

Energy Conversion and Conservation Division (ECCD)

Fall 2018 Newsletter

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Message from the Division Chair

Dear Wonderful Members,

Thank you for a successful 2018 conference in Salt Lake City where the Nuclear Division and Energy Conversion and Conservation Division joined forces. We warmly welcome all new and returning members!

We are excited to welcome Dr. Robert Kerestes to the leadership team. He has put together a great newsletter that I hope you will enjoy. We thank Dr. Siamak Farhad for his excellent work on past newsletters and are glad he is continuing as Treasurer-Secretary. We are saddened to say farewell to outgoing chair, Dr. Madhumi Mitra, but glad that she continues to support the division in other ways. Many thanks to her for a successful Biofuel workshop in Columbus and follow up panel, Incorporation of Bioenergy in STEM Curricula, in Salt Lake City with guest speaker, Dr Serpil Guran.

For three years running, Dr. Hossein Mousavinezhad has rallied Mr. Charles Alexander, Dr. Herbert Hess, Dr. Howard Rockman,

Dr. Aaron St. Leger, and Mr. Bhavesh Mistry to share their expertise on the latest research and pedagogy in energy engineering. Many thanks to him for a great program!

A special thank you to Dr. Ted Song who has helped move our Division forward by advocating for and procuring a new Logo. He has taken over the Program Chair duties with enthusiasm, posted the call for papers, and secured a distinguished lecturer. He has done amazing work and I'm sure you will hear more from him as the year progresses with the help of our new webmaster, Dr. Sandip Das who has already made some great updates.

I am humbled to follow in the footsteps of great leaders. It has been my pleasure and honor to learn from all prior Chairs especially our 2018 ASEE Fellow Dr. Herbert Hess whom we extend our heartiest congratulations. This division is great because of the support and dedication exhibited by all. Have a wonderful year and we look forward to seeing you in Tampa, 2019!

Cheers,
Lynn
ASEE-ECC Division Chair

2018 – 2019 Division Officers

Chair

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Vice Chair/Chair-Elect

Dr. Hossein Mousavinezhad
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Program Chair

Dr. Ted Song
John Brown University
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Secretary/Treasurer

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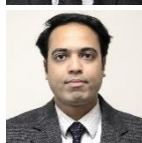
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Call for Papers for 2019 Conference

The Energy Conversion and Conservation Division (ECCD) invites papers for the 125th ASEE Annual Conference and Exposition to be held **June 16-19, 2019** in **Tampa, Florida**. The division is multi-disciplinary and is honored to share innovative pedagogy related to all forms of energy generation, distribution, use, and conservation with the engineering education community. Authors should consider submitting technical papers for oral or poster presentations, as well as recommendations for Workshops, Special Panels, Outreach Events, and Service Projects. The topics of interest are

- Innovative Research and its dissemination into grades P-20
- Innovative teaching and learning strategies
- Research methods to assess teaching and learning strategies
- Curriculum content innovation
- Hands-on Projects for grades P-20
- Novel experiments and use of laboratory equipment and their impact on learning
- Integrating research and engineering education
- Impact of problem-based learning, collaborative learning, cooperative learning, discovery learning and inverted learning
- Outreach programs that involve energy conversion and conservation industry
- Renewable Energy Sources
- Manufacturing – all processes including 3D printing
- Energy conversion technologies
- Energy storage technologies
- Engineering for sustainability and emissions reductions
- Worldwide energy supply/demand issues
- Electrical distribution and power systems
- Industrial and commercial scale energy conversion and conservation

Division Announcements

- The ECCD Call for Papers for the 2019 ASEE Conference and Exposition has been released. The URL for this call is given below:
https://www.asee.org/uploads_public/conferences/session_owner/call_for_papers_file/0000/1681/CFP_ECCD_2019.pdf
- A new ECCD LinkedIn group has been created. The URL for this group is given below:
<https://www.linkedin.com/groups/12134751> All members are encouraged to join.
- Call for papers for the 2019 Mascaro Center for Sustainable Innovation's "A Climate for Change" conference is now available. URL for this conference is given below:

- Discipline-specific engineering research relating to energy conversion and conservation (electrical, mechanical, nuclear, chemical, aerospace, civil, computer, textile, petroleum, biological, agricultural, natural resources, etc.)
- Role of engineers in the formulation and enforcement of public policy related to energy at all levels.
- Research Experiences for Undergraduates (REU) projects related to energy conversion or conservation.

