & maintenance of Zero Liquid Discharge systems. Our presentation will cover best practices as it relates to the overall engineering, design, and operations of ZLD systems in the power industry. Project delivery options, best practices, lessons learned, and key successful case histories will be presented as main topics of discussion.

9:15 to 10:15 am

Workshop 5: ESP O&M Tricks by *Tim Mallory, Air Advantage* (Birmingham Ballroom 9)

This training class will begin with a primer on tips and tricks to make an inspection easier. Then we will cover a basic understanding of the mechanical workings of the precipitator and how to troubleshoot issues in the field. Attendees are encouraged to bring questions or descriptions of issues from their own equipment for class discussion.

Workshop 6: Technology Update – Measurement and Monitoring of Hg, Se, and As in Flue Gas by *Rob Doran, CleanAir* (Birmingham Ballroom 11)

This workshop will explore the history of Hg CEMS, where it is to date and what has been done with regards to other multi-metals CEMS... (i.e. As, Se)

Workshop 7: Evaluating DSI System Performance and Balance of Plant Effects by *Mark Thomas, Mark Thomas & Associates Consulting* (Birmingham Ballroom 12)

Numerous DSI systems have been installed for environmental compliance and for other balance of plant benefits. Testing for improved DSI system performance, BOP impacts and for evaluating proposals from sorbent and equipment suppliers can easily be misleading unless the test campaign is well thought out. This workshop discusses important factors to consider when developing test plans for DSI systems and related plant processes. .

Workshops and Panels

Monday, June 24, 2019

9:15 to 10:15 am (cont.)

Workshop 8: WFGD Concerns in Preparation for ELG by *Suzette Puski, Babcock Power* (Birmingham Ballroom 1&5)

There are several options to reclaim, treat, and reuse water from coal ash and WFGD systems to reduce the effluent from WFGD systems in consideration of future Effluent Limitation Guidelines (ELG). Concerns to be addressed when reducing WFGD effluent discharge include materials of construction limitations, gypsum marketability, limestone blinding, and wear on rotating equipment. Geo textile tubes are an effective means to collect and dewater ash from ponds. Treatment of the water utilizing anti-fouling membrane technology is beneficial to produce ELG compliant water discharge or pre-treat water to remove contaminants for reuse in the plant. Additional treatment options include evaporation to maintain a zero-liquid discharge from the plant. It is important to look at the plant's overall water balance to determine the most economical means to reduce effluent from WFGD systems.

11:00 am to 12:00 noon

Workshop 9: The Future of Remote/Offsite Support, Troubleshooting, & Performance Analysis by *Paul Ford, Redkoh Industries* (Birmingham Ballroom 9)

A discussion about remote access, firewall security, and offsite troubleshooting; all to achieve the same goal: optimum precipitator performance!

- How it's done: safely and securely
- Advantages including: Troubleshooting; Diagnostics – Having an expert see a potential problem before it begins; In-depth training and facetime with precip experts
- Case studies and areas that have and can use this technology

Workshop 10: Innovative Measurement Technologies to support Pollution Control: SO₃, NH₃, As, Se, HCl, HBr, Hg

by *Jonathan Cross, Ohio Lumex* (Birmingham Ballroom 11)

Ohio Lumex performs research to solve industry problems and create new products and services. In collaboration with EPA and industry partners, the laboratory developed an array of sorbent trap methods based on Method 30B, but for different pollutants which include HCl/HBr, NH₃, SO₃, and Se/As. These trap methods provide easy, high-quality alternatives to existing EPA methods.

Workshop 11: Lessons Learned from a Fleet of Operating Bottom Ash Continuous Dewatering and Recirculating (CDR) Systems by *Kevin McDonough, UCC* (Birmingham Ballroom 12)

UCC has successfully designed and commissioned numerous closed-loop recirculation Bottom Ash transport water systems over the past seven years throughout the U.S. Coal Fleet across a wide range of operating conditions. In this discussion, UCC will present several case studies and lessons learned on water balance, water quality, and wastewater management. Topics of discussion will highlight pH analysis case studies and pH control design considerations.

Workshop 12: Approach for Recovering Extra Heat in the Air Heater to Send to Spray Dryer for Wastewater Vaporization by *Blake Stapper, LJUNGSTROM* (Birmingham Ballroom 1&5)

This workshop will discuss new developed heat recovery elements that can extract an additional 10 to 20 percent energy from an existing air heater, which can be then applied for beneficial use such as improving net unit heat rate or evaporating the FGD system waste water to comply with the ELG rule. In this presentation, full-scale operating data from a ZLD application will be provided.

LUNCH in Exhibition Hall (12:00 to 1:30 pm)

1:30 to 2:45 pm

Welcome / Presentation of the Round Table Lifetime Achievement Awards by *Susan Reinhold, Reinhold Environmental* (Birmingham Ballroom 1&5)

The Round Table Awards will be given to Darryl Wall and Curt Biehn

Workshops and Panels

Monday, June 24, 2019
1:30 to 2:45 pm

Keynote Speech : **Pathways to a Low Carbon Future** by *Jeffrey A. Burleson, SCS Environmental & System Planning SVP, Southern Company* (Birmingham Ballroom 1&5)



Jeff Burleson is Senior Vice President of Environmental and System Planning for Southern Company. He is responsible for Environmental Affairs, System Planning, and Southern Wholesale Energy. He assumed the System Planning role in 2011 with expanded responsibilities in 2016. Burleson began his Southern Company career as a co-op student at Alabama Power, later progressing through various positions in areas including technical services, research and technical assessment and enhanced power quality. He has also worked in several capacities in the Southern Company Services and Georgia Power. Burleson is a graduate of the University of Alabama at Birmingham with a degree in electrical engineering and holds a master's degree in electrical engineering from Auburn University.

3:00 to 4:00 pm

Workshop 13: Update on ELG/CCR/Clean Power Legislation by *Trisha Scroggin, Burns & McDonnell* (Birmingham Ballroom 9)

This workshop will update the attendee on the state of current CCR and ELG rules. Discussion will be provided on different technical approaches for compliance that are being applied industry wide.

