



The European Institute for the PCB Community

## **EIPC NEWS**

### **A Webinar with Walt Custer**

**23<sup>th</sup> June 2020**

**Only 3 seats available!**

*Business Outlook for Global Electronics Industry with Emphasis on Europe*

*June 23, 2020 at 16:00 hrs Standard European Time*

*Free of Charge*

The Directors of The European Institute for the PCB Community invite you one again to join the second Free of charge Webinar which they will be holding on Tuesday 23<sup>rd</sup> June 2020 at 16.00 hrs Standard European Time.

The Webinar is again limited to 50 registrations. The first 20 registrations are exclusive to EIPC members, most of whom will be familiar with the unique experience that is a presentation from Walt Custer, who is the fount of all knowledge about our market and our industry. Hurry, there are only 3 seats left available!

Walt will lead off with the Business Outlook for Global Electronics Industry, with particular emphasis on Europe, followed by a look at electronic industry supply chains, electronic equipment, process equipment, material and components, as well as a view of the PCB industry nationally and internationally.

Of specific pertinence will be his current economic outlook including leading indicators that will predict timing and magnitude of recovery.

In order to ensure that this event does not pass you by, please register free of charge online on our website [www.eipc.org](http://www.eipc.org), use the [registration form](#) or send an email to [kwestenberg@eipc.org](mailto:kwestenberg@eipc.org)

Your registration will be confirmed by the EIPC office via email. You will receive a ZOOM invitation to log in for the Webinar. The presentation will be distributed by Mr. Walt Custer himself after the online event has taken place.



The European Institute for the PCB Community

## EIPC SPEeDNEWS

*Issue 14 – May 2020*

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### NEWS FROM GERMANY

#### **ILFA GmbH, Hannover Germany manufactures circuit boards for medical ventilators**

In recent months, many German companies have shown their willingness to help. Electronics companies – such as the Hannover-based PCB manufacturer ILFA – are indispensable here, especially for the production of medical devices. For example, the company has received a rush order from a German company. Thousands of FlexRigid circuit boards are to be produced, which will later accommodate oxygen sensors and thus form an important component for emergency respirators.

“The customer chose ILFA because the order is given top priority and can be delivered within a very short time. For the ILFA employees here it is clear that this order can save lives. In this acute crisis, ensuring medical care is the top priority. This, as well as all other medical orders, is therefore currently a priority for ILFA,” says Christian Georg Behrendt, managing partner at ILFA GmbH. The demand for the company’s medical products would also increase in general. “Not everything can be imported cheaply from abroad. It is becoming clear right now that critical economic structures and structures in Europe (where Russia is a part of) must be protected. The production for and of medical devices is only one example”, Mr Behrendt continues. The company will invest and further expand the production location in Germany.

At present, however, the health of the 160 employees in Hanover is the main concern. “We have adapted the 3-shift system, ‘customer visits’ are carried out digitally. We also do everything else to ensure the health of our employees. At the same time, we naturally want to make our contribution. It’s a difficult balancing act, but the team here at ILFA is motivated,” Mr Behrendt continues.



The European Institute for the PCB Community

## EIPC SPEeDNEWS

*The Weekly On-Line Newsletter from the European Institute of Printed Circuits.  
Issue 14 – May 2020*

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### ELECTRONIC INDUSTRY NEWS

# Can tech survive without China?

*Most tech is made in China. What happens when it can't – or won't – make our gadgets?*

by: [Nicole Kobie](#)  
14 May 2020



The Foxconn campus in Zhengzhou employs 200,000 workers, which is about the same population of Peterborough. It covers a staggering 1.4 million square metres, so is four times the size of the cathedral city. The factories are normally bustling, busy assembling phones for Apple, Huawei and Samsung. But as news of the novel coronavirus spread at the beginning of February, work at such plants was abruptly halted on Chinese government orders.

Many workers had returned to their hometowns for Lunar New Year celebrations and were told not to return until the epidemic waned; when they did come back, those from affected areas were forced into quarantine for up to two weeks, leaving production lines

understaffed and employees from Hubei province and others with coronavirus locked down in company apartments.

