



The European Institute for the PCB Community

## EIPC SPEeDNEWS

Issue 13 – May 2020

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### NEWS FROM GERMANY

#### **Everflow JV to manufacture Vanadium Redox Flow Batteries (VRFB) in KSA**

*Nusaned Investment and SCHMID Group have closed the JV transaction in Saudi Arabia focusing on manufacturing and technology development in the field of Vanadium Redox Flow Batteries (VRFB).*

Nusaned Investment (an investment company owned by SABIC) and SCHMID Group announced that they have successfully closed their JV transaction focusing on manufacturing and technology development in the field of Vanadium Redox Flow Batteries (VRFB) after receiving all required regulatory approvals and satisfying all closing conditions.

The agreement to establish (Advance Energy Storage System Investment Company) (the “JV”) was signed and announced in May 2019. During the next 2 to 3 months, The Riwaq Industrial Development Company will join the JV as additional investors and shareholders. The JV aims to become a global technology leader and champion in the fast-growing utility-scale energy storage segment, supporting the Kingdom’s Vision 2030 economic diversification objectives.

With R&D facilities in Germany and Saudi Arabia, the JV plans to set-up a GW scale manufacturing facility in the Kingdom, expected to be in production in 2021. The JV’s strategy for developing value chain integrated production will allow it to achieve global cost leadership. Fuad Mosa, CEO of Nusaned Investment said: “The JV marks a milestone for Saudi Arabia in its quest to localize manufacturing for technologies in emerging industries, and marks another major step in SABIC’s NUSANED™ program that seeks to build partnerships and enable local content creation”.

Christian Schmid, CEO of the Schmid Group said: “The new JV will aim to establish a leadership position in the rapidly developing energy storage market and both companies are fully committed to realizing our joint vision for the project.” The JV will produce energy storage systems for use alongside utility-scale renewables projects, telecom towers, mining sites, remote cities and off-grid locations.

The systems will be utilized for renewables capacity grid integration, establishment of mini grids at remote locations, optimization of diesel generator capacity, and power back-up. The JV’s products will be offered under the EVERFLOW brand. The JV will directly contribute to

the Kingdom's renewable ambitions. As per the new energy mix announced this year, Saudi Arabia will aim to install 57.5 GW of renewable capacity in the Kingdom by 2030. Utility-scale stationary energy storage systems will be critical to ensure that the new renewable capacity is stabilized and connected reliably to the grid. The Kingdom could also leverage this technology in the upcoming mega-projects in the Kingdom. The proposed manufacturing facility and R&D center is going to be developed in Dammam 3rd Industrial City. The facility will be built under a Build-to-Suit lease agreement with MODON.

The project site has been identified and construction is expected to start in the first half of 2020. The facility will have an annual production capacity of 3 GWh and will be among the biggest Flow Batteries production facilities worldwide.

Nusaned Investment is an investment company based in Riyadh, Saudi Arabia and owned by SABIC with a mandate to increase local content in the Kingdom. Nusaned Investment invests alongside the investors in localizing mature technologies and pioneering emerging technologies in the Kingdom. Nusaned Investment prioritizes economic development and strategic benefit for KSA, in addition to supporting and enabling the execution of KSA's National Industrial Strategy (NIS).

Schmid Group is a technology group based in Freudenstadt, Germany. Founded in 1864, the group of companies employs more than 900 staff members worldwide and has technology centres and manufacturing sites in Germany, China, Turkey and the USA in addition to several sales and service locations worldwide. The group focuses on developing customized equipment and process solutions for multiple industries including Electronics, Renewables and Energy Storage. The Riwaq industrial development company is a developer and investor in industrial projects focusing on advance technologies in the sector of renewable energy, recycling, chemical & metal finishing.

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## Schweizer Electronic AG: Business performance in the first quarter of 2020

- **Order intake slightly above the same quarter of the previous year**
- **Revenue of EUR 27.4 million in the first quarter**
- **Special effects and weak utilisation put pressure on profitability**

Schramberg, 08 May 2020 – As was to be expected, the coronavirus pandemic, significantly gloomy forecasts for global automotive markets and production stops among leading automobile manufacturers also had an impact on SCHWEIZER's PCB sales in the first three months of 2020.