Workshop 14: Acid Gas Control – Redefining Cultural Practices in Unit Flexibility to Compete in a Changing Environment by *Chad Donner, Duke Energy* (Birmingham Ballroom 11)

Wind, Solar, and low cost natural gas are changing the way pulverized coal units are dispatched across the United States. Understanding the impacts these technologies have on the grid and the load profile can go a long way in understanding WHY a traditional approach to pulverized coal plant operation has to be challenged. Managing the acid gasses and dewpoints reliably opens the door to new opportunities for pulverized coal unit operating range and flexibility.

Workshop 15: Advanced Engineering Solutions for Environmental Protection in CCR Closures by *Gregory L. Hebel, Golder* (Birmingham Ballroom 12)

Groundwater protection is a primary focus of the CCR Rule. This presentation discusses a range of engineering methods available to supplement traditional closure controls to provide improved groundwater protection. Several cases studies from CCR closure and related industry projects are presented to demonstrate site specific challenges with such approaches.

Workshop 16: A Case Study: FGD ZLD the First Three Years by *Joe Tinto & Mark Owens, SUEZ* (Birmingham Ballroom 1&5)

A coal-fired power station in the mid west installed a zero liquid discharge system to treat the blowdown from their existing FGD scrubber. The system includes physical chemical treatment followed by falling film evaporation with the final concentrate used as a wetting agent for the station flyash. This discussion will review the operational challenges faced along with their resolution and a quick look into the future.

4:30 to 5:30 pm

Workshop 17: Safety Issues by *Doug Hartman, FirstEnergy* (Birmingham Ballroom 9)

This will be an interactive session moderated by FirstEnergy. The discussion will focus on significant OSHA reportable, site observations, near miss events and the lessons learned from those events. Additional safety best practices will be incorporated into the discussion. Audience participation will be leveraged to strengthen the overall discussion.

Workshop 18: Recent Demonstrations Using Hydrated Lime for Cost Benefits by *Cal Lockert and Curt Biehn, Mississippi Lime* (Birmingham Ballroom 11)

Advancements in the hydrated lime dry sorbent injection (DSI) process open the possibility of benefits to the end user beyond simply environmental compliance. After review of the hurdles that existed ten years ago, we will examine how some utility boilers are using hydrated lime DSI to remain cost competitive and flexible in the new world of coal-fired electrical generation.

Workshops and Panels

Monday, June 24, 2019

4:30 to 5:30 pm (cont.)

Workshop 19: Water Management in the Age of CCR and ELG Regulations by *Kate Hobble, Dewberry and Nitou Makidi, Georgia Power* (Birmingham Ballroom 12)

A water balance was performed at a power plant in the southeast with a need for water management solutions driven in part by planned gypsum cell retirement and increasing water processing constraints. An operational data review, onsite flow monitoring, and a control logic evaluation revealed opportunities for water reduction and reuse. A custom solution optimized for the plant was recommended which included improving FGD process control, reducing freshwater use, and segregating precipitation from process water.

Workshop 20: Sulfite Control of WFGD Systems by *Ray Gansley, GE* (Birmingham Ballroom 1&5)

Operations using sulfite control for WFGD absorbers will be described including sulfite measurement consistency, sulfite analyzer installation and key aspects of oxidation air control approaches. Recent data demonstrating multiple benefits of WFGD sulfite control include reduced mercury emissions, reduction of dissolved mercury and selenium and nitrates/nitrites in the WFGD purge stream, and significant power savings.

5:30 to 6:30 pm

*******RECEPTION in Exhibit Hall (5:30 to 6:30 pm)*******

Tuesday, June 25, 2019

8:00 to 9:00 am

Workshop 21: Cliffside Natural Gas Firing Update by *Richard Roy, Duke Energy* (Birmingham Ballroom 9)

Duke Energy has engineered, installed, commissioned and tested a natural gas firing system addition to Unit 5 and Unit 6 boilers at Cliffside Steam Station. The system met project guarantees. Station impacts, lessons learned and system performance will be reviewed during this presentation.

Workshop 22: Lime Basics, Terminology, and Applications by *Carl Laird & Scott Fraley, Carmeuse Lime & Stone* (Birmingham Ballroom 11)

Various forms of "lime" are used in FGT and water treatment. This presentation will discuss the lime cycle, proper terminology, and common applications.

Workshop 23: Coal Pile Runoff Treatments for CCR Compliance by *Max Swoboda, Evoqua Water Technologies* (Birmingham Ballroom 12)

Ash pond closures have prompted the need to consider treatment of coal pile run-off. This treatment has unique considerations caused by the natural production of the stream from rainfall. High solids and variable flow rates create a challenge for traditional treatment processes. The design data and treatment method is discussed for two solutions.

Workshop 24: Wet Flue Gas Desulfurization Wastewater Physical/Chemical Treatment – Lessons Learned by *Ralph Cutler, WesTech Engineering* (Birmingham Ballroom 1&5)

In this workshop Ralph Cutler will describe several FGD wastewater Physical Chemical systems recently installed and commissioned. Discussion of the process and equipment designs that went well and those that needed improvement.

9:15 to 10:15 am

Workshop 25: Mercury Oxidation Improvements via Catalyst and Coal Additives by *Scott Hinton, WS Hinton Assoc.* (Birmingham Ballroom 9)

Coal additives, along with catalyst design, can provide an effective solution for mercury control. The implementation and long-term management of mercury control strategies using coal additives and catalyst design will be discussed, along with current trends and field performance highlights.

Workshop 26: Managing the SCR in the New World of Low Load, Cycling, and Reserve Outages by *Jared Koliha, Ceram* (Birmingham Ballroom 11)

Changing energy market conditions have incentivized previously base-loaded coal-fired power plants to expand low load operating

Workshops and Panels

Tuesday, June 25, 2019

9:15 to 10:15 am (cont.)

windows, and tolerate frequent load cycling and reserve outages. The persistent changes in load and frequency of economic reserve outages have created new challenges for selective catalytic reduction (SCR) system management. The new plant operations

Discussion I: Scrubber O&M Discussion (cost saving) : moderated by *Steve Wolsiffer and Ron Richard, REC / Group : Ron Laws, Duke Energy; Roger Ferguson, Ameren; Melissa Allen, TVA* (Birmingham Ballroom 1&5)

This session is designed to be an audience-participation discussion of current FGD system Operation & Maintenance Practices by the various system users in specific on going pressures to reduce scrubber O&M costs. Many conditions, and personnel, have probably changed since the scrubber system was designed & placed in service. The attending utility operators and those responsible for FGD System reliability will be encouraged to ask questions and share their experiences with the group.

