



IEEE ENERGY CONVERSION CONGRESS & EXPO **2022** Detroit, Michigan, USA Oct. 9-13

# **IAS INDUSTRIAL DRIVES COMMITTEE (IDC) MEETING**

Tuesday, October 11, 2022

6:00 PM to 7:00 AM (EDT)

# On the shoulders of Giants



Dr. Tsuneo (Joe) Kume



Prof. Donald W. Novotny



Dr. Tsuneo J. Kume  
1936-2022

It is with great sadness that we announce the sudden death of Dr. Tsuneo J. Kume, **IEEE Fellow ('05)** on August 20, 2022 in Japan. He was 86 and is survived by his wife and sons. At the time of passing, Dr. Kume had retired from Yaskawa Electric Corporation but remained in constant touch with the R&D group at his former company. He was a tireless researcher and never stopped thinking of ideas and topologies to improve the performance of Variable Frequency Drives. In 1974, he developed the first commercially produced general-purpose transistor PWM inverter. He also played a key role in the development of the first vector-controlled inverter in the world (1979). He moved to the U.S. in 1996 as director of R&D activities at Yaskawa Electric America Inc., where he continued his research interests in the broad area of motor drive technology till 2006, after which, he returned to Japan. His longstanding passion for sustainable and energy efficient drive topology led him to develop the winding change method to allow Permanent Magnet AC motors to exhibit dual torque characteristics and extend the constant horsepower operating region. Dr. Kume was also an “**IEEE Distinguished Lecturer**”. The members of Yaskawa R&D in Japan and US including his former colleagues will miss him greatly along with his wit and humor in the lab – he would famously say, “the scope never lies – we do not know how to interpret the data!”. May his soul rest in peace.

Members of Yaskawa Corporation, R&D, and Mahesh Swamy (Milwaukee Tool)



Prof. Donald W. Novotny

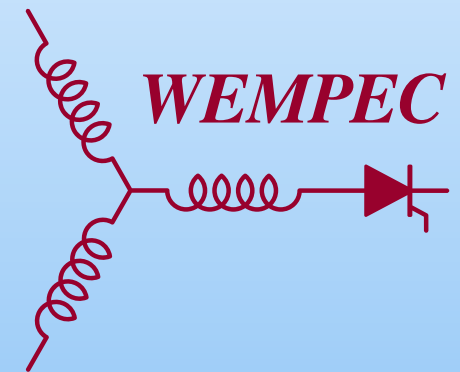
Prof. Thomas M. Jahns  
Prof. Bulent Sarlioglu

WEMPEC

University of Wisconsin - Madison



# Donald W. Novotny



1934 - 2022

# Donald W. Novotny

## Academic Career

Born Dec. 15, 1934, in Chicago, IL

1956 BS, Electrical Engineering, Illinois Institute of Technology

1957 MS, Electrical Engineering, Illinois Institute of Technology

1962 PhD, Electrical Engineering, Univ. of Wisconsin – Madison

1962 – 1964 Assistant Professor, ECE Department, UW-Madison

1964 – 1968 Associate Professor, ECE Department, UW-Madison

1968 – 1990 Professor, ECE Department, UW-Madison

1976 – 1980 Chair, Dept. of Electrical & Computer Engineering, UW-Madison

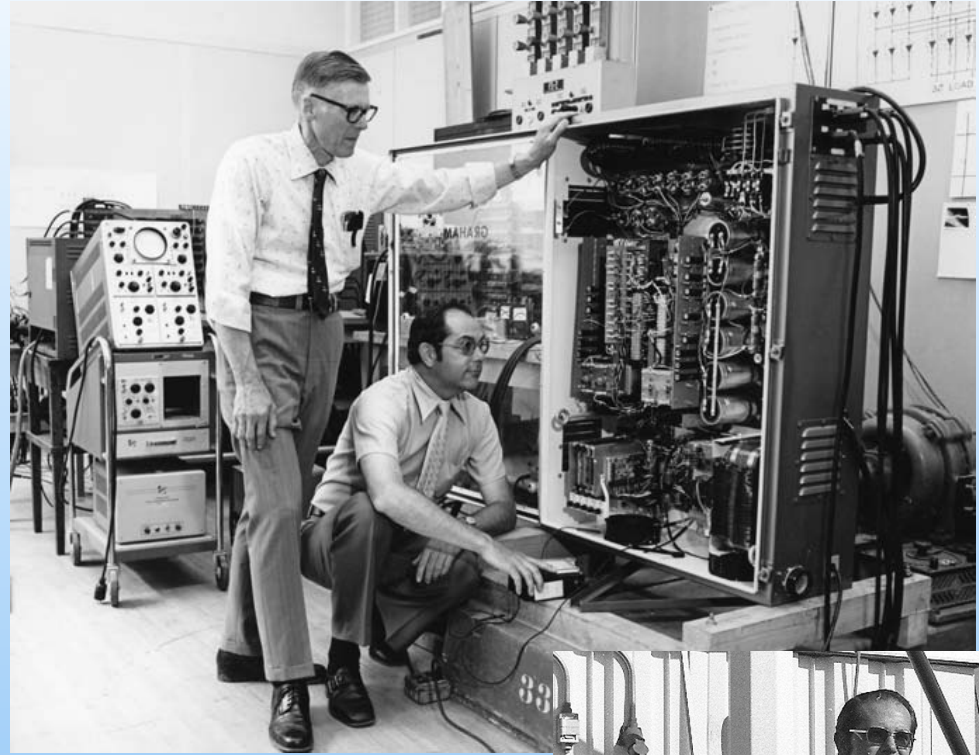
1990 – 1997 Grainger Professor of Power Electronics, UW – Madison

1981 – 1996 Founder and Co-Director, WEMPEC

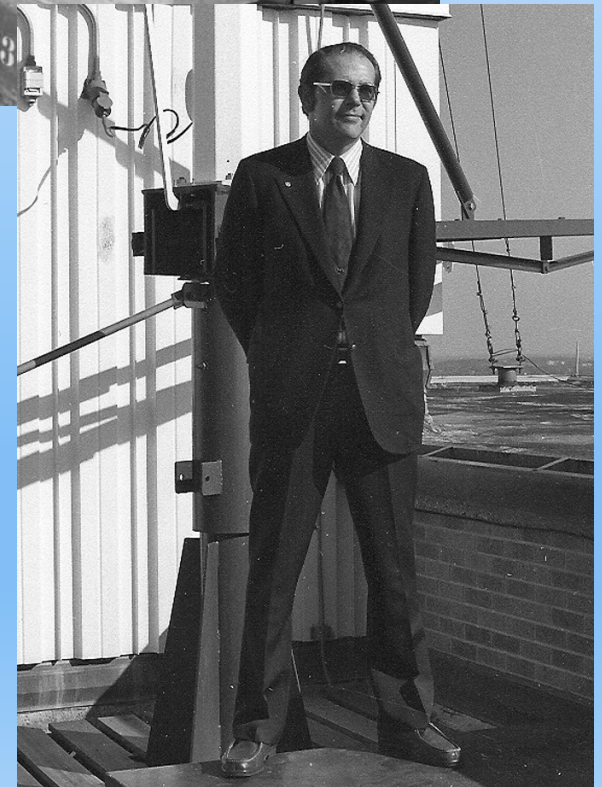
1996 – 2022 Professor Emeritus, University of Wisconsin – Madison

Passed Away May 7, 2022, in Madison, WI

# Early Career



Graduation picture in the  
1956 IIT "Integral"



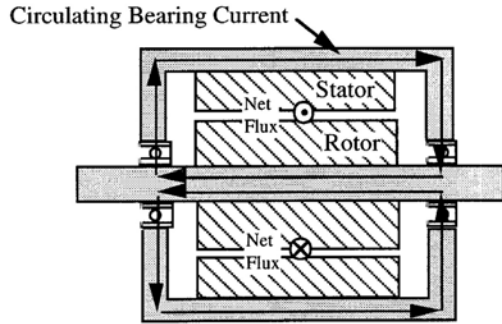


# WEMPEC

Co-founded WEMPEC  
with Prof. Tom Lipo in  
1981 and served as  
Co-Director for 25 years

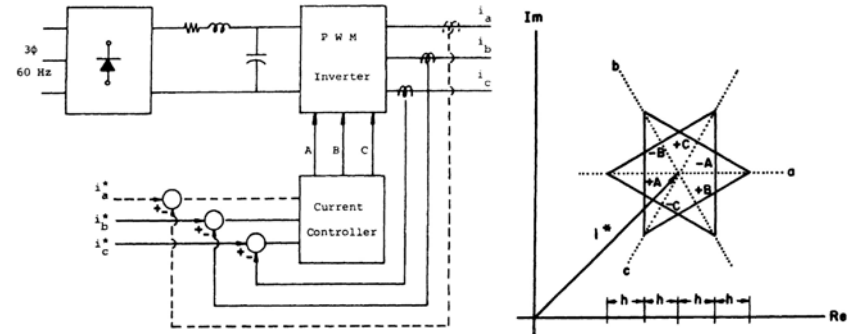


### Circulating Bearing Currents (1996)

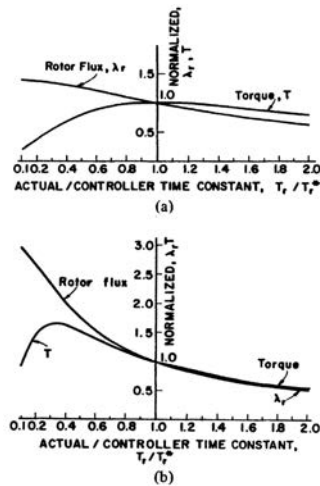
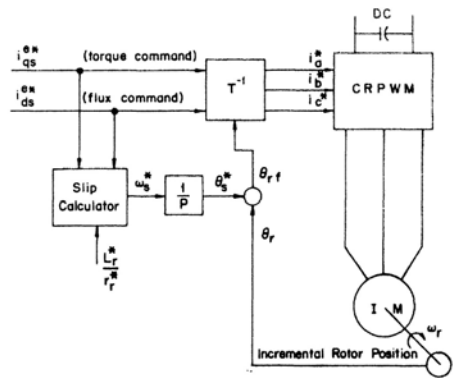


# Major Technical Contributions

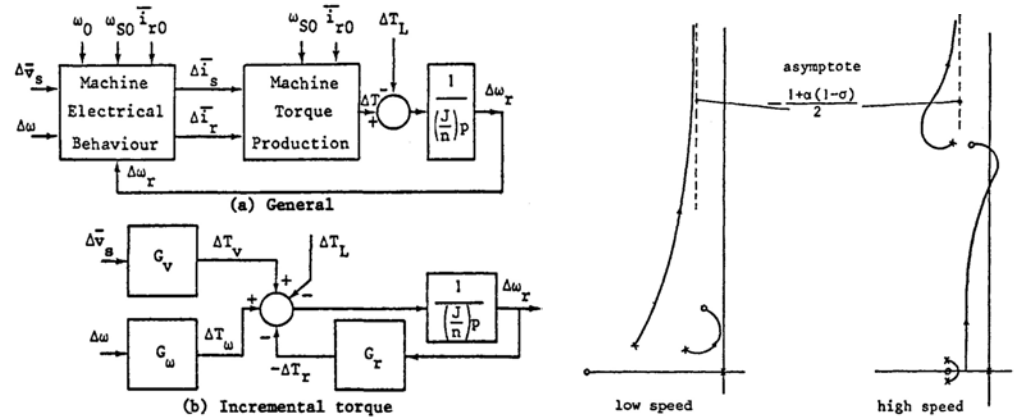
### Hysteresis Current Regulators (1985)



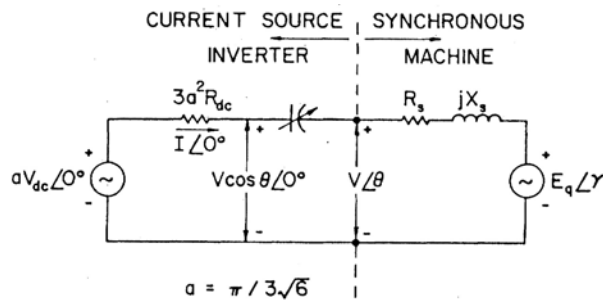
### Indirect FO Control Motor Parameter Sensitivity (1985)



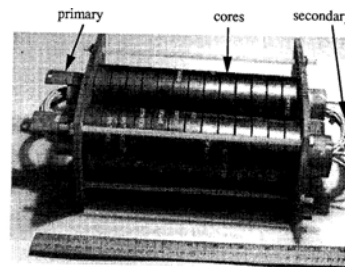
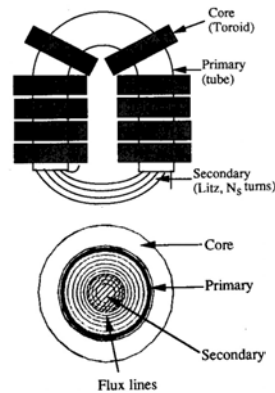
### Small-Signal Analysis of Induction Machine Stability (1976)