The **order backlog** totalled EUR 121.0 million at the end of the first quarter of 2020 (31 Dec 2019: EUR 126.7 million). Despite cancellations and/or postponements of orders from customers in the automotive sector, the cumulative **order intake** was EUR 22.3 million which was therefore slightly higher than in the first quarter of 2019 (EUR 22.1 million).

The SCHWEIZER Group achieved a **turnover** of EUR 27.4 million in the first quarter of 2020 (Q1 2019: EUR 29.1 million), which corresponds to a decrease in revenue of 5.8 percent. Despite a decline in turnover of 8.5 percent compared to the same quarter in the previous year, the automotive customer group still remained the most important customer group with a turnover share to the value of around 70 percent (Q1 2019: 72 percent); followed by industrial customers with a stable 22 percent and miscellaneous customers with 8 percent (Q1 2019: around 6 percent).

In the first quarter of 2020, a **gross profit** of EUR +2.0 million (Q1 2019: EUR +3.3 million) and/or a gross margin of 7.3 percent (Q1 2019: 11.3 percent) was achieved. The costs for producing the recently constructed production plant in China is included in the turnover costs for the first time compared to the previous year. These costs have not however been offset by significant turnover yet, which is in line with the planned ramp-up of sales activities. Furthermore, preliminary costs are included in the first quarter of 2020 for increasing stock levels in order to ensure delivery capacity due to the short-time work starting in April 2020. In order to be able to counteract the impact of declining business volumes and falling margin income, numerous saving measures were already started and implemented in the last fiscal year.

**Earnings before interest, taxes, depreciation and amortisation (EBITDA)** amounted to EUR -1.6 million (Q1 2019: EUR -0.1 million), which corresponds to an EBITDA ratio of -5.7 percent (Q1 2019: -0.4 percent). The quarterly result was burdened with costs totalling EUR -1.1 million for special expenses arising from restructuring and a loss of receivables.

#### **Forecast / Outlook**

The Management Board is maintaining the forecast published on 21 April 2020 for the current financial year and the illustration in two scenarios. This indicates the annual turnover forecast in the rather optimistic scenario at between minus 10 and 15 percent compared to 2019, with a more pessimistic scenario at between minus 20 and 25 percent. Although turnover in the first quarter was better than the annual expectations with -5.8 percent, an extremely weak second quarter is anticipated. We hereby expect turnover to develop in the first half of 2020 at the lower end of the forecast scenarios. There are still great uncertainties as to whether, as well as how much, turnover recovery will take place in the second half of the year.

EBITDA is expected to be between minus 2 and 6 percent in a rather optimistic scenario and between minus 4 and 8 percent in a more pessimistic scenario. The EBITDA ratio in the first quarter was burdened by special effects which will not be expected in the following quarters. The increased utilisation of short-time work will have a positive impact on the cost situation, although it will not be able to fully compensate for the drastic fall in turnover.

Liquidity holdings were very solid at the end of the first quarter. Due to the decline in turnover and the thereby associated lower receivables, a noticeable decline in liquidity is therefore expected in the coming months. The Management Board has initiated a number of measures, and has already successfully implemented them partially, which should therefore contribute to maintaining the company's financial solvency with corresponding flexibility at all times.

## Thomas Brämer joins Ventec as Technical Sales Representative, Germany



04 May 2020 – Ventec International Group Co., Ltd. (6672 TT), is pleased to announce that Thomas Brämer has joined the company as Technical Sales Representative for Germany. As a key member of the German Sales team, Thomas takes on responsibility for selling and supporting all product lines to help the company further develop its presence in the region.

Due to the achievement of rapid growth and a strengthening position in the market, Ventec is continuing to expand its sales force. As from 1<sup>st</sup> May, Thomas Brämer joined Ventec as Technical Sales Representative reporting to Jürgen Knörchen (Sales Director DACH).

Thomas has over 30 years' technical and sales experience within the printed circuit board industry. He joins Ventec from Vaas Leiterplattentechnologie GmbH (Schwäbisch Gmünd, Germany) where, as Production Manager, he provided technical support services to customers alongside his managerial and process-optimization responsibilities. Prior to that, Thomas worked in various technical roles at Kubatronik, CCI Eurolam, CONTAG, ILFA and Precoplat.