11:00am to 12:00 pm

Workshop 27: Effects of Dual Fuel Firing on Backend Equipment by *Keith Benton, AECOM* (Birmingham Ballroom 9)

Many utilities are considering retrofit of their coal plants to fire natural gas only or a combination of natural gas and coal. Gas fired operation can have a wide range of effects on the performance, operation and control of the air quality control system (AQCS). This session will provide an overview of the potential impacts dual fuel operation on the AQCS equipment used to control NO_x, SO₂, mercury and particulate emissions.

Workshop 28: An Economics-Based Approach to SCR Catalyst Cleaning by *Carl Wise, Thompson Industrial Services* (Birmingham Ballroom 11)

Explanation and discussion of the effect optimal catalyst cleaning – including long term preventative maintenance - has on maximizing operating efficiency and extending catalyst overall longevity. Learn about the latest technologies and methods to substantially expose the available reactive catalyst surface area, increase de-NO_x potential, reduce pressure drop and ammonia slip and improve emissions and plant efficiency.

Workshop 29: Beneficial Uses of Coal Ash from Ponds and Landfills by *Bill Fedorka, SEFA Group* (Birmingham Ballroom 12)

Due to the acceleration of coal fired generation retirements, as well as increased environmental pressures, more and more utilities are facing crucial decisions related to closure plans of legacy coal ash impoundments and landfills. In cases where closure by removal is required, utilities can reduce their disposal costs and improve their environmental stewardship by diverting this material to encapsulated beneficial uses such as in cement and concrete. Beneficial use eliminates the long-term environmental liability of leaving ash in the ground, and when used as a replacement for Portland cement results in a global reduction in CO₂ emissions.

Workshop 30: Impact of Air Pollution Controls on Selenium in FGD and Wastewater Treatment Systems by *Sharon Sjostrom, Odonata Energy* (Birmingham Ballroom 1&5)

Although the implementation deadline for the current Federal Steam Effluent Limitation Guidelines, including selenium discharge from coal-fired FGD systems, are delayed as the EPA reviews and updates the Rule, some plants in the U.S. have limits on discharge of selenium from flue gas desulfurization (FGD) systems based on state water permits. Gaseous selenium post-combustion can be removed by wet FGDs as well as other air pollution control devices (APCDs). Removal of selenium before the FGD reduces the potential discharge of selenium in the wastewater. In this workshop, an overview of selenium will be provided, including the behavior of selenium during coal combustion and in downstream air pollution control systems. The results from a study where limestone forced oxidation FGDs are modeled to determine how the concentration of selenium in FGD liquor depends on upstream APCDs such as ESP, fabric filter, and dry sorbent injection (DSI) as well as the operation of the FGD itself will be highlighted.

*******LUNCH in Exhibition Hall (12:00 to 1:30pm)*******

1:30 to 2:30 pm (cont.)

Workshop 31: Coal Boiler Issues Related to CCUS by *Kevin Davis, REI* (Birmingham Ballroom 9)

Efforts to advance the implementation of Carbon Capture, Utilization, and Storage (CCUS) have resulted in mixed results; however, the Petra Nova plant, which opened in 2016, was on schedule and on budget. Additional CCUS projects are being considered (e.g., Project Tundra), and it appears that enhancements to Internal Revenue Code Section 45Q tax credits in 2018 have increased interest. Recent feasibility studies involving the implementation of oxy-coal combustion and CCUS technologies indicate that application to existing

Workshops and Panels

Tuesday, June 25, 2019

1:30 to 2:30 pm (cont.)

pulverized coal fired boilers merits consideration. Combustion, heat transfer, steam cycle and emissions control associated with these oxy-coal retrofits are a key consideration and will be discussed in this workshop.

Workshop 32: Managing SCR Catalyst from Beginning (New/Regeneration) to End of Life Options by *Philip Elliott, Cormetech* (Birmingham Ballroom 11)

During the end-of-life discussion for SCR catalyst, a major concern for a Utility is the environmental legacy that results from their ash-laden modules being disposed of at landfills. CORMETECH can now provide the Re-Use™ process as a cost effective and environmentally responsible solution to handling spent catalyst material. In addition, this presentation will cover alternative techniques to ensure proper disposal of catalyst modules as well as SCR management fundamentals regarding new versus regeneration, SCR graphs, testing, and maintenance procedures.

Workshop 33: Treating Bottom Ash Transport Water with Enhanced Wastewater Technologies by *Kevin McDonough, UCC* (Birmingham Ballroom 12)

UCC highlights a Bottom Ash Remote Submerged Flight Conveyor System case study where lamellas and clarifiers were integrated to meet potential ELG requirements. Topics of discussion include design criteria, performance requirements, design summary, installation photos, and lessons learned.

Workshop 34: Treating Wastewater from Equipment Washes by *Dennis Fink, Worley* (Birmingham Ballroom 1&5)

Managing wastewater from equipment washes poses challenges, especially at a “post-CCR pond” plant. Presentation will discuss wash water characteristics, NPDES permitting challenges, and examples and lessons learned from design and operation of treatment in clarifier-based systems and in ponds.

2:45 to 3:45 pm

Workshop 35: Heat Rate Improvement: Boilers, Gas Turbines, and Condensers by *Rob Mudry, Airflow Sciences* (Birmingham Ballroom 9)

This presentation will provide an overview and detailed discussion of heat rate improvements and best practices in terms of flow modeling and testing. Topics will cover both coal and gas-fired units, including a discussion of common issues that can result in performance degradation of heat exchangers, air heaters, and SCR/AIG design. An overview of condenser and cooling tower influences on heat rate including industry R&D will also be discussed.

Workshop 36: The Importance of O&M Performance for SCR Asset Management by *Xavier Henry, ENGIE Laborelec* (Birmingham Ballroom 11)

State-of-the-art SCR asset management for operators should be focused on optimization of both CAPEX and OPEX on the plant lifetime duration. Therefore, monitoring and optimizing O&M performance is a key contributor to lowering TCO (Total Cost of Ownership), when properly combined with catalyst performance. Engie Laborelec will present how important is the SCR O&M performance, despite being overlooked in too many cases, based on multiple case studies.

