

## **PSMA Magnetic Committee Minutes**

July 6, 2022 @ 10:00 am CDT

### **Attendees**

Matt Wilkowski  
George Slama  
Ed Herbert  
Chuck Wild  
Rodney Rogers  
Mark Swihart  
John Horzepa  
Joe Horzepa  
Hasan Ahmadian Baghbaderani – Tyndall  
Victor Boyadzhyan  
Daniel Mascareno  
Bruce Hesterman  
Steve Carlsen  
Mike Arasim  
JC Sun

### **Agenda**

Workshop banner  
Proposals for presentation for PSMA PTR webinar series  
2023 Industry Session Planning  
2023 Workshop Planning

### **Discussion**

1. Consensus on latest workshop banner proposal
2. Mike Arasim of FairRite confirmed technology demonstration for workshop
3. Bryce indicated transformers have already been constructed with novel insulation systems, so results are available beyond reference paper
4. JC thermal issues in measurements proposed thermal issues in measurements as a potential topic for industry session
5. Chuck provided contact information for potential contact from University of Utah for presentation on implantable magnetics

### **Action Items**

- a. Ed to prepare the industry session proposal

- b. Ed to update budget for workshop based on input from Lisa
  - a. Workshop proposal will be submitted for September BOD meeting
- c. George to update magnetism logo for workshop banner
- d. All to continue to think of presenters for industry session and workshop

**Next Meeting**

August 2 @ 10:00 am CDT



*The Multinational Power Electronics Association*

# PSMA Magnetics Committee Meeting

July 6<sup>th</sup> 2022

**George Slama, Matt Wilkowski**  
**Committee Chairs**

# ***PSMA Magnetics Committee Meeting Agenda***

## ***July 6, 2022***

- Introductions
- Banner proposals for 2023 Power Magnetics at High Frequency Workshop
- Proposals for Magnetics Committee Contributions to Power Technology Roadmap Webinars
- 2023 Industry Session Planning
- 2023 Workshop Planning
- Other Items
  - PSMA Magnetics Committee articles for How2Power
  - PSMA Magnetics Committee on PSMA Website



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# ***Power Magnetics at High Frequency Workshop Banner Proposal #5***



**Power Magnetics @ High Frequency Workshop**

**PSMA Magnetics Committee - 18 March 2023, Orlando FL USA**



Improve the appearance of the BH Loop

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# 2023 PSMA PTR Webinar Series

## Contributions from the Magnetics Committee

- ETH – Johann Kolar, Jonas Huber
  - Soft-Switched Bridge-Leg Topologies
  - (2L and 3L TCM, ARCP)
- EnaChip – Matt Wilkowski
  - Wafer Level Magnetics
- Tyndall – TBD
  - Wafer Level Magnetics
- Tyndall – Hasan Baghbaderani
  - Core Loss Mechanisms – Note also a potential topic for industry session (prefer IS)
- Magnetics for Wireless Charging
  - Bryce – 10kW to 1MW (small to large vehicles) a student
  - Wurth – low power
- Magnetics for Transportation Electrification
- Sustainable Magnetics
- Magnetic Materials
- Insulation Materials
- Core Loss Data Bases
  - More likely a candidate for 2023





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# 2023 PSMA Magnetics Industry Session

- Theme: Measurement of Core Loss
- Organization
  - Mechanisms of power losses
    - Tyndall – Hasan Baghbaderani
    - Trade-off core design versus coil design
    - Eddy current Vs hysteresis loss Vs anomalous loss
  - Core loss measurements for
    - Powder cores
    - Ferrite cores
    - Amorphous and nanocrystalline cores
  - Low frequency Vs High frequency
    - High frequency ( $\geq 1$  MHz)
  - Power level measurements
    - High power ( $\geq 1$  kilowatt Vs low power  $\leq 1$  milliwatt)
  - Arbitrary waveforms
    - Generating waveforms
    - Measuring waveforms
  - Accuracy and resolution
  - Calorimetric Measurements
  - Test methods
  - Non-Evasive Stability Measurements (NISM)
  - Databases