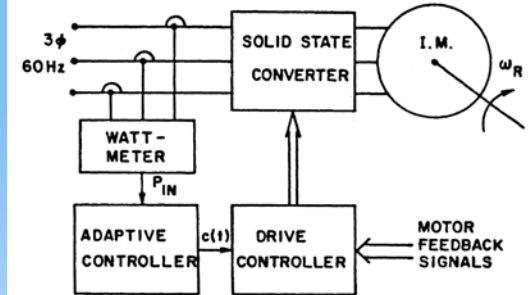
### CSI Induction Motor Drive Steady-State Equivalent Circuit (1981)



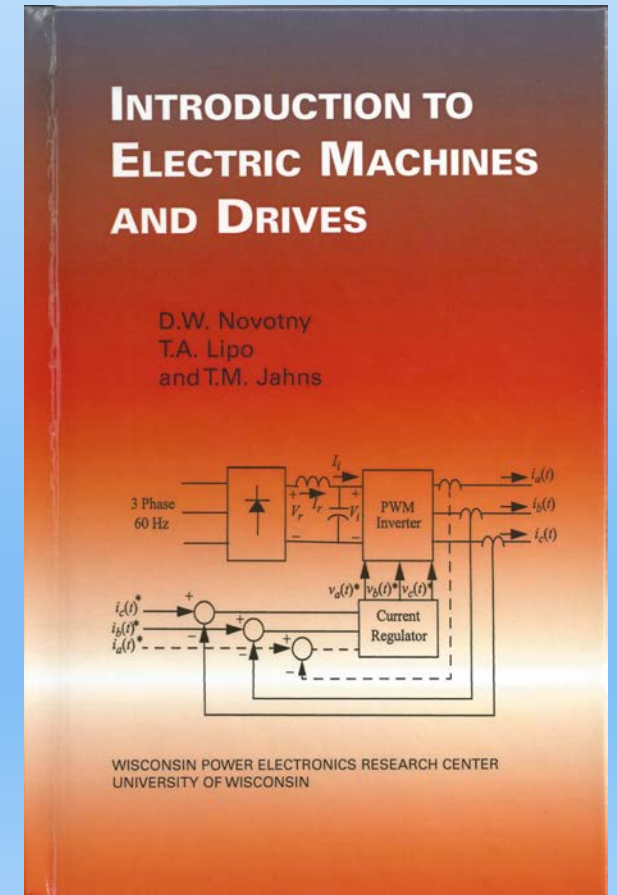
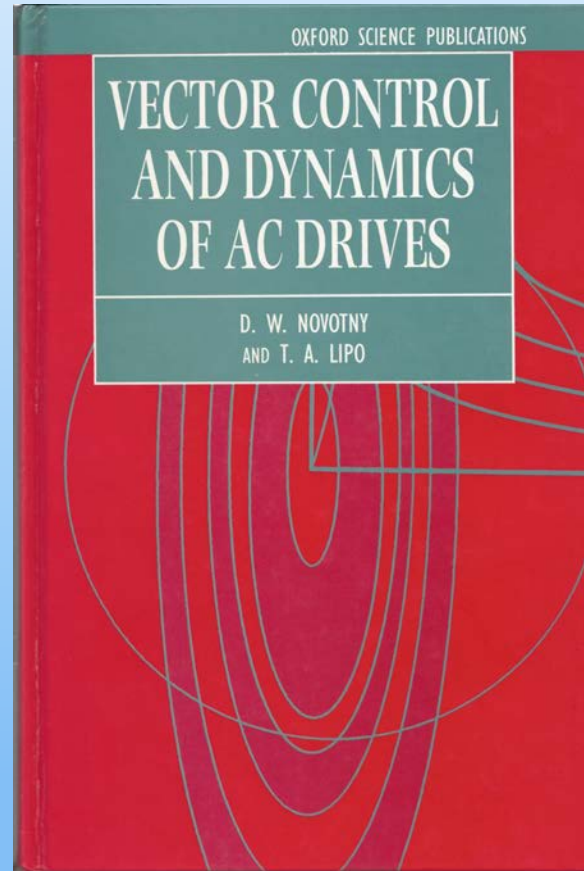
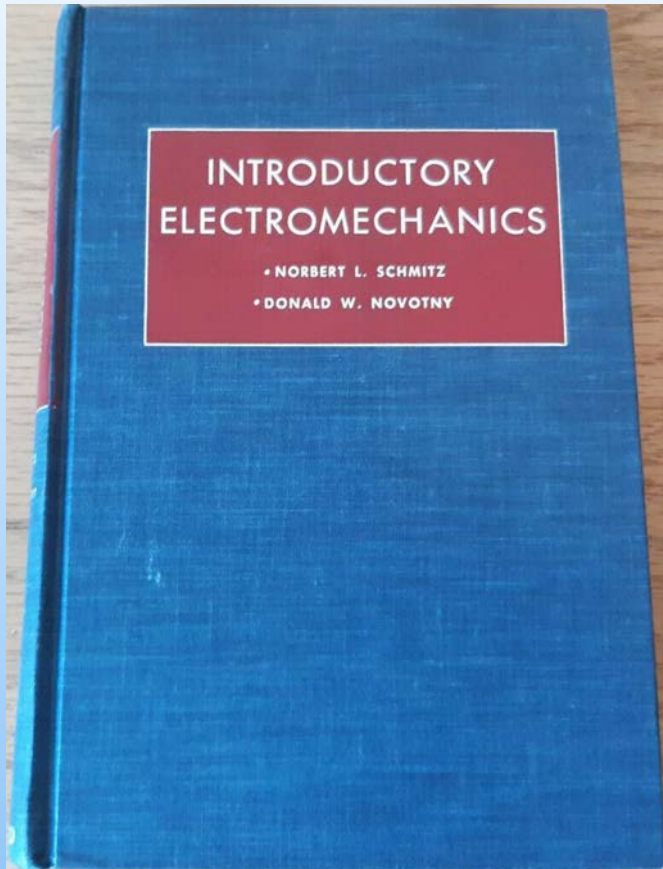
### Coaxial Transformers (1991)



### Online Induction Motor Drive Efficiency Optimizer (1985)



# Textbook Author



Taught courses at UW-Madison almost every semester for more than 50 years

# Donald W. Novotny Teaching Awards



**Kiekhofer  
Award for  
Excellence in  
Teaching  
1964**

Kiekhofer Award for Excellence in Teaching, UW-Madison, 1964

Benjamin Smith Reynolds Teaching Award, UW College of Engr., 1984

Holdridge Teaching Award, ECE Department, UW-Madison, 1995

National Technological University Outstanding Instructor, 1995

# IEEE Service

- IEEE PES Rotating Machinery Committee  
Theory Subcommittee, Chair (1979-82)  
Induction Single-Phase Machine Subcom. Vice Chair (1983-84)
- IEEE IAS AC Drives Committee, Member (1980-98)
- IEEE IAS Electric Machines Committee, Member (1984-1998)  
Chair (1984-86)
- IEEE Fortescue Fellowship Committee (1977-1981)
- IEEE IAS Executive Board (1986-1991)
- IEEE ECPD Accreditation Visitor (1979-1984)
- IEEE IAS Continuing Education Committee (1988-2000)



# Awards

## 2009 IEEE Nikola Tesla Technical Field Award

IEEE Fellow, 1987

IEEE Industry Applications Soc. Outstanding Achievement Award, 1998

11 Prize Paper Awards



# Novotny Family

2 children  
4 grandchildren  
4 great-  
grandchildren



# Donald W. Novotny



*Rest in Peace*

# Agenda

## 1. Approvals of the Agenda and 2021 Meeting Minutes

## 2. Old Business and Reports

- Vice-chair, Paper Review – Transactions Papers
- Vice-chair, Programs – Report on ECCE 2022
- Report on conferences held in 2022
- Vice-chair, Standards Subcommittee

## 3. Awards and Recognitions

- Awards Subcommittee 2022
- Conference Paper Awards
- Associate Editors
- Nagamori Awards

## 4. New Business

- Nomination of 2023 IDC Slate of Officers
- Submission of Papers to Transactions on Industry Applications
- Recruit Topic Chairs & Session Chairs for ECCE 2023
- Future Conferences (ECCE 2023 and other conferences)

## 5. Closing Remarks & Motion to Adjourn



# 1. Approvals of the Agenda and 2021 Meeting Minutes

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

Motion for approval

# IEEE Fellows and new members

Please stand up,  
to receive the recognition you deserve!

## 2. Old Business and Reports

- Vice-chair, Paper Review – Transactions Papers
- Vice-chair, Programs – Report on ECCE 2022
- Vice-chair, Standards Subcommittee
- ECCE 2022 Update

## 2. Old Business and Reports

Vice-Chair Paper Review Report  
on Transactions Papers

**Prof. Jul-Ki Seok**

Yeungnam University, Korea

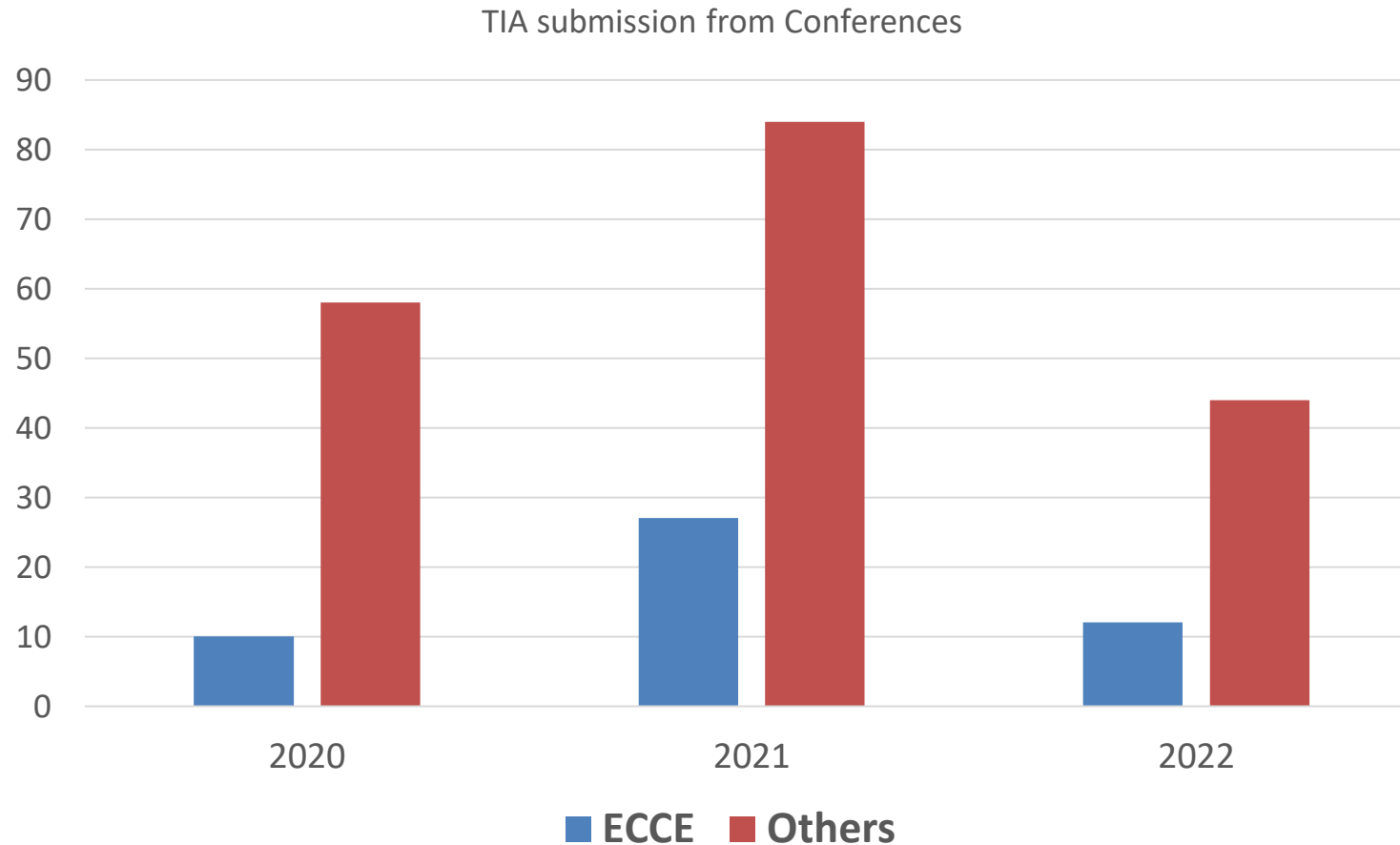


# Number of original submissions (new papers)

	Number of new submissions
January 2022-October 2022	56
Papers invited and not submitted yet	13
<b>TOTAL</b>	<b>69</b>

