

IEEE IAS Industrial Drives Committee Minutes of the 2022 Annual Committee Meeting

ECCE 2022, Detroit, USA | Oct. 10-14, 2022
Tuesday, October 11, 2022, 6:00 pm – 7:00 am, EST

The following committee officers were present:

Luca Zarri, Chair of the IAS Industrial Drives Committee (IDC)

Jul-Ki Seok, IDC Vice-chair Papers

Kevin Lee, IDC Vice-chair Programs

Di Pan, IDC Secretary

Pre-Meeting

Two tributes speeches in memory of Dr. Tsuneo Kume and Dr. Professor Donald Novotny were made respectively by Prof. Luca Zarri and Prof. Bulent Sarlioglu. Dr. Luca Zarri called for silence in the room.

Dr. Luca Zarri acknowledged IEEE fellows and welcomed the new members in the room.

1. Approvals of the Agenda and 2021 Meeting Minutes: (<https://site.ieee.org/ias-idc/resources/>)

The approvals of the agenda and 2021 meeting minutes were moved by Dr. Hassan Eldeeb, seconded by Prof. Gianmario Pellegrino, and unanimously approved.

2. Old Business and Reports

a. Vice-Chair Paper Review Report on Transactions Papers

Prof. Jul-Ki Seok presented the vice-chair papers report summarizing the statistics of the papers submitted to the IDC for publication in IEEE Transactions on Industry Applications.

■ Total Number of Papers Submitted

During October 11, 2021 - October 10, 2022, 38 original papers had been submitted for review, as compared to 95 in 2020, and 68 in 2019.

■ Time Distribution of the Submissions

From October, 2021 to October, 2022, there were 38 original papers, 18 revised papers and a total of 56 papers.

■ Papers Received based on Country of Origin

According to the submission statistics from October, 2021 to October, 2022, the submitting countries were China (15 papers), India (10 papers), Italy (6 papers), Japan (6 papers), USA (4 papers), Korea (Republic of) (3 papers), Norway (3 papers), UK (2 papers), UAE (2 papers), Finland (2 papers) followed by Germany, Brazil and Estonia with 1 paper (in total, 56 papers from 13 countries all over the world).

■ Papers Submitted from Conferences Originally Presented

There were 11 papers from ECCE 2021, 21 papers from other conferences.

■ Accept/Reject Ratio and Days to Final Decision

Between October, 2021 and October, 2022, the acceptance ratio is 30.4% with 7 accepted papers, and 16 rejected papers. This ratio was 50% in 2021 and 36% in 2020. The median time taken from submission to first decision was 68.9 days for 2022, 70 days for 2021 and 67 days for 2020. The mean time taken from submission to the final decision was 108.6 days in 2022, 105 days in 2021 and 96 days in 2020.

■ Associate Editors

- Davide Barater, University of Parma, Italy
- Roberto Petrella, University of Udine, Italy
- Prerit Pramod, Nexteer Automotive Corporation, USA
- Marcello Pucci, ISSIA-CNR, Italy
- Ramakrishna Raja, Halla mechatronics, USA
- David Díaz-Reigosa, University of Oviedo, SPAIN
- Dinesh Kumar, Danfoss Drives Global R&D Center, Denmark
- Giacomo Scelba, University of Catania, Italy
- Wei Xu, Huazhong University of Science and Technology (HUST), China
- Pinjia Zhang, Tsinghua University, China
- Arijit Banerjee, University of Illinois at Urbana-Champaign, US
- Peng Han, Ansys Inc, US
- Fabio Immovilli, University of Modena and Reggio Emilia, Italy
- Juan Manuel Guerrero Munoz, University of Oviedo, Spain

c. Review Report by the Vice-Chair for Programs

Dr. Kevin Lee presented the vice-chair programs report on the results at ECCE 2022.

■ Topic Chairs

The following 16 Topic Chairs, who had managed the review process, were recognized.