For the tech industry, this is a huge problem: More than half of the world's smartphones are assembled in China, along with 90% of the laptops, most of our wearables, key components and parts such as display panels. Only a few weeks into the shutdowns, Apple issued a profit warning, saying that iPhone supply would be "temporarily constrained". Microsoft, Lenovo and HP have subsequently issued warnings to their investors, as have hundreds of other companies across all industries. Business had caught a nasty fever.

Coronavirus is an unexpected disruption, but it's not the only one. If you think the trade war between the US and China has wreaked havoc on the [rollout of 5G](#) then bear in mind that it's just the first skirmish, with tariffs likely to further hit tech production. And that's just a trade war: the way 2020 has started, an actual war doesn't seem impossible. In the worst-case scenario, whatever that might be, have we put too much of our technology production in China's hands?

### **Made in China**

Before we look at those worst-case scenarios, it's worth understanding how we got here. Two decades ago, China was a minor player in the global economy, with a 6% share of global manufacturing value in 2001. The same year, something happened that changed the fortunes of the Asian giant: the US backed China in its bid to join the World Trade Organization.

The aim was to open up a new market for American-made goods, but instead China's low-cost labour helped manufacturing work flood into the country. China becoming the world's factory coincided rather neatly with the boom in smartphones, sparked by the 2007 launch of the iPhone. Since then, China has climbed from its 6% share of global manufacturing to 28% – ten points ahead of the US.

"Basically, all electronic products are at least partially made in China, primarily due to cheap labour," says Ray Wang, an analyst at TrendForce. "Also, their upstream supply chains are located in domestic China."

90% of [laptops](#) are produced in China, Wang explains, with all of the major manufacturers basing their production in the country. For [smartphones](#), China (including Hong Kong) is responsible for 60% of global exports – and that doesn't include the handsets it produces for its domestic market, the largest in the world.

But China makes so much more. The bulk of smartwatches and game consoles are made in the country. It's also home to much of the world's TV panel production, semiconductor and memory factories, as well as key components for the whole of the tech industry such as batteries, fibre optic cables and LEDs. If you own a piece of technology, odds are that it's been at least partially sourced, assembled or manufactured in China.

So, when the country takes a few weeks off, tech has a big problem.

## The wrong type of virus

Apple was the canary in the coal mine when it came to coronavirus in China. On 17 February, three weeks after the country quarantined the city of Wuhan, the company issued a profit warning that said supply and sales of iPhones would be hampered by the epidemic, as the smartphone is not only manufactured in China but the country makes up a good slice of its consumer sales too.

As Apple noted at the time, the first and most important concern with the outbreak is public health, not the manufacture of iPhones, and that [shutting down factories](#) to try to stop the spread was a necessary move. But the production halt has given the tech industry a sharp reminder of how reliant it is on China for everything from assembly to R&D, raw materials to finished products.

Foxconn, the firm that assembles iPhones alongside other products, was forced to close some of its factories at the end of January. Company chairman Liu Young-way said in a call with investors that Foxconn [hoped to be running at full capacity again](#) by the end of March and while it's not clear if that has been achieved, the company [did say](#) it expects to be able to manufacture Apple's latest 5G enabled smartphones as it would have before the coronavirus outbreak.

It should be noted that production lines don't run all year round in China anyway. Many were already closed or on reduced operation because of the Lunar New Year, which sees citizens travel to visit family. And that's good news for the tech industry. "We were fortunate in the timing," says Kevin Anderson, senior analyst at Omdia. "Because of the Lunar New Year... people plan for that, they build ahead and stock components. Most of them shut down for about a week. Because all of this happened at the beginning of the Lunar New Year, it was basically an extension of that shutdown." Plus, the first quarter is the quietest for the industry; if the outbreak had happened in the third quarter, it would have hurt even more.

Of course, China isn't only a producer – it's a major consumer. Apple's profit warning wasn't limited to iPhone shortages, but noted that closing stores had caused local sales to fall. More widely, the pandemic could spark a recession that would naturally hit technology industry revenue too. "The sales that have been lost in the first quarter may be partially recovered in the rest of the year, but there's no guarantee this will happen," explains Marina Koytcheva, an analyst at CSS Insight. "The disruption affects not just the phone industry, but the whole economy. The question now is what will happen with macro-economic growth in China and the world."

That could make the factory closures look like a mere blip. "Shops will reopen, people will return to work," she said. "But the economic consequences of this disruption are still unclear at this point."

