



Fall 2021 Newsletter, Volume 38

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**Abstract Submissions are OPEN now until
Friday November 8, 2021**

**Workshop Applications are OPEN until
Monday, November 22, 2021**

ECCNED Call for Papers  [View Online](#)

Website: <https://sites.asee.org/eccd/>

MESSAGE FROM THE DIVISION CHAIR

Dear ECCNED Members,



Greetings on behalf of the ECCNED officers! The pandemic has impacted how we educate the next generation of engineers. While it created new challenges for educators and students, we see innovative ways of teaching. I am sure there are many strategies you have taken to continue equipping students, and ECCNED would love to hear about them! I would like to invite you to submit your abstract(s) to our division. The abstract submission is now open and will close on November 8. ECCNED welcomes various topics in energy conversion and conservation as well as the nuclear engineering. We especially encourage your participation in

areas of renewable energy, sustainability, and green entrepreneurship. ECCNED also has awards for the top three papers, which are evaluated by a panel of experts. This is a great opportunity to showcase your work and get recognized. We want to incorporate more sessions, workshops, and panel presentations geared toward sustainability and greenhouse gas reduction while we work with other divisions interested in these endeavors. Your ideas and suggestions are welcomed to strengthen the ECCNED. I look forward to seeing many of you in Minneapolis in June 2022.

Yours Truly,
Siamak Farhad, Ph.D.

Chair



2021 – 2022 DIVISION OFFICERS

Chair

Dr. Siamak Farhad
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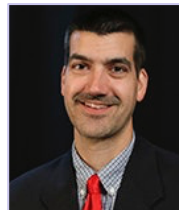
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DIVISION ANNOUNCEMENTS

The ECCNED Call for Papers for the 2022 ASEE Conference and Exposition has been released. For more information and to view the paper guidelines, please visit the Call for Papers webpage, [available here](#).

Please join the ECCNED LinkedIn group for all the latest information! The URL for this group is: <https://www.linkedin.com/groups/12134751> 

Access all previously published ECCNED Newsletters here: <https://sites.asee.org/ECCNED/about/newsletters/>

ECCNED Business Meeting for the year 2021 was held virtually (online) on July 28th during the 2021 ASEE Annual Conference.



2022 CONFERENCE CALL FOR PAPERS

Dear Energy Conversion and Conservation Division (ECCNED) Members,

I hope that your semesters are off to a great start! Although the last two annual conferences were held online, we are planning to return to an in-person conference next year in Minneapolis, Minnesota. The conference will be held from June 26-29, 2022. The conference website is: <https://www.asee.org/annual-conference/2022>

If you are interested in organizing or participating in a workshop or panel session at the conference, please email me as soon as possible. Panels and Workshops must be requested no later than November 22, 2021. Panels must also submit an abstract, which will be used as the description for the panel session, and they may also submit a full paper.

Abstract submissions for conference papers will open on October 11, 2021 and will close on November 8, 2021. Abstracts should be 400 words or less and should include a brief introduction, a statement about the focus of the paper, the work which has been done, assessments, and a conclusion. All abstracts must be submitted via the ASEE paper management system and will be peer reviewed.

Topics may include:

- 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.
- Pandemic related changes to pedagogy.
- Innovative remote learning teaching and learning strategies.
- 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 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.
- Nuclear engineering technologies.
- 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.

In addition to traditional full conference papers, the ECCNED Division will be accepting Works in Progress (WIP). Work-in-Progress papers report on work that is in the process of study and/or implementation for which results will not be available by the time of draft paper submission, for studies that are as yet inconclusive, and for studies at an early to intermediate state for which authors are seeking feedback from the community. A submission of this paper type MUST have a title that begins with "Work-in-Progress:" with the colon separating the phrase from the remainder of the title. WIP papers may be assigned to a poster presentation session to allow authors to maximize the opportunity for extended conversations regarding their



ongoing research. WIP papers are not eligible for the Division's Best Paper Award.

The 2022 ASEE Annual Conference and Exposition Author's Kit, Plagiarism Guidelines, and Best Paper Rubric can be found on the "For Authors" section of ASEE conference website. All ASEE papers are published to present. 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. ECCNED will not accept papers that overlap significantly in content that has been (or will be) published elsewhere. All authors are expected to adhere to the guidelines put forth in the Author's Kit and Plagiarism Guidelines. Of particular importance is the "double-blind" requirement.

The ECCNED Division has a best paper award that is presented at the division's business

meeting at the annual conference. The division also participates in the conference best diversity paper award by the nomination of a paper submitted to the division.

If you are interested in reviewing abstracts and/or papers or have any questions about the submission process, please let me know by sending an email to maldema@ilstu.edu.

Thank you very much for your time and your participation! We welcome your wonderful ideas, and we look forward to seeing you in Minneapolis!

Sincerely,

Matthew Aldeman, Ph.D.

