



The European Institute for the PCB Community

## EIPC SPEeDNEWS

*The Weekly On-Line Newsletter from the European Institute of Printed Circuits.  
Issue 8 - March 2021*

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### NEWS FROM THE EIPC

EIPC TECHNICAL WEBINAR – WEDNESDAY 17TH MARCH 2021

WOKE UP!

There is a relatively new word in the English Dictionary, it's 'woke'. We have a new definition, and it is linked to that very important current topic – mental health. WOKE stands for Working On Knowledge Extension, and this can only be achieved by attending an EIPC Webinar. EIPC has always had mentally extremely fit members, which may account for its success, so on 17th March you can have a work-out (actually it will be a work-in as you will be at home) with three of them who will be delighted to share their exercises with you.

The topic will be 5G. -The signal speed in electronics applications is driven by 5G. There is a clear demand in the whole PCB supply chain on finding solutions to decrease signal losses at the PCB level. The understanding of loss savings in signalling at PCB level is meaningful from functionality but also from the signal point of view and as well the total power consumption of the product. Thus OEMs are challenging the supply chain to find the solutions to increase signal losses and improve the signal quality at the PCB level.

In this session we will have interesting papers on the dielectric material, copper foil, and testing solutions, supporting the challenge of signal losses driven by these high-speed products.

Paul Waldner from Multiline International Europa has agreed to be the moderator. Our 3 speakers are:

**Dipl.-Ing. Manfred Huschka, Vice-President Global Marketing, AGC Multi Material General Division. A PCB industry professional, the title of his paper is Electrical and Mechanical Reliability of an RF Laminate are Key Requirements For Selection in 77 GHz ADAS sensor.**

In essence, his paper describes how the selection of non-reinforced PTFE laminates for 77/79 GHz is the correct one. In fact, certain features demonstrate a second

generation laminate is needed in order to meet the requirements of next generation 77/79 GHz ADAS. Late 2019 saw this laminate going into its first ADAS sensor mass-production, and in mid-2020 a second one followed, of even bigger sensor volume. The market introduction of “almost no profile” ED copper foil provides an even improved insertion loss over rolled annealed copper foil, in addition to its lower cost. Only PTFE laminates result in high enough copper peel strength even at repeated rework cycles.

All European and Asian pcb manufacturers capable of making 77/79 GHz ADAS pcbs have processing experience of this new laminate; therefore larger-scale introduction is just the logical development.

**Julie Mouzon from Circuitfoil in Luxembourg will present a paper on ultra-flat ED-Copper foils dedicated to high-speed digital and RF circuit boards.**

High speed signal transmission is more and more required in order to support huge amounts of data transfers in electronic devices. The roughness of the copper foil has become a significant factor that influences conductor loss in high speed digital and RF PCBs, particularly as they move above the 10 GHz range. At high frequencies, the current density is larger near the surface of the conductor (skin effect). When the so-called skin depth reaches the same dimensions as the roughness profile of the foil, the current follows its contour, inducing additional loss. The challenge is therefore to offer the smoothest copper foil profile while ensuring a good level of peel strength. In this context, a full characterization of the copper foil profile is also of prime importance.

**Martyn Gaudion is the face of Polar Instruments , and needs no introduction. He will indicate the primary drivers for insertion loss on high speed base material.**

PCB fabricators and designers are very familiar with the drivers for controlled characteristic impedance traces on highspeed PCBs, trace width, height over substrate and base material dielectric constant that set conditions for signalling up to 2GHz or so. But when pushing above that region to multi GHz operation, a raft of new physical properties need to be taken into account. The drivers for impedance are still important, but they must be considered alongside the physical effects of copper conductivity, substrate dielectric loss, and the impact of surface roughness on signal loss. Careful stackup design can sometimes save on stepping into more exotic materials, so the ability to model all these effects before evaluating physical product is an important time and cost saving step. The presentation wraps up with some insights into testing at up to 40GHz.

Each speaker will have 15 minutes and we will end with a panel discussion.

To ensure a place at the Webinar, please register online: [www.eipc.org](http://www.eipc.org)

The webinar is free of charge for EIPC members.

The registration fee for non-members is € 50,- per person.