## Tracking the impact

While the full impact of COVID-19 on the industry isn't yet clear, in early March analyst firm TrendForce tried to quantify the disruption so far, predicting the number of smartphones

shipped in the first quarter of the year would fall by 10%, smartwatches by 16% and monitors by 5%. But those figures belie the complexity involved in modern supply chains and the far reach of China's manufacturing.

As Anderson notes, there's more to tech supply chains than components. To ship a smartphone you'll also need connectors, packaging and boxes – and those are all labour-intensive processes – as well as customs and logistics. "The whole thing can slow down because all it takes is one part that's not there before you can't do the build," said Anderson.

Components such as semiconductors and memory are likely to be hit less hard, TrendForce predicted, because of the higher degree of automation used in their manufacture – one upside to robots replacing human workers is they don't get sick. However, such parts could be left sitting at customs if human border guards aren't around to approve their export, leading to production delays in other countries.

Another branch of technology facing disruption is 5G installations, as most of the world's fibre optics production is based in Wuhan – home to manufacturers Fiberhome, YOFC and Accelink. That locked-down city is also home to a large slice of printed circuit board (PCB) production – a key component in base stations. Companies in other countries make these components, but shortages could lead to price hikes and procurement delays.

Smartwatches and other wearables, including headphones, are mostly made in the provinces of Guangdong, Jiangsu and Zhejiang, all of which have seen factory shutdowns. TrendForce expects to see product launches deferred in the first half of the year, though the analyst firm notes that the biggest launches tend to happen at the end of the year, allowing time for production to catch up.

Perhaps the worst hit sector, says TrendForce, will be laptops, in particular because of shortages of display panels. February's shipment forecast for laptops fell from 10.8 million units to 5.7 million units, down 48% year-on-year, the analyst firm reported. If the spread of the coronavirus can be contained, allowing production to rebound in subsequent months, first-quarter laptop shipments will fall by about 25%, it predicted. If the epidemic halts production further, those shipments will take a further nosedive. However, the problem isn't only assembly – there are issues further up the supply chain, constraining the availability of parts such as hinges, batteries and necessary metal ores.

### **Shortages on the shelves?**

What impact will these widespread tech shortages have on consumers? Prices may or may not increase, but we can expect fewer sales and discounts. Shelves won't be empty of smartphones or laptops, but launches may be pushed back by months, while some models may only be available in limited quantities.

"I think in the short term you're definitely going to see price increases or at least fewer discounts," Anderson predicts. "I expect you will see less discounting and firming up of pricing throughout the second quarter."

Anderson notes that the first quarter of the year often sees the setup and testing of production lines for new devices, and right now that's not happening. "That will mean the launch of some products may push out," he said. A phone launch set for September may not happen until December, for example. "That happened to [Apple] a couple years ago where they had some difficulty making components that went into their latest phone and they did push back the launch date," he notes.

Such disruption will be particularly problematic for laptops designed for education, as TrendForce notes that February is traditionally when bidding wars for production of devices such as Chromebooks begin. Due to the shutdown, manufacturers and brands may eschew production of lower-priced budget laptops in favour of higher-priced models; if you can only make so many laptops, you're going to focus on those with the greatest margins. That means schools and parents may have a harder time finding the right kit for students come September, but, again, it depends on the length of outages and the ability of manufacturers to catch up once they're back online.

### **Beyond the bug**

The coronavirus is a perfect example of [disruption in the tech industry](#) caused by an overdependence on China – but it's hardly the only one. The fervent political debate over whether Chinese networking giant Huawei should be allowed to supply components to the UK's 5G network is another case in point. The security concerns were stoked by the US-China trade war, meaning that an undiplomatic tweet threatening to raise tariffs on Chinese goods sent by US president Trump is enough to set back our mobile networks.

Huawei is outright banned in the US, but Prime Minister Boris Johnson [has approved the use of Huawei networking products in some aspects of the UK 5G network](#). Despite that decision, critics continue to argue that the Chinese firm can't be trusted – although experts say that's more of a political standpoint than a security one. "It's become very zero-sum in terms of risk management and cyber security," says James Sullivan, head of cyber research at the Royal United Services Institute (RUSI). "Some people are saying there's no way you can manage risk from Huawei in 5G infrastructure, and that's just not true. It's really important not to dismiss those previous measures that historically isolated and localised risks in telecommunications networks."

