24th International Conference on Electrical Machines (ICEM'2020)

(virtual conference)

Preliminary Program

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Gothenburg, Sweden
August 23rd-26th, 2020

Technical Co-Sponsors

IEEE Industrial Electronics Society

Hosted by

CHALMERS
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International Conference of Electrical Machines, Non-Profit Organization (ICEM NPO)
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Welcome Message from the General Co-Chairs

We are very honored to invite you to Gothenburg, Sweden, for the 24th International Conference on Electrical Machines. We aim to attract 700 quality attendees from all over the world. The International Conference on Electrical Machines (ICEM) has established itself as an influential and recognized International event, being the only major international conference entirely devoted to electrical machines. Started in London in 1974, ICEM is now established as a regular event. Very successful recent editions were held in Helsinki (Finland) in 2000, Bruges (Belgium) in 2002, Cracow (Poland) in 2004, Chania (Greece) in 2006, Vilamoura (Portugal) in 2008, Roma (Italy) in 2010, Marseille (France) in 2012, Berlin (Germany) in 2014, Lausanne (Switzerland) in 2016, and Alexandroupoli (Greece) in 2018.

Chalmers University of Technology of Sweden will host the conference. Chalmers has a long tradition in the research area of electrical machines.

Gothenburg is located on the Swedish west coast, with direct connections to most major cities in Europe. This 400-year-old harbor city blends a distinct charm with the pulse of a modern urban lifestyle. You easily get around on foot or by tram and will find numerous restaurants and cafés, flourishing gardens, historic sites, museums and music. A 30-minute ride from downtown brings you to a ferry to explore the tranquil archipelago.

Late summer is beautiful to visit; long hours of daylight and moderate temperatures ensure a pleasant stay.

Welcome to Sweden and Gothenburg in 2020.

Due to the COVID-19, this ICEM has to be held as a virtual conference with all presentation on-line. The decision is made based on our priority on health and safety of our participants and uncertainty for meeting restriction release.

We will do our best to ensure the quality of the conference and exchange of academic knowledges. The virtual experiences will give us opportunities to virtually visit all sessions and watch the video materials in your convenience time.

General Co-chair: Yujing Liu
Chalmers University of Technology, Sweden

General Co-Chair: Gérard-André Capolino
University of Picardie "Jules Verne", Amiens, France

Message from the Technical Program Committee

The 24th edition of ICEM is a major event of the worldwide engineering community working in the field of electrical machines and their applications. It was therefore a great honour and a pleasure for us to be in charge of the technical program of ICEM 2020. This is the eighth time after Chania in 2006, Vilamoura in 2008, Roma in 2010, Marseille in 2012, Berlin in 2014, Lausanne 2016 and Alexandroupoli in 2018, that ICEM proposes its new shape to authors with the technical co-sponsorship of IEEE. For this purpose, it has been asked to submit a full provisional version of each paper for both regular tracks and special sessions.

For the 2020 edition, the Organizing Committee has proposed to participants:

- 9 tutorials
- 6 tracks for regular papers
- 14 special sessions on "hot" topics
- A student forum

Altogether, 508 papers have been submitted and approximately 450 will be in the final program involving more than thousand authors from countries all around the world. There are more than 1700 reviews conducted and at least 3 reviews for each paper. In the technical program, the papers have been classified in oral sessions and poster sessions as the tradition.

The Technical Program represents the integrated effort of many individuals, namely, authors, reviewers, track co-chairs, special session organizers, and local committee members, whom we would like to thank for their contributions to the success of ICEM 2020.

It is our strong opinion that the world's state of the art on electrical machines will be well represented across both technical tracks and special sessions. We look forward to the intellectual stimulation of all participants and would like to thank you again for attending ICEM 2020.

Welcome to our virtual conference!

Aldo Boglietti, Jose Alfonso Antonino-Daviu, Luca Zarri, Sonja Lundmark

ICEM 2020 Technical Program Co-Chairs

Committees

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Design issues:

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Michael Galea, UK

Special Machines:

Akira Chiba, Japan
Ronghai Qu, China
Sami Hlioui, France
Yacine Amara, France

Thermal and Losses Issues – Magnetic and insulation Materials:

Andrea Krings, Germany
Shafigh Nategh, Sweden
Marco Cossale, Switzerland

Electrical Drives:

Eric Armando, Italy
Gianmario Pellegrino, Italy
Marko Hinkkanen, Finland
Shafiq Odhano, UK

Diagnostic and Condition monitoring:

Thomas Wolbank, Austria
Raphael Romary, France
Lucia Frosini, Italy

Publication Co-Chairs
Antonio Luque, Spain
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General Information

Conference Venue & Virtual Conference
The original venue of the conference is Swedish Exhibition & Congress Centre in Gothenburg, Sweden. Due to COVID-19, the conference is moved on-line with cloud-based conference arrangement. The access to the conference materials is via the conference website and the links to cloud-based database.

Tutorials
All 9 tutorials will be presented on Sunday, 23rd August 2020 in 3 parallel sessions. Each tutorial will be organized as Zoom webinar with presentation in 120 minutes and questions and answers in 30 minutes. The presenters will present their PPTs on-line in real-time. Access to tutorials is free for all attendees registered to ICEM 2020 (student or regular). The arrangement of sessions will depend on the numbers of registrations by the participants. Audience can ask questions by typing questions in chat window. Chairmen should read the questions for all audience. If the questions are too many, chairmen can do the selections. The presenters answer the questions directly for all the audience.

- Tutorial session 1: 9:00-11:30 CET. 3 tutorials
- Tutorial session 2: 12:00-14:30 CET. 3 tutorials
- Tutorial session 3: 15:00-17:30 CET. 3 tutorials

In the final program, the time for each tutorial will be provided.

Oral & Poster Paper presentations
In ICEM 2020 Proceedings, there will be no difference in between oral and poster presentations. All papers will be treated in the same way and will be potentially available in the IEEEXplore after the conference if they are presented.

The paper presentations will not be on-line presentations in real-time. They are pre-recorded by the presenters themselves and uploaded to the conference. Registered participants can watch presentation video and ask questions in text. The oral presentations and the poster presentations will be the same.

Video pre-recording for oral and poster presentation	
Presentation length	13-15 minutes
Video format	MP4
Video quality	1280 x 720 or similar
Video file size	< 30 MB
Recommended software	Zoom or similar
Introduction at the beginning	Presenter's name, organization, and research areas

The uploading portal with the instruction will be opened in the beginning of July. The deadline for uploading will preliminarily be 22sd July 2020. An unqualified video presentation will be considered as no presentation of the paper. Unpresented papers will not be included in the final program and conference proceeding.

If you have difficulties in pre-record your presentation, the conference secretariat can provide help.

Conference Secretariat
Sweden Meetx
icem2020@meetx.se

Keynote Speakers

Hakan Yilmaz

Vice-President and Chief Technology Officer (CTO), BorgWarner

Hakan Yilmaz is the Vice President and Chief Technology Officer at BorgWarner. In this role, Yilmaz oversees the company's corporate advanced engineering, portfolio strategy and market research teams to ensure BorgWarner's technical portfolio continues to lead the industry and meet current and future market needs. Prior to joining BorgWarner, Yilmaz spent more than 15 years at Robert Bosch, where he held several engineering, strategy and executive positions in the US and Europe with increasing responsibilities. Most recently, he was the vice president, global head of powertrain systems and advanced engineering. Before his time at Bosch, Yilmaz gained engineering experience at Volvo Car Corporation and other European-based companies. Yilmaz earned master's degrees in mechanical engineering and engineering management from the University of Michigan in Ann Arbor; and a bachelor's degree in mechanical engineering from Middle East Technical University in Turkey.

Title: Future trend and challenges for traction electrical machines

Nils-Gunnar Vågstedt, PhD

Head of Innovation R&D, Scania
Chairman of Executive Board, Swedish Electromobility Centre (SEC)

Nils-Gunnar Vågstedt is managing the innovation activities and processes at Scania, a world leading company on trucks and buses. He obtained his PhD in Vehicle Dynamics from Royal Institute of Technology, Sweden, in 1995. He has 25 years of working experiences at Scania to lead research and development covering mechanical, electrical, active safety and other aspects. In the last decade, he dedicated himself to inspiriting and managing the development of electric and hybrid powertrains for heavy-duty vehicles. Nils-Gunnar is active in promoting the national academic research on transport electrification in Sweden and acts as the chairman of the executive board of Swedish Electromobility Centre (SEC) in the last 5 years. He is also engaged in international standardization work and is co-chair in SAE J2954 wireless charging group for commercial vehicles. Nils-Gunnar has been involved in many important innovation projects at Scania and holds patents in the area of brake systems, electronics systems, and electrification solutions.

Title: Architecting the future of sustainable powertrain

Technical Program

TT1 Diagnosis and Condition Monitoring

Session Title	**Induction Motors**				
Paper ID	**Paper title**	**Authors**	**Country**	**Presentation**	**Link**
SD-011665	Rotor fault detection in induction motors operated with different types of soft-starters_ITE	Marta García-Pellicer, Alfredo Quijano-López, José A. Antonino-Daviu, Iván Higuero-Torres, Ernesto Martínez-Montes, Guillem Gil-Prieto	Spain	Oral	Video Link Q&A Link
SD-007021	Detection of Rotor and Impeller Faults in Wet-rotor Pumps	Vincent Becker, Thilo Schwamm, Sven Urschel, Jose Alfonso Antonino-Daviu	Germany	Oral	Video Link Q&A Link
SD-009539	An Analytical Model for Detailed Transient Fault Analysis of Doubly-Fed Induction Machines	Frederic Maurer, Jonas Kristiansen Nøland	Norway	Oral	Video Link Q&A Link
SD-011509	Multi-Sensor Fault Diagnosis of Induction Motors Using Random Forests and Support Vector Machine	Alireza Nemat Saberi, Sarvavignoban Sandirasegaram, Anouar Belahcen	Finland	Oral	Video Link Q&A Link
SD-007013	Wavelet Scattering Transform Based Induction Motor Current Signature Analysis	Mesaad AlBader, Hamid Toliyat	United States	Oral	Video Link Q&A Link
SD-010308	Investigation of Rotor Current Spectrum Signature in the Healthy and Faulty Cage of a Dedicated Induction Motors in Load Conditions	Gheorghe Madescu, Marius Biriescu, Martian Mot, Lucian-Nicolae Tutelea	Romania	Oral	Video Link Q&A Link

Session Title	**Mechanical Issues**				
Paper ID	**Paper title**	**Authors**	**Country**	**Presentation**	**Link**
SD-004405	Shielding the endwindings to reduce bearing currents	Konstantin Vostrov, Juha Pyrhönen, Jero Ahola	Finland	Oral	Video Link Q&A Link
SD-005355	Reliability index for health monitoring of hydroelectric synchronous machine's insulation	Ghofril Kahwati, Souheil-Antoine Tahan, Arezki Merkhouf, Claude Hudon, Kamal Al-Haddad	Canada	Oral	Video Link Q&A Link
SD-004448	A Multisensor Induction Motors Diagnostics Method for Bearing Cyclic Fault	Marcello Minervini, Lucia Frosini, Leutrim Hasani, Andrea Albini	Italy	Oral	Video Link Q&A Link
SD-006564	Commutation Angle Self-Calibrating Technique for Brushless DC Motor Drives with Defective Hall-effect Position Sensors	Dimitrios Papathanasopoulos, Dionysios Spyropoulos, Epaminondas Mitronikas, Athanasios Karlis	Greece	Oral	Video Link Q&A Link
SD-009261	Influence of manufacturing tolerances and eccentricities on the unbalanced magnetic pull in permanent magnet synchronous motors	Unai Galfarsoro, Alex McCloskey, Sergio Zarate, Xabier Hernandez, Gaizka Almandoz	Spain	Oral	Video Link Q&A Link
SD-001872	Bearing Failure Diagnosis in Three-Phase Induction Motors Using Information Measures and Meta-Heuristic Tools	Gustavo Bazan, Alessandro Goedtel, Marcelo Castoldi, Wagner Godoy, Oscar Duque-Pérez	Brazil	Oral	Video Link Q&A Link

Session Title	**Synchronous Machines**				
Paper ID	**Paper title**	**Authors**	**Country**	**Presentation**	**Link**
SD-001309	Electrical Testing for Detection and Classification of Open Damper Bar and Shorted Field Winding Failures in Wound Field Synchronous Motors	Jongsan Park, Muhamad Shaikh, Yonghyun Park, Sang Bin Lee, Jose Antonino-Daviu	Korea (South)	Oral	Video Link Q&A Link
SD-005045	Diagnosis of Stator Faults in Synchronous Generators: Short Review and Practical Cases	Dimosthenis Verginadis, Jose Alfonso Antonino-Daviu, Athanasios Karlis, Michael Danikas	Greece	Oral	Video Link Q&A Link
SD-011843	Fault Tolerant Control by Asymmetric Operation of Double Three-Phase PMSMs with Inter-Turn Faults	Simon Foitzik, Martin Doppelbauer	Germany	Oral	Video Link Q&A Link
SD-005118	Detection of Rotor Faults in Salient Pole Generator Using Flux Density Monitoring	Maxime Ployard, Aurelie Fasquelle, Abdelmounaim Tounzi, Frederic Gillon	France	Oral	Video Link Q&A Link
SD-002216	Model-Based Fault Identification of Inter-Turn Winding Short Circuits in PMSM	Gabriel Forstner, Andreas Kugi, Wolfgang Kemmetmüller	Austria	Oral	Video Link Q&A Link
SD-002798	Investigation of the combined eccentricity and demagnetization fault in an AFPMSG	Alexandra Barmpatza, Joya Kappatou	Greece	Oral	Video Link Q&A Link

Session Title	**TT Diagnosis and Condition Monitoring**				
Paper ID	**Paper title**	**Authors**	**Country**	**Presentation**	**Link**
SD-006394	A Simulink Model for the Induction Machine with an Inter-Turn Short Circuit Fault	İLker ŞAhin, Göksenin Hande Bayazıt, Ozan Keysan	Turkey	Poster	Video Link Q&A Link
SD-003972	Entropy based broken rotor-bar fault detection and estimation of its severity in a three-phase induction motor	Megha Singh, Abdul Gafoor Shaik	India	Poster	Video Link Q&A Link
SD-004855	DFIG terminal and controller signal shaft misalignment fault signature – an experimental study	Yingzhao Wang, Nur Sarma, Anees Mohammed, Sinisa Djurovic	Ukraine	Poster	Video Link Q&A Link
SD-008273	Modeling Stator Winding Inter-Turn Short Circuit Faults in PMSMs including Cross Effects	Saeed Hasan Ebrahimi, Martin Choux, Van Khang Huynh	Norway	Poster	Video Link Q&A Link
SD-007447	Recent Advances of Neural Network based Methods in Induction Motor Fault Diagnosis	Yannis L. Karnavas, Ioannis D. Chasiotis, Maria Drakaki, Ioannis A. Tziafettas	Greece	Poster	Video Link Q&A Link
SD-003743	Increasing the Reproducibility of Impulse PD Measurements and Development of an Online Interturn Fault Monitoring Routine for External Rotor Motors	Lukas Weisenseel, Dennis Sieling, Jan Güdelhöfer	Germany	Poster	Video Link Q&A Link
SD-010596	Terminal Voltage Harmonic Analysis of Brushless Synchronous Generator for Fault Detection	Mehdi Rahnama, Abolfazl Vahedi, Arta Mohammad-Alikhani, Noureddine Takorabet	Iran	Poster	Video Link Q&A Link
SD-005983	Stator Interturn Short-circuit Fault Diagnosis in Synchronous Condensers Based on the Third Current Harmonic	Mengyao Jiang, Hongzhong Ma, Yuandi Lin, Chao Wei	China	Poster	Video Link Q&A Link
SD-012211	Analysis of Traction PMSM Operating under Static and Dynamic Eccentricities	Jan Sobra, Karel Hruska, Jan Laksar	Czech Republic	Poster	Video Link Q&A Link

