



The European Institute for the PCB Community

EIPC SPEeDNEWS

The Weekly On-Line Newsletter

Issue 13 – April 2023

NEWS FROM THE EIPC

Join us at the upcoming EIPC Summer Conference in Munich!

If you have never been to Munich, then you are probably not working in the PCB industry. Well, you may be, but then if you have never attended Productronica or Electronica, a bi-annual gathering in Munich of the illustrious companies who are the foundations of it, then that's a shame. But here is your chance. The EIPC are holding their Summer Conference there on 15th & 16th June, which is not far off now.

For the EIPC holding a conference in Munich is like an away match at home, and if we can draw you in then it's a win-win result for everyone. That includes those not only the other spectators, but the peerless speakers from all around the world who will be very pleased to see you, as will we. So too, will BMW World.

The conference will have papers from Custer Consulting, Adeon/CIMS, Elsyca, Circuit Foil, Ventec, Göttle, SAT, Emma Hudson, NanYa Plastics/Technolam, and others. We will also be having a Round table for Roadmapping.

Registration for the conference is open: www.eipc.org

Conference location:

Munich Marriott Hotel
Berliner Strasse 93
Munich 80805, Germany

Bonus and Evening Programma

On the afternoon of Thursday June 15, we will visit BMW World and in the evening we will have our Networking Dinner in a wonderful Restaurant in Munich area. Transportation by bus is arranged.



Conference Day 1, Thursday June 15

Conference Day 1, Thursday June 15		
08:00-08:30	Conference Registration and Table Top & Poster Exhibition build up	Table Top & Sponsor Lounge
08:30-08:45	Welcome by the EIPC President	Alun Morgan, EIPC, UK
Keynote Session 1: Business Outlook		Moderator: Tarja Rapala-Virtanen, EIPC, FI
08:45-09:15	Business Outlook: Global Electronics Industry	Alun Morgan obo Custer Consulting, USA
09:15-09:45	Interconnect Reliability in Electronic Systems	Dr. Donkai Shangguan, Fellow - IEEE, IMAPS, USA
09:45-10:15	TBC	TBC
10:15-10:30	Q&A	
10:30-11:00	Coffee break @ the Table top & Sponsor Lounge	
Session 2: Smart Manufacturing (Industry 4.0)		Moderator: Dr. Michele Stampanoni
11:00-11:20	Real Time Integration of Design-, and Production generated Process Results, CIMS AOI systems	Andre Bodegom, Adeon-CIMS
11:20-11:40	Digital twin concept in Cu electroplating processes for better process control and superior metal finish	Agnieszka Franczak, Elsyca, BE
11:40-12:00	A guide to converting existing European PCB Fab facilities to 100% ZLD/Green processing	Alex Stępiński FRSA, Stepinski Group, USA
12:00-12:20	A new 3D finite element modeling approach to compute copper roughness supplementary loss in PCB.	Benoit Wittmann, Circuit Foil, LU
12:20-12:30	Q&A	
12:30-13:30	Lunch	Restaurant Marriott Hotel
Session 3: Special Material Solutions		Moderator: Emma Hudson, EHTC, UK
13:30-14:10	CCL Challenges in E-mobility applications	Andreas Folge, NanYa Plastics, DE Volker Klafki, Technolam, DE
14:10-14:30	IMS Thermal Performance: The Secret's in the Test Method	Robert Art, Ventec Europe, DE
14:30-14:50	Development stable dielectric performance and low modulus CCL for Automotive Radar Application	Yonghyon Kim, Doosan Corporation Electro Materials, KR
14:50-15:00	Q&A	
15:15-16:30	Departure & Tour Group 1 to BMW World	
15:15-16:30	Group 2 Networking Table Top & Sponsor Lounge Marriott Hotel	
16:45-18:00	Departure Group 2 to BMW World	
16:45-18:00	Group 1 Networking Table Top & Sponsor Lounge Marriott Hotel	
19:00-22:00	Departure Marriott Hotel Lobby - Networking Dinner	