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### NEWS FROM GERMANY

COMMUNICATIONS



#### **SCHWEIZER in a new design: New logo and a modern website**

Schramberg, 1 March 2021 The new corporate design and website, which will go online from 1 March 2021, is another important step for Schweizer on its way to a new era in the company's history. With the new production plant in China, the Singapore site and the headquarters in Schramberg, it is also important for SCHWEIZER to adapt its digital appearance to the company's global, growth-oriented and innovative direction.

A consistent focus on customers and solutions is at the heart of the new website. Addressing existing and new customers digitally in a target-group-oriented manner is crucial, especially at such a challenging time. When personal contact with customers, partners and investors is not possible, an innovative digital presence is especially important. The modern, structured and detailed presentation of technologies, solutions and products, paired with an increased focus on innovation and service, will help Schweizer Electronic AG to better meet the demands of its Germany – Asia connection and its role as a global company. This is being implemented step by step in different languages.

In addition to an intuitive user interface, great importance has also been attached to usability on all kinds of end devices – from smartphones to desktops. Together with communication via social media the new website now rounds off the company's online presence.

Of course, there are some things that remain unchanged – inviolable even – despite SCHWEIZER's new brand identity and the continuous further development and

transformation: with its family history spanning more than 170 years, SCHWEIZER continues to stand for the fundamental values of quality, speed, creativity and openness. Let's always look ahead - because we are more than PCBs.

About Schweizer Electronic AG:

Schweizer Electronic AG offers the latest, cutting-edge technology and consultancy expertise in the PCB industry. Thanks to its state-of-the-art production facilities in Schramberg, Germany and Jintan, China as well as close partnerships with other technology leaders, SCHWEIZER provides individual PCB & Embedding solutions. SCHWEIZER's innovative PCB technologies are used in the most demanding applications, for example, in the Automotive, Aviation, Industry & Medical and Communications & Computing sectors, and are characterised by their extremely high quality and energy-saving and environmentally-friendly features.

The company was founded by Christoph Schweizer in 1849 and is listed at the Stuttgart and Frankfurt Stock Exchanges (ticker symbol „SCE“, „ISIN DE 000515623“).

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The logo for ZUKEN, featuring the word "ZUKEN" in a bold, black, sans-serif font with a registered trademark symbol (®) to the upper right of the letter "N".

**Zuken Announces Addition of GENESYS MBSE Technology to its Electrical and Electronic Product and Solutions Portfolio**

***Model-based systems engineering adds a vital element to Zuken's Digital Engineering Strategy***

**Munich, Germany, March 4, 2021** --- Following the acquisition of the US based MBSE specialist Vitech Corporation and the formation of Zuken Vitech in 2019, Zuken has now officially added Zuken Vitech's GENESYS MBSE 2.0 technology into its European sales and service portfolio. The GENESYS MBSE 2.0 tools and solutions can now be acquired through Zuken's global sales network; existing global Vitech customers have access to Zuken's worldwide service and consulting network.

Founded in 1992 by David Long, Zuken Vitech is dedicated to the development and

application of innovative engineering and business process systems approaches to solve the challenges of designing integrated systems. GENESYS is a modern integrated, model-based system engineering software tool which incorporates the key components of building a system: people, processes, data, and documentation.

“In a market that is experiencing accelerating dynamic due to the digital transformation of products and processes, the methodology of model-based systems engineering is rapidly gaining in importance”, comments Oliver Hechtel, Head of Data Management and Integration, Zuken Europe. “Leading edge MBSE tools like GENESYS allow innovative approaches to systems, processes and products to be modelled, analyzed and documented up-front before committing to implementation. This documentation can be used as a ‘living’ reference for all decisions throughout the product lifecycle.”

Vitech GENESYS is an integrated, model-based systems engineering software that covers all four domains of systems engineering — requirements, behaviour, architecture, and verification — holding all the information in the tool itself to support complex engineering projects. GENESYS has been designed specifically for collaborative teamwork to providing a live repository for all product related decisions across the product lifecycle.

