



IEEE Industry Applications Society Electric Machines Committee (EMC) 2021 Annual Meeting Minutes

Webex Event

Saturday, October 23 2021, 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.

1. Approval of the Agenda and 2020 Meeting Minutes

Agenda:

The Chair presented the draft agenda of the 2021 EMC meeting, which was circulated electronically prior to the meeting (September 22, 2021). 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 members could not take place. Hence, the secretary A/Prof Rukmi Dutta informed the members that like 2020, the Microsoft Form (a survey App from Microsoft corporation) will be used to collect the information. The members were requested to fill the survey once they received the link.

Recruitment of new members:

The secretary, A/Prof Dutta, informed the members that a recruitment drive was conducted via the LinkedIn page (<https://www.linkedin.com/groups/8981430/>), which was established in 2020 by the valuable EMC member Pete Wung. The new member can join either by sending an email to the EMC secretary or via the web page link <https://site.ieee.org/ias-emc/member-subscriptions/>. A total of 22 new members have joined since the last EMC. 18 out of 22 joined via the webpage, and the majority of this was during the LinkedIn recruitment drive. The secretary A/Prof Dutta mentioned that currently, there is no check for IAS membership when someone joins EMC via the web link. It will be useful to build such a check in the web subscription.

2020 Meeting Minutes:

The draft minutes of the last meeting (2020) was distributed electronically in a weblink (<https://site.ieee.org/ias-emc/meeting-minutes/>) prior to the current meeting (October 18, 2021). The secretary and the Chair requested the attendees to check and provide corrections if any. No correction

was suggested; hence, the Chair moved the motion to make the draft minutes approved by the attendees. Since no objection was raised for the motion and the minutes were considered approved.

Member recognitions

The following members were recognized for their contributions:

- **Prof. Zi-Qiang Zhu** IEEE Nikola Tesla Award (2021), *"for contributions to the design, modelling, control, and application of ac permanent magnet machines and drives."*

Class of 2021 IEEE Fellows in EMC

- **Mohammad Nazmul Anwar**, "for contributions to the system-balanced-robust power electronics design methodology for electrified vehicles".
- **Mahesh Swamy**, "for development of power electronics topologies".
- **Mohammad Uddin**, "for contributions to control techniques for AC motor drives".
- **Leila Parsa**, "for contributions to control of multi-phase permanent magnet electrical drives".
- **Alireza Bakhshai**, "for contributions to the development of synchronization techniques for power electronics converters".
- **Jin Wang**, "for development of high-density power converters and their use in electric cars".

2. Chairman's Report (Prof Akira Chiba)

EMC IAS Transactions Papers Status Review - 2021

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 Tessarolo | 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 |
| • Takashi Kosaka | Japan |
| • Eric Severson | USA |



- **Sanjib K Panda** Singapore
- **Adam Skorek** Canada
- Mircea Popescu UK

The 4 newly appointed AEs in 2021 are highlighted in the list above **in bold**.

There is a slight change in the TCPRC policy in 2021 regarding the review process. If the review outcomes are split among the reviewers, the paper will be returned for revision.

Giving consideration to COVID related constraints, the request for an invitation to submit manuscripts in TIA was allowed to extend >1 year but <2 years since the conference publication of a paper. This time allowance is likely to continue in 2022.

Overview of IAS publications:

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

In 2020, EMC had 116 papers published in TIA and only one paper in the Industry Application Magazine. AEs and reviewers may recommend papers to the Magazine if deemed to have wider interest for the industry audience.

Pete Wung commented that industry and application-oriented papers should be recommended for the magazines.

IAS Transaction Paper Award Selection Process:

Each technical committee recommends at least one paper. Larger committees such as EMC can recommend 2 Transactions.

EMC nominated 2 papers out of the 116 published based on the highest scores received from the reviewers

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

"Winding Thermal Modeling and Parameters Identification for Multi Three-Phase Machines Based on Short-Time Transient Tests" by Paolo Pescetto, Simone Ferrari, Gianmario Pellegrino, Enrico Carpaneto, and Aldo Boglietti (<https://ieeexplore.ieee.org/document/8970537>)

One of the co-authors Aldo Boglietti was present in the EMC meeting and spoke briefly as an acknowledgment of the award.

TIA Submission statistics

A short summary statistics of the EMC paper submitted to TIA in 2021 was presented. Detailed statistics are not currently available as the TCPRC meeting is yet to happen.

Process for prospective authors

EMC Members who wish to submit papers presented at an IAS sponsored conference for transactions

- For invitation send Email to
 - Current Chair of EMC Akira Chiba, (achiba@ieee.org) until December 2021
 - In-coming Chair of EMC Greg Heins: gregheins@ieee.org from January 2022.
- 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/>*

The Chair commented that missing the corresponding author's Email leads to delay in communication, hence important to clearly identify the email address. Also, the use of different font colors in the manuscript to show the changes from the conference paper is useful.

