



IEEE Industry Applications Society Electric Machines Committee (EMC) 2020 Annual Meeting Minutes

Webex Event

Saturday, November 7, 2020, 8:00 am 10:30 am EST (Eastern Time, US)

Call to Order

EMC Chair, Prof. Akira Chiba called the meeting to order at 8:05 am. A motion to start the meeting was moved by Dr. Rajesh Deodhar and seconded by Dr Rakib Islam. This motion was carried unanimously.

1. Approval of the Agenda and 2019 Meeting Minutes

Agenda:

The draft agenda of the 2020 EMC meeting, which was circulated electronically prior to the meeting (November 2, 2020) was presented by the Chair. The attendees were asked whether anyone wanted to add any other items. Since there was no proposal for any new item, the agenda was confirmed as the final.

Attendance:

Being a virtual meeting, the traditional way of collecting attendance, updating the members' database (roster), and the recruitment of new member could not take place. Hence, the secretary A/Prof Rukmi Dutta proposed to use a Microsoft Form (a survey App from Microsoft corporation) to collect the information.

2019 Meeting Minutes:

The secretary also informed about that new database for EMC members at IEEE LISTSERV and automated subscription and un-subscription to EMC mailing list via LISTSERV.

The minutes of the last meeting (2019) was distributed electronically prior to the current meeting (November 2 2020). The secretary and the Chair requested the attendees to check and provide correction to the A/Prof Dutta if any.

2. Chairman's Report (Prof Akira Chiba)

Member recognitions

The following members were recognized for their contributions:

- Emeritus Professor Kouki Matsuse IEEE Richard Harold Kaufmann Award (2020), "*For pioneering contributions to the advancement of sensorless vector control of AC drives and multilevel inverters for industrial applications.*"
- Prof. Zi-Qiang Zhu IEEE Nikola Tesla Award (2021), "*For contributions to the design, modeling, control, and application of ac permanent magnet machines and drives.*"



- Prof. Akira Chiba IEEE Nikola Tesla Award (2020), "*For contributions to bearingless and reluctance machines.*"
- Dr. Bruno Lequesne *IAS Distinguished Service Award*(2020).

Class of 2020 IEEE Fellows in EMC

- Andrea Cavagnino "*For contributions to the multi-physics design and material characterization of electric machines.*"
- Mahinda Vilathgamuwa "*For contributions to power quality and grid storage.*"

Prof Zhu and Andrea Cavagnino were present and spoke briefly thanking their colleagues.

EMC IAS Transactions Papers Status Review - 2020

The current Associate Editors and reviewers were recognized and thanked for their service. The Associate Editors are:

- | | |
|------------------------------|-----------|
| • Antonio J. Marques Cardoso | Portugal |
| • Giulio De Donato | Italy |
| • Yao Duan | USA |
| • Greg Heins | Australia |
| • Gianmario Pellegrino | Italy |
| • Alberto Tassarolo | Italy |
| • Rajeev Vyas | USA |
| • Katsumi Yamazaki | Japan |
| • Ronghai Qu | China |
| • Rukmi Dutta | Australia |
| • Zhang Pinjia | China |
| • Parsa Leila | USA |
| • Silvio Vaschetto | Italy |
| • Min-Fu Hsieh | Taiwan |
| • Mircea Popescu | UK |

Overview of IAS publications:

- Transactions on Industrial Applications (TIA)
- Industry Applications Magazine (IAM)
- Open Journal of Industry Applications (OJIA)

EMC has only one paper in the Industry Application Magazine in 2020. AE and reviewers may recommend papers to the Magazine also if they are suitable in scope for it.

Andy knight provided comments about the Open Journal of Industry Applications, which was launched this year. It is a new Gold open-access journal. Editor-in-Chief is Prof. Pericle Zanchetta, from the Power Electronics Machines and Control (PEMC) Group. This is a venue for people who need to or want to publish in an open-access journal. The current acceptance rate is around 20% as the goal is to achieve a high impact factor in two years. It is also relatively a small journal with a goal to publish 20-30 papers annually.