SD-004707	Improved Fault-Ride-Through Control Scheme without Requiring Fault-Detection System for a Doubly Fed Induction Generator in a Wind System	Dimitrios Papagiannis, Markos Koseoglou, Evangelos Tsioumas, Nikolaos Jabbour, Athanasios Karlis, Christos Mademlis	Greece	Poster	Video Link Q&A Link
SD-006599	Evaluation of Parameter Variation and Torque Accuracy of IPMSM for EV Applications	Christoph Wolz	Germany	Poster	Video Link Q&A Link
SD-007587	An Alternative Approach for Condition Monitoring of Brushless DC Motor Drives	Dimitrios Papathanasopoulos, Epaminondas Mitronikas, Konstantinos Giannousakis, Evangelos Dermatas	Greece	Poster	Video Link Q&A Link
SD-012084	Large Synchronous Machines Diagnosis Based on Air-Gap and Stray Fluxes - An Overview	Bachir Kedjar, Arezki Merkhouf, Kamal Al-Haddad	Canada	Poster	Video Link Q&A Link
SD-009377	Condition Monitoring of the Brushless Doubly-Fed Machines Based on Continuous Wavelet Transform Method	Salman Abdi, Mark Tatlow, Ehsan Abdi, Richard McMahon	United Kingdom	Poster	Video Link Q&A Link

TT2 Electrical Drives

Session Title	**Electrical Drives Operation Issues**				
Paper ID	**Paper title**	**Authors**	**Country**	**Presentation**	**Link**
SD-008893	High Frequency Modeling of Electric Drives for EMC Analysis	Gaizka Almandoz, Sergio Zarate, Aritz Egea, Yerai Moreno, Ander Urdangarin, Roberto Moreno	Spain	Oral	Video Link Q&A Link
SD-008796	An Improved Model for the Common Mode Impedance in Inverter-Fed AC Machines	Michael Jaritz, Nicolas Stieger, Cornelius Jaeger, Matthias Schneider, Djordje Vukovic, Sebastian Blume, Jasmin Smajic	Switzerland	Oral	Video Link Q&A Link
SD-006327	Multi-drive control and condition monitoring in networked electric drives with EtherCAT	Giovanni Zanuso, Viktoria Fodor, Luca Peretti, Oskar Wallmark	Sweden	Oral	Video Link Q&A Link
SD-003751	Drive System Overvoltage-Protection with hybrid Phase-Cutoff Switches for PMSM-Drives at high field weakening Operation	Florian Liebetrau, Patrick Schwarz, Andreas Möckel	Germany	Oral	Video Link Q&A Link
SD-007099	Electromagnetic Noise in Concentrated Winding Permanent Magnet Synchronous Motor Driven by Voltage Source PWM Inverters	Takafumi Hara, Toshiyuki Ajima, Katsuhiro Hoshino, Akihiro Ashida	Japan	Oral	Video Link Q&A Link
SD-002402	Comparative Simulation Study of Pump System Efficiency Driven by Induction and Synchronous Reluctance Motors	Levon Gevorkov, Václav Šmídl, Hamidreza Heidari, Anton Rassõlkin, Ants Kallaste, Toomas Vaimann	Czech Republic	Oral	Video Link Q&A Link

Session Title	**Synchronous Machines Drives**				
Paper ID	**Paper title**	**Authors**	**Country**	**Presentation**	**Link**
SD-007196	Impact of Saturation and Scaling on the Field Weakening Performance of an Interior PM Machine	Elisabet Jansson, Emma Grunditz, Torbjörn Thiringer	Sweden	Oral	Video Link Q&A Link
SD-005843	Periodic Speed Ripple Suppression Based on Cascade Filter of IPMSM Drive in Air-Conditioners	Rongfeng Deng, Jiaqiang Yang, Shida Zheng, Tangtang Gu, Senqing Zhuo, Fashun Li	China	Oral	Video Link Q&A Link

SD-003115	Copper Loss Minimization Control of IPMSM for Engine Torque Emulators	Suguru Yamanaka, Takaharu Takeshita	Japan	Oral	Video Link Q&A Link
SD-005339	A moving least-square approach for current slope estimation in an inverter fed IPMSM using field programmable gateway arrays	Jan P. Degel, Stefan Haehnlein, Christian Kloeffer, Martin Doppelbauer	Germany	Oral	Video Link Q&A Link
SD-003352	Damper Winding Harmonics Analysis of a Wound-Field Synchronous Machine at Power Converter Supply	Thomas Holzer, Johann Bacher, Annette Muetze	Austria	Oral	Video Link Q&A Link
SD-002976	Direct Speed Estimation of Synchronous Reluctance Machines using Model Reference Adaptive System	Tetsuya Kojima, Toshiki Suzuki, Moriyuki Hazeyama, Shinsuke Kayano	Japan	Oral	Video Link Q&A Link

Session Title	**Electrical Drives Control**				
Paper ID	**Paper title**	**Authors**	**Country**	**Presentation**	**Link**
SD-001694	Robust Parallel Predictive Torque Control with Model Reference Adaptive Estimator for IM Drives	Haotian Xie, Qian Xun, Ying Tang, Fengxiang Wang, José Rodríguez, Ralph Kennel	Germany	Oral	Video Link Q&A Link
SD-006262	Global Maximum-Torque-Per-Ampere Control for Variable Flux Memory Machine Based on Simplified Magnetization State Manipulation	Shukang Lyu, Hui Yang, Heyun Lin	China	Oral	Video Link Q&A Link
SD-008915	Improve Speed Estimation for Speed-Sensorless Induction Machines: A Variable Adaptation Gain and Feedforward Approach	Lei Zhou, Yebin Wang	United States	Oral	Video Link Q&A Link
SD-004251	A new approach to detect load sharing of dual-motors driven and controlled by a single converter using only three current sensors	Eduardo Rodriguez Montero, Markus Vogelsberger, Martin Bazant, Thomas Wolbank	Austria	Oral	Video Link Q&A Link
SD-000094	An Improved Vector Control of Hybrid-Excitation Switched Reluctance Machines for Torque Ripple Minimization	Wen Ding	China	Oral	Video Link Q&A Link
SD-003298	A Novel Sliding Mode Observer of PMSM Using Frequency-Adaptive Band-Pass Filter	Yelong Yu, Xiaoyan Huang, Min Wu	China	Oral	Video Link Q&A Link

Session Title	**TT Electrical Drives**				
Paper ID	**Paper title**	**Authors**	**Country**	**Presentation**	**Link**
SD-001597	Induction Motor Rotor Time-Constant Determination using Flux-Decay Test	Salvatore Musumeci, Aldo Boglietti, Eric Armando, Sandro Rubino	Italy	Poster	Video Link Q&A Link
SD-010014	Position Sensor-less Resonant Frequency Estimation Method for Linear Compressor with Assist Springs	Takahiro Suzuki, Masaki Koyama, Shuhei Nagata, Wataru Hatsuse, Masatsugu Takemoto, Satoshi Ogasawara	Japan	Poster	Video Link Q&A Link
SD-002666	Sensorless Sensing and Control of Linear Compressor's Piston Stroke Driven by Linear Magnet Motor	Anh-Tuan Huynh, Tae-Won Chun	Korea (South)	Poster	Video Link Q&A Link
SD-005037	Fast and Accurate Modeling of Squirrel Cage Induction Machines for the Transient Electromechanical Simulation of Electrified Drivetrains	Dániel Bíró, Franz Diwoky, Erich Schmidt	Austria	Poster	Video Link Q&A Link

SD-001031	Vibration Reduction by Segmented Continuous Variable Width Pole for Rotating Armature Permanent Magnet Motors	Zhanlu Yang, Shangming Wang, Jianfeng Hong, Chao Liu	China	Poster	Video Link Q&A Link
SD-002852	A Modified Predictive Current Control with Sensitivity Analysis for Permanent Magnet Synchronous Motor	Shaobin Li, Yongxiang Xu, Jibin Zou	China	Poster	Video Link Q&A Link
SD-001295	NVH-Simulation of Permanent Magnet Synchronous Traction Drives Including Torsional Mode Shapes	Stephan-Akash Vip, Jan Andresen, Florian Dräger, Bernd Ponick	Germany	Poster	Video Link Q&A Link
SD-003255	Speed control of drive-train incorporating magnetic coupling	Xiaowen Liao, Chris Bingham, Argyrios Zolotas, Qinghua Zhang, Tim Smith	China	Poster	Video Link Q&A Link
SD-002712	An Incremental Deadbeat Predictive Current Control Method for PMSM with Low Sensitivity to Parameter Variation	Xiahe Zhang, Xiaoyan Huang	China	Poster	Video Link Q&A Link
SD-003581	Performance Evaluation for an Optimized 4/2 High-speed SRM Fed by Active Front-end Rectifier	Yingjie He, Ying Tang, Haotian Xie, Fengxiang Wang, José Rodríguez, Ralph Kennel	Germany	Poster	Video Link Q&A Link
SD-012319	Stable adaptive estimation for speed-sensorless induction motor drives: A geometric approach	Yebin Wang, Akira Satake, Sota Sano, Shinichi Furutani	USA	Poster	Video Link Q&A Link
SD-002755	Comparison Between Two Fault Tolerant Deadbeat Controllers under Partial Demagnetization Faults in Permanent Magnet Synchronous Machines	Lynn Verkroost, Hendrik Vansompel, Frederik De Belie, Peter Sergeant	Belgium	Poster	Video Link Q&A Link
SD-012076	Implementation of an SMO-based MRAS Estimator for Sensor-less Control of RDFIG Systems	Mwana Wa Kalaga Mbukani, Nkosinathi Gule	South Africa	Poster	Video Link Q&A Link
SD-008389	Real-Time Simulation for Torque Ripple Minimization of BLDC motor using Low Pass Compensator	Shrutika Chaudhari, Parag Karekar, Shadab Sayed	India	Poster	Video Link Q&A Link
SD-006424	A Novel Analytical Model for Current Harmonics Prediction of Interior PM Machines Based on Differential Evolution Algorithm	Zhuo Chen, Xiaoyan Huang	China	Poster	Video Link Q&A Link
SD-000175	Micromobility and Smart Cities: Efficiency, Energy Consumption and Range Analysis for Electric Vehicles	Désirée Alcázar-García, Luis Romeral Martínez	Spain	Poster	Video Link Q&A Link
SD-004049	Decoupled Vector Control of PMSM Based on Uncertainty and Disturbance Estimator	Xinghe Fu, Hang He, Wu Chen, Jibin Zou, Xiaokun He	China	Poster	Video Link Q&A Link
SD-007188	Verification of Control Performance when Driving Linear Induction Motor with Superimposed Frequency	Shota Nakatani, Daichi Okamori, Toshomitsu Morizane, Hideki Omori	Japan	Poster	Video Link Q&A Link
SD-001716	In-vehicle identification of an induction machine model for operational torque prediction	Bart Forrier, Alexander Loth, Yves Mollet	Belgium	Poster	Video Link Q&A Link
SD-003395	Influence of the Stator Winding and the Forming of the End Winding on the Mechanical Eigenfrequencies and Damping of the Stator Core of Electric Machines	Martin Gerlach, Bernd Ponick	Germany	Poster	Video Link Q&A Link
SD-009911	Speed Estimator of a Three-phase Induction Motor using Extend Kalman Filter Optimized by Firefly Algorithm	Heloisa Oliveira Santos, Iolanda Ortiz Bernardes, Jacqueline Jordan Guedes, Marcelo Favoretto Castoldi, Alessandro Goedtel	Brazil	Poster	Video Link Q&A Link

SD-008087	Continues Sliding-Mode Control Of Robotic Manipulators With Uncertain Control Gain	Minghao Zhou, Siwei Cheng, Ying Chi, Long Xu	China	Poster	Video Link Q&A Link
SD-009458	Analysis and Modification of a Particle Filter Algorithm for Sensorless Control of BLDC Machine	Iman Hosseini Sabzevari, Yaser Chulaee, Salman Abdi	United Kingdom	Poster	Video Link Q&A Link
SD-009393	Control of the static and dynamic stiffness of feed drive axes by using an external force sensor	Sebastian Kehne, Marcel Fey, Christian Brecher	Germany	Poster	Video Link Q&A Link
SD-008516	Elimination of Cogging Torque for Axial Flux Permanent Magnet Motors Based on Current Harmonic Injection	Meltem Tetik Girgin, Metin Aydın	Turkey	Poster	Video Link Q&A Link
SD-008761	Torque Ripple Reduction in PM Synchronous Motor - FEM simulation	Martin Sumega, Marek Štulrajter, Pavol Rafajdus	Slovak Republic	Poster	Video Link Q&A Link

TT3 Rotating Machines

Session Title	**Induction Motors**				
Paper ID	**Paper title**	**Authors**	**Country**	**Presentation**	**Link**
SD-001902	Induction Motor Design Workflow for Variable Frequency and Constant Voltage Applications	Matteo Carbonieri, Nicola Bianchi	Italy	Oral	Video Link Q&A Link
SD-008311	Improved Analytical Model of Induction Machine for Digital Twin Application	Victor Mukherjee, Tatjana Martinovski, Aron Szucs, Jan Westerlund, Anouar Belahcen	Finland	Oral	Video Link Q&A Link
SD-008842	Twin Induction Machines Artificial Loading Without Mechanical Coupling	Adrian Martin, Tutelea Nicolae Tutelea, Ion Boldea	Romania	Oral	Video Link Q&A Link
SD-006475	A Stochastic Optimization Approach to the Estimation of Squirrel-Cage Induction Motor Equivalent Circuit Parameters	Andre M. Silva, Jose Alberto, Carlos Henggeler Antunes, Fernando J.T.E. Ferreira	Portugal	Oral	Video Link Q&A Link
SD-005576	Measurements and simulation of induction machines flux linkage characteristics adopting rotor field orientation	Diego Troncon, Matteo Carbonieri, Luigi Alberti, Nicola Bianchi	Italy	Oral	Video Link Q&A Link
SD-007943	Gradient-based Multi-Objective Design Optimisation Formulation of Grid-Connected Wound-Rotor Induction Motors	Mkhululi Mabhula, Maarten Kamper	South Africa	Oral	Video Link Q&A Link

Session Title	**IPM and SyncRel Machines**				
Paper ID	**Paper title**	**Authors**	**Country**	**Presentation**	**Link**
SD-010537	A Novel Asymmetric Interior Permanent Magnet Synchronous Machine	Yang Xiao, Ziqiang Zhu, Jintao Chen, Di Wu, Liming Gong	United Kingdom	Oral	Video Link Q&A Link
SD-006173	PMASynRM late design-stage rotor shape NVH optimization	Sebastian Ciceo, Fabien Chauvicourt, Bogdan Varaticeanu, Johan Gyselinck, Claudia Martis	Belgium	Oral	Video Link Q&A Link
SD-000515	Improvement of Torque Density by Using Ferrofluid in IPMSM	In-Jun Yang, Dong-Ho Kim, Kwang-Soo Kim, Ik-Sang Jang, Won-Ho Kim	Korea (South)	Oral	Video Link Q&A Link

SD-008591	Procedure to Define an Accurate Model for Saturation and Cross-Coupling in IPM Machines	Antonino Di Gerlando, Giovanni Maria Foglia, Roberto Perini	Italy	Oral	Video Link Q&A Link
SD-004561	Consideration of the Skin Effect in a Transient Model of Line-Start Synchronous Reluctance Machines	Jannik Rituper, Jan Güdelhöfer, Raimund Gottkehaskamp	Germany	Oral	Video Link Q&A Link
SD-007528	Optimization of Line-Start Synchronous Reluctance Machine Amended From an Induction Machine	Jan Barta, Ladislav Knebl, Ondrej Vitek, Gerd Bramerdorfer, Siegfried Silber	Czech Republic	Oral	Video Link Q&A Link

