

The 44th International Technical Conference on Clean Energy

June 16 to 21, 2019

Clearwater, Florida, USA

Keynote Address: Dr. Randy Gentry, Chief Research
Officer and Deputy Director, Science & Technology,
National Energy Technology Laboratory,
U.S. Department of Energy

To Learn More About Innovations That Are Meeting
The Challenges to Energy Utilization From The
World's Key Planners, Leading Experts and "Super
Scientists" In The Most Comprehensive Program on
Energy Technologies With Representatives From Six
Continents, Then You Must Attend

The Clearwater Clean Energy Conference



The Panels, Short Courses and Technical Sessions cover all of the critical technological issues of the day.

MISSION STATEMENT

- Increased demand - coupled with energy security issues, and uncertainty in the oil sector, - **make this conference a must for those involved in all aspects of power generation** who must meet the competitive pressures and environmental concerns in the 21st century.

The current Administration continues to bring in many more challenges and opportunities for the energy sector. We plan to cover all the proposed programs and policies. As changes and additions occur, we will cover them.

CONFERENCE HIGHLIGHTS

**International Programs -
Technical Developments -
Policy Issues**

Papers from the international community are strongly encouraged. In the 2018 conference nine countries

were represented at the conference. In addition, one-third of all attendees were from the international community. The international papers were related to energy/-environmental developments throughout the world.

The Committee also encourages papers that deal specifically with the topics covered in the Keynote Session, Panels, Short Courses and Plenary Sessions.

NEW STUDENT EVENT

- The Conference has encouraged student participation from its inception. To offer students guidance on what the world has to offer once they graduate, the Conference Committee will offer a "Pizza Night" for them where representatives from government, academia and industry will offer perspectives on what these areas have to offer them upon graduation. This event is open to all students.

PANELS - To provide our attendees with the most comprehensive and up-to-date information from the world's energy leaders, we offer panel presentations covering an overview of emerging, evolving, and innovative technologies, fuels, policy and/or equipment in the power generation industry.

SHORT COURSES On

Sunday, June 16th, we offer Short Courses on a wide variety of topics important to the energy community. **Participation is optional; is included in the registration fee; and open to all conference registrants.**

THEMED LUNCHEON – A conference favorite is the Themed Luncheon. Industry leaders host tables of 8 where a specific topic is chosen by the host for discussion during lunch.

EXHIBIT CENTER An Exhibit Center showcasing 24 booths also provides opportunities to highlight accomplishments and achievements. We also offer tables for Information Display. Those signing up for this are included in the write-ups and include an ad in the Official Program that is posted on our website for the entire year.

FIELD TRIP – Friday, June 21, 2019, to Polk Power Plant

BACKGROUND – At the direction of the Conference Committee, it was decided to broaden the scope of the conference to include some new and exciting technologies currently on the horizon. Industry professionals representing

nearly all the major players in the electric utility industry were in Clearwater, Florida, USA for the 43rd Clearwater Clean Energy Conference.

This conference has earned a reputation for excellence as one of the premiere conferences on coal technologies as it grows in size and scope since its inception in 1975.

Through the Technical Sessions, Short Courses, and Panels, cutting-edge developments dealing with **technical solutions to problems; specific strategies; projects; innovations; industry trends; and/or regulatory compliance** will be offered. The program presents an extensive overview of emerging, evolving, and innovative technologies, fuels and/or equipment in the power generation industry. We seek papers from all countries worldwide.

The **Clearwater Clean Energy Conference** will offer participants more than 200 technical presentations in four days. Buffet style luncheons in the Exhibit Center (an area dedicated for the use of attendees all day), refreshment breaks and a fabulous reception offer numerous networking opportunities.

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Technical Sessions Areas and Topics	
POWER OPERATIONS FROM EXISTING PLANTS <i>Area Chair: Bonnie Courtemanche, Babcock Power, Inc.</i>	
Water	<i>Nick Siefert and Jessica Mullen, National Energy Technology Laboratory, U.S. Department of Energy</i>
Fluidized Bed Units	<i>Fredrik Lind, Chalmers University</i>
PC Fired Units	<i>J.J. Letcavits, AEP, and Alan Paschedag, Covanta</i>
Gasification for Power and Chemicals	<i>Massood Ramezan KeyLogic Systems and Kunlei Liu, University of Kentucky</i>
Advanced Controls for Existing Plants	<i>Larry Shadle National Energy Technology Laboratory, U.S. Department of Energy</i>
Biomass and Biomass Cofiring	<i>Les Marshall Ontario Power Generation, Canada</i>
Coal Preparation/Handling/- Beneficiation	<i>Dr. Dave Osborne Somerset International Australia Pty Ltd., Australia</i>
Fuel Blending for Utility and Industrial Use	<i>Claus Bachmann J&C Bachmann GmbH, Germany</i>
Energy From Waste	<i>Alan Paschedag, Covanta</i>
Case Studies in Plant Conversions	<i>John Dooher, Adelphi University</i>
Emissions (SO₂/NO_x/CO₂/Hg/Particulates)	<i>Edmundo Vasquez, Consultant Boiler Combustion and Emission Controls, and Byron Burrows, TECO</i>

ADVANCED TECHNOLOGY

Area Chair: Massood Ramezan, KeyLogic, Inc.

