



The European Institute for the PCB Community

EIPC SPEeDNEWS

The Weekly On-Line Newsletter

Issue 12 – April 2022

NEWS FROM THE EIPC

EIPC @ Electronica 2022

The EIPC is a network of Professionals of the Electronics Industry providing platforms to exchange business & technology information for the success of the European electronics industry.

In 2021, the EIPC took again part at Productronica in München. The show was recovering from the COVID pandemic and therefore not as busy as we were used to, but we still considered our participation successful.

Electronica 2022 takes place at Messe München from November 15th to the 18th and the EIPC will represent itself again. If you would like to join us as a co-exhibitor at the EIPC stand, then we would very much like to hear from you. Those stand-alone stands can be rather lonely, and rather expensive; the big advantage of getting together with others on a shared stand is attractive in terms of cost, and also in companionship. The EIPC is looking for partners (EIPC Members exclusive) to become co-exhibitors.

EIPC will provide the necessary administrative support, stand management, liaison with the exhibition organisers, stand contractors, etc., and will publicise the joint venture on a continuing basis throughout the year.

The following options will be offered for Electronica 2022:

1. New! Poster & Flyers Your company:

- will be represented on the EIPC stand via an A1 size poster
- will be able to display company flyers on the stand

The fee for this service is € 700.-

2. Co-exhibitor integrated in the EIPC stand.

The co-exhibitor :

- will be allowed to display 1 (A0) poster with company logo and information in the stand
- will be allowed to share the 2 brochure displays with the other co-exhibitors
- will be allowed to use the stand equipment like refrigerator, coffee machine and other products provided in the stand by the EIPC

- will receive 1 free exhibitor pass as a co-exhibitor for the entire period of the exhibition
- will be registered in the exhibitor catalogue with their own company information for a fee charged by Messe Munich of € 695.-
- will be allowed to use electricity provided by EIPC
- will be allowed to use WIFI internet provided by EIPC

The fee to become a co-exhibitor is € 1,950.-. Each co-exhibitor has to be registered at Messe München.

For this registration, Messe Munich charges an additional fee of € 250.-. Total fixed costs: € 1,950.- + € 250.- + € 695.- = € 2895.-

3.Co-exhibitor stand of 12 sqm with open connection to the EIPC stand.

The stand will have the Co-exhibitors' own company identity.

The co-exhibitor:

- will be allowed to decorate this "Co-exhibitor area" as they wish with their own promotion material
- will be able to use the dedicated area 12 sqm of the EIPC stand as "Company stand". Included is a seating area (1 table, 4 chairs) and 1 brochure display
- will be allowed to use the stand equipment like refrigerator, coffee machine and other products provided in the stand by the EIPC
- will receive 1 free exhibitor pass as a co-exhibitor for the entire period of the exhibition
- will be registered in the exhibitor catalogue with their own company information for a fee charged by Messe Munich of € 695.-.
- will be allowed to use electricity provided by EIPC
- will be allowed to use WIFI internet provided by EIPC
- stand cleaning

The fee for a customized co-exhibitor stand of 12 sq. m will be € 5250.-. This fee includes the additional co-exhibitor registration fee charged by Messe Munich of € 250.- as well as the obligatory exhibitor catalogue fee of € 695.-. If you require a larger stand size, please contact the EIPC for further information and prices.

If this is of interest, please do contact us (eipc@eipc.org) to discuss the matter further.

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NEWS FROM GERMANY

2021 Annual Report from Atotech

BERLIN, April 19, 2022 (GLOBE NEWSWIRE) — Atotech has filed its 2021 annual report on Form 20-F, including its audited financial statements for the year ended December 31, 2021, with the U.S. Securities and Exchange Commission on EDGAR. The Form 20-F is also available under the Investor Relations section of Atotech's website and a hard copy will be provided to shareholders free of charge upon written request to investor.relations@atotech.com.

Atotech's audited financial statements for the full-year ended December 31, 2021 are consistent with the unaudited full-year 2021 financial results reported by the company on April 4, 2022.

Highlights include:

- Record full-year 2021 revenues of \$1.5 billion, an increase of 21% over the prior-year period, including chemistry organic revenue growth of 11%;
- 2021 net income of \$7.5 million, compared to a net loss of \$289 million in 2020, the latter including impairment charges of \$279.5 million of the company's GMF segment as a result of changed market conditions caused by the COVID-19 pandemic;
- Record 2021 Adjusted EBITDA of \$458 million, a 26% increase over the prior-year period;
- Year-end net debt leverage decreased to 2.8x.

