Power Plant Pollutant Control
“MEGA” Symposium
(MEGA 2016)

Baltimore, Maryland, USA
16 - 18 August 2016

**Final Program**

**TECHNICAL AGENDA**

### Workshop – Monday, August 15, 2016

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>7:00 am – 6:00 pm</td>
<td>Registration</td>
</tr>
<tr>
<td></td>
<td>Harbor Registration</td>
</tr>
<tr>
<td>7:00 am – 8:00 am</td>
<td>Continental Breakfast for Workshop Attendees</td>
</tr>
<tr>
<td></td>
<td>Essex AB (Ticket Required)</td>
</tr>
<tr>
<td>8:00 am – 5:30 pm</td>
<td>Workshop “Air Pollution Control Fundamentals”</td>
</tr>
<tr>
<td></td>
<td>Essex AB (Ticket Required)</td>
</tr>
<tr>
<td>10:00 am – 10:15 am</td>
<td>Coffee Service for Workshop Attendees</td>
</tr>
<tr>
<td></td>
<td>Essex AB</td>
</tr>
<tr>
<td>12:00 pm – 1:00 pm</td>
<td>Lunch for Workshop Attendees</td>
</tr>
<tr>
<td></td>
<td>Falkland</td>
</tr>
<tr>
<td>2:45 pm – 3:00 pm</td>
<td>Refreshment Break for Workshop Attendees</td>
</tr>
<tr>
<td></td>
<td>Essex AB</td>
</tr>
</tbody>
</table>

### Technical Program – Tuesday, August 16, 2016

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>7:00 am – 6:30 pm</td>
<td>Registration</td>
</tr>
<tr>
<td></td>
<td>Harbor Registration</td>
</tr>
<tr>
<td>7:00 am – 8:00 am</td>
<td>Continental Breakfast</td>
</tr>
<tr>
<td></td>
<td>Harborside Foyer</td>
</tr>
<tr>
<td>7:00 am – 8:00 am</td>
<td>Presenter's Breakfast</td>
</tr>
<tr>
<td></td>
<td>Kent ABC</td>
</tr>
<tr>
<td>8:00 am – 9:00 am</td>
<td>Opening Session</td>
</tr>
<tr>
<td></td>
<td>Harborside Ballroom ABC</td>
</tr>
<tr>
<td></td>
<td>Welcome</td>
</tr>
<tr>
<td></td>
<td>George R. Offen, Sr. Technical Executive, EPRI</td>
</tr>
<tr>
<td></td>
<td>Featured Speaker</td>
</tr>
<tr>
<td></td>
<td>Shannon Angielski, Executive Director, CURC</td>
</tr>
<tr>
<td></td>
<td>“The Role for Coal Research in Today’s and Tomorrow’s Electric Generation Environment”</td>
</tr>
<tr>
<td></td>
<td>SESSION 1: MATS Compliance by Co-Benefits</td>
</tr>
<tr>
<td></td>
<td>Harborside Ballroom ABC</td>
</tr>
<tr>
<td></td>
<td>Chair: Tom Martz, EPRI</td>
</tr>
<tr>
<td>9:00 am – 9:25 am</td>
<td>Control # 84</td>
</tr>
<tr>
<td></td>
<td>Effectiveness of MATS Controls Based on Data Reported to EPA...</td>
</tr>
<tr>
<td></td>
<td>J. Edward Cichanowicz, Michael Hein, James Marchetti</td>
</tr>
<tr>
<td></td>
<td>J.E. Cichanowicz, Inc., Los Gatos, CA; Hein Analytics, LLC, Whitefish, MT; J.P. Marchetti, Inc., Washington, DC</td>
</tr>
<tr>
<td>9:25 am – 9:50 am</td>
<td>Control #47</td>
</tr>
<tr>
<td></td>
<td>Maximizing Co-benefit Hg Capture on Multiple Coal-fired Units...</td>
</tr>
<tr>
<td></td>
<td>Gary Blythe, David Colley, Richard Jackson, Matt McCants, Louis Manigault; AECOM, Austin, TX; Santee Cooper, Monks Corner, SC</td>
</tr>
<tr>
<td>9:50 am – 10:15 am</td>
<td>Control #121</td>
</tr>
<tr>
<td></td>
<td>SCR Mercury Oxidation...</td>
</tr>
<tr>
<td></td>
<td>Thomas D. Martz, W. Scott Hinton, EPRI, Palo Alto, CA; W.S. Hinton &amp; Associates, Gulf Breeze, FL</td>
</tr>
<tr>
<td></td>
<td>Coffee Service</td>
</tr>
<tr>
<td></td>
<td>Harbor Foyer</td>
</tr>
<tr>
<td>10:15 am – 10:45 am</td>
<td>Refreshment Break for Workshop Attendees</td>
</tr>
<tr>
<td></td>
<td>Essex AB</td>
</tr>
<tr>
<td>10:45 am – 11:15 am</td>
<td>Continental Breakfast for Workshop Attendees</td>
</tr>
<tr>
<td></td>
<td>Essex AB (Ticket Required)</td>
</tr>
<tr>
<td>11:15 am – 11:45 am</td>
<td>Workshop “Air Pollution Control Fundamentals”</td>
</tr>
<tr>
<td></td>
<td>Essex AB (Ticket Required)</td>
</tr>
<tr>
<td>11:45 am – 12:00 pm</td>
<td>Coffee Service for Workshop Attendees</td>
</tr>
<tr>
<td></td>
<td>Essex AB</td>
</tr>
</tbody>
</table>
## TECHNICAL AGENDA