Panel I: Ash Ponds Closing - Lesson Learned from Boots on the Ground chaired by *Ed Healy, Southern Company* / *Panelists: Keven Harshburger, R.B. Jergens; Robert Kunzel, GWTT; Anita Perry, Southern Company* (Birmingham Ballroom 1&5)

Lessons Learned from Boots on the Ground: This panel will feature a facilitated discussion from pond closure engineers/consultants, construction contractors, water treatment consultants, and utility owners. The discussion will highlighting early learnings, best practices, and lesson learned applicable to Ash Pond Closure Projects. There will also be an opportunity for audience participation and general questions/answers.

4:30 to 5:30 pm

Panel II: Impacts across the Environmental Equipment Due to Load Cycling chaired by *Pam Orlando, LG&E-KU* / *Panelists: John Brotherton, Duke Energy; Ian Mylenbusch, Southern Company; Patrick Sadler, Tucson Electric, TBD* (Birmingham Ballroom 1&5)

The panel will discuss load cycling challenges for AQCS equipment, including control strategies, flue gas temperature limitations on SCRs and Fabric Filters, ash deposition and various other impacts. Also discussed will be potential mitigation plans including gas co-firing, SCR minimum operating temperature management, additives, etc.

June 25, 2019 * McWane Science Center * Birmingham AL.

2019 Conference Event



5:45 pm - Buses Depart the Hotel for Science Center with continuous Shuttling. Last bus departs Science Center for the hotel at 945 pm

6:00 pm - Cash Bar Opens

6:00 pm – 7:00 pm – McWane Gift Shop is open

7:00 pm – 8: 30 pm - Dinner

7:30 PM - IMAX Movie #1 Oceans

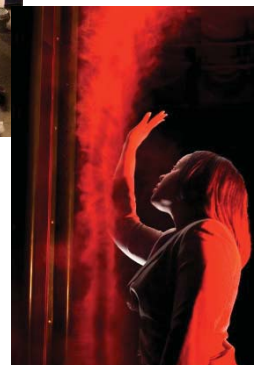
Trailer for Movie is at <https://vimeo.com/257564202>

8:30 PM - IMAX Movie # 2 Superpower Dogs

Trailer for Movie is at <https://www.youtube.com/watch?v=t2sHrbIlpR4>



Self-parking is available in the McWane Science Center Parking Structure - \$8.00



Open to Conference attendees and their families. For additional information, please contact Reinhold Environmental – Susan Reinhold 847.291.7396

2019 REINHOLD Round Table Exhibitors

#	Exhibitor
1	open
2	open
3	Ground/Water Treatment & Tech.
4	SUEZ Water Tech. & Sol. (Sponsor)
5	NWL
6	AirTek Construction
7	Integrated Global Services
8	Dewberry
9	ETS
10	Lhoist North America (Sponsor)
11	Mitsubishi Hitachi Power System
12	GE Power
13	Airflow Sciences
14	EES
15	Welmer Mechanical Services
16	Redkoh Industries
17-18	Stein Industries
19	United Conveyor Corp
20	High Temperature Technologies
21&22	Cormetech (Sponsor)
23	AECOM
24	ReNOx
25	Zhejiang TUNA Envir. Science&Tech
26	Howden North America
27	BWF Envirotec
28	Kirk Key Interlock Company
29	LJUNGSTROM
30	Garlock Sealing Technologies

#	Exhibitor
31	Fuel Tech
32	Johnson Matthey
33	Innovative Combustion Technologies
34	Ohio Lumex Company
35	Gray Wolf Industrial
36	Gecko Robotics
37&38	Mississippi Lime (Sponsor)
39	Thompson Industrial Services
40	Acoustic Cleaning Systems
41	Ceram
42	Veolia
43	Evonik Corp.
44&45	RE Consulting
46	Breen Energy Solutions
47	FLSmith
48	Babcock Power
49	Cemtek
50	Carmeuse Lime & Stone
51	Charging Station
52	WesTech Engineering
53	Southern Environmental
54	Valmet
55&56	KraftPowerCon
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Acoustic Cleaning.....40

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Acoustic Cleaning Systems, Inc. is a manufacturer of sonic horns / acoustic cleaners for variety of utility and industrial applications. Applications include boilers, ESP's, baghouses, SCR reactors, and ductwork and material handling applications. ACS also specializes in repair and replacement parts for all major brands of sonic horns.

ADA.....57&58

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ADA brings together ADA Carbon Solutions, a leading provider of powder activated carbon and ADA-ES, the providers of ADA® M-Prove™ Technology. We continue to provide products and services to control mercury and other contaminants at coal-fired power generators and other industrial companies. Our families of complementary products control contaminants: activated carbon, coal additives and scrubber additives, along with flue gas conditioning and other supporting chemical technologies. This broad product suite supports customized, integrated solutions that help our customers meet their compliance objectives consistently and reliably. ADA produces and delivers many of our products through three key assets; Red River Plant is the largest, most automated and environmentally friendly activated carbon plant in North America; Natchitoches Processing Facility provides custom processing and packaging and Five Forks Mine supports our vertical integration by providing a dedicated source for raw materials. Our chemical technologies are currently produced by third party manufacturers and shipped directly to customers.

AECOM.....23

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AECOM is a fully integrated multi-disciplinary firm with expertise in engineering, construction, and program management. We are built to deliver cost-competitive, reliable solutions for clients in the power industry particularly in the areas of emissions control and environmental compliance. For more than forty years, AECOM's Process Technologies group has helped clients overcome regulatory and operational challenges. We develop, implement and optimize clean air and water treatment technologies, and deliver turnkey solutions for coal combustion product management with a focus on beneficial use.

Airflow Sciences Corporation.....13

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Experts in CFD, physical flow modeling, and field testing since 1975. Our modeling provides cost-effective designs for ducts, pulverizers, windboxes, SCRs, ESPs, baghouses, scrubbers, and stacks. Custom field test equipment ensures accurate and efficient measurement of flow, temperature, chemical species, and particulate. The combination of modeling, testing, and engineering expertise makes ASC the one-stop shop for all your flow-related needs.

AirTek.....6

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Since 1988, AirTek has been a leading provider of precipitator services. These services include field service engineering, consulting services, construction management, maintenance, new construction, major rebuilds, and the supply of spare parts. AirTek offers this full range of services, in addition to our own line of ESPs, to all users of air pollution control equipment.