About Atotech

Atotech is a leading specialty chemicals technology company and a market leader in advanced electroplating solutions. Atotech delivers chemistry, equipment, software, and services for innovative technology applications through an integrated systems-and-solutions approach. Atotech solutions are used in a wide variety of end-markets, including smartphones and other consumer electronics, communications infrastructure, and computing, as well as in numerous industrial and consumer applications such as automotive, heavy machinery, and household appliances.

Atotech's team of 4,000 experts in over 40 countries generated revenues of \$1.5 billion in 2021. Atotech, headquartered in Berlin, Germany, has manufacturing operations across Europe, the Americas, and Asia. With its well-established innovative strength and industry-leading global TechCenter network, Atotech delivers pioneering solutions combined with unparalleled on-site support for over 8,000 customers worldwide.

Schweizer Electronic AG confirms consolidated figures for 2021 and outlook for 2022

- **Turnover increased by 25 percent compared to the previous year**
- **EBITDA in line with expectations**
- **Outlook 2022 – Sales growth between 10 and 20 percent, further improvement in operating results – potential effects due to geopolitical situation cannot be ruled out**

-

Schramberg, 22 April 2022 – Today SCHWEIZER publishes the full report for the 2021 financial year and confirms the preliminary figures. The **SCHWEIZER Group** (in accordance with IFRS) achieved sales of EUR 122.7 million in 2021 (previous year: EUR 98.3 million). This corresponds to an increase of almost 25 percent compared to the previous year, which was made possible by significant market share gains. This growth trend is supported by incoming orders in 2021 to the amount of EUR 175.2 million (previous year: EUR 78.4 million).

Earnings before interest, taxes, depreciation and amortisation (EBITDA) amounted to EUR - 8.5 million (2020: EUR -9.5 million). The EBITDA ratio improved compared to the previous year to -6.9 percent (2020: -9.7 percent). The Group excluding China achieved EBITDA of EUR +9.1 million in 2021. This means that both the development of sales and EBITDA are within the company's expectations. As of 31 December 2021, the equity ratio was 5.3 percent (previous year: 17.4 percent). Taking into account the shareholding (completed in January 2022) in the SCHWEIZER Chinese subsidiary of strategic partner WUS Printed Circuit (Kunshan) Co., Ltd. based in China (WUS), the equity ratio amounts to 10.5 percent. The holding occurred as part of a capital increase, whereby the SCHWEIZER Group received equity of EUR 10.5 million.

Nicolas-Fabian Schweizer, CEO of Schweizer Electronic AG, said: "The past financial year has once again brought many challenges. Even though the general conditions have been different to what we expected in the past two years, we are still very satisfied with what we have achieved. The restructuring of the Schramberg site, which began in 2020, was very successful. After a loss-making year, we were able to achieve a successful turnaround and bring the Schramberg site back into the profit zone in 2021. In 2022, we will continue on this path."

Marc Bunz, Chief Financial Officer, added: "We also expect positive momentum for our business volume in 2022. This expectation is driven by the ongoing ramp-up of our Chinese plant and increased capacity utilization at the plant in Schramberg. Profitability will be clearly determined by development at the Chinese plant, in line with 2021. On the balance sheet, our focus is on strengthening the equity base, especially at our Chinese subsidiary."

Development in the fourth quarter

In the fourth quarter, the Group's operating results largely improved compared to the previous quarters. In particular, gross profit recovered significantly to EUR -0.3 million. This can be ascribed in particular to the measures implemented in the new plant in China to reduce local losses. With consolidated sales of EUR 32.4 million, an EBITDA ratio of -4.9 percent was achieved in the fourth quarter. An adjustment to the deferred tax credit for the plant in China, on the other hand, led to an after-tax loss of EUR -8.6 million in the final quarter of 2021.

Schweizer Electronic AG

The results of Schweizer Electronic AG (according to HGB) in Schramberg recorded a very positive development. In 2021, turnover was EUR 90.6 million, an increase of 19 percent compared to the previous year. This was achieved despite the still very difficult European market environment. The clear turnaround was evident in the earnings situation. After a loss in the two previous years, the operating profit (EBIT) amounted to EUR +2.0 million, which corresponds to an improvement of EUR +9.5 million compared to the previous year. The equity ratio of the individual company rose to 43.8 percent (previous year: 41.8 percent).