Pete Wung commented that the inclusion of the conference paper as the first reference in the journal submission allows easy identification of the conference during the administrative check.

Special Issue for IEEE TIA from EMC:

The EMC member, Dr. Amin Mahmoudi presented a call for papers for a special issue on 'Design and Optimization of Electric Motors for Transport Electrification' in TIA.

The aim is to publish about 40 papers on the issue. Eight EMC members have volunteered to be the guest editors for the issue.

The Chair Prof Chiba commented that Special Issues motivate members to write papers on the selected topic. He also reminded members that the paper submission to Special Issue does not require prior publication in a conference but must submit the paper by specific dates.

Rukmi Dutta asked about the process of the invitation from the Manuscript Central for the Special Issues.

Both Prof Chiba and Wung provided clarification on the process.

ECCE 2021 Technical Program Vice-Chairs Report (Dr Greg Heins)

The Track G Chairs were recognized and thanked:

G01	Peng Han	Ansys, Inc.
G01	Prerit Pramod	Nexteer Automotive Corporation, USA
G02	Silvio Vaschetto	Politecnico di Torino
G02	Yang Xu	Ford Motor Company
G03	Fan Wu	Rivian Automotive
G03	Narges Taran	BorgWarner
G03	Nicola Bianchi	University of Padova
G04	Edwin Xikai Sun	Rockwell Automation, China
G04	Sandro Rubino	Politecnico di Torino, Dipartimento Energia "G. Ferraris"
G05	Wei Xu	Huazhong University of Science and Technology
G05	Z.Q. Zhu	University of Sheffield, UK
G06	Giulio De Donato	Sapienza-University of Rome, Italy
G07	Bryan Ruddy	The University of Auckland, New Zealand
G07	Renato Lyra	Aerotech, Inc., USA
G08	David Reigosa	University of Oviedo
G08	Hassan Eldeeb	Florida International University, USA
G08	Jose Antonino-Daviu	Universitat Politecnica de Valencia
G09	Antonio Griffo	University of Sheffield
G09	Haran Karmaker	TECO Westinghouse, United States
G09	Nick Simpson	University of Bristol, UK
G10	Adam Skorek	University of Quebec at Trois-Rivières, Canada
G10	Rafal Wrobel	Newcastle University
G11	Gerd BRAMERDORFER	Johannes Kepler University Linz, Austria
G11	Matthew Gardner	University of Texas at Dallas, USA
G12	Eric Severson	University of Wisconsin-Madison, USA
G12	Wolfgang Gruber	Johannes Kepler University Linz
G13	Alireza Fatemi	Motors
G13	Rajesh Deodhar	IMRA Europe S.A.S.
G13	SUBRATA SAHA	AISIN AW CO. LTD JAPAN
G14	Athanasios Karlis	Democritus University of Thrace, Greece
G14	Udochukwu Akuru	Tshwane University of Technology, South Africa

ECCE Group G Vice-Chairs were EMC secretary (Rukmi Dutta) and Vice Chair (Greg Heins) and Antonio J. Marques Cardoso.

ECCE review processes

- Topic Chairs were selected from volunteers who gave their names in the Microsoft survey conducted in 2020. Information gathered via the survey worked well and can be continued in future even when we revert to a face-face EMC meeting. Providing an alternate track of interest along with the main one is useful when a topic chair needs to move to another track due to CoI papers.
- 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.
- Similar to 2020, about 8294 reviewers were invited, and 1715 had been accepted.

EMC statistics:

- **218** digests submitted.
(234(2020), 249 (2019), 252 (2018), 186(2017), 245(2016), 203(2015), 201(2014)).
- **141** digests are accepted.
(173(2020), 183(2019), 189(2018), 140(2017), 151(2016), 141(2015), 137(2014))
- Acceptance ratio: **65%**
(74% (2020), 71%(2019), 75%(2018), 75%(2017), 62%(2016), 69%(2015))

Strong submission despite COVID challenges.

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

The electric machines sessions recommended by the vice-chairs:

- 25 Oral Sessions (21 in 2020, 21 in 2019, 23 in 2018, 20 in 2017, 18, 19)
- No Poster Sessions (6 sessions in 2020, 3 sessions in 2019)
- All paper presentations were pre-recorded.
- When the conference moved to fully virtual mode, some papers were withdrawn.

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).

These two awards for IAS members <35 years old.

- 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 2021 recipients can be found on the IAS website.

Deadlines are approximate only.



Award in Electric Machine outside of IAS for EMC members:

IEEE PES Cyril Veinott Electromechanical Energy Conversion Award Prof. Bulent Sarlioglu "For contributions to the design, development, and manufacturing of electric motors and drives for industrial and aerospace applications."