#### **More information**

- GENESYS – An authoritative Systems Engineering Source of Truth <https://www.zuken.com/en/product/vitech-genesys/>
- The role of MBSE in the Digital Transformation of Electrical and Electronic Engineering: <https://www.zuken.com/en/blog/digital-transformation-and-mbse/>  
[www.zuken.com](https://www.zuken.com), <https://blog.zuken.com/>, or [www.linkedin.com/company/zuken](https://www.linkedin.com/company/zuken)



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### NEWS FROM ITALY



Seica SpA is pleased to invite you and your readers to our SECOND WEBINAR in March:

### **Overcome the limits of MLO access. 18<sup>th</sup> March 2021**

In this webinar we will analyze the latest technology available for fixtureless testing of even the most challenging probe cards, through high precision, low impact probing of all types of circuits on all types of materials, including MLOs.

Save the date **March 18** and select your time: **9.00** or **16.00** (Central Europe Time).



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### ELECTRONIC INDUSTRY NEWS

#### **Apple-supplier Foxconn flags strong start to year as lockdowns spur electronics demand**

Apple supplier Foxconn said it expects first-quarter revenue to rise more than 15% from a year earlier, boosted by strong iPhone sales and robust demand for electronics during lockdowns worldwide to curb the COVID-19 pandemic.

FILE PHOTO: Apple's 5G iPhone 12 and iPhone 11 are seen at an Apple Store in Shanghai, China October 23, 2020. REUTERS/Aly Song

The world's largest contract electronics manufacturer has previously forecast strong demand for the new iPhone 12, saying its business will be supported by "stronger than expected" sales for smartphones and for telecommuting devices amid a coronavirus-induced work-from-home trend.

Taiwan-based Foxconn, in a short statement on Thursday, said it expects consumer electronics revenue, which includes smartphones and smart watches, to rise more than 15% in the January-March quarter from a year earlier. It did not elaborate.

Foxconn said it saw revenue for cloud products that include servers and revenue for computing products such as laptops to rise about 10% in the first quarter, respectively.

Foxconn's chairman said last month that he expects his company and its clients will face only "limited impact" from a chip shortage that has rattled the global automotive and semiconductor industries.

Foxconn, formally Hon Hai Precision Industry Co Ltd, has previously said it expects revenue to grow about 10% in 2021.

Over the past year or so it has announced several deals on the production of electric vehicles with automakers including U.S. electric-car maker Fisker Inc, China's Byton and Zhejiang Geely Holding Group and Stellantis NV's Fiat Chrysler unit.

Shares in Foxconn have risen more than 20% so far this year.

Tech-powerhouse Taiwan's economy is booming due to the pandemic because of global demand for tablets, computers and smartphones.

Taiwan's January export orders, a bellwether of global technology demand, surged 49.3% from a year earlier to \$52.72 billion.

Taiwan's government last month revised up its outlook for 2021, predicting the economy will grow at its fastest pace in seven years, seeing gross domestic product (GDP) expanding 4.64% on the jump in exports driven by tech demand.

Taiwan Semiconductor Manufacturing Co Ltd (TSMC) the world's largest contract chip maker, in January posted its best-ever quarterly profit and lifted revenue and capital spending estimates to record levels as it forecast "multiple years of growth opportunities".

Reporting by Yimou Lee; Editing by Susan Fenton

## The Politics of Rare Earth Metals

By [Cabe Atwell](#) 03.03.2021 0

Rare earth metals and their alloys populate many of our everyday devices: rechargeable batteries, cell phones, magnets, fluorescent lighting, and the list goes on. But, as with any rare or sought-after resource, the supply chain is caught up in global politics. The demand has exploded within the last 20 years as personal cellphones have become commonplace and their use in computer components has grown.

Complicating matters further, they play a large role in national defence industries, making up precision-guided weapons, GPS equipment, and more — and the bulk of the world's supply is controlled by China. Though interest in alternatives has been growing over the past few years, it is compounded by China's recent push for tighter control. So what does the future of our electronic devices look like?



Clockwise from top centre: praseodymium, cerium, lanthanum, neodymium, samarium, and gadolinium (Credit: Peggy Greb, U.S. Department of Agriculture. Agricultural Research Service).

While not exactly as rarely found in the earth's crust as the name implies, elements categorized as rare earth metals are difficult to find in extractable concentrations. While major reserves do exist in other countries like the US, Australia, and Brazil, China accounts for over 60% of rare earth element production in the world and controls around thirty percent of the world's reserves, estimated at 99 million tons.

In 2020, their exports sank to a 5-year low, and as of late January 2021, the Chinese government has released a draft bill requiring companies to follow control laws and regulations for the import and export of rare earth, an extension of policies aimed to prohibit the export of Chinese technologies that could be diverted for military use.