Given the political debate and the potential risk to security, why not just use a company that's not Chinese? Well, there simply aren't enough 5G suppliers. "There are just so few experts in this space and so few suppliers to do this work," Sullivan said. In Europe, Nokia, Ericsson and Huawei can supply this necessary equipment. There's also ZTE, but it's owned by the Chinese government. With [4G and 5G networks](#), the UK requires at least two vendors supplying equipment. "If you cut Huawei out, you've got no competition," says Sullivan.

This is the result, Sullivan says, of industrial strategy decisions over the past 20 years. "5G's become one instance of a much wider set of issues relating to the globalisation of technology," he said. "It's probably just woken people up and raised questions about the national strategy relating to vendor diversity."

In short, we need more 5G suppliers that are based in countries we trust. The other alternative is to develop “technological sovereignty”, which means developing such technologies and industries ourselves – or supporting those in countries with which we’re aligned politically. The US has tried to push its own home-grown networking companies to compete more effectively with Huawei, with both the White House and intelligence agencies urging US giant Cisco to build the necessary components and saying that the technologies should be open-sourced to encourage an alternative to manufacturing in China.

This trade war and cybersecurity concerns are two reasons why such alternatives may be necessary. “If you’re voicing displeasure about the actions in China – and there are a lot of reasons that might be legitimate, [such as] political, economic and human-rights considerations – they may end up being factors that lead to a decision to exclude China from selling technology and providing technical infrastructure,” Sullivan said.

Thus far, the discussion has centred on 5G, but there are other fields of technology where China could dominate in the future, notably automation or AI. Sullivan argues that we need to identify advanced technological areas now that will need vendor diversity or sovereign technology, then develop an industrial strategy to make it happen. Otherwise, we’ll endlessly repeat the same conversations about whether we can trust a Chinese technology or company, without any real alternatives.

### **Triggering change**

Coronavirus and the trade war have been a wake-up call to the industry, a sign that diversity in production is necessary. Indeed, a shift is already happening. “There are a number of reasons why manufacturing is very strong in China, as well as product development and research as well,” says CSS Insight’s Koytcheva. “The trade tensions between US and China are one reason why some companies are looking to diversify their manufacturing. Of course, costs in China are no longer as low as they were at the start of the century.”

Sony shifted production out of China to Thailand last year, while Google and Samsung have departed for Vietnam, which has low labour costs and the manufacturing skills, but with fewer political concerns. Plus, local Chinese companies such as Huawei and Xiaomi have dominated the local market, giving less reason to stick around.

However, some factories aren’t so easy to move. Semiconductor fabrication is complex and setting up assembly lines can cost billions; firms may decide to set up elsewhere in the future, but for now it’s difficult and expensive to make the shift. Even over the long term, there are supply issues beyond manufacturing. “Although Southeast Asia or India may replace China as the next hotbed of notebook production, that fact that metal ore production, the farthest upstream part of the supply chain, is located in China poses certain difficulties for Southeast Asia or India to supplant China in this regard,” Wang says.

While diversity in manufacturing has its appeal, it’s expensive to run multiple factories in different locations. “Keeping more than one source qualified and ready [to manufacture] can be an additional cost,” Anderson says. “Some companies have thought the cost was too high, but will they continue to see it that way?” The coronavirus, trade wars and ongoing political tension might just be enough to change their minds.

## COVID-19 Digital Contact Tracing: Apple and Google Work Together as MIT Tests Validity

*Developers are building and testing an opt-in automated system to slow the spread of the coronavirus. But will anyone use it?*

*By Megan Scudellari*

In a rare act of cooperation, Google and Apple this month released specifications for software developers to build digital contact tracing apps for Apple and Google mobile operating systems, which jointly encompass the majority of smartphones around the world.

Digital contact tracing, which can automatically notify an individual if they've crossed paths with someone who tested positive for COVID-19, has been proposed as a way to augment manual contact tracing, which requires the painstaking work of thousands of trained workers per state to identify, track, and assist individuals exposed to the virus.

As digital contact tracing technologies advance, two questions rise to the surface: Will state health officials and individuals opt to use the technology? And, if so, how well will it work?

