



The Multinational Power Electronics Association

PSMA Magnetics Committee Meeting

July 17TH 2025

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

July 17, 2025

- Introductions
- 2026 Workshop Planning
- 2026 Industry Session Planning
- Special Projects
 - Core Loss Database
 - Current Driven Core Loss
 - Electrical Parameters of Magnetic Materials – phase 2
- Magnetics Forum on PSMA Website
- Open Magnetics
- Power Technology Roadmap
- Next Meeting



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PSMA Magnetics Committee Meeting Agenda – 2026 Workshop Planning

July 17, 2025

- ✓ **Identify Themes**
 - Overall Theme: Measurements and Data Trends to Achieve Better Analytic Models and Simulation Models Towards Improved Design Tools
 - AM Theme: Developing Analytic and Simulation Models from Measurement Data
 - PM Theme: Starting with Design Basics to Achieve Design Automation
- ✓ **PSMA Special Projects Request**
 - Approved by PSMA BOD on May 16, 2025
- ✓ **2026 Magnetics Workshop Banner**
 - Draft available – May 20, 2025
 - Use for PSMA 2025 Q2 Newsletter article
- ✓ **2025 PSMA 2 Quarter Newsletter**
 - Draft article submitted - May 27, 2025
- ☐ **Next Steps (June 2025 thru August 2025)**
 - Identify – Invite – Confirm Keynote presenters
 - Identify – Invite – Confirm Lecture presenters
 - Identify – Invite – Confirm Technology Demonstrations



PSMA Magnetics Committee Meeting Agenda – 2026 Workshop Banner

July 17, 2025



Power Magnetics @ High Frequency Workshop

PSMA Magnetics Committee - 21 March 2026, San Antonio, TX USA

PSMA



PSMA Magnetics Committee Meeting Agenda – Milestone Schedule

July 17, 2025



AI #	Description	Target Date	Actual date	Comments
1	Compile post workshop survey results	3/17/2025	3/17/2025	
2	Identify themes for workshop	4/9/2025	4/9/2025	
3	Post final presentations from previous workshop to attendees only URL	4/11/2025	4/10/2025	
4	Identify theme for industry session	5/7/2025	5/7/2025	
5	Approve expenses for previous workshop	5/1/2025	5/1/2025	
6	Establish budget	5/5/2025	5/6/2025	
7	Create banner for the workshop	5/15/2025	5/20/2025	
8	2ND quarter PSMA newsletter article	5/23/2025	5/27/2025	
9	Submit workshop proposal to PSMA BOD	6/1/2025	5/14/2025	Approved PSMA BOD on 5/16/2025
10	Identify target keynote presenters	6/18/2025		
11	Identify lecture presenters	6/18/2025		
12	Identify technology demonstrators	6/18/2025		
13	Solicit keynote presenters	6/30/2025		
14	Solicit lecture presenters	6/30/2025		
15	Solicit tech demonstrators	6/30/2025		
16	Solicit workshop partners	7/1/2025		
17	Confirm keynote presenter	8/1/2025		
18	Confirm lecture presenters	8/1/2025		
19	Confirm technology demonstrators	8/21/2025		
20	Submit 3RD quarter PSMA newsletter article	8/22/2025		
21	Identify poster presenters	9/12/2025		
22	Solicit poster presenters	9/30/2025		
23	Confirm poster presenters	10/15/2025		
24	Confirm partners	10/15/2025		
25	Publish final presentations from previous workshop to public PSMA URL	10/15/2025		
26	Tour facilities in conjunction with pre-APEC meeting	10/15/2025		
27	Post tentative agenda on website	10/22/2025		
28	Open registration	10/24/2025		

PSMA Magnetics Committee Meeting Agenda – Magnetics Workshop - AM Session Presenters July 17, 2025

□ AM Theme: Developing Analytic and Simulation Models from Measurement Data

➤ Keynote:

- **Who – Helen Cui (University of Tennessee) or Maeve Duffy (University of Galway Ireland)**
 - **Analytic Models**

➤ Lecture presenter 2:

