The MEGA Symposium is brought to you through the combined efforts of four key industry partners:
The MEGA Symposium returns in 2018 with a focus on industry responses to new operational and environmental challenges for power plants as well as policy and regulatory perspectives affecting future operations. Building on the 20-year history as the power plant industry’s leading technical conference for SOx, NOx, particulate and mercury control, the 2018 conference will include policy discussions, sessions on emission challenges for gas-fired plants, and content designed for international power plant owners facing new regulations.

The twelfth MEGA Symposium has been restructured to provide added value to seasoned professionals in the US and internationally and to provide an excellent learning experience for early career engineers. Attendees will benefit from insights into policy trends and receive the latest developments and operational experience to reliably manage compliance with air quality, solid waste, and discharge water quality requirements for fossil-fired power plants while adapting to increasingly variable operational demands. Recognizing the maturity of control technologies for criteria pollutants and the advanced development status of mercury and air toxics (MATS)-specific controls, the 2018 MEGA will emphasize approaches and technologies to support cycling operations while balancing emission constraints at the stack and effluent discharges, and byproduct quality.

REGISTRATION

Online registration is open at www.awma.org/MEGA through August 20 at noon. On-site registration is located on the third floor of the Baltimore Marriott, at the Grand Ballroom registration desk and will be open during the following hours:

- Tuesday, August 21: 7:00 am – 5:00 pm
- Wednesday, August 22: 7:00 am – 5:00 pm
- Thursday, August 23: 7:00 am – 12:00 pm

Your registration will not be processed without payment.

REFUND POLICY

If written notice of cancellation is received on or before August 6, 2018, payment will be refunded, less a $75 cancellation fee. (Cancellation fees apply regardless of payment method). Substitutions may be made at any time; payment for any difference is due at the time of substitution. This refund policy applies to all occurrences, including weather-related events and other natural disasters. In the unlikely occurrence of event cancellation, the Association is not liable for any expenses incurred by the registrant other than the full refund of registration fee(s) paid.

CONFERENCE PROCEEDINGS

Abstracts, papers, and PowerPoint presentations will be available online. Attendees will be notified via e-mail after the conference.

CONTINUING EDUCATION CREDIT

Symposium attendees may be eligible for continuing education credit. For more information, please contact Gloria Henning at +1-412-904-6021 or ghening@awma.org.

PRESENTERS’ MEETING

Grand Ballroom, Salons I–IV

Presenters and Session Chairs will meet during the continental breakfast on the day of their session involvement to review program details. Presenters should bring their PowerPoint presentations on a memory stick/USB to this meeting, as well as a brief biography for introductory purposes.

CONFERENCE COMMITTEE

Sharon Sjostrom, ADA Environmental Solutions, ICAC President, A&WMA Technical Representative
John Chang, U.S. EPA
Jordan Haywood, Siemens
John Litynski, DOE

The views expressed by the individual presenters do not imply endorsement and may not be reflective of the views of the symposium organizers.

LOCATION

Baltimore Marriott Waterfront
700 Aliceanna Street
Baltimore, MD 21202
Phone: +1-410-385-3000

See the hotel floor plan on page 12 for details.

ADA/SPECIAL REQUIREMENTS

The Air & Waste Management Association supports the Americans with Disabilities Act (ADA). Those attendees requiring specific equipment, meals, or services should contact Cindy Fontanesi, Conference & Events Planner, at +1-412-904-6031 to make those needs known in advance. A&WMA will make every reasonable effort to accommodate them.
PARTNERING ORGANIZATIONS

Air & Waste Management Association (A&WMA)

A&WMA is a not-for-profit, nonpartisan professional organization that enhances knowledge and expertise by providing a neutral forum for technology exchange, professional development, networking opportunities, public education, and outreach to more than 6,000 environmental professionals in 65 countries. A&WMA also promotes global environmental responsibility and increases the effectiveness of organizations to make critical decisions that benefit society. For more information, please visit www.awma.org. A&WMA Federal Tax ID # 25-6048614.

Institute of Clean Air Companies (ICAC)

For nearly 60 years, the Institute of Clean Air Companies (ICAC) has been the trusted voice of the clean air technology industry. ICAC is a trade association of companies that supply air pollution control and monitoring systems, equipment, and services for stationary sources around the world. ICAC provides members with unique opportunities to sharpen market awareness and enhance business planning through valuable engagement with market influencers and policy-makers. We believe that improved air quality and industrial growth best occur when achievable cost-effective policies are paired with innovative technologies.

To learn more about ICAC or for information about becoming a member, please visit www.icac.com or contact us at icacinfo@icac.com or 202-478-6188.

U.S. Environmental Protection Agency (U.S. EPA)

The mission of the U.S. Environmental Protection Agency is to protect human health and the environment. EPA's purpose is to ensure that:
• all Americans are protected from significant risks to human health and the environment where they live, learn and work.
• national efforts to reduce environmental risk are based on the best available scientific information.
• federal laws protecting human health and the environment are enforced fairly and effectively.
• environmental protection is an integral consideration in U.S. policies concerning natural resources, human health, economic growth, energy, transportation, agriculture, industry, and international trade, and these factors are similarly considered in establishing environmental policy.
• all parts of society—communities, individuals, business, state and local governments, tribal governments—have access to accurate information sufficient to effectively participate in managing human health and environmental risks.
• environmental protection contributes to making our communities and ecosystems diverse, sustainable and economically productive.
• the US plays a leadership role in working with other nations to protect the global environment.
Visit www.epa.gov for more information.