Expectations for the 2022 financial year

Development for 2022 is difficult to assess due to the geopolitical situation, in particular the war in Ukraine, and the intensified pandemic measures in China. Despite the very high order backlog, there is a great deal of uncertainty. Taking into account the currently known opportunities and risks, the Executive Board expects further sales growth of between +10 and +20 percent for 2022. The start of series production of embedding technology will contribute to this, among other things. It is expected that rising energy and commodity prices will make it more difficult to improve operating results. The EBITDA ratio is expected to be between -4 and +1 percent. Ongoing measures to improve earnings will continue unabated. The expectation for the equity ratio is between 6 and 11 percent. Further capital measures are planned for this purpose.

The full report for the 2021 financial year is available from today at www.schweizer.ag in the Investors & Media/Annual Report section or at <https://schweizer.ag/investoren-und-medien/geschaeftsbericht/downloads-berichte>.

Group figures compared to the previous year

in EUR million	2021	2020
Order book	191.8	109.7
Revenues	122.7	98.3
EBITDA	-8.5	-9.5
EBITDA ratio (%)	-6.9	-9.7
EBIT	-19.8	-18.5
EBIT ratio (%)	-16.1	-18.8
Annual result	-26.2	-17.9
Equity ratio (%)	5.3	17.4

About SCHWEIZER

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“).

The Carbon Footprint of HDI: Direct Metallization vs. Electroless Copper

April 14, 2022

Jordan Kologe and Leslie Kim

MacDermid Alpha Electronics Solutions

Introduction

As the electronics supply chain contends with the struggles of moving out of the pandemic and into a new normal, it is increasingly obvious that a new normal will be one with sustainability and resource conservation as the top priority. Over the past year, we have seen printed circuit board manufacturers encounter challenges associated with environmental regulations, water and power outages, and pressures from the supply chain to reduce environmental footprints.

From the perspective of a board fabricator, especially one that specializes in HDI, a highly resource-intensive step in the process of making a printed circuit board is the primary metallization step. All circuit boards that have multiple layers go through such a primary metallization, which is either electroless copper or direct metallization (DM). The main difference between a direct metallization process and the more traditional electroless copper plating process is that the former deposits a paint-like conductive coating through absorption onto the surface, while the latter deposits a copper coating from solution through chemical reduction. The DM coatings are most typically a carbon or graphite, and this kind of board manufacturing has been done reliably for nearly four decades.

Electroless copper processes have a larger carbon footprint than direct metallization for several reasons. Compared to direct metallization, electroless copper is more water and energy intensive, has a higher variety and amount of chemical ingredients, and has higher process variation. When looking at the comparison from the perspective of HDI, the impact of all of this becomes even more critical.

HDI—Why Direct Metallization?

In conventional PCB multilayer, the primary metallization step is utilized once all inner layers of the board have been laminated and drilled and the board is nearing completion. The microvia structure is the central feature of HDI that allows for the manufacture of high-density circuit boards today. The microvia essentially replaces the singular through-hole that connects multiple layers and allows individual layers to be routed to their neighbours directly and separately from other layers. To achieve this feat of engineering, however, every single build-up operation that the board goes through requires an additional run through a primary metallization step.

It is for this reason that the electroless copper and direct metallization are under constant scrutiny from a reliability perspective. Yet, as we will discuss shortly, the sustainability question has not been widely examined. This is important since the volume of boards in the industry that use microvia designs is as high as it has ever been and will continue to grow to meet the needs of any electronic design that can economically benefit from increased circuit density.

Can we create an ever-increasing amount of printed circuit boards with HDI technologies such as mSAP while also meeting increasingly strict targets for carbon mitigation, while also meeting profitability expectations?



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NEWS FROM THE UK

MicroTech 2022

NEXT GENERATION OF ELECTRONICS AND PEOPLE 5 KEY QUESTIONS TO BE ADDRESSED

- Can Hybrid Bonding achieve cost-effective high-density interconnect?
 - Can E-Planes replace High Speed Rail?
 - Can Copper Sintering replace silver?
- How thin can semiconductor wafers be ground?
- How can UK companies win in the global semiconductor market?