The 2019 ASEE Annual Conference and Exposition Author's Kit can be found on [this webpage](#). Authors should submit an abstract of 300 words or less on their paper topic. All ASEE papers are published to present. Panels must also submit an abstract and may submit a full paper. Papers accepted for publication in the Proceedings must be presented by at least one registered conference participant in a designated technical session or poster session. ECCD will not accept work-in-progress (WIP) papers or papers that overlap significantly in content that had been (or will be) published elsewhere. The abstract submission opens September 4, 2018 and is closed October 15, 2018.

Highlights from the 2018 Conference

At the 2018 ASEE Annual Conference and Exposition, the Energy Conversion & Conservation Division had 21 papers presented, 4 technical sessions, 2 discussion panels, 1 social events (Dinner at Mazza Middle Eastern Cuisine), 1 business events (Energy Conversion and Conservation Division Business Meeting), and 1 workshop.

ECCD 2018 Papers Presented, Posters & Panels

[Papers: M316 Technical Session on Solar](#)

1. Experimental Field Trial of Self-cleaning Solar Photovoltaic Panels; Dr. Kenneth A. Walz (Madison Area Technical College), Mr. Joel B. Shoemaker (Madison Area Technical College), Ms. Ashley

Jordan Scholes (Madison Area Technical College), Hao Jiang (University of Wisconsin, Madison), Dr. Jessica M.S. Silva (Azelis), Mrs. Jennifer Sanfilippo M.S., L.A.T. (University of Wisconsin, Madison), Dr. Walter A. Zeltner (Microporous Oxides Science and Technology, L.L.C.), and Prof. Marc Arlen Anderson (Imdea Energía, Madrid)

2. Modernized Teaching Methods for Solar Energy Projects; Prof. William Hutzler (Purdue University, West Lafayette) and Dr. Jan T. Lugowski (Purdue University, West Lafayette)
3. Impacts on Teaching Practices from a Solar Photovoltaic Institute Faculty Professional Development Program; Dr. Kenneth Walz (Madison Area Technical College), Mr. Joel B. Shoemaker (Madison Area Technical College), Mr. Scott Liddicoat (Green Bay Southwest High School), and Mr. Cris Folk (Madison College)
4. Solar Energy Education at Grand Valley State University [view paper] Dr. Lihong (Heidi) Jiao (Grand Valley State University)

[Papers: M416 Energy Conversion and Conservation Division Best Papers](#)

1. Integrated Learning In Context for Heat Exchanger Analysis; Dr. Jan T. Lugowski (Purdue University, West Lafayette) and Prof. William Hutzler (Purdue University, West Lafayette)
2. Design and Implementation of MATLAB-Simulink Based Solar Cell Modeling and PV System Design Exercises for Advanced Student Learning; Dr. Sandip Das (Kennesaw State University)
3. Teaching Power Circuit Breaker Testing to Undergraduates; Dr. Glenn T. Wrate P.E. (Northern Michigan University)
4. Improving Vertical Axis Wind Turbine (VAWT) Performance; Dr. Patrick A. Tebbe (Minnesota State University, Mankato), Dr. Nazli Aslican Yilmaz Wodzinski (Minnesota State University, Mankato), and Dr. Namyong Lee (Minnesota State University, Mankato)

[Papers: T116 Energy Efficiency and Power Grid Security](#)

1. Study of Energy Efficiency Characteristics of a Hydraulic System Component]; Dr. Alamgir A. Choudhury (Western Michigan University), Prajna Paramita (Western Michigan University), and Dr. Jorge Rodriguez P.E. (Western Michigan University)
2. Air Entrapment Issues in Piping for a Small Hydroelectric Station in Western North Carolina; Dr. George D. Ford (Western Carolina University), Dr. Hayrettin B. Karayaka (Western Carolina University),

and Dr. Sung Joon Suk (Western Carolina University)