Department of Energy (DOE) / Office of Fossil Energy

The U.S. Department of Energy’s Office of Fossil Energy is responsible for Federal research, development, and demonstration efforts on advanced power generation; power plant efficiency; water management; and carbon capture, utilization, and storage (CCUS) technologies, as well as the development of technological solutions for the prudent and sustainable development of our unconventional oil and gas domestic resources. It also manages the nation's Strategic Petroleum Reserve and Northeast Home Heating Oil Reserve, both key emergency response tools available to the President to protect Americans from energy supply disruptions. More information about DOE's Office of Fossil Energy is at: https://www.energy.gov/fe/office-fossil-energy.
Gulf Power serves 460,000 customers across eight counties in Northwest Florida. More than 1,200 team members put customers at the center of everything they do, working hard to provide them with reliable and environmentally responsible energy, offering innovative energy services and giving back to the community they call home. Gulf Power has ranked among the highest performers in customer satisfaction among electric utilities - 3rd out of 19 in the Southern Region Midsize Utility Group — according to the 2017 J.D. Power Electric Utility Residential Customer Satisfaction Study. Gulf Power’s renewables account for 11 percent of its energy mix for 2018, one of the highest percentages by any electric utility in the state of Florida. Gulf Power signed the first agreement in the state to purchase wind in 2016, making the company a leading purchaser of wind energy among Florida utilities. In 2017, Gulf Power added the Gulf Coast Solar Center — 1.5 million photovoltaic-panels on three military bases that serve customers in Northwest Florida. Together, wind and solar provide enough energy to power 100,000 homes annually. Additionally, Gulf Power has produced more than 153 million kilowatt-hours of renewable energy from its Perdido Landfill Gas-to-Energy facility in Escambia County, Florida. For more information on Gulf Power, visit the company’s website at www.gulfpower.com.

ME2C delivers proven mercury emission control technologies to the global coal-power industry. Our exclusive, patented technologies provide tunable formulations for effective low-cost solutions to ensure compliance with regulations of mercury air emissions. ME2C’s suite of mercury oxidizers, sorbent products, and scrubber reemission additives offer the least disruption to current equipment and plant operations while preserving the integrity of fly-ash. www.midwestemissions.com

Blue Mountain Environmental Management Corp.

In a world of evolving regulations and reporting requirements Blue Mountain Environmental Management Corporation has become a leader in Source Testing and Industrial Hygiene/Health & Safety. Serving a wide variety of clientele including various manufacturing sectors, power generation and transmission, and pilot plant operations our staff of dedicated professionals offer clients extensive experience, accurate timely results and superior service with a cost effective approach on all projects. www.bluemountainusa.com

Exposure Opportunities at A&WMA

If you’re looking to get your name in front of key target audiences and generate leads, A&WMA has many options to meet your needs and budget. Exhibit or sponsor at one of our upcoming events, including: the Vapor Intrusion, Remediation and Site Closure Conference, NSR Workshop, Guideline on Air Quality Models Conference, Air Quality Measurement Methods and Technology Conference, ACE 2019, Freight & Environment: Ports of Entry, IT3, and more.

Advertising opportunities are available in EM Magazine in print or digital, and also on our website. Visit www.awma.org/advertise or contact Jeff Schurman at jschurman@awma.org for details.
EXHIBITION INFORMATION

The Exhibit Hall will be located in the Grand Ballroom, Salons VI - X.

Exhibition Hours:
Tuesday, August 21: 4:00 pm - 6:00 pm
Wednesday, August 22: 9:00 am - 6:00 pm
Thursday, August 23: 7:30 am - 12:00 pm

EXHIBITORS

ADA Carbon Solutions  Booth 312
www.ada-cs.com

ADA Carbon Solutions today has established itself as a leading provider of powdered activated carbon products optimized for MATS compliance in emission control applications. We commit our unique expertise and dedicated assets to delivering superior mercury compliance solutions and providing our customers with Reliability and Peace of Mind.

ADA-ES, Inc.  Booth 308
www.aedaes.com

ADA-ES has been a leader in developing advanced mercury and acid gas control solutions for over 25 years. Our proprietary environmental technologies and specialty chemicals enable power plants to enhance existing air pollution control equipment, minimize mercury, acid gases, and other emissions, maximize capacity, and improve operating efficiency to meet the challenges of existing and pending emission control regulations.

Air Hygiene International, Inc.  Booth 100
www.airhygiene.com

Air Hygiene is committed to the highest quality of stack testing services. Our efforts are to ensure continuous compliance with testing requirements that provide exceptional expertise for the benefit of our customers.

Ashland LLC  Booth 408
www.ashland.com

Ashland constantly evaluates the performance of Derakane resin laminates for corrosion service. Ashland’s technical service team has an industry-leading reputation for solving problems. Whether focused on our customers’ product design, process optimization or new product development, our technical staff prides itself on building partnerships with our customers that lead to innovative solutions.

B3 Systems, Inc.  Booth 108
www.B3systems.com

B3 Systems provides specialized environmental field services and products including: Chemical Spiking, PM Spiking, Bag Filter Optimization, Bag Leak Detectors, Dust Monitors, Particulate Monitors for EPA MACT Compliance and Process Control.

Breen Energy Solutions  Booth 412
www.breenes.com

Breen Energy Solutions provides acid gas management solutions to the Fossil Fuel Power Generation Industry. Products/services include the patented AbSensor system for Acid Gas measurement and characterization, partial coal/gas conversion processes for Fuel Flexibility and MATS compliance and SCR Tuning/Catalyst Management.