Program Chair

Energy Conversion, Conservation and Nuclear Engineering Division

HIGHLIGHTS FROM THE 2021 CONFERENCE

At the 2021 Virtual ASEE Annual Conference, the Energy Conversion, Conservation and Nuclear Engineering Division had 14 papers presented in 3 technical sessions, held 2 discussion panels

including 8 guest speakers, one poster session, and one business event (Energy Conversion, Conservation and Nuclear Engineering Division Business Meeting).

ECCNED 2021 PAPERS PRESENTED, POSTERS & PANELS

M416 • Technical Session 1: Mechanical and CAD Track

Moderators: Dr. Seyed Hossein Mousavinezhad and Dr. Siamak Farhad

1. **A Hands-on Learning Module Pipe-flow Velocity Profile Interrogator Laboratory Kit for Remote Online Fluid Mechanics Instruction** [[view paper](#)]

Ms. Nina T. Jones (University of Florida), Dr. Sean R. Niemi (University of Florida), and Dr. Matthew J. Traum (Engineer Inc.)

2. **Hydro-Island: Undergraduate Research Modeling an Ocean Thermal Energy Conversion (OTEC) System** [[view paper](#)]

Ms. Leah Hope Sirkis (University of Pittsburgh) and Dr. Tony Lee Kerzmann (University of Pittsburgh)

3. **Project-based Learning Program for Nuclear Workforce Development Phase II: Implementation** [[view paper](#)]

Dr. Hayrettin Bora Karayaka (Western Carolina University), Dr. Chip W. Ferguson (Western Carolina University), and Dr. Amber C. Thompson (Western Carolina University)



4. **Integration of COMSOL Multiphysics into an Undergraduate Electrical Engineering Curriculum** [[view paper](#)]

Mr. Abdullah Al Hadi (Texas A&M University-Kingsville) and Dr. Rajab Chaloo (Texas A&M University-Kingsville)

T316 · Technical Session 2: Solar Track

Moderators: Dr. Ted Song and Dr. Robert J Kerestes

1. **A Model Passive Solar Home Student Design Project** [[view paper](#)]

Dr. Matt Aldeman (Illinois State University) and Dr. Jin Ho Jo (Illinois State University)

2. **Design and Implementation of Solar PV Charging Stations for City of Huntsville Aquatic Center** [[view paper](#)]

Dr. Reg Pecen (Sam Houston State University), Dr. Keith L. Coogler (Sam Houston State University), Dr. Faruk Yildiz (Sam Houston State University), Dr. Ulan Dakeev (Sam Houston State University), and Mr. Lance David Sebesta (Affiliation unknown)

3. **ETHR-ENRG Smart Solar Project Kits** [[view paper](#)]

Ms. Danielle S. Washington (North Carolina Agricultural and Technical State University), Mr. Tony D. Martin Jr. (Affiliation unknown), and Dr. Evelyn Sowell-Boone (North Carolina Agricultural and Technical State University)

4. **Simulation and Validation of Battery Management System** [[view paper](#)]

Mr. Edmund Huminski (United States Coast Guard Academy), Salena Marie Bantz (Affiliation unknown), Mr. Joseph Roth (United States Coast Guard Academy), Mr. Liam Scott Caro (Affiliation unknown), Dr. Tooran Emami (United States Coast Guard Academy), and Mr. David Fournier (United States Coast Guard Academy)

5. **Resilience in the Home Office Through a Scaled-down Microgrid** [[view paper](#)]

Ms. Tessa Veurink (University of Pittsburgh), Mr. Bradley G. Fox (University of Pittsburgh), Ms. Sabrina R. Helbig (University of Pittsburgh), Mr. Duncan Penizotto (University of Pittsburgh), Dr. Robert J. Kerestes (University of Pittsburgh), and Prof. Brandon M. Grainger (University of Pittsburgh)

T416 · Technical Session 3: Education Track

Moderators: Dr. Matt Aldeman and Dr. Sandip Das

1. **Food to Energy: A K12/University Partnership to Develop a Resource Recovery Program** [[view paper](#)]

Dr. Jan DeWaters P.E. (Clarkson University) and Prof. Stefan J. Grimberg (Clarkson University)

2. **Project-based Learning Approach in Teaching Power and Energy Engineering Courses** [[view paper](#)]

Dr. Radian G. Belu (Southern University), Dr. Alexandru Belu (Affiliation unknown), and Dr. Zhengmao Ye (Southern University)

3. **Teaching Power Electronics to Electrical Engineering Undergraduates in an Interactive Two-semester Integrated Sequence** [[view paper](#)]

Dr. Herbert L. Hess (University of Idaho)

4. **Teaching STEM Early-college Students: A New Methodology to Teach Energy Complex Systems** [[view paper](#)]

Dr. Ahmed Cherif Megri (North Carolina Agricultural and Technical State University), Dr. Sameer Hamoush (North Carolina Agricultural and Technical State University), and Dr. Taher M. Abu-Lebdeh P.E. (North Carolina Agricultural and Technical State University)

5. **Teaching Maximum Power Point Tracking (MPPT) Algorithms of Photovoltaic (PV) Systems Using MATLAB** [[view paper](#)]

Dr. Lihong Heidi Jiao (Grand Valley State University)



M516 • Panel: International Collaboration in Teaching Sustainable Energy Solutions

Moderator: Dr. Herbert L. Hess P.E.