### Technical Program – Tuesday, August 16, 2016

#### SESSION 2: MATS Compliance by Co-Benefits (Continued)

**Chair:** Tom Martz, EPRI

<table>
<thead>
<tr>
<th>Time</th>
<th>Event Description</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>10:45 am</td>
<td>CANCELLED</td>
<td></td>
</tr>
<tr>
<td>11:00 am</td>
<td>Control #93, Challenges Within Laboratory Testing of SCR Catalysts for Mercury Oxidation, N/A</td>
<td>Thorsten Dux, Thies Hoffmann, STEAG Energy Services GmbH, Herne, Germany, STEAG SCR-Tech, Inc., Kings Mountain, NC</td>
</tr>
<tr>
<td>11:10 am</td>
<td>Control #87, SCR Catalyst Management for Optimal NOx and Hg Emissions Control, 32</td>
<td>Scott Rutherford, Chris Reeves, Cormetech Inc., Durham, NC</td>
</tr>
<tr>
<td>11:35 am</td>
<td>Lunch</td>
<td></td>
</tr>
</tbody>
</table>

#### SESSION 3: MATS Compliance by Co-Benefits (Continued)

**Chair:** Andrew O’Palko, DOE

<table>
<thead>
<tr>
<th>Time</th>
<th>Event Description</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>12:35 pm</td>
<td>Control #46, Investigation of Toxics Control by Wet FGD Systems, 50</td>
<td>Gary M. Blythe, Mandi K. Richardson, Charles E. Dene, Nanda Srinivasan, AECOM, Austin, TX, EPRI, Palo Alto, CA</td>
</tr>
<tr>
<td>1:00 pm</td>
<td>Control #44, WFGD Sulfite Control to Reduce Mercury Re-emissions and Improve Trace Elements in the Purge Stream, 63</td>
<td>Troy Patton, Ray Gansley, Rikard Hakansson, Seminole Electric, Palatka, Florida, General Electric, Knoxville, Tennessee, General Electric, Vaxjo, Sweden</td>
</tr>
<tr>
<td>1:25 pm</td>
<td>Control #7, Correlating FGD Oxidation-Reduction Potential Using Multivariate Data Analysis Techniques: A Path to Understanding Governing Behavior and Advanced Control Options, 76</td>
<td>William A Steen, Gary M Blythe, Mandi Richardson, Nanda Srinivasan, and Chuck Dene, AECOM, Austin, TX, EPRI, Palo Alto, CA</td>
</tr>
</tbody>
</table>

#### SESSION 4: MATS Compliance by Co-Benefits (Concluded)

**Chair:** Andrew O’Palko, DOE

<table>
<thead>
<tr>
<th>Time</th>
<th>Event Description</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>2:45 pm</td>
<td>Control #85, Managing Mercury Scrubber Reemission and Maintaining MATS Compliance Using a Sorbent Approach, 99</td>
<td>John H. Pavlish and Nick L. Lentz, Midwest Energy Emissions Corp., Lewis Center, OH</td>
</tr>
<tr>
<td>3:10 pm</td>
<td>Control #38, Commercial Demonstration of HBS Injection for MATS Compliance, 108</td>
<td>James B. Jarvis, Sterling M. Gray, Garrett E. Smith, Andrew Wang, AECOM, Austin, TX</td>
</tr>
<tr>
<td>4:00 pm</td>
<td>Poster Session</td>
<td>Grand Ballroom Foyer</td>
</tr>
<tr>
<td>4:00 pm</td>
<td>Reception in Exhibit Hall</td>
<td>Grand Ballroom V-X</td>
</tr>
<tr>
<td>6:30 pm</td>
<td>Baltimore Inner Harbor Cruise</td>
<td>(Ticket Required)</td>
</tr>
</tbody>
</table>
## TECHNICAL AGENDA