California Analytical Instruments, Inc.  Booth 107
www.gasanalyzers.com

CAI is a premier provider of quality gas analyzers and systems for use in industrial, environmental, process, and automotive emissions measurement applications. Our analyzers utilize technologies such as: Chemiluminescence, Non-Dispersive Infrared (NDIR), Flame Ionization (FID), Paramagnetic, Photoacoustic Infrared Spectroscopy and Fourier Transform Infrared (FTIR) for measurement of virtually any gas.

Carbonxt, Inc.  Booth 409
www.carbonxt.com

Carbonxt\textsuperscript{TM}, in partnership with United Conveyor Corporation, is a leading provider of oxidizing, non-halogenated Powdered Activated Carbons (PACs) for emissions control applications to help utilities meet stringent compliance requirements. Our PACs are enhanced with our proprietary oxidizing additive and/or a minimal percentage of bromine for optimal sorbent performance. Visit www.carbonxt.com.

Carmeuse Lime & Stone  Booth 403
www.carmeusena.com

Leading producer of lime, hydrated lime and limestone for SOx mitigation, including dry sorbent injection. Other applications include wastewater and solid waste treatment, zero liquid discharge and coal ash disposal solutions. Our customers benefit from “Value Added” services such as Inventory Management, Technical Support, Customer Solutions, Logistics Flexibility and more.

Catalyst Air Management, Inc.  Booth 115
www.catalystair.com

Since 1996, Catalyst Air Management, Inc. has been providing quality process evaluation and air emissions testing services to the power generation industry. Headquartered in Knoxville, Tennessee with offices in Pennsylvania, Florida, and Alabama, Catalyst provides experienced, qualified test personnel proficient in the latest EPA test methods at competitive mobilization costs.

CEM Service Group, Inc.  Booth 105
www.cemservicegroup.com

Exclusively dedicated to CEMS integration, service & support since 1997. Featuring the CEMsentry\textsuperscript{TM}3000 Continuous Emission Monitoring System custom configured for your specific application. Providing turn-key installations/upgrades, commissioning, training, performance testing, QA audits, preventive maintenance and complete field service & support. CEMS leasing, analyzers, gas conditioners, probes, sample-lines & equipment rentals.

Clayborn Lab  Booth 106
www.claybornlab.com

Clayborn Lab is a leading manufacturer of heated sample lines for the CEMS and RATA marketplace. Clayborn offers innovative technology including TuffGuard outer cover, multi circuit OEM heat trace, efficient insulation, and internal kellum grips. Lead times are an industry leading 2-3 weeks and quotes are available within 48 hours.
CORMETECH, INC.
www.cormetech.com

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™), provides SCR catalyst regeneration and full life-cycle catalyst management services. 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.

ECO PHYSICS, INC
www.ecophysics-us.com

NOx, Ammonia, O2 and CO2 analyzers for emissions measurements for regulatory compliance. We are the leading supplier for combustion and atmospheric research. Heated sample inlet systems for measurement of hot, wet samples, and dual inlet analyzers for simultaneous measurement of two separate samples. We have a solution for you!

Fuel Tech, Inc.
www.ftek.com

Fuel Tech provides multi-pollutant emission control for NOx, particulate, and acid gases, along with technologies to improve boiler efficiency. Our technologies enable customers to produce cost-effective and environmentally sustainable energy.

FLSmidth Inc. - AFT Operations
www.flsmith.com/aft

FLSmith AFT is a major manufacturer and supplier of baghouse filter bags, APC replacement parts and baghouse services to most every industry. Our highly experienced engineering and technical service team provides complete bag installations, changeouts and dust collector rebuilds to ensure minimum downtime and long-term, trouble-free operation.

Gasmet Technologies Inc.
www.gasmet.com

Gasmet’s range of FTIR gas analyzers provide a cost-effective solution. Gasmet’s CEMS II or In-Situ and the compact & rugged DX4000 portable FTIR provide simultaneous measurement of many key pollutants including H2O, HCl, HF, Ammonia, NOx, SO2, CO, CO2, GHG’s & VOC’s including formaldehyde, and many others gases.

Hadek Protective Systems Inc.
www.hadek.com

Hadek Protective Systems is the worldwide distributor of the Pennguard® Block Lining System as well as the global leader in corrosion protection for power plant chimneys and ductwork. The Pennguard® Block Lining System is the most versatile acid resistant chimney lining for fossil fired power plants. Learn more at www.hadek.com.

Institute of Clean Air Companies (ICAC)
www.icac.com

For nearly 60 years, the Institute of Clean Air Companies (ICAC) has been the trusted voice of the clean air technology industry. ICAC is a trade association of companies that supply air pollution control and monitoring systems, equipment, and services for stationary sources around the world. ICAC provides members with unique opportunities to sharpen market awareness and enhance business planning through valuable engagement with market influencers and policy-makers. We believe that improved air quality and industrial growth best occur when achievable cost-effective policies are paired with innovative technologies.

Krishnan & Associates, Inc.
www.krishnaninc.com

Krishnan & Associates provides marketing for energy & environmental services firms. K&A offers business development, digital marketing, website, webinars, sales & communication services. We generate leads, proposal opportunities, and sales for clients from power plants, refineries, industrial & petrochemical facilities using our industry experience and database of 60,000+ energy professionals.

Lhoist North America
www.lhoist.us

Lhoist North America, a subsidiary of the Lhoist Group, is a privately-owned mining company with facilities across the US and Canada. Lhoist supplies high quality calcium based products, including Sorbacal® SP, an enhanced hydrate lime for flue gas treatment of acid gases into many industries, including utilities and various industrials.