Session Title	**PM Machines**				
Paper ID	**Paper title**	**Authors**	**Country**	**Presentation**	**Link**
SD-001945	Additively Manufactured Hollow Conductors Integrated with Heat Pipes: Design Tradeoffs and Hardware Demonstration	Fan Wu, Ayman EL-Refaie	USA	Oral	Video Link Q&A Link
SD-012092	Short Circuit Current reduction in PMSM by introducing End Winding Magnetic Circuits	Eleftherios Karamanis, Antonios Kladas	Greece	Oral	Video Link Q&A Link
SD-000612	Reduction of torque ripple in synchronous machines by quasi-skew-asymmetric rotor	Ilya Petrov, Alvaro Hoffer, Juha Pyrhönen	Finland	Oral	Video Link Q&A Link
SD-011525	Analysis of Different Harmonic Utilization PM Rotor Topologies	Gurakuq Dajaku	Germany	Oral	Video Link Q&A Link
SD-003638	DQ0 Modelling and Parameterization of small Delta connected PM Synchronous Machines	Simon Decker, Simon Foitzik, Felix Rehm, Matthias Brodatzki, Christoph Rollbühler, Johannes Kolb, Michael Braun	Germany	Oral	Video Link Q&A Link
SD-002208	High Power Density and High Efficiency of High-Speed Motor	Masato Enokizono, Daisuke Wakabayashi, Naoya Soda, Yuji Tsuchida, Shohei Ueno, Mohachiro Oka	Japan	Oral	Video Link Q&A Link

Session Title	**Synchronous Machines**				
Paper ID	**Paper title**	**Authors**	**Country**	**Presentation**	**Link**
SD-000752	A Magnetic Equivalent Circuit to Account for Gaps Between Clamping Plate Segments in Large Synchronous Machines	Torben Fricke, Babette Schwarz, Bernd Ponick	Germany	Oral	Video Link Q&A Link
SD-007897	A Novel DC-Excited Doubly Salient Machine with Modular II-Shaped Stator Iron Core	Ming Guangqiang, Wu Lijian, Zhang Liu	China	Oral	Video Link Q&A Link
SD-003778	Analytical Modelling of Doubly Salient Electric Machines using Conformal Mapping Method	Ahmed Sidia Sidi Babe, Vincent Lanfranchi, Rachid Missoum, Stephane Vivier, Mohammed El Hadi Zaïm	France	Oral	Video Link Q&A Link
SD-003131	Start of a synchronous motor using rotor field polarity inversion and rotor back-emf sensing	Urban Lundin, Fredrik Evestedt, Johan Abrahamsson, José Pérez-Loya, Martin Fregelius, Jonas Nøland	Sweden	Oral	Video Link Q&A Link
SD-004014	Design Optimization of Synchronous Reluctance Machines for Railway Traction Application Including Assembly Process Constraints	Erin Kuci, Francois Henrotte, Christophe Geuzaine, Bruno Dehez, Christophe DeGreef, Christophe Versele, Christophe Friebel	Belgium	Oral	Video Link Q&A Link

SD-004154	Rotor Flux-Barrier Design for Improving Field-Weakening Capability of an Interior Permanent Magnet Synchronous Machine	Hao Zhou, Dieter Gerling	Germany	Oral	Video Link Q&A Link

Session Title	**Rotating Machines**				
Paper ID	**Paper title**	**Authors**	**Country**	**Presentation**	**Link**
SD-005665	Dynamic Simulation of Unbalanced Magnetic Force in Induction Machines with Static Eccentricity	Samad Taghipour Boroujeni, Noureddine Takorabet, Smail Mezani	Iran	Poster	Video Link Q&A Link
SD-007153	Preliminary Electromagnetic Sizing of Axial-Flux Induction Machines	Konstantina Bitsi, Minos E. Beniakar, Oskar Wallmark, Sjoerd G. Bosga	Sweden	Poster	Video Link Q&A Link
SD-006009	3D Printing as a Technology Enabler for Electrical Machines: Manufacturing and Testing of a Salient Pole Rotor for SRM	Leonidas Gargalis, Vincenzo Madonna, Paolo Giangrande, Mark Hardy, Ian Ashcroft, Michael Galea, Richard Hague	United Kingdom	Poster	Video Link Q&A Link
SD-006432	On the Analytical Determination of the Complex Relative Permeance Function for Slotted Electrical Machines	Nada Elloumi, Mauro Bortolozzi, Alberto Tessarolo	Italy	Poster	Video Link Q&A Link
SD-006386	Theoretical Torque Density Limit for SPM Machines - Analytical Predictions and FE Validation	Andrea Bocchese, Jonas Kristiansen Nøland, Nicola Bianchi, Børge Noddeland, Astrid Røkke	Italy	Poster	Video Link Q&A Link
SD-006467	Stator Core Flux Density Analytical Determination in Slotless Machines	Nada Elloumi, Matteo Leandro, Jonas Kristiansen Noland, Alberto Tessarolo	Italy	Poster	Video Link Q&A Link
SD-006033	Variable Turn Rectangular Wire Winding Permanent Magnet Machine	Yu Zhao, Dawei Li, Tonghao Pei, Ronghai Qu	China	Poster	Video Link Q&A Link
SD-006572	On the Use of Switched Reluctance Machines in Highly Dynamic Drive Applications	Arda Tuysuz, Christoph Budde	Germany	Poster	Video Link Q&A Link
SD-005649	Finite Element Analysis and Performance Improvement of Hysteresis Motors Considering Magnetic Anisotropy and Over-Excitation Effects	Kazumi Kurihara	Japan	Poster	Video Link Q&A Link
SD-011568	Semi-analytical Finite Element Study of the Slot Leakage Inductance of Double-Layer Windings	Lukas Bailey, Werner Montecinos, Carlos Madariaga, Javier Riedemann, Gerd Bramerdorfer, Andrea Cavagnino, Juan Tapia	Chile	Poster	Video Link Q&A Link
SD-000124	Different Traction Motor Topologies Used in E-mobility Part I: Solutions without magnet	Jahirul Islam, Shafigh Nategh, Reza R. Moghaddam, Aldo Boglietti	Sweden	Poster	Video Link Q&A Link
SD-005479	Design and Implementation of an Optimized Printed Circuit Board Axial-Flux Permanent Magnet Machine	Furkan Tokgoz, Gokhan Cakal, Ozan Keysan	Turkey	Poster	Video Link Q&A Link
SD-007846	Multi-Objective Optimization of a Hybridly Excited Asymmetric Stator Pole Doubly Salient Machine	Yishu Zhang, Wei Xu, Lei Tang, Mingjie He, Lei Ning	China	Poster	Video Link Q&A Link
SD-003786	Educational Test Rig for Non-Standard Electric Machines	Zdenek Frank, Jan Stepanek, Karel Hruska	Czech Republic	Poster	Video Link Q&A Link

SD-007048	Design Optimization of an Axial-Flux Permanent-Magnet-Assisted Eddy-Current Brake by Reluctance Network Modeling	Mehmet Gulec, Metin Aydin, Pia Lindh, Juha Pyrhönen	Turkey	Poster	Video Link Q&A Link
SD-005436	Transient Coupled System Model for the Analysis of Structural Dynamic Interactions of Electric Drive Trains	Marius Franck, Jan Philipp Rickwärtz, Daniel Butterweck, Martin Nell, Kay Hameyer	Germany	Poster	Video Link Q&A Link
SD-007102	Multi-Sector Windings Bearing Relief E-Machine: Saturation and Cross Coupling Effects	Hanafy Mahmoud, Giorgio Valente, Michele Degano, Mauro Di Nardo, Chris Gerada, Barry James	United Kingdom	Poster	Video Link Q&A Link
SD-000604	Different Traction Motor Topologies Used in E-Mobility Part II: Magnet-based Solutions	Reza R. Moghaddam, Shafigh Nategh, Jahirul Islam, Aldo Boglietti	Sweden	Poster	Video Link Q&A Link
SD-003107	A Novel Design for Notch on Rotor Surface of Double-Layered IPMSM for Reducing Cogging Torque	Marika Kobayashi, Shigeo Morimoto, Masayuki Sanada, Inoue Yukinori	Japan	Poster	Video Link Q&A Link
SD-004456	Investigation on Stator Mutual Inductance Factor used for Induction Machine Control	Fei Lu, Johann Mayer, Harald Graul, Johannes Gerold, Matthias Pohl, Andreas Greifelt, Dieter Gerling	Germany	Poster	Video Link Q&A Link
SD-002674	Investigation of three-phase short circuit and demagnetization of dual three-phase surface-mounted permanent magnet machines	Yidong Du, Lijian Wu, Liang Zhu, Zhuohang Li, Hui Wen, Youtong Fang	China	Poster	Video Link Q&A Link
SD-005266	2-Controllable-Rotor Motor Driven by a 5-Phase Current	Hironori Suzuki, Katsuhiro Hirata, Noboru Niguchi	Japan	Poster	Video Link Q&A Link
SD-007919	Development of an Analytical Method for a Driving Cycle-Optimized Design of a Surface Mounted-Permanent Magnet Synchronous Machine	Alena Babl, David Filusch, Hans-Georg Herzog, Dieter Gerling	Germany	Poster	Video Link Q&A Link
SD-003301	Design and analysis of dual wound machine for electric ships	Boyuan Yin, Xiaoze Pei, Xianwu Zeng, Fred Eastham, Chris Hodge, Oliver Simmonds	United Kingdom	Poster	Video Link Q&A Link
SD-002682	Behavior Investigation of Five-Phase Induction Machine Fed by Sine Voltage Using Three-to-Five Phase Transformer	Abdelhakim Khelafi, Abdelmalik Djebli, M'hamed Ouadah, Omar Touhami, Rachid Ibtiouen	Algeria	Poster	Video Link Q&A Link
SD-005126	Calculation of Slot Leakage Flux Using Equivalent Magnetic Circuits	Elmar Haschen, Bernd Ponick	Germany	Poster	Video Link Q&A Link
SD-008931	Improved analytical calculation of axial AMB by means of fringing estimation	David Rura, Jan Barta	Czech Republic	Poster	Video Link Q&A Link
SD-005495	Optimised Magnet Wire size and Slot winding height for minimum AC losses	Anuvav Bardalai, David Gerada, Zeyuan Xu, Christopher Gerada	United Kingdom	Poster	Video Link Q&A Link
SD-004901	Mechanism of Torque Ripple Generation by Time and Space Harmonic Magnetic Fields in Interior Permanent Magnet Synchronous Motors	Katsumi Yamazaki, Kento Utsunomiya	Japan	Poster	Video Link Q&A Link
SD-006777	Braking Torque and Time Constant in Aircraft Magneto-rheological Fluid Brake at High Temperature	Hiroki Shiga, Yoshimi Kikuchi, Hiroyuki Wakiwaka, Makoto Sonehara, Toshiro Sato	Japan	Poster	Video Link Q&A Link
SD-006556	Analytical Approach and Solution for Line-Start Permanent Magnet	Johann Pecho, Wilfried Hofmann	Germany	Poster	Video Link Q&A Link

	Synchronous Machines with Anisotropic Rotor Reluctance				
SD-006521	Robust Control and Harmonics Modeling of a PMSG for a 1.5 MW Wind Turbine	Hayder Gallas, Sandrine Le Ballois, Helmi Aloui, Lionel Vido	France	Poster	Video Link Q&A Link
SD-003263	Novel Coupled Analysis Methods of Automotive Alternators Considering Synchronous Rectification Circuit	Yuki Hidaka	Japan	Poster	Video Link Q&A Link
SD-003018	A Novel Rotor Structure of Claw-pole Motor Designed by Magnetomotive Force Based Simulation Method	Fujikura Shohei, Hidaka Yuki	Japan	Poster	Video Link Q&A Link
SD-003271	Rotor Flux Templates for Energy Efficient Dynamic Operation Of Induction Machines	Antony Dominic, Gernot Schullerus, Martin Winter	Germany	Poster	Video Link Q&A Link
SD-006661	Improvement of Transient Performances for Line-Start Vernier Permanent Magnet Machine	Yu Zhao, Mengxuan Lin, Dawei Li, Ronghai Qu	China	Poster	Video Link Q&A Link
SD-008222	Unified Sizing Model Approach for Radial and Axial Flux Permanent Magnet Machines	Theo Carpi, Maxime Bonnet, Sarah Touhami, Yvan Lefevre, Jean-Francois Llibre	France	Poster	Video Link Q&A Link
SD-002992	Mathematical-model-based Simulation of an Automotive Alternator Considering the Operation of a Rectifying Circuit	Yuki Hidaka, Haruyuki Kometani, Toshiyuki Yoshizawa, Masahiko Fujita	Japan	Poster	Video Link Q&A Link
SD-002844	Calculation of Synchronous Torques and Radial Magnetic Forces for Pole-Changing Winding Using the 3//Y / 3//Y Method	Gábor Kovács	Hungary	Poster	Video Link Q&A Link
SD-011592	Topological Approach for Minimization of Cogging Torque in Permanent Magnet Synchronous Motors	Milorad Risticevic, Andreas Möckel	Germany	Poster	Video Link Q&A Link
SD-006769	A Review of Multi-physics Optimization of Electric Machines: Coupling Mechanism of Multidisciplinary Submodels and Coupled Multi-physics Optimization	Yue Sun, Qingqing Ma, Ayman EL-Refaie	United States	Poster	Video Link Q&A Link

TT4 Special Mechines

Session Title	**Special Machines**				
Paper ID	**Paper title**	**Authors**	**Country**	**Presentation**	**Link**
SD-003476	AC Loss Analysis of 10-MW HTS Double-Stator Flux Modulation Generators and Its Reduction	Yi Cheng, Ronghai Qu, Dawei Li, Yuting Gao, Yuanzhi Zhang, Qian Wang	China	Oral	Video Link Q&A Link

SD-008397	Design Challenges of Direct-Drive Permanent Magnet Superconducting Wind Turbine Generators	Dong Liu, Xiaowei Song, Xuezhou Wang	China	Oral	Video Link Q&A Link
SD-004499	Analysis and Compensation of End Effects for Improved Force Control of Linear Machines	Sebastian Benecke, Andreas Gerlach, Roberto Leidhold	Germany	Oral	Video Link Q&A Link
SD-005827	A Novel Hybrid-Magnetic-Circuit Variable Flux Memory Machine with Biased-PM Configuration	Wei Liu, Hui Yang, Heyun Lin	China	Oral	Video Link Q&A Link
SD-009792	Methods of Estimating AC Losses in Multi-filamentary MgB2 Armature Windings with Spatial and Time Harmonics	Thanatheepan Balachandran, Noah Salk, Dongsu Lee, Kiruba Haran	USA	Oral	Video Link Q&A Link
SD-001686	Cycloidal Reluctance Electric Machine	Alireza Fatemi, Derek Lahr	United States	Oral	Video Link Q&A Link

Session Title	**TT Special Machines**				
Paper ID	**Paper title**	**Authors**	**Country**	**Presentation**	**Link**
SD-010383	Design and Performance Assessment of an Integrated Flywheel Energy Storage Systems based on an Inner-Rotor Large Airgap SPM	Andrea Floris, Alfonso Damiano, Alessandro Serpi	Italy	Poster	Video Link Q&A Link
SD-002399	Semi-Analytical Calculation of a Laminated Transverse Flux Machine	Lukas Rabenstein, Armin Dietz, Andreas Kremser, Nejila Parspour	Germany	Poster	Video Link Q&A Link
SD-002283	2D Reluctance Model of an Eddy Current Brake with a Magneto Isotropic Material Structure	Christoph Holtmann, Andreas Möckel	Germany	Poster	Video Link Q&A Link
SD-010618	Comprehensive Study of Variable Flux Memory Machines with Symmetrical Series Hybrid Permanent Magnets in Rotor Pole	J. T. Shi, R. P. Deodhar, C. Umemura, A. Pride	United Kingdom	Poster	Video Link Q&A Link
SD-003239	Harmonic Excitation Concepts for Wound-Rotor Synchronous Machines with Power-Electronics on the Rotor	Jan Pötter, Martin Pfost, Gernot Schullerus	Germany	Poster	Video Link Q&A Link
SD-010553	Dynamic Model of Segmented Stator Switched Reluctance Motor with Bypass Coils	Mladen Terzic, Bogdan Brkovic, Dragan Mihic	Serbia	Poster	Video Link Q&A Link
SD-010731	A Novel Three-Degree-of-Freedom Linear Resonant Actuator and Its Control Method	Gyunam Kim, Katsuhiro Hirata	Japan	Poster	Video Link Q&A Link
SD-005584	Dynamic Compensation Control with Adaptive Parameter Correction for Transverse Flux Machines	Soeren Behrens, Holger Groke, Jannik Ulbrich, Bernd Orlik	Germany	Poster	Video Link Q&A Link
SD-004626	Design of A Limited-Angle Torque Motor with Magnetic Zero-Returner for Aviation Fuel Valve	You Zhou, Dawei Li, Lihao Huang, Ronghai Qu	China	Poster	Video Link Q&A Link
SD-005347	Six Phase Linear Drive based on new Transverse Flux Linear Machines	Jannik Ulbrich, Sören Behrens, Holger Raffel, Bernd Orlik	Germany	Poster	Video Link Q&A Link