IAS Transaction Paper Award Selection Process:

Each technical committee recommends at least one paper. Larger committees such as EMC can recommend 2 Transactions and 1 Magazine paper. Potentially there are 23 nominations for TIA and 15 for IAM. This year there were 14 nominations for TIA and 8 for IAM. EMC recommended 2 TIA and 1 IAM paper. The papers were reviewed by an ad-hoc committee which includes current and past TCPRC.

This year, the first paper award went to a paper recommended by EMC:

"Cogging Torque Minimization and Performance of Sub-Fractional HP BLDC Claw-pole Motor", S. Leltner, H. Grebler and A. Muetze.

TIA Submission statistics

- 116 Original submissions from EMC, which the highest among the IAS departments
- The total number of TIA paper in 2020 is 665, which is slightly less than in 2019.
- *Further information is available in the meeting slides on the EMC website.*

Decision statistics

- Average first decision time for EMC is 70 days, which is less than the average of all committees within IAS.
- The average number of papers handled by EMC AE is 6.17, which is the highest among the committees.

Discussion on AEs for TIA

AEs may be overloaded, and hence, EMC may seek to employ more AEs.

Andy Knight commented on the increased load at TCPRC level in the last ten years as the number of paper submission and acceptance have grown significantly.

Peter Wung commented that AE list in S1M might need updating and it was important to maintain verities of AEs.

Emmanuel Agamloh commented that in S1M, AEs are not listed by the committee which might have created some discrepancy between S1M list and the actual list of the active AEs.

Pete Wung offered to help TCPRC of EMC to make an up-to-date list of AEs by finding more detailed information of AEs at S1M.

- The acceptance rate of TIA for the past 12 months is 53%. EMC acceptance rate is close to the average.
- There was only one special issue proposal from EMC for TIA. The papers for special issues do not require a prior presentation at an IAS sponsored conference.
- Similarity index between the submitted papers and their conference versions is reducing significantly. However, authors need to be careful as the CrossRef often checks only the main text, not the changes in the figures and tables.

Peter Wung explained further about the process of CrossRef and gave emphasis on correctly referring to the PhD dissertation based on which the paper might have been written.

- Statistics on submission by author Geography shows that in 2020 the greatest number of submission had come from China (increased from 17% in 2019 to 31% in 2020).
- *Further information is available in the meeting slides on the EMC website.*

Process for prospective authors

- EMC Members who wish to submit papers presented at an IAS sponsored conference for transactions
- Send Email to
 - Current Chair of EMC Akira Chiba, (chiba@ee.e.titech.ac.jp)
- Include in your email:
 - Corresponding author's first name and last name;
 - Corresponding author's email address (used for the manuscript central account) and Affiliation
 - Title of manuscript
 - Conference name, and date of the conference where the paper was presented
 - Clearly indicate the difference between the conference and the transaction version in the cover letter.
- *For more information visit the EMC website: <http://sites.ieee.org/ias-emc/publications/>*

ECCE 2020 Technical Program Vice-Chairs Report (Dr Greg Heins)

The Track G Chairs were recognized and thanked:

G01	Edwin Xikai Sun	Rockwell Automation
G01	Rajeev Vyas	General Motors
G02	Andrea Cavagnino	Politecnico di Torino
G02	Cong Ma	BorgWarner Corporation
G03	Takashi Kato	Nissan Motor Co., Ltd., Japan
G03	Tsarafidy Raminosoa	Oak Ridge National Laboratory
G03	Zhe Zhang	Eaton Corporation, USA
G04	Gerd Bramerdorfer	Johannes Kepler University Linz, Austria
G04	Silvio Vaschetto	Politecnico di Torino
G05	Peng Han	University of Kentucky, USA
G05	Takashi Kosaka	Nagoya Insititute of Technology
G06	Giulio De Donato	Sapienza - Univeristy of Rome, Italy
G07	Bryan Ruddy	University of Auckland, New Zealand
G07	Narges Taran	Borg Warner Inc.
G08	Jose Antonino-Daviu	Universitat Politecnica de Valencia, Spain
G08	Shanelle N. Foster	Michigan State University, United States
G08	Roy McCann	University of Arkansas
G09	Antonio Griffo	University of Sheffield
G09	Dr. Nick Simpson	University of Bristol, UK
G09	Zhiwei Zhang	The Ohio State University
G10	Baoyun Ge	C-Motive Technologies, Inc
G10	Tausif Husain	Borgwarner
G11	Fan Wu	Marquette University
G11	Renato Lyra	Aerotech Inc.
G12	Eric L Severson	University of Wisconsin-Madison, USA
G12	Wolfgang Gruber	Johannes Kepler University Linz, Austria
G13	Alireza Fatemi	General Motors, USA
G13	Dr. Rajesh Pranay Deodhar	IMRA Europe SAS UK Research Centre
G13	Subrata Saha	Aisin AW Co. Ltd. Japan
G14	Lijian Wu	Zhejiang University, China
G14	Udochukwu Bola Akuru	Stellenbosch University, South Africa