Mississippi Lime Company
www.mississippilime.com

Mississippi Lime is a leading supplier of hydrated lime for DSI. Our High Reactivity Hydrated Lime is a fast reacting and cost effective sorbent for SO3 and HCl removal. Our newest product, HRH-64, exhibits high performance in DSI applications for SO2 control. Stop by our booth to find out more.

Ohio Lumex Company, Inc.
www.ohiolumex.com

For more than 15 years, Ohio Lumex has been the manufacturer and distributor of the RA 915 Atomic Absorption Mercury Spectrometer with Zeeman Background Correction, a sensitive, reliable, and portable EPA-recommended mercury measurement device. The company has successfully incorporated this analyzer into a complete Sorbent Trap Analysis System and offers a fully-staffed NELAP certified laboratory for analysis. Also known for its state-of-the-art 915-J Continuous Emissions Mercury Monitor, the company also offers equipment in the areas of oxygen, HCl, NH3 and SO3 measurements.
SICK, Inc. Booth 202
www.sickusa.com

SICK’s proven technologies for in-situ and extractive gas analysis and measurement instrumentation for dust, opacity and flow ensure the best solution for emission monitoring and process control applications. Our power application solutions include emissions and process control gas analysis, particulate measurement and system integration.

Siemens Industry, Inc. Booth 209
http://usa.siemens.com/analyticalproducts

Siemens is a leading provider of Gas Chromatograph and Continuous Gas analyzer measurement products, training services, service repair and spare parts. In addition, we offer best in class after sale product support such as 24 hour technical assistance, spare parts, and Quick Ship Inventory availability for

U.S. Department of Energy Booth 405
www.energy.gov/fe

The Office of Fossil Energy is responsible for Federal research, development, and demonstration efforts on advanced power generation; power plant efficiency; water management; and carbon capture, utilization, and storage technologies, as well as the development of technological solutions for the prudent and sustainable development of our unconventional oil and gas domestic resources. It also manages the nation’s Strategic Petroleum Reserve and Northeast Home Heating Oil Reserve, both key emergency response tools available to the President to protect Americans from energy supply disruptions.

United Conveyor Corporation Booth 104
www.unitedconveyor.com

United Conveyor Corporation (UCC), a global leader in material handling and environmental solutions for the power generation industry offers a comprehensive portfolio of technologies to improve plant performance and help ensure environmental compliance. Our expertise in Dry Sorbent Injection/Activated Carbon Injection results in delivering the right solution for each application.

EXHIBITORS, CON’T.

EXHIBIT FLOOR PLAN
## TECHNICAL PROGRAM – Tuesday, August 21

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Registration</strong></td>
<td>7:00 am – 5:00 pm</td>
<td>Grand Ballroom Foyer West</td>
</tr>
<tr>
<td><strong>Continental Breakfast</strong></td>
<td>7:00 am – 8:00 am</td>
<td>Grand Ballroom V</td>
</tr>
<tr>
<td><strong>Presenters’ Meeting</strong></td>
<td>7:00 am – 8:00 am</td>
<td>Grand Ballroom I - IV</td>
</tr>
<tr>
<td><strong>Exhibition Hours</strong></td>
<td>4:00 pm – 6:00 pm</td>
<td>Grand Ballroom, Salons VI-X</td>
</tr>
<tr>
<td><strong>8:00 am - 10:00 am</strong></td>
<td><strong>Opening Keynote Session</strong></td>
<td>Grand Ballroom V</td>
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<tr>
<td><strong>Moderator:</strong> Michele Gehring, Coterie Environmental, LLC, and A&amp;WMA President-elect</td>
<td><strong>Speakers include:</strong></td>
<td></td>
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<tr>
<td><strong>Speakers include:</strong></td>
<td>Steve Winberg, Assistant Secretary of Fossil Energy, US Department of Energy</td>
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<td>Mandy Gunasekara, Principal Deputy Assistant Administrator for the Office of Air and Radiation, US EPA</td>
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<td>Sharon Sjostrom, Vice President, ADA-ES Inc. and President of the Institute of Clean Air Companies</td>
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<tr>
<td><strong>10:00 am - 10:20 am</strong></td>
<td><strong>Networking Break</strong></td>
<td>Grand Ballroom Foyer West</td>
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<tr>
<td><strong>10:20 am – 11:45 am</strong></td>
<td><strong>Panel: The Transformation of the Power Industry and the Role of Energy Storage</strong></td>
<td>Grand Ballroom V</td>
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<tr>
<td><strong>Session Chair:</strong> John Litynski, DOE</td>
<td><strong>Panelists include:</strong></td>
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<td></td>
<td>Matt Moore, Executive Director of Portfolio Strategy, ACES</td>
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<tr>
<td></td>
<td>Steve Baxley, Manager- Renewables, Storage, and Distributed Generation, Southern Company</td>
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<td>Deck S. Slone, Senior Vice President of Strategy &amp; Public Policy, Arch Coal, Inc.</td>
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<td>Peter Balash, Senior Economist, DOE National Energy Technology Laboratory</td>
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<tr>
<td><strong>11:45 am – 12:10 pm</strong></td>
<td><strong>Technical Presentation: Old Smokey Power - Transforming Aging Power Plants</strong></td>
<td>Grand Ballroom V</td>
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<tr>
<td><strong>Control #10</strong></td>
<td>Peter T. Belmonte, TRC Solutions, Houston, TX</td>
<td><strong>12:10 pm - 1:10 pm</strong></td>
</tr>
<tr>
<td><strong>1:10 pm - 2:25 pm</strong></td>
<td><strong>Panel: Regulatory Trends and Strategy: ELG and CCR</strong></td>
<td>Grand Ballroom V</td>
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<tr>
<td><strong>Session Chair:</strong> Constance Senior, ADA-ES, Inc.</td>
<td><strong>Panelists include:</strong></td>
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<td>Dan Hedrick, Director of Environmental Affairs, City Utilities of Springfield</td>
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<td>Lisa Bradley, Senior Toxicologist, Haley &amp; Aldrich</td>
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<td>William Kennedy, PE, Manager, Process &amp; Environmental Engineering, Duke Energy</td>
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<tr>
<td><strong>2:25 pm - 2:45 pm</strong></td>
<td><strong>Networking Break</strong></td>
<td>Grand Ballroom Foyer West</td>
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<tr>
<td><strong>2:45 pm - 3:10 pm</strong></td>
<td><strong>Control #17</strong> Impact of Air Pollution Control Devices on Selenium in FGD and Wastewater Treatment Systems at Coal-Fired Boilers</td>
<td>Grand Ballroom V</td>
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<tr>
<td></td>
<td>Constance Senior, ADA-ES, Inc., Highlands Ranch, CO</td>
<td><strong>Control #20</strong> Operational Water Balances for a Coal-Fired Power Plant with FGDs and Wastewater Recycling</td>
</tr>
<tr>
<td></td>
<td>Jonathan O. Allen, Christopher K. Ferens-Foulet, Allen Analytics LLC, Tucson, AZ; Chethan K. Acharya, Southern Company Services, Birmingham, AL</td>
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<tr>
<td><strong>3:10 pm - 3:35 pm</strong></td>
<td><strong>Control #48</strong> Near Real-Time Detection of Mercury and Selenium for Process Control</td>
<td>Grand Ballroom V</td>
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<tr>
<td></td>
<td>Cassandra Hutson, Craig Katic, Mandi Richardson, AECOM, Austin, TX; Naomi Goodman, EPRI, Palo Alto, CA</td>
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<tr>
<td><strong>4:00 pm - 5:00 pm</strong></td>
<td><strong>Poster Session in Exhibit Hall</strong></td>
<td>Grand Ballroom, Salons I - IV</td>
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</table>

