Organisational Information

Sign up at: www.ecpe.org/events

Registration Deadline:

17 September 2024

Participation Fee:

€ 650,– *	for industry
€ 480,– *	for universities/institutes
€ 145,– *	for students/PhD student (limited spaces; copy of students ID required)

* plus VAT

- The on site participation fee includes dinner, lunches, coffee/soft drinks and digital proceedings. The reduced (PhD) students fee includes all except for dinner (can be booked for an extra fee of € 50,-*)
- The online participation includes remote access via the meeting software Webex and digital proceedings.
- Digital proceedings will be provided by download link latest one day before start of the event. A printed handout is available on request.
- Upon receipt of registration confirmation via email you are signed-up for the event. The invoice will be sent via email.
- Three participants from each ECPE member company free of charge. Allocation in sequence of registration.
- 10% discount on university/institute fee for participants from ECPE competence centres.
- Further information (hotel list and maps) will be provided after registration and can be found on the ECPE web page.
- Cancellation policy: Full amount will be refunded in case of cancellation upon to 2 weeks prior to the event. After this date 50 % of the fee is non-refundable (replacement is possible).

Organisational Information

Organiser	ECPE e.V. Ostendstrasse 181 90482 Nuremberg, Germany www.ecpe.org
Technical Chair	Prof. Till Huesgen, Hochschule Kempten Dr. Jacek Rudzki, Semikron Danfoss Dr. Helmut Schweigart, Zestron Europe
Technical Contact	Gudrun Feix, Thomas Harder, ECPE e.V. thomas.harder@ecpe.org
Organisation	Marietta Di Dio, ECPE e.V. +49 911 81 02 88 – 13 marietta.didio@ecpe.org
Venue	Zestron Europe a Business Division of Dr. O.K. Wack Chemie GmbH Untere Au 9 85107 Baar-Ebenhausen Germany (Shuttle bus from Munich Airport) or online via Webex

Source : Zestron Europe
Source graph front page: HS Kempten/Semikron Danfoss

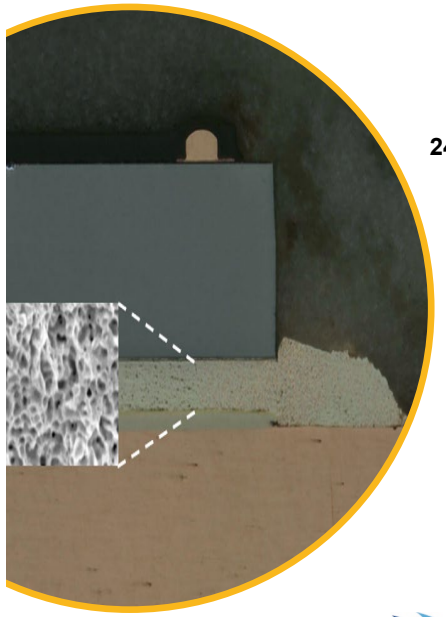
European Center for Power Electronics e.V.

Hybrid Event

Draft Programme

ECPE Hybrid Workshop

Sinter Technology in Power Electronics



24 -25 September 2024
Baar-Ebenhausen
(near Ingolstadt)
/ hybrid

in cooperation with

ZESTRON

Cluster Leistungselektronik

ECPE Hybrid Workshop

Sinter Technology in Power Electronics

24 – 25 September 2024
Baar-Ebenhausen, Germany / hybrid

Sinter technology is increasingly coming into focus for high performance power electronic applications. Sintering is overcoming the limitations of common solder materials, which remain well suited for many discrete and small module device applications. Sinter systems enable performance at harsh ambient conditions as seen in extended mission profiles for automotive and industrial applications. These mission profiles typically drive longer high-temperature operating life, higher temperature cycles and require faster switching. Also, due to significantly lower thermal resistance, the power density can be increased.

The main benefits of silver as well as copper sintering are:

- High thermo-mechanical stability
- Highest electrical conductivity
- High thermal conductivity

Metal sintering is a surface interdiffusion of adjacent atoms to create a solid interconnection joint out of a metal particle network. To control the densification and the joint strength of the sinter connection, the primary process influencers are the temperature, the time, the pressure, the nature of the sintering atmosphere, and the microstructure of the sinter paste.