Previous years	Number of new submissions Papers (invited papers)
Jan. 2019-Oct.2020	68 (89)
Oct. 2020-Oct. 2021	95 (111)
Jan. 2022-Oct. 2022	56 (69)

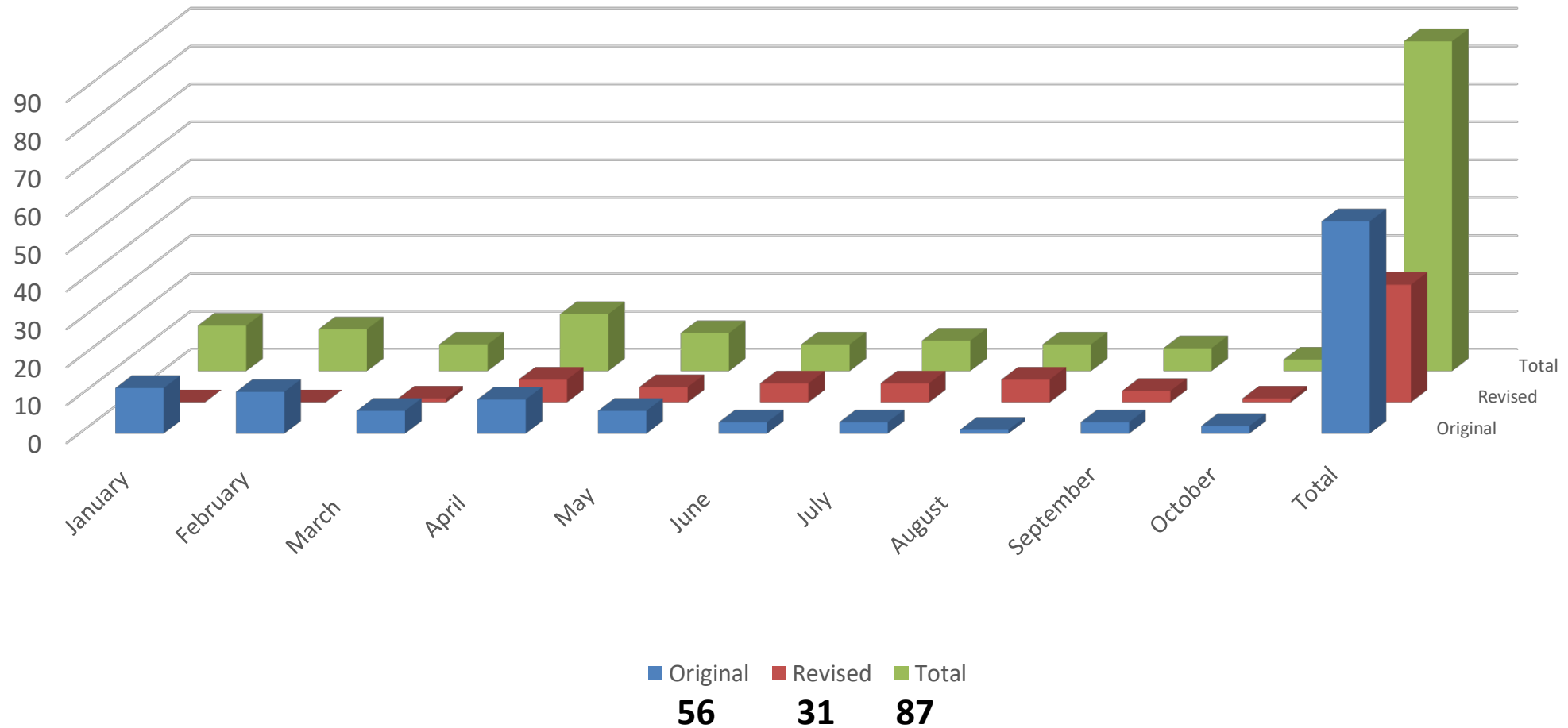
# Number of submissions From IAS-sponsored Conferences



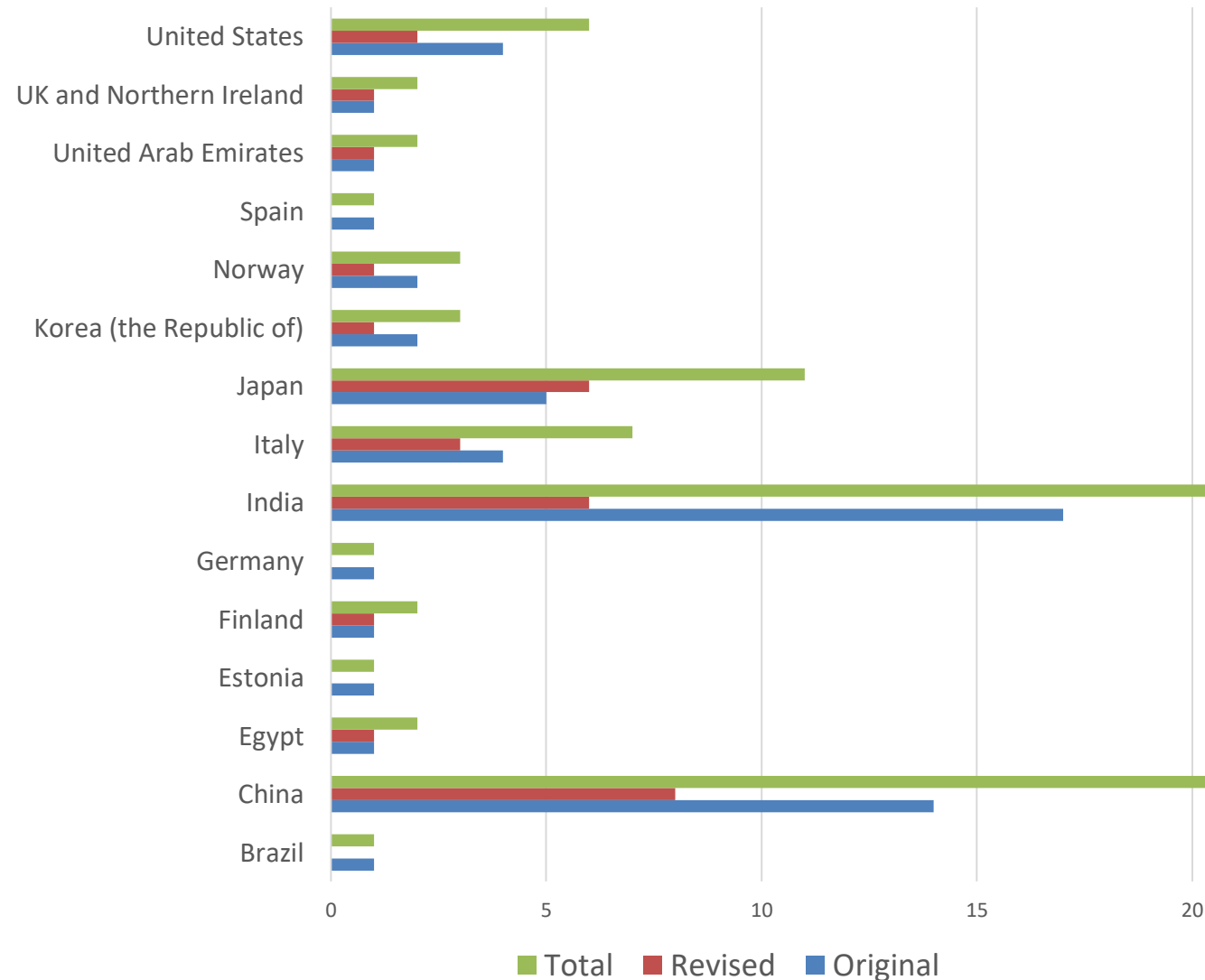
**Submission from other conferences has been reduced by 29% (compared to 2020 ).**

# Time distribution of the submissions

Time distribution



# Country of the corresponding author (Jan 2022-Oct 2022)



Author Country/Region	Original	Revised	Total
Brazil	1	0	1
<b>China</b>	<b>14</b>	<b>8</b>	<b>22</b>
Egypt	1	1	2
Estonia	1	0	1
Finland	1	1	2
Germany	1	0	1
<b>India</b>	<b>17</b>	<b>6</b>	<b>23</b>
Italy	4	3	7
<b>Japan</b>	<b>5</b>	<b>6</b>	<b>11</b>
Korea (the Republic of)	2	1	3
Norway	2	1	3
Spain	1	0	1
United Arab Emirates	1	1	2
UKi and Northern Ireland	1	1	2
United States	4	2	6
<b>Summary</b>	<b>56</b>	<b>31</b>	<b>87</b>



# Acceptance rate and days to final decision

Period: Jan. 2022 – Oct. 2022	Num. of papers with a final decision
Accepted papers	15
Rejected papers	23
<b>Total</b>	<b>38</b>

Acceptance rate	%
Acceptance rate (2022)	39.5%
Acceptance rate (2021)	50%
Acceptance rate (2020)	36%

**\* 2022 Total IAS  
 Publication Trans.  
 Acceptance rate – 31.09%**

	2022	2021	2020	2022 IPCSD Avg.
Days to first decision	69.2	70	67	74.8
Days to final decision	109.3	105	96	158.7

## 2. Old Business and Reports

### Vice-Chair Programs – Report on ECCE 2022

Kevin Lee

Kevin Lee, Eaton, USA



# ECCE 2022 Technical Program Committee Members, Electric Drives

**Vice-chairs:** Ali Bazzi, Kevin lee

## Topic Chairs

- ❖ 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

Thank you to all Topic Chairs!

# ECCE 2022 Technical Program Committee Members, Electric Drives

- **Track H: 11 oral sessions, 2 remote oral sessions, 3 poster sessions.**
- **Two session chairs are assigned to each session.**

## Session Chairs

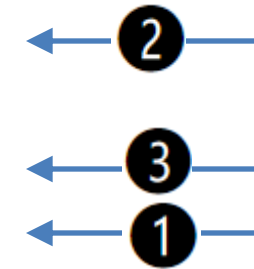
- |               |                  |
|---------------|------------------|
| ❖ Kevin Lee   | ❖ Zhe Zhang      |
| ❖ Jiangang Hu | ❖ Weiqiang Chen  |
| ❖ AK Arafat   | ❖ Mohammed Agamy |
| ❖ Ali Bazzi   | ❖ Jun Wang       |
| ❖ Yang Xu     | ❖ Hao Chen       |

Thank you to all Session Chairs!

# IDC Digest Submissions (132 digests)

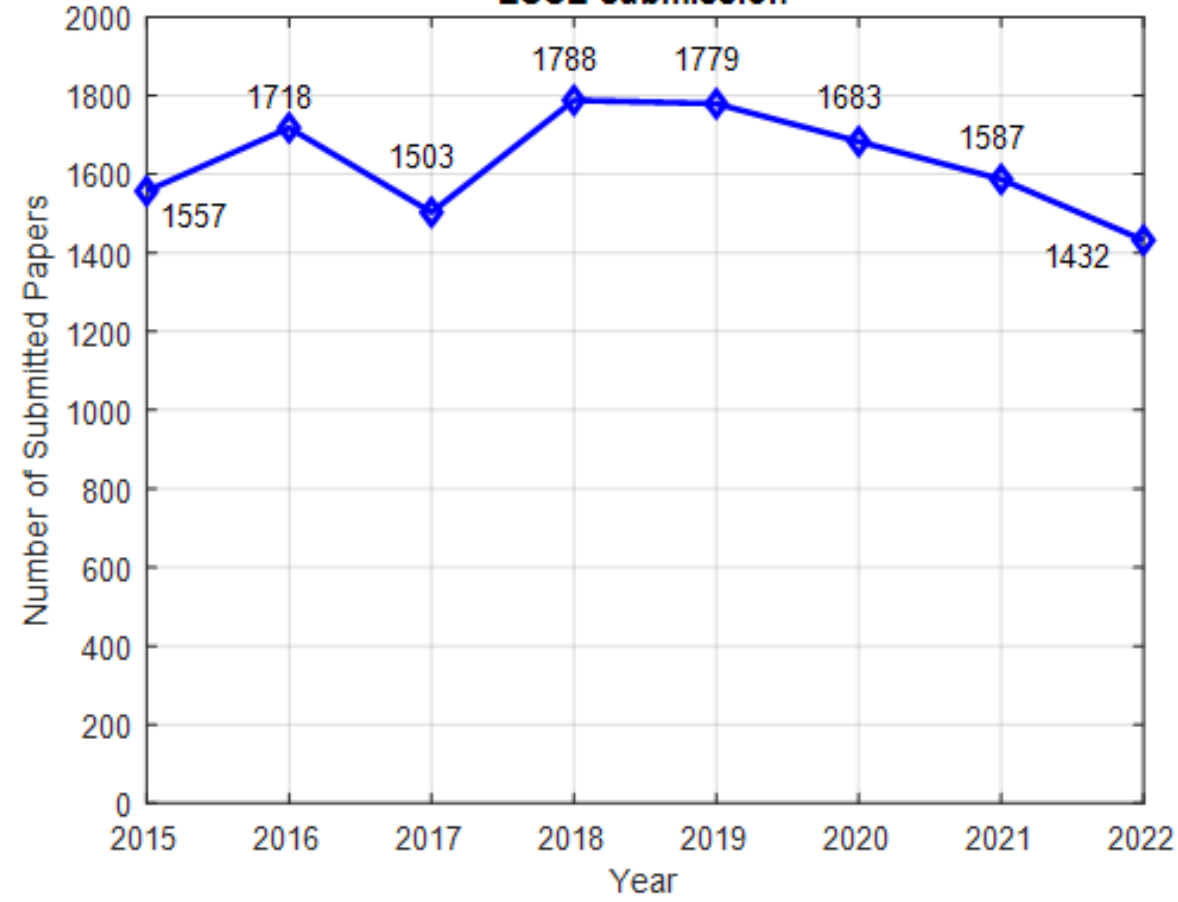
## Sub-tracks are organized as:

1. General Electric Drives	24
2. Induction motor drives	4
3. PM and IPM Motor Drives	23
4. Control of electric drives	27
5. Drive applications & Drive utility interface	5
6. Sensorless drives	18
7. Monitoring, diagnostics, reliability and EMI	15
8. High speeds and direct drives	1
9. Energy efficient motor drives	2
10. Medium voltage and high-power drives	6
11. New technologies and integrated drives and standards	0
12. Electrical drives for aerospace and traction applications	3
13. Electrical drives for wind & other renewable integration	4

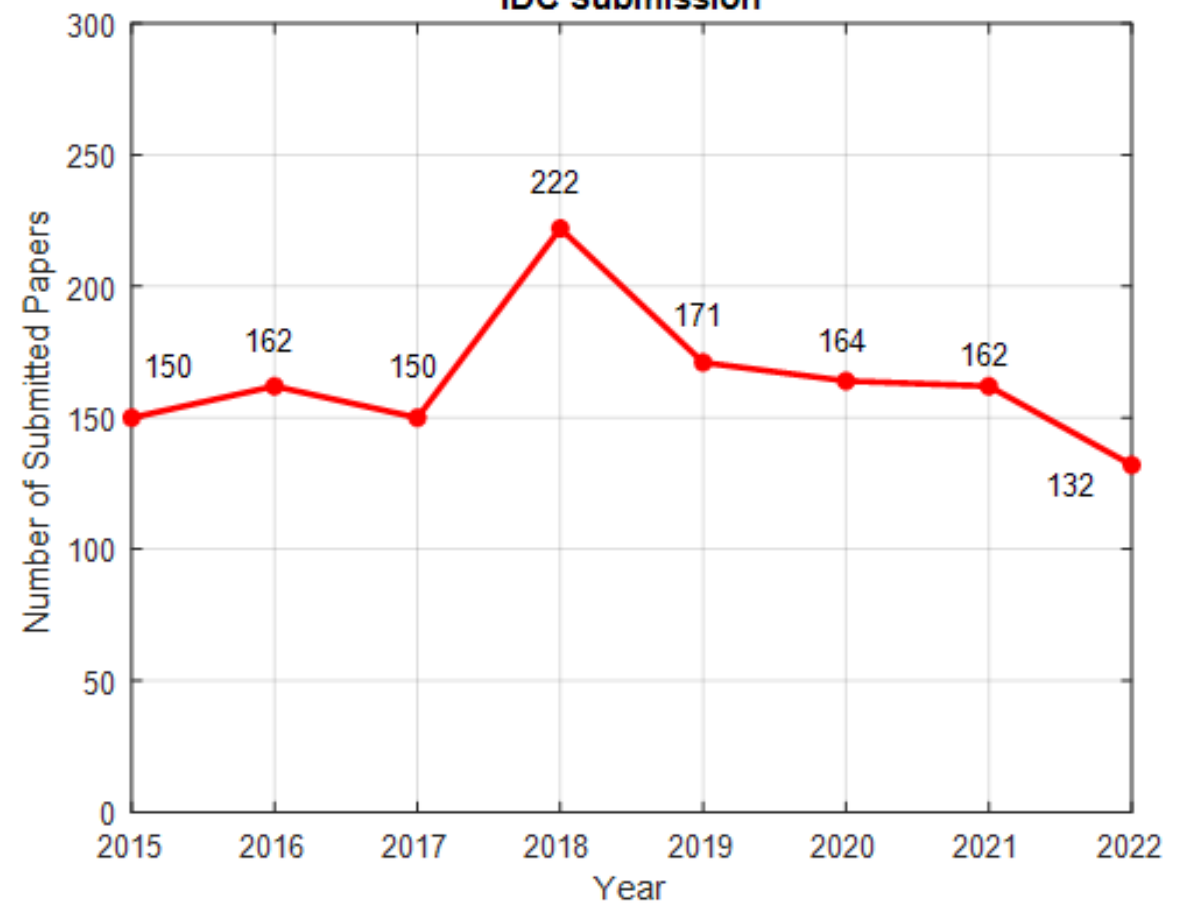


# Yearly Submission Trends

**ECCE Submission**



**IDC Submission**

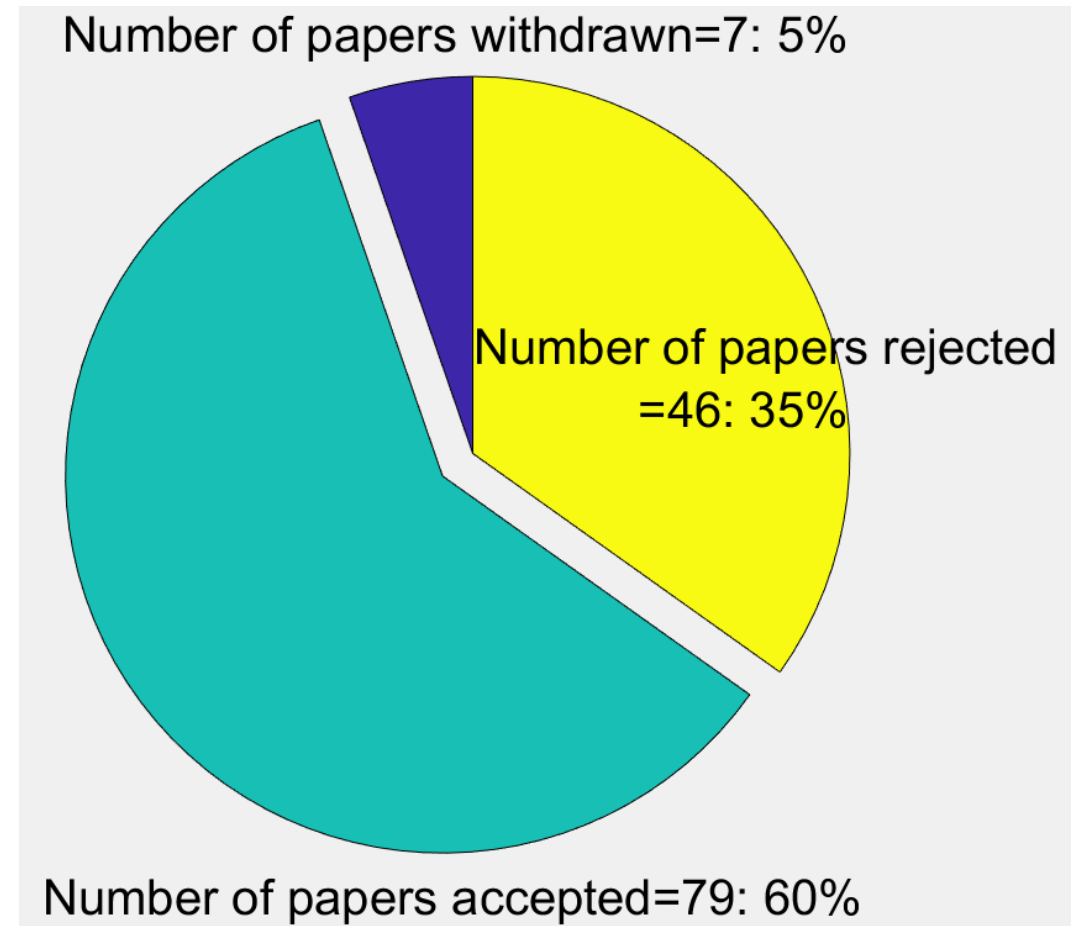


- 1432 submissions (-9.7%)
- 17 special session papers
- 24 tutorial papers

- 132 submissions (-18.5%)

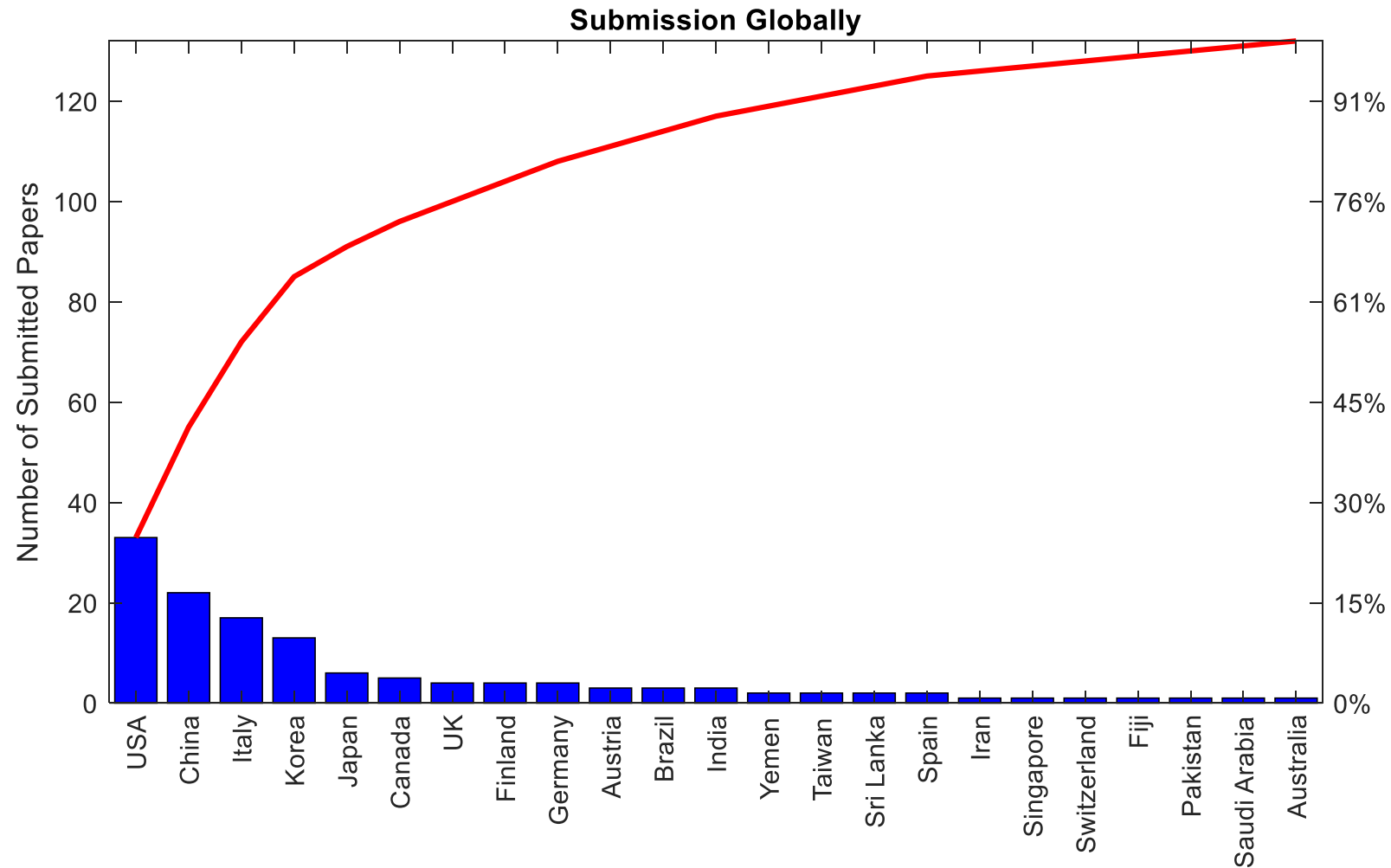
## Overall Statistics (2022)

- 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 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 is 4.5 (4.7 last year).