**Note:** The above schedule is subject to change. Please consult the final program for the most up-to-date information.
8:00 am - 9:30 am
Panel: Integration of Diverse Generation Sources and Effects of Variable Load on Pollution Control Equipment and Emissions
Grand Ballroom V

Session Chair: Sheila Glesmann, Emission Strategies, Inc.

Speakers include:
- Tony Licata, Partner, Licata Energy & Environmental Consultants, Inc.
- Doug Campbell, Senior Technical Advisor, Nova Scotia Power
- Mike Mattes, President & CEO, Cormetech
- Angelos Kokkinos, Director of the Office of Advanced Technology Systems, US Department of Energy

9:30 am - 10:00 am
Networking Break and Exhibition Viewing
Exhibit Hall

TRACK 1 (Grand Ballroom V)

Session 2A
MANAGING IMPACTS OF LOAD CYCLING
[concurrent with Session 2B]
Session Chair: Ian Saratovsky, Lhoist

10:00 am - 10:25 am
Control #41
Impacts to SCR System and Catalyst Management from Load Cycling and Reserve Outages
Jared Koliha, John Cochran, IBIDEN CERAM Environmental, Inc., Overland Park, KS

10:25 am - 10:50 am
Control #65
Utilization of High Reactivity Hydrated Lime for Heat Rate and Operational Benefits
Charles Lockert, Mississippi Lime Company, Chagrin Falls, OH

10:50 am - 11:15 am
Control #40
The Real-Time Measurement of Sulfur Bearing Vaporous Compounds ("SO3", Sulfuric Acid, Ammonium Bisulfate) and its Application for Use for Process and Environmental Control
Daniel Menniti, Breen Energy Solutions, Houston, TX

11:15 am - 11:40 am
Control #11
Improving Acid Gas Abatement: Tales in Dry Sorbent Injection System Optimization
Ian Saratovsky, Martin Dillon, Greg Filippelli, Gerald Hunt, Lhoist North America, Fort Worth, TX

TRACK 2 (Dover A, B, C)

Session 2B
ELG AND CCR
[concurrent with Session 2A]
Session Chair: John Chang, EPA

10:00 am - 10:25 am
Control #50
A Detailed Overview of the KLeeNwater Pilot System for ELG Compliance
Katie McIntyre, KLEENwater, LLC, Elliston, VA

10:25 am - 10:50 am
Control #56
Heavy Metal Contaminant Sequestration in Ash by PAC
Micala Mitchek, Ariel Li, Joe Wong, ADA Carbon Solutions LLC; Sheila Glesmann, Emission Strategies, Inc., Littleton, CO

10:50 am - 11:15 am
Control #38
New Buffer Additive for Wet FGD Systems
Lewis B. Benson, Benson Environmental, Sewickley, PA

11:40 am - 12:40 pm
Lunch
Grand Ballroom I - IV
# TECHNICAL PROGRAM – Wednesday, August 22