### SESSION 5A: MATS - Hg Capture by Sorption Processes

**Chair**: Sharon Sjostrom, AES

**8:00 am – 8:25 am**

Control #40

**MATS Problem-Solving: Advancing SO₂-Tolerant Powdered Activated Carbons Through Pilot Demonstration**

Joe Wong¹, Robert Huston¹, Roger Cayton¹, Chris Vizcaino¹, Sheila Giesmann¹, Doug Campbell¹, Noah Meeks¹, Laura Berry¹, and John Cover¹; ¹ADA Carbon Solutions, LLC, Littleton, CO, ²Nova Scotia Power, Halifax, Nova Scotia, ³Southern Company, Birmingham, AL, ⁴Southern Research, Birmingham, AL

**8:25 am – 8:50 am**

Control #24

**Comprehensive Mercury Reduction Test Program for a Lignite-fired Unit**

Jon Norman¹, James McConnell¹, United Conveyor Corporation Dry Sorbent Injection, LLC, Waukegan, IL, ²GE Power, Windsor, CT

**8:50 am – 9:15 am**

Control #19

**Full-Scale Mercury Mitigation Testing of Novinda’s AS-ULTRA**

Thomas K. Gale, Steve Bologa; Novinda Corporation, Denver, CO

### Coffee Service

Grand Ballroom 5-10

9:40 am – 10:10 am

### SESSION 5B: CO₂ Reduction Technologies

**Chair**: CW Lee, EPA

**8:00 am – 8:25 am**

Control #5

**Demonstration Results of Enzyme-Accelerated CO₂ Capture**

Jonathan Carley, Dr. Louis Fradette, Dr. Sylvain Lefebvre, CO₂ Solutions Inc., Quebec, Canada

**8:25 am – 8:50 am**

Control #45

**Heat Recovery and USE Technology Assessments**

Max Bernau¹, David Morett¹, Katherine Dombrowski¹, Scott Hume², Andrew Maxson¹, Russell Noble³, AECOM, Austin, TX, ⁴EPRI, Charlotte, NC, ⁵EPRI, Palo Alto, CA, ⁶Southern Company Services, Birmingham, AL

**8:50 am – 9:15 am**

Control #116

**CCS Reheat System-Flue Gas Heat Recovery**

Jared Pozarnsky¹, Mike Mengel², Rodney Hendrickson³; ¹GRE, Underwood, ND; ²MET; ³MET Lebanon, PA

**9:15 am – 9:40 am**

Control #58

**MHI High Efficiency System Demonstration Project Updates**

Shintaro Honjo¹, Takuya Okamoto¹, Masayuki Inui¹, Joseph Kowalczyk¹ and Jerrad Thomas¹; ¹Mitsubishi Heavy Industries America, Inc., Houston, TX, ²Mitsubishi Hitachi Power Systems, Ltd., Yokohama, Japan, ³Mitsubishi Heavy Industries, Ltd., Yokohama, Japan, ⁴Southern Company Services, Inc., Birmingham, AL

### Coffee Service

Grand Ballroom 5-10

9:40 am – 10:10 am
# Technical Program – Wednesday, August 17, 2016

## SESSION 6A: Hg Capture by Sorption Processes (Concluded)
(CONCURRENT WITH SESSION 6B)
Harborside Ballroom AB

**Chair:** Sharon Sjostrom, AES

### 10:10 am – 10:35 am

**Control #125**

**Lance-Less Injection Technology: Retrofit Technology Delivering Improved Performance for Your DSI and ACI Systems**

Nick Evans, Mitch Lund, Mat Koppang; Nol-Tec Systems, Circle Pines, MN; Haley Turner, Louisville Gas & Electric (LG&E), Louisville, KY

### 10:35 am – 11:00 am

**Control #89**

**Reducing Operating Costs and Risks of Hg Control with Fuel Additives**

David Young, Sharon Sjostrom, Constance Senior, ADA-ES, Highlands Ranch, CO

### 11:00 am – 11:25 am

**Control #17**

**Update on EPRI’s Balance of Plant Effects Study of Bromine-based Mercury Controls**

Katie Arambasick¹, John Currie¹, Katherine Dombrowski¹, David Morett¹, Nanda Srinivasari¹, ¹AECOM, Austin, TX, ²EPRI, Palo Alto, CA

## SESSION 6B: CO₂ Reduction Technologies (Concluded)/SO₂ Capture Processes
(CONCURRENT WITH SESSION 6A)
Harborside Ballroom C

**Chair:** CW Lee, EPA

### 10:10 am – 10:35 am

**Control #20**

**Heat Rate Improvement Demonstration and Co-Benefits**

Sterling M. Gray¹, Kevin J. O’Boyle², Gus Shearer²; ¹AECOM, Austin, TX, ²LJUNGSTRÖM, Wellsville, NY

### 10:35 am – 11:00 am

**Control #8**

**Examination of Uncertainty in Heat Rate Determinations**

James E. Staudt; Andover Technology Partners, North Andover, MA

### 11:00 am – 11:25 am

**Control #36**

**Real-time Aerosol Measurements from Coal Fired Flue Gas in Pilot ScalePost-combustion CO₂ Capture**

Chiranjib Saha, James H. Irvin; Southern Research, Birmingham, AL

### 11:25 am – 11:50 am

**Control #110**

**Maintaining Reliable, Compliant Operation of Dry Scrubbers in Low and Transient Load Conditions**

Rodrigo R. S. Camargos, Stewart H. Nicholson; Primex Process Specialists Inc., Doylestown, PA