SD-007927	End Magnet Optimisation for the Reduction of the Thrust Ripple of Linear Switched-Flux Machines	Imanol Eguren, Gaizka Almandoz, Aritz Egea, Sergio Zarate, Ander Urdangarin	Spain	Poster	Video Link Q&A Link
SD-003875	Design Strategy and Performance of Hybrid-Type Single-Phase SRMs	Grace Firsta Lukman, Kwang-Il Jeong, Janghyun Park, Jin-Woo Ahn	Korea (South)	Poster	Video Link Q&A Link
SD-004588	100-kW High-Speed Electric Motor for the Air Conditioning System of More Electric Aircrafts	Flyur Ismagilov, Viacheslav Vavilov, Valentina Ayguzina, Ilya Petrov, Juha Pyrhönen	Finland	Poster	Video Link Q&A Link
SD-005673	2-Degree-of-Freedom Z-Theta Actuator using 5-phase Control	Kazuaki Takahara, Katsuhiro Hirata, Noboru Niguchi	Japan	Poster	Video Link Q&A Link
SD-009075	Adjustable air gap machine for aerospace applications	Roggia Sara, Gimeno Anthony, Roggia Gaetano	France	Poster	Video Link Q&A Link
SD-011452	Design of a Dual Halbach Array Tubular Linear Motor for Long Stroke and Large Force	Valentina Consolo, Antonino Musolino, Rocco Rizzo, Luca Sani	Italy	Poster	Video Link Q&A Link
SD-008435	Two-Degree-of-Freedom Actuator for Robotic Eyes	Akira Heya, Yoshihiro Nakata, Hiroshi Ishiguro, Katsuhiro Hirata	Japan	Poster	Video Link Q&A Link
SD-010197	Double-sided Linear Induction Motors with Belt-Shaped Narrow and Thin Secondary Conductor	Itsuki Shimura, Junnosuke Nakatsugawa, Yasuaki Aoyama, Akeshi Takahashi	Japan	Poster	Video Link Q&A Link
SD-007579	Design, Construction and Test of a Magnetically Geared Induction Machine	Badr-El-Boudour Bidouche, Thierry Lubin, Smail Mezani, Franck Vangraefschepe	France	Poster	Video Link Q&A Link
SD-002747	Variable-magnetization PM-motor for Widely Variable Flux and Small Magnetizing Current	Kazuto Sakai, Shunsuke Kataoka	Japan	Poster	Video Link Q&A Link
SD-010375	Comparison of Two Tubular Linear Permanent Magnet Machines with Translator Eccentricity	Haidar Diab, Yacine Amara, Georges Barakat	France	Poster	Video Link Q&A Link
SD-003662	Planar Aligned Transverse Flux Machine with Integrated Reduction Gear	Jonathan Terfurth, Martin Schmid, Nejila Parspour	Germany	Poster	Video Link Q&A Link
SD-000078	2 x 2D Analytical Model of a Transverse Flux Magnetic Gear	Melaine Desvaux, Bernard Multon, Stéphane Sire, Hamid Ben Ahmed	France	Poster	Video Link Q&A Link
SD-009865	Design and Control a Linear Motor with Planar V-Shaped Segmented Magnet Arrangement	Ayse Boduroglu, Yusuf Ulu, Yucel Demir, Metin Aydin	Turkey	Poster	Video Link Q&A Link
SD-003891	Design of Low-Torque-Ripple Switched Reluctance Motor for Shift-by-Wire Actuator	Grace Firsta Lukman, Nguyen Xuan Son, Kwang-Il Jeong, Jin-Woo Ahn	Korea (South)	Poster	Video Link Q&A Link
SD-004138	Dynamic Simulation Method of a Magnetic Gear Using its Torque Map	Noboru Niguchi, Katsuhiro Niguchi, Kazuaki Takahara, Hironori Suzuki, Hiroki Daito	Japan	Poster	Video Link Q&A Link

TT5 Thermal and Losses Issues, Magnetic and Insulation Materials

Session Title	**Thermal Analysis**				
Paper ID	**Paper title**	**Authors**	**Country**	**Presentation**	**Link**
SD-000051	Detailed and Reduced-order LP Thermal Models for Open Self - ventilated Induction Motors Used in Traction Applications	Aldo Boglietti, Shafigh Nategh, Luca Roggio	Sweden	Oral	Video Link Q&A Link

SD-003557	On the Capability of Heat Dissipation in Thermally Aged Electrical Machines	Vincenzo Madonna, Paolo Giangrande, Michael Galea	United Kingdom	Oral	Video Link Q&A Link
SD-009253	Numerical and Experimental Investigation of Rotational Effects on Pressure Drop and Convection Heat Transfer for Rotor Cooling	Yaohui Gai, Yew Chuan Chong, Mircea Popescu, James Goss	United Kingdom	Oral	Video Link Q&A Link
SD-001899	Directly Cooled Windings in Switched Reluctance Machines	Mohamed Nabil Fathy Ibrahim, Jasper Nonneman, Abdalla Hussein Mohamed, Andries Daem, Ahmed Abdallh, Stephan Schlimpert, Michel De Paepe, Peter Sergeant	Belgium	Oral	Video Link Q&A Link
SD-000019	Electrical Machines Second Order Thermal Model a Viable Solution for Electrical Drives	Aldo Boglietti, Eric Armando, Enrico Carpaneto, Sandro Rubino, Devi Geetha Nair	Italy	Oral	Video Link Q&A Link
SD-008966	Opportunities and Challenges of Employing Heat-Pipes in Thermal Management of Electrical Machines	Rafal Wrobel, Ryan McGlen	United Kingdom	Oral	Video Link Q&A Link

Session Title	**Losses and Efficiency Issues**				
Paper ID	**Paper title**	**Authors**	**Country**	**Presentation**	**Link**
SD-010626	A Computationally Effective Method for Iron Loss Estimation in a Synchronous Machine from a Static Field Solution	Md Masum Billah, Floran Martin, Anouar Belahcen	Finland	Oral	Video Link Q&A Link
SD-002046	Losses and Thermal considerations on an IPOS structure with 20kW high-frequency planar transformers	Alessandro La Ganga, Sergen Reyhan, Roberto Re, Jeanne-Marie Dalbavie, Paolo Guglielmi	Italy	Oral	Video Link Q&A Link
SD-007625	Estimation of AC copper loss in electrical machine windings with consideration of end effects	Dave Winterborne, Steven Jordan, Lars Sjöberg, Glynn Atkinson	United Kingdom	Oral	Video Link Q&A Link
SD-008001	Methodology and measurement setup for determination of PWM influence on iron losses	Igor Sirotić, Marinko Kovačić, Stjepan Stipetić	Croatia	Oral	Video Link Q&A Link
SD-001961	Fully automatized PWM harmonics analysis and loss calculation in multiphase PMSM with floating start point	Bianca Klammer, Siegfried Silber, Kevin Kaspar, Wolfgang Gruber	Austria	Oral	Video Link Q&A Link
SD-008958	Novel method for considering AC copper losses in traction motors	Christian Noerenberg, Juergen Redlich, Bernd Ponick	Germany	Oral	Video Link Q&A Link

Session Title	**Magnetic, Insulation and Mechanical Issues**				
Paper ID	**Paper title**	**Authors**	**Country**	**Presentation**	**Link**
SD-001538	Inter-turn Voltage in Hairpin Winding of Traction Motors Fed by High-Switching Frequency Inverters	Grazia Berardi, Shafigh Nategh, Nicola Bianchi	Italy	Oral	Video Link Q&A Link
SD-004936	Transient Thermal Model for Ball Bearings in Electrical Machines	Felix Hoffmann, Donatas Silys, Martin Doppelbauer	Germany	Oral	Video Link Q&A Link
SD-002372	Modeling of the Partial Discharge Process Between the Winding and the Stator of Low Voltage Traction Drives	Florian Pauli, Moritz Kilper, Niklas Driendl, Kay Hameyer	Germany	Oral	Video Link Q&A Link

SD-006181	Analytical-Based Iron Loss Assessment in the SPM Slotless Machine Stator Core	Matteo Leandro, Nada Elloumi, Alberto Tessarolo, Jonas Kristiansen Nøland	Norway	Oral	Video Link Q&A Link
SD-012335	Influence of manufacturing processes on magnetic properties of stator cores	Lukasz Mierczak, Piotr Klimczyk, Darwin Hennies, Patrick Denke, Stefan Siebert	Germany	Oral	Video Link Q&A Link
SD-005592	Influence of Ambient Conditions on the Qualification Tests of the Winding Insulation in Low-Voltage Electrical Machines	Niklas Driendl, Florian Pauli, Kay Hameyer	Germany	Oral	Video Link Q&A Link

Session Title	**TT Thermal and Losses Issues, Magnetic and Insulation Materials**				
Paper ID	**Paper title**	**Authors**	**Country**	**Presentation**	**Link**
SD-004146	Conjugate Heat Transfer-CFD model of an induction motor for washdown environment applications	Aldo Boglietti, Alessandro Castagnini, Marco Seita	Italy	Poster	Video Link Q&A Link
SD-004022	Predicting Airflow Distribution in A Radially Air-Cooled Generator by LPTN Method	Hui Wen, Yang Shi, Lijian Wu, Yidong Du, Youtong Fang	China	Poster	Video Link Q&A Link
SD-010979	Evaluation of Three Cooling Concepts for an IPM Electric Vehicle Motor - LPN Modelling	Emma Arfa Grunditz, Sonja Tidblad Lundmark, Mikael Alatalo	Sweden	Poster	Video Link Q&A Link
SD-003379	Systematic Evaluation of Characteristic Thermal Parameters in Electric Traction Drives	Benedikt Groschup, Martin Nell, Florian Pauli, Kay Hameyer	Germany	Poster	Video Link Q&A Link
SD-000744	Extended Modelling of Hairpin Winding Eddy Current Losses in High Power Density Traction Machines	David Philipp Morisco, Holger Rapp, Ioan Liviu Iepure, Andreas Möckel	Germany	Poster	Video Link Q&A Link
SD-001791	Determination and emulation of motor-like flux conditions for loss characterization by means of a single tooth geometry	Christoph Rollbühler, Patrick Breining, Daniel Pollak, Johannes Kolb, Martin Doppelbauer	Germany	Poster	Video Link Q&A Link
SD-005231	Estimation of Continuous Power of a Permanent Magnet Synchronous Machine Equipped with Direct-Liquid-Cooling Winding for Propulsion Applications	Chong Di, Ilya Petrov, Juha Pyrhönen	Finland	Poster	Video Link Q&A Link
SD-000779	Single Equation Clamping Plate Loss Model for Large Synchronous Machines	Torben Fricke, Babette Schwarz, Bernd Ponick	Germany	Poster	Video Link Q&A Link
SD-009873	Efficiency Optimization for an IPMSM Considering Eddy-Current and Hysteresis Losses	Takeo Ishikawa, Yusuke Matsumoto	Japan	Poster	Video Link Q&A Link
SD-010448	Time resolution dependency of core loss accuracy in finite element analysis of a PM machine	Elisabet Jansson, Torbjörn Thiringer, Emma Grunditz	Sweden	Poster	Video Link Q&A Link
SD-006831	A Generic Lumped-Parameter Model for Stator with Tooth-Wound Winding	Andrej Kacenka	Germany	Poster	Video Link Q&A Link
SD-011347	Quality Assessment of 2D FE based Lumped Parameter Electric Motor Thermal Model using 3D FE model	Jasper Nonneman, Ilya T'Jollyn, Michel De Paepe	Belgium	Poster	Video Link Q&A Link
SD-011355	Advantages of Redesign of Cooling System 40MW Synchronous Machine	Roman Pechanek, Lukas Veg, Lukas Sobotka, Jiri Franc	Czech Republic	Poster	Video Link Q&A Link

SD-009237	Low heat electric motor for variable speed human implant for a critical application	Ioav Ramos, Alexandre Giraud, Bertrand Nogarede	France	Poster	Video Link Q&A Link
SD-000132	Evaluation of three cooling concepts for an IPM electric vehicle motor – 3D models	Mikael Alatalo, Sonja Lundmark, Emma Grunditz	Sweden	Poster	Video Link Q&A Link
SD-008664	Iron-Loss Computation Using Matlab and Comsol Multiphysics	Oskar Wallmark, Konstantina Bitsi	Sweden	Poster	Video Link Q&A Link
SD-009229	Thermohydraulic Modelling of Microchannel Winding Cooling for Electric Machines	Ilya T'Jollyn, Jasper Nonneman, Michel De Paepe	Belgium	Poster	Video Link Q&A Link
SD-010057	Assessment of Energy Lost in the Winding in Road Vehicle IPM Machines, Considering Saturation, Cross Coupling, Battery State of Charge	Antonino Di Gerlando, Giovanni Maria Foglia, Roberto Perini, Bruno Massa	Italy	Poster	Video Link Q&A Link
SD-009148	Quantitative analysis of a short circuited laminated high speed (faulty) switching reluctance motor yoke using a multi harmonic multi zone predictive loss modeling.	Alexandre Giraud, Ioav Ramos, Reda Abdouh, Bertrand Nogarede	France	Poster	Video Link Q&A Link
SD-003182	Generator Loss Analysis and Comparison for a 5MW Wind Turbine System	Kenta Sugiyama, Wataru Kitagawa, Takaharu Takeshita, Torbjörn Thringer	Japan	Poster	Video Link Q&A Link
SD-009067	Error Compensation in Initial Temperature Estimation of Electric Motors using a Kalman Filter	Hrishikesh Joshi, Yves Burkhardt, Markus Seilmeier, Wilfried Hofmann	Germany	Poster	Video Link Q&A Link
SD-005851	Multidisciplinary Analysis of Permanent Magnet Machines Considering Thermal Contact Resistance	Moritz Kuenzler, Quentin Werner, Uwe Schaefer	Germany	Poster	Video Link Q&A Link
SD-009334	Smart structural bonding process applied to high speed actuators: an experimental comparative characterization	Alexandre Giraud, Aurélie Leonardi, Maxime Nomdedeu, Frédéric Martin, Richard Boudineau, Bertrand Nogarede	France	Poster	Video Link Q&A Link
SD-007668	Applying a Novel Iron Loss Model with Experimental Validation to an Efficiency Optimized Torque Control of an Electrically Excited Synchronous Machine	Samuel Müller, Nejila Parspour	Germany	Poster	Video Link Q&A Link
SD-004642	Core Loss Reduction of Segment Stator Core Motor in Consideration of Rolling Direction of Electrical Steel Sheet	Naoya Soda, Naoki Hayashi, Masato Enokizono	Japan	Poster	Video Link Q&A Link
SD-001619	Improved Equivalent Circuit of Induction Motor considering Iron-loss Calculated by Novel Analysis Method for Flux Density Harmonics	Sung-Woo Hwang, Jae-Hyun Kim, Dong-Gyun Ahn, Myung-Seop Lim	Korea (South)	Poster	Video Link Q&A Link
SD-000159	Thermal evaluation of a propulsion motor for electric aircraft	Mikael Alatalo	Sweden	Poster	Video Link Q&A Link