- Zhiwei Zhang
- Pescetto Paolo
- Yang Xu
- Michele Mengoni
- Wei Xu
- Antonio Griffo
- Sandro Rubino
- Juan Manuel Guerrero Munoz
- Veysel Buyukdegirmenci
- Mohammed Agamy
- Hassan Eldeeb

- Jun Wang
- Hao Chen
- Pinjia Zhang
- Weiqiang Chen
- Dong Jiang

■ Session Chairs

The following 10 Session Chairs served at ECCE2022:

- Kevin Lee
- Jiangang Hu
- AK Arafat
- Ali Bazzi
- Yang Xu
- Zhe Zhang
- Weiqiang Chen
- Mohammed Agamy
- Jun Wang
- Hao Chen

Dr. Kevin Lee thanked the Topic Chairs and Session Chairs for their contribution.

■ IDC Digest Submissions

A total of 132 papers had been received under Electric Drives (13 sub-tracks) as compared to 162 papers in 2021. The sub-tracks were reorganized from 2020's 15 to 13 in 2021, which include:

1. General Electric Drives
2. Induction Motor Drives
3. PM and IPM Motor Drives
4. Control of Electric Drives
5. Drive Applications & Drive Utility Interface
6. Sensorless Drives
7. Monitoring, Diagnostics, Reliability and EMI
8. High Speeds and Direct Drives
9. Energy Efficient Motor Drives
10. Medium Voltage and High-Power Drives
11. New Technologies and Integrated Drives and Standards
12. Electrical Drives for Aerospace and Traction Applications
13. Electrical Drives for Wind & Other Renewable Integration

Control of electric drives had the highest submission number of 27, followed by General Electric Drives with 24, and PM and IPM Motor Drives with 23, as the top three sub-tracks.

■ Yearly Submission Trends

There were 1432 ECCE submissions, down 9.7% as compared to 2021 with 17 special session papers and 24 tutorial papers. At IDC, 132 digests were submitted, down 18.5% from 2021.

■ 2022 Overall Statistics

Number of digests: 132

Number of papers withdrawn: 7

Number of papers accepted: 79

Number of papers rejected: 46

The acceptance ratio is 59.8% for 132 reviewed papers.

79 accepted papers were distributed into 16 technical sessions.

Review Quality:

All papers with at least 4 reviews

The average number of reviews per paper was around 4.5 (4.7 in 2020).

■ Submission by Country based on the First Author

There were 132 digests from 23 different countries. The submitted digests distribution by country based on the first author placed United States first (33), and China (22), followed by Italy (17), Korea (13) and Japan (6).

■ Distribution of the Accepted Papers for the First Author

About 76% of the accepted papers come from United States (16), China (13), Italy (12), and Italy (11), Japan (6), Korea (6) and Finland (4). All 6 papers submitted from Japan are accepted.

■ Relevant Statistics

The papers from industry in 2022 decreased to 14 from 19 in 2021. The number was 17 in 2020, 24 in 2019, 32 in 2018 and 13 in 2017.

d. IDC Standards Activity Update by the Subcommittee Chair

Dr. Jiangbiao He (subcommittee secretary) presented IEEE IAS IDC standards subcommittee activity updates.

Standard Subcommittee of IAD IDC established in 2018.

P2943 started in January 2019. The Subcommittee has a monthly conference call to discuss IDC standards development.

■ Mission Statement of IDC Standards Sub-Committee

1. The goal of the Standards Sub-committee of the IEEE Industrial Drives group is to participate in the development of Standards and/or Practices pertaining to electric drive systems. Electric drive systems include but are not limited to all types of electrical motors and drives that are used for controlling torque and speed of said electrical motors.
2. Participation is not limited to co-operating with other Standards groups or organizations within the IEEE and/or other technical bodies of the world but also includes taking a leading role in formulating new standards to facilitate meaningful applications of said standards in the industrial and commercial workplace.