3. Testbed for Transactive Energy and its Effects on the Distribution System and Protective Devices Settings; Dr. Ilya Y. Grinberg (Buffalo State)
4. A Hardware-in-the-loop Experimental Platform for Power Grid Security; Mr. James Dylan Kollmer (Affiliation unknown), Dr. Saroj K Biswas (Temple University), Dr. Li Bai (Temple University), Dr. Arif I. Sarwat (Florida International University), and Walid Saad (Virginia Tech)
5. Enhanced Workforce Development via the 2017 FEEDER Student Summer Program; Dr. Robert J. Kerestes (University of Pittsburgh), Dr. Zhihua Qu (University of Central Florida), and Dr. Damla Turgut (University of Central Florida)

Papers: W316 Conservation and Optimization

1. Occupancy Detection Chair Sensor: An Energy Conservation Tool; Dr. Maher Shehadi (Purdue University)
2. An Experiential Learning Exercise: Optimization of Evaporators and Condensers in a Vapor Compression Cycle; Dr. David C. Zietlow (Bradley University) and Mr. John Sullivan (Affiliation unknown)
3. Work in Progress: Research-based Teaching in Undergraduate Thermofluid Mechanical Engineering Courses in a Primary Undergraduate University; Dr. Farshid Zabihian (California State University, Sacramento)
4. Development and Implementation of a Power and Energy Engineering Minor with Limited Resources: First Results and Lessons Learned; Dr. Radian G. Belu (Southern University and A&M College), Prof. Lucian Ionel Cioca (Lucian Blaga University of Sibiu), and Dr. Richard Chiou (Drexel University)
5. Regenerative Braking System on a Conventional Bike; Dr. Bala Maheswaran (Northeastern University), Mr. Nicolas Berna Tedori (Affiliation unknown), Mr. Eamon J. Whitmore (Northeastern University), Miss Bailey L. Ritchie (Affiliation unknown), and Mr. Logan Gross (Northeastern University)

Workshop: U216 Wind Energy Presentation and Activity for K-20 Outreach

Speakers

- Dr. Lynn A. Albers, Campbell University
- Dr. Reg Recayi Pecan, Sam Houston State University
- Mr. Jeremy Ryan England, Sam Houston State University

Panel: W416-The Latest Research and Pedagogy in Energy Conversion and Conservation

Speakers

- Charles K. Alexander, Cleveland State University
- Dr. Herbert L. Hess P.E., University of Idaho, Moscow
- Dr. Howard Rockman, University of Illinois, Chicago
- Dr. Aaron St. Leger, U.S. Military Academy
- Mr. Brian Hayt, National Instruments

Panel: T416-The Incorporation of Bioenergy in STEM Curricula

Speakers

- Dr. Lynn A Albers, Campbell University
- Dr. Ted Song, John Brown University
- Dr. Serpil Guran, Director of Rutgers EcoComplex "Clean Energy Innovation Center"
- Dr. Ibrahim H. Yeter, Purdue University-Main Campus, West Lafayette (College of Engineering)
- Dr. Ahmed H. Elsayy, Tennessee Technological University

Best Papers Award

1st Best Paper: Dr. Patrick A. Tebbe, Minnesota State University, Mankato, Dr. Nazli Aslican Yilmaz Wodzinski, Minnesota State University, Mankato, and Dr. Namyong Lee, Minnesota State University, Mankato; "Improving Vertical Axis Wind Turbine (VAWT) Performance"

The 2nd best paper: Dr. Glenn T. Wrate, Northern Michigan University; "Teaching Power Circuit Breaker Testing to Undergraduates"

The 3rd best paper: Dr. Sandip Das, Kennesaw State University, "Design and Implementation of MATLAB-Simulink Based Solar Cell Modeling and PV System Design Exercises for Advanced Student Learning"

Photos of Social Events, Panels and Business Meeting



Social event: Dinner at Mazza Middle Eastern Cuisine



Social event: Dinner at Mazza Middle Eastern Cuisine



Social event: Dinner at Mazza Middle Eastern Cuisine



M316 Technical Session on Solar



M316 Technical Session on Solar



2017-2018 Officers at ECCD Business Meeting



ECCD Business Meeting

Editor's Note

Hello everyone,

It is my pleasure to serve as the Newsletter Editor for the Energy Conversion and Conservation Division of the ASEE. I have dedicated my career to education and particularly as it relates to electrical power systems and sustainable engineering I promise to continue that through the opportunity that was given to me. I am looking forward to a wonderful 2018-2019 school year and the 126th Annual Conference and Exposition in Tampa with all of you!

Robert Kerestes, Ph.D.