## TRACK 1 (Grand Ballroom V)

### Session 3A
**PANEL: REGULATORY TRENDS AND OUTLOOK: NSR/CPP/MATS**  
[concurrent with Session 3B]

Session Chair: Michael Goo, ICAC

12:40 pm - 2:20 pm

Speakers include:
- Dan Chartier, Regulatory Director, Environmental Policy, National Rural Electric Cooperative Association (NRECA)
- Angelos Kokkinos, Director of the Office of Advanced Technology Systems, DOE
- Miles Keogh, Executive Director, National Association of Clean Air Agencies

2:20 pm - 2:40 pm

Networking Break and Exhibition Viewing (for both tracks)

### Session 4A
**HEAT RATE IMPACTS AND IMPROVEMENTS**  
[concurrent with Session 4B]

Session Chair: Anthony Licata, Licata Energy & Environmental Consultants

2:40 pm - 3:05 pm

**Heat Rate – Impact on EGUs and Emissions**
Anthony Licata, Licata Energy & Environmental Consultants, Inc., Yonkers, NY; Jeffrey Quick, Utah Geological Survey, Salt Lake City, UT

3:05 pm - 3:30 pm

**Heat Rate Improvement Case Studies on Coal-Fired Power Plants**
Emily Kunkel, Rajendra Gaikwad, Sargent & Lundy, Chicago, IL; Rae Cronmiller, NRECA, Washington, DC

3:30 pm - 3:55 pm

**Minimizing NOx and Heat Rate in Chinese Coal Fired Utility Boilers**
Richard Conn, Jeff Shan, Sunco International Co., Ltd, Naperville, IL; May Chen, Blue Horizon, Inc. Suzhou, Jiaxing China; Xiaodong Fang, Xiangyu Hu, Mingchi Lu, Xiaolin Xing, Pingwei Power Station, China Power Int’l Development Ltd., Huainan, Anhui, China

## TRACK 2 (Dover A, B, C)

### Session 3B
**EMISSIONS FROM NATURAL GAS-FIRED PLANTS**  
[concurrent with Session 3A]

Session Chair: Stan Mack, Johnson Matthey

12:40 pm - 1:05 pm

**The Impact of Changes in Electric Generation on Air Quality in Northern New Jersey**
Peter Mayes, Thomas F. McNevin, New Jersey Department of Environmental Protection, NJ

1:05 pm - 1:55 pm

**Gas Turbine Combined Cycle Startup Emissions – A New Paradigm**
Jordan M. Haywood, Siemens Energy, Inc., Orlando, FL

1:55 pm - 2:20 pm

**Low Level NOx Monitoring on “Rapid Start” Simple Cycle Turbines**
Jeremy Whorton, Thermo Fisher Scientific; Tommy Leach, Oklahoma Gas & Electric

### Session 4B
**EMISSIONS MONITORING**  
[concurrent with Session 4A]

Session Chair: William Vining, BASF

2:40 pm - 3:05 pm

**Improved Measurements of PM10/2.5 Emissions from Natural Gas-Fired Combined Cycle Power Generation Units**
Jordan Haywood, Siemens Energy Inc., Orlando, FL; Glenn England, Ramboll US Corporation, Orange County, CA; Kevin Crosby, Montrose Air Quality Services LLC, San Francisco, CA

3:05 pm - 3:30 pm

**Effects of Sample Conditioning on SO2 Retention and Measured Emissions**
Craig D. Sunada, Amy Geary, Perma Pure LLC, A Halma Company, Lakewood, NJ

4:00 pm - 5:00 pm

Poster Session in Exhibit Hall

5:00 pm - 6:00 pm

Reception in Exhibit Hall
### TECHNICAL PROGRAM – Thursday, August 23

<table>
<thead>
<tr>
<th>Registration</th>
<th>Continental Breakfast</th>
<th>Presenters’ Meeting</th>
<th>Exhibition Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>7:00 am - 12:00 pm</td>
<td>7:00 am - 8:00 am</td>
<td>7:00 am - 8:00 am</td>
<td>7:30 am - 12:00 pm</td>
</tr>
<tr>
<td>Third floor</td>
<td>Exhibit Hall</td>
<td>Grand Ballroom I - IV</td>
<td></td>
</tr>
</tbody>
</table>

#### TRACK 1 (Dover A, B, C)

**Session 5A**  
**MERCURY MEASUREMENT AND CONTROLS 1** [concurrent with 5B]

- **Session Chair:** Constance Senior, ADA-ES

  **8:00 am - 8:25 am**  
  Control #37  
  **Mercury Emissions Rate: The Evolution of Control Technology Effectiveness**  
  J. Edward Cichanowicz, J.E. Cichanowicz, Inc., Los Gatos, CA; Michael Hein, Hein Analytics, LLC, Whitefish, MT; James Marchetti, J.P. Marchetti, Washington, DC

  **8:25 am - 8:50 am**  
  Control #28  
  **Sulfite Control of WFGD Systems**  
  Ray Gansley, Rita Mardini, General Electric Power, Knoxville, TN

  **8:50 am - 9:15 am**  
  Control #62  
  **Mercury Capture in the Wet Scrubber with WetJect™ -- Minimizing Plant Balance Effects**  
  Regina Rodriguez, Lindsey Costin, Erica Gonzaga, David Mazyck, Carbonxt, Gainesville, FL

  **9:15 am - 9:40 am**  
  Control #18  
  **Improving Fuel Flexibility on Bituminous-Fired Boilers with Fuel Additives for Mercury Control**  
  Constance Senior, Sharon Sjostrom, ADA-ES, Inc., Highlands Ranch, CO