In theory, digital contact tracing can be used to contact large numbers of people at a fraction of the cost of manual contact tracing. Now that Apple and Google are onboard, and the CDC has issued guidance criteria for the technology, it seems poised for use. But cities and states across the United States have yet to adopt the digital tool, instead focusing on manual tracing, according to a recent WIRED investigation.

In Massachusetts, the first state to initiate a major manual contact tracing program, Governor Charlie Baker has said publicly that there are conversations about incorporating smartphone data into the manual program, but it must be done in a way that protects privacy and confidentiality. Other government leaders have voiced similar privacy concerns. Smartphone tracking programs are being effectively employed in other countries to slow the spread of the virus, but many, like TraceTogether in Singapore, would violate privacy laws if enacted in the United States.

Apple and Google's effort is certainly focused on privacy. In their joint draft documentation [PDF], Apple and Google said that apps using their contact tracing application programming interfaces (APIs) must be made by or for the use of government health authorities; users must be opt-in only and shall consent before sharing a positive test result; gathered information is only for use for COVID-19 exposure information, so cannot be used for advertising or any other purposes; and the companies have pledged to discontinue the use of the system once the crisis has passed.

The two companies are being advised in part by the MIT-led Private Automated Contact Tracing, or PACT project, one of the international research teams pioneering the Bluetooth-based privacy protocol at the heart of Apple and Google's solution. The PACT system seeks

to automate contact tracing by detecting and logging proximity between phones using Bluetooth signals, or “chirps,” from phones within an approximate 6-foot radius and picked up for a particular duration of time.

Unlike early digital contact tracing efforts from the WHO and MIT’s SafePaths which relied on GPS data, the PACT system does not collect location data. Instead, the system relies on phones sending out anonymous Bluetooth “chirps”—random, rotating numbers which do not reveal from where or whom they were sent. Then, if a person tests positive for the new coronavirus, they can upload all the chirps their phone has sent out in the last two weeks to a database. If any of those chirps match ones picked up by someone else’s phone, a notification will inform that person of a possible exposure.

“Our job is to make sure what [Apple and Google] implement is as private as possible,” says Marc Zissman, co-PI on the PACT team and associate head of the Cyber Security and Information Sciences Division at MIT Lincoln Laboratory. “But we’re also worried about, how well does this really work?”

Bluetooth, which transmits data via low-power radio waves, was designed as a communication waveform, not for determining the distance between objects, like a radar waveform, Zissman points out. To determine if Bluetooth technology has the ability to detect contacts that could lead to COVID-19 infection—such as at 6 feet away for 15 to 30 minutes—the PACT team is now leading an international consortium of cooperating research laboratories to collect data and conduct experiments.

Some of the data are being collected with robots at the Lincoln Laboratory’s Autonomous Systems Development Facility. By moving robots equipped with smartphones around a room under various conditions, the MIT team is gathering data on the signal strength of the chirps for various distances and amounts of times. That data can be used as the basis for improving machine learning algorithms to detect distance via Bluetooth without burning through battery life on devices, says Zissman. Plus, if the CDC changes its guidance on how close people have to be for how long to become infected, the team could adapt the protocol to measure the optimal distance and time.

The team has initial data demonstrating the validity of the system, Zissman notes. “We’re very optimistic about the whole thing, but we still have to prove it,” he says. The team is making data public as they collect it, and will continue to provide recommendations to Apple and Google moving forward.

Apple and Google have released screenshots of how a digital tracing app might look to a user, but the companies have thus far deferred making an app of their own, leaving that to industry and government groups. The PACT team continues to be involved with assisting governments looking to implement the technology. All of our stuff is available for anybody who wants to look at it,” says Zissman. “Our role is to show how the technology could work and then try to answer questions for government organisations that might use it.”



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# EIPC SPEeDNEWS

*The Weekly On-Line Newsletter*  
*Issue 14 – May 2020*

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## NEWS FROM THE UK



### **Free Online "Power and High Temperature" Conference**

**Thursday 28 May 2020: 09:25 - 16:30**

#### **Electronics Manufacturing Challenges and Solutions for the Electric Revolution**

This **Free Online Conference** will cover all aspects of designing, manufacturing and testing of **power and high temperature** electronics, where **miniaturisation, thermal management, electrical performance** and **reliability** are critical features that need to be optimised.