Winners of 7th Nagamori Awards for EMC members

- Leila Parsa, University of California, Santa
- Ronghai Qu, Huazhong University of Science & Technology

The Nagamori award is for researchers in the 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 (for paper presented in ECCE 2020)

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

- 15 top papers with the highest rankings from the 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

"Flux-based Detection and Classification of Induction Motor Eccentricity, Rotor Cage, and Load Defects" Jaehoon Shin, Yonghyun Park and Sang Bin Lee, Department of Electrical Engineering, Korea University, Seoul, Korea

Second Prize

"Comparative Analysis of PWM Power Losses in IPM Machines with Different Modulation Schemes Using Wide-Bandgap-Based Inverters", Le Chang, Woongkul Lee, Thomas Jahns and Kim Jihyun, Wisconsin Electric Machines and Power Electronics Consortium (WEMPEC), University of Wisconsin- Madison, Madison, WI USA, and General Motors Global Propulsion Systems, Pontiac, MI USA

Third Prize

“Fully Passively Levitated Self-Bearing Machines with Combined Windings Joachim Van Verdeghe and Bruno Dehez, Université catholique de Louvain (UCLouvain), Louvain-la-Neuve, Belgium.

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

Standards

Dr Haran Karmaker is the Chair of the Standard subcommittee of EMC. The slides were presented by Prof Chiba on behalf of Dr Karmaker.

Project #1: IEEE P-11

"IEEE Std. 11: IEEE Standard for Rotating Electric Machinery for Rail and Road Vehicles"

- WG Chair: Tim Burrell
- 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
- 3rd Ballot completed in Oct. 2021, 1 comment to address

Project #5: IEEE P-252

IEEE Standard Test Procedure for Polyphase Induction Motors Having Liquid in the Magnetic Gap

- PAR submitted August 31, 2018
- Membership Recruiting is Going on
- Interested Members contact:
 - Yao Duan yao.duan@ieee.org
 - Haran Karmaker h.karmaker@ieee.org

Project #6: IEEE P-114

IEEE Standard Test Procedure for Single-Phase Induction Motors

PAR approved September 26, 2021

- WG Chair: Maher Al-Badri
- Membership Recruiting is Going on
- Interested Members contact:
 - Maher Al-Badri albadri@ieee.org
 - Haran Karmaker h.karmaker@ieee.org

5. ECCE 2021 Session Chair Reports

The TPC appointed session chairs for ECCE 2021 were acknowledged:

Se	Session Title	Session Chair
G01	Electric Machines in Transportation	Nick Simpson
G02	Permanent Magnet Machines 1	Silvio Vaschetto
G03	Modeling of Electric Machines	Nicola Bianchi
G04	Permanent Magnet Machines 2	Eric Severson
G05	Electric Machines: Fault Analysis	Jose Antonino-Daviu
G06	Thermal Analysis of Electric Machines	Silvio Vaschetto
G07	Electric Machines Materials and	Shanelle Foster
G08	Loss Analysis in Electric Machines	Nick Simpson
G09	Noise and Vibration in Electric	Jose Antonino-Daviu
G10	High Speed and Bearingless Machines	Eric Severson
G11	Electrical Machines 1	Nichola Bianchi
G12	Electrical Machines 2	Andrea Cavagnino
G13	Electrical Machines 3	Gerd Bamerdorfer
G14	Modeling of Electric Machines 2	Gerd Bamerdorfer
G15	IPMSM and Synchronous Reluctance	Prerit Pramod
G16	Other Synchronous Machines 1	Prerit Pramod
G17	Other Synchronous Machines 2	Andrea Cavagnino
G18	Switched reluctance and flux switching	Giulio De Donato
G19	Actuators, Axial Flux and Linear	Giulio De Donato
G21	Noise and Vibration in Electric	David Reigosa
G20	Electrical Machines 4	Rukmi Dutta
G22	Modeling of Electric Machines 3	Greg Heins
G23	High Speed Machines 1	Rajesh Deodhar
G24	Electrical Machines 5	Rukmi Dutta
G25	High Speed Machines 2	Greg Heins

Several session chairs reported on the sessions. The following common threads have emerged from these comments:

- The pre-recorded videos have very good quality.
- The interaction is minimum in the asynchronous mode. Most sessions have very few questions from the audience, and session chairs have to post questions in these sessions as directed by the TPC. Most of the authors have responded to the questions promptly.

Eric Severson commented that the use of platforms such as GatherTime could be considered to make lively poster sessions in future virtual conferences.

ECCE 2022 General Chair Emmanuel Agamloh was present and noted the suggestion.

The EMC member Adam Skorek commented that members should promote their presentations in conferences via social media to increase their audience.