Thomas comments: "I've been working in the PCB manufacturing sector for over 30 years and relish this new opportunity to further strengthen Ventec's position in the German speaking region. I have enjoyed my time in the sector immensely and look forward to working together with Ventec's strong team to develop our relationships with current and future customers."

Jürgen Knörchen, added: "Thomas is an experienced technical sales professional with an excellent track record in PCB manufacturing. His appointment strengthens our proposition both in the DACH region and internationally and I am really pleased that he has joined Ventec to contribute to the success and growth of the company."

Ventec International is a world leader in the production of polyimide & high reliability epoxy laminates and prepregs and specialist provider of thermal management and IMS solutions.

Further information about Ventec's solutions and the company's wide variety of products is available at [www.ventecamines.com](http://www.ventecamines.com) and/or by downloading the Ventec APP.



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### **ELECTRONIC INDUSTRY NEWS**

#### **Covid-19 and America's Vulnerabilities – A Way Forward**

By **Dan Breznitz** EE TIMES

The unfolding Covid-19 crisis exposed America's significant economic and security vulnerabilities. We no longer produce — indeed are unable to develop — many of the things we need to run a modern, prosperous economy. From swabs, facial masks, drugs and ventilators to simple computers to advance 5G telecommunication products, we are largely dependent on overseas suppliers. The supply networks that underpin both the production and innovation of those goods long ago moved from the U.S. to Greater China. In so doing, that exodus left us with hollowed-out capabilities, broken production capacities, underutilized engineering and technical talent as well over-reliance on one relatively small region of the world.

This is precisely why the pandemic might be our last opportunity to regain prosperity. In the last two decades we have been lulled into following a specific path of financialization-induced offshoring. The huge short-term profits, coupled with the impressive decrease in the prices of consumer goods, soothed us to such degree that we lost sight of the critical requirements of a vibrant economy.

Indeed, death by despair has been claiming the lives of hundreds of thousands of working Americans. But for many of us, staring as we often do at our screens, watching our favorite company stocks continue to rise, the illusion emerged that all was well. In so doing, we became the mythical frog floating in a pot of water on the stove, slowly, unwittingly being boiled alive without realizing it.



Covid-19 represents a sudden burst of heat that should awaken us to the fact that we are being cooked to death. Nonetheless, let us be clear: We are already damn-well cooked, losing so much productive capacity that to revive our economy will require us to overcome significant coordination and collective action challenges, and then sustain those efforts over multiple years — even as the pandemic recedes to the background.

This we must do. Not only is our long-term prosperity is at stake, but also because the next crisis disrupting our global production chains is already around the corner, be it medical, natural, political or manmade.

#### **Creating incentives, engineering a response**

There are two critical spheres of action. First, dealing with the managerial and financial regulations and incentives that have made offshoring the rational, sometimes the only, option, for too many U.S. companies. Second, engineering a response to rebuild our depleted production capacities, from skills to the production networks of suppliers and sub-suppliers that will allow us to both produce and innovate in producing finished products.

I will focus on the second set of tasks. However, we should not expect public companies to stop offshoring without changing the financial incentives of both managers and investors. That requires a fundamental shift away from focusing on short-term stock prices utilizing financial engineering tools such as stock buybacks and the use of a complex network of offshoring companies (Double Irish with a Dutch Sandwich, anyone?). Further, we must move beyond worshipping performance metrics such as simplified return-on-assets, which incentivize moving as many holdings off balance sheets as possible.

After two decades of accelerated offshoring, the obstacles to reshoring are currently so significant that we should not assume that even our best-run corporations can overcome these financial obstacles by themselves. In order for a high-end manufacturer to produce, it needs a constant supply of two resources: components, from screws and pins to various sub-systems; along with technicians, engineers and managers with highly honed production skills.

We are severely lacking in both.