■ IDC P2943 working group:

Chair: Kevin Lee, Eaton Corporation

Program Manager: Ron Hotchkiss, IEEE Standards Association

Secretary: JiangBiao He, University of Kentucky

Active group members:

Eric Armando, Politecnico di Torino, Italy
Joseba Arza, Ingeteam Group, Spain
Fernando Briz, University of Oviedo, Spain
Hassan Eldeeb, BorgWarner Inc., USA
Jiangang Hu, Rockwell Automation, USA
Lei Hao, General Motors, USA
Mohamad Koteich, Schneider Electric, France
Fang Luo, Stony Brook Univ, USA
Di Pan, Crane Aerospace, USA
Luis Rodriguez, INEL, Venezuela
Mahesh Swamy, Milwaukee Tools, USA
Zheyu Zhang, Clemson University, USA

■ Scope of work of P2943 Working Group Project:

- This standard establishes a testing method for determining energy efficiency of a motor drive system operating at varying load conditions.
- The rated system voltage is not to exceed 690Vac (line-line).
- The test methodology is not limited to one motor, one drive combination and is intended to accommodate multiple drives fed from a common AC to DC rectifier or a DC source.
- Single phase input fed three-phase motor drive systems are also included in this standard.
- No restriction is intended to be imposed on type of variable speed drive used in the system under study. All three-phase and multi-phase AC motors including linear motors are included.
- Ancillary equipment, including input harmonic and/or EMI filters, output filter with long cable lengths, and step-up/down isolation transformer at input or output of drives are included provided they are part of the said motor drive system and the testing facility is equipped with instrumentation to measure overall system efficiency

■ P2943 Working Group Project Status:

P2943 Standard Project Task Distribution Matrix

Updated Date: 09/19/2022

Document Sections	Task Leader(s)	Presentation Date	Status
General	Luis, Hassan	11/15/2021	In progress
System Settings	Joseba, Mahesh	01/24/2021	In progress
Test Measurements	Fernando, Di	11/15/2021	In progress
Testing Procedures with regards to thermal equilibrium of system	Mahesh, Hassan	07/25/2022	In Progress
Testing Procedures of Multi-Drive System	Mahesh, Fernando	10/31/2022	In progress
Load Test Schedule	Kevin, Jiangang, Lei, Di	07/25/2022	In progress
Torque Offset Measurement	Eric, Jiangang Mohamad	05/23/2022	Completed
Sub-System Efficiency Measurements	Lei Hao, Zheyu, Mohamad, JiangBiao	09/19/2022 10/31/2022	In progress
Power Quality	Fang Luo	TBD	TBD

Dr. Jiangbiao He thanked working group members for their contribution and welcomed new volunteers who would like to participate in the Standards Subcommittee.

3. Awards and Recognitions

Dr. Milijana Odavic from University of Sheffield, UK, was the Chair of the IDC Awards Subcommittee. Prof. Luca Zarri presented the conference paper awards.

■ Awards Subcommittee

1. Milijana Odavic, University of Sheffield, UK, (Chair)
2. Kais Atallah, University of Sheffield, UK, (Vice Chair)
3. Davide Barater, University of Modena and Reggio Emilia, Italy
4. Judith Apsley, University of Manchester, UK
5. David Diaz Reigosa, University of Oviedo, Spain
6. Obrad Dordevic, Liverpool John Moores University, UK
7. Ramakrishnan Raja, Halla Mechatronics, US
8. Giorgio Valente, Hexagon, UK
9. Hanafy Mahmoud, Hexagon, UK
10. Stuart Calverley, Magnomatics, UK
11. Khoa Dang Hoang, University of Huddersfield, UK
12. Mohammed Bouheraoua, Magnokinetics

■ Review Criteria for Selecting Transaction Paper Nomination and ECCE 2021 Paper Awards

The review criteria included 6 specific quality indicators. A score from 0 to 5 had been given for each of the below parameters.