Babcock Power.....48

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Babcock Power Environmental Inc., along with its affiliate Riley Power Inc., provide fully integrated environmental solutions for utility power plants, waste-to-energy facilities, and large industrial applications. With more than forty years of experience in planning, designing, fabricating, constructing and commissioning environmental control systems, Babcock Power has developed into one of the market leaders in the field of environmental air pollution control technology.

Breen Energy Solutions.....46

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Breen Energy Solutions is a fully integrated provider of technology, solutions and services for the Power and Industrial markets. Breen offers measurement of Ammonium bisulfate dew point, sulfuric acid dew point and sulfuric acid vapor concentration("SO3"). Breen also offer Dry Sorbent Injections services, including temporary and long term mobile DSI Injection equipment rentals and DSI Temporary, and permanent, system operation and maintenance. The Breen solutions offering includes the measurement, control and optimization of Hydrated Lime injection systems to improve plant operations by eliminating air heater fouling, reducing minimum load and the control of sulfuric acid mist emissions concentration.

BWF Envirotec USA.....27

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BWF Envirotec is the world's leading supplier of filter bags to the power generation market. As both a needle felt producer and bag fabricator, BWF Envirotec has the unique ability to match the gas stream characteristics with the properties of the needle felt ensuring maximum bag performance. In addition the standard services offered by BWF Envirotec and the Environmental Services team are: baghouse maintenance service, change-outs, retrofits, and mechanical inspections.

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Carmeuse Lime & Stone.....50

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CERAM.....41

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CERAM manufactures honeycomb and plate type SCR catalysts and provides comprehensive SCR system services. We have delivered SCR catalysts for more than 2,000 SCR systems worldwide. Our experience portfolio includes coal, gas, oil, biomass, cement, MSW/RDF, petroleum refineries, diesel engines, and other unusual fuel/application types. SCR system services include catalyst testing, reactor inspections, operations assessments, AIG tunings, low load studies, and catalyst management planning utilizing the proprietary Manage CATLife® model. This model is adaptable for all catalyst types, geometries and compositions. The model is also flexible to evaluate both regenerated and new catalysts over multiple operating scenarios, fuels changes, and emissions targets.

Cemtek KVB-Enertec.....49

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Cemtek KVB-Enertec is a division of the Cemtek Group. Cemtek founders are recognized pioneers in the development and design of Continuous Emissions Monitoring Systems (CEMS) for compliance, combustion optimization and process efficiency. We have over 40 years of experience in the CEMS industry. Cemtek KVB-Enertec is a full service CEMS company. We have offices in California, Pennsylvania and New Jersey and a combined production space of 40,000 square feet. With a field technician network across the United States, we are ready to serve all industrial and utility plants. Cemtek KVB-Enertec is an organization dedicated to forward thinking solutions for today's environmental compliance challenges and continual process efficiency improvements. Our mission is to design, engineer, construct and deliver the best possible system for each individual application utilizing quality materials and proven engineering principles to meet the goal of both Cemtek and those of our customers.

CORMETECH.....21&22

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CORMETECH is a leader in providing environmental services solutions used to reduce emissions from coal and gas-fired power generation, chemical process industries, petroleum refineries, and diesel engines. It manufactures new SCR catalyst (e.g. COMET™, DUST BUSTER™, METEOR™, ELITE™), provides SCR catalyst regeneration and full life-cycle catalyst management services including its state of the art Re-Use™ process. Additional products and services include engineering, design and supply services for SCRs, SNCRs, and ammonia systems. CORMETECH has delivered environmental catalyst solutions to more than 1,600 SCR systems totaling over 156 GW of worldwide generating capacity.

Dewberry.....8

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EBRO ARMATUREN USA.....61

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Ebro Armaturen together with its wholly owned subsidiary, Stafsjo, is a global supplier of Butterfly Valves and Knife Gates to the Power, Pulp and Paper and heavy industrial market sectors. Our rugged, dependable and versatile range of valves have been used in many diverse applications. EBRO Butterfly Valves have been specified and installed in wastewater systems designed to handle effluent in Boilers for upcoming ELG Regulation compliance together with pump isolation, lime recirculation and mist elimination in wet FGD systems. Our line of Stafsjo knife gates offer reliable service when handling dry fly ash underneath baghouse or ESP discharge hoppers as well as in handling dry lime or fly ash in pneumatic conveying systems.

Environmental Energy Services.....14

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ETS.....9

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Evonik Corporation.....43

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FLSmidth - AFT Operations.....47

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FLSmidth Inc - AFT Operations (Advanced Filtration Technologies) is a major manufacturer and supplier of baghouse filter bags, APC replacement parts and baghouse services to the power generation, industrial boiler and waste to energy industries. AFT is highly regarded for the quality and performance of its products to many baghouse OEM's as well as countless individual production facilities. Our highly experienced engineering and technical service team provide complete bag installations, changeouts and dust collector rebuilds to ensure minimum downtime and long term, trouble free operation.

FuelTech, Inc.....31

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APC technologies include low NOX combustion systems, ESP upgrades, NOXOUT® and HERT™ SNCR systems, Advanced SCR systems, ULTRA® ammonia generation process, and TIFI® programs to improve boiler efficiency while reducing slagging, corrosion, SO₂, and GHG emissions. Water treatment technologies include DGI™ Dissolved Gas Infusion Systems using Oxygenation and a patented nozzle for cost effective approach over conventional utility and industrial aeration, and REDOX chemical additives for effective control of mercury emissions for wet FGD scrubbers.

Garlock Sealing Technologies.....30

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Garlock is a multinational manufacturer of high-performance fluid sealing and pipeline solutions with an emphasis on safety, longevity, and productivity. We work in partnership with our customers, industry associations, and governmental entities to understand their unique sealing challenges and respond with innovative solutions that keep people safe while increasing profitability. With a history dating back over 125 years, Garlock today maintains a global presence of manufacturing and distribution facilities that allow us to meet our customers' needs with unprecedented responsiveness and ingenuity. We also operate state-of-the-art research, development, and testing facilities that continue to advance the state of the sealing industry to meet the rapidly changing demands of our industrial customers. By combining the most innovative products with unparalleled service and a strong environmental commitment, we deliver solutions that improve plant productivity, reduce costs, and comply with increasingly stringent environmental regulations.