Even mighty Apple Inc. found itself unable to overcome those obstacles when it tried to shift production of its Mac Pro laptops to Austin, Texas, in 2012. The consumer electronics giant quickly realized it could not even locally source components such as simple screws (when demand dried up in Texas, local producers shut down production lines and sold their equipment to China manufacturers). Worse, Apple could not find enough tooling engineers,



Disclosure would also create opportunities for exclusive branding, allowing such products to fetch a higher price, as has been aptly demonstrated by both moral branding, such as fair trade in food, or quality, along the lines of “Made in Germany” for well-engineered white goods.

Often the problem is not one of absolute demand, but fragmented demand. This makes it difficult to match existing demand with supply. With its large land mass and multiple local markets, the U.S. is especially prone to such problems. Government policy can relatively easily solve this issue by mapping out and aggregating demand, then promoting it. Indeed, just demonstrating there is significant demand to be tapped in the U.S. will change the investment rational of most economic actors.

### **Production tech ingenuity**

If there is one area where the United States still leads the world, it is new production technologies. If properly utilized, such technologies can give the U.S. a sustained dual advantage. The reason is emerging production technologies allow for the development and manufacture of new products that cannot be produced using older technologies. Thus, American companies can develop and produce domestically products as much as a decade ahead of global competitors. Those rivals would need their Chinese contract manufacturer to first master the new technologies before they can even start to play with them. This will also allow American producers to help shrink the ever-increasing U.S. trade deficit.



Too often, however, those technologies never reach the market; in their infancy, no single company has sufficient demand to make it financially rational to prototype new production technologies, much less build a full-scale factory. Among the solutions is a form of “infant production technologies protection.” This approach should include the availability of matching funds to build the new factories that would be utilized as shared assets, that is, production facilities that allow multiple companies to produce small batches of products based on the new technologies. This approach would allow producers to demonstrate their potential and begin generating profits. Once up and running, those facilities can be then spun-off as a stand-alone high-end contract manufacturer.

The second prong in infant production technology protection should be legal covenants preventing the transfer of those technologies abroad for at least a decade, thus ensuring that all American taxpayers, who after all paid for their development, also enjoy the prosperity they generate.

### **Bridging the skills gap**

The second obstacle to reshoring is skills. Here, the problem is not just shop-floor production skills, but also system, production and tooling engineering and production management.



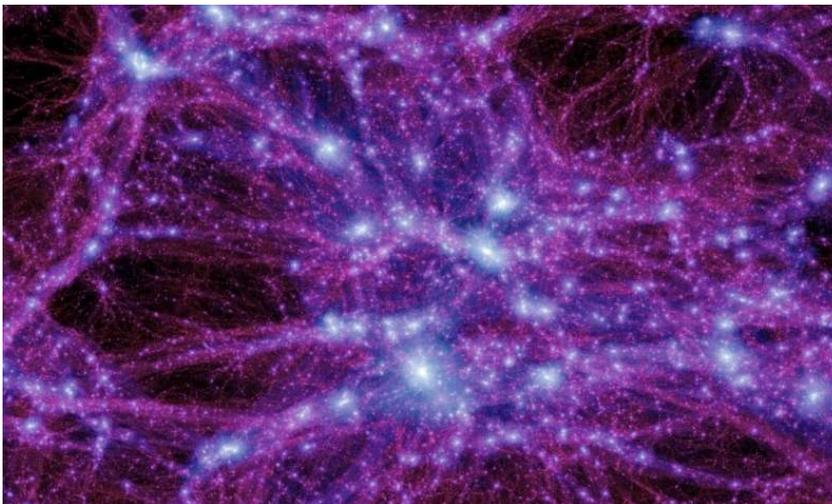
boiled to death. The task in front of us is difficult and will take years to bear fruit. However, the pandemic gives us one last chance to secure prosperity for future generations of Americans, as well as ensuring that the next crises will not find us so vulnerable.

It is time, then, that we believe again in American ingenuity and give Americans the chance to show the world what its people are capable of doing, innovating and producing.

Let us all take collective leadership and action in shaping our future for the better.

## Study: Could dark matter be hiding in existing data?

by Glenn Roberts Jr.