Conference Day 2, Friday June 16		
Session 4: Supply Chain and Metrology		Moderator: Oldrich Simek, Pragoboard, CZ
08:30-08:50	The Bullwhip effect, from crises to crises	Gerd Appelt, Göttele GmbH, DE
08:50-09:10	General UL update	Emma Hudson, EHTC, UK
09:10-09:30	Metrology for Advanced PCB and ICS Manufacturing	Uwe Altmann, KLA-Orbotech, BE
09:30-09:50	Smart Design – sustainable solution for automated and optimized Cu balancing	Agnieszka Franczak, Elsyca, BE
09:50-10:05	Q&A	
10:05-10:35	Coffee Break @ Table Top & Sponsor Lounge	
Session 5: Solder Mask applications and Surface Finishes		
10:35-10:55	Application for Digital Ink Jet Printing of Solder Mask for Flex Circuits	Hans Fritz, SAT, DE
10:55-11:15	Next Generation Solder Mask for Automotive	Harald Kutzias, Taiyo America, USA
11:15-11:35	Selection Criteria of Surface Finishes for Better Reliability of Next Generation Electronic Assemblies	Dr. Kunal Shah, LiloTree, USA
11:35-11:50	Q&A	
Session 6: Round table for Roadmapping		Moderator: Alun Morgan, EIPC, UK
11:50-12:50		
12:50-14:00	Lunch	Restaurant Marriott Hotel





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NEWS FROM FINLAND

Aspocomp Group Plc's Annual General Meeting 2023 Decisions and Board of Directors' organisation meeting

The Annual General Meeting of Aspocomp Group Plc held on April 20, 2023, adopted the annual accounts and the consolidated annual accounts as well as granted the members of the Board of Directors and the CEO discharge from liability regarding the financial period 2022. The Annual General Meeting approved the Remuneration Report for the governing bodies 2022.

The Annual General Meeting decided to pay a dividend of EUR 0.21 per share, as proposed by the Board of Directors. The dividend will be paid to shareholders registered in the company's register of shareholders maintained by Euroclear Finland Ltd on the record date of the dividend distribution, April 24, 2023. The dividend will be paid on May 2, 2023.

The Annual General Meeting decided to set the number of Board members at four (4) and re-elected the current members of the Board Ms. Päivi Marttila, Ms. Kaarina Muurinen, Mr. Jukka Huuskonen and Mr. Anssi Korhonen for a term of office ending at the closing of the following Annual General Meeting. The Annual General Meeting re-elected PricewaterhouseCoopers Oy, Authorized Public Accountants, as the company's auditor for a term of office ending at the closing of the following Annual General Meeting. PricewaterhouseCoopers Oy has notified that Mr. Tuukka Kiuru, Authorized Public Accountant, will act as the principal auditor.

The Annual General Meeting decided that the amount of remuneration payable to the Board of Directors remain the same as in the ending term and thus the chairman of the Board of Directors will be paid EUR 30,000, the vice chairman of the Board of Directors be paid EUR 20,000 and the other members will be paid EUR 15,000 each in remuneration for their term of office.

The Annual General Meeting further decided that EUR 1,000 will be paid as remuneration per meeting to the chairman and that the other members be paid EUR 500 per meeting of the Board of Directors and its committees. The members of the Board of Directors will further be reimbursed for reasonable travel costs. It was decided that the auditor's fees will be paid in accordance with the auditor's invoice.

The Annual General Meeting decided to authorize the Board of Directors, in one or more instalments, to decide on the issuance of shares and the issuance of options and other special rights entitling to shares referred to in Chapter 10 Section 1 of the Companies Act as follows:

The number of shares to be issued based on the authorization may in total amount to a maximum of 684,144 shares.

The Board of Directors decides on all the terms and conditions of the issuances of shares and of options and other special rights entitling to shares. The authorization concerns both the issuance of new shares as well as own shares possibly held by the company. The issuance of shares and of options and other special rights entitling to shares referred to in Chapter 10 Section 1 of the Companies Act may be carried out in deviation from the shareholders' pre-emptive rights (directed issue).