GeckoRobotics.....36

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Gecko Robotics (Gecko) make robots for industrial inspection, starting in the Power Industry. Our technology and services perform safe, fast, and accurate inspection on critical industrial assets. Gecko's wall-climbing robots, along with inspection teams, perform non-destructive testing for clients across the United States and internationally. Gecko's inspections are 10x faster than current methods and collect 100x more data.

GE Power.....12

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GE Power is transforming the electricity industry with the digital power plant, the world's largest and most efficient gas turbine, full balance of plant, upgrade and service solutions. GE Power has installed 30% of the world's steam turbine and boiler capacity and is the OEM for a long list of environmental control installations throughout the world. We are dedicated to ensuring coal power plants are as efficient as possible and to limiting their effects on the environment through effective emission reduction technologies. We are proud to have 100 years of experience in environmental control solutions for coal power. Our technology can address all the sources of non-greenhouse gas emissions, including NO_x, SO_x, particulate matter and others (Hg, HCl, HF, SO₂). GE's expertise, technology, and comprehensive product portfolio enable our customers to comply with today's stringent emission regulations. Our high-quality and cost-effective equipment and services can be adapted to our customers' needs. Our innovative technologies and digital offerings help make power more affordable, reliable, accessible and sustainable.

GrayWolf Industrial Services.....35

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Titan Contracting is a subsidiary of GrayWolf Industrial. Titan, along with its sister companies, Titan Fabricators, Milco National Constructors and Inco Services are full service providers of construction and fabrication services in the Power Industry. Services include new construction, existing plant modifications, repair and maintenance. Specialties include Power and Process Piping, Balance of Plant Disciplines, Turbine and HRSG Installations, ASME boiler and tube repair, Tank & Vessel Fabrication (Shop and Field Installations), Existing Plant Modifications/Upgrades, Environmental Equipment Installation/ Retrofits, Air Cooled Condenser Rebuild & Installation, AQCS installations and Maintenance.

Ground/Water Treatment & Technology, LLC.....3

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With a national presence, Ground/Water Treatment & Technology (GWTT) is one of the only U.S. groundwater treatment companies that self-performs system design; civil, electrical, and mechanical site work; equipment fabrication and customization; dewatering; and licensed operation & maintenance for groundwater treatment systems. Our chemistry subject matter expertise, systems engineering, project management, quality control, field experience, and safety-first approach distinguish us from our peers. As a vertically integrated company with more than 20 years of experience, we deliver compliant systems and solutions the first time and every time. With the growing complexity of environmental laws, regulations, and enforcement actions, selecting the right partner for remediation projects has never been more important. Join the growing list of companies that rely on GWTT as their solutions partner.

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High Temperature Technologies.....20

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Business: 704.375.2111 / www.isomembrane.com



2018 marks our 25th Anniversary in helping coal-fired plants measurably reduce emissions, operating costs, and improve plant safety and efficiency. With well over 1,500 installations, ISOMEMBRANE® has a demonstrated track-record of solving air in-leakage issues - from the boiler to the stack - with greater reliability, lower cost and faster install times than traditional options. ISOMEMBRANE® is a maintenance-free alternative to refractory and weld repairs in dead air space applications, and a more cost-effective option to expansion joint replacement (online repairs are an option in many applications). ISOMEMBRANE® is an effective tool to resolve air in-leakage, significantly enhancing APC equipment performance, and reducing sorbent costs & parasitic power consumption.

Howden.....26

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Innovative Combustion Technologies.....33

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Innovative Combustion Technologies (ICT) provides technical, consulting, and field testing services worldwide to troubleshoot/optimize combustion and pollution control system performance. ICT's products and services include: (1) SCR catalyst management services through the operation of the USA's only independent third-party bench-scale SCR catalyst testing lab. (2) Dynamic classifiers, pulverizers, and technical services for solid fuel firing installations as the NA sales agent for Loesche Energy Systems. (3) SCR-AIG tuning and EPA method testing/stack testing as a certified AETB. (4) Engineered solutions, equipment, and CFD/numeric mesh modelling to solve challenges associated with airflow measurement, fuel/air distribution, and pulverizer/boiler performance. (5) MillPro systems as an alternative to steam inerting to inhibit coal pulverizer fires and explosions.

Integrated Global Services, Inc.....7

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www.IntegratedGlobal.com



Industry leading NoNOx Components offer high temperature erosion resistant LPA/Popcorn Ash filtration systems for protection against catalyst plugging. NoNOx supports utilities and OEM's in the design and manufacture of components for effective filtration over long service intervals, while minimizing system pressure drop. The NoNOx patented screens have been successfully installed in over 60 SCRs across the USA.

Johnson Matthey Stationary Emissions Control LLC.....32

1121 Alderman Drive, Suite 204
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Ken Jeffers, Sales Manager
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www.matthey.com



Johnson Matthey manufactures plate and honeycomb SCR catalyst and CO catalyst for many applications including coal fired power plants and gas turbines. We have extensive world-wide experience including over 50 coal-fired utility boiler installations in the U.S. alone. Johnson Matthey has installed over 100,000 m³ of plate-type SCR catalyst in U.S. coal-fired applications. Plate catalyst is recognized for its resistance to fly ash plugging, low SO₂/SO₃ conversion, low pressure loss and mechanical robustness. Johnson Matthey is a 200-year old specialty chemicals company focused on its core skills in catalysts, precious metals, fine chemicals and process technologies. Our \$15 billion company has been providing catalytic solutions for air quality problems for more than 30 years.

Kirk Key Interlock Co.....28

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North Canton, OH 44720
Michael Gareri
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KIRK believes that everyone has the right to be safe at work! KIRK interlock safety systems have been providing safety to the utility industry and precipitator applications for over 80 years. Our interlock safety systems isolate hazardous energy, permit safe access to hazardous areas, and transfer safety sequences, mitigating risk. KIRK safety systems are customized to specific applications requirements

KraftPowercon.....55&56

101 S. Palafox Place, #366
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Business: 850-607-7688
www.kraftpowercon.com/northamerica



KraftPowercon manufactures a broad range of power supply products for precipitator applications. Over 15,000 KraftPowercon T/R sets have been installed worldwide dating back to 1955. Our Kraft Classic series is offered in single-phase and three-phase configurations. The SmartKraft+ series includes our Switch Mode Advanced Rectifier Technology for less ripple and high purification levels. Additionally we manufacture ancillary equipment associated with high voltage power supply applications, such as our new MicroKraft 4 automation voltage controller. Please let us apply our manufacturing and application experience to help you develop a best in class precipitator power solution.