ECCE Group G Vice-Chairs were Secretary (Rukmi Dutta) and Vice-Chair (Greg Heins) in EMC.

ECCE review processes

- Topic Chairs were selected from volunteers who gave name cards in the last EMC meeting in ECCE. They were contacted to find their preference for G01-G14.
- Topic Chairs selected reviewers in the web system with five reviewers for each digest.
- Generally, at least three review evaluations were requested; however, **five evaluations were requested for split cases**, for example, weak accept, accept, weak reject.
- Some reviewers did not provide evaluations even after the deadline. Their review assignments were cancelled, and Topic Chairs and Vice-Chairs worked on review evaluations. If you cannot review digests, please let us know in advance.
- Like 2019, about 7000 reviewers were invited, and 1173 had accepted.

EMC statistics:

- **234** digests submitted.
(249 (2019), 252 (2018), 186(2017), 245(2016), 203(2015), 201(2014)).
- **173** digests are accepted.
(183(2019), 189(2018), 140(2017), 151(2016), 141(2015), 137(2014))
- Acceptance ratio: **74%**
(71%(2019), 75%(2018), 75%(2017), 62%(2016), 69%(2015))

In even years, the number of digests is high because IEMDC is in odd years.

The electric machines sessions recommended by the vice-chairs:

- 21 Oral Sessions (21 in 2019, 23 in 2018, 20 in 2017, 18, 19) 86 Papers
- 6 Poster Sessions (3 sessions in 2019)
- However, when the conference moved to fully virtual mode this year, there were some slight changes to the sessions as some papers were withdrawn and some sessions were merged.
- EMC paper submission by Geography showed a similar trend as in Transaction submission, i.e. most of the papers came from China.
- EMC representation at TPC Emmanuel Agamloh provided a comment on merging of the EMC sessions with the Drive committee sessions due to withdrawal of papers and formation of virtual sessions with 8-10 papers.

3. Old Business

Awards committee nominations

The Awards that are relevant to the EMC are:

- Andrew W. Smith, Outstanding Young Member Achievement Award (Deadline: March 15).
- Outstanding Young Member Service Award (Deadline: March 15).
- Distinguished Service Award (Deadline: March 15).
- Outstanding Achievement Award (Deadline: March 15).



- Kliman Award (Deadline: June 1).
- IAS Distinguished Lecturers (Deadline: March 31).
- IEEE Fellow (Deadline: March 1)

Name of 2020 recipients can be found in the IAS website.

EMC needs Award committee volunteers. Please contact EMC Vice-Chair (Dr. Greg Heins gregheins@ieee.org) for more information.

Award in Electric Machine outside of IAS for EMC member:

- IEEE PES Cyril Veinott Electromechanical Energy Conversion Award: Prof Dan Ionel, "For contribution to the design, development and manufacturing of high-efficiency electric motor and generators.

Winners of 6th Nagamori Awards for EMC members

- Chris Gerada, The University of Nottingham
- Annette Muetze, Graz University of Technology

The Nagamori award is for researchers in fields of motors, actuators and power generators, and their control methods, application technologies, etc.

It is open to mid-career researchers or development engineers no more than 30 years after the bachelor's degree.