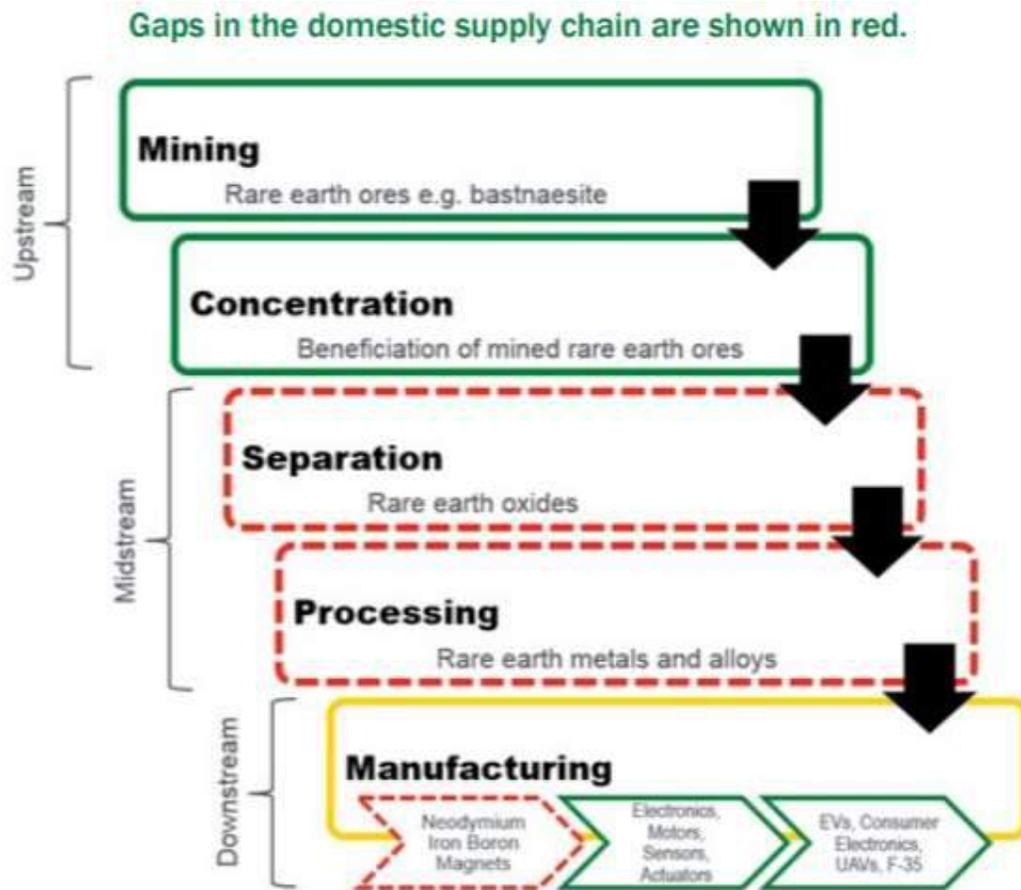
Many speculate that this is the continuation of ongoing tensions with the US and a response to US efforts to build a network of partners and seize greater control of the tech front.

It's not new for China, or other nations, to exercise control of supply chains in response to political tensions. China restricted exports of REEs to Japan in 2010 over a territorial dispute. The new export regulations look likely to pass into law by December. There is the possibility that these restrictions do not go as planned; the 2010 restrictions imposed on Japan resulted in a Japanese partnership with Australia that dropped the Chinese share of global mined production from 98% to its current share of around 60%.

In fact, a history of exercising supply-chain control as a form of political sanctions has driven up the valuations of non-Chinese producers, enabling them to fund expanded mining and processing capabilities.

The long-standing need to ensure supplies has also already led the US and Australia to work together towards creating an alternative supply chain. The outgoing administration began making attempts to increase supply chain resiliency in 2018, and given the Biden administration's environmental policy, it is likely to maintain a strong interest. The Pentagon has also set up a government stockpile of rare earth elements, as they did with petroleum to create the US Strategic Petroleum Reserve. The US itself has an estimated 2.7 million tons of ore readily available, and a mine in California able to produce 38,000 tons of bastnaesite mineral and monazite concentrate per year, though it has historically been sent to China for processing.