Speakers:

1. Dr. Robert J Kerestes (University of Pittsburgh)
2. Mr. Daniel Tyler Theis (Technical University of Denmark)
3. Patrick Conner (University of Pittsburgh)
4. Maiken Jakobsen (Technical University of Denmark)

R316 • Panel: Energy and Environmental Education in the Midst of Misfortunes

Moderator: Dr. Robert J Kerestes

Speakers:

1. Dr. Veera Gnaneswar Gude P.E. (Mississippi State University)
2. Dr. Bala Maheswaran (Northeastern University)
3. Dr. Tooran Emami (United States Coast Guard Academy)
4. Dr. Ramanitharan Kandiah P.E. (Central State University)

R411 • Distinguished Lecture: Innovation Is Driving Business and Education Transformation

Moderators: Dr. Katherine McConnell, Ms. Robin R Hammond, and Dr. Huihui Q

Guest Speaker:

Dr. Stefan Jockusch

Vice President of Services and Solutions Innovation at Philips

W216 • Poster Session

Moderator: Dr. Robert J Kerestes

BEST PAPERS AWARDS

Congratulations to all of the Best Paper Award Winners!

1st Place and Best Paper:

“Food To Energy: A K12/University Partnership to Develop a Resource Recovery Program”

Authors: Dr. Jan DeWaters P.E., Clarkson University

2nd Best Paper:

“Teaching Power Electronics to Electrical Engineering Undergraduates in an Interactive Two-Semester Integrated Sequence”

Authors: Dr. Herbert L. Hess, University of Idaho

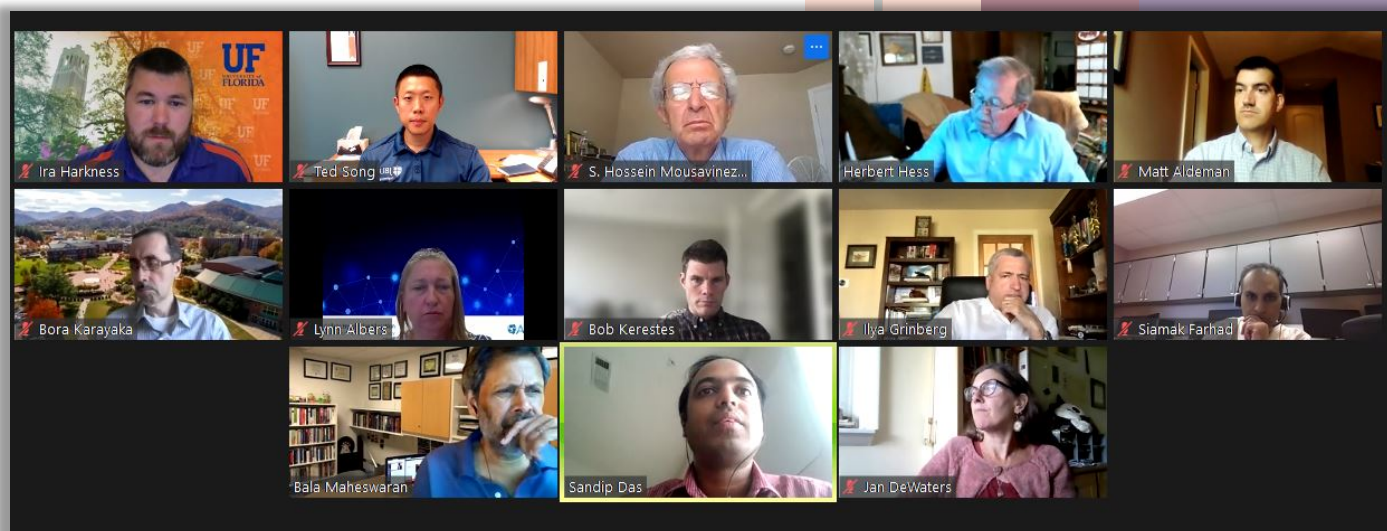
3rd Best Paper:

“Design and Implementation of Solar PV Charging Stations for City of Huntsville Aquatic Center”

Author: Dr. Faruk Yildiz, Sam Houston State University, Dr. Ulan Dakeev, Sam Houston State University, Mr. Lance David Sebesta



PHOTOS OF SOCIAL EVENTS, PANELS AND BUSINESS MEETING



2021 ECCNED business meeting. (From top left to bottom right) Dr. Ira Harkness, Dr. Ted Song, Dr. Seyed Hossein Mousavinezhad, Dr. Herber Hess, Dr. Matthew Aldeman, Dr. Bora Karayaka, Dr. Lynn Albers, Dr. Robert Kerestes, Dr. Ilya Grinberg, Dr. Siamak Farhad, Dr. Bala Maheswaran, Dr. Sandip Das, Dr. Jan DeWaters

ENERGY CONVERSION AND CONSERVATION DIVISION

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