Oxy-Combustion	<i>Dr. Klas Andersson (Chalmers University, Sweden) and Dr. Andrew Fry, Brigham Young University</i>
sCO₂ <i>Coal Direct Combustion System Heat Transfer</i>	<i>Prof. Subith Vasu CATER, University of Central Florida, Josh Stanislawski, UNDEERC, and Bhupesh Dhungel, Air Liquide</i>
Chemical Looping Carrier Development Component Development Systems Analysis Chemical Production	<i>Andrew Tong The Ohio State University; JoAnn Lighty Boise State University; and Robert Stevens National Energy Technology Laboratory, U.S. Department of Energy</i>
Advanced O₂	<i>Dr. Lawrence E. Bool, Praxair, Inc.</i>
Recovery of Rare Earth Metals	<i>Prof. Eric Eddings University of Utah</i>
CO₂ Capture & Utilization	<i>Dr. Erik Meuleman ION Engineering, and David Hopkinson, National Energy Technology Laboratory, U.S. Department of Energy</i>

FUNDAMENTALS

Area Chair: Prof. Ashwani Gupta, University of Maryland

Combustion and Gasification	<i>Weihong Yang, KTH Royal Institute of Technology, Sweden; and Prof. Ashwani K. Gupta, University of Maryland</i>
Radiation	<i>Brad Adams Brigham Young University</i>
Modeling	<i>Edmundo Vasquez Consultant, Boiler Combustion and Emission Controls</i>
Innovative and Low Carbon Fuels	<i>Prof. Dongke Zhang The University of Western Australia</i>
Fluid Particle Fundamentals	<i>Dr. Ronald Breault National Energy Technology Laboratory, U.S. Department of Energy</i>
Fuels Production	<i>Dushyant Shekhawat National Energy Technology Laboratory, U.S. Department of Energy</i>
Upgrading Natural Gas	<i>Evan Granite, National Energy Technology Laboratory, U.S. Department of Energy</i>
Coal Upgrading for Value Added Products	<i>Prof. Gerardine Botte Ohio University</i>
Advances in Analytical and Testing Techniques	<i>Dr. Dave Osborne, Somerset International Australia Pty Ltd., Australia</i>
Solar and Coal Hybrid Plants	<i>Prof. John Dooher Adelphi University</i>

CALL FOR PAPERS

2019 Clearwater Clean Energy Conference

The 44th International Technical Conference
on Clean Energy
June 16 to 21, 2019
Sheraton Sand Key, Clearwater, Florida, USA

ABSTRACT REQUIREMENTS

The **ONE PAGE ABSTRACT**, required by January 15, 2019, must be submitted via email and include:

- The Proposed Paper with Exact Title and one page of information (no equations and no figures) must summarize the objective and current status of the work; and provide the committee with an accurate scope of the paper. **Please indicate under which Technical Topics this paper falls.**
- Principal Presenter Listing (name, title, company, address, phone, and email). Email addresses are required since this will be the primary mode of communication. Please include Complete Listings for all Co-Authors

The Clearwater Clean Energy Conference does not provide financial support to authors. The registration fee covers one technical paper; authors submitting more than one paper must include an additional \$100 per paper.

Notification of acceptance will be made immediately. A manuscript for inclusion in the Proceedings and for distribution on thumb drive (not to exceed 12 pages in length, with illustrative material) is required by **APRIL 16, 2019**.

Instructions for preparation of manuscripts will be sent with letters of acceptance. Presentations will be scheduled in Panels and Technical Sessions, as determined by the Conference Committee. The **ONE-PAGE** abstract should be sent via email to BarbaraSak@aol.com.

Best Student Paper Award - Over the years the conference has benefitted

<p>(name, title, company, address, phone, FAX and email).</p> <p>The Principal Presenter is the person to whom all correspondence will be sent and who must meet the deadlines and obligations of the conference: making a presentation at the 2019 conference; submitting a manuscript; and paying a conference fee.</p> <p>The non-refundable registration fee of \$795 is due before January 31, 2019. There is no reimbursement for time spent or expenses incurred in preparing manuscripts or illustrations, or for transportation to, and expenses at the conference.</p>	<p>from the many excellent papers given by students. To give these exceptional students well-deserved recognition, the Conference Committee awards the best paper from a student with the Clearwater Clean Energy Conference Best Student Paper Award. The student will be evaluated in the quality of the paper, grasp of the topic presented and quality of the presentation at the conference. The student must be present to win.</p>
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THE CONFERENCE COMMITTEE The dedicated efforts and expertise of each Committee member result in the excellent Technical Program offered each year. They reach out to all segments of the energy industry so that the state-of-the-art (and beyond) is presented. Through their hard work, we offer a world-renowned conference each year. This year's Conference Committee members are:

<p>Adelhi University <i>Dr. John Dooher</i> AEP, J.J. Letcavits AECOM, Dr. Guisu Liu Air Liquide, Bhupesh Dhungel Arizona State University <i>Dr. Klaus S. Lackner</i> The Babcock & Wilcox Company, Thomas Flynn Babcock Power Inc. <i>Bonnie Courtemanche</i> Clear Energy Technologies</p>	<p>Mitsubishi Hitachi Power Systems Americas, Inc., Dr. Song Wu Mitsubishi Hitachi Power Systems Europe GmbH, <i>Gosia Stein-Brzozowska</i> Monash University <i>Dr. Sankar Bhattacharya</i> Northeastern University <i>Dr. Yiannis A. Levendis</i> Ohio University <i>Dr. Gerardine G. Botte</i> Ontario Power Generation,</p>
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<p><i>Dr. Edmundo R. Vasquez</i> Boise State University <i>Prof. JoAnn Lighty</i></p> <p>Brigham Young University <i>Prof. Bradley Adams and</i> <i>Prof. Andrew Fry</i></p> <p>CANMET Natural Resources Canada, <i>Dr. Ligang Zheng</i> Chalmers University of Technology <i>Prof. Klas Andersson and</i> <i>Fredrik Lind</i></p> <p>Consultant, <i>Gerry Hesselmann</i> Covanta, <i>Alan Paschedag</i> CSIRO <i>Dr. Louis Wibberley and</i> <i>Dr. David Harris</i></p> <p>Electric Power Research Institute, <i>Horst Hack</i> Électricité du France <i>Mathieu Insa</i></p> <p>Energy & Environment <i>Prof. Dr.-Ing. Klaus R. G. Hein</i> (Chairman Emeritus)</p> <p>Energy & Environmental Research Center, University of North Dakota <i>Christopher J. Zygarlicke and</i> <i>Josh Stanislawski</i></p> <p>Fuels and Combustion Consultant, <i>David Tillman</i> Gas Technology Institute <i>Howard Meyer</i></p> <p>GE – Alstom Power Inc., <i>Frederic Vitse</i></p> <p>Huazhong University of Science <i>Prof. Chuguang Zheng</i></p>	<p><i>Les Marshall</i> Pennsylvania State University <i>Bruce G. Miller</i></p> <p>Praxair, Inc. <i>Dr. Lawrence E. Bool III (Co-chair)</i></p> <p>Reaction Engineering International, <i>Kevin Davis</i> Ruhr-University Bochum, Department of Energy Plant Technology, <i>Prof. Viktor Scherer</i> Somerset Pty Ltd., <i>Dr. Dave Osborne</i> Southern Illinois University <i>Dr. Joseph Hirschi</i></p> <p>Tampa Electric Company <i>Yogesh M. Patel and Byron Burrows</i></p> <p>Technische Universität Hamburg- Harburg <i>Prof. Dr.-Ing. Alfons Kather</i></p> <p>Tsinghua University, <i>Dr. Yao Qiang</i> U.S. Geological Survey <i>Ronald H. Affolter, Emeritus</i></p> <p>University of Alberta <i>Dr. Rajender Gupta</i></p> <p>University of Kentucky <i>Dr. Kunlei Liu</i></p> <p>University of Maryland Dr. Ashwani Gupta</p> <p>University of Newcastle Prof. Terry Wall</p> <p>University of North Carolina at Charlotte Dr. Nenad Sarunac</p> <p>University of South Carolina Prof. Jochen Lauterbach</p> <p>University of Utah Prof. Eric Eddings, and Kevin Whittey U.S. Department of Energy,</p>
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<p>IEA Clean Coal Centre <i>Dr. Andrew Minchener</i></p> <p>ION Engineering <i>Dr. Erik Meuleman</i></p> <p>Jiangnan Environmental Technology, Inc. (JET) <i>Robert Nicolo</i></p> <p>KeyLogic Systems Inc., <i>Massood Ramezan</i></p> <p>Korea Advanced Institute of Science and Technology, <i>Assoc. Prof. Jeong Ik Lee</i></p> <p>Lehigh University <i>Dr. Edward K. Levy</i></p> <p>Massachusetts Institute of Technology <i>Dr. Janos M. Beer, Professor Emeritus</i></p>	<p>National Energy Technology Laboratory <i>Dr. Ronald Breault (Co-Chair)</i></p> <p>Wrocław University of Technology, Poland <i>Halina Pawlak-Kruczek Ph.D., D.Sc., and Dr. Janusz Lichota</i></p>
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Endorsing Organizations:

- American Institute of Chemical Engineers
- American Public Power Association
- CANMET Natural Resources, Canada
- China Coal Research Institute
Ministry of Coal, People's Republic of China
- Edison Electric Institute
- Export Assistance Center, U.S. Commercial Service
- International Energy Agency: Coal Research
- Japan Coal Energy Center (JCOAL)
- National Mining Association
- National Rural Electric Cooperative Association
- Ohio Coal Development Office
- U. S. Geological Survey

The Clearwater Clean Energy Conference

Deadline for Abstracts:

January 15, 2019

*Clearwater Clean Energy Conference
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Louisa, VA 23093
240-751-0900*

www.ClearwaterCleanEnergyConference.com

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