The authorization cancels the authorization given by the Annual General Meeting on April 26, 2022, to decide on the issuance of shares as well as the issuance of special rights entitling to shares. The authorization is valid until June 30, 2024.

The Annual General Meeting decided to amend the company's Articles of Association to enable convening a General Meeting as a virtual meeting without a meeting venue as an alternative to a customary general meeting or a hybrid meeting. The Finnish Companies Act requires that shareholders can exercise their full rights in virtual meetings, with equal rights to those in customary in-person General Meetings. The 9 § of the company's Articles of Association reads as follows:

"9 § The General Meeting shall be held in Helsinki or Espoo. The Board may decide that the General Meeting is arranged without a meeting venue in a manner where shareholders exercise their full decision-making powers in real time during the General Meeting using telecommunications and technical means (virtual meeting).

In order to exercise his right to speak and vote at the General Meeting, a shareholder must register in the manner specified in the invitation to the

meeting. The closing date for registration shall be no sooner than ten days before the meeting.”

The minutes of the Annual General Meeting are available on the company’s website at www.aspocomp.com/agm_starting_from_May_4, 2023 at the latest.

THE BOARD OF DIRECTORS’ ORGANIZATION MEETING

In its organization meeting held after the Annual General Meeting, the Board of Directors of Aspocomp Group Plc re-elected Ms. Päivi Marttila as the Chairman of the Board. Ms. Kaarina Muurinen was re-elected as the Vice Chairman.

The Board of Directors did not establish an Audit Committee, the Board itself performs the duties of the Audit Committee.

The Board of Directors has at its meeting evaluated the independence of the Board members in compliance with the recommendations of the Finnish Corporate Governance Code. It is the view of the Board of Directors that all Board members are independent of the company’s major shareholders. The Board of Directors has also assessed that all the Board members are independent of the company.

For further information, please contact Mikko Montonen, President and CEO, tel. +358 40 5011 262, mikko.montonen(at)aspocomp.com.

ASPOCOMP GROUP PLC

Mikko Montonen

President and CEO

Aspocomp – heart of your technology

A printed circuit board (PCB) is used for electrical interconnection and as a component assembly platform in electronic devices. Aspocomp provides PCB technology design, testing and logistics services over the entire lifecycle of a product. The company’s own production and extensive international partner network guarantee cost-effectiveness and reliable deliveries.

Aspocomp’s customers are companies that design and manufacture telecommunication systems and equipment, automotive and industrial electronics, and systems for testing semiconductor components for security technology. The company has customers around the world and most of its net sales are generated by exports.

Aspocomp is headquartered in Espoo and its plant is in Oulu, one of Finland’s major technology hubs.



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NEWS FROM THE UK

UK facing a losing battle In Semiconductor growth unless the Government acts now

The UK government's long awaited Semiconductor Strategy provides an opportunity to lay out a blueprint to grow this critically important sector that underpins virtually every modern industry. However, unless it includes a robust plan that includes incentives for capital expenditure, meaningful investment in UK semiconductor companies and drives home-grown revenue opportunities through the targeted use of public procurement, the UK doesn't stand a chance.

When the government laid out its ambition to become a science and technology superpower by 2030, it was music to the ears of high-growth UK STEM companies. Such a pledge indicated that a wave of government investment and policy initiatives would be forthcoming, and that we would finally start to make the most of the huge potential for innovation and growth that the UK's science and technology sector firms possess.

The semiconductor industry has huge potential value to the UK, but for that value to be realised, it needs specific and targeted support. A range of unprecedented global challenges have disrupted the sector, causing issues throughout the supply chains that deliver chips to industries such as automotives and electronic appliances, which rely heavily on semiconductors for their products to work.