4. Subcommittee reports

Prize Paper Awards Presentation,

The following selection process was used for the ECCE prize paper awards:

- Eight top papers with the highest rankings from digest review process were selected for full review by the panel.
- The panel included a six-member committee of distinguished reviewers: a balanced mix of industry (3) and academia (3), previous committee chairs, paper award winners:
 - Prof. Akira Chiba
 - Prof Aldo Boglietti
 - Dr. Bruno Lequesne
 - Dr. Mircea Popescu
 - Prof. Wen Soong
 - Dr. Haran Karmaker

The winning papers were:

First Prize

"Detection and Classification of Damper Bar and Field Winding Faults in Salient Pole Synchronous Motors" Y. Park, S.B. Lee, J. Yun, M. Sasic and G.C. Stone Korea University, Hyundai Electric, Qualitrol-Iris Power Engineering.

Second Prize

"Design of High-Performance Shaped Profile Windings for Additive Manufacture" , Nick Simpson, Chris Tighe and Phil Mellor University of Bristol, Electrical Cooling Solutions Ltd.

Third Prize

"Very-High-Speed Miniaturized Permanent Magnet Motors: Modeling and Experimental Validation", Guillaume Burnand and Yves Perriard, École Polytechnique Fédérale de Lausanne (EPFL).

The recipients were recognized at the meeting, and certificates will be posted to the recipients with the help of IAS officer Lynda Bernstein.

Award recipients Yves Perriard and Nick Simpson were present during the meeting who acknowledged on behalf of their groups.

Standards update

Dr Haran Karmaker is the Chair of Standard subcommittee of EMC. He will provide details of the activities in the next EMC meeting.

5. ECCE Session Chair Reports

Several session chairs reported on the sessions. Most of the sessions have 20 -30 attendees during the Zoom live sessions. Most of the authors were present even though there was a huge time zone difference in some places.

Some issues raised were:

- Rajesh Deodhar mentioned that covering of 8-12 papers in a 30-min live session was very challenging. He noted the preferred choice of interaction for most of the attendees was Zoom. He also suggested that the option of a single IT platform that can integrate all the functionalities should be explored for the future. Rajesh also found poster sessions to be more challenging in the virtual form due to both time constraints and the format.
- Eric Severson, Peng Han, Giulio De Donato, Andrea Cavgnino, Nick Simpson and Shanelle Foster also found 30 mins were not sufficient and found the availability of additional 10-15min very useful.
- Andrea Cavgnino suggested that having a short live presentation by the authors during the live Q&A session would have been very useful. Nick Simpson, Gerd Bramerdorfer and Shanelle Foster also supported the idea.
- Gerd Bramerdorfer commented that the live sessions where authors were not present felt less valuable. Hence the presence of authors during the live session in the future virtual conference should be considered carefully.

6. New Business:

2020 Officers

- Chair: Prof. Akira Chiba (chiba@ee.e.titech.ac.jp)



- Vice-Chair: Dr. Greg Heins (gregheins@ieee.org)
- Secretary: Dr Rukmi Dutta (rukmidutta@ieee.org)
- Past Chair: Prof. Emmanuel Agamloh (eagamloh@ieee.org)

The past Chair Prof. Emmanuel Agamloh moved the motion to keep the officers unchanged for the next year as this year is not an election year. Rajesh Deodhar seconded the motion. This motion was carried unanimously.

EMC LinkedIn Group:

Peter Wung, EMC past chair, initiated a LinkedIn Group for IAS EMC (<https://www.linkedin.com/groups/8981430/>) with a motivation to recruit new members for EMC. It will be a virtual platform to cooperate, get-together, foster ideas among like-minded people with interest in electric machines. The group is listed, but private, which means it is searchable, but members can join only via invitation.

Andy Knight suggested linking the group with the IAS official LinkedIn page so that anything posted in the IAS group can also get posted on the EMC group.

7. Future Conference Organization

ECCE 2021 Update (ECCE 2021 Finance Chair, Shanelle Foster)

Shanelle Foster (Finance Chair, chair) provided a presentation about ECCE 2021 in Vancouver, Oct 10-14. The various important submission date can be found at <http://www.ieee-ecce.org/2021/>.