#### Session 6A  
**MERCURY MEASUREMENT AND CONTROLS 2** [concurrent with 6B]

- **Session Chair:** John Pavlish, MEEC

  **10:10 am - 10:35 am**  
  Control #39  
  **Optimizing ACI Usage to Reduce Costs, Increase Fly Ash Quality, and Avoid Corrosion**  
  John Satterfield, Cabot Corporation, Marshall, TX

  **10:35 am - 11:00 am**  
  Control #63  
  **No Bromine, No Problem! – High Performing Activated Carbon**  
  Regina Rodriguez, Lindsey Costin, Erica Gonzaga, David Mazyck, Carbonxt, Gainesville, FL

  **11:00 am - 11:25 am**  
  Control #13  
  **Using Mer-Cure and Other Enhancements to Reduce PAC Usage**  
  Jon Norman, United Conveyor Corporation, Waukegan, IL

#### Session 5B  
**PLANT DIGITIZATION AND IMPACTS ON EMISSIONS AND OPERATING COSTS PANEL** [concurrent with Session 5A]

- **Session Chair:** Jessica Mullen, National Energy Technology Laboratory (NETL) DOE

  **8:00 am - 9:40 am**  
  **Speakers include:**
  - Stephen Zitney, Process Systems Engineering Research, National Energy Technology Laboratory
  - Paula Restrepo, Power Digital Product Manager, GE Power
  - Marc A. Cremer, Senior Principal and Co-president, Reaction Engineering International

#### Session 6B  
**DEVELOPMENT ACTIVITIES** [concurrent with Session 6A]

- **Session Chair:** CW Lee, US EPA

  **10:10 am - 10:35 am**  
  Control #59  
  **Merits and Plant Specific Experience with SCR Catalyst Bench Scale Testing**  
  Marc Harton, Richard Storm, Innovative Combustion Technologies, Inc.; Jason Bookout, Southern Company Services, Pelham, AL

  **10:35 am - 11:00 am**  
  Control #12  
  **Novel Cross Flow Hybrid Precipitator**  
  Muhammad Ali, Clinton Hedrick, Anbara Lutfullaeva, Khairul Alam, Ohio University, Stocker Center, Athens, OH

  **11:00 am - 11:25 am**  
  Control #74  
  **A Novel Wet Electrostatic Precipitator Installation**  
  Ralph Altman, Bruce Scherer, Altman, Scherer & Associates LLC; M. Zhu, US Power Environmental Technologies
Session 6A
MERCURY MEASUREMENT AND CONTROLS 2 (CON’T)
[concurrent with Session 6B]

11:45 am - 12:10 pm
Control #15
Working with Your Supplier to Provide Fast and Accurate Troubleshooting to Ensure MATS Compliance
John H. Pavlish, Midwest Energy Emissions Corp. (ME₂C), Grand Forks, ND

12:10 pm - 12:35 pm
Control #25
Mercury and Air Toxics Control Using The Chem-Mod™ Solution
Murray F. Abbott, Chem-Mod LLC, Pittsburgh, PA

12:35 pm - 1:00 pm
Control #16
Activities in South East Asia Supporting Implementation of Minamata Convention on Mercury
Wojciech Jozewicz, ARCADIS U.S., Inc., Research Triangle Park, NC

Session 6B
DEVELOPMENT ACTIVITIES (CON’T)
[concurrent with Session 6A]

11:45 am - 12:10 pm
Control #2
Aerosol Deposition in the Sampling Train of PM CEMS
Shi-Bo Wang, Chih-Wei Lin, Sheng-Hsiu Huang, Chih-Chieh Chen, National Taiwan University, Taipei, Taiwan; Yu-Mei Kuo, Chung Hwa University of Medical Technology, Tainan, Taiwan; Hsien-Shiow Tsai, Environmental Protection Department, Taipower, Taipei, Taiwan

12:10 pm - 12:35 pm
Control #44
FTIR Monitoring System Provides Tighter Control on Emissions from Carbon Capture Process
Jim Cornish, Gasmet Technologies, Inc., Pulittie 8, Helsinki, Finland
Two dedicated poster sessions will be held in the Exhibit Hall

Tuesday, August 21, 4:00 pm - 5:00 pm
Wednesday, August 22, 4:30 pm - 5:30 pm

Multipollutant Controls and Measurements

Control #5
Clean Power and An Economical, Reliable Grid — The Place for Coal
Mark R. Sankey, Mark R. Sankey & Associates LLC, Frederick, MD

Control #27
Use of Air Emissions Measurement Technologies to Optimize Fuel Co-Firing and Pollution Control for Emissions Compliance
Thomas A. Dunder, TRC Environmental Corporation, Raleigh, NC

Control #73
Optimized Boiler Efficiency with SO3 Control
Brian Conway, SICK, Inc., Plymouth, MA

SO2, PM and NOx Controls

Control #30
Reuse of magnesium by-products from the calcination of natural magnesite in dry desulfurization at low temperature
Josefa Fernández-Ferreras, Geidy Guzman-Pardías, University of Cantabria, Santander, Spain

Control #33
A High-Performing Iron Oxide-Based Sorbent for Capturing Elemental and Oxidized Mercury Vapor in Flue Gas
Yongheng Huang, Viviron Technology LLC, Houston, TX

Control #42
Aging TR Sets on Electrostatic Precipitators - The Hidden Liability
Paul Leanza, KraftPowercon, Inc., Pensacola, FL

Control #60
Filter Technology Takes a Leap into Next Generation
Richard Williams, John B. Johnson, David Escott, FLSmidth AFT, Evans GA