*Registration is **free** for this event.*

[Register Here](#)

[More Information Here](#)

**Forthcoming IMAPS-UK Free Online Events in June 2020**

Please Click on the Links below for More Information

## Fundamentals of Electronic Packaging Tutorials

Friday 12 June 2020 @13:00: "[New Product Introduction for Micro-electronics](#)" by Allan Proudfoot, ALP Consulting



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## Benchmarking, Cleaning & Solderability Webinars



Every month we present online webinars for assembly, design, quality engineers and production staff working in electronics industry. Its an ideal way of learning and increasing awareness on standard processes or solving production issues or failures onsite or at your contractor. Further information on hands on training via our [Website](#). Here are the webinar we are presenting in the next couple of months

### [Practical Set-Up, Qualification of Cleaning Process in PCB Assembly](#)

8th June 2.30 pm - 4.00 pm UK Time



[Webinar outline](#)

**Solderability Benchmarking, Failures & Production Testing Methods**  
**6th July 2.30 pm - 4.00 pm UK Time**



[Webinar outline](#)

**Monitoring & Benchmarking Your Processes & Assembly Yields**  
**Aug 2.30 pm - 4.00 pm UK Time**



[Webinar outline](#)

**Further webinars for 2020**

Printed Circuit Board (PCB) Inspection & Quality Control - September  
Crimping Wire Termination Inspection & Quality Control - October  
What is a Good Solder Joint – How to Test Your Joints - November  
Guide to PCB Solder Finishes – Process Defects Causes & Cures - December

**Coming in 2021**

Using Solder Preforms for Soldering in Electronics  
Solder Wicking - Benefits, Causes & Cures  
Pin in Hole Intrusive Reflow 2021 - Design & Assembly  
Tombstoning Components During Reflow - Causes & Cures

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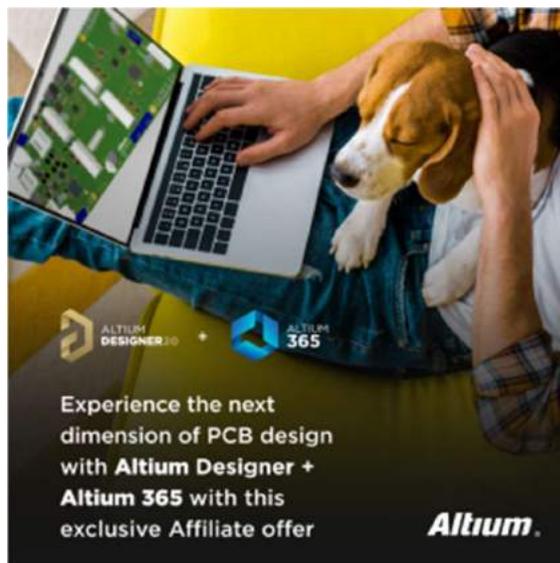
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### NEWS FROM THE USA

#### **Promotions**

We are happy to announce that one of our members Altium, who offer the most powerful, modern and easy-to-use PCB design tool for professional use, have an offer exclusively for EIPC members. The Affiliate Program runs Now-June 30.

- Click on the banner for more information





The European Institute for the PCB Community

# EIPC SPEeDNEWS

*Issue 14 – May 2020*

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## International Diary

### 2020

#### **EIPC Webinar with Walt Custer**

Business Outlook for Global Electronics Industry

**Fully booked!**

9 June

#### **EIPC Webinar with Walt Custer**

Business Outlook for Global Electronics Industry

**Limited seats available!**

23 June

#### **EIPC @ Evertiq Expo**

3 September

Tampere, Finland

#### **FED Conference**

17-18 September

Augsburg, Germany

#### **IPCA Expo**

23-25 September

India

#### **TPCA Exhibition**

21-23 October

Taipei, Taiwan

#### **EIPC @ Electronica 2020**

10-13 November

München, Germany

**ECWC15, WECC World Electronics Circuits Council**

30 November-2 December

Shenzhen, China

**HKPCA Exhibition**

2-4 December

Hong Kong, China

**2021**

**EIPC @ SMTconnect**

4-6 May

Nuremberg, Germany