

## ***ECCE 2017 Charted Course Of Energy Conversion In Aviation And Other Fields***

The ninth annual Energy Conversion Congress and Exposition ([ECCE 2017](#)) came to an end on Thursday, October 5, 2017 after an exciting and productive five days of non-stop activities, invigorating discussions, and prolific exchange of ideas between 1,565 attending energy conversion professionals and researchers. This edition of the conference certainly lived up to the claim that this is the premier conference for energy conversion professionals. Co-sponsored by IEEE Power Electronics Society and Industry Applications Society, and with support from industry partners Wolong Electric, GE Aviation Systems, and General Motors, ECCE continues to expand its programs to address the entirety of the profession.

With this year's conference located in Cincinnati, OH, ECCE 2017 emphasized the theme of energy conversion for Aviation, and the conference opened with a welcome address from Joe Krisciunas, the president of GE Aviation Electrical Power Systems.

The aviation theme also drew three respected and knowledgeable speakers for the plenary session: Dr. Hao Huang, Technology Chief of GE Aviation – Electrical Power, on Future Electrification: Beyond More Electric Aircraft, Robert Bayles, Senior Fellow – Electric, Environmental & Engine Systems, UTC Aerospace Systems, on *Integration of More Electric Airplanes*, and Dr. Nateri K. Madavan, Associate Manager, Advanced Air Transport Technology Project, NASA, *The Electrifying Future of Air Transportation*. The speakers presented a seamless vision of the future of aviation as well as challenging the attendees with the mission of creating our aviation future today. As expected, the plenary gave focus and excitement to the proceedings as the attendees headed off into the technical programs.

A new component to this year's program created by the organizers was the incorporation of previously existing programs under the "Professional Program". Running alongside the Technical Program track of oral sessions and poster presentations, the Professional Program addresses the need of the practicing engineer. It included a diverse and practical program consisting of Tutorials, Plenary, Special Sessions, Product and Services sessions, and a day and a half devoted to industry exhibitions. The intent of unifying these programs together is to give the practicing engineer technical content that will help them do their jobs.

A full slate of eleven tutorials opened the pre-convention program on Sunday. Tutorials covered a gamut of topics: from SiC devices to electric machines design, from converter designs of numerous types to wireless energy transfer, from shipboard power system design and analysis to DC power system protection, foreshadowing the broad coverage of energy conversion subject that defines the ECCE conference.

Ten special sessions were presented. Four addressing the state of the art topics in Aviation: Electrical Power in Aviation, IOT and Digital Twin for Aviation, Advanced Aircraft Electrification beyond the MEA, and WBG Devices for Aviation Applications. Two on Power Electronics Meets Power Utilities and Systems. One session addressing the future of Power Electronic profession, sponsored by US Power Electronics Industry Collaborative (PEIC). There was also a session on Power Electronics and Control of Low Inertia Systems, a special session on the Magnetic Testing Standards, as well as a special session presenting the Industry Activities in Korea, co-sponsored with the KIPE.

The exhibition portion of the conference was a great success as well, drawing fifty exhibitors with 37 poster sessions presented. Fifteen student demonstration projects were also presented. There was an impressive amount of activity on the show floor during the exhibition, with a lot of great interaction and exchange of information.

ECCE 2017's Technical Program drew 1,500 digests and resulted in papers being presented in 141 oral sessions and 37 poster sessions.

Some highlights were:

- 6 modular multilevel converter (MMC) related sessions covering topology, PWM, control and application aspects of MMC.
- 9 microgrid related sessions cover microgrid structure, microgrid converters, control, power management and power quality.
- 14 sessions on new device technologies

- 7 sessions on wireless power transfer and charging
- 6 PV and solar related sessions covers PV plants, PV inverter topologies, control, and applications
- 3 wind sessions.

There were, of course, plentiful opportunities for socializing. The opening reception, the Industry Night Out, and the Awards banquet were very well attended and the attendees had a chance to unwind and meet with friends, new and old.

There were significant new programs for Women in Engineering at this year's conference. WIPELS (Women in Power Electronics Society) sponsored a breakfast for the women attendees at the conference, it was very well attended. There was a Women's event sponsored by the ECCE for women attendees to socialize and network, they are already planning a more integrated program for ECCE 2018, so stay tuned. ECCE also provided a small travel grant for women professionals who are presenting papers to offset the cost of attending the conference, as well as set aside a family room for the attendees. ECCE sees this evolution as an important part of our conference purpose and mission.

The young professionals also had variety of activities at ECCE. They met for a social gathering and networking on Tuesday evening. They also celebrated the IEEE Day at this occasion. Thirty of the students received travel grant to attend ECCE.

Another first for ECCE this year was the co-location of the IAS Annual Meeting, held just across the street from the convention center at the Hyatt hotel. This co-location offered attendees the possibility to engage in two programs promoting the growing energy conversion field. This co-location will also be held at ECCE 2018 in Portland, Oregon.