This image was produced by a simulation showing the evolution of dark matter in the universe. Credit: Millennium-II Simulation

Dark matter has so far defied every type of detector designed to find it. Because of its huge gravitational footprint in space, we know dark matter must make up about 85 percent of the total mass of the universe, but we don't yet know what it's made of.

Several large experiments that hunt for dark matter have searched for signs of dark matter particles knocking into atomic nuclei via a process known as scattering, which can produce tiny flashes of light and other signals in these interactions.

Now a new study, led by researchers at the Department of Energy's Lawrence Berkeley National Laboratory (Berkeley Lab) and UC Berkeley, suggests new paths for catching the signals of dark matter particles that have their energy absorbed by these nuclei.

The absorption process could give an affected atom a kick that causes it to eject a lighter, energized particle such as an electron, and it might produce other types of signals, too, depending on the nature of the dark matter particle.

The study focuses mostly on those cases where an electron or neutrino is ejected as the dark matter particle strikes an atom's nucleus.

Published May 4 in *Physical Review Letters*, the study proposes that some existing experiments, including ones that search for dark matter particles and processes related to neutrinos—ghostly, detectable particles that can pass through most matter and have the ability to change into different forms—can easily be broadened to also look for these absorption-related types of telltale dark matter signals.



Photomultiplier tube arrays are prepared for the WIMP-hunting LUX-ZEPLIN experiment during assembly at the Sanford Underground Research Facility in Lead, South Dakota. Credit: Matt Kapust/SURF

Also, the researchers propose that new searches in previously collected particle detector data could possibly turn up these overlooked dark matter signals.

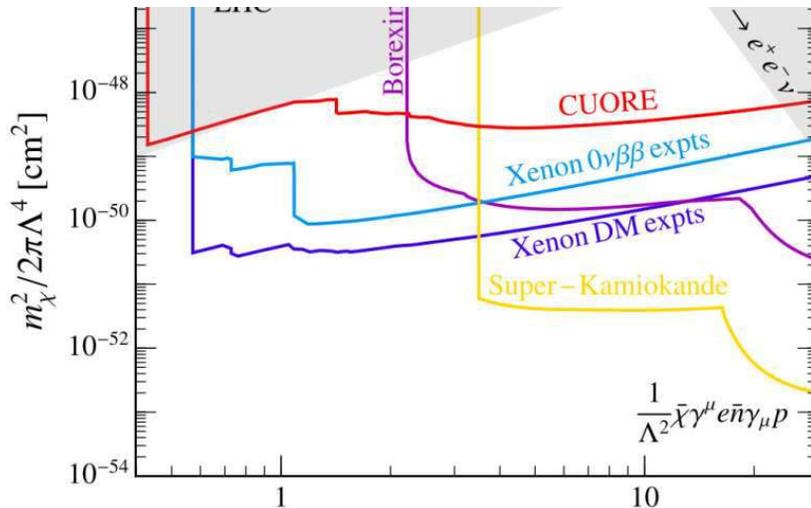
"In this field, we've had a certain idea in mind about well-motivated candidates for dark matter, such as the WIMP," or weakly interacting massive particle, said Jeff Dror, the lead author of the study who is a postdoctoral researcher in Berkeley Lab's Theory Group and UC Berkeley's Berkeley Center for Theoretical Physics.

Dark matter pushes at the boundaries of the known fundamental laws of physics, encapsulated in the Standard Model of particle physics, and "The WIMP paradigm is very easy to build into the Standard Model, but we haven't found it for a long time," Dror noted.

So, physicists are now considering other places that dark matter particles may be hiding, and other particle possibilities such as theorized "sterile neutrinos" that could also be brought into the family of particles known as fermions—which includes electrons, protons, and neutrinos.

"It's easy, with small modifications to the WIMP paradigm, to accommodate a whole different type of signal," Dror said. "You can make a huge amount of progress with very little cost if you step back a little bit in the way we've been thinking about dark matter."

Robert McGehee, a UC Berkeley graduate student, and Gilly Elor of the University of Washington were study co-authors.



This chart shows the sensitivity range to charged current signals by a variety of experiments. Credit: Jeff A. Dror, Gilly Elor, and Robert McGehee

The researchers note that the range of new signals they are focusing on opens up an "ocean" of dark matter particle possibilities: namely as-yet-undiscovered fermions with masses lighter than the typical range considered for WIMPs. They could be close cousins of sterile neutrinos, for example.