Don't miss out on this opportunity to hear the answers to the above questions and many more by registering for MicroTech 2022 below.

Registration for MicroTech 2022:

<https://www.imaps.org.uk/events/microtech-2022-next-generation-of-electronics-and-people/>

A Pre-Conference Training Workshop on Microelectronic Packaging Techniques for Power Electronics (PEP-IT-UP) will also be held on the afternoon of Monday 25 April 2022.

If you have registered to attend MicroTech 2022, you can register for a place at the Training Workshop for free, by booking Ticket PEP-IT-UP-03. However, there are only limited places available and they will be allocated on a first come, first served basis.

Registration for PEP-IT-UP Workshop:

<https://www.imaps.org.uk/events/pep-it-up-training-workshop-microelectronic-packaging-techniques-for-power-electronics-monday-25-april-2022/>

Semiconductor Industry Update Webinar

Registration Now Open

Will the current shortages continue through 2022? Find out the answer to this and other key questions at Future Horizons' Semiconductor Industry Update Webinar, May 10, 2022 - 3pm UK BST (GMT+1):

<https://www.futurehorizons.com/page/136/Industry-Update-Seminar>

Why? Founded in 1989, Future Horizons' forecast accuracy track record and industry experience makes this a must-attend event for key decision makers in the semiconductor, electronics and all related industries. We are never afraid take a contrarian view where necessary, backed up by data and sound analytical process.

What You Will Learn

This one-hour broadcast will focus primarily on the semiconductor industry forecast and outlook for 2022, including:

- How demand will shift in the short and medium-term
- An understanding of the exposure, vulnerabilities, opportunities, losses and gains
- How to build resilient strategies and reimagine business models
- When will the shortages end and what will be the likely repercussions

Just like our live events, there will be ample opportunity to ask specific questions in advance, during and after the webinar.

Who Should Attend?

- All companies, small and large, from startups to established market leaders
- Key decision-makers engaged in the design, fabrication or supply of semiconductors
- Government organisations involved in trade and investment
- Those involved in investing or banking within the electronics industry
- Senior marketing executives planning future marketing strategy

Why Future Horizons?

We have been in the business of forecasting and analysing the semiconductor market for over 55 years and have been a trusted advisor to governments, investors and most of the top global semiconductor firms. Time and time again we have delivered sound advice and saved our clients time and money with our forensic and accurate analysis of the industry.

For a small investment of £150 plus £30 UK VAT you will gain accurate industry insight to make good strategic decisions in these uncertain times

- Discount available for 3 or more attendees from the same company/organisation
- Site license option for unlimited company participation
- Can't attend? Order the webinar material only
- Please pass to a colleague if already attended or not suitable for you
- This event can also be held in-house for your added convenience and flexibility



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ELECTRONICS INDUSTRY NEWS

An Honourable Company

Henkel to exit its business in Russia

Against the background of the current developments of the war in Ukraine, Henkel has decided to exit its business activities in Russia. The execution process is now being prepared. Henkel will work closely with its teams in Russia on the details to ensure an orderly process. In the meantime, Henkel's 2,500 employees in Russia will continue to be employed and paid. The expected financial impact for Henkel resulting from the planned exit cannot be quantified at this time.

"Henkel condemns the Russian war against Ukraine and the violence against innocent civilians. Our priority remains to do everything we can to support our colleagues in Ukraine," said Carsten Knobel, CEO of Henkel. "We are providing extensive support to our employees and the people in Ukraine and neighbouring countries by offering financial donations as well as food and material donations. Many Henkel employees are also helping at the borders by distributing urgently needed goods or offering people from Ukraine a place to stay."

Wireless Charging

New Technology Allows Devices to Power Anywhere Within Charging Area - IEEE Transactions on Industrial Electronics

Power transfer technology makes it possible to charge devices without using any wires or plugs. Devices can receive power anywhere within the charging area.

April 2022

Circuit Insight

Technology Briefing

A new power transfer technology described recently in IEEE Transactions on Industrial Electronics, makes it possible to conveniently charge devices without using any wires or

plugs. Using this technology, warehouse robots, kitchen appliances, phones, laptops and other devices can receive power anywhere within the charging area. And because the power transfer continues even while the device is in motion, this technology could one-day power electric vehicles while they're on the go.