# Submission in Geological Distribution based on First Author

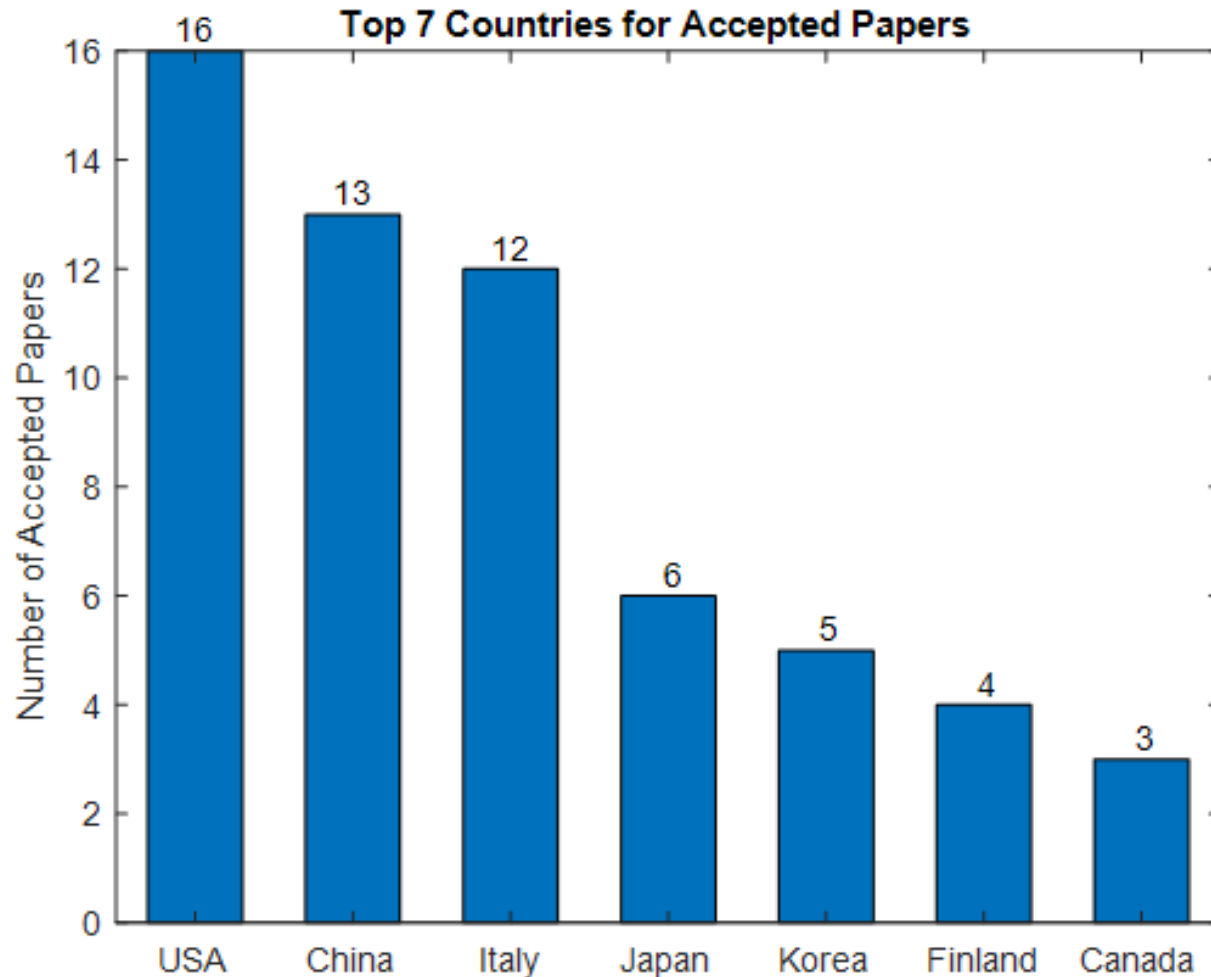
- 132 digests from 23 different geological locations
- United States (33), China (22), Italy (17), Korea (13), Japan(6)





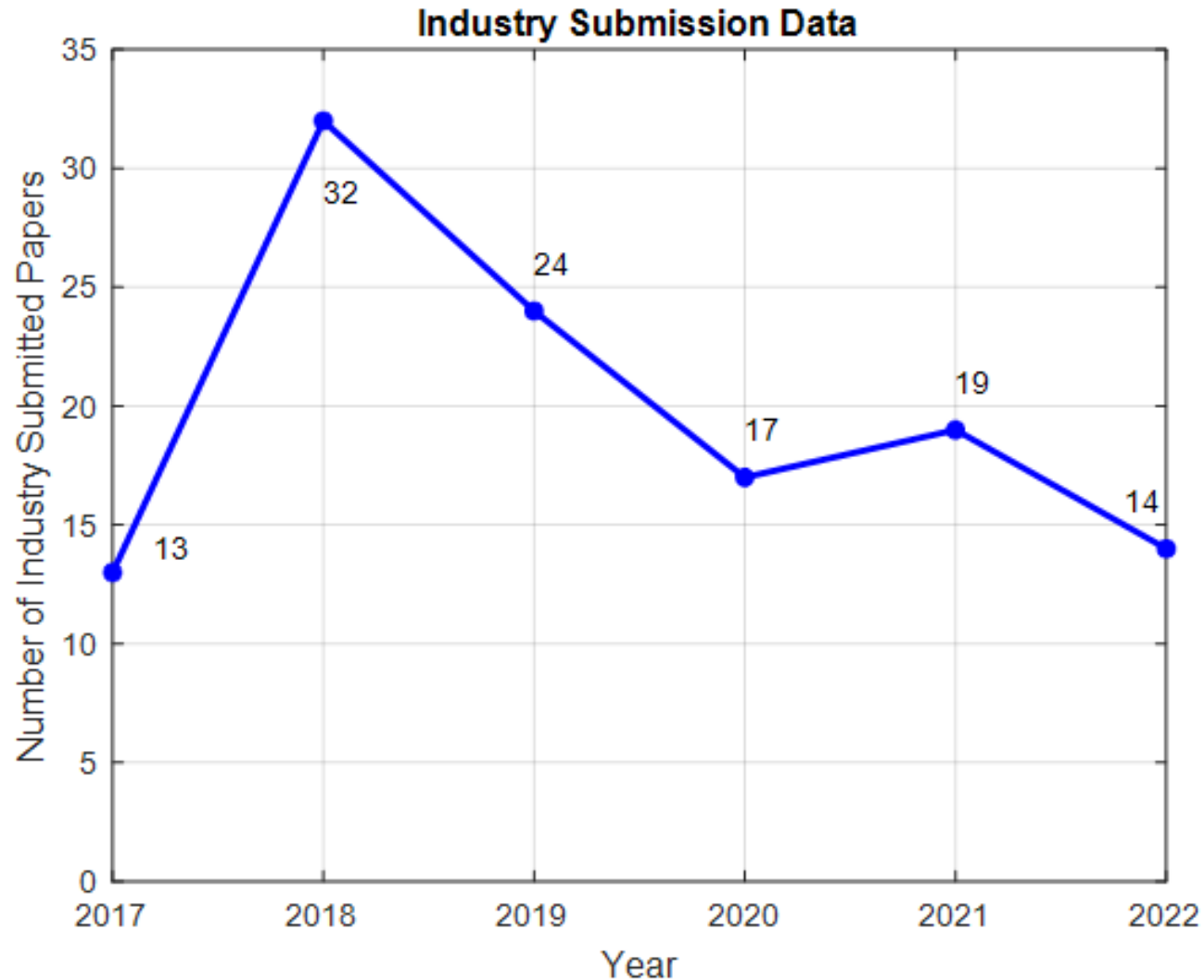
# Distribution of Accepted Papers from First Author

- About 76 percent of the accepted papers come from United States (16), China (13), Italy (12), Japan (6), Korea (6), Finland (4), and Canada (3).



- All 6 papers submitted from Japan are accepted.

# Industry Papers Submission Statistics



■ Industry papers acceptance rate in 2022: 35.7%

## 2. Old Business and Reports

Report on ECCE 2022

Emmanuel Agamloh

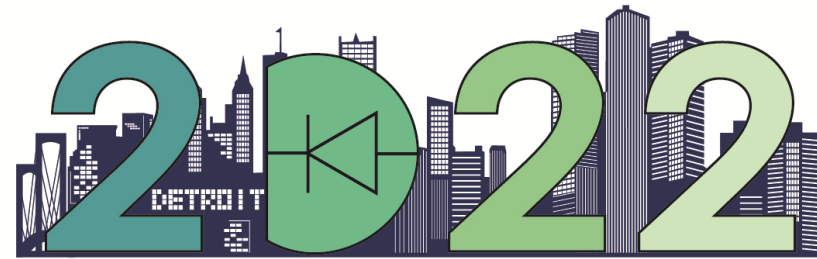
General Chair



# ECCE 2022 Update

October 2022

Emmanuel Agamloh  
General Chair



IEEE ENERGY CONVERSION CONGRESS & EXPO

 Detroit,  Michigan,  USA  Oct. 9-13

# Motor City - Detroit

- Venue : Detroit, Michigan (Huntington Place)
- Dates : October 9-13, 2022 (Virtual: Oct 17-19, 2022)



# ECCE 2022 Team

General Chair: [Emmanuel Agamloh](#)

Finance Chair: [Shanelle Foster](#)

TPC Co-Chairs: [Navid Zargari](#), [Annette Muetze](#), [Mohammad Islam](#), [Gerry Moschopoulos](#),  
[Brandon Grainger](#), [Andrea Cavagnino](#),

Publication Chairs: [Jiangbiao He](#), [Xiaonan Lu](#), [Silvio Vaschetto](#)

Local Chairs: [Abraham Gebregergis](#), [Al-Thaddeus Avestruz](#)

Exhibit Chairs: [David Morrison](#), [Grant Pitel](#)

Industry Partnership Chairs: [Avoki Omekanda](#), [Maz Chowdhury](#), [Joseph Song-Manguelle](#)

Tutorial Chairs: [Pete Wung](#), [Xu She](#), [Xiaonan Lu](#)

Special Session Chair: [Yue Cao](#), [Sara Roggia](#)

Publicity Chairs: [Zheyu Zhang](#), [Zhi \(George\) Gao](#)

Plenary Session Chair: [Yunwei \(Ryan\) Li](#), [John Shen](#)

Student Activities Chair: [Xiu Yao](#), [Sandun Kuruppu](#)

Electronic Media Chair: [Anant Singh](#)

Webmaster: [Dong Cao](#), [Yuan Li](#)

Women in Engineering Chairs: [Norma Anglani](#), [Lijun, He](#); [Jin Ye](#),

Awards Chair: [Akshay Rathore](#), [Chiara Boccaletti](#)

Attendee Outreach and Engagement chairs:

[Kevin Taylor](#)

[Mengqi \(Maggie\) Wang](#)

Local PELS Chapter Liaison

[Van Wagner](#)

# ECCE 2022 Team

## Virtual Platform Team:

	Affiliation	Email
<b>VP Chair</b>		
<b>Anant Singh</b>	Halla Mechatronics, USA	anant_singh@ieee.org
<b>VP Vice Chairs:</b>		
Arnab Sarkar	IIT Bombay, India	<a href="mailto:asarkar783@gmail.com">asarkar783@gmail.com</a>
Hitesh Kumar	IIT Kanpur, India	<a href="mailto:hitesh.do.am@gmail.com">hitesh.do.am@gmail.com</a>
<b>VP Coordinators:</b>		
Elliott Fix	Temple University	<a href="mailto:elliott.fix@temple.edu">elliott.fix@temple.edu</a>
Komal Saleem		<a href="mailto:enr.komalsaleem@gmail.com">enr.komalsaleem@gmail.com</a>
Rounak Siddaiah	University of Wisconsin-Milwaukee	<a href="mailto:rounaksiddaiah@gmail.com">rounaksiddaiah@gmail.com</a>
Sina Vahid	Marquette University, USA	<a href="mailto:sina.vahid@gmail.com">sina.vahid@gmail.com</a>
Narayan Rajagopal	Virginia Tech, Arlington, VA	<a href="mailto:nrajagopal@vt.edu">nrajagopal@vt.edu</a>
Sony Susan Varghese	McGill University, Canada	<a href="mailto:sosuva@gmail.com">sosuva@gmail.com</a>
Gozde Sivka	Portland State University, USA	<a href="mailto:gozdesivka95@gmail.com">gozdesivka95@gmail.com</a>
Yuniel León Ruiz	Autonomous University of San Luis Potosi	<a href="mailto:yuniel.leon1985@gmail.com">yuniel.leon1985@gmail.com</a>
Kamal Chandra Paul	University of North Carolina at Charlotte, USA	<a href="mailto:kpaul9@uncc.edu">kpaul9@uncc.edu</a>
Prince Jain	Chandigarh University, Mohali, India	<a href="mailto:princeece48@gmail.com">princeece48@gmail.com</a>
Yuchen He	Florida State University, USA	<a href="mailto:yuchenhe971010@gmail.com">yuchenhe971010@gmail.com</a>