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NEWS FROM THE USA

Isola Shows Circuit Material Solutions for Hybrid Mixed-Signal Circuits at DMEMS2022 May 4 - May 5, 2022 Del Mar Fairgrounds San Diego CA

Isola Group (www.isola-group.com) brings the latest cost-effective, high-performance PCB material solutions for hybrid circuits to this year's Del Mar Electronics & Manufacturing Show (DMEMS2022). With growing demand for miniaturization in electronic design, Isola's materials support compact PCBs for RF/microwave (RF/MW), high-speed-digital (HSD), and power circuits with high efficiency and excellent thermal stability. The durable circuit materials share processing compatibility with general-purpose circuit materials such as FR-4 for ease of fabricating multilayer circuit solutions with a combination of circuit material types.

DMEMS2022 is set for the Del Mar Fairgrounds (San Diego, CA) on May 4-5, 2022, and features free admission, parking, and an abundance of educational seminars. Isola's representatives are ready to share their years of experience and expertise on matching PCB materials to different mechanical and electrical circuit requirements. They will welcome DMEMS2022 visitors to booth #100 to learn more about their high-performance but "manufacturing-friendly" circuit materials, including Tachyon® 100G, Astra® MT77, I-Tera® MT40, TerraGreen®, and IS680/IS680 AG laminates. These temperature-stable circuit materials enable the fabrication of HSD circuits and high-frequency RF, MW, and millimetre-wave (mmWave) signals beyond 110 GHz on the same circuit board.

When the highest signal integrity must be maintained, I-Speed® and Tachyon® 100G circuit materials support HSD circuits at rates well beyond 100 Gb/s. Visitors to the booth can learn more about the characteristics of each material and how they benefit some of the latest high-frequency/high-speed circuits for automotive, aerospace and defence, robotics, space, and telecommunications applications.

For environmentally sensitive applications requiring RoHS-compliant, lead-free processing, visitors can ask about Isola's new high-speed TerraGreen® laminates and prepregs. These halogen-free materials support mixed-signal analog and digital circuits with dielectric constant that is stable at temperatures from -55 to +125°C. TerraGreen® materials are compatible with Isola's FR-4 circuit materials for ease of processing hybrid assemblies.

Isola Group (www.isola-group.com) is a leading global developer and supplier of advanced electronic circuit materials for high-voltage, high-power, high-speed, and high-frequency PCBs. By performing ongoing R & D on emerging circuit applications, such as military radar and EW systems, commercial 5G communications networks, and vehicle electrification, and operating a network of global factories, Isola provides cost-effective, high-performance solutions for the most challenging electronic single-layer and multilayer PCB applications.



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NEWS FROM THE TPCA

Taiwan PCB supply chain flocking to Thailand

Apple is reportedly discussing with its manufacturing partners to move part of the production lines for MacBook and Apple Watch devices from China to Thailand, according to industry sources.

The report underscored an accelerating shift of manufacturing away from China as Washington-Beijing tensions continue to grow, said the sources.

The selective decoupling from China has been in process since 2022-2023, with Apple's production partners significantly expanding their capacities in Southeast Asia for producing such products as iPhones, iPads, and MacBooks. The supply chain sources indicated that Foxconn has set up a MacBook production line in Vietnam. And Quanta Computer has decided to build a factory in northern Vietnam to produce notebook products.

As the second largest economy in Southeast Asia, Thailand has been one of the favourite locations for Taiwan-based PCB makers to enhance their overseas investments in recent years.

Related PCB suppliers are facing severe challenges in China, including geopolitical tensions and electricity and labor shortages, and are accelerating the shift of their manufacturing capacity away from China, said the sources. On the other hand, Thailand is continuously improving the value chain of its PCB industry through the availability of lower manufacturing costs, a stable water supply, and government-backed investment incentives.

As such, Taiwan-based upstream and downstream PCB supply chain makers, including CCL, FCCL, and PCB suppliers, are gradually expanding their operations in Thailand.

FCCL maker, Taiflex Scientific, moved fast and started building a factory in Thailand at the end of 2022 with an initial investment of US\$35 million. The

new plant aims to produce double-sided, non-adhesive copper foil substrates, with mass production likely to begin in mid-2024.

CCL (copper clad-laminate) suppliers Taiwan Union Technology (TUC) and Elite Material (EMS) said that they will also venture into Thailand.