### Lunch

Harbor DE

11:50 am – 12:50 pm
Final Program

TECHNICAL AGENDA

Technical Program – Wednesday, August 17, 2016

SESSION 7A: MATS - Compliance by Integrated or Novel Controls (CONCURRENT WITH SESSION 7B)
Harborside Ballroom AB

Chair: Connie Senior, AES

12:50 pm – 1:15 pm
Control #41
Homer City Units 1&2 Retrofit with NID and ACI for Clean Air and Water.....268
Thomas E. Pearson1, Travis Reynolds2, Joseph Naugle3; 1GE Power, Knoxville, TN; 2GE Power,Knoxville, TN; 3NRG Homer City Services LLC, Homer City, PA

1:15 pm – 1:40 pm
Control #29
20 Years of Mercury Re-emission—What Do We Know?.....289
Mandar Gadgil, The Babcock & Wilcox Company, Barberton, OH

SESSION 7B: SO2 Capture Processes (Continued) (CONCURRENT WITH SESSION 7A)
Harborside Ballroom C

Chair: Tiffany Yelverton, EPA

12:50 pm – 1:15 pm
Control #126
New In-Duct SO2 Scrubber.....301
E. Joseph Duckett, Rajat Ghosh, Paul Farber, SNC-Lavalin America Inc., Alcoa, Lake Charles, LA

1:15 pm – 1:40 pm
Control #14
WFGD Upgrades for Burning Higher Sulfur Coal at Longview Power.....311
Kevin J. Peterson,1 Stephen H.Nelson,1 Aydra R. Kalynchuk,2 Michael T. Hoydick; 1Longview Power, Maidsville, WV, 2Amec Foster Wheeler, Pittsburgh, PA

1:40 pm – 2:05 pm
Control #102
The Evaluation of “SO3” Measurement Technologies and Their Applicability for Their Use in the Control of Hydrated Lime Injection Feed Rates.....318
Daniel T. Menniti1, Haley Turner2, 1Breen Energy Solutions, Carnegie, PA, 1LGE-KU Louisville, KY

Refreshing Break
Grand Ballroom V-X
2:05 pm - 2:35 pm
TECHNICAL AGENDA

Technical Program – Wednesday, August 17, 2016

SESSION 8A: MATS - Compliance by Integrated or Novel Controls (Concluded)
(CONCURRENT WITH SESSION 8B)
Harborside Ballroom AB

Chair: Connie Senior, AES

2:35 pm - 3:00 pm
Control #23
Results from Two Fixed Sorbent Systems Installed for Mercury Control at Fort Martin.....330
Jeffrey A. Kolde,1 John J. Knotts,1 Matthew A. McCluskey1, Mark E. de Garbolewski2; 1W.L. Gore & Associates, Elkton, MD, Dan Sendro, Mark Scaccia2; 1FirstEnergy, Greensburg PA

3:00 pm - 3:25 pm
Control #15
Mercury Emission Removal from Gas Streams Implementing an Innovative Absorption Process - Initial Pilot Results.....335
Zach Barnea1, Hagay Keller1, Gabriel Jindikhashvily2, Margee Zaher2; 1MecuRemoval Ltd., Netanya, Israel; 2Engineering Division, Israel Electric Company, Haifa, Israel.

3:25 pm - 3:50 pm
Control #2
Boiler Optimization and MATS Compliance Testing Using Delta CO2/NO Extractive Monitoring Systems.....340
Nicholas Ferr1, Tony Volpicelli2, Robert Sisson2; 1Delta Measurement and Combustion Controls, Apex, NC; 2Delta Measurement and Combustion Controls, Hopedale, MA; 3Duke Energy, Hernando, FL

3:50 pm - 4:15 pm
Control #13
Reaction Kinetic Modeling of DSI for MATS Compliance.....347
Rodney Foo1, Rob Berger2, Johan J. Heiszwolf3, 1Lhoist Research & Development, Nivelles, Belgium, 2Lhoist North America, Fort Worth, TX, 3Great River Energy, Stanton, ND

SESSION 8B: SO2 Capture Processes (Concluded)
(CONCURRENT WITH SESSION 8A)
Harborside Ballroom C

Chair: Tiffany Yelverton, EPA

2:35 pm - 3:00 pm
Control #2
A High Reactivity Hydrate For Improved SO2 Capture.....362
Pat Mongoven, Curt Biethn, Randy Griffard, Richard Zhang; Mississippi Lime Company, Saint Genevieve, MO