## VFairs Support Team

- Vish
- Anmol
- Syed
- Usman

# New things @ ECCE 2022

## Highlights

- **Hybrid Conference**
  - ECCE's first **In-person/Remote** Conference
  - Several Challenges (Rock/Hard Places); e.g., Promotion
- **IEEE Student Job Fair**
  - Participation of Exhibitors and their HR Teams
- Record Number of **Exhibitors and Sponsors (53)**
  - First time with **3 Platinum** Sponsors
- Record Number of Tutorials (**24**)
- Introduction of **Exhibitor Tutorials**
  - **3 Exhibitor Tutorials** Delivered by Exhibitors
- Featured **IAS Posters** in the ECCE Exhibit Hall
- Two (2) Virtual ECCE **Session Chairs Trainings**
  - Sept 29<sup>th</sup>, 2022; training on handling oral, poster and remote sessions
- Opening and **Closing Receptions** at ECCE
  - Network with drinks and desert with a live band at end of conference
- Strolling Dinner at **Ford Museum with Luxury Shuttle** Transportation
  - Industry Networking Event off site
- **Car Show**
  - **7 Cars** in Expo Hall and Atrium form the Big 3



# Conference Format

## Hybrid Program Design

- In-person Conference with Remote Access to Proceedings and Virtual Author/Attendee Interactions:
  - In-person Conference: **Sunday 10/9– Thursday 10/13;**
  - Regular ECCE program during in-person conference
  - **Remote Conference: Monday 10/17– Thursday 10/19).** Zoom “Meet the Authors session” for Q&A
  - Technical Paper pre-recorded videos available for remote attendees with Q&A through chat function, plus of livestream plenary session.
  - For Remote attendees, (no live stream or videos of tutorials or SS),
  - Registration Fees : One flat fee for both in-person and remote attendees
  - Virtual Platform Access – one month after event

## In-person Program

	Sunday Oct. 9, 2022 7:30-19:00 Conference Registration	Monday Oct. 10, 2022 7:30-18:00 Conference Registration	Tuesday Oct. 11, 2022 7:30-17:00 Conference Registration	Wednesday Oct. 12, 2022 7:30-18:00 Conference Registration	Thursday Oct. 13, 2022 7:30-12:00 Conference Registration
07:00					
07:30					
07:45		07:30-08:30 Speakers Breakfast	07:30-08:30 Speakers Breakfast	07:30-08:30 Speakers Breakfast	07:30-08:30 Speakers Breakfast
08:00				08:00-09:00 WIE Breakfast	
08:15					
08:30			08:30-10:30 ECCE Student Job Fair (New)		
08:45			08:30-10:30 Morning Oral Sessions	08:30-10:30 Morning Oral Sessions #1	08:30-10:30 Morning Oral Sessions #1
09:00					
09:15		08:30-11:15 ECCE Plenary Session Keynotes			
09:30					
09:45					
10:00	08:30-11:45 Morning Tutorials			10:30-10:30 Morning Break	10:30-10:30 Morning Break
10:15					
10:30					
10:45					
11:00			10:30-17:00 Expo Hall Open		
11:15				10:30-12:10 Morning Oral Sessions #2	10:30-12:10 Morning Oral Sessions #2
11:30		11:15-12:30 Lunch on your own	10:30-13:00 Poster Sessions		
11:45					
12:00					
12:15	11:45-13:00 Lunch on your own		11:30-13:00 Lunch	12:30-14:00 Lunch on your own	
12:30					
12:45					
13:00			12:30-14:10 Morning Oral Sessions		
13:15				12:30-14:00 Lunch on your own	
13:30					
13:45					
14:00					
14:15					
14:30					
14:45					
15:00					
15:15					
15:30					
15:45					
16:00					
16:15					
16:30					
16:45					
17:00					
17:15					
17:30					
17:45					
18:00					
18:15					
18:30					
18:45					
19:00					
19:15					
19:30					
19:45					
20:00					
20:15					
20:30					
20:45					
21:00					

## Remote Program

	Monday Oct. 17, 2022	Tuesday Oct. 18, 2022	Wednesday Oct. 19, 2022
8:30-9:00 AM	Plenary panel session	Plenary panel session	Plenary panel session
9:00 - 9:55 AM	Q/A Live Zoom Sessions	Q/A Live Zoom Sessions	Q/A Live Zoom Sessions
9:55 - 10:00 AM	Break		
10:00 - 10:55 AM	Q/A Live Zoom Sessions	Q/A Live Zoom Sessions	Q/A Live Zoom Sessions
10:55 - 11:10 AM	Housekeeping Announcements / Adjourn	Housekeeping Announcements / Adjourn	Housekeeping Announcements / Adjourn

# Digest Submission

Two deadline extensions:

- ✓ Jan. 28<sup>th</sup> and Feb. 7<sup>th</sup>
- ✓ Portal closed to digest: Feb. 19<sup>th</sup>

Number of submissions:

Digests (Total): 1407  
 Digests (valid): 1394  
 Special sessions: 24 (17 accepted)  
 Tutorials: 36 (24 accepted)

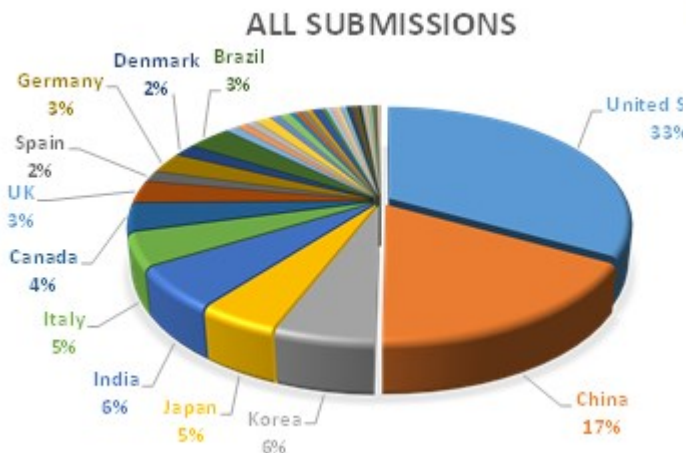
Countries of first author: 65

Authors: 4995

Digests/submissions: 1407

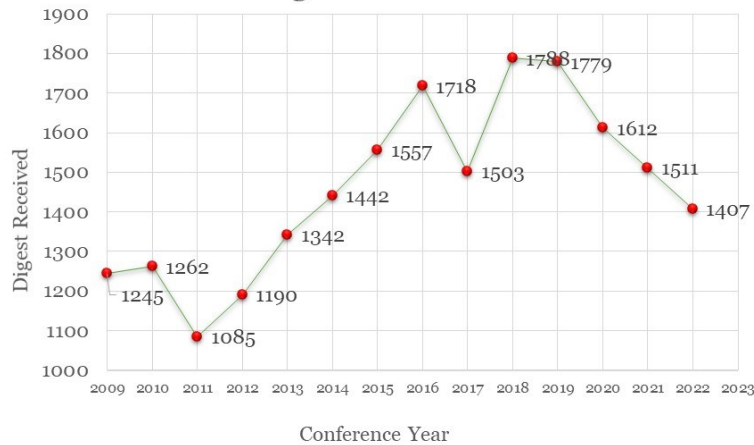
## Top 10 countries:

United States	1215
China	770
Korea (South)	222
Japan	219
Italy	196
India	193
United Kingdom	157
Canada	135
Germany	126
Brazil	119
Spain	87
Denmark	81



# Digest Review

Digest Submissions



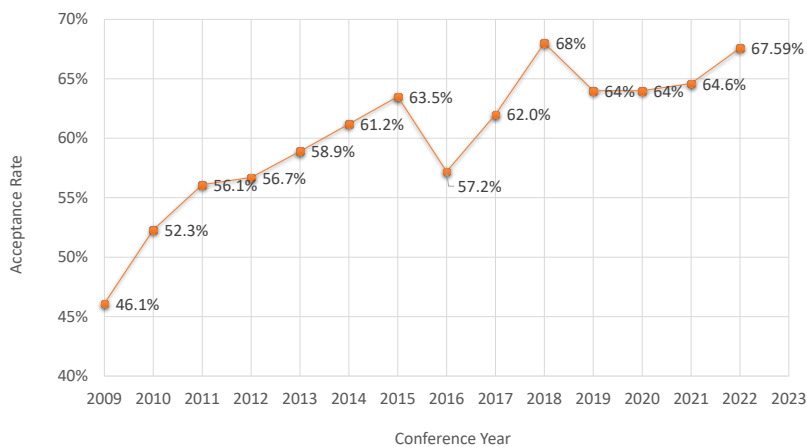
Review start: February 16<sup>th</sup>

Review end: April 5<sup>th</sup>

- 6 TPCs , 32 VCs, ~160 Topic Chairs
- ~2000 Reviewers

	3 reviews	4 reviews	5 reviews	Total	Average reviews/paper
<b>Papers</b>	<b>114</b>	<b>498</b>	<b>782</b>	<b>1394</b>	<b>4.5</b>
<b>no. of review</b>	<b>342</b>	<b>1992</b>	<b>3910</b>	<b>6244</b>	

Historical Acceptance Rates



Two virtual TPC meetings:

- Saturday April 9<sup>th</sup>
- Saturday April 23<sup>rd</sup>

Decision emailed: Saturday April 30<sup>th</sup>

Overall acceptance rate: **68%**

# Technical Program

## Final Papers

- Submission Deadline : July 30<sup>th</sup> (Actual July 17<sup>th</sup>)
- Pre-recorded videos Submission Deadline: August 15<sup>th</sup>

NOTE: Twelve (12) IAS posters were displayed during the poster sessions at the Expo

## Preliminary Technical Program

- Author Notification of Presentation Form: July 30<sup>th</sup>
- Preliminary program posted on website: around August 15<sup>th</sup>
- Critical Challenge: Requests to change the presentation format (oral, poster and remote) kept coming in until late

Final technical program: posted end of August (Updated on Sept.9<sup>th</sup>):

- ✓ **107** oral sessions: **426** papers + **2** memoriam speeches (prof. Novotny, track G and H)
- ✓ **25** poster sessions: **172** papers (presented during the exposition)
- ✓ **17** Special sessions ***IN-PERSON PROGRAM (Detroit, Oct.10 - Oct.13)***

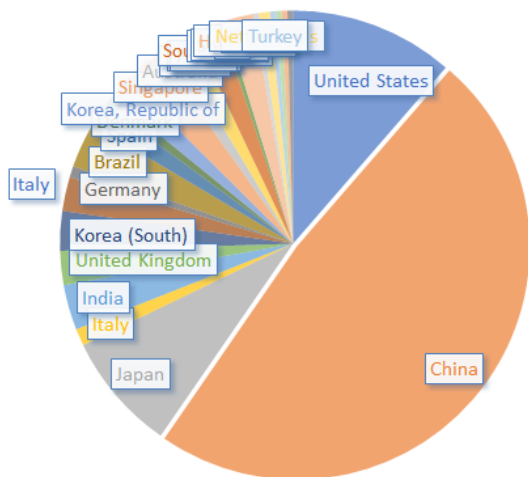
- ✓ **30 Q/A Zoom sessions: 258 papers** ***REMOTE PROGRAM (VFairs, Oct.17-Oct.19)***

# Technical Program

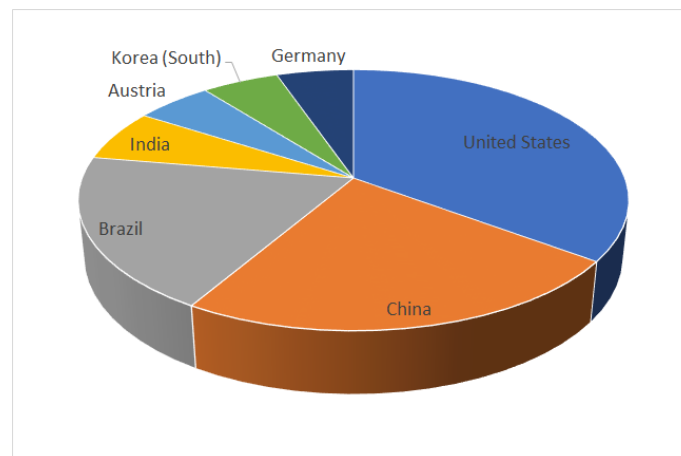
## Remote Sessions:

- Mostly in Asia and reflects covid restrictions
- TPCs handled many change requests
- Two virtual Training sessions for all session chairs, including Remote Chairs on Sept 9<sup>th</sup>, 2022

About **27%** of papers accepted opted to **present remotely** and authors were mostly from these regions



About **10%** of papers accepted were either **not submitted or withdrawn**, mostly from these regions



Track	Item	ORAL Program	POSTER Program	REMOTE Program	Total
A	# Sessions	9	2	3	14
	# Papers	36	9	26	71
B	# Sessions	9	2	4	15
	# Papers	36	10	36	82
C	# Sessions	3	2	1	6
	# Papers	12	12	8	32
D	# Sessions	8	1	2	11
	# Papers	32	9	14	55
E	# Sessions	17	2	5	24
	# Papers	68	13	38	119
F	# Sessions	18	4	4	26
	# Papers	72	35	35	142
G	# Sessions	18	6	4	28
	# Papers	71	35	36	142
H	# Sessions	9	2	2	13
	# Papers	34	24	21	79
I	# Sessions	10	3	3	16
	# Papers	40	20	25	85
K	# Sessions	6	1	2	9
	# Papers	25	5	19	49