- **Lucas Pniak – SAFRAN Research and Technology Center – Industry**
 - **Planar Transformers Electromagnetic Modelling Considering Capacitive Couplings Up to 100 MHz**

➤ Lecture presenter 3:

- **Nick Kirkby – ASU – Research**
 - **NIST Standards – Error Analysis (consider for student poster if Kirkby is still a student)**
- **Miroslav Vasic/Danile Rios Linares – University of Madrid – Academia**
 - **Artificial Neural networks (ANN) and Digital Twin to optimize DAB transformer design**

➤ Lecture presenter 4:

- **Thomas Guillod – Dartmouth – Research**
 - **Qualifying measurement data, eliminating bias**

PSMA Magnetics Committee Meeting Agenda – Magnetics Workshop PM Session Presenters July 17, 2025

❑ **PM Theme: Applying Design Basics to Achieve Design Automation**

➤ **Keynote:**

- **Iosu Aizpuru Larrañaga – University of Mondragon – Academia**
 - **Core loss from the aspect of physics-based modelling**

✓ **Lecture presenter 6:**

- **Alfonso Martinez – Würth Elektronik**
 - **Analytical models for leakage and stray inductance**

✓ **Lecture presenter 7:**

- **TBD – SIMPLIS Technologies – Industry**
 - **Simulation models**

➤ **Lecture presenter 8:**

- **TBD – Frenetic – Industry**
 - **Excel spreadsheets to AI**



PSMA Magnetics Committee Meeting Agenda – Magnetics Workshop – Tech Demo Presenters

July 17, 2025

Technology Demonstration Presenters

➤ Presenter 1:

- Who – Rohde & Schwarz – Industry
 - VNA – S-Parameters

➤ Presenter 2:

- Who - Hioki – Industry
 - Power analyzer, LCR meter, Impedance Analyzer

➤ Presenter 3:

- Who - Affiliation – Industry
 - Dielectric Withstanding Voltage/Insulation resistance

➤ Presenter 4:

- Who – PE Systems – Industry
 - Double Pulse Set

➤ Presenter 5:

- Who - Affiliation – Industry
 - Automated test Systems

➤ Presenter 6:

- Who - Affiliation – Industry
 - Partial Discharge

➤ Presenter 7:

- Marcin Kacki/Student - Hitachi Energy/University of Madrid – Industry/Academia collaboration
 - Impact of unequal flux distribution on power loss (potential poster)

➤ Presenter 8:

- Who - Affiliation – Sector
 - TBD

➤ Presenter 9:

- Who - Affiliation – Sector
 - TBD

➤ Presenter 10:

- Who - Affiliation – Sector
 - TBD

➤ Presenter 11:

- Who - Affiliation – Sector
 - TBD

➤ Presenter 12:

- Who - Affiliation – Sector
 - TBD

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PSMA Magnetics Committee Meeting Agenda – 2026 Industry Session Planning July 17, 2025

□ Previous Industry Sessions

- Presentations from industry sessions of 2023, 2024 and 2025 are not indicated on “Presentations” tab of the Magnetics Technical Forum
- **Action Item:** John Horzepa to check with APEC Industry Session chairs if we can restart the practice of making the APEC industry session presentations available on the “Presentation” tab of the Magnetics Technical Forum of the PSMA website if we wait one year after each APEC to place the presentations of the technical forum.

PSMA Magnetics Committee Meeting Agenda – 2026 Industry Session Planning July 17, 2025

- ✓ **Identify Themes**
 - Manufacturing Challenges and Directions
 - Magnetic Materials for Existing and Emerging Applications
 - Pairing Capacitors with Inductors to Create Better Solutions

- ☐ **Next Steps (June 2025 thru July 2025 for August Submission to APEC)**
 - Identify – Invite – Confirm presenters
 - Strategy 50/50 mix of industry and research presenters
 - PSMA to identify ten (10) industry sessions to sponsors other will need to be submitted outside of PSMA umbrella
 - APEC 2026 Industry Session Proposal submission deadline is August 15, 2025