ECCE 2021 –Preparation for ECCE 2021 (Dr Rukmi Dutta)

Dr. Greg Heins and Dr. Rukmi Dutta will be ECCE 2021 TPC Vice-Chairs.

Volunteering information for ECCE will be collected via a Microsoft Form, which is replacing traditional name card collection this year due to the virtual EMC meeting. The MS Form will be sent out by email correspondence.

Other Upcoming Conferences and Awards

IEEE IEMDC 2021 (Ali Bazzi)

Ali Bazzi was not present. The Chair Prof Chiba presented on his behalf.

May 17-20, 2021 in CT, USW

IPEC 2022 (Prof. Akatsu)

Prof Akatsu presented about IPEC (International Power Electronics Conference), which will be at Himeji, Japan, May 15-19,2022.

WEMDCCD (Davide Barater)

David Barter presented about WEMDCCD (Workshop on Electrical Machine Design, Control and Diagnosis) which will be on 8-9 April 2021, Modena (Italy).

8. Other Business

Liaison Report from Motor subcommittee in PES (Yao Duan)

On-going projects:

Project #1: IEEE P-11: "IEEE Std. 11: IEEE Standard for Rotating Electric Machinery for Rail and Road Vehicles."

- WG Chair: Tim Burress.
- Current Version: 2006.
- PAR Approved: March 2015.
- On-going revision since June 2015.

Project #2: IEEE P-1812: "IEEE Std. 1812: IEEE Guide for Testing Permanent Magnet Machines."

- WG Chair: Yao Duan.
- Trial-use guide published: 2015.
- On-going revision since August 2016.
- PAR extended until 2023

Project #3: IEEE P-1415: "IEEE Std. 1415: Induction Machinery Maintenance Testing and Failure Analysis."

- WG Chair: Pinjia Zhang
- Current Version: 2006
- PAR Approved: 2019
- On-going revision since Oct. 2019

Project #4: IEEE P-620: IEEE Std. 1812: Guide for the Presentation of Thermal Limit Curves for Squirrel Cage Induction Machines.

- WG Chair: Yao Duan
- Current revision: 1996 (reconfirmed 2008)
- PARs submitted August 2019
- 1st Ballot completed in May 2020, working on addressing comments
- Membership Recruiting is Going on, interested Members contact: Yao Duan yao.duan@ieee.org, Emmanuel Agamloh eagamloh@ieee.org

Project #5: IEEE P-252: IEEE Standard Test Procedure for Polyphase Induction Motors Having Liquid in the Magnetic Gap.

- PARs submitted August 31, 2018
- Membership Recruiting is Going on, interested Members contact: Yao Duan yao.duan@ieee.org, Emmanuel Agamloh eagamloh@ieee.org

Emmanuel Agamloh requested members to join EMC effort on Standards by contacting EMC standard subcommittee chair Haran Karmaker by email.

PES Motor subcommittee calls for papers & presentation at 2021 PES General meeting on two sessions: Condition monitoring, Application of IoT and advanced topics in Electric Machines and Drives, Power Dense Heavy Rare-earth free Electric Motor Drive Systems for Transport Electrification. (Akira Chiba).



Transportation Systems Committee (Dr Rakib Islam)

TSC secretary Dr Rakib Islam presented current activities of TSC, which is a subcommittee of IPCSD. Dr Islam requested interested ECM members to join TSC.

Nagamori Award (Yasushi Nishimura): For mid-career researchers.

Application period - November 01, 2020 - January 31, 2021 (<http://www.nagamori-f.org/en/>)

Necrology – Prof. Thomas Lipo (presented by Prof. Akira Chiba)

Prof. Chiba gave a short speech highlighting many achievements of Prof Lipo and his extensive contribution to EMC.

9. Adjournment

A motion to adjourn the meeting was moved by Andy Knight and seconded by Rajesh Deodhar. This motion was carried unanimously.

Submitted by

Rukmi Dutta

Secretary, IEEE IAS Electrical Machines Committee

November 10, 2020