The basics of wireless power transfer have been in place for some time, but existing systems are not able to charge devices placed just anywhere within a large area. Using a single large transmitter to cover the entire area leads to unwanted electromagnetic exposure and means that the power flow to individual devices cannot be controlled.

If many small transmitters are used, the receiving devices must be in a known position, and the transmitter and receiver have to be precisely aligned. This means the system either has to use fixed charging locations or incorporate position sensors, communication protocols, and processing capabilities to track the location of each receiver. But now, researchers at Aalto University have developed a power transfer technology that works regardless of the position and orientation of the transmitter and receiver.

The key idea is to arrange the transmitters in a grid with the current in neighbouring transmitters running in opposite directions - for example, a clockwise loop in one transmitter and counter-clockwise loops in its neighbours. This creates a chessboard-like grid of 'positive' and 'negative' transmitting coils with a magnetic flux between them.

A receiver above the grid of transmitters captures the magnetic flux between positive and negative transmitters, which generates an electric current to charge the device. The beauty of this method is that it's very simple yet quite sophisticated. It doesn't need a high-end processor or lots of computations to make the transmitters intelligent.

At the end of the day, it's all an electromagnetic system, and the challenge was to figure out how to detect the receiver's presence and position electromagnetically. Because the presence of a receiver triggers the power transfer, the system can work without any positional tracking and communication between the receivers and transmitters. This also means that power is only transferred to the receiver, rather than the entire area being energized, and it makes it possible for several devices to be charged simultaneously. Tiling transmitters together produces a charging area of the desired size and shape. A subset of the transmitters is then activated at lower power.

The transmitters are listening for a receiver. If power transfer to a receiver begins, the neighbouring transmitters switch from being off into an alert mode, primed to transfer power if the receiver appears over them. With this configuration, the system achieves almost constant efficiency and constant power transfer, regardless of the receiver's position and orientation, and the power transfer continued smoothly even as the receiving device moved around.

The project aims to commercialize this new technology for industry and transport. The technology has been tested with commercial warehouse robots in cooperation with Finnish firm Solteq Robotics. Although the technology is essentially ready for real-world applications, it still needs commercial packaging and certification.

In the meantime, the team will continue to refine and improve it. One of their goals is to boost the power levels from about 1 kW to around 20 kW so that the technology could be

used to charge electric vehicles. There are already pilot projects for electrifying roads across the world, so electric vehicles are a really great application of this technology

Supply Chain

There's No Place Like a Supply Chain Close to Home

But it's complicated for European companies. Sometimes, suppliers turn out to be in regional trouble spots.

April 19, 2022

Rachel Sanderson

Bloomberg

Bringing manufacturing back to Europe — what's called “reshoring” or “onshoring” — is a reasonable, if not vital, business strategy. Over the previous two decades, manufacturers shifted production of everything from cars to cosmetics primarily eastwards to China, in an attempt to cut labor costs and protect margins. The supply chain snarls brought on by geopolitics and Covid-19 are now forcing a rethink.

Some recent developments have helped. Carlo Altomonte, professor of economics of European integration at Milan's Bocconi University, argues the recent speed of European integration is fostering a “regionalization” of supply chains. But reshoring is still complicated — and will require difficult choices from both companies and governments.

Take the predicament of Dardanio Manuli, chairman and chief executive officer of Manuli Rubber Industries SpA, an Italian multinational that makes hydraulic equipment. He thought he had already brought his supply chain back from China, finding suppliers for steel and wire in Europe — specifically, Germany, the U.K. and Luxembourg. Then, Vladimir Putin's invasion started and Manuli discovered his new suppliers had all been sourcing their pig iron from Ukraine, specifically, a single factory in Mariupol. “We thought we were already onshoring, but Europe turned out to be the weakest link,” he says.

Data showing large-scale reshoring is still hard to find. There is some anecdotal evidence. Dusseldorf-based retailer C&A Group is opening a new textile plant in Germany to produce 400,000 pairs of jeans a year. Swedish carmaker Volvo Car AB announced plans to build a third factory in Europe in 2025. Smaller businesses are getting into the act. Maia & Borges, a toymaker based in northern Portugal, is on course for 12 million euros (almost \$13 million) of revenue in 2022, up from 1.5 million euros in 2019, having won multiple orders — from Europe, and the U.S. — when Asian supply chains were snarled up in the early months of the pandemic. Patricia Maia, chief executive officer, said the family firm will make 10 million toys this year and is building a third factory to cope with demand expected to hit 40 million by 2024. “From a business perspective, we've had a good two years,” she said.