Lhoist North America, Inc.....10

5600 Clearfork Main St Suite 300
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Director, New Business Development FGT
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Business: 682-774-2037
www.lhoist.us



Lhoist North America, a subsidiary of the Lhoist Group, is a privately-owned mining company with facilities across the U.S. and Canada. Lhoist supplies a number of high quality calcium based products, including Sorbacal® SP, an enhanced hydrate lime for flue gas treatment of acid gases into many industries including cement, glass, utility, paper, chemical, and waste to energy. Call our FGT Solutions team at 1-800-365-6724 or visit our websites www.lhoist.us / www.sorbacal.us for more information.

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LJUNGSTRÖM.....29

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Business: 512.771.1890
www.ljungstrom-global.com



LJUNGSTRÖM is a global technology and innovation leader, specializing in full life-cycle services and solutions for thermal power plants and industrial facilities. With a history of heat recovery advances spanning 95 years, LJUNGSTRÖM is redefining clean thermal power technologies through its deep customer and technical knowledge, worldwide. LJUNGSTRÖM serves the thermal power plant market with three key applications: air preheaters, gas-gas heaters and AdvX, based on our genuine Ljungström® technology platform.

Mississippi Lime.....37&38

3870 S. Lindbergh Blvd. Suite 200
St. Louis, MO 63127
Curt Biehn, Business Director - FGT
crbiehn@mlc.com
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www.mississippilime.com



Mississippi Lime is a leading supplier of enhanced hydrated lime to the air pollution control industry. Our line of High Reactivity Hydrated Lime products offer proven cost effective methods for controlling SO₃, SO₂, and HCl with Dry Sorbent Injection technology. Mississippi Lime has production and supply capabilities that are unmatched in the hydrated lime industry. We also offer technical support towards plant demonstrations, conveying optimization, and troubleshooting. In conjunction with Breen Energy Solutions, Mississippi Lime can help you understand how controlling your flue can reduce operating costs while maintaining regulatory compliance.

Mitsubishi Hitachi Power Systems.....45

Basking Ridge, NJ
Kyle Neidig, Product Mgr., SCR Systems & Catalyst
kyle.neidig@mhpowersystems.com
Business: 330-201-5459 / www.mhpsa.com



Headquartered in Lake Mary, FL, MHPS Americas employs more than 2,000 people who design, build, install, monitor and service aero-derivative and heavy-duty natural gas turbines, steam turbines, generators, battery storage products and environmental control systems throughout North and South America. MHPS Americas collaborates with customers to deploy artificial intelligence and low carbon technologies to take the cost and carbon out of the electric power value chain. MHPS Americas is a subsidiary of Mitsubishi Hitachi Power Systems, a joint venture between Mitsubishi Heavy Industries, Ltd. and Hitachi, Ltd. PWPS and MD&A are wholly owned subsidiaries of MHPS Americas. Learn more about MHPS by visiting www.changeinpower.com.

NWL.....5

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Bordentown, NJ 08505
Joseph Manna,
National Sales Manager
jmanna@nwl.com /
Business: 941-629-0436
www.nwl.com



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Ohio Lumex.....34

30350 Bruce Industrial Parkway
Solon, OH 44139
Alexandra Sipershteyn, Marketing Director
alexandra.sipershteyn@ohiolumex.com
Business: 440-264-2500 x305



Ohio Lumex has been a trusted partner for the power industry for almost 20 years. Beginning with crucial technological advancements in the field of mercury measurements, we continue to transform the way environmental testing is performed by offering in-situ measurements of SO₃, NH₃, HCl, Se, and As, among other pollutants. These state-of-the-art non-extractive techniques come together in our offering of an SCR Support Service. In cooperation with other industry experts, Ohio Lumex completes a direct assessment of SCR performance by utilizing the data obtained from these field measurements and combines it with the latest modeling techniques and catalyst management principals. These tools are crucial to optimizing SCR performance and understanding the impact of fuel and operational changes on plant operations as well as emissions.

ProcessBarron.....60

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ProcessBarron is a leader in the design, manufacturing, installation, maintenance, and repair of bulk materials handling, air handling, and ash handling equipment. Our teams can quickly assess your needs and generate solutions that improve efficiency and reduce costs. The ProcessBarron field service department specializes in turnkey installation of new equipment and the inspection, maintenance, and thorough analysis of problems with existing equipment.

RE Consulting.....2&3

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RE Consulting is a division of Reinhold Environmental Ltd., a corporation which continues to provide numerous O&M services to the coal-burning utility industry since 1993. Using its team of industry experts, RE Consulting's current focus is to provide engineering studies, on-site training, and O&M based troubleshooting and consulting. In addition, RE Consulting provides on-line training manuals.

Redkoh Industries.....16

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Used and respected around the world, Redkoh is a leading supplier in the design and development of controls for the ESP/FF Industry. With proof of concept available in the form of a mobile test unit (shown above), the Redkoh SMPS provides a host of advantages to ESP operation and maintenance such as:

- Increased ESP Power
- Reduced Emissions
- Cost Effective
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Mobile Test Units Are Available, Stop by Our Booth for More Information

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ReNOx.....24

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VP of Bus. Dev. & Marketing
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Business: 513-562-1818
www.ReNOx-us.com



ReNOx Inc. in partnership with Laborelec ENGIE, a global independent laboratory and energy service provider for the past 55 years, has begun operations in North America. Our 25 years' of experience in expert environmental services using DeNOx technologies has already led Laborelec ENGIE to be the largest independent SCR specialist in the world. With our custom new options for DeNOx catalyst from multiple sources around the world, couple with comprehensive in-house testing capability, reactor inspection and in-situ high-performance cleaning ReNOx is now in the unique position of being the go-to independent partner for integrated SCR management services

Southern Environmental, Inc.....53

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SouthernField-Environmental Elements.....59

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Southern Field is an experienced supplier of Air Pollution Control Equipment and Services and General Plant Maintenance for the Power Generation and Industrial Marketplace. We are a division of Processbarron (www.processbarron.com) with offices in Arden, NC, Luverne, AL and Pensacola, FL. Our main products and services Include:

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- Electrostatic Precipitator to Baghouse conversions
- Baghouse Maintenance and Upgrades
- Tubular and Rotary Style Air PreHeater Maintenance and Upgrades
- Stoker Fired Boiler Traveling Grate System upgrades and Maintenance
- General Plant Maintenance

Stein Industries17&18

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Bill Cooke
Contract Administrator
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www.steinindustriesinc.com



Designs and manufactures electrical apparatus for use with electrostatic precipitators. This includes transformer-rectifier sets (T/R's) at both nominal (60Hz) and mid-range frequencies (400 Hz), current limiting reactors (CLR's) and control cabinets. The 400 Hz T/R's together with mid-frequency controllers provide a capable alternative to high frequency with the reliability of a standard oil-filled transformer. Field service as well as factory repairs and rebuilds of all T/R's, gives our customers a unique advantage for their T/R fleet. Renewal parts for most manufacturers are available; please call with details for a quote.