PSMA Magnetics Committee Meeting Agenda – Industry Session Planning

July 17, 2025

❑ **Manufacturing Challenges and Directions**

➤ **Presenter 1:**

- **Who - DMEG – Industry**
 - **Fully automated ferrite factory**

➤ **Presenter 2:**

- **Who - Affiliation – Industry**
 - **Low profile cores for high current applications**

➤ **Presenter 3:**

- **Rudy Geisler – National Magnetics – Industry**
 - **TBD**

➤ **Presenter 4:**

- **Who - Affiliation – Industry**
 - **Molded versus Pressed Cores versus machined cores**

➤ **Presenter 5:**

- **Peter Weiner - Norwe – Industry**
 - **3D Printing and or Laser Direct Structuring**

➤ **Presenter 6:**

- **Who - Affiliation – Industry**
 - **Safety Issues**

✓ **Presenter 7:**

- **Claudio Canete-Cabeza – Würth – Industry**
 - **Transformers for 400V/48V scalable to 800V/48V power conversion for AI data centers**

➤ **Presenter Backup:**

- **Marcin Kacki - Hitachi Energy/University of Madrid – Industry/Research collaboration**
 - **Experimental data confirming analytical calculations and simulations to address challenges of transformer design for DAB**

➤ **Presenter Backup:**

- **Who – Standex – Industry**
 - **Automation**

PSMA Magnetics Committee Meeting Agenda – Industry Session Planning

July 17, 2025

❑ **Magnetic Materials for Existing and Emerging Applications**

➤ **Presenter 1:**

- **Alexander Stadler – Coburg University - Research**
 - **Overview of relevant magnetic material properties for existing and emerging applications**

✓ **Presenter 2:**

- **Sai Pranesh Amiriseti – University of Florida (Gainesville) – Research**
 - **Electroplated Nanocomposite Magnetic Material**

➤ **Presenter 3:**

- **Who - Sandia – Research**
 - **TBD**

➤ **Presenter 4:**

- **Toshio Hiraoka - Taiyo Yuden – Industry**
 - **Magnetic material for IVR applications**

✓ **Presenter 5:**

- **Abraham Solis MK Magnetics – Industry**
 - **Tape Wound Amorphous Cores**

➤ **Presenter 6:**

- **Hideki Oyama – Ajinomoto Fine-Techno – Industry**
 - **Magnetic powders and films**

✓ **Presenter 7:**

- **Tobias Trupp - Magnetec – Industry**
 - **Nanocrystalline Cores**

➤ **Presenter 8:**

- **Who – Yageo – Industry**
 - **Nanocrystalline Cores**

PSMA Magnetics Committee Meeting Agenda – Industry Session Planning

July 17, 2025

- ❑ **Pairing Capacitors with Inductors to Create Better Solutions**
- ❑ **Capacitors teaming with Inductors to Create better Solutions**
- **Presenter 1:**
 - **Jared Quinzer – Würth Elektronik – Industry**
 - **TBD**
- **Presenter 2:**
 - **Arturo Mediano – HF Labs - Research**
 - **Shielding, Filter Locations**
- **Presenter 3:**
 - ✓ **Who – Schaffner – Industry**
 - **The importance of magnetic and capacitive components in emc filters**
- **Presenter 4:**
 - **Who – Affiliation – Sector**
 - **TBD**