3:00 pm - 3:25 pm
Control #25
Comparison of Sodium and Calcium Reagents for SO2 Removal with Dry Sorbent Injection.....375
Jon Norman, United Conveyor Corporation Dry Sorbent Injection, LLC, Waukegan, IL

3:25 pm - 3:50 pm
Control #49
ESP Compatible Calcium Sorbent for SO2 Capture at Great River Energy’s Stanton Station.....380
Rodney Foo1, Jim Dickerman2, Jerry Hunt2, Johan J. Heiszwolf3, Landon Johnson3; 1Lhoist Research & Development, Nivelles, Belgium, 2Lhoist North America, Fort Worth, TX, 3Great River Energy, Stanton, ND

3:50 pm - 4:15 pm
Control #80
Optimizing Dry Sorbent Injection Performance Using Chemistry-Based CFD Modeling.....396
Guisu Liu1, Jose C. Sanchez2, Greg Archer3; 1AECOM, Austin, TX; 2EPRI, Palo Alto, CA; 3Great River Energy, Maple Grove, MN

4:15 pm - 5:30 pm
Poster Session
Grand Ballroom Foyer

5:00 pm - 6:30 pm
Reception in Exhibit Hall
Grand Ballroom V-X
# Final Program

## TECHNICAL AGENDA

<table>
<thead>
<tr>
<th>Time</th>
<th>Session 9A: Effluent Limitation Guidelines (ELG) — Technologies for Compliance</th>
</tr>
</thead>
<tbody>
<tr>
<td>7:00 am – 3:00 pm</td>
<td>(CONCURRENT WITH SESSION 9B)</td>
</tr>
<tr>
<td>7:00 am – 8:00 am</td>
<td>Harborside Ballroom AB</td>
</tr>
<tr>
<td>7:00 am – 8:00 am</td>
<td>Registration</td>
</tr>
<tr>
<td>7:00 am – 8:00 am</td>
<td>Harbor Registration</td>
</tr>
<tr>
<td>7:00 am – 8:00 am</td>
<td>Continental Breakfast</td>
</tr>
<tr>
<td>7:00 am – 8:00 am</td>
<td>Presenter’s Breakfast</td>
</tr>
<tr>
<td></td>
<td>Technical Program — Thursday, August 18, 2016</td>
</tr>
</tbody>
</table>

### SESSION 9A: Effluent Limitation Guidelines (ELG) — Technologies for Compliance

#### (CONCURRENT WITH SESSION 9B)

**Harborside Ballroom AB**

**Chair:** Jeffery Preece, EPRI

<table>
<thead>
<tr>
<th>Time</th>
<th>Control #</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:00 am – 8:25 am</td>
<td>#42</td>
<td>Effluent Trace Metals Survey and Related Plant Operations at 18 Flagship FGD Units</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Jonathan O. Allen, Christopher K. Ferens-Foulet, Chethan Acharya, Allen Analytics LLC</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Tucson, AZ, Southern Company Services, Birmingham, AL</td>
</tr>
<tr>
<td>8:25 am – 8:50 am</td>
<td>#78</td>
<td>Emerging Trends and Observations from ELG Feasibility Studies</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Stephen E. Winter, Amec Foster Wheeler NA</td>
</tr>
<tr>
<td>8:50 am – 9:15 am</td>
<td>#16</td>
<td>Integration of Air Pollution Controls and Wastewater Management • Emerging Technologies</td>
</tr>
<tr>
<td></td>
<td></td>
<td>and Operating Practices for Controlling Effluent Discharges</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Robert Nicola, Song Wu, Shintaro Honjo, Environmental Products Director, Mitsubishi</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Global Research &amp; Innovation - Houston Office, Mitsubishi Heavy Industries America, Inc.,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Houston, TX</td>
</tr>
<tr>
<td>9:15 am – 9:40 am</td>
<td>#26</td>
<td>Wet FGD Effluent Characterization in Preparation for Waste Water Treatment Technology</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Selection</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Shannon R. Brown, Steven Feeney, Joseph M. Mitchell, Ted R. Parsons, The Babcock &amp;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Wilcox Company, Barberton, OH</td>
</tr>
</tbody>
</table>