- A. Readability (Is the paper easy to read, do the conclusions follow from the data?).
- B. Use of Figures and Graphics (Do the figures and graphics clearly illustrate the data?).
- C. Education (Does the paper leads to a deeper understanding of the paper's subject?).
- D. Broad Interest (Is the paper's topic of interest outside of a narrowly targeted audience?).

E. Significance (Is the paper's subject matter of significance in the paper's defined field of interest?)

F. Impact (Will the paper have an impact on future research and development?)

The selection was based on the highest total scores. The highest-scored papers had to satisfy a threshold set for combined scores of the Significance and Impact parameters.

■ Procedure for Selecting Transaction Paper Nomination

A total of 37 papers recommended by IDC were published in the IEEE Transactions on Industry Applications in 2021 (Volume 57).

The review process rules included:

- Two members of the Sub-Committee (one coming from University, one coming from Industry) were assigned to review 8 papers.
- The reviewers were assigned considering their nationality (the papers assigned to a reviewer were authored by people with different nationalities).
- Reviewers had to declare no conflict of interest for the papers assigned to them.
- Papers authored by the same author were assigned to different groups of reviewers.

One paper with the highest total scores and the highest combined scores for the Significance and Impact parameters was nominated for the Transactions Paper Awards.

■ Procedure for Selecting Conference Paper Awards

The eligibility criteria for the IDC Prize Paper Awards included papers that were:

- presented at ECCE 2021,
- submitted to IEEE Transactions on Industry Applications (IDC)
- and passed the first round of review.

There were too few papers fulfilling the criteria. So, also the papers with the highest scores obtained during the review of the digests were added. In total, 18 papers have been considered.

The task of the IDC Awards Sub-Committee was to rank the best three papers.

Each paper was reviewed by at least 2 reviewers, one from academia /one from industry. The selection criteria (with quality indicators: significance, impact, readability, use of figures and graphics, education, broad interest) included the highest total scores and the highest significance/impact scores.

Three papers with the highest total scores were selected. All the three papers satisfied a threshold set for the combined scores of the Significance and Impact parameters.

■ 2021 IEEE ECCE Conference Paper Awards

The three Conference Paper Awards were:

1. First Prize Paper: Sensorless Acceleration Estimation and Acceleration Feedback Control to Improve the Disturbance Torque Rejection on Galvano Motor System

Authors: Yi-Jen Lin (1), Po-Huan Chou (2), Chi-Ju n Wu (1) and Shih-Chin Yang^{1, 1}
National Taiwan University, Taipei, Taiwan, R.O.C., 2) Industrial Technology Research
Institute, Hsinchu, Taiwan, R.O.C.

2. Second Prize Paper: Direct Flux and Load Angle Vector Control of Permanent Magnet Synchronous Motors

Authors: Sandro Rubino, Fabio Mandrile, Luisa Toscano, Eric Armando, Radu Bojoi,
Dipartimento Energia “G. Ferraris”, Politecnico di Torino, Italy

3. Third Prize Paper: Evaluation of Topologies and Active Control Methods for Overvoltage Mitigation in SiC-Based Motor Drives

Authors: Mohamed S. Diab, Wenzhi Zhou, and Xibo Yuan, Department of Electrical and
Electronic Engineering, University of Bristol, Bristol, United Kingdom.

Dr. Luca Zarri presented the award to the authors. The IDC Committee congratulated the winners and members of the Awards Subcommittee for their excellent work.

■ Associate Editors

Prof. Jul-Ki Seok thanked all Associate Editors for their help.

Davide Barater, University of Parma, Italy

Roberto Petrella, University of Udine, Italy

Prerit Pramod, Nexteer Automotive Corporation, USA

Marcello Pucci, ISSIA-CNR, Italy

Ramakrishna Raja, Halla mechatronics, USA

David Díaz-Reigosa, University of Oviedo, SPAIN

Dinesh Kumar, Danfoss Drives Global R&D Center, Denmark

Giacomo Scelba, University of Catania, Italy

Wei Xu, Huazhong University of Science and Technology (HUST), China

Pinjia Zhang, Tsinghua University, China

Arijit Banerjee, University of Illinois at Urbana-Champaign, US

Peng Han, Ansys Inc, US

Fabio Immovilli, University of Modena and Reggio Emilia, Italy

Juan Manuel Guerrero Munoz, University of Oviedo, Spain

■ Nagamori Awards Introduction by Yasushi Nishimura from Nagamori Foundation: Nagamori Foundation Mission Statement: Support research and development engineers in the technical fields of motor, power generator, actuator, and other related technologies.