PSMA Magnetics Committee Meeting Agenda

July 17, 2025

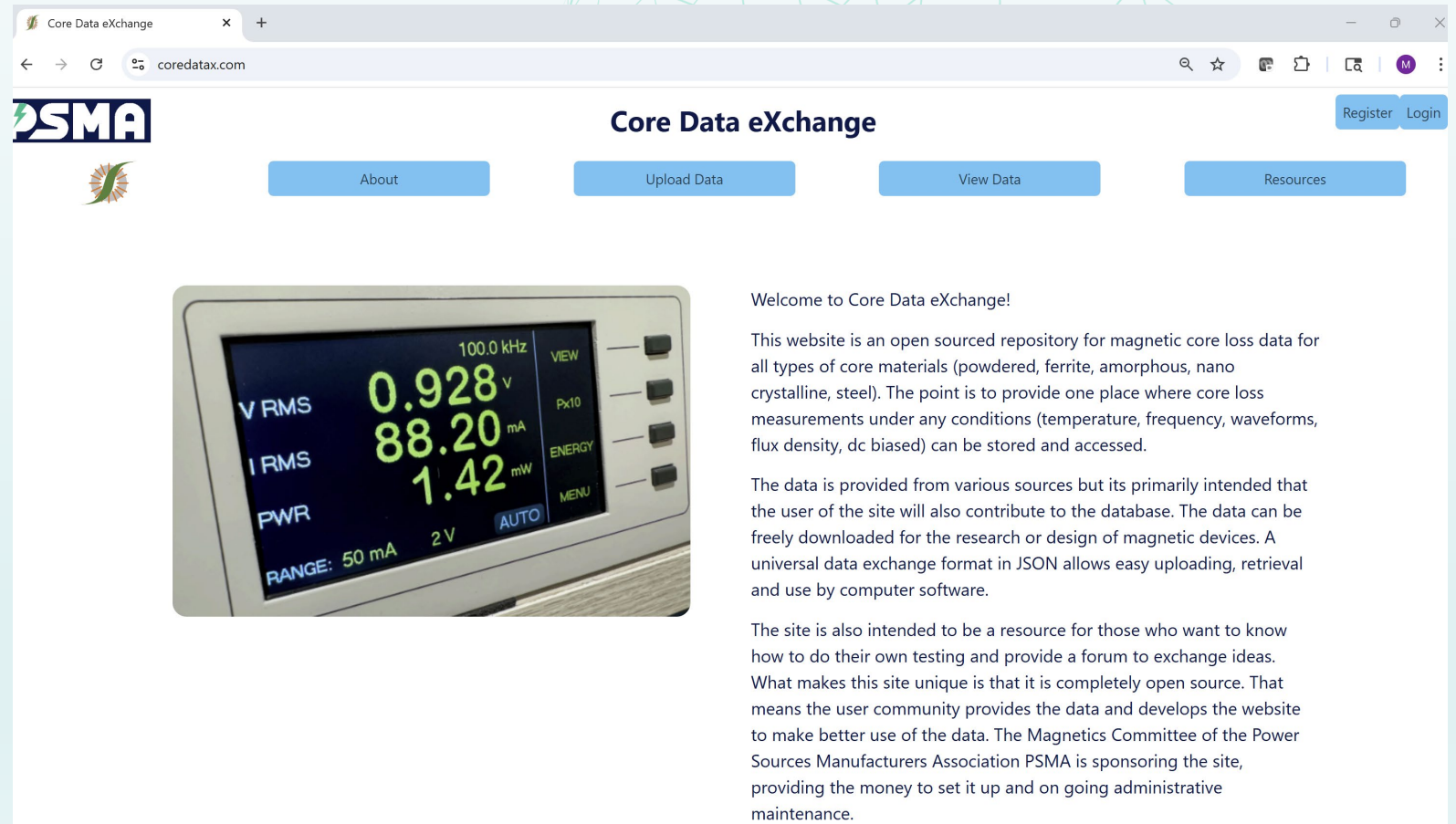
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PSMA Magnetics Committee Meeting Agenda – Special Projects – In Process

July 17, 2025

- Core Loss Database
 - on-line needs formatting/styling
 - URL: coredataX.com



Welcome to Core Data eXchange!