Dominic Heye – Dexter Technologies  
Practical Core Loss Measurements  
Across Different Materials

## New slants

Avoid topics that were previously covered

Target audience for core loss measurements

TTA – usage of core loss measurements in magnetics design

Focus on practical rather than academic

Add survey to this year's industry session

Gap loss – especially tape wound cores

Relationship/influence/interaction of winding/core loss

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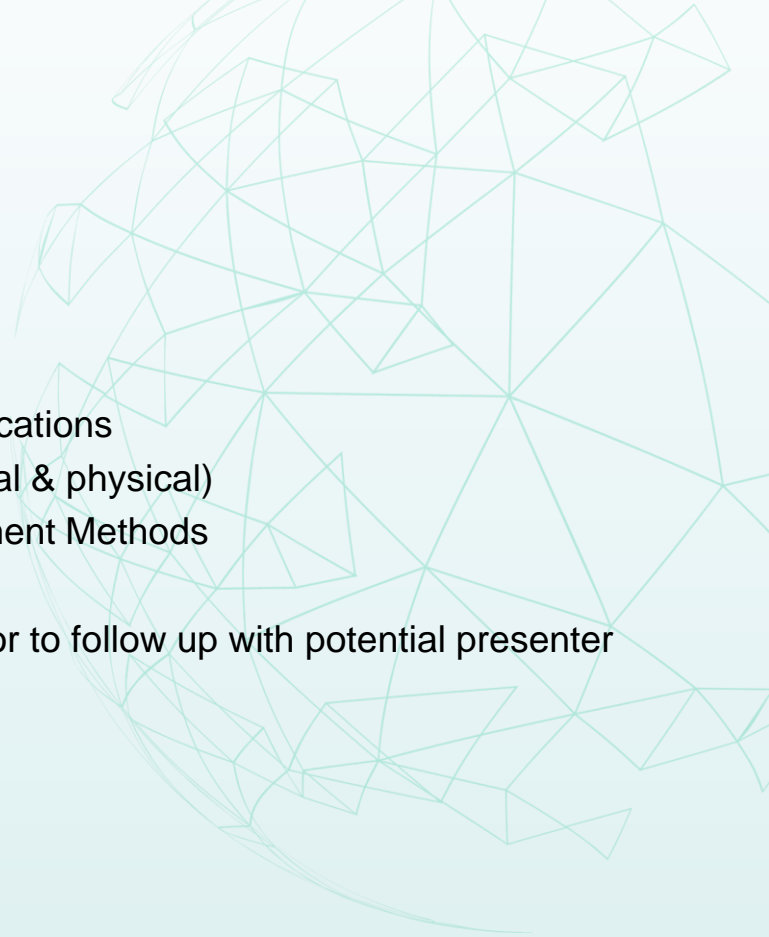


# 2023 Power Magnetics at High Frequency Workshop -1

- Theme: Magnetic Component Design Across Applications from Milliwatts to Megawatts
- Presenters
  - Keynote Presenter – Candidates
    - Scott Sudhoff – Purdue – Multi Objective Design Approach – No response after two attempts
    - Victor Quinn – Lessons Learned from the Trenches of Practical Product Design
    - Other
  - Lecture Presenters
    - Solid State Transformers
      - Kolar, Ohodnicki, Other?
      - CLLLC Dual Active bridge With Novel Insulation Approach for SST Applications (same topic, corona)
        - » <https://ieeexplore.ieee.org/document/9487105> – one chapter of below
      - Three-Phase Unfolding Based Soft-DC-Link Converter Topologies for AC-DC Applications
        - » <https://digitalcommons.usu.edu/etd/8015/>
    - Wireless Charging
      - Implantable – follow up with Chuck Wild for potential presenter
      - Mobile devices –
        - » Khurram Afridi – challenges of magnetics in capacitive wireless charging – material handling equipment
      - Electric vehicles
    - Transportation Electrification
      - 7 kilo-Watt Planar Transformer and Inductor -
    - Wearables
    - IVR
    - Servers
    - IoT

# 2023 Power Magnetics at High Frequency Workshop -2

- Theme: Magnetic Component Design Across Applications from Milliwatts to Megawatts
- Presenters
  - Special Topics (afternoon session)
    - Insulation
    - Corona
      - 3M or DuPont? (coming from Chuck)
    - Encapsulation processes & encapsulation materials
  - Technology Demonstrations
    - Moien Mohamadi – University of Illinois Chicago – Charging Applications
    - Mike Arasim – Fair Rite – Manufacturing Test Equipment (electrical & physical)
    - Arturo Mediano – HF Magic Lab – Near Magnetic Field Measurement Methods
    - Test equipment
      - Battery charging – higher voltage – safety equipment – Victor to follow up with potential presenter
      - Hazardous magnetic fields
    - Magnetic materials and structure



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# PSMA Magnetics Committee Web Page

<https://www.psmas.com/technical-forums/magnetics>

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## Magnetics Forum

 **Magnetics Info & Resources**  
for the Power Electronics Industry.

Introduction HF Task Force Magnetics Checklist Resources Presentations Core Loss Studies Meeting Minutes Workshop

### Introduction

The PSMA Magnetics Committee is a group of volunteers knowledgeable about power magnetics. Members include people from power supply companies, wound components producers, core manufacturers, and leading consultants in the field. The aim of the group is to support industry in a sometimes arcane area. We recognize that magnetics is often unfamiliar, for even the most experienced electronics designers. The committee is involved in republishing classic textbooks; making fundamental design papers available; education; and design tools. The members and their companies can be excellent resources for designers and users of magnetic devices.

Please send any suggestions for improvements to [power@psma.com](mailto:power@psma.com).

**News**

- Welcome to the PSMA
- New Product Announcements
- Members in the News
- Other News of Interest
- Calendar of Events
- Meeting Schedule

**Publications**

- Currently Available from PSMA
- Members Order Form
- Non-members Order Form
- EPSMA Publications

**Resources**

- Industry Information
- Industry Links
- Industry Resources
- Standards Organizations
- Standards Updates
- University Resources
- Job Postings
- Student Resumes

**Conferences**

- APEC
- CPSS
- EnerHarv
- IWIPP
- 3D-PEIM
- PwrSoC
- WiPDA

**Technical Forums**

- Capacitor
- Education
- Energy Harvesting
- Energy Management
- Energy Storage
- Magnetics
- Packaging & Manufacturing
- Power Technology Roadmap
- Reliability
- Safety & Compliance
- Semiconductor
- Transportation Power Electronics

**Membership**

- Benefits of PSMA
- Membership
- Joining Information
- Application form
- Members, A - Z
- Power Supplies
- Components
- Service Related
- By Market Segment
- Members Only
- Pay Your Membership Dues

**About PSMA**

- Purpose
- Mission
- Industry Leadership Organization
- Association Office
- Advisory Council
- Board of Directors
- Meeting Information
- Bylaws
- Working Committees
- Aims & Objectives of the EPSMA

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# PSMA Magnetics Committee Web Page

<https://www.pdma.com/technical-forums/magnetics>



psma.com/index.php/technical-forums/magnetics/meeting-minutes



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[Presentations](#)

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### Minutes from Magnetics Committee Meetings

The meeting minutes will be listed here for the convenience of the committee members.



[PSMA Magnetics Committee Meeting 2022 June 7](#)

1.13 MB



[PSMA Magnetics Committee Meeting 2022 May 10](#)

886.96 KB



[PSMA Magnetics Committee Minutes 2022 April 19](#)

3.52 MB



[PSMA Magnetics Committee Meeting 2022 Mar 22](#)

2.78 MB



Thank You