TT6 Design issues

Session Title	**Design Issues**				
Paper ID	**Paper title**	**Authors**	**Country**	**Presentation**	**Link**
SD-005207	A Novel V-shape Interior Permanent Magnet Synchronous Machine with Asymmetric Spoke-type Flux Barrier	Yang Xiao, Ziqiang Zhu, Jintao Chen, Di Wu, Liming Gong	United Kingdom	Oral	Video Link Q&A Link
SD-007137	Force Ripple and Cogging Force Minimisation Criteria of Single-Sided Consequent-Pole Linear Vernier Hybrid Machines	Christoff D. Botha, Maarten J. Kamper, Rong-Jie Wang, Albert J. Sorgdrager	South Africa	Oral	Video Link Q&A Link
SD-008044	Optimal sizing method based on working cycle for High-Speed PMSM and a flywheel accumulator	Nicolas Bernard, Linh Dang, Serigne ousmane Samb, Ryad Sadou	France	Oral	Video Link Q&A Link
SD-004324	Rotordynamic Assessment for an Inside Out, High Speed Permanent Magnet Synchronous Motor	Yangxue Yu, Samith Sirimanna, Kiruba Haran, Daniel Lubell, Brian Murphy	USA	Oral	Video Link Q&A Link
SD-002925	Computationally Efficient Analysis of Spatial and TempVideo Link Harmonics Content of the Magnetic Flux Distribution in a PMSM for Efficiency Maps Computation	Carlos Candelo-Zuluaga, Antonio Garcia Espinosa, Jordi-Roger Riba, Pere Tubert Blanch	Spain	Oral	Video Link Q&A Link
SD-011304	Design of Electrically Excited Synchronous Machines to Achieve Unity Power Factor in Field Weakening for Long-Haul Electric Trucks	Junfei Tang, Yujing Liu	Sweden	Oral	Video Link Q&A Link

Session Title	**TT Design issues**				
Paper ID	**Paper title**	**Authors**	**Country**	**Presentation**	**Link**
SD-000574	Optimal Rotor Bars Number in Four Pole Cage Induction Motor with 36 Stator Slots – Part I: Numerical Modeling	Gojko Joksimovic, Aldin Kajevic, Mario Mezzarobba, Alberto Tessarolo	Montenegro	Poster	Video Link Q&A Link
SD-004502	End Effects and Geometric Compensation in a Linear Permanent Magnet Synchronous Generator with Buried Topology	Jonathan Sjölund, Anna Frost, Mats Leijon, Sandra Eriksson	Sweden	Poster	Video Link Q&A Link
SD-005215	Performance analysis and coil number impact on 4-phase Low Speed Toothed Doubly Salient Permanent Magnet Motors for High Power Ship Propulsion	Cherif Guerroudj, Charpentier Jean-Frederic, Mohammed El-Hadi.Zaïm, Saou Rachid	Algeria	Poster	Video Link Q&A Link
SD-011223	Influences of Design and Manufacturing on the Performance of Electric Traction Drives	Maximilian Halwas, Ludwig Hausmann, Felix Wirth, Jürgen Fleischer, Benedict Jux, Martin Doppelbauer	Germany	Poster	Video Link Q&A Link
SD-006548	A New Direct-Drive Induction Flux Modulation Motor	Vincent Fedida, Ronghai Qu	China	Poster	Video Link Q&A Link
SD-008974	Improved dq model and analytical parameters determination of a Permanent Magnet Assisted Synchronous Reluctance Motor (PMa-SynRM) under saturation using frozen permeability method	Jessica Neumann, Carole Hénaux, Maurice Fadel, Dany Prieto, Etienne Fournier, Mathias Tientcheu Yamdeu	France	Poster	Video Link Q&A Link

SD-011851	Design of a High Torque Density In-Wheel YASA AFPM Motor	Antonino Di Gerlando, Giovanni Maria Foglia, Claudio Ricca	Italy	Poster	Video Link Q&A Link
SD-004316	Design Optimization of Permanent Magnet Clutch	Ekaterina Andriushchenko, Ants Kallaste, Anouar Belahcen, Hamidreza Heidari, Toomas Vaimann, Anton Rassõlkin	Estonia	Poster	Video Link Q&A Link
SD-010685	Silent design of electric motors: optimization under constraints and parameters uncertainties	Martin Jeannerot, Jean-Baptiste Dupont, Emeline Sadoulet-Reboul, Morvan Ouisse, Vincent Lanfranchi, Pascal Bouvet	France	Poster	Video Link Q&A Link
SD-005134	Effects Analysis of Design Parameters on Three-phase 6/4 and Four-phase 8/6 Switched Reluctance Machines Performance	Ana Camila Ferreira Mamede, José Roberto Camacho, Rui Esteves Araújo, Geraldo Caixeta Guimarães	Brazil	Poster	Video Link Q&A Link
SD-000582	Optimal Rotor Bars Number in Four Pole Cage Induction Motor with 36 Stator Slots – Part II: Results	Gojko Joksimovic, Aldin Kajevic, Mario Mezzarobba, Alberto Tessarolo	Montenegro	Poster	Video Link Q&A Link
SD-008338	Modeling and design analysis of the Tesla Model S induction motor	Robin Thomas, Lauric Garbuio, Laurent Gerbaud, Hervé Chazal	France	Poster	Video Link Q&A Link
SD-002305	Reduction of Open-Circuit DC Winding Induced Voltage and Torque Pulsation in the Wound Field Switched Flux Machine by Stator Axial Pairing of Tooth-Tips	Wentao Zhang, Zhongze Wu, Wei Hua, Z. Q. Zhu	United Kingdom	Poster	Video Link Q&A Link
SD-003212	First estimations of stator dimensions for permanent magnet synchronous machines with tooth-coil windings and direct liquid cooling	Constantin Wohlers, Bernd Ponick	Germany	Poster	Video Link Q&A Link
SD-005371	Variance-Based Sensitivity Analysis of Significant Design Parameters of an Induction Machine	David Orth, Christian Alteheld, Raimund Gottkehaskamp	Germany	Poster	Video Link Q&A Link
SD-004898	Analysis and Examination of Eddy Current Brake for Aircraft Using Composite Disc	Daichi Mochizuki, Kentaro Hori, Yoshimi Kikuchi, Hiroyuki Wakiwaka, Makoto Sonehara, Toshiro Sato	Japan	Poster	Video Link Q&A Link
SD-002119	Torque Ripple Reduction of Outer Rotor Permanent Magnet Vernier Machine with Concentrated Winding	Ying Fan, Yeyi Mei, Qiushi Zhang	China	Poster	Video Link Q&A Link
SD-001007	Design Modifications for Cogging Force Reduction in Linear Permanent Magnet Machines	Praveen Kumar, Rakesh Kumar Srivastava	India	Poster	Video Link Q&A Link
SD-008559	Impact on Vibration of Eccentric Permanent Magnet Assisted Synchronous Reluctance Machine	Jiaqi Li, Hanafy Mahmoud, Michele Degano, Chris Gerada	United Kingdom	Poster	Video Link Q&A Link
SD-009741	Optimization Design of Stator Notch of Brushless DC Motor by Response of Surface Method	Yongdae So, Mijeong Kim, Juhyeong Moon, Jaehyuk Kim, Dongwoo Kang	Korea (South)	Poster	Video Link Q&A Link
SD-011614	PM BLDC Motor for Primary Flight Surface Actuator	Davide Macera, Moreno D'Andrea, Giovanni Di Domenico, Lino Di Leonardo, Marco Villani	Italy	Poster	Video Link Q&A Link

SD-001953	Small Permanent Magnet Vernier machines in mass production	Lionel Billet, Damien Laforge, Christophe Espanet	France	Poster	Video Link Q&A Link
SD-004804	An Optimization Procedure for a Synchronous Reluctance Machine with Fluid Shaped Flux Barriers	Federica Uberti, Lucia Frosini, Lorand Szabo	Italy	Poster	Video Link Q&A Link
SD-000256	Study on STM (Separated Teeth Motor) for Manufacturing and Weight Reduction	Si-Woo Song, Jun Sung Park, Kwang Soo Kim, Won-Ho Kim	Korea (South)	Poster	Video Link Q&A Link
SD-011746	Lamination Optimization in a Flux Switching Permanent Magnet Motor Using Laminated Segmented Rotor	Seyedmilad Kazemisangdehi, Seyedmehdi Kazemisangdehi	Iran	Poster	Video Link Q&A Link
SD-009024	Effects of Rotor Flux Barrier Design on Torque Ripple and High Speed Performance of Synchronous Reluctance Machines	Yusuf Basri Yilmaz, Emine Bostancı	Turkey	Poster	Video Link Q&A Link

SS1 Electrical Machines for Renewables

Session Title	**SS Electrical Machines for Renewables**				
Paper ID	**Paper title**	**Authors**	**Country**	**Presentation**	**Link**
SD-008605	Evaluation of PM Rotor Topologies for Impedance Matching of Small-Scale Passive DC-Connected Wind Generator Systems	Casper Labuschagne, Maarten Kamper	South Africa	Oral	Video Link Q&A Link
SD-004057	Optimal tooth tips design for cogging torque suppression of permanent magnet machines	Elia Brescia, Marco Palmieri, Giuseppe Cascella, Francesco Cupertino	Italy	Oral	Video Link Q&A Link
SD-010529	Electromechanical Dynamics Analysis of Pole-Piece Rotors in Pseudo Direct-Drive Wind Turbine Generators	Michiel Desmedt, Jianning Dong, Faisal Wani, Pavol Bauer, Henk Polinder	Netherlands	Oral	Video Link Q&A Link
SD-010235	Analytical Study of Rotor Eccentricity Effects on Brushless Doubly Fed Machines Vibration	Salman Abdi, Ehsan Abdi, Richard McMahon	United Kingdom	Oral	Video Link Q&A Link
SD-004782	Influence of Air Gap in Transverse Flux Permanent Magnet Machines for Wind Power Applications	Rajesh Kumar, Zhi Qiang Zhu, Alexander Duke, Arwyn Thomas, Richard Clark	United Kingdom	Oral	Video Link Q&A Link
SD-009601	A New Iron Loss Model for Brushless Doubly Fed Machines	Salman Abdi, Ehsan Abdi, Richard McMahon	United Kingdom	Oral	Video Link Q&A Link

Session Title	**SS Electrical Machines for Renewables**				
Paper ID	**Paper title**	**Authors**	**Country**	**Presentation**	**Link**
SD-004553	Effect of Airgap Length on Electromagnetic Performance of Surface Mounted Permanent Magnet Vernier Machine	Dileep Kumar Kana Padinharu, Guang-Jin Li, Zi-Qiang Zhu, Richard Clark, Arwyn Thomas	United Kingdom	Poster	Video Link Q&A Link
SD-002348	Two New Rotor Designs with Reduced Amount of Rare-Earth Magnet Material for a Permanentmagnet Wind Generator for a 4MW Application	Alena Babl, Gurakuq Dajaku, Dieter Gerling	Germany	Poster	Video Link Q&A Link
SD-011207	Sizing Optimization of 15 MW Spoke-type Permanent Magnet	Amina Bensalah, Georges Barakat, Yacine Amara	France	Poster	Video Link Q&A Link

	Synchronous Generator For Wind Turbine				
SD-009032	A Robust 5 MW Split-Pole Reluctance Synchronous Wind Generator	Jandre Dippenaar, Maarten J Kamper	South Africa	Poster	Video Link Q&A Link
SD-004731	10MW, 10rpm, 10Hz, directly-driven synchronous generator system: preliminary design with key FEM validations	Ion Boldea, Lucian Nicolae Tutelea, Ileana Torac	Romania	Poster	Video Link Q&A Link
SD-004928	Design and Analysis of a 2.5 MW Hybrid Excited Synchronous Wind Turbine Generator With Two Separate Rotors	Aysel Akgemci, Ozan Keysan	Turkey	Poster	Video Link Q&A Link
SD-001481	Low Cost Rotary To Linear Magnetic Gear	Thang Van Lang, Suleiman. M Sharkh, Jame R Anglada, Mehdi Hendijanizadeh, Mohamed. M Torbati	United Kingdom	Poster	Video Link Q&A Link
SD-010715	Impact of stator slot geometry on the performance of a permanent magnet synchronous generator for wave energy converters	Alexandra Tokat, Torbjörn Thiringer, Elisabet Jansson	Sweden	Poster	Video Link Q&A Link
SD-004871	Analysis of Modular Inverter-fed Six-Winding Transformers for WECS-Mains Interface	Antonino Di Gerlando, Khaled ElShawarby, Giovanni Maria Foglia, Roberto Perini	Italy	Poster	Video Link Q&A Link
SD-007803	Design optimization of a direct-drive PMSG considering the torque-speed profile Application for Offshore wind energy	Thi Nhat Linh Dang, Serigne Ousmane Samb, Nicolas Bernard	France	Poster	Video Link Q&A Link
SD-010936	High Voltage Direct Drive Generators with Multiphase Single Layer Fractional Slot Concentrated Windings	Michela Diana, Sonja Tidblad Lundmark, Torbjörn Thiringer	Sweden	Poster	Video Link Q&A Link
SD-011037	Design and optimization of a Cage+Nested loops rotor BDFM	Oreoluwa I. Olubamiwa, Nkosinathi Gule, Maarten J. Kamper	South Africa	Poster	Video Link Q&A Link

SS2 High Efficiency Electrical Machines Innovative Materials, Design, Measurement and Manufacturing Techniques

Session Title	**SS High Efficiency Electrical Machines Innovative Materials, Design, Measurement and Manufacturing Techniques**				
Paper ID	**Paper title**	**Authors**	**Country**	**Presentation**	**Link**
SD-005509	Magnetic Characterization of Stator Segments made of Soft Magnetic Composites	Patrick Breining, Christoph Rollbühler, Lars Sjöberg, Martin Doppelbauer	Germany	Oral	Video Link Q&A Link
SD-003174	A High Strength Rotor Structure for IPMSM with Narrow Bridges	Makoto Ito, Shinji Sugimoto, Akeshi Takahashi, Shuichi Tamiya, Takatoshi Kushida	Japan	Oral	Video Link Q&A Link
SD-012165	Circumferentially Segmented Rotor Architecture for PMSM Traction Machines	Fabian Lorenz, Ralf Werner, Daniel Paul, Tony Stein	Germany	Oral	Video Link Q&A Link
SD-007374	Investigation of the Influence of Harmonics on Iron loss of Soft Magnetic Composites	Daichi Azuma, Yuta Enokizono, Tatsuya Saito, Tomoyuki Ishimine, Tomoyuki Ueno	Japan	Oral	Video Link Q&A Link
SD-007323	On the Design and Manufacturing of Small Single Phase Induction Motors toward Super Premium Efficiency Standards	Ioannis D. Chasiotis, Yannis L. Karnavas	Greece	Oral	Video Link Q&A Link

SD-003034	Design Optimizations of Advanced Surface-mounted Permanent-magnet Motors for Refrigerant Compressor Applications	Cheng-Tsung Liu, Kuan Yang, Pei-Yu Chao, Chun-Kuei Chang, Ming-Tsung Chiu, Jui-An Chiang, Chung-Ming Lin	Taiwan	Oral	Video Link Q&A Link

