

Inside ECCE: What's So Special About A Special Session?

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Special sessions have been a mainstay at the IEEE Energy Conversion Congress & Exposition (ECCE) for the last three years. Though the technical program was already packed with well over a hundred oral (paper) sessions, the special session was added to create a synergy between the participants from different segments of the energy conversion industry, i.e. between the students, academics, working engineers and researchers on *timely* topics. While we like to think that the topics being discussed in the oral sessions are timely, and they generally are, the reality is a bit more complicated.

At most conferences, the main program presents papers and posters that are the culmination of many years and months of sweat and work. The authors and presenters aggregate their solutions and results into a compact and comprehensible paper and the associated presentation so that they can share their work with the world. Unfortunately, the format prevents the conference from presenting the latest results and discoveries that may affect the future directions of research and development activities. That's largely because the paper writing, review, and presentation cycle takes a minimum of a year.

The accepted presentation format usually contains the following components: authors set forth their premise, state their known assumptions and limitations, show their numerical or experimental results (which may support or refute their assumptions), and summarize their problem and results. This format gives the authors and the audience a familiar and reliable rhythm. Unfortunately, it's a rhythm that automatically mitigates ad hoc discussion and the introduction of new topics since the format is time limited and further digging into the granularity of any topic is impossible.

With these limitations in mind, the special session was instituted by ECCE to fill some of these voids.

The guiding principles of the special session are to create opportunities for attendees to present ideas and results that are fresh off the lab bench or prototype laboratory; and to allow for informal and unstructured exchanges among the attendees to passionately brainstorm, debate, argue, and innovate in an open format.

A minimal number of rules exist for the special sessions in order to encourage an honest exchange of ideas and to provide an ethos where making mistakes in the interest of advancing the debate is not only welcomed but applauded.

The ECCE organizing committees would like the special sessions to resemble the conversations in an Agora, a central public space for the conference. As the literal meaning of the word Agora is "gathering place" or "assembly," the ECCE organizers wish to make our special sessions our attendee's main gathering place for any topic, where the free flow of creativity and out-of-the-box thinking dominates the discussions.

For those looking to submit a special session proposal, the general ground rules for the special session proposal are as follows:

- The oral presentations are generally limited in time or are altogether eliminated in order to create conversations that are focused on the proposed topics.
- Panel discussions, town hall meetings, and any participant-driven discussions are welcomed and encouraged. Even though ECCE has never hosted an *unconference* (Wikipedia defines it as "a participant driven meeting") that is a format for which the special session is ideally suited.
- The presentations from the special sessions are not included in the conference proceedings nor are they eligible for publication in any transaction or magazine. This is to incentivize those who have important results or ideas but do not have the time nor the inclination to formally present them in a publication.
- The special sessions do not limit the amount of commercial content in the sessions, i.e. commercial companies can freely speak of their products and the technical aspects of those products.

In summary, the special session format at ECCE welcomes any activity that seeks to advance the state of the art in our energy conversion milieu by removing many traditional restrictions on communications and the associated formalities. The free flow of original ideas is greatly encouraged, and we give the participants as much room as they need to take chances with their technical thoughts without constraining their imaginations.

Examples of some of the more salient special sessions that have been held at ECCE:

- *Workforce Development and Careers in Power Electronics.* A Q & A session addressed to the students to advise them on present career opportunities in the power electronics field.
- *Collaboration between Industry and Academia: How To Foster it?* A session sponsored by the ECCE-Women in Engineering group. A panel discussion focused on creating bridges between industry and academia.
- *A special series of aviation themed panel discussions addressing:*
 - *Electrical Power for Aviation Applications*
 - *IOT and Twin for Aviation*
 - *Advanced Aircraft Electrification beyond MEA*
 - *Wide Band Gap Devices for the Aviation Applications*
- *Power Electronics Meets Power Utilities & Systems.* Two sessions that began at the electric power industry conferences and which look to bridge the communications gap between the power electronics and power systems worlds. Sessions included presentations and panel discussions.
- *Challenges of Simulating Power Electronic Systems in Real Time—Sampling Frequency vs. Model Fidelity.* A session organized by the leading simulation software companies addressing their challenges in developing tools. A freeform discussion with minimal presentation.
- *Advancements, Challenges and End-Games in Power Supply on Chip (PwrSoC).* A session organized on the latest developments in the burgeoning field of Power Supply on a Chip.
- *Magnetic Materials Standards in the Research Environment.* A session devoted to explaining to machine designers and others how the magnetic testing standards are created, where those standards came from and how those standards are improved by incorporating new technologies.
- *Aircraft Hybridization and Electrification Roadmap.* This was an unprecedented meeting of the minds of four major aviation companies discussing their future roadmaps with their competitors. This session included minimal presentation and featured a good amount of free form discussion.
- *The Role of Simulation Software for Power Electronics Control Design in Education.* This session was organized by Mathworks to discuss the role of simulation software in power electronics education.
- *Virtual Factory Tours.* Organized by power electronics manufacturers to showcase their factories through videos. This obviated the need for physically traveling to each site separately and it also allowed everyone to participate without the fear of industrial espionage. This innovative approach to the factory tour allowed the participants to virtually walk through the plants and ask questions about what they were seeing.
- *Evolution of the Powertrain.* This Q&A session focused on the evolutionary and revolutionary developments in the powertrain.
- *The Trend, Requirement and Development of DC Technologies for Medium and Low Voltage DC Grids.* This session included presentation and discussion on dc grids.

If reading about the special session format and some of the topics we've addressed piques your interest, consider proposing a special session on a topic that you're passionate about. The next ECCE will be held October 11-15, 2020 in Detroit. For more information, see the [Call for Special Sessions](#), which provides information on where to submit your special session proposals.