



The Multinational Power Electronics Association

PSMA Magnetics Committee Meeting

November 20TH 2023

Ed Herbert, George Slama, Matt Wilkowski
Committee Chairs



PSMA is a not-for-profit organization and a CO-SPONSOR OF APEC



PSMA Magnetics Committee Meeting Agenda

November 20, 2023

- Introductions
- 2024 Workshop Planning
- 2024 Industry Session Planning
- Power Technology Roadmap
- Special Projects -
 - Core Loss Database
 - Electrical parameters of magnetic materials



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PSMA Magnetics Committee Meeting Agenda – Workshop Planning

September 11, 2023

- Workshop Themes
 - Overall: Design of Optimal Magnetics Across Applications and Environments
 - Morning Session: Design and Optimization of Magnetics for Different Applications
 - Afternoon Session: Thermal design and other special issues such as insulation, partial discharge, etc.,
 - Tech Demos
- Industry Session Theme
 - Circuit and Construction Simulation and Modelling of Magnetic Components
- Propose not to cover core loss modelling for the 2024 workshop due to
 - Survey results requesting core loss modelling was based on a survey on Saturday March 18 however there were two PSMA Magnetics Committee related activities at APEC 2023 after the survey
 - George Slama Professional Education Seminar on Sunday March 19 – Core Loss Data for Everyone
 - Magnetics Committee Industry Session on Tuesday March 21 – Core Loss Measurements For Different Materials and Excitations
 - MagNet Activities will may results in some presentation and sessions on core loss modelling at APEC 2024
 - May have some tech demos related to MagNet

PSMA Magnetics Committee Meeting Agenda – Workshop Planning

November 20, 2023

- When does registration open – opened
- Workshop on PSMA Website - ✓
- Workshop on APEC website - ✓
- Workshop on How2Power - ✓
- Presentations from 2023 Workshop page of Magnetics Technical Forum - ✓
- Workshop on PELS Website - ✓
- Tentative Agenda - Update



PSMA Magnetics Committee Meeting Agenda – Workshop Planning

November 20, 2023

- From Tentative Agenda Workbook

Time	Event	Presenter	Affiliation	
7:00 AM - 8:00 AM	Breakfast Plus Technology Demonstrations			
8:00 AM - 8:05AM	Opening Remarks	Ed Herbert	PSMA	
8:05 AM - 8:45 AM	Keynote Speaker Power Magnetics Design - Design and Optimization of Magnetics for Different Applications - Intro	George Slama	Wurth Elektronik	
	Opportunities for new magnetics designs to address a broad range of market driven technology trends across automotive and data center applications	Johan Kolar	ETH	Confirmed
8:45 AM - 9:20 AM	Technical Session - Design and Optimization of Magnetics for Different Applications			
	Overview of Different Optimization Effort	Jonas Muhlethaler	Frenetic	Confirmed
9:20 AM - 9:40 AM	Q&A		Kolar, Muhlethaler	
9:40 AM - 10:00 AM	Break			
	Technical Session - Design and Optimization of Magnetics for Different Applications - Part 2			
10:00 AM - 10:35 AM	Magnetics for VRM Applications	Qiang Li	Virginia Tech - CPES	Accepted
10:35 AM - 11:10 AM	Inductor Optimization Based on Choice of Different Magentic Materials	Lukas Mueller	Micrometals	Accepted
11:10 AM - 11:45 AM	Optimizing Trade-Offs Between Capacitors and Inductors	David Zawacki	Cornell Dublier	Accepted
11:45 AM - 12:00 Noon	Panel Q & A		Kolar, Muhlethaler, Li, Mueller, Zawacki	

2:00 PM - 2:50 PM	Keynote Speaker Addressing Thermal Design and other special issues as partial discharge, insulation, etc., Intro	George Slama	Wurth Elektronik	
	Overview of special issues for the design of magentics	Charlers Sullivan	Dartmouth College	Accepted
	Q & A		Sullivan	
	Technology Session - Thermal Design and other special issues as partial discharge, insulation, etc., - Part 1			
	Opening Remarks	George Slama	Wurth Elektronik	
2:50 PM - 3:15 PM	Leading Edge Power Magentics design - multi -physical, multi-dimensional Optimization Relative to Electrical, Thermal and Commercial Objectives	Roman Jamy	Yageo - Kemet	Accepted
3:15 PM - 3:40 PM	Characterization of Partial Discharges in High-frequency Transformer under PWM Pulses	Zhicheng Guo	Arizona State University	Accepted
3:40 PM - 4:00 PM	Break			
	Technology Session - Thermal Design and other special issues as partial discharge, insulation, etc., - Part 2			
4:00 PM - 4:25 PM	Thermal Issues with Power Magnetics	Subhashish Bhattacharya	NCSU	Accepted
4:25 PM - 4:45 PM	Panel Q & A		Sullivan, Roman, Guo, Bhattacharya	
	Closing Remarks			
4:45 PM - 5:00 PM	Best of the Best	Alex Gerfer	Wurth Elektronik	Accepted
	Survey	George Slama	PSMA	Accepted
5:15 PM - 6:30 PM	Networking Hour			