Still, setting up a self-sufficient supply chain within the US remains complicated. The extraction step involves either acid leaching, baking, or solvent use that creates toxic waste, which needs to be dealt with. Historic export to China for processing has also meant exporting a lot of the pollution. A number of China's reserves are also absorbed into the surface of clay minerals, meaning easier extraction and cost advantage for Chinese producers. While the US does have control of known deposits in California, Alaska, Nebraska, Wyoming, and elsewhere, processing and cost still play a role in their viability.



REE supply chain for neodymium iron boron magnets, with domestic gaps shown in red.

Though very limited recycling of REEs currently takes place, it is possible to recycle them from sources such as magnets, fluorescent lamps, and batteries, as well as to seek non-traditional sources. For instance, the Oak Ridge National Laboratory has demonstrated the possibility of extracting neodymium from the magnets in old hard drives.

It is also possible to extract the elements from coal or as a byproduct from power-plant coal ash and coal-mining waste. While recycling and alternative sourcing could someday help ensure the security of supply, the amount being done right now is not enough to have a large impact.

Political tensions have consistently led the US to begin seeking alternative partnerships, sources, and processing options as China threatens to weaponize its control, but this cycle has often resulted in a return to the usual supply chain as the threat passes and prices from China drop. The economic realities of extraction and processing have made them the most immediately reliable option, if not as a source of REEs then as the most attractive way to process them for US consumers.

If domestic sources can be made economically sustainable over time, it is still likely 10-15 years down the road, and it is hard to say if the US will push for a self-sustained domestic supply unless China truly forces its hand. Similarly, while the US has begun to aid in developing supply chains in partnership with nations like Australia and Malaysia, that is also a process of work to drop the cost of production and ensuring that they remain stable sources. Expert opinion seems set that tensions with China are not a large source of concern relating to our ability to secure REEs, though what happens exactly will depend on both the future of Chinese exports and on American determination to source alternatives.



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## NEWS FROM THE IPC

### **IPC Issues Industry Alert to Members Regarding U.S. EPA Prohibition of PIP (3:1) in Electronics**

**BANNOCKBURN, Ill., USA, March 3, 2021** — IPC alerted members about the U.S. Environmental Protection Agency's (EPA) [final risk management rules](#) to reduce exposure to five persistent, bioaccumulative, and toxic chemicals (PBTs). The alert calls attention to the rules, which went into effect February 5, 2021, and to one of the five PBTs with a history of use in electronics: [phenol, isopropylated, phosphate \(3:1\)](#) (known as PIP (3:1)).

The final rule for PIP (3:1) prohibits the processing and distribution of this chemical substance and products containing this chemical substance as of **March 8, 2021**. There are some exceptions to the prohibition, for example, for new and replacement parts for automotive and aerospace industries, however, there are no electronics industry exceptions.

As a chemical that can perform several functions simultaneously, sometimes under extreme conditions, PIP (3:1) has several distinctive applications: It is used as a plasticizer; a flame retardant; an anti-wear additive; or an anti-compressibility additive in hydraulic fluid, lubricating oils, lubricants and greases, various industrial coatings, and in adhesives and sealants. PIP (3:1) is also used in plastic-containing materials that are used to form tubes, harnesses, cables, sleeves, gaskets, and covers of parts – parts that are used in electrical or electronic products.

IPC seeks out member input on the EPA final rule, requesting information on how the final rule may adversely affect supply chains for electronics manufacturers. To provide input, contact Kelly Scanlon, EHS policy and research director, at [KellyScanlon@ipc.org](mailto:KellyScanlon@ipc.org). To view news on

EPA's final PIP (3:1) ruling and other advocacy and EHS-related information,  
visit [www.ipc.org/ipc-advocacy](http://www.ipc.org/ipc-advocacy).



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## International Diary

### 2021

#### **6<sup>th</sup> EIPC Technical Snapshot Webinar**

Registrations via [www.eipc.org](http://www.eipc.org)

March 17

#### **7<sup>th</sup> EIPC Technical Snapshot Webinar**

Registrations via [www.eipc.org](http://www.eipc.org)

April 14

#### **8<sup>th</sup> EIPC Technical Snapshot Webinar**

Registrations via [www.eipc.org](http://www.eipc.org)

May 19