Sintering is an emerging technology compared to well-established soldering. Thus, it needs a careful consideration of the entire process chain including paste printing and drying, chip placement, and the final sintering step. The sequence of the steps as well as the parametrization depends on the targeted paste, the finishes, and the size of the joining area.

As for all processes, there is still the necessity for quality management. The Workshop presentations will start with the evaluation of sinter pastes, proceed to test the sinterability of the metal finishes, as well as the final control of the sinter joints.
In addition to standard sinter technology, there will be an outlook on potential future alternatives.

The workshop is chaired by:

Prof. Till Huesgen, Hochschule Kempten (DE)
Dr. Jacek Rudzki, Semikron Danfoss (DE)
Dr. Helmut Schweigart, Zestron Europe (DE)

All presentations and discussions will be in English.

Draft Programme

Tuesday, 24 September 2024

09:15 **Registration / Webex started**

Introduction

09:45 **Welcome & Opening**
Gudrun Feix, ECPE; Helmut Schweigart, Zestron Europe

10:00 **Evolution of Sintering Technology**
Jacek Rudzki, Semikron Danfoss (DE)

Materials and Surfaces

10:30 **Surface Finishes and Sinterable Metallisations**
Aaron Hutzler, Bond Pulse (DE)

11:00 **Lifetime Modeling for Module Attach Sintering**
Florian Seifert, Heraeus (DE)

11:30 **Silver Sinter Film Materials, Properties and Industrial Applications**
Martin Metzler, MacDermid Alpha (DE)

12:00 **Sinterability Analysis, Surface Treatment Pre and After Sintering**
Helmut Schweigart, Zestron Europe (DE)

12:30 **Lunch break**

Process and Equipment

13:30 **Sintering Equipment for Different Atmosphere as Batch and Inline Solution**
Dirk Bußе, Budatec (DE)

14:00 **Micro-Punch System for Independent Pressure Sintering**
Alexander Walther, AMX Automatrix (IT)

14:30 **Large-area Sintering: Advantages and Challenges**
Aylin Bicakci, Fachhochschule Kiel (DE)

Quality Testing and Reliability

15:00 **Quality Testing of Sintered Layers by Thermal Analysis**
Corinna Grosse-Kockert, NanoTest (DE)

15:30 **Coffee Break**

16:00 **Non-Destructive Testing of Sinter Joints Using Scanning Acoustic Microscopy**
Zyzi Ramos, PVA TePla (DE)

16:30 **Accelerated Qualification of Highly Reliable Chip Interconnect Technology by Power Cycling under Thermal Overload**
Andreas Lindemann, University of Magdeburg (DE)

17:00 **Experimental and Simulation based Lifetime Estimation of Silver Sintered Power Modules**
Anu Mathew, Fraunhofer ENAS (DE)

17:30 **End of 1st Day**

18:00 **Visit of Zestron's Analytical Centre**

18:30 **Networking BBQ Dinner at Zestron Facility**

Draft Programme

Wednesday, 25 September 2024

08:30 **Start of 2nd Day / Webex started**

Applications Example

09:00 **Sinter Technology in Automotive Power Electronics**
Freerik Forndran, Vitesco Technologies (DE)

Alternative Technologies and Future Trends

09:30 **Nanowires as Power Dies Interconnect: Review and Current Work**
Vincent Bley, LaPlace Université Toulouse (FR)

10:00 **Copper Silver Hybrid Sintering as an Intermediate Stage to Pure Copper Sintering with Combined Advantages of both Elements**
Adrian Stelzer, NanoJoin (DE)

10:30 **Coffee Break**

11:00 **Copper Sintering for Large Area Bonding - a Low Pressure and Low Temperature Approach**
Krishna Bhogaraju, CuNex (DE)

11:30 **Sinter-Lamination Technology for 3D Power Electronics**
Andreas Ostmann, Fraunhofer IZM (DE)

12:00 **Final Discussion**

12:30 **Lunch Break**

13:30 **End of Workshop**