Session Title	**SS High Efficiency Electrical Machines Innovative Materials, Design, Measurement and Manufacturing Techniques**				
Paper ID	**Paper title**	**Authors**	**Country**	**Presentation**	**Link**
SD-008249	Post rotor-fault operation of a Ferrite Magnet assisted Synchronous Reluctance Motor	Sascha Neusues, Andreas Binder	Germany	Poster	Video Link Q&A Link
SD-008494	Loss Analysis of a Traction IPM Machine in a FEA based Efficiency Map	Hiroyuki Sano, Katsuyuki Narita, Nicolas Schneider, Kazuki Semba, Koji Tani, Takashi Yamada, Ryosuke Akaki	Japan	Poster	Video Link Q&A Link
SD-008575	Measurement of Eddy Current Loss in Permanent Magnets of Inverter-Fed Permanent Magnet Synchronous Machine During Normal Operation	Nijan Yogal, Christian Lehrmann, Markus Henke, Zihang Song	Germany	Poster	Video Link Q&A Link
SD-010103	High-Efficiency Induction Motor with Small Gap Length and Magnetic Wedges	Sugimoto Shinji, Takahashi Akeshi, Endo Mikio, Tamura Tatsuhiro, Kinoshita Hirotaka	Japan	Poster	Video Link Q&A Link
SD-005169	Manufacturing of tooth coil winding PM machines with in-slot oil cooling	Alessandro Acquaviva, Stefan Skoog, Torbjörn Thiringer	Sweden	Poster	Video Link Q&A Link
SD-011363	Design of Low-Power Direct-on-Line Synchronous Reluctance Motors Based on Modified Natural-flux-Line-Curve Approach	Valerii Abramenko, Ilya Petrov, Juha Pyrhönen	Finland	Poster	Video Link Q&A Link
SD-002062	Iron Loss Evaluation under PWM Excitation of Ultrathin Electrical Steel Sheets for a Stator Core used in a High-speed and High-effective Motor	Mohachiro Oka, Hirofumi Kiyotake, Masato Enokizono, Daisuke Wakabayashi	Japan	Poster	Video Link Q&A Link
SD-003158	Effect of Magnet Materials on Designing of a High Power-Low Voltage Permanent Magnet Flux Switching Motor for Automotive Applications	Mohamed Taha, Amr Saleh	Egypt	Poster	Video Link Q&A Link
SD-012173	Overmodulation opportunity in 48 V three-phase PMSM with open-ended windings	Stefan Skoog	Sweden	Poster	Video Link Q&A Link
SD-002178	Design Method by Vector Magnetic Characteristic Analysis for upgrading Efficiency of Motor	Masato Enokizon	Japan	Poster	Video Link Q&A Link
SD-011487	Design Aspects and Thermal Analysis of a Dual Slot Layer Permanent Magnet Synchronous Machine with Star-Delta Winding	Florian Birnkammer, Dieter Gerling	Germany	Poster	Video Link Q&A Link
SD-002321	Influence of Advanced Electrical Steel on the Optimal Design of Interior Permanent Magnet Traction Motors	Ahmed Abdallh, Lode Vandenbossche, Ophélie Dorez	Belgium	Poster	Video Link Q&A Link
SD-005606	Review of Segmented Stator and Rotor Designs for AC Electric Machines	Anmol Aggarwal, Elias Strangas, Athanasios Karlis	USA	Poster	Video Link Q&A Link

SD-002968	Optimisation Challenge in a Line-Start Permanent-Magnet Synchronous Motor Designed Base on a Commercial Induction Motor	Amin Mahmoudi, Solmaz Kahourzade	Australia	Poster	Video Link Q&A Link

SS3 High Speed Electrical Machines

Session Title	**SS High Speed Electrical Machines**				
Paper ID	**Paper title**	**Authors**	**Country**	**Presentation**	**Link**
SD-004634	Applicability of CNT materials in present-day and future electrical machines	Juha J. Pyrhönen, Marcin Otto, Valentina V. Ayguzina, Ilya Petrov, Julia Vauterin, Flyur R. Ismagilov, Viacheslav E. Vavilov	Finland	Oral	Video Link Q&A Link
SD-005789	A Novel High-Speed Permanent Magnet Machine with Dual Semi-Cage Winding	Shaofeng Jia, Yongtao Liang, Deliang Liang, Shuaijun Chu, Yang Liang	China	Oral	Video Link Q&A Link
SD-006602	Torque analysis of high-speed switched reluctance motor with amorphous alloy core	Feng Chai, Zongyang Li, Jing Ou, Yanlei Yu	China	Oral	Video Link Q&A Link
SD-008079	Hybrid model for AC Losses in High Speed PMSM for arbitrary flux density waveforms	Taha El Hajji, Sami Hlioui, François Louf, Guillaume Mermaz-Rollet, M'Hamed Belhadi, Mohamed Gabsi	France	Oral	Video Link Q&A Link
SD-003204	High-Speed Synchronous Reluctance Motor for Electric-Spindle Application	Emanuel Castagnaro, Nicola Bianchi	Italy	Oral	Video Link Q&A Link
SD-001775	Online L Identification for Arbitrary EMF-Based Sensorless Drives of High-Speed SPMSM	Yu Yao, Yunkai Huang, Fei Peng, Jianning Dong	China	Oral	Video Link Q&A Link

Session Title	**SS High Speed Electrical Machines**				
SD-009849	Combined Electromechanical-thermal model of a high-speed flywheel energy storage system	Mauro Andriollo, Andrea Tortella, Roberto Benato, Lorenzo Bellini	Italy	Poster	Video Link Q&A Link
SD-002313	Performance comparison of a high-speed surface-mounted permanent-magnet synchronous motor with different sleeve types	Jing Ou, Martin Doppelbauer	Germany	Poster	Video Link Q&A Link
SD-006785	A novel rotor bar shape for enhancing the torque density of high-speed induction motor	Silba Mathew, Ram Kumar R. M., B. G. Fernandes	India	Poster	Video Link Q&A Link
SD-002887	Performance Evaluation of a High-Speed Permanent Magnet Synchronous Machine with Hairpin Winding Technology	Sridhar Balasubramanian, Markus Henke	Germany	Poster	Video Link Q&A Link
SD-008532	No-Load Loss Separation of High-Speed Electric Motors for Electrically-Assisted Turbochargers	Adrien Gilson, Ralph Sindjui, Baptiste Chareyron, Misa Milosavljevic	France	Poster	Video Link Q&A Link
SD-005681	Realization of High-Speed Cast Copper Cage Induction Machines for Electric Mobility	Uwe Schuffenhauer, Sören Miersch, Thomas Schuhmann, David Schmitz, Michael Breuckmann, Abdullah Kahveci, Florian Herget, Karsten Machalitza	Germany	Poster	Video Link Q&A Link
SD-004103	Comparison of Stator Winding Technologies for High-Speed	Théophane Dimier, Marco Cossale, Tobias Wellerdieck	Switzerland	Poster	Video Link Q&A Link

	Motors in Electric Propulsion Systems				
SD-011924	Analytical Model of Open-Circuit Air Gap Flux Density in High Speed Permanent Magnet Machines Accounting for Winding Eddy Current Reaction	Xin Xu, Zhiquan Deng, Zhongming Zhang, Zelin Wang	China	Poster	Video Link Q&A Link
SD-004111	Research on Discharge Process and Temperature Field of PMSM/G for High Speed Flywheel Energy Storage System	Haoyue Tang, Weili Li, Hanying Gao, Xiang Zhao, Zhigang Wu, Jiafeng Shen	China	Poster	Video Link Q&A Link
SD-008168	Discrete Current Regulator Design with Sensorless Drive for High-Speed Permanent Magnet Synchronous Machine	Yang Liang, Deliang Liang, Shaofeng Jia, Shuaijun Chu, Yongtao Liang	China	Poster	Video Link Q&A Link
SD-010901	Modeling and Axial Reluctance Force Analysis of Bearingless Switched Reluctance Motor	Zelin Wang, Xin Cao, Zhiquan Deng	China	Poster	Video Link Q&A Link
SD-010898	Average control strategy of 3-DOF bearingless switched reluctance motor considering coupling	Zelin Wang, Zhiquan Deng, Xin Cao	China	Poster	Video Link Q&A Link
SD-011533	A Comparison among Various Designs of Dual Phase Material on High Specific Power Electrical Machines for Aerospace Applications	Rasul Hemmati, Sina Vahid, Ayman El-Refaie	United States	Poster	Video Link Q&A Link
SD-002909	Unbalanced Magnetic Pull Analysis for Rotordynamics of Induction Motors	Heesoo Kim, Janne Nerg, Tuhin Choudhury, Jussi Sopanen	Finland	Poster	Video Link Q&A Link
SD-004065	The Influence of Eddy Current in Different Material Sleeve on the Armature Response of High-speed Permanent Magnet Motors used for More Electric Aircraft	Meiwei Zhang, Weili Li, Wanlu Xie, Xiaohan Shen, Jiafeng Shen, Xiang Zhao	China	Poster	Video Link Q&A Link
SD-010707	Robust DC-Link Voltage Control and Discrete-Time Sensorless Control for High-Speed Flywheel Energy Storage System	Yang Liang, Deliang Liang, Shaofeng Jia, Shuaijun Chu, Yongtao Liang	China	Poster	Video Link Q&A Link
SD-001929	A novel low control frequency control strategy of high switching frequency inverter for high speed PMSM current control	Jin-Dong Zhang, Fei Peng, Yun-Kai Huang, Yu Yao, Zi-Chong Zhu	China	Poster	Video Link Q&A Link
SD-011282	Research and Analysis on Design Characteristics of High Temperature and High-Speed Permanent Magnet Motor	Shuaijun Chu, Deliang Liang, Shaofeng Jia, Yang Liang	China	Poster	Video Link Q&A Link
SD-003468	Novel Rotor Design for High Speed Flux Reversal Motor	Vladimir Dmitrievskii, Vladimir Prakht, Vadim Kazakbaev	Russian Federation	Poster	Video Link Q&A Link

SS4 Innovative magnetic materials for electromagnetic devices

Session Title	**SS Innovative magnetic materials for electromagnetic devices**				
Paper ID	**Paper title**	**Authors**	**Country**	**Presentation**	**Link**
SD-005223	Design of a Novel High Power Density Single Sided Axial Flux Motor Using SMC Materials	Andreas Echle, Urs Pecha, Nejila Parspour, Christian Gruener	Germany	Oral	Video Link Q&A Link
SD-008877	Reduction in Hysteresis Loss of Binder Jet Printed Iron Silicon	Thang Q. Pham, Hawke Suen, Patrick Kwon, Shanelle N. Foster	United States	Oral	Video Link Q&A Link

SD-011835	Study of the Adoption of Different Bonded Magnets in Assisted Reluctance Machines	Emir Poskovic, Luca Ferraris, Nicola Bianchi, Fausto Franchini	Italy	Oral	Video Link Q&A Link
SD-006343	Comparison between Halbach Array Rotors with Discrete and Continuous Magnets for Aeronautic Applications	Benjamin Daguse, Sabrina Ayat	France	Oral	Video Link Q&A Link
SD-012009	Multiple Layer Magnetic Materials for Variable Flux PM Machines	Mostafa Ahmadi Darmani, Emir Pošković, Fausto Franchini, Luca Ferraris, Andrea Cavagnino	Italy	Oral	Video Link Q&A Link
SD-004286	Hysteresis Loss Evaluation of Additively Manufactured Soft Magnetic Core	Hans Tiismus, Ants Kallaste, Anouar Belahcen, Toomas Vaimann, Anton Rassolkin	Estonia	Oral	Video Link Q&A Link

Session Title	**SS Innovative magnetic materials for electromagnetic devices**				
Paper ID	**Paper title**	**Authors**	**Country**	**Presentation**	**Link**
SD-006726	Development Policy of SMC to Improve Efficiency of Axial Gap Motor Employing Coreless Rotor Structure	Ren Tsunata, Masatsugu Takemoto, Satoshi Ogasawara, Tatsuya Saitoh, Yuta Enokizono, Tomoyuki Ueno	Japan	Poster	Video Link Q&A Link
SD-003123	Fundamental Study of Eddy Current Brakes by Using Magnetic Clad Material	Kentaro Hori, Daichi Mochizuki, Yosimi Kikuchi, Hiroyuki Wakiwaka, Makoto Sonehara, Toshiro Sato	Japan	Poster	Video Link Q&A Link
SD-010723	Additive Manufacturing of Non-homogeneous Magnetic Cores for Electrical Machines - Opportunities and Challenges	Thang Pham, Shanelle Foster	United States	Poster	Video Link Q&A Link

SS5 Large synchronous generators

Session Title	**SS Large synchronous generators**				
Paper ID	**Paper title**	**Authors**	**Country**	**Presentation**	**Link**
SD-004189	Numerical Study of Windage Power Loss for One Salient Pole Generator	Sinisa Majer, Zeljko Tukovic	Croatia (Hrvatska)	Oral	Video Link Q&A Link
SD-005142	Hydrogenerator Calculation Software for Recalculation Purpose	Georg Traxler-Samek, Andreas Binder, Maximilian Bartosch	Germany	Oral	Video Link Q&A Link
SD-003166	Impact of Design Aspects on the Vibrational Behaviour of the Stator End-Winding Region of Large Turbogenerators	Sebastian Lange, Martin Pfost	Germany	Oral	Video Link Q&A Link
SD-004464	Determination of the electromagnetic forces of the synchronous electric generator for the asymmetric load condition by measurements	Miroslav Petrinic, Stjepan Tvoric, Eduard Plavec, Bono Zrakic	Croatia (Hrvatska)	Oral	Video Link Q&A Link
SD-009059	Pattern Recognition of Inter-Turn Short Circuit Fault in Wound Field Synchronous Generator via Stray Flux Monitoring	Hossein Ehya, Arne Nysveen, Robert Nilssen	Norway	Oral	Video Link Q&A Link
SD-012041	Time Periodic 2D FE electromagnetic simulation of large Hydro Generators	Thomas Lugand, Alexander Schwery	Switzerland	Oral	Video Link Q&A Link

Session Title	SS Large synchronous generators				
Paper ID	**Paper title**	**Authors**	**Country**	**Presentation**	**Link**
SD-004677	PM Vernier Machine for Utility Scale Wind Generator Applications: Design and Evaluation	Pushman Tlali, Rong-Jie Wang	South Africa	Poster	Video Link Q&A Link
SD-003484	Rotor Yoke Effect on Core Losses of a Non-Overlap Wound Rotor Synchronous Machine	Karen Garner, Maarten Kamper	South Africa	Poster	Video Link Q&A Link
SD-011126	Concentrated Windings for Wind Generators with Solid Rotor Iron and Redundant Feeding	Nicolas Erd, Andreas Binder	Germany	Poster	Video Link Q&A Link
SD-008982	Detailed Magnetic Field Monitoring of Short Circuit Defects of Excitation Winding in Hydro-generator	Hossein Ehya, Arne Nysveen, Ingrid Linnea Groth, Bruce A. Mork	Norway	Poster	Video Link Q&A Link
SD-007145	Wireless Supervision of a Rotating High-Speed De-excitation System for Brushless SM	Emilio Rebollo, Carlos A. Platero	Spain	Poster	Video Link Q&A Link
SD-009008	A Practical Approach for Static Eccentricity Fault Diagnosis of Hydro-Generators	Hossein Ehya, Arne Nysveen, Robert Nilssen	Norway	Poster	Video Link Q&A Link
SD-003816	Synchronous Generator Rotor Thermal Bow, Diagnostics and Correction	Peter Popaleny, Piotr Mialkowski	Slovak Republic	Poster	Video Link Q&A Link
SD-003441	Calculation of Circulating Currents in Parallel Branches of Salient Pole Synchronous Machines	Constantin Schepe, Elmar Haschen, Bernd Ponick	Germany	Poster	Video Link Q&A Link
SD-005312	Analytical Method to Diagnose Large Salient Poles Through Frequency Response Analysis	Asier Mugarra, Carlos A. Platero	Spain	Poster	Video Link Q&A Link
SD-002003	Challenges in Multi-Phase Winding Design for Large Hydro-Generators	Georg Traxler-Samek, Michael Lecker	Switzerland	Poster	Video Link Q&A Link

SS6 Motor and Generator Windings Design, Performance and Manufacturing

Session Title	SS Motor and Generator Windings Design, Performance and Manufacturing				
Paper ID	**Paper title**	**Authors**	**Country**	**Presentation**	**Link**
SD-004537	Algebraic Design of Symmetrical Windings for AC Machines	Johannes Germishuizen, Andreas Kremser	Germany	Oral	Video Link Q&A Link
SD-004197	The Tingley's Box Method to Construct the Stator Winding Matrix	J. Johnny Rocha E., Edson Bortoni, Paulo Silva, Bernardo Alvarenga	Brazil	Oral	Video Link Q&A Link
SD-005363	An Analytical Approach for the Design of Innovative Hairpin Winding Layouts	Andrea Arzillo, Stefano Nuzzo, Pietro Braglia, Giovanni Franceschini, Davide Barater, David Gerada, Chris Gerada	Italy	Oral	Video Link Q&A Link
SD-009342	Two-Slot Coil Pitch For Five-Phase Integrated Permanent Magnet Synchronous Machine	Romain Cousseau, Raphael Romary, Remus Pusca, Eric Semail	France	Oral	Video Link Q&A Link

SD-012017	Sensitivity Analysis on the Voltage Distribution within Windings of Electrical Machines fed by WBG Converters	Marco Pastura, Stefano Nuzzo, Giovanni Franceschini, Giacomo Sala, Mario Kohler, Davide Barater	Italy	Oral	Video Link Q&A Link
SD-004669	The influence of saturation on eddy currents in form-wound windings of electrical machines	Sebastian Moros, Stephan Tenner, Joachim Kempkes, Uwe Schäfer	Germany	Oral	Video Link Q&A Link

