



*The Multinational Power Electronics Association*

# PSMA Capacitor Committee

**0 Days to APEC 21 March 2026  
Touchdown. We are here.**

**25 Mar 2026**

**Alan Cooper, Frank Puhane  
Committee Chairs**

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



# Capacitor Forum



## Capacitor Info & Resources for the Power Electronics Industry.

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## Purpose

The PSMA Capacitor Committee is committed to educating and sharing the latest technologies, design trends, and design techniques for capacitors with the electronic community at large. We organize Workshops, Industry Sessions, and Webinars. The Workshops are all day events typically held on the Saturday before APEC that include, not only interactive discussions from Manufactures and Universities, but also a demonstration area for added educational opportunities. Our Industry Sessions are a part of APEC, and focus on a trending theme in which we bring in speakers from many industries to dig into that theme from several different angles. We offer Webinars that are focused strictly on education. We named these Webinars "Capacitor Fundamentals" 101, 201, etc. The Capacitor Committee also has Webinars dedicated to the information that is included in the PSMA Roadmap that is published every second year.

We are a group of volunteers knowledgeable about capacitors and power electronics. Members include people from capacitor makers, the power electronics industry, and leading consultants. The members and their companies can be excellent resources for designers and users of capacitors. Our Webpage also includes reference documents to educate designers on capacitor basics. These are pulled from many of our member company Websites all pulled together for a single point of use.

Thank you for visiting our PSMA Webpage, and if you would like to participate or have any questions please do not hesitate to reach out to any of the Co-chairs.

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- **Agenda:- PSMA Capacitor Report 2026**

- 1. Industry Session**

1. **Managed and supported two industry sessions.**
2. **Full capacitor 7 session**
3. **Full mixed technology magnetic / capacitor 4 session**
4. **Session max headcount 85**

- 2. Workshop**

1. **Organised a Capacitor Specific Workshop to run in parallel**
2. **Technology demonstrations well supported showing latest technology and concerns**
  1. **Demos from Hioki, CalRemics, Yageo, Würth Elektronik, Omicron**
3. **Capacitor Workshop attendees 35**
4. **Total Magnetic and Capacitor count 195**

- 3. Webinar**

1. **We did a series of Webinars from Basics to Design In**
2. **High attendees count up to ~100**



# Workshop

*Preliminary Agenda, Subject to Change*

**7:00 AM – 8:00 AM Registration, Technology Demonstrations, Posters and Breakfast**

**8:00 AM – 8:05 AM Opening Remarks**

**8:05 AM – 9:25 AM Technical Session 1 – Design Basics Part 1**

- **Keynote:** Current Capacitor technology and how it affects basic designs – *Peter Blais, Director of Technical Marketing, YAE0*
- Capacitor Selection for Resonant Converter Design – *Dr. Mark Scott, University of Miami*

**9:25 AM – 9:45 AM Break**

**9:45 AM – 12:00 Noon Technical Session 2 – Design Basics Part II**

- 3 Days to 30 Seconds Capacitor Array Design – *Jake Michaels, YAGE0*
- Designing for Environmental Compatibility – A Key to Sustainable Power Electronics (working title) - *Luc Imperiali, ETH Zürich*
- Electrolytic Capacitor Technology in multilevel inverters – *Benjamin Dermeik, CapXon*
- Panel Discussion

**12:00 Noon – 2:00 PM Technology Demonstration and Poster Session**

**Technology Demonstrations:**

- Calramics
- Hioki
- Würth Elektronik
- YAGE0

**2:00 PM – 3:50 PM Technical Session 3 - Design Analysis and Futures - Part 1**

- **Keynote:** Why Capacitors Do What They Do – *David Zawacki, CalRamics*
- Lifetime analysis of Electrolytics including Mission Profiles - *MaryAnn Fulton, YAGE0*
- Tired of the DC-Bias of MLCCs. How a model is created based on performance measurements of class 2 MLCCs – *Frank Puhame, Würth Elektronik*

**3:50 PM – 4:10 PM Break**

**4:10 PM – 5:10 PM Technical Session 4 – Design Analysis and Futures - Part 2**

- Switched-Capacitor Based Topologies and Circuit Techniques for High-Performance Power Conversion – *Dennis Larsen, Skycore Semiconductor*
- Panel Discussion