Pete Wung commented that we need to reflect on our virtual conference experience and take the lessons to the live conference when we revert to that mode in the future.

6. New Business:

2021 Officers

- Chair: Prof. Akira Chiba (chiba@ee.e.titech.ac.jp)
- Vice-Chair: Dr. Greg Heins (gregheins@ieee.org)
- Secretary: Prof Rukmi Dutta (rukmidutta@ieee.org)
- Past Chair: Prof. Emmanuel Agamloh (eagamloh@ieee.org)

The past Chair Prof. Emmanuel Agamloh presented the process of election of the new officers, as 2021 was an election year for the secretary role:



Section IV. C. 4

C. Election, Appointment and Term of Office

1. All Committee officers shall normally serve a two-year term of office commencing on January 1.
2. The Chair will be succeeded by the Vice-Chair.
3. The Vice-Chair will be succeeded by the Secretary.
4. Election of officers is conducted at the Annual EMC Meeting, (section VI). Every second year the Nominating Subcommittee will propose a slate of one or more candidates for the office of Secretary, as discussed in section V. The Nominating committee will accept suggestions for nominations for the Secretary up to 2 months before the annual meeting. Nominations will not be accepted from the floor at the annual meeting. In the intervening years, a motion will be held to continue with the existing executive committee.

Prof. Emmanuel Agamloh informed the members that the nomination subcommittee proposed candidate A/Prof Giulio De Donato for the secretary role starting 2022.

The motion to approve the following slate of officers for 2022 was moved by Prof Agamloh:

- **Chair:** Dr. Greg Heins (gregheins@ieee.org)
- **Vice Chair:** Prof. Rukmi Dutta (rukmidutta@ieee.org)
- **Secretary:** Dr. Giulio De Donato (giulio.dedonato@uniroma1.it)
- **Past Chair:** Prof. Akira Chiba (chiba@ee.e.titech.ac.jp)

No objection was raised from the floor, and thus motion was considered accepted unanimously by the members.

Prof Agamloh thanked the outgoing Chair, Prof Chiba.

The upcoming secretary A/Prof De Donato speak briefly to thank the nomination committee and accept the role.

7. Future Conference Organization

ECCE 2022 Update (ECCE 2022 General Chair, Emmanuel Agamloh)

Emmanuel Agamloh (General Chair) provided a presentation about ECCE 2022 in Detroit, Oct 9-13. The various important submission date can be found at <http://www.ieee-ecce.org/2022/>.

ECCE 2022 –Preparation for ECCE 2022 (Rukmi Dutta)

Rukmi Dutta and Giulio De Donato will be ECCE 2022 TPC Track G Vice-Chairs.

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

Other Upcoming Conferences and Awards

OPTIM and ACEMP-OPTIM Joint International Conference

A report on 18th Edition of the OPTIM Conference, and 4th edition of the ACEMP-OPTIM Joint International Conference was reported by Prof. Bulent Sarlioglu. It was held on September 2-3, 2021 in Brasov, Romania as an on-line conference.

ACEMP-OPTIM 2023

The next joint event is planned as "ACEMP-OPTIM 2023", due to take place in Turkey, end of August 2023 (contacts: Prof. Dr. H. Bülent Ertan, TR; Prof. Dr. Marcian Cirstea, UK; Dr. Carmen Gerigan, RO; Prof. Dr. Mihai Cernat, RO; and Dr. Bulent Sarlioglu, Madison-Wisconsin, USA). The first Call for papers with location, deadlines, etc., will be launched around November 2021.

XXV International Conference on Electrical Machines (ICEM2022)

Jose A Antonion Daviu presented about the upcoming ICEM 2022 conference which will be held at Valencia – SPAIN, September 5-8, 2022.

8. Other Business

Liaison report from PES motor sub committee Prof. Bulent Sarlioglu provided a brief overview about the organized Panel Session and a Super Session during the 2021 IEEE- PES General Meeting on July 25-29 at Washington, DC, USA.

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

Application period - November 01, 2021 - January 31, 2022 (<http://www.nagamori-f.org/en/>)



Pete Wung, SIM administrator, provided additional information related to EMC papers in IEEE IAS publications.

There were 150 submissions from EMC in 2021, slightly down from 2020 (189). This trend was seen in the majority of the committee submissions. The average first decision time for EMC is maintained at the same level as 2020, which is considered good. The acceptance rate of the EMC papers was above 60%.

Pete Wung also informed members about the availability of the recorded special session on 'Experimentation verification versus Simulation'.

A brief discussion regarding the topic ensued.

9. Adjournment

A motion to adjourn the meeting was moved by the Chair Akira Chiba. This motion was carried unanimously.

Submitted by

A/Prof Rukmi Dutta

Secretary, IEEE IAS Electrical Machines Committee

October 28, 2021