Meanwhile, PCB makers, including Unimicron Technology, Tripod Technology, Dynamic Electronics, and Nanya PCB, have all announced plans to expand their production capacities in Thailand.

Apex International currently produces 100% of its PCB products in Thailand, and fellow companies Chin-Poon Industrial and Advanced Printed Circuit Board (APCB) operate branch offices in Thailand.

And industry insiders pointed out that HDI board makers Compeq Manufacturing and United Printed Circuit Board will likely remove part of their HDI capacities to new plants in Thailand, capitalizing on scaling-up MacBook shipments from the country.

PCB companies set off another wave of mergers and acquisitions and acquired circuit board related companies

On April 4, APCT, a leading PCB designer and manufacturer in the United States, completed the acquisition of San Diego PCB Design (San Diego PCB), the acquisition amount has not been disclosed. This is another major acquisition by APCT, following APCT's acquisition of Advanced Circuits in February. APCT is a portfolio company of Industrial Growth Partners.

Currently, APCT and Industrial Growth Partners continue to pursue value-added acquisitions to strengthen APCT's position as a high-end PCB designer and manufacturer.

Founded in 2011, Industrial Growth Partners is a San Francisco-based professional private investment partnership that has raised more than \$2.1997 billion in equity capital since its inception. The company works with management teams to invest exclusively in businesses in the industrial sector. Founded in 34 and headquartered in San Diego, California, San Diego PCB is a leading PCB design services company with a team of IPC-certified designers who provide accurate, high-reliability PCB layout designs to hundreds of customers in North America; Merged in 2003 with Milwaukee Electronics, Milwaukee Electronics has facilities in Milwaukee, Wisconsin, Portland, Oregon and Teka, Mexico, to provide mass production.

Steve Robinson, CEO of APCT, said: “We are delighted to partner with San Diego PCB to provide our customers with a complete PCB lifecycle solution from design and layout to prototyping and production. Over the past 2016 years, San Diego PCB has built a strong reputation for quality, service and efficiency and is the perfect complement to APCT products. I am delighted to welcome everyone on the San Diego PCB team to the APCT family. Tony Bel, Division Manager for San Diego PCB, said: “We are very excited to join APCT, which shares our commitment to putting our customers first and is the ideal partner for San Diego PCB. With this merger, we will continue to provide best-in-class PCB design services to our customers and are excited to leverage APCT’s rapid prototyping and manufacturing capabilities to meet additional customer needs.” (News source: HNPCA)

Taiwan-based PCB manufacturers are still committed to enhancing their high-end offerings for network device, server, and data center applications despite lower-than-expected demand in the first half of 2023

Taiwan-based PCB manufacturers are still committed to enhancing their high-end offerings for network device, server, and data center applications despite lower-than-expected demand in the first half of 2023.

According to a report from consulting firm Prismark Partners, the global PCB output value will fall 4% in 2023, sliding from US\$81.7 billion in 2022 to US\$78.4 billion, mainly affected by weak end market demand. The data showed that substrate output reached a record high in 2022 and will fall more than 8% in 2023. Laminate, flexible printed circuit boards (FPC), and high-density interconnect (HDI) rigid boards will fall 2-3%.

Supply chain companies pointed out that the average price of many mid-range and low-cost products fell 10-15%, with some products seeing prices fall by more than 20%.

Even if operations pick up in the second half, sources say the increase will be slow. Market sources added that China-based PCB makers are waging price wars in fields where PCB demand is more stable, such as the automotive sector.

Despite the economic downturn, some major Taiwan-based PCB manufacturers are choosing to upgrade mid-range and high-end products.

Unimicron recently said that demand for high-end products is more stable than that for mid-range and low-cost products. High-end ABF substrate accounts for 40% of Unimicron’s overall output value, while high-end substrates account for 40% of Unimicron’s substrates, followed by mid-range with 45% and low-cost with 15%.

Unimicron believes the market for substrates in 2023 will be similar to that of the IC industry.

Major HDI manufacturer Compeq Manufacturing said it is aiming to increase the penetration rate of various products this year. Compeq hopes that the return of working days, stabilization of end demand, and continuous deployment in non-consumer applications, such as low earth orbit (LEO) satellites, in the second quarter will help support operations.