**5:10 PM – 5:30 PM Closing Remarks**

**5:30 PM – 6:30 PM Networking Hour**

- Technology Demonstrations and Posters











# Industry Session

8:30 AM - 11:55 AM CT

### IS03 - Capacitor Circuit Design Essentials for Modern Challenges

Industry Session Chair: [Alan J. Cooper, Ph.D CEng. MIET – YAGEO](#)

Industry Session Chair: [Frank Puhane, B.Eng \(he/him/his\) – Würth Elektronik](#)

Student Session Assistant: [Christoph Sachs \(he/him/his\) – University Of Stuttgart, Institute For System Dynamics](#)



**PSMA Session**

8:30 AM - 8:55 AM CT

#### IS03.1 - How Capacitors are qualified and how to interpret datasheet values

Location: 205

Industry Session Presenter: [Jon Izkue \(he/him/his\) – Würth Elektronik](#)



**PSMA Session**

8:55 AM - 9:20 AM CT

#### IS03.2 - Optimized Material Selection for targeted Electrolytic Capacitor Designs

Location: 205

Industry Session Presenter: [Benjamin Dermeik \(he/him/his\) – CapXon Electronic Technology Co., Ltd.](#)



**PSMA Session**

9:20 AM - 9:45 AM CT

#### IS03.3 - Cooling Considerations for an MLCC Array in a Resonant Power Converter

Location: 205

Industry Session Presenter: [Hunter Hayes, PhD – KEMET Electronics Corporation](#)



**PSMA Session**

9:45 AM - 10:10 AM CT

#### IS03.4 - Optimizing Modern Power:- The Role of Parasitics in High Performance Design

Location: 205

Industry Session Presenter: [Octavian-Tudor Stroe, MSc – Würth Elektronik](#)



10:40 AM - 11:05 AM CT

IS03.5 - An Investigation of Rectangular Capacitor Technology, its Advantages Compared to Traditional Cylindrical Capacitors

Location: 205

Industry Session Presenter: [MaryAnn E. Fulton \(she/her/hers\)](#) – YAGEO / KEMET Division

Industry Session Presenter: [Rui Montiero](#) – YAGEO

Industry Session Presenter: [Rita Caeiro](#) – YAGEO



**PSMA Session**

11:05 AM - 11:30 AM CT

IS03.6 - High-Temperature Solid-State Metallized Polymer Capacitors for Power Processing Applications

Location: 205

Industry Session Presenter: [Angelo Yializis, PhD](#) – PolyCharge



**PSMA Session**

11:30 AM - 11:55 AM CT

IS03.7 - Switched-Capacitor Power ICs for Emerging Data Center Architectures

Location: 205

Industry Session Presenter: [Dennis Larsen, PhD](#) – Skycore Semiconductors



**PSMA Session**



## Power Density of Array Designs

- Useful metric for comparing heat concentration of different designs
- Total power losses of all M,CCs in the array divided by array area
- Somewhat analogous to the heat flux of the design



For 1210, Density Level B  
(PC-7511)  
 $V1 = 4.7 \text{ mm}$   
 $V2 = 3.2 \text{ mm}$

	Close Spacing	Wide Spacing
Cells to Carrier Spacing (Multiple of $V1, V2$ )	34	24
Array Footprint	$38 \times 21 \text{ mm}$ ( $272 \text{ mm}^2$ )	$72 \times 47 \text{ mm}$ ( $3,384 \text{ mm}^2$ )
Power Losses	12 W	13 W
Power Density	$28 \text{ mW}/\text{cm}^2$	$3.8 \text{ mW}/\text{cm}^2$



- **Agenda:- PSMA Capacitor Meeting 2026**

1. **Next Meeting Date**

1. **We meet every 4 Weeks online**
2. **15<sup>th</sup> of April**

2. **Workshop**

1. **Do it again in 2027**
2. **Analysis of the survey result**
3. **Based on this we can prepare the theme and topic**

3. **Industry Session**

1. **Run a 7 session again in 2027**
2. **Based on the feedback from the workshop we can prepare the theme and topic for the industry session**

4. **Webinar**

1. **Start the Webinar session again**
2. **End (3<sup>rd</sup> Week) of January 2027**
3. **End of November 2026**
4. **End of September 2026**
5. **Mid/End of June 2026**

5. **One pager about the information what is the workshop and what is the industry session then make it like a call for paper.**

- **Agenda:- PSMA Capacitor Meeting 2026**

- 1. Committee Chair selection**

- 1. Long term perspective**

- 1. David Zawacki**
- 2. Jon Izkue**
- 3. Frank Puhane**