SUEZ Water Technologies & Solutions.....4

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www.suezwatertechnologies.com



We help industries solve their toughest water, wastewater and process challenges. We work with customers across all industries, including power, food & beverage, metals and mining, chemicals & pharma, oil & gas downstream and petrochemicals, upstream oil & gas, pulp and paper, and utilities. Our goal is to help industries thrive. We have complete solutions for FGD wastewater and can help you meet ELG regulations.

Thompson Industrial Services39

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Carl Wise
Sr. Business Development Manager
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Business: 803- 773-8005
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Significantly reduce NOx emissions and increase overall SCR efficiency with Thompson's unique in-situ, off-line catalyst cleaning process. This safe, proprietary and proven technique dislodges and removes hardened surface fly ash as well as deep within the modules that cannot be reached by other more traditional methods. Clients see a decrease in pressure drop, an increase in reactive surface, a decrease in ammonia usage/slip and increased lifespan of the catalyst. In addition, our newest patent-pending process also cleans LPA screens in-place. The catalyst cleaning procedure is also frequently employed to decontaminate the catalyst just before its removal for replacement to minimize in-transit roadside contamination and enhance regeneration processing. Thompson Industrial Services offers 30 years of unmatched safety and productivity in industrial cleaning with a broad range of services including SCR specialized catalyst & scrubber cleaning, Combustible Dust Remediation, Vacuum-Excavation, FINFOAM® Air-cooled Heat Exchanger Cleaning and more.

Umicore Catalyst USA, LLC.....62

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Umicore Catalyst USA, LLC (Umicore) is recognized as the world leader in the development and supply of catalyst and technology for air pollution control with a global presence encompassing five with over 1,800 worldwide references. With manufacturing facilities in Pasadena, TX, Umicore services the petro-chemical, refinery, and power generation with stationary emissions control technology solutions. Umicore's air pollution technologies, including Selective Catalytic Reduction (SCR) catalyst for the control of nitrogen oxides (NOx), the reduction of Carbon Monoxide (CO) and VOC's , provides energy efficient and reliable solutions for the reduction of air emissions including a multiple function catalyst. Umicore's catalysts are highly efficient reducing CO, VOC's and Nitrogen Oxide at levels greater than 95% at an almost zero ammonia slip. Umicore has proven, over the 20 years, to be the supplier of choice when it comes to advanced products for environmental catalytic systems.

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United Conveyor Corporation.....19
 2100 Norman Drive W
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 Jon Norman
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 Business: 847-473-5900
 www.unitedconveyor.com



United Conveyor Corporation is a global leader in material handling and multi-pollutant emissions control systems for the power generation industry. Our in-depth knowledge of regulatory compliance and expertise in material behavior, product innovation and system development provides customers with comprehensive, cost-effective solutions specific to their individualized and complex plant needs.

Valmet.....54
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 Olympia, WA 98512
 Greg Lockert, Sales Manager
 greg.lockert@valmet.com
 Business: 317-418-7878
 www.valmet.com



Valmet has acquired Energetech, a high-tech combustion diagnostics and monitoring technology company based in Washington, USA. The company develops innovative technologies for boiler imaging and temperature measuring, and holds a leading position on the US market.

Veolia.....42
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 Moon Township, PA 15108
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 www.veoliawatertech.com



Veolia's expertise and technologies for the power generation industry covers the complete water and wastewater cycle with hundreds of power generation references throughout the world. Focusing on system performance, compliance with process and environmental requirements as well as long-term cost-effectiveness, we are able to meet the most demanding standards of reliability, safety and quality that power utilities demand.

Welmer Mechanical Services.....15
 South Shore Signs
 103 West College Ave. Ruskin, FL 33570
 Michael Pelzer
 pelzermichael@yahoo.com
 Business: 813-645-2201



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WesTech Engineering.....52
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 Salt Lake City, Utah 84115
 Brett Housley
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 Business (801) 265 - 1000
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WesTech Engineering, Inc is headquartered in Salt Lake City, Utah and celebrates 47 years of excellence in the design, engineering, manufacture and supply of liquid-solids separation process equipment designed to work and built to last. Expertise in water and wastewater treatment for the power industry is based upon real-world field work, commissioned both domestic and internationally. Dewatering, FGD, CCR, Zero Liquid Discharge are among the many customized process solutions offered to the mining and power industries for optimization of resources and regulatory compliance. We also provide mobile containerized process steps for targeted deployment. We look forward to the opportunity of working with you on your project and stand ready to meet site objectives both now and into the future.

Zhejiang TUNA Environmental Science & Technology Co.....25
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 www.zj-tuna.com



TUNA, a National High-tech enterprise provides EPC service of FGD, SCR DeNOx, and ESP systems, is listed in Shanghai main board with annual turnover of 120 mil USD. As a major SCR catalyst supplier in China, TUNA has delivered more than 70,000m³catalyst so far, including 2,500m³ exported in the year of 2017. Our vision is to be a reliable global SCR catalyst supplier by 2022.

WPCA Upcoming Seminars

**September 18: WPCA/TVA Ash Pond Seminar
 Oak Ridge, TN**

**October 2-3: WPCA/Duke Energy Co-Firing Seminar
 Spartanburg, SC and tour of Cliftside PS**

Further information can be found on www.wpca.info

Treasure Hunt!

Utility attendees - look for the treasure hunt card inside your name tag. Search the expo for the answers. Place your completed card in the box at the registration desk by 3:30 Tuesday afternoon. Drawing for prizes will be held in the expo hall at 3:45 pm.

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Tuesday
at 3:45 pm in the Expo
Hall**