There are significant challenges. Engineers are needed to populate high-tech factories, and Europe's pharmaceutical industry has a continuing problem with a brain drain to the U.S. Even luxury-goods makers are struggling to find enough experienced hands to make their goods. French group LVMH Moët Hennessy Louis Vuitton SE has pledged to hire 2,000 young people, especially in Italy, to keep manufacturing knowledge alive.

To make a difference, reshoring needs a more forceful policy push and tangible support from the European Union and member governments. Some incentives only indirectly benefit reshoring — such as fulfilling ESG goals. I spoke to executives of one of Europe's largest

industrial companies which suffered supply chain difficulties last year. Part of the impetus for reshoring was investor pressure to have “greener” supply chains and reduced Scope 3 emissions (emissions generated indirectly by a company’s activities). “Bringing suppliers closer to our plants means we get to limit carbon emissions,” says the global supply chain director of this firm. (Both executives asked for anonymity because the board discussions aren’t yet public.

Money from the EU’s post-pandemic 750 billion-euro (\$811 billion) NextGeneration fund is available to companies for projects with a green or digital emphasis. Maia & Borges has applied for funding in part because it uses robotics to manufacture products.

Those funds have had their effect: spurring investment in a European semiconductor industry, and battery cell production. Some 24 battery gigafactories have been announced in Europe with enough annual production capacity to equip 9 million electric vehicles per year, according to Erik Nielsen, chief economics advisor at UniCredit SpA. Strategically, that hops over supply and political problems with China — a powerhouse of EVs and batteries — as well as provides a smaller carbon footprint. Frank Pisch, professor of microeconomics at the Technical University of Darmstadt, argues in a recent research paper that perceived uncertainty will make localized “just-in-time” production more attractive.

But bringing the supply chain to Europe also poses fresh problems. Two hours by car from Porto is Tras-os-Montes in the Barroso region, a mountainous region of stunning beauty in Portugal. This is where Savannah Resources plans to set up Europe’s largest lithium mine and processing plant. It’s part of a bigger plan to create a European supply chain for lithium, which also includes a refinery run by Portuguese energy company Galp Energia SGPS SA and Swedish electric vehicle battery maker Northvolt AB. Environmental groups argue the mines will destroy a lush countryside and community. The project has applied for NextGeneration funding.

Some small companies just throw up their hands. Asked what he plans to do now that the war in Ukraine has botched his supply chain, the CEO for Manuli Rubber says, “We are going to India.”

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More than Moore

By Maurizio Di Paolo Emilio & Stefani Munoz

EE Times Daily

The semiconductor sector is seeing a new wave of expansion. While there has never been a greater demand for chip innovation, Moore’s Law 2D scaling is stalling. With each successive iteration, chip shrinking takes longer and costs more. As chipmakers and systems strive to continue driving advancements in power, performance, area, cost, and speed to market, new design and production paradigms are required.

The next revolution in advanced packaging provides a major improvement over conventional multi-chip packaging techniques, with the substrate’s wiring used to complete the electrical interconnections between chips. Each successive technology offers higher I/O density, as well as lower power consumption per bit of data transfer.

Nirmalya Maity, corporate vice president of Advanced Packaging at Applied Materials, writes in this special project how to accelerate the trend through advanced packaging techniques.

Applied Novel Devices (AND), a provider of new semiconductor device architectures applicable to discrete and integrated power devices, has introduced a major industry breakthrough with its new class of silicon power MOSFET (ANDFET) technology, which features a sub-30- μm substrate that offers significant benefits for fast-switching and power-conversion applications.

Meanwhile, silicon photonics is evolving from a technology reserved for niche markets, such as high-performance computing or military applications, to an accessible technology for higher-volume markets, including the consumer one. Designed to address growing bandwidth demands and high-level applications that rely on artificial intelligence and machine learning, the next silicon photonics platforms are ready for the market.

The modular architecture of photonic chips simplifies the design, fabrication, and integration of quantum and other optoelectronic solutions. The forthcoming architectures' modularity, speed, and room-temperature operation will enable photonics to contribute to the rapid construction of quantum computers.

Here's an excerpt from Ed Seng, strategic marketing manager for Advanced Digital at Teradyne, in which he examines a post-Moore's