### SESSION 9B: NOx Reduction Technologies

#### (CONCURRENT WITH SESSION 9A)

**Harborside Ballroom C**

**Chair:** Tony Facchiono, EPRI

<table>
<thead>
<tr>
<th>Time</th>
<th>Control #</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:00 am – 8:25 am</td>
<td>#10</td>
<td>Combustion Optimization Technologies at ATCO Power Battle River Generating Station</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Enrique Bosch, Francisco Rodríguez, Enrique Tova, Brent Stenson, Vincent Cheng</td>
</tr>
<tr>
<td></td>
<td></td>
<td>INERCO, Amherst, NY, ATCO POWER, Calgary, Alberta, Canada</td>
</tr>
<tr>
<td>8:25 am – 8:50 am</td>
<td>#98</td>
<td>Enhanced Gas CoFiring Experience at Orlando Utilities</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Charles A. Lockert, James Czarniecki, Breen Energy Solutions, Carnegie, PA, Orlando Utilities/Stanton Energy Center, Orlando, FL</td>
</tr>
<tr>
<td>8:50 am – 9:15 am</td>
<td>#118</td>
<td>SCR System Evaluation and Risk Management</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Noel Rosha, BIDEN CERAM Environmental, Inc., Overland Park, KS</td>
</tr>
<tr>
<td>9:15 am – 9:40 am</td>
<td>#63</td>
<td>Advanced SNCR NOx Reduction Experience on Multiple Large Utility Boilers</td>
</tr>
<tr>
<td></td>
<td></td>
<td>John M Boyle, Penelope Stamatakis, Fuel Tech, Inc.U.S.A.; Piers de Havilland Fuel Tech Srl, Italy</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Coffee Service</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Grand Ballroom V-X</td>
</tr>
<tr>
<td>9:40 am – 10:10 am</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

**Final Program**

**Registration**

7:00 am – 8:00 am

- Continental Breakfast
- Presenter’s Breakfast
- Kent ABC

---

**Technical Program**

7:00 am – 3:00 pm

- Registration
- Harbor Registration
- Continental Breakfast
- Presenter’s Breakfast
- Kent ABC
### TECHNICAL AGENDA

**Technical Program – Thursday, August 18, 2016**

**SESSION 10A: Effluent Limitation Guidelines (ELG) — Technologies for Compliance (Continued)**
*CONCURRENT WITH SESSION 10B*
Harborside Ballroom AB

**Chair:** Jeffery Preece, EPRI

10:10 am – 10:35 am
Control #66
The Effect of Dissolved Organic Carbon on Mercury Treatability in FGD Wastewater...510
*Mandi Richardson*, Cassandra Hudston*; Chuck Dene*; ‘AECOM, Austin, TX; ‘EPRI, Palo Alto, CA

10:35 am – 11:00 am
Control #75
ELG Compliance Enabled by Physical/Chemical Separation...N/A
*Bruce A. Keiser; Angela Zagala; and W. Carlson; Nalco, an Ecolab Company*

10:35 am - 11:00 am
Control #48
Overcoming Challenges in Getting to Zero with Flue Gas Desulfurization (FGD) Wastewater...517
*Thomas E Higgins*, Dennis Fink*; Krystal Perez*; ‘CH2M, Reston, VA; ‘CH2M, Oakland, CA; ‘CH2M, Bellevue, WA

11:00 am - 11:25 am
Control #88
Characterization of Air Preheater Wash Water at Coal Fired Power Plants...531

**SESSION 10B: NOx Reduction Technologies (Concluded)**
*CONCURRENT WITH SESSION 10A*
Harborside Ballroom C

**Chair:** Tony Facchiono, EPRI

10:10 am – 10:35 am
Control #39
SCR Performance Enhancements Supporting NOx Compliance, Load Cycling and Reduced Operating Costs...544
*James B. Jarvis, Sterling M. Gray; AECOM, Austin, TX*

10:35 am – 11:00 am
Control #81
Method for Enhanced Low Load SCR Operation...554
*Christopher Bertole, Cormetech Inc., Durham, NC*

11:00 am – 11:25 am
Control #105
Successful SCR Operation at Low Load for Coal Firing Plant...561

**Lunch**
Harbor DE
11:50 am – 12:50 pm
SESSION 11A: ELG (Concluded) / Managing Coal Combustion Products under MATS Compliance
(CONTINUOUS WITH SESSION 11B)
Harborside Ballroom AB

Chair: Susan Thorneloe, EPA

12:50 pm – 1:15 pm
Control #60
Evaluation of Boiler and Heat Recovery Steam Generator Chemical Cleaning Waste Treatment Options.....578
Stephen Shulder, Michael Rosen, Joy Rooney, Rajendra Gaikwad;
EPRI, Charlotte, North Carolina, Sargent & Lundy LLC, Chicago, IL

1:15 pm – 1:40 pm
Control #120
Use of the Leaching Environmental Assessment Framework to Evaluate Coal Fly Ash and Other Industrial By-Products.....593
Susan Thorneloe, Greg Helms, Dan Fagnant, David Kosson, Andrew Garrybrants;

1:40 pm – 2:05 pm
Control #117
Conveying CCR to a Dry Landfill.....596
Richard Munson, Randy Shepler; Beumer Kansas City, Kansas City, MO; Design Build Group, CCC Group

2:05 pm – 2:30 pm
Control #61
Dense Slurry Ash Management: Ash/Water Mixes to Maximize Economics and Environmental Performance.....612
Dale Timmons, R.G., NAES Corporation, Issaquah, WA