# Exposition

## Exhibitions

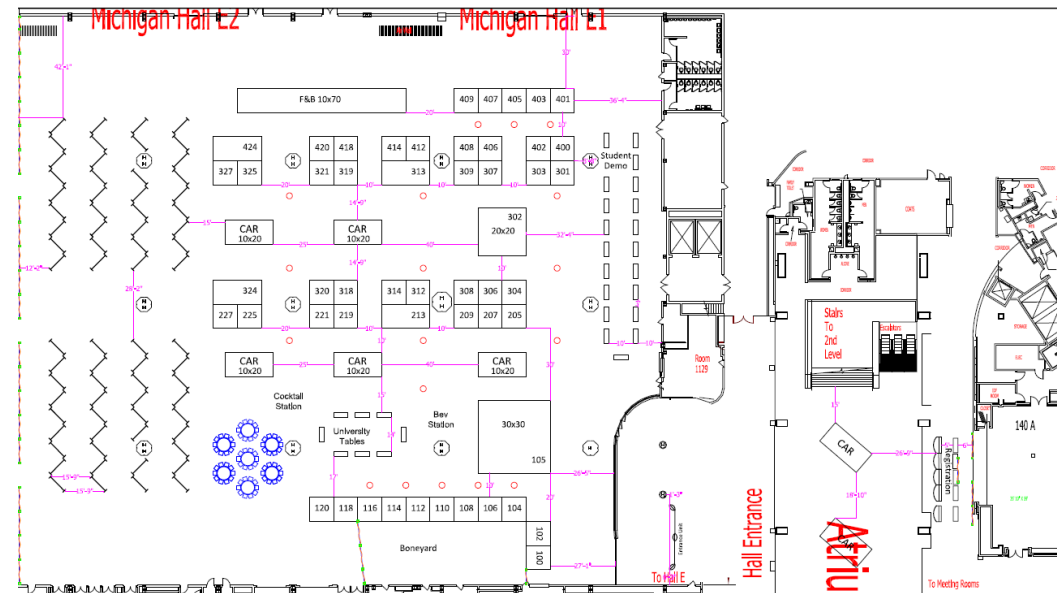
- **53** organizations currently exhibiting or doing Sponsorships with Ads/Inserts (**8 Universities**)

## Sponsors :

- **Platinum(3)**: GM, Ford, Magna Powertrain
- **Gold(2)**: STM, Opal-RT
- **Silver(9)**: Torquemeters, Imperix, Halla Mechatronics, Plecko, GaNPower Intl, Typhoon-HIL , How2Power.com, MagniX, Powersys
- **Reception Sponsor: Altair**
- **Latest Cars @ ECCE'22: 7**
- **Revenue : ~\$150k**

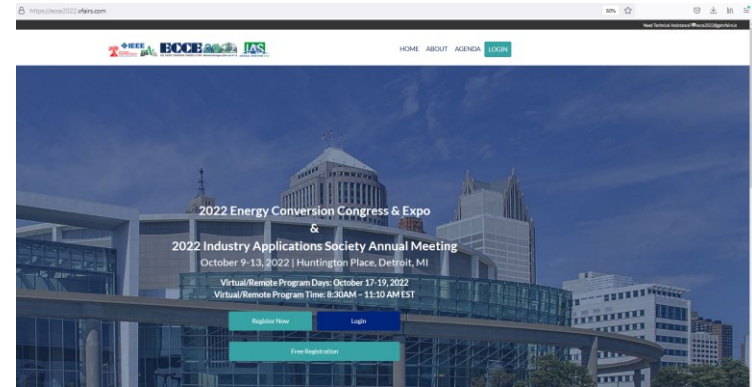
- Exhibitors get Exposure on Expo Floor and Logos on Collateral, Logo/Pages on Virtual Platform

## Expo Floor



# Virtual Program

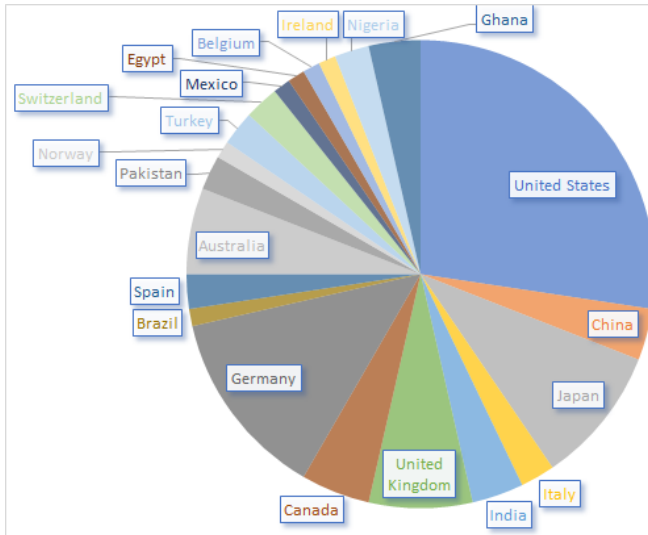
- Virtual / Remote Program
  - 258 Remote Papers (size of a decent conference)
  - Free livestreamed Plenary
  - Free Remote Sessions on Zoom



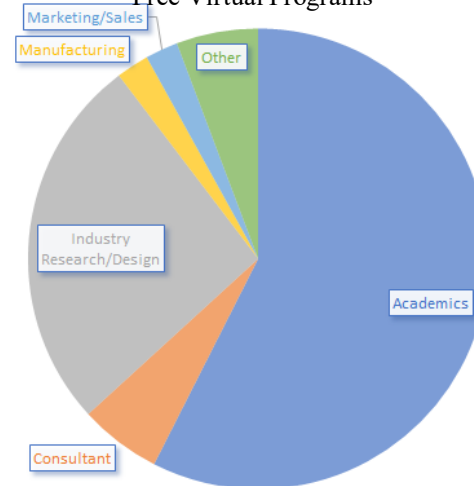
[ecce2022.vfairs.com](http://ecce2022.vfairs.com)

Virtual Platform, available to access starting from October 5, 2022

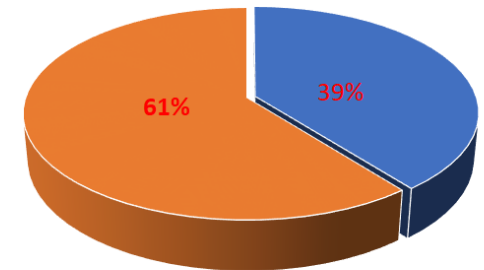
Countries of Registrants for ECCE's Free Virtual Programs



Affiliations of Registrants for ECCE's Free Virtual Programs



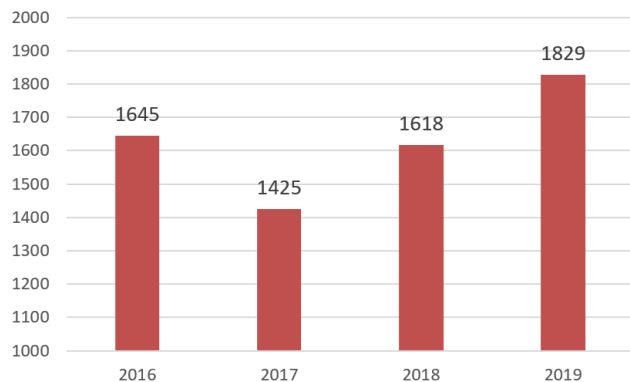
Free Virtual Programs – First time Attendees  
Free Virtual Programs



■ New ECCE Attendee ■ Existing ECCE Attendee

# Registration Numbers

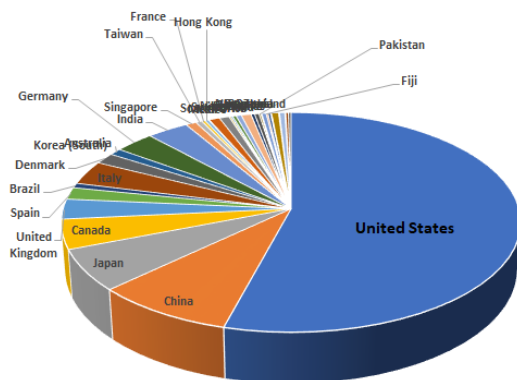
Previous ECCE in-person conferences



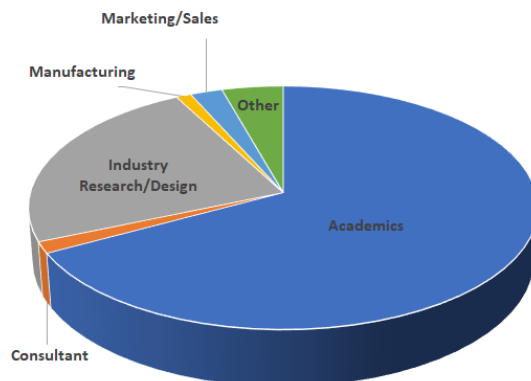
ECCE 2022 Total registration

- Total Registered = **1932** (as of October 10, 2022)
- In person **1279**
- Remote **616**
- Paid registration: **1,180**
- Include student reg: **493**
- Complementary : **747**
- Include exhibitors/exhibit attendees/Speakers etc
- **First time Attendees: 940** (including remote)

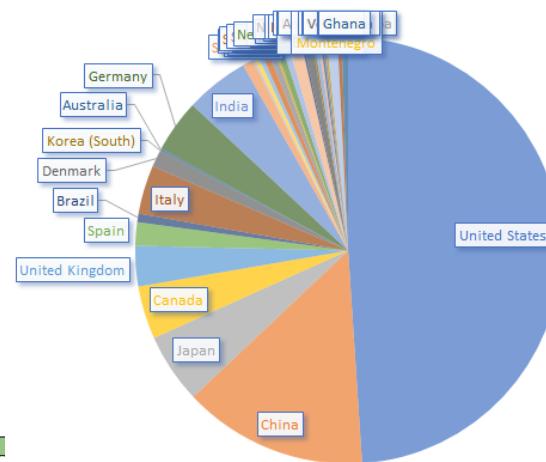
ECCE 2022 Attendees:  
Countries



ECCE 2022 Attendees:  
Affiliation



ECCE 2022 First-time attendees:  
Countries





## 2. Old Business and Reports

### Standards Subcommittee

**Prof. Jiangbiao He**

Secretary

University of Kentucky College of Engineering



# Standard Development of IEEE P2943 on Energy Efficiency Test Methods for 3-Phase Variable Frequency Drive Systems

**JiangBiao He, Ph.D.**

**(Present on behalf of the P2943 Work Group)**

**Oct. 11, 2022**

# P2943 Work Group Introduction

- The Standards Subcommittee of IAS IDC was established in 2018
- The Subcommittee started working on the P2943 standard in January 2019, and monthly meetings have been organized since then.