Nagamori Awards:

- Commend those who have made innovative technological development in the motor related technical fields.
- Applicants must be entry to mid-career researchers and engineers.
- Will be given to approximately six people. The Grand Nagamori Award winner will receive a prize of 5 million yen, and each of the Nagamori Award winners will receive 2 million yen.

Application Guideline for the 9th Nagamori Awards:

- Fields covered: Technical fields related to motors, actuators and power generators, and their control methods, application technologies, etc.
- Applicant eligibility: Applicants must be entry to mid-career researchers or development engineers who have made an outstanding achievement in the fields covered by the Nagamori Awards. Entry to mid-career – normally defined as no more than 30 years of research after obtaining the Bachelor's degree.
- Application method: Self-nomination or nomination from academic institution are accepted. A recommendation letter by an expert in the field covered by the Awards, or a senior member of your Academic Society, organization, research department, etc. must be submitted.
- Application period: November 01, 2022-January 31, 2023. Applications must be postmarked on, or before, January 31, 2023.
- Application condition: Documents must be submitted in either English or Japanese.
- Awards & prizes: Nagamori Awards will be given to approximately six people. The winner of The Grand Nagamori Award will be announced during the Awards ceremony. The Grand Nagamori Award winner will receive a prize of 5 million yen, and each of the Nagamori Award winners will receive 2 million yen.

*The 9th Nagamori Awards Ceremony will be held on September 3, 2023 in Kyoto, Japan

Winners of The 8th Nagamori Awards:

- Huijun Gao, Professor and Director, Research Institute of Intelligent Control and Systems, Harbin Institute of Technology
- Yunwei Ryan Li, Professor and Acting Department Chair, Department of Electrical and Computer Engineering, University of Alberta
- Burak Ozpineci, Section Head^[1] Vehicle and Mobility Systems Research Section, Building and Transportation Science Division, Oak Ridge National Laboratory
- Gianmario Pellegrino (**Grand Nagamori Award**), Full Professor, Department of Energy "Galileo Ferraris", Politecnico di Torino
- Maryam Saedifard, Professor, School of Electrical and Computer Engineering, Georgia Institute of Technology
- Akio Yamamoto, Professor, ^[1]Department of Human and Engineered Environmental Studies, Graduate School of Frontier Sciences, The University of Tokyo

4. New Business

Prof. Luca Zarri presented the nomination of 2022 IDC slate of officers. The officers are the same as 2021. This is the second year for the two-year term.

■ IDC Slate of Officers

Chair: Prof. Luca Zarri, University of Bologna, Italy

Vice Chair: Papers-Prof. Jul-Ki Seok, Yeungnam University, Korea

Vice Chair: Programs-Dr. Kevin Lee, Eaton Corporation, USA

Secretary: Secretary-Dr. Di Pan, Crane Aerospace & Electronics, USA

Past Chair: Dr. Mahesh Swamy, Milwaukee Tool, USA

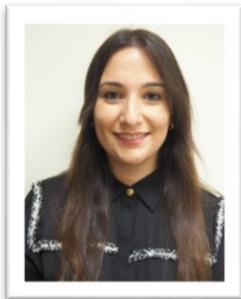
Prof. Bulent Sarlioglu moved the motion first, which was then seconded by Prof. Radu Bojoi. The motion was unanimously approved.

■ 2022 IEEE ECCE Conference Paper Awards

Vice chair Prof. Jul-Ki Seok provided the guideline to submit the papers to TIA.