Control #68
Developing an SCR High Dust Catalyst for Highly Abrasive Ash
Tilmann Knorr, Maria Brandmair, Silvia Alcove Clave, Juan-Carlos Martin, Sailesh Mullapudi, Paul Andersen, Johnson Matthey, Redwitz, Germany

Fine Particulates

Control #53
Evaluation of the Concentration, Size Distribution and Chemical Composition of Fine Particles Emitted By Biomass Combustion Process in Sugarcane Region
M.A.M. Costa, A. Sarti, A.A. Cardoso, H.M. Fogarin, M.L. Souza, Universidade Estadual Paulista, UNESP, Campus of Araraquara - IQ, Brazil; Araraquara, São Paulo; J.A. Carvalho Jr., Department of Energy, Universidade Estadual Paulista, UNESP, Campus of Guaratinguetá, Brazil A.F.M.Costa; Department of Bioprocesses and Biotechnology, Unesp, Campus of Araraquara, Brazil

PM2.5 And Gaseous Pollutants from the Burning of Different Types of Biomass Used by Industries
Maria Angélica Martins Costaa, Juliana Esteves Fernandes Cieslinskib, Kelly Dussan Medinna, Arnaldo Alves Cardosoaa, João Andrade de Carvalho Júniorc; a Universidade Estadual Paulista, UNESP, Campus of Araraquara - IQ, Brazil; b Departamento de Engenharia Industrial Madeireira - Universidade Estadual Paulista, UNESP, Itapeva, Brasil; c Departamento de Engenharia Mecânica - Universidade Estadual Paulista, UNESP, Guaratinguetá, Brasil

Carbonaceous Aerosols Associated with Very Fine Particles in the Delhi-National Capital Region
Arun Srivastava, Naba Hazarika, School of Environmental Sciences, Jawaharlal Nehru University, New Delhi, India

Mercury Control

Control #46
Mercury Adsorption Test of Activated carbon using a Fixed-Bed Reactor
Jeong Min Park, Sinang Choi, Sang-Sup Lee; Department of Environmental Engineering, Chungbuk National University, Cheonju, South Korea

Control #6
Elimination of Ancillary Impacts of Mercury Control in Coal-Fired Power Plants and Improvement of Fly Ash Quality
Thomas K. Gale, Novinda Holdings, Inc., Golden, CO

Control #8
Fast Simulation of Mercury Capture within ESPs
Herek L. Clack, Department of Civil and Environmental Engineering, University of Michigan, Ann Arbor, MI

Control #64
High Performing Activated Carbon for Industrial Boiler Applications
Regina Rodriguez, Lindsey Costin, Erica Gonzaga, David Mazyc, Carbonxt, Gainesville, FL
In Memoriam

Dr. George Offen (1939 – 2018)
Founder and champion of the MEGA Symposium
A&WMA Member since 1998, Emeritus
Winner of the Richard C. Scherr Award of Industrial Environmental Excellence in 2014

Dr. George Offen was a Senior Technical Executive at the Electric Power Research Institute (EPRI). His research focused on the reduction of air pollutants from coal-fired power plants. His group had developed/evaluated controls for mercury emissions and had expanded to address post-combustion CO\textsubscript{2} capture and CO\textsubscript{2} storage from any source.

Before joining EPRI, Dr. Offen was Manager, Energy Engineering at Acurex Corporation. Earlier positions included teaching at Stanford and Santa Clara Universities, research assignments at Chevron Research and the French Institute of Petroleum, and three years as an officer and test engineer with the U.S. Air Force.

Dr. Offen received his Bachelor of Science and Doctorate degrees in mechanical engineering from Stanford University and his Master’s degree in mechanical engineering from MIT. He was fluent in French and German.

A standout volunteer and community member of Woodside, CA, George’s efforts extended more than three decades, with three terms on the local elementary school board in the 1980s and 1990s, and 20 years (starting in 1998) on committees associated with the town’s response to issues of sustainability, conservation and the environment. Most recently, he presided over the 2018 May Day parade as the grand marshal.

George Offen died at home on Sunday, August 5, 2018. He is survived by his wife Karen; daughters Catherine and Stephanie; and four grandchildren. The family asks that donations in George’s memory be made to Mission Hospice & Home Care in San Mateo, CA; KDFC, his favorite music station; or the San Francisco Opera.

TECHNICAL POSTERS, CON’T.

**ELG, CCR, and Byproduct Use**
Control #31
Concrete and Cement Spec. Coal Fly Ash from a Waste Fly Ash
Michael Varner, SCB International Materials, Inc., Newtown, CT

Control #14
New Effluent Regulations for Steam Electric Power plants and Emerging Calcium-Based Technologies
Narahari Kramadhati, Lhoist North America, Los Angeles, CA

**Variable Operation**
Control #7
Challenges Complying with Emissions Limits in Chile Caused by New Modes of Operations and High Levels of Renewable Energy Integration
Jorge Moreno, Donny Holaschutz, inodú – Energy & Sustainability, Santiago, Chile

Control #51
Energy Storage is Emerging Worldwide as a Tool for Managing System Variability
Karin Wadsack, Northern Arizona University, Flagstaff, AZ

**Carbon Capture**
Control #57
Designing a Performance Test Program for a Carbon Capture Process
Thomas Dunder, TRC Environmental, Austin, TX

Control #67
Techno-Economic Analysis of CO2 Separation Based on the Experiences in South Korea
Gwang G. Lee, Sungwon Ham, Kyungil University, Gyeongsan, Republic of Korea; Junhan Kim, Jungbin Lee, KEPCO Research Institute, Daejeon, Republic of Korea
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We hope to see you in the future!