SESSION 11B: Particulate Controls
(CONTINUOUS WITH SESSION 11A)
Harborside Ballroom C

Chair: John Chang, EPA

12:50 pm – 1:15 pm
Control #65
Regimes of Enhancement and Inhibition of Mercury Adsorption within ESPs.....625
Herek L. Clark, Department of Civil & Environmental Engineering, University of Michigan, MI

1:15 pm – 1:40 pm
Control #122
Artificial Intelligence for Precipitator Diagnostics.....631
Tony Bazzi, Michael Estes, Bruce Scherer; Engineering Support Organization, DTE Energy, Detroit MI; Particulate Controls Technologies, Helena, AL

1:40 pm – 2:05 pm
Control #54
Emission Standards and Control of PM2.5 from Coal-Fired Power Plant.....653
Xing Zhang, IEA Clean Coal Centre

2:05 pm – 2:30 pm
Control #32
MATS Mercury and HCI Control Requires More Power to the ESP and Careful Consideration of ESP Design Details.....665
John A. Knappik, Jia (Erick) Ma, Steve Burgund, Steve Marchigiano; The Babcock & Wilcox Company, Barberton, Ohio
Dynegy, Wood River Station, Alton, Illinois, Duke Energy, Crystal River Station, Crystal River, FL
SESSION 12A: MATS Compliance Under Flexible Operations
Harborside Ballroom AB

Chair: Rick Himes, EPRI

2:30 pm - 2:55 pm  CANCELLED
Control #82
Edgewater Generating Station Unit 5 Scrubber Project: Lessons Learned and Recommendations on Scrubber Byproduct Storage, Conditioning, and Transportation.....N/A
Ryan W. Essex, Tim J. Kreft; 1HDR Inc., Chicago, IL; Wisconsin Power and Light Co., Madison, WI

2:30 pm - 2:55 pm  CANCELLED
Control #27
Economizer Outlet Temperature Control Provides Flexibility for Cycling Plants.....N/A
Joseph T. Buckler, Ryan D. Hensel, Mel J. Albrecht; The Babcock & Wilcox Company, Barberton, OH

2:30 pm - 2:55 pm
Control #9
Impact of Load Swings & Fuel Flexing on MATS & ELG Compliance.....680
Jason F. Baker, Dean P. Bell, Thomas L. Hart; American Electric Power Service Corp., Columbus, OH.

2:55 pm - 3:20 pm
Control #67
Impact of Variable Unit Operation on Wet FGD.....688
Mandi Richardson, Gary Blythe, Chuck Dene, Nanda Srinivasar; AECOM Austin, TX, EPRI Palo Alto, CA
**Final Program**

**POSTER SESSIONS**

**POSTERS**

**Poster Sessions:**
Posters will be presented on Tuesday, August 16 from 4:00 pm - 5:00 pm and on Wednesday, August 17 from 5:00 pm - 6:30 pm in the Grand Ballroom Foyer in conjunction with the Reception in the Exhibit Hall.

**CO2**
Control #6
Carbon Capture Sequestration Challenges and Opportunities.....N/A
Adel J. Al-Khalifah, Saudi Electricity Company

Control #11
Cleaning Energy-Saving Technology (CEST) For Flue Gases and Waste Waters.....N/A
Sergei Komkov-Epshtein, Global Consulting, Chicago, IL

Control #57
Reduction of Pollutant and Carbon Emissions through CHP at Johns Hopkins Medical Campus.....699
John H. Kumm,1 Christina Duell,2 David Eldridge,3 Anatoly Gimburg,4 Amanda McClaskey,5 Jack Ross,6; 1,2EA Engineering, Science, and Technology, Inc., PBC, Hunt Valley, MD, 3,4,5JHMI Utilities, LLC, Baltimore, MD, 6Affiliated Engineers, Inc.

Control #96
Microalgae: Clean Energy from Fossil Fuels.....N/A
Ed Weinberg,1 Robert Mroz,2; ESSRE Consulting, Inc. Richboro PA, 1HYTEK-Bio, LLC, Dayton, MD

**MATS Hg**
Control #43
Contribution of Startup and Shutdown Events to 30-Day Mercury Emission Averages Using Time Series Decomposition.....703
Jonathan O. Allen,1 Christopher K. Ferens-Foulet,1 George Offen2; 1Allen Analytics LLC, Tucson, AZ, 2EPRI, Palo Alto, CA

Control #50
Catalytic Oxidation of Elemental Mercury in Flue Gas by Recyclable CuCl2 Modified Magnetospheres from Fly Ash.....N/A
Yongxin Feng, Yaming Liu, Kai Xu, Zhong Xiong, Yongchun Zhao, Junying Zhang, Chuguang Zheng; 1Electric Power Research Institute of Guangdong Power Grid Company, Guangzhou, China, 2State Key Laboratory of Coal Combustion, Huazhong University of Science and Technology, Wuhan, China