Session Title	**SS Motor and Generator Windings Design, Performance and Manufacturing**				
Paper ID	**Paper title**	**Authors**	**Country**	**Presentation**	**Link**
SD-005797	Design of Shaped-Profile Electrical Machine Windings for Multi-Material Additive Manufacture	Sabrina Ayat, Nick Simpson, Benjamin Dagusé, Johannes Rudolph, Fabian Lorenz, David Drury	France	Poster	Video Link Q&A Link
SD-009814	Saturation-Related Losses in Induction Motors for Star and Delta Connection Modes	Fernando J. T. E. Ferreira, José Alberto, André M. Silva, Aníbal T. de Almeida	Portugal	Poster	Video Link Q&A Link
SD-010227	Investigation of Cooling Solutions for Hairpin Winding in Traction Application	Giada Venturini, Giuseppe Volpe, Marco Villani, Mircea Popescu	United Kingdom	Poster	Video Link Q&A Link
SD-010782	Comparison of Single- and Double-Layer Windings in Spoke-type Synchronous Motors with Ferrite Magnets	Shouhui Ni, Uwe Schäfer	Germany	Poster	Video Link Q&A Link
SD-005711	Ceramic-like Composite Systems for Winding Insulation of Electrical Machines	Sören Miersch, Ralph Schubert, Thomas Schuhmann, Uwe Schuffenhauer, Markus Buddenbohm, Markus Beyreuther, Jeannette Kuhn, Mathias Lindner, Bernd Cebulski, Jakob Jung	Germany	Poster	Video Link Q&A Link
SD-007773	Peak Voltage Stress on Stator Winding in PWM Inverter Fed Drives	Shubham Sundeep, Jiabin Wang, Antonio Griffo, Fernando Alvarez-Gonzalez	United Kingdom	Poster	Video Link Q&A Link
SD-007498	High-torque Ferrite Assisted Reluctance Machine Winding Comparison	Ladislav Knebl, Jan Barta, Cestmir Ondrusek, Ondrej Vitek	Czech Rep.	Poster	Video Link Q&A Link
SD-007463	Experimental Study on the Impact of MMF Spatial Harmonics in the Mechanical Vibration of a Three-Phase Induction Motor	Alexandre Correia, André Silva, Fernando J. T. E. Ferreira	Portugal	Poster	Video Link Q&A Link
SD-004944	A boundary element analysis for electric apparatus considering electric loading	Shoichiro Nagata	Japan	Poster	Video Link Q&A Link

SS7 Multiphase Machines Design and Control

Session Title	**SS Multiphase Machines Design and Control**				
Paper ID	**Paper title**	**Authors**	**Country**	**Presentation**	**Link**
SD-002879	Torque Ripple Minimization in Exoskeleton Drives with Multiphase Electrical Machines by Current Harmonic Injection	Marcel Waldhof, Nejila Parspour	Germany	Oral	Video Link Q&A Link
SD-001643	Modeling and Control of a Dual Three-Phase Permanent Magnet Machine Accounting for	Mingjin Hu, Wei Hua, Hengliang Zhang, Guishu Zhao, Guangtong Ma, Shuai Xu	China	Oral	Video Link Q&A Link

	Asymmetry between Two Winding Sets				
SD-011134	Control of the Torque and Rotor Power in a Five-Phase Wound-Rotor Induction Motor Drive For Rotary Assembly Platforms	Gabriele Rizzoli, Michele Mengoni, Giacomo Sala, Luca Zarri, Angelo Tani	Italy	Oral	Video Link Q&A Link
SD-003492	A Direct Energy Control Technique for Torque Ripple and DC-link Voltage Ripple Reduction in Switched Reluctance Drive Systems	Xu Deng, Barrie Mecrow	United Kingdom	Oral	Video Link Q&A Link
SD-007501	A Transient Model of WICSC and ISCAD Machines Based on Permeance Networks	Oskar Wallmark, Konstantina Bitsi, Sjoerd Bosga	Sweden	Oral	Video Link Q&A Link
SD-010162	Design of a Six-Phase Squirrel Cage Induction Motor with Pseudo-Concentrated Windings	Ghasem Rezazadeh, Farzad Tahami, Gérard-André Capolino, Zahra Nasiri-Gheidari, Humberto Henao, Amine Yazidi, Mehdi Sahebazamani	France	Oral	Video Link Q&A Link

Session Title	**SS Multiphase Machines Design and Control**				
Paper ID	**Paper title**	**Authors**	**Country**	**Presentation**	**Link**
SD-012033	Multi-Phase Winding with In-Conductor Direct Cooling Capability for a 48V Traction Drive Design	Stefan Haller, Johan Persson, Peng Cheng, Kent Bertilsson	Sweden	Poster	Video Link Q&A Link
SD-008281	Analysis of Dual Three-Phase Synchronous Reluctance Motor by Winding Function Theory	Chaelim Jeong, Junkyu Park, Nicola Bianchi	Italy	Poster	Video Link Q&A Link
SD-007064	Comparative Analysis of Single-Star and Dual-Star Permanent-Magnet Synchronous Machines	Abdolmajid Abedini Mohammadi, Sebastian Ciceo, Yves Mollet, Adrian-Cornel Pop, Johan Gyselinck	Belgium	Poster	Video Link Q&A Link
SD-008672	Sensorless controls of a 7-phase bi-harmonic Surface-mounted PM Machine	Florent Becker, Franck Scuiller	France	Poster	Video Link Q&A Link
SD-010154	Seven-phase axial and radial flux in-wheel machine with three active air gaps	Jinlin Gong, Benteng Zhao, Eric Semail, Ngac-Ky Nguyen, Yanliang Xu	France	Poster	Video Link Q&A Link
SD-003697	Analysis of Vibration Characteristics of Twelve-Phase Permanent Magnet Synchronous Motor Under Different Fault Tolerance Strategies	Bingnan Zhang, Bochao Du, Tianxu Zhao, Shumei Cui	China	Poster	Video Link Q&A Link
SD-005703	A Novel Sequential Direct Torque Control Scheme for Multiphase Motors	Guanghui Yang, Jiaqiang Yang, Yan Wang, Haseeb Hussain, Rongfeng Deng, Liang Yan, Sheng Li	China	Poster	Video Link Q&A Link
SD-001511	Replacing Stator of Existing Three-phase Synchronous Reluctance Machines towards Improved Multiphase Machines Performance	Kotb Albassioni, Mohamed Nabil, Elwy Elkholy, Peter Sergeant	Belgium	Poster	Video Link Q&A Link
SD-005991	A New Optimal Maximum Torque Control Strategy of Double Star Induction Machine Under Healthy and Faulty	Kamal Nounou, Jean-Frédéric Charpentier, Mohamed Benbouzid, Khoudir Marouani, Abdelaziz Kheloui	Algeria	Poster	Video Link Q&A Link

	Operating Conditions in Flux-Weakening Area				
SD-007641	Comparison of Dual Three-Phase Synchronous Reluctance Motor under Half-Control Mode according to Winding Configurations	Junkyu Park, Riccardo Zavagnin, Andrea Tortella, Nicola Bianchi	Italy	Poster	Video Link Q&A Link
SD-004839	Predictive High Dynamic Current Control of Dual Three-Phase PMSMs	Maximilian Hepp, Dzevad Imamovic, Wolfgang Wondrak, Nejila Parspour	Germany	Poster	Video Link Q&A Link
SD-006017	Open-Circuit Fault-Tolerant Control of Five-Phase PM Synchronous Motor using Control Variable Method	Guidan Li, Yuxia Zhao, Bin Li	China	Poster	Video Link Q&A Link
SD-008028	Feasibility of Permanent Magnet Fault Tolerant Machines for Aircraft Starter Generator Systems	Bo Wang, Ye Liu, Gaurang Vakil, Tao Yang, Zhuoran Zhang	United Kingdom	Poster	Video Link Q&A Link
SD-005614	Torque-Speed Characteristic Improvement in Nineteen-phase Induction Machine with Special Phase Connection	Abdelhak Mekahlia, Eric Semail, Franck Scuiller, Hussein Zahr	France	Poster	Video Link Q&A Link
SD-007005	Nine-Phase Induction motor with Harmonic Injection and Different Winding Topology	Radek Čermák, Zdeněk Frank, Vladimír Kindl, Jan Laksar, Tomáš Komrska	Czech Republic	Poster	Video Link Q&A Link
SD-009369	Control of Five-Phase Induction Machine with Three-Phase Inverter via Three-To-Five Phase Transformer	Abdelhakim Khelafi, Abdelmalik Djebli, M'hamed Ouadah, Omar Touhami, Rachid Ibtiouen	Algeria	Poster	Video Link Q&A Link

SS8 Novel Flux Modulation Machines and Control

Session Title	**SS Novel Flux Modulation Machines and Control**				
Paper ID	**Paper title**	**Authors**	**Country**	**Presentation**	
SD-003999	Flux Modulation Magnet Coupler for Wind Generation System	Li Fang, Dawei Li, Tianjie Zou, Ronghai Qu	China	Oral	Video Link Q&A Link
SD-005762	Enhanced Flux Modulation of FSCW Consequent Pole PM Machine Employing Stator Slot Halbach PM	Shaofeng Jia, Deliang Liang, Ziqiang Zhu	China	Oral	Video Link Q&A Link
SD-012246	Presentation of Novel High Torque Density Dual-Stator Wound-Field Flux Modulation Machines	Udochukwu B. Akuru, Maarten J. Kamper	South Africa	Oral	Video Link Q&A Link
SD-009466	A 50kW Halbach Rotor Coaxial Magnetic Gear for an Ocean Generator Application	Hossein Baninajar, Sina Modaresahmadi, Wesley Williams, Jonathan Bird	USA	Oral	Video Link Q&A Link
SD-012262	Analysis of a Five-Phase PM Vernier Machine Topology with Two-Slot Pitch Winding	Shaohong Zhu, Tom Cox, Zeyuan Xu, Chris Gerada	United Kingdom	Oral	Video Link Q&A Link
SD-004774	Comparative Analysis of Double Flux Modulation Flux Reversal Machines with PMs on Both Stator and Rotor	Yuting Gao, Martin Doppelbauer	Germany	Oral	Video Link Q&A Link

Session Title	**SS Novel Flux Modulation Machines and Control**	

Paper ID	Paper title	Authors	Country	Presentation	Link
SD-001287	Modeling and Current Control Method for Linear Vernier Permanent Magnet Machine including Longitudinal End Effects	Zhi Chen, Rui Li, Wubin Kong, Ronghai Qu, Vincent Fedida	China	Poster	Video Link Q&A Link
SD-005746	Analysis of Operation Modes and Control for a Multiple Torque Component Single Air Gap Magnetless Machine	Shaofeng Jia, Xiaozhuang Dong, Deliang Liang, Shuai Feng	China	Poster	Video Link Q&A Link
SD-004863	Design Process of Spoke-Array Brushless Dual-Electrical-Port Dual-Mechanical-Port Machine	Ziyi Liang, Xiang Ren, Dawei Li, Ronghai Qu	China	Poster	Video Link Q&A Link
SD-003433	A Novel Flux Switching Permanent Magnet Planar Machine with Natural Decoupling of Two Orthogonal Motions	Mengfei Zheng, Qinfen Lu	China	Poster	Video Link Q&A Link
SD-001937	Minimum Copper Loss Control Strategy for dc-biased Vernier Reluctance Machines based on Speed Variation	Zixiang Yu, Wubin Kong, Ronghai Qu	China	Poster	Video Link Q&A Link
SD-008184	Comparison of Cogging Torque Compensation Methods for a Flux-Switching Permanent Magnet Motor by Harmonic Current Injection and Iterative Learning Control	Wentao Huang, Wei Hua, Xiaofeng Zhu, Ying Fan, Ming Cheng	China	Poster	Video Link Q&A Link
SD-002097	Design and Analysis of a Novel Tubular Flux-Modulated Consequent-Pole PM Machine	Guangyao Jiang, Huawei Zhou, Weiguo Tao, Guohai Liu	China	Poster	Video Link Q&A Link
SD-006971	PM losses Comparisons of Permanent Magnet Vernier Motors With Different Stator Topologies	Yanlei Yu, Feng Chai, Yulong Pei	China	Poster	Video Link Q&A Link
SD-009946	Performance Analysis of Tubular Flux-Reversal Linear Machine with Different Slot/Pole Combination	Qinfen Lu, Ruiheng Wu, Lei Zhao	China	Poster	Video Link Q&A Link
SD-008486	Efficiency of Dynamic Torque Control of Coaxial Magnetic Gears	Iliana Marinova, Valentin Mateev	Bulgaria	Poster	Video Link Q&A Link

SS9 Software Based Design of Machines Present and Perspectives

Session Title	**SS Software Based Design of Machines Present and Perspectives**				
Paper ID	**Paper title**	**Authors**	**Country**	**Presentation**	
SD-011096	Electrical machine design by optimization for e-motor application: a drive cycle approach	Juliana F. Cardoso, Christian Chillet, Laurent Gerbaud, Lamya Abdeljalil Belhaj	France	Oral	Video Link Q&A Link
SD-010278	Efficient Multiphysics Design Workflow of Synchronous Reluctance Motors	Paolo Ragazzo, Simone Ferrari, Nicolas Rivière, Mircea Popescu, Gianmario Pellegrino	Italy	Oral	Video Link Q&A Link
SD-008907	Computational Analysis of Air Gap Field in Electrical Machines by Fourier Coefficient Matrices	Nicolas Erd, Robin Koester, Andreas Binder	Germany	Oral	Video Link Q&A Link

SD-009571	Design Optimization of a Synchronous Reluctance Motor Based on Operating Cycle	Andrea Credo, Paolo Pescetto	Italy	Oral	Video Link Q&A Link
SD-008052	Vibration Analysis of a PMSM through FEM Multiphysics Simulation with Experimental Validation	Alejandro L. Rodriguez, Limin Huang, Patrick Lombard, Vincent Leconte, Irma Villar	France	Oral	Video Link Q&A Link
SD-007471	Investigation of Maximum Torque per Ampere and Maximum Efficiency Control Strategies of a Transverse Flux Machine	Julian Fischer, Martin Schmid, Nejila Parspour	Germany	Oral	Video Link Q&A Link

Session Title	**SS Software Based Design of Machines Present and Perspectives**				
Paper ID	**Paper title**	**Authors**	**Country**	**Presentation**	
SD-007765	Traction Motor Optimization Using Mesh Reshaping for Gradient Evaluation	Stiaan Gerber, Rong-Jie Wang	South Africa	Poster	Video Link Q&A Link
SD-009431	Transient Modeling of Induction Motors considering Space Harmonics	Lino Di Leonardo, Mircea Popescu, Marco Tursini, Franco Parasiliti, Matteo Carbonieri	Italy	Poster	Video Link Q&A Link
SD-005894	Multi-Objective Design of an Interior Permanent Magnet Machine with Robust Consideration	Yuan Cheng, Ling Ding, Xiaowei Ju, Shumei Cui, Shouliang Han	China	Poster	Video Link Q&A Link
SD-011061	Numerical load-point calculation method for synchronous machines	Matthias Centner	Germany	Poster	Video Link Q&A Link
SD-003247	Effect of Mesh-to-Mesh Projection on the Magnetic Tooth Forces Calculation in Electrical Machines	Raphaël Pile, Guillaume Parent, Yvonnick Le Menach, Jean Le Besnerais, Thomas Henneron, Jean-Philippe Lecointe	France	Poster	Video Link Q&A Link
SD-008451	Finite Element Analysis of a VR Resolver Considering the Leakage Flux from a PMSM	Hiroyuki Sano, Nicolas Schneider, Kazuki Semba, Koji Tani, Takashi Yamada	Japan	Poster	Video Link Q&A Link
SD-011517	A study of model fidelity for multi-objectives GA based Optimization with FEA for PMSMs	Hiroyuki Sano, Nicolas Schneider, Shiro Yano, Kazuki Semba, Koji Tani, Takashi Yamada	Japan	Poster	Video Link Q&A Link
SD-003689	Design optimization of innovative electrical machines topologies based on Pyleecan open-source object-oriented software	Pierre Bonneel, Jean Le Besnerais, Emile Devillers, Cédric Marinel, Raphaël Pile	France	Poster	Video Link Q&A Link