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12:00 Noon - 2:00 PM	Technology Demonstration Session	George Slama	Würth Elektronik	
	<i>Oscilloscope</i>	George Slama	LeCroy, Keysight or Tektronix, Pico	Pending
	Near field measurements useful techniques for electronics engineers	Arturo Mediano	HF Magic Labs	Accepted
	Computer Aided Inductor Optimization	Lukas Mueller	Micrometals	Accepted
	<i>Magnetics for Energy Harvesting Applications</i>	Sergiy Tykhonov	Fraba Ubito	Invited (Responded)
	<i>Core Loss Correlations Across Equipment and Different Core Materials</i>	George Slama	Würth Elektronik	Pending
	<i>Capacitor/Inductor Filter</i>	Frank Puhane	Würth Elektronik	Accepted
	<i>High-Q SMD measurements of various components (low ESR and ESL measurements)</i>	Frank Puhane	Zurich Instruments	Invited
	<i>Circuit Simulation of Magnetic Components</i>	Tom Wilson	SIMPLIS Technologies	Accepted
		Aminul Mehedi	CMM	Invited
	Nanocrystalline-based CMC filters for EV – reducing footprint	Bharadwaj Reddy Andapally	CBMM	Accepted
	3D FEM-based software for low-frequency electromagnetic behavior in transformers and inductors	Juris Vencels	Trafo	Accepted
		Mike Arasim	Fair Rite	Accepted
		Chuck Wild	Miles Platt	Pending
		Naomichi Nao Miyari	Hioki	Invited
		Mark Rine	Proterial America	Pending
Non Linearity of metal alloyed powdered core with micro Pulse 2.0	JC Sun	Bs&T	Accepted	
Posters				
Regroup for Next Session	-	-	-	

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PSMA Magnetics Committee Meeting Agenda – Industry Session Planning

November 20, 2023

Tuesday, February 27, 2024	
8:30 AM – 11:55 AM PST	<p>IS01 - Modelling and Simulation of Magnetics - Closing the Loop</p> <p>Industry Session Chair: George Slama – Würth Elektronik</p> <p>Industry Session Chair: Matt Wilkowski – PSMA</p> <p>PSMA Session</p>
8:30 AM – 8:55 AM PST	<p>IS01.1 - Magnetics Material Data for Simulation Tools</p> <p>Industry Session Presenter: Minjie Chen, PhD – Princeton University</p> <p>PSMA Session</p>
8:55 AM – 9:20 AM PST	<p>IS01.2 - Impedance Over Wide frequency Ranges for EMI Filtering</p> <p>Industry Session Presenter: Fang Luo – Stony Brook University</p> <p>PSMA Session</p>
9:20 AM – 9:45 AM PST	<p>IS01.3 - 2D vs 3D Finite Element Analysis of Magnetic Components? How to decide!</p> <p>Industry Session Presenter: Mark Christini – Ansys</p> <p>PSMA Session</p>
9:45 AM – 10:10 AM PST	<p>IS01.4 - Modelling Magnetics in Circuit Simulation Tools</p> <p>Industry Session Presenter: Tom Wilson – SIMPLIS Technologies</p> <p>Industry Session Presenter: Andrija Stupar – SIMPLIS Technologies</p> <p>PSMA Session</p>
10:40 AM – 11:05 AM PST	<p>IS01.5 - Measurement and characterization of magnetic fields with near field probes</p> <p>Industry Session Presenter: Arturo Mediano – University of Zaragoza</p> <p>PSMA Session</p>
11:05 AM – 11:30 AM PST	<p>IS01.6 - Leakage Inductance and Coupling</p> <p>Industry Session Presenter: Bryce Hesterman – Utah State University</p> <p>PSMA Session</p>
11:30 AM – 11:55 AM PST	<p>IS01.7 - Thermal Modelling of Magnetic Components</p> <p>Industry Session Presenter: Juris Vencels – Trafolo</p> <p>PSMA Session</p>