Control #51
Emission of Mercury in a 35MWth Industrial-Scale Oxyfuel Combustion Power Plant with Different Flue Gas Recycle.....N/A
Yaming Liu,1 Yongxin Feng,1 Kai Xu, Jianping Yang, Yongchun Zhao, Junying Zhang, Chuguang Zheng; 1Electric Power Research Institute of Guangdong Power Grid Company, Guangzhou, China, 2State Key Laboratory of Coal Combustion, Huazhong University of Science and Technology, Wuhan, China

Control #62
Advanced Kinetics of Hg0 Oxidation Over a V-based SCR Catalyst.....N/A
David Repp, Silvia Alcove-Clave, Michael Nasr; Nicola Uberti; Alessandra Beretta; 1Johnson Matthey Technology Centre, Reading, UK, 2Politecnico di Milano, Milano, Italy

Control #69
On-site Production of Lime to Remove Acid Gases from Illinois Coal Combustion Flue Gas.....N/A
Ivan Sugiyono, Hong Lu; Illinois State Geological Survey, University of Illinois at Urbana-Champaign, Champaign, IL

Control #71
Powdered Activated Carbon Injection Resulting in Improved Dispersion.....N/A
Regina Rodriguez, David Mazyck, PhD, Jack Dwieg, Erica Gonzaga, Christine Valcarce, PhD; Carbonxt, Inc., Gainesville, FL
POSTER SESSIONS

TECHNICAL POSTERS

MATS Hg (continued)
Control #73
Powdered Activated Carbon for the Removal of Mercury in WFGD Wastewater.....N/A
Erica Gonzaga, David Mazyck, Christine Valcarce, Regina Rodriguez; Carbonxt, Inc., Gainesville, FL

Control #79
Experimental Validation of CFD Models for Activated Carbon Injection.....N/A
Prescott L. Eisele, Eric ten Siethoff, Jeffery M. Russell; MPR Associates, Alexandria, VA

Control #90
Integrating ADAir-Mixer™ Technology to Optimize System Performance with DSI Applications.....N/A
Cody Wilson, Elizabeth Morley, Constance Senior, Mark Pavel, Dave Dorste; 1ADA-ES, Highlands Ranch, CO; 2Blender Products, Denver, CO

Control #92
Assessment of Field Test Methods to Monitor Hg Oxidation Performance Across an SCR.....N/A
Xin Liu, Nick Pollack; STEAG SCR-Tech, Inc., Charlotte, NC

Control #94
Mercury Treatment Options for MATS Compliance: A review.....N/A
Nick Pollack, Thorsten Dux; 1 STEAG SCR-Tech, Inc., Kings Mountain, NC; 2 STEAG Energy Services GmbH, Herne, Germany

Control #123
Mercury Emissions from the Combustion of Coal, Dried Sludge and RDF.....N/A
Sang-Sup Lee, Min Park; Department of Environmental Engineering, Chungbuk National University, Cheongju, South Korea

ELG ZLD
Control #30
ZLD, Near ZLD, Treat and Discharge – What Is Best?.....N/A
Steve Feeney; The Babcock & Wilcox Company, Barberton, Ohio

Control #72
Bromide & Disinfection By-Products: How Do They Fit into Your Utility’s Future Plans.....723
Regina Rodriguez, Christine Valcarce, PhD, David Mazyck, PhD, Erica Gonzaga; Carbonxt, Inc., Gainesville, FL

Control #103
Zero Discharge Ash Handling System Costs and Their Sensitivity to Unit Retirement and Ash Make Rate.....736
Matthew K. Heermann, Sargent & Lundy, LLC Chicago, IL

Measurement Methods
Control #101
Laboratory and Field Testing Directed Toward Minimizing Uncertainty in Boiler Heat Rate Measurements when Utilizing Stack Emissions Monitoring Equipment.....N/A
Jack Bionda, Volker Schmid; 1 Dave Wheeler, Tom Martz, Samuel Korellis, Chuck Dene; 1 Clean Air Engineering, Inc., Pittsburgh, PA; 2Clean Air Engineering, Inc., Knoxville, TN; 3EPRI, Palo Alto, CA

Control #107
NIST Programs to Achieve Accurate, Internationally-Recognized Stack Emission Measurements.....N/A
Aaron Johnson, NIST Programs Gaithersburg, MD

Control #114
Continuous and Real-Time FTIR Monitoring of Sulfuric Acid and Other Components in Coal-Fired Power Plant Flue Gas.....N/A
Constant Marks, Brian Adair, Curtis Laush; Geosyntec Consultants, Austin, TX

NOx SCR
Control #31
Unique Cold-side SCR Arrangement on the Palm Beach Renewable Energy Facility No. 2 Waste-to-Energy Plant.....N/A
Ryan D. Hensel, Mike D. Fick; The Babcock & Wilcox Company, Barberton, OH