Major FPC manufacturer Flexium Interconnect saw revenue for high-frequency transmission products increase 36% on year in 2022, attributed to the increasing demand for high-frequency transmission in smart mobile devices. Flexium will continue to focus on high-frequency transmission products in 2023.

In the long run, those familiar with the PCB industry believe that the market size of various PCB markets will continue to grow. IC substrates are expected to grow at a compound annual growth rate (CAGR) of 5%. High-end PCB demand is also expected to continue increasing.

Taiwan's PCB industry accounts for 1.2% of Taiwan's overall carbon emissions, not a large carbon emitter, but the PCB industry still actively responds to carbon reduction

Li Changming, chairman of the Taiwan Circuit Board Association (TPCA), attended the "Building Competitiveness in the Net Zero Era" forum on the 18th, and mentioned that net zero carbon emissions is a vision and a huge project, which requires the cooperation of the government, enterprises and the private sector to build a more diversified renewable energy and trading platform, and drive the low-carbon transformation of the PCB industry through energy transition.

Li Changming said that according to the results of the carbon inventory, Taiwan's PCB industry accounts for 1.2% of Taiwan's overall carbon emissions, not a large carbon emitter, but the PCB industry still actively responds to carbon reduction, not only in response to the requirements of policies and regulations, but more importantly, customers have put forward specific requirements, as well as pressure from competitors, such as Taiwan PCB factory has many well-known brand customers put forward specific net zero requirements from 2030 to 2040.

Li Changming analysis, Taiwan's PCB industry overall greenhouse gas emissions 77% from indirect emissions, 14% for value chain emissions, 9% for direct emissions, accounting for the largest proportion of indirect emissions

and electricity use as the largest case, to statistical data, Taiwan PCB manufacturing power consumption hot spot distribution, process equipment accounted for 49.5%, the top three for electroplating, lines, pressing, factory equipment accounted for 40.5%, the top three for air conditioning, air pressure, ice water system.

Regarding the net-zero emission path of Taiwan's PCB industry, Li Changming said that he will take 2020 as a benchmark, with three main axes (independent energy saving, renewable energy, carbon negative/carbon trading) and nine major aspects (enterprise self-organization adjustment, carbon inventory, proposed targets, cross-border cooperation, etc.) to gradually achieve the stage goals, strive to reduce carbon emissions by 2030% by 30, and reach net zero emissions in 2050.

After the meeting, for the current situation of the PCB industry and the trend of Southeast Asia, Li Changming shared, PCB can not move on its own, to the entire supply chain together, the current supply chain in Southeast Asia is relatively complete, and there have been many board factories, material factories plan to invest in Southeast Asia, among which there are more to Thailand, Malaysia electronics developed early, but most of them are packaging, semiconductors, assuming that the carrier board factory south, to Malaysia is a good choice, close to surrounding customers.

In terms of inventory adjustment, Li Changming mentioned that the entire market situation slowed down in the fourth quarter of last year, more precisely, since the third quarter of last year, the industry has predicted that it is not good, but it has lasted until the first half of this year, and it has been sorted out for a year, with past experience, it will not be adjusted for too long, and demand will gradually improve, but compared with last year's good boom, it is as good as it is, the original TPCA estimated that this year's Taiwan PCB industry output value has a 3% growth, now it can be flat, it is good. (News source: Business Times)



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International Diary

2023

21st EIPC Technical Snapshot Webinar

3 May

Registrations via www.eipc.org

EIPC @ SMT-connect

9-11 May

Nuremberg, Germany

EIPC Summer Conference

Visit BMW World

15 & 16 June

Munich, Germany

22nd EIPC Technical Snapshot Webinar

Registrations via www.eipc.org

September

23rd EIPC Technical Snapshot Webinar

Registrations via www.eipc.org

October

EIPC @ Productronica 2023

14-17 November

München, Germany

24th EIPC Technical Snapshot Webinar

Registrations via www.eipc.org

December