Needs to be updated to Ed Herbert in lieu of Matt Wilkowski

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2022/2023/2024 PSMA PTR Webinar Series

Potential Contributions from the Magnetism Committee

- Tyndall – Ranajit Sai
 - Core Loss Mechanisms
 - Presentation confirmed for November 30
- Utah State University – Reebal Nimri
 - High Power (1 MW) Charging
 - 2023 Q1/Q2
 - Confirmed 8/16/23
- Fraunhofer – Florian Ziegler (Powder MEMS Micromagnets - Technology for innovative magnetic MEMS)
 - MEMS
 - Fall 2023
 - Confirmed 8/18/23
- CBMM - Bharadwaj Reddy Andapally (Technology Roadmap for Nanocrystalline Cores)
 - New magnetic materials
 - Fall 2023/Spring 2024
 - Confirmed: 9/1/23

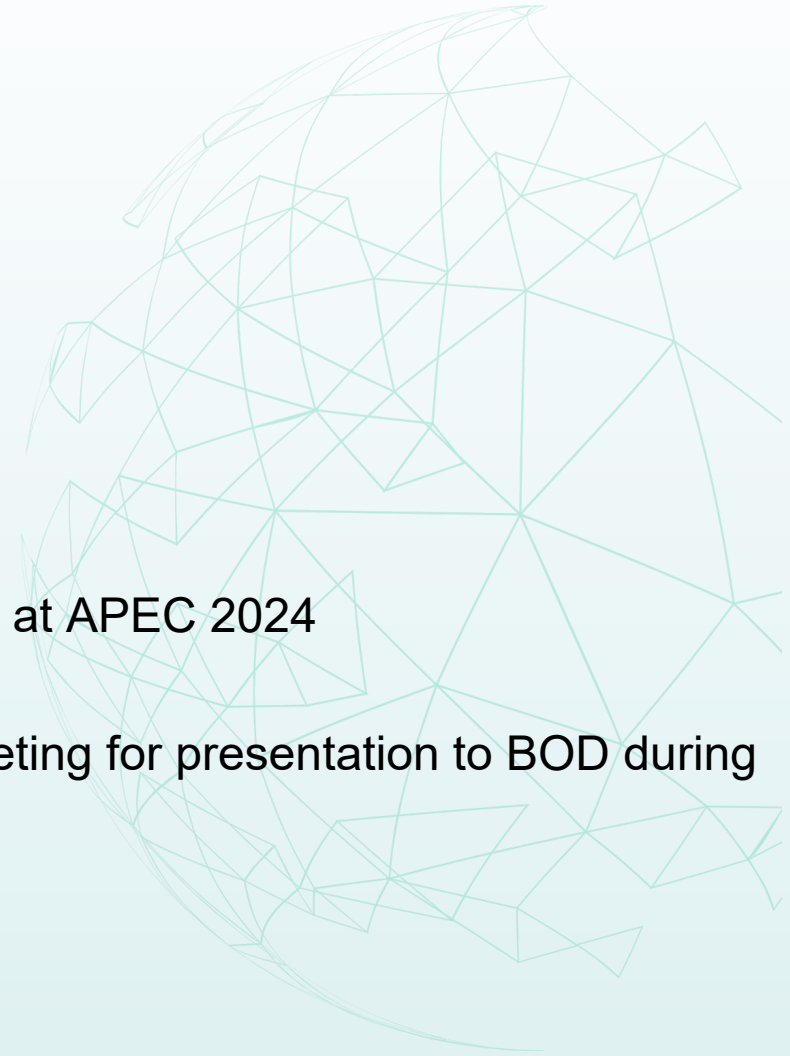


Potential Source of Info Inter Mag
Japan
Presentations
Measurement Techniques
New Materials

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 - Core Loss Database
 - Special project proposal to be submitted for BOD at APEC 2024
 - Electrical parameters of magnetic materials
 - Special projects proposal to be reviewed this meeting for presentation to BOD during their December 2023 meeting



PSMA Magnetics Committee Meeting

November 20, 2023

- Attendance (12)
 - John Horzepa
 - Joe Horzepa
 - Mike Arasim
 - Doug Eaton
 - Ed Herbert
 - Bryce Hesterman
 - Lukas Mueller
 - Alfonso Martinez
 - Rodney Rogers
 - George Slama
 - Mark Swihart
 - Matt Wilkowski



PSMA Magnetics Committee
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Thank You