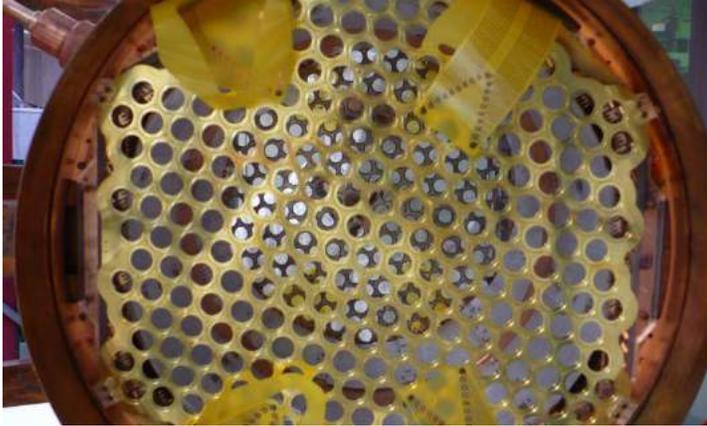
The study team considered absorption processes known as "neutral current," in which nuclei in the detector material recoil, or get jolted by their collision with dark matter particles, producing distinct energy signatures that can be picked up by the detector; and also those known as "charged current," which can produce multiple signals as a dark matter particle strikes a nucleus, causing a recoil and the ejection of an electron.

The charge current process can also involve nuclear decay, in which other particles are ejected from a nucleus as a sort of domino effect triggered by the dark matter absorption.

Looking for the study's suggested signatures of both the neutral current and charge current processes could open up "orders of magnitude of unexplored parameter space," the researchers note. They focus on energy signals in the MeV, which means millions of electron volts. An electron volt is a measure of energy that physicists use to describe the masses of particles. Meanwhile, typical WIMP searches are now sensitive to particle interactions with energies in the keV range, or thousands of electron volts.

For the various particle interactions the researchers explored in the study, "You can predict what is the energy spectrum of the particle coming out or the nucleon that's getting the 'kick,'" Dror said. Nucleon refers to the positively charged proton or uncharged neutron that resides in an atom's nucleus and that could absorb energy when struck by a dark matter particle. These absorption signals could possibly be more common than the other types of signals that dark matter detectors are typically designed to find, he added—we just don't know yet.

Experiments that have large volumes of detector material, with high sensitivity and very low background "noise," or unwanted interference from other types of particle signals, are particularly suited for this expanded search for different types of dark matter signals, Dror said.



The EXO-200 time projection chamber during assembly. Credit: EXO-200 collaboration

LUX-ZEPLIN (LZ), for example, an ultrasensitive Berkeley Lab-led dark matter search project under construction in a former South Dakota mine, is a possible candidate as it will use about 10 metric tons of liquid xenon as its detector medium and is designed to be heavily shielded from other types of particle noise.

Already, the team of researchers participating in the study has worked with the team operating the Enriched Xenon Observatory (EXO), an underground experiment searching for a theorized process known as neutrino-less double beta decay using liquid xenon, to open up its search to these other types of dark matter signals.

And for similar types of experiments that are up and running, "The data is already basically sitting there. It's just a matter of looking at it," Dror said.

The researchers name a laundry list of candidate experiments around the world that could have relevant data and search capabilities that could be used to find their target signals, including: CUORE, LZ predecessor LUX, PandaX-II, XENON1T, KamLAND-Zen, SuperKamiokande, CDMS-II, DarkSide-50, and Borexino among them.

As a next step, the research team is hoping to work with experiment collaborations to analyze existing data, and to find out whether search parameters of active experiments can be adjusted to search for other signals.

"I think the community is starting to become fairly aware of this," Dror said, adding, "One of the biggest questions in the field is the nature of dark matter. We don't know what it is made out of, but answering these questions could be within our reach in the near future. For me, that's a huge motivation to keep pushing—there is new physics out there."



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## International Diary

### 2020

#### **KPCA Exhibition**

21-23 July  
Korea

#### **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