- Any IDC paper presented at ECCE 2022 is eligible.
- The requirement that the paper must be submitted to IAS Transaction is no more applicable.
- 15~20 papers are pre-selected based on ECCE digest review score.
- The Award sub-committee will review the full paper version for final selection.

■ New IDC Awards Chair: Dr. Maria Martinez.



Dr. Maria Martinez (S'15) received the M.S. and Ph.D. degrees in electrical engineering from the University of Oviedo, Gijón, Spain, in 2017 and 2020, respectively. She is currently an assistant professor with the Department of Electrical, Electronic, Computers and Systems Engineering, University of Oviedo.

From 2016 to 2020, she has been the treasurer and co-founder of the IAS Student Branch Chapter of the University of Oviedo. Her topics of interest include machine monitoring and diagnostics, wireless measurement systems and sensorless control.

■ How to Submit Papers to IEEE Transaction on Industry Applications

In order to be considered for publication in Transactions or the Magazine, authors must first present their work at an IAS sponsored conference and then request an invitation to submit a paper.

To request an invitation, the authors must send an email to the Publications Chair:

Jul-Ki Seok (doljk@ynu.ac.kr)

Detailed instructions can be found on the section “Publications” in the IDC website:

<https://site.ieee.org/ias-idc/>

■ Call for Volunteers

To revitalize our committee and involve the younger members in the IDC activities, we are looking for volunteers for the following aims:

Promoting activities for student members and young professionals

Liaison members with different IEEE regions and local IEEE chapters

Promoting cultural diversity and network building

Creating working groups on emerging technical topics.

Please send an email to Di Pan (pandi@ieee.org) - no deadline, the sooner the better.

■ Introduction to ECCE 2023

The details of ECCE 2023 were presented by Prof. Joseph Ojo, which will take place in Nashville, TN, USA, October 29 - November 2, 2023. General Chair: Prof. Brad Lehman The conference website is www.ieee-ecce.org/2023 .

■ Recruit Topic Chairs and Session Chars for ECCE 2023

IDC is looking for candidates: Send an email to Kevin Lee and Di Pan (by Nov. 30, 2022)

kevin_lee@ieee.org , pandi@ieee.org

■ Introduction to IEMDC 2023

The details of IEMDC 2023 were presented by Prof. Leila Parsa, which will take place in Chania, Greece, August 28-31, 2023. The general chairs are Leila Parsa and Gerard-Andre Capolino.

■ Introduction to SDEMPED 2023

The details of SDEMPED 2023 were presented by Prof. Konstantinos N. Gyftakis, which will take place in San Francisco, CA, USA, May 15-18, 2023. The general chair is Prof. Konstantinos N. Gyftakis. The conference website is <https://www.ieee-sdemped.org/> .

■ IAS Annual Meeting 2025 Global Engagement

- In 2025 the IAS Annual Meeting will be held in either Region 8 (Europe, Middle East and Africa) or Region 10 (Asia and Pacific)
- It will not co-locate with ECCE in 2025
- Executive Board Decision Based on Survey of IAS Council in 2021
- Better engagement with global membership
- Mirrors previous events – IAS AM 2000 in Rome and IAS AM 2005 in Hong Kong
- Because we aim to engage with regional membership as well as regular global attendees, it is proposed that the 2025 meeting scope will be the full scope of IAS
- We expect that in 2025 the Annual Meeting will be held at a different time of year to avoid clashes with ECCE, PCIC etc. (probably late Q2?)

Next steps:

- We are putting out a call for expressions of interest to host the IAS AM 2025
- General Chair
- Location

- If you are interested in chairing / hosting the conferences locally in R8 or R10 in 2025, contact andyknight@ieee.org
- Deadline for expressions of interest submission is Dec 1, 2022.



5. Adjournment

A call to adjourn the meeting was moved by Dr. Micheal Harke, seconded by Prof. Emmanuel Agamloh, and unanimously approved.

Submitted by Di Pan
October 30, 2022