- **Group Members:**

**Chair:** Kevin Lee, Eaton Corporation

**Program Manager:** Ron Hotchkiss, IEEE Standards Association

**Secretary:** JiangBiao He, University of Kentucky

**Active Group Members:**

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

# P2943 Scope of Work

- 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

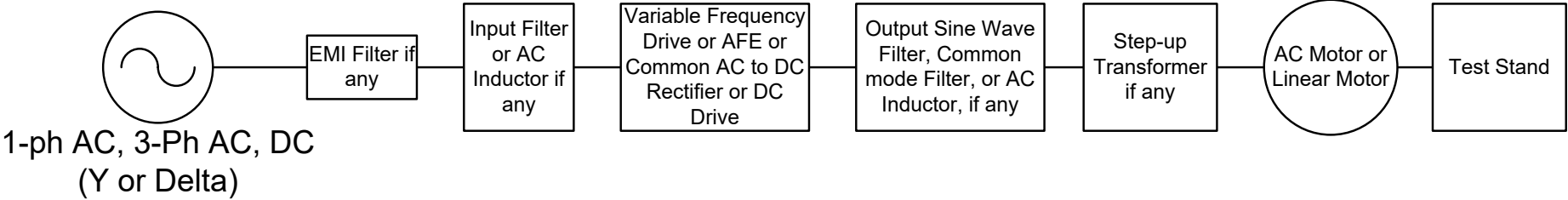
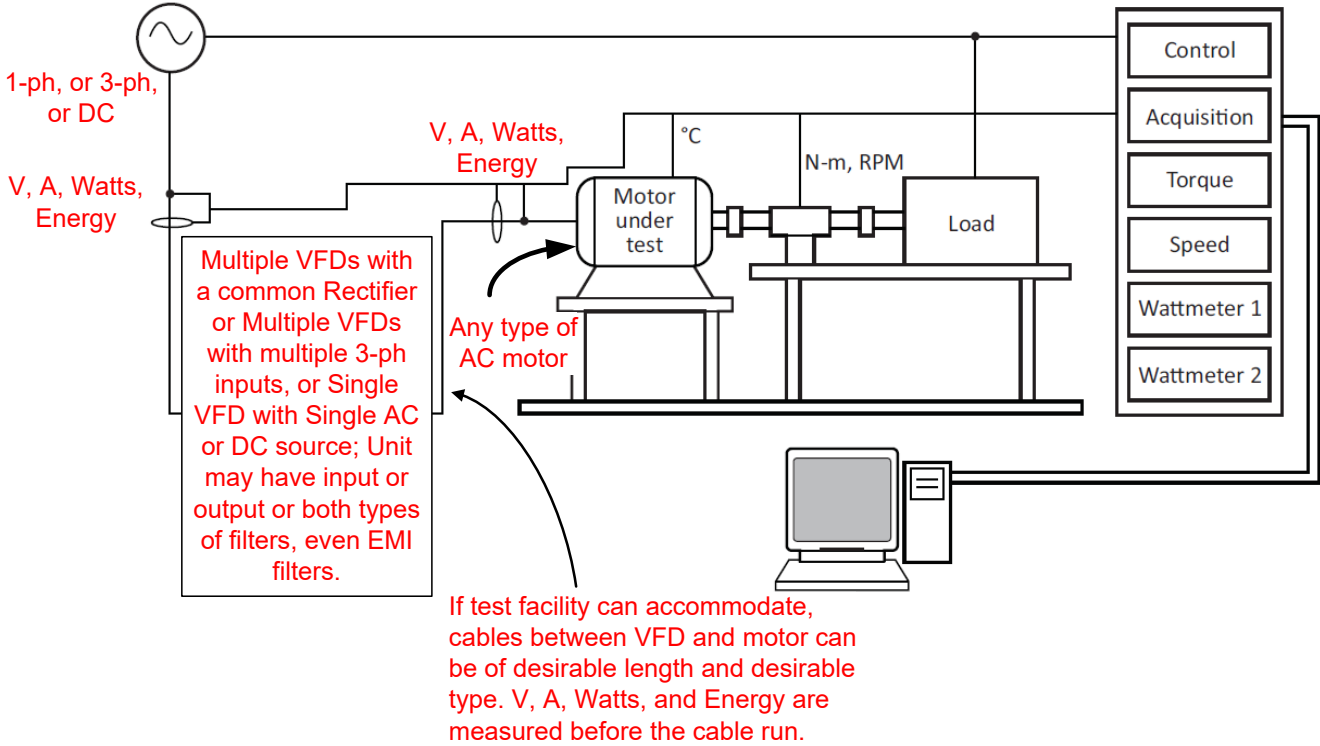
# P2943 Task Distributions

## 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

# P2943 on Energy Efficiency Test Methods:





**Welcome to join the IDC Standards Subcommittee!**

**Contact:** [Kevin\\_Lee@ieee.org](mailto:Kevin_Lee@ieee.org)  
[Jiangbiao@ieee.org](mailto:Jiangbiao@ieee.org)

# 3. Awards and Recognitions

## Prize Papers and Awards Subcommittee

**Prof. Jul-Ki Seok**

Yeungnam University, Korea



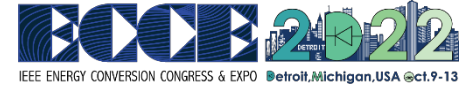


# Awards Subcommittee

- 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

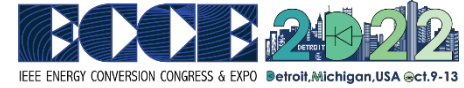


# The review criteria for selecting Transaction Paper Nomination and ECCE2022 Paper Awards



- ❖ The review criteria included 6 specific quality indicators. A score from 0 to 5 was 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 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 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

## Third Prize Paper Award

*Evaluation of Topologies and Active Control Methods for Overvoltage Mitigation in SiC-Based Motor Drives*

### Authors

Mohamed S. Diab

Department of Electrical and Electronic Engineering,  
University of Bristol, Bristol, United Kingdom.

Wenzhi Zhou

Department of Electrical and Electronic Engineering,  
University of Bristol, Bristol, United Kingdom.

Xibo Yuan

Department of Electrical and Electronic Engineering,  
University of Bristol, Bristol, United Kingdom.



Dr Mohamed Diab  
Uni. of Loughborough  
(previously at the Uni. of  
Bristol)



Dr Wenzhi Zhou  
Uni. of Bristol



Prof. Xibo Yuan  
Uni. of Bristol

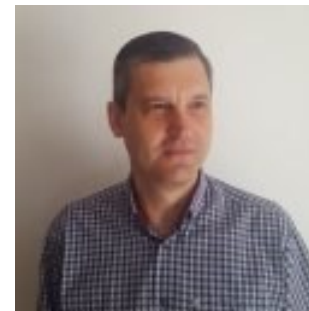
# 2021 IEEE ECCE Conference Paper Awards

## Second Prize Paper Award

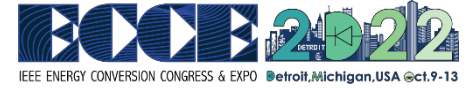
*Direct Flux and Load Angle Vector Control of Permanent Magnet Synchronous Motors*

### Authors

Sandro Rubino	Dipartimento Energia "G. Ferraris", Politecnico di Torino, Italy
Fabio Mandrile	Dipartimento Energia "G. Ferraris", Politecnico di Torino, Italy
Luisa Tolosano	Dipartimento Energia "G. Ferraris", Politecnico di Torino, Italy
Eric Armando	Dipartimento Energia "G. Ferraris", Politecnico di Torino, Italy
Radu Bojoi	Dipartimento Energia "G. Ferraris", Politecnico di Torino, Italy



# 2021 IEEE ECCE Conference Paper Awards



## First Prize Paper Award

*Sensorless Acceleration Estimation and Acceleration Feedback Control to Improve the Disturbance Torque Rejection on Galvano Motor System*

### Authors

Yi-Jen Lin	National Taiwan University, Taipei, Taiwan, R.O.C.
Po-Huan Chou	Industrial Technology Research Institute, Hsinchu, Taiwan, R.O.C.
Chi-Jun Wu	National Taiwan University, Taipei, Taiwan, R.O.C.
Shih-Chin Yang	Industrial Technology Research Institute, Hsinchu, Taiwan, R.O.C.

# 3. Awards and Recognitions

## 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

Thank you to all Associate Editors for your help!



# 3. Awards and Recognitions

## Nagamori Awards

**Dr. Yasushi Nishimura**

Secretary General, Nagamori Foundation





# Our Mission: Nagamori Foundation

Support research and development engineers in the technical fields of motors, power generators, actuators, and related technologies.

## Nagamori Awards:

- Commend those who have made innovative technological development in the motor related technical fields.
- 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.
- Applicants must be entry to mid-career researchers and engineers.



# Application Guideline for the 9<sup>th</sup> 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. <b><u>Entry to mid-career – normally defined as no more than 30 years of research after obtaining the Bachelor's degree.</u></b>
Application method	Self-nomination or nomination from academic institution are accepted. <b><u>A recommendation letter</u></b> 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 Guideline for the 9<sup>th</sup> Nagamori Awards

Application period	<b>November 01, 2022 - January 31, 2023</b> 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 <u>The Grand Nagamori Award will be announced during the Awards ceremony</u> . The Grand Nagamori Award winner will receive a prize of <b>5 million yen</b> , and each of the Nagamori Award winners will receive <b>2 million yen</b> .

\*The 9<sup>th</sup> Nagamori Awards Ceremony will be held on September 3, 2023, **in Kyoto, Japan**





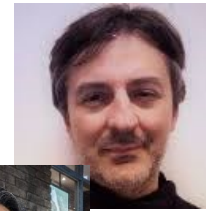
# Winners of The 8<sup>th</sup> Nagamori Awards

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

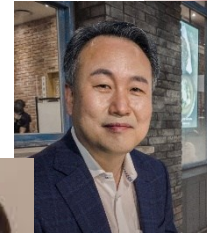
# 4. New Business

## 2023 IAS-IDC slate of officers

- Luca Zarri, Chair of the IAS Industrial Drives Committee



- Jul-Ki Seok, IDC Vice-chair Papers



- Kevin Lee, IDC Vice-chair Programs



- Di Pan, IDC Secretary



- Mahesh Swamy, Past Chair



Motion for approval

# 4. New Business

- **2023 ECCE Conference paper Awards**
  - Any IDC paper presented at ECCE 2022 is eligible.
  - The requirement that the papers must be submitted to IAS Transaction is no more applicable.
  - 15~20 papers are pre-selected based on ECCE digest review score.
  - IDC Award sub-committee will review the full paper version for final selection.
- **IDC Transactions paper Awards**
  - IDC Award sub-committee will select IDC Transactions paper awards for papers published in 2022.
  - It is not required that the papers are presented at ECCE.

# 4. New Business

## New IDC Awards Chair

**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.





# 4. New Business

## How to Submit Papers to IEEE Trans. on Ind. Applications

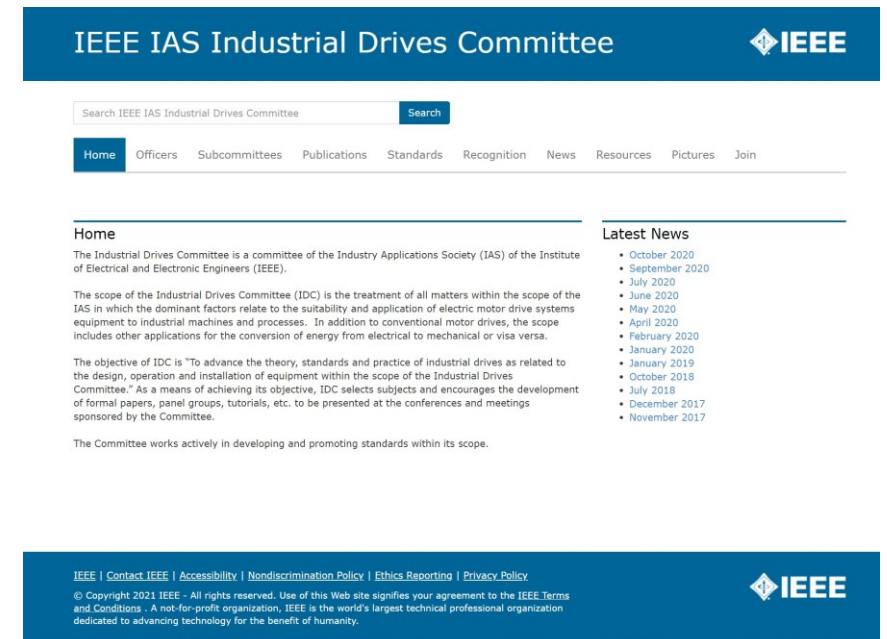
In order to be considered for publication in Transactions or the Magazine, authors must first present their work at an IAS sponsored conference and then request an invitation to submit a paper.

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

Jul-Ki Seok ([doljk@ynu.ac.kr](mailto:doljk@ynu.ac.kr))

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

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



The screenshot shows the IEEE IAS Industrial Drives Committee website. The header includes the IEEE logo and the text "IEEE IAS Industrial Drives Committee". Below the header is a search bar and a navigation menu with links for Home, Officers, Subcommittees, Publications, Standards, Recognition, News, Resources, Pictures, and Join. The main content area is divided into two columns. The left column is titled "Home" and contains text about the committee's purpose and scope. The right column is titled "Latest News" and lists recent news items with dates. The footer contains a navigation menu with links for IEEE, Contact IEEE, Accessibility, Nondiscrimination Policy, Ethics Reporting, and Privacy Policy, along with the IEEE logo and copyright information.

# 4. New Business

## 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:

- 1) Promoting activities for student members and young professionals
- 2) Liaison members with different IEEE regions and local IEEE chapters
- 3) Promoting cultural diversity and network building
- 4) Creating working groups on emerging technical topics.

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

# 4. New Business

## Presentation of ECCE 2023

Prof. Joseph Ojo

Tennessee TECH



## 4. New Business

Topic Chairs, Session Chairs for ECCE 2023, APEC,...

Business cards, please!

Or send an email to Kevin Lee and Di Pan (by Nov. 30, 2022)

[kevin\\_lee@ieee.org](mailto:kevin_lee@ieee.org), [pandi@ieee.org](mailto:pandi@ieee.org)

# 4. New Business

## Presentation of IEMDC 2023

Prof. Leila Parsa

UC Santa Cruz



# 4. New Business

## Presentation of SDEMPED 2023

Prof. Konstantinos N. Gyftakis

Technical University of Crete, Greece





# IAS Annual Meeting 2025 Planning

*Andy Knight, IAS Vice President*

# 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?)



# What's next?

- 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](mailto:andyknight@ieee.org)
- Deadline for expressions of interest submission is **Dec 1, 2022.**

# 5. Closing Remarks & Motion to Adjourn

Motion for approval