SS10 The Electric Platform as Means for Green Shipping

Session Title	**SS The Electric Platform as Means for Green Shipping**				
Paper ID	**Paper title**	**Authors**	**Country**	**Presentation**	**Link**
SD-007536	Azimuth Thruster PMSM Optimization using Symbiotic Organisms Search Algorithm	Yannis L. Karnavas, Ioannis D. Chasiotis, Maria S. C. Pechlivanidou, Eleytherios K. Karamanis, Antonios G. Kladas	Greece	Poster	Video Link Q&A Link
SD-004227	Multi-Three-Phase Propulsion System for Fault-Tolerant Naval Rim-Driven Propeller	Ciro Alosa, Fabio Immovilli, Emilio Lorenzani	Italy	Poster	Video Link Q&A Link
SD-009881	Optimized Efficiency Predictive Controller for Induction Motor Drives in Electric Ships	Dimitrios Raptis, Athanasios Karlis, Antonios Kladas	Greece	Poster	Video Link Q&A Link

SS11 Thermal Analysis of Electrical Machines Operating Under Harsh Conditions

Session Title	SS Thermal Analysis of Electrical Machines Operating Under Harsh Conditions				
Paper ID	**Paper title**	**Authors**	**Country**	**Presentation**	**Link**
SD-004723	Thermal Analysis of Salient Pole Synchronous Machines by Multiple Model Planes Approach	Payam Shams Ghahfarokhi, Ants Kallaste, Andrejs Podgornovs, Anouar Belahcen, Toomas Vaimann, Oleg Kudrjavtsev	Latvia	Poster	Video Link Q&A Link
SD-009997	Additively Manufactured Hollow Conductors with Integrated Cooling for High Specific Power Electrical Machines	Fan Wu, Ayman EL-Refaie	USA	Poster	Video Link Q&A Link
SD-002143	Dependency of Efficiency on Stator Temperature in Permanent Magnet Synchronous Machines	Svenja Kalt, Philipp Neuhaus, Karl Ludwig Stolle, Matthias Steinsträter, Markus Lienkamp	Germany	Poster	Video Link Q&A Link
SD-001759	A New Approach for Determining the Conductive Thermal Resistances in Lumped Parameter Thermal Networks of Electric Machines Using Conduction Shape Coefficients	Christoph Schmidt, Thomas Schabbach, Martin Doppelbauer	Germany	Poster	Video Link Q&A Link

SS12 Topology, Modelling, Control, and Reliable Operation of Energy Conversion Systems Based on MultiPort Electrical Machines

Session Title	SS Topology, Modelling, Control, and Reliable Operation of Energy Conversion Systems Based on MultiPort Electrical Machines				
Paper ID	**Paper title**	**Authors**	**Country**	**Presentation**	**Link**
SD-006335	Torque Ripple Minimization of Seven-Phase Induction Motor under More than Two Phase Fault	Shan He, Xin Sui, Dao Zhou, Frede Blaabjerg	Denmark	Oral	Video Link Q&A Link
SD-001252	Dynamic Performance Improvement Control of Brushless Dual-electrical-port Dual-mechanical-port Machine with Integrated Winding	Xu Liu, Wubin Kong, Ronghai Qu, Xun Han	China	Oral	Video Link Q&A Link
SD-002275	Novel Modeling Approach for Voltage Distribution within Automotive Electrical Machines	Lucas Hanisch, Mingyuan Sun, Markus Henke	Germany	Oral	Video Link Q&A Link
SD-003026	Sensorless position control based on active power MRAS for ship shaft stand-alone BDFIGs	Mohamed G. Hussien, Yi Liu, Wei Xu	China	Oral	Video Link Q&A Link
SD-002534	High-frequency Vibration Noise Reduction with Carrier Phase-shift for Dual-branch Three-phase Permanent Magnet Synchronous Motors	Wentao Zhang, Yongxiang Xu, Shaobin Li, Guodong Yu, Jibin Zou	China	Oral	Video Link Q&A Link
SD-004758	Electrical Variable Transmission for Hybrid Off-highway Vehicles	Thomas Vandenhove, Ahmed A-E. Abdallh, Florian Verbelen, Mats Vande Cavey, Jeroen Stuyts	Belgium	Oral	Video Link Q&A Link

Session Title	SS Topology, Modelling, Control, and Reliable Operation of Energy Conversion Systems Based on MultiPort Electrical Machines

Paper ID	Paper title	Authors	Country	Presentation	Link
SD-010391	Sensorless MRAS Control of Brushless Doubly-Fed Reluctance Generators for Wind Turbines	M. R. Agha Kashkooli, Milutin Jovanovic	United Kingdom	Poster	Video Link Q&A Link
SD-006882	Influence of the Rotor Circuit on Characteristics of Brushless Doubly-Fed Induction Machines	Hossein Bagheri Naghneh, Samad Taghipour Boroujeni, Noureddine Takorabet	Iran	Poster	Video Link Q&A Link
SD-002984	Nonparametric predictive current control for standalone brushless doubly-fed induction generators	Junjie Chen, Yi Liu, Wei Xu	China	Poster	Video Link Q&A Link
SD-003824	Simplified Voltage Behind Reactance model for the Six-phase Open-End Salient Pole PMSM	Jose Aller, Jose Restrepo, Julio Viola, Rhett Mayor	Ecuador	Poster	Video Link Q&A Link

SS13 Applications of Electrical Machines in Modern Electric Vehicles

Session Title	SS Applications of Electrical Machines in Modern Electric Vehicles

Paper ID	Paper title	Authors	Country	Presentation	Link
SD-005819	Potential of Dual Three-Phase PMSM in High Performance Automotive Powertrains	Daniel Keller, Moritz Kuenzler, Akif Karayel, Quentin Werner, Nejila Parspour	Germany	Oral	Video Link Q&A Link
SD-008176	On Magnetization Deviations as the Dominant Cause for Vibration Harmonics in the Spectrum of a PMSM Drive	Markus Jaeger, Pascal Drichel, Michael Schröder, Joerg Berroth, Georg Jacobs, Kay Hameyer	Germany	Oral	Video Link Q&A Link
SD-002658	Design and Optimization of Synchronous Reluctance Machine for actuation of Electric Multi-purpose Vehicle Power Take-Off	Branko Ban, Stjepan Stipetic	Croatia	Oral	Video Link Q&A Link
SD-011339	Performance Evaluation of Electrically Excited Synchronous Machine compared to PMSM for High-Power Traction Drives	Georgios Mademlis, Yujing Liu, Junfei Tang, Luca Boscaglia, Nimananda Sharma	Sweden	Oral	Video Link Q&A Link
SD-005622	Design of a Permanent Magnet assisted Synchronous Reluctance motor using Ferrites	Andre Nasr, Baptiste Chareyron, Abdenour Abdelli, Misa Milosavljevic	France	Oral	Video Link Q&A Link
SD-010421	Structural Topology Optimization of High-Speed Permanent Magnet Machine Rotor	Aino Manninen, Janne Keränen, Jenni Pippuri-Mäkeläinen, Damijan Miljavec, Selma ČOrović, Alen Alič, Urban Rupnik, Mehrnaz Farzam Far, Timo Avikainen	Finland	Oral	Video Link Q&A Link

Session Title	SS Applications of Electrical Machines in Modern Electric Vehicles

Paper ID	Paper title	Authors	Country	Presentation	Link
SD-003387	Current and Average Temperature Calculation for Electrically Excited Synchronous Machines in Case of Contactless Energy Supply	Björn Berweiler, Bernd Ponick	Germany	Poster	Video Link Q&A Link
SD-003646	Effect of uneven magnetization on magnetic noise and vibrations in PMSM – application to EV HEV electric motor NVH	Emile Devillers, Paul Gning, Jean Le Besnerais	France	Poster	Video Link Q&A Link
SD-007455	Computationally Cost-efficient Characteristics Analysis of EV Traction Motor considering AC	Jun-Woo Chin, Young-Hoon Jung, Jun-Yeol Ryu, Min-Ro Park, Myung-Seop Lim	Korea (South)	Poster	Video Link Q&A Link

	Copper Loss based on 2-D Magneto-Static Analysis				
SD-001767	A high-precision Analytical Method for Fast Calculation of Motor Vibration Based on Tooth Modeling	Jianfeng Hong, Shanming Wang, Yuguang Sun, Haixiang Cao	China	Poster	Video Link Q&A Link
SD-012068	Review and Trends in Electric Traction Motors for Battery Electric and Hybrid Vehicles	Andreas Krings, Christian Monissen	Germany	Poster	Video Link Q&A Link
SD-002194	Analysis and Design of Multi-Pole High-Speed IPMSM with SiC Based Inverters for EVs	Xiaowei Ju, Yuan Cheng, Ling Ding, Shumei Cui	China	Poster	Video Link Q&A Link
SD-007617	Comparison of Methodologies for Calculation of Inductances in Direct and Quadrature Axis	Mario Vukotić, Danilo Makuc, Alen Alić, Damijan Miljavec	Slovenia	Poster	Video Link Q&A Link
SD-004219	Testing of an in-wheel halbach array motor	Iago Martinez Ocaña, Nick J. Baker, Barrie C. Mecrow, Chengwei Gan, Chris Hilton, Simon Brockway	United Kingdom	Poster	Video Link Q&A Link
SD-007781	Low-Voltage Electric Motor for the Motorization of an Electric Tractor.	Philippe Enrici, Nadhem Boubaker, Daniel Matt	France	Poster	Video Link Q&A Link
SD-008508	Design of a surface-mounted PM motor for improved flux weakening performance	Stavros Pastellides, Stiaan Gerber, Rong-Jie Wang, Maarten Kamper	South Africa	Poster	Video Link Q&A Link
SD-011827	Dynamic Current Control to Compensate for Magnetic Mutual Coupling in Electrically Excited Synchronous Machines	Junfei Tang, Yujing Liu	Sweden	Poster	Video Link Q&A Link
SD-010774	Design of a Power Hardware-in-the-Loop Test Bench for a Traction Permanent Magnet Synchronous Machine Drive	Nimananda Sharma, Yujing Liu, Georgios Mademlis, Xiaoliang Huang	Sweden	Poster	Video Link Q&A Link
SD-010243	A Comparison between Axial and Radial Flux Permanent Magnet In-Wheel Motors for Electric Vehicle	Feng Chai, Yunlong Bi, Lei Chen	China	Poster	Video Link Q&A Link
SD-006459	Nine-Phase Based Fractional-slot Winding Arrangements for Integrated On-board EV Battery Chargers	Mahmoud Abdel-Majeed, Mohamed Metwly, Ayman Abdel-Khalik, Ragi Hamdy, Mostafa Hamad	Egypt	Poster	Video Link Q&A Link
SD-011002	Design and Analysis of V-Shaped IPM Motor for EV Application Considering Irreversible Demagnetization	Farshid Mahmouditabar, Abolfazl Vahedi, Noureddine Takorabet	Iran	Poster	Video Link Q&A Link
SD-002259	Multi-Objective Design of an Interior Permanent Magnet Machine with Robust Consideration	Yuan Cheng, Ling Ding, Xiaowei Ju, Shumei Cui, Shouliang Han	China	Poster	Video Link Q&A Link
SD-009555	An Overview of PM Synchronous Machine Design Solutions for Enhanced Traction Performance	Buddhika De Silva Guruwatta Vidanalage, Shruthi Mukundan, Wenlong Li, Narayan C. Kar	Canada	Poster	Video Link Q&A Link
SD-002763	Switched Reluctance Motor for a Trolleybus Traction Application: Design and Modeling	Victor N. Antipov, Andrey D. Grozov, Anna V. Ivanova	Russian Federation	Poster	Video Link Q&A Link
SD-012025	Cylindrical Wound-Rotor Synchronous Machines for Traction Applications	Federica Graffeo, Silvio Vaschetto, Marco Cossale, Michael Kerschbaumer, Edson Bortoni, Andrea Cavagnino	Italy	Poster	Video Link Q&A Link

SS14 Electrical Machines Fault Diagnosis During Transient Operation

Session Title	SS Electrical Machines Fault Diagnosis During Transient Operation				
Paper ID	**Paper title**	**Authors**	**Country**	**Presentation**	**Link**
SD-002038	Stray-flux and Current Analyses under Starting for the Detection of Damper Failures in Cylindrical Rotor Synchronous Machines	Habib Castro-Coronado, Jose Antonino-Daviu, Alfredo Quijano-Lopez, Pedro LLovera-Segovia, Vicente Fuster-Roig	Spain	Poster	Video Link Q&A Link
SD-010006	Induction Motors Torque Analysis via Frequency Extraction for Reliable Broken Rotor Bar Detection	Konstantinos N. Gyftakis, Dionysios V. Spyropoulos, Ioannis Arvanitakis, Panagiotis A. Panagiotou, Epaminondas D. Mitronikas	United Kingdom	Poster	Video Link Q&A Link
SD-008923	Deep Gabor Based Induction Motor Bearing Fault Classification and Diagnosis	Mohammad Mohammadi, Shahabodin Afrasiabi, Mousa Afrasiabi, Benyamin Parang	Iran	Poster	Video Link Q&A Link
SD-005754	Robust Starting Current Time-Frequency Analysis for Fault detection in Induction Motors via Minimum Norm	Tomas Alberto Garcia-Calva, Daniel Morinigo-Sotelo, Oscar Duque-Perez, Arturo Garcia-Perez, Rene de J. Romero-Troncoso	Mexico	Poster	Video Link Q&A Link
SD-003409	Improved Quadratic Time-Frequency Distributions for Fault Detection in Transient States	Sveinung Attestog, Huynh Van Khang, Kjell Gunnar Robbersmyr	Norway	Poster	Video Link Q&A Link
SD-005398	A New Stator Winding Inter-Turn Short Circuit Fault Detection Method For Brushless Doubly Fed Induction Machine	Mojtaba Afshar, Salman Abdi, Abolfazl Mortazavizadeh, Poria Fajri, Mohammad Ebrahimi	USA	Poster	Video Link Q&A Link
SD-001996	The Low Voltage Start-up Test of Induction Motor for the Detection of Broken Bars	Bilal Asad, Toomas Vaimann, Anouar Belahcen, Ants Kallaste, Anton Rassolkin, Hamidreza Heidari	Pakistan	Poster	Video Link Q&A Link

ICEM AWARDS from the ICEM NPO Board

ICEM Arthur Ellison Achievement Award

The ICEM Arthur Ellison Achievement Award is to be presented biennially (once every even year) to an individual, for outstanding sustained technical contributions in the field of electrical machines based on his/her publications and particularly those which have been published in ICEM Proceedings. Nominator to send nomination form with at least two reference letters to the ICEM Awards Chair, Jan Melkebeek (jan.melkebeek@ugent.be) and Gerard-Andre Capolino (gerard.capolino@ieee.org), before July 30, 2020. Nominations can be issued by any member of the electrical machine community worldwide.

ICEM John Tegopoulos Distinguished Service Award

The ICEM Distinguished Service Award is to be presented biennially (once every even year) to an individual, for outstanding services to the electrical machines community especially within the ICEM. Nominator to send nomination form with at least two reference letters to the ICEM Awards Chair, Jan Melkebeek (jan.melkebeek@ugent.be) and Gerard-Andre Capolino (gerard.capolino@ieee.org), before July 30, 2020. Nominations can be issued by any member of the electrical machine community worldwide.

ICEM Brian Chalmers Best Paper Award

The ICEM Best Paper Award is to be presented biennially (once every even year) for up to three technical papers (in no order), for outstanding technical competence displayed in an oral paper presented at ICEM (pre-recorded video presentation at virtual conference). Keynote papers are not eligible.

ICEM Best Poster Presentation Award

The ICEM Best Poster Presentation Award is to be presented biennially (once every even year) for up to three technical papers (in no order), for outstanding technical competence displayed in a poster presented at ICEM (pre-recorded video presentation at virtual conference).

All the awards will be announced during ICEM closing ceremony.