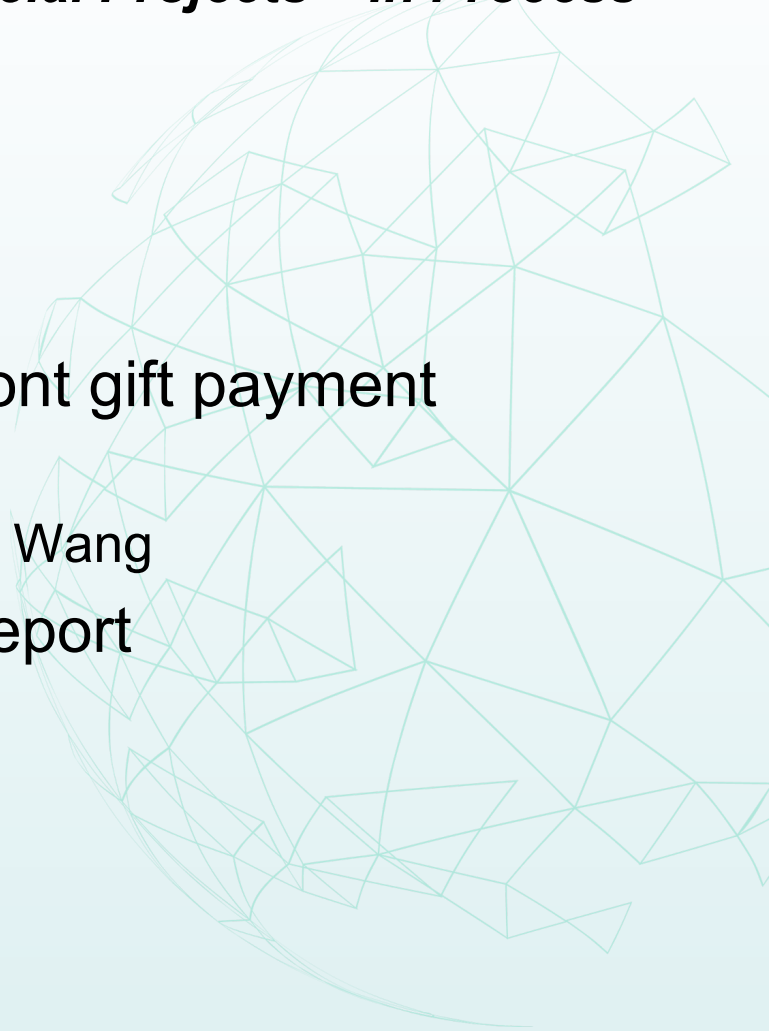
This website is an open sourced repository for magnetic core loss data for all types of core materials (powdered, ferrite, amorphous, nano crystalline, steel). The point is to provide one place where core loss measurements under any conditions (temperature, frequency, waveforms, flux density, dc biased) can be stored and accessed.

The data is provided from various sources but its primarily intended that the user of the site will also contribute to the database. The data can be freely downloaded for the research or design of magnetic devices. A universal data exchange format in JSON allows easy uploading, retrieval and use by computer software.

The site is also intended to be a resource for those who want to know how to do their own testing and provide a forum to exchange ideas. What makes this site unique is that it is completely open source. That means the user community provides the data and develops the website to make better use of the data. The Magnetics Committee of the Power Sources Manufacturers Association PSMA is sponsoring the site, providing the money to set it up and on going administrative maintenance.

***PSMA Magnetics Committee Meeting Agenda – Special Projects – In Process
July 17, 2025***

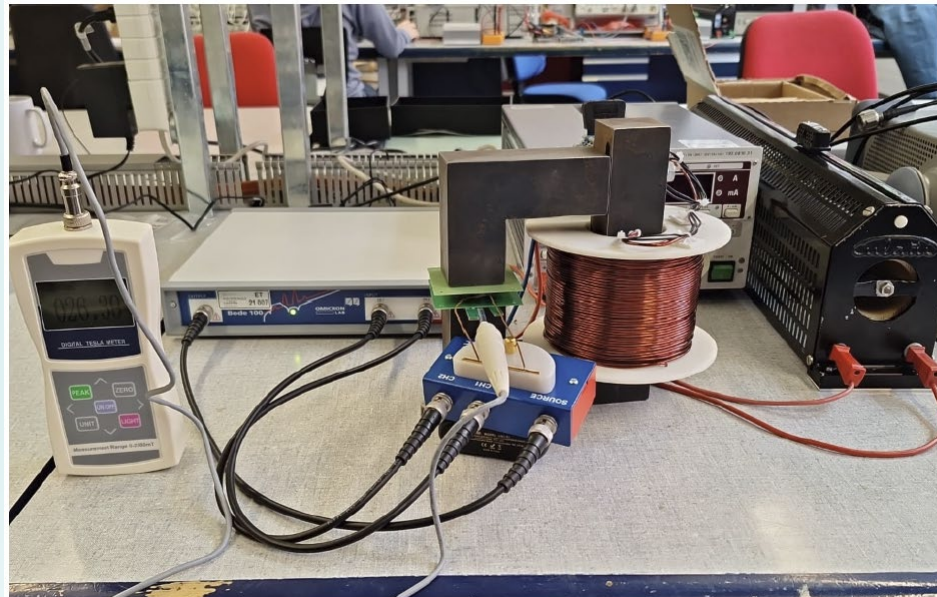
- Current driven core loss testing –
 - Approved by PSMA BOD June 20, 2025
 - Project can start upon receipt of 50% upfront gift payment
 - PSMA to submit gift form
 - Payment to University of Nebraska care of Jun Wang
 - 50% final payment after approval of final report



PSMA Magnetics Committee Meeting Agenda – Special Projects – In Process

July 17, 2025

- Electrical parameters of magnetic materials – phase 2
 - Final report available
 - Approved payment with additional contingency expenses
 - Need invoice from HSLU
 - Place accepted report on special projects tab of Magnetics technical forum
 - Add link to IEEE Xplore for associated APEC 2025 paper
 - KPIs
 - Data
 - Methodology



PSMA Magnetics Committee Meeting Agenda – Special Projects Pending

July 17, 2025

– Pending

- Steinmetz like approximation
- Spice model
- Propagation in magnetic materials

Address after APEC 2026 planning meeting in October



PSMA Magnetics Committee Meeting Agenda

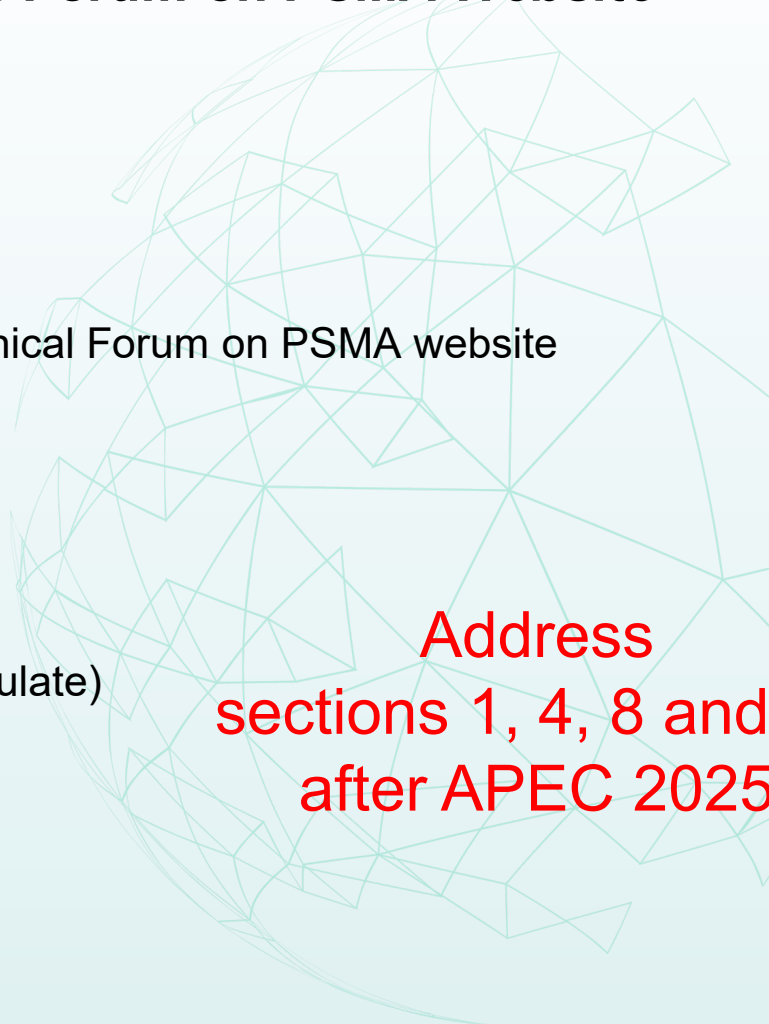
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PSMA Magnetics Committee –Magnetics Committee Forum on PSMA Website July 17, 2025

- Completed in 2024
 - Section 1.3 Powdered metal
 - Proposal by Lukas Mueller has been accepted
 - Need to add to HF task force tab under magnetics Technical Forum on PSMA website
- Proposed additions/updates
 - Section 1 Core Materials
 - Sputtered (addition)
 - Electroplated (addition)
 - Section 1.4 Nanocrystalline and amorphous metals (populate)
 - Section 4 Inductors
 - TLVR inductors (addition)
 - Section 8 “Solid state” transformers (populate)
 - Section 12 Fabrication Technology
 - Section 12.3.2 Substrate embedded (populate)
 - Section 12.6 PSiP (populate)
 - Section 12.7 PwrSoc (populate)



**Address
sections 1, 4, 8 and 12
after APEC 2025**

PSMA Magnetics Committee –Magnetics Committee Forum on PSMA Website July 17, 2025

<https://psma.com/technical-forums/magnetics/hf-task-force>

psma.com/technical-forums/magnetics/hf-task-force

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Magnetics Info & Resources
for the Power Electronics Industry.

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

HF Task Force

PSMA Magnetics Committee High Frequency Task Force

January 11, 2015

At the PSMA Planning meeting in September 2013, the PSMA Magnetics Committee was strongly encouraged to do a workshop on high frequency magnetics.

Below is to the working document in which various topics of interest have been identified and grouped. This document will be revised as new topics are suggested and input is received.

For the various topics, we solicit inputs from experts in the related field. White papers, application notes, slide presentation, audio and video files all are welcome. As inputs are received, they will be summarized in the working document, and links will be added to original files.

We have created a LinkedIn group, "PSMA Magnetics Committee High Frequency Task Force." We will open threads on various topics to provide a forum for questions and open discussion.


We encourage engineers to identify problems with magnetics that have hindered their high frequency designs. The more interesting problems may become discussion threads, looking for solutions.

Steve Carlsen
Ed Herbert
Co-Chairmen
PSMA Magnetics Committee

High frequency magnetics

Revision: January 11, 2015

- ▶ **1. Core materials**
- ▶ **2. Core geometry and scaling**
- ▶ **3. Transformers**
- ▶ **4. Inductors**
- ▶ **5. Lossy suppressors**
- ▶ **6. Magnetic circuits with saturating cores**
- ▶ **7. Combination magnetic structures**
- ▶ **8. "Solid state" transformers**
- ▶ **9. Windings**
- ▶ **10. Parasitic impedance**
- ▶ **11. Core loss**
- ▶ **12. Fabrication technology**
- ▶ **13. Near field noise performance**
- ▶ **14. Software, design and simulation**
- ▶ **15. Test equipment, quality assurance and production testing**
- ▶ **16. Reliability**
- ▶ **Appendix**



PSMA
40th
ANNIVERSARY
Celebrating 40 Years in Service
1985-2025
Power Sources
Manufacturers Association

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PSMA Magnetics Committee Meeting Agenda – Open Magnetics

July 17, 2025

- What's next?
 - Proceed to integrate into PSMA webpage
 - April 25 – initial discussions with PSMA webmaster
 - May 8 – feedback from PSMA webmaster

The screenshot displays the PSMA website's navigation bar with links for News, Publications, Resources, Conferences, Technical Forums, Membership, and About PSMA. Below the navigation is the 'Magnetics DB test page' header. The main content area features a dark-themed interface for the 'OpenMagnetics design tool'. A sidebar on the left lists 'Steps' including Welcome, Design Req., Op. Points, Tool Selector, and a 'Tool menu'. The main text area contains a 'Welcome' message and three paragraphs explaining the tool's workflow: 1) defining requirements for components like inductors or transformers; 2) defining excitation (voltage and current) for ports; and 3) choosing the desired output (report, COTS core, or manual design). A footer section contains a grid of links categorized by News, Publications, Resources, Conferences, Technical Forums, Membership, and About PSMA.

PSMA News Publications Resources Conferences Technical Forums Membership About PSMA
The multinational power electronics association Contact Log in

Magnetics DB test page

OpenMagnetics Alf's Musings New Design Other Tools Wizards Donate Bug?

Welcome

Welcome to OpenMagnetics design tool.

Since this is the first time you use it, allow me to explain how it works.

In this tool you don't need to specify if you want an inductor, a transformer, or a flyback. It will be defined by the requirements.

In the first step you will be asked for the requirements of your magnetic component. This usually implies the magnetizing inductance, the number of windings, and their turns ratio; but more things, like the insulation or the maximum dimensions can be added.

In the second step, you need to define the excitation of your component. This implies specifying the voltage and current of each of the ports (primary, secondary, etc.) of the device. You can do this by manually defining them, or by uploading a simulation from your favorite circuit simulator.

In the third step, you will be able to choose what you want to achieve with this specifications: getting a report of your specification, finding a COTS core, getting advise for designing a full magnetic, or even doing it yourself manually.

[View the OpenMagnetics design tool in a new window](#)

News	Publications	Resources	Conferences	Technical Forums	Membership	About PSMA
Welcome to the PSMA	Currently Available from PSMA	Industry Information	APEC	Capacitor	Benefits of PSMA	Purpose
New Product Announcements	Non-members Order Form	Industry Links	CPSS	Education	Membership	Mission
Members in the News	EPSMA Publications	Industry Resources	EnerHarv	Energy Harvesting	Joining Information	Industry Leadership
Other News of Interest		Standards Organizations	IWIPP	Energy Management	Application form	Organization
		Standards Updates	INPEM	Energy Storage	Members: A - Z	Association Office

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2025 Edition PSMA Power Technology Roadmap

Magnetics Section

- 2025 Topics (Submitted)
 - Embedded Magnetics
 - Integrated Voltage Regulators (IVR)
 - Fully Integrated Voltage Regulators (FIVR)
 - Hybrid Integrated Voltage Regulators (HIVR)
 - Isolated Signal and Low Power Transformers
 - PwrSoC (Power Supply on Chip)
 - Power Systems in Package (PSiP)
 - Solid State Transformers (SST)
 - Trans-Inductor Voltage Regulators (TLVR)
 - Mother Board Voltage Regulators (MBVR)
 - Lateral Power Delivery (LPD)
 - Vertical Power Delivery (VPD)
 - Dual Phase Power Block (DPPB)
 - ~~Wireless Power Transfer (WPT)~~
 - ~~EV Charging~~
 - Core Loss Measurement Methods & Databases
 - Magnetic Material Alternatives Opportunities and Limitations
- 2026/2027 Cycle Topics (Need to identify)
 - Net Zero Bias TLVR
 - Solid State Transformers (SST)
 - Magnetic Materials
 - EV Charging
 - TBD
 - TBD

2025 PSMA PTR Released June 2025

Still in process of identifying chairs for the next cycle of the PSMA PTR?

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***PSMA Magnetics Committee Meeting Agenda
July 17, 2025 – Next Meeting***

- **Thursday August 7 10:00 AM CDT – 11:00 AM CDT Virtual**



PSMA Magnetics Committee Meeting . July 17, 2025

Attendance (17)

John Horzepa

Kamyar Ahmadi

Mike Arasim

Andres Arias

Hasan Ahmadian Baghbaderani

Alan Cooper

Jim Cox

Doug Eaton

Frank Feng

Michael Freitag

Ed Herbert

Bryce Hesterman

Marcin Kacki

Mohammed Khodadadi

Alfonso Martinez

Jonas Multhahaler

Frank Oberlitner

Paul Ohodnicki

Lukas Mueller

Mike Ranjram

Rodney Rogers

Ranajit Sai

George Slama

JC Sun

Tobias Trupp

Jun Wang – Bristol

Jun Wang - Nebraska

Ningning Wang

Matt Wilkowski



PSMA Magnetics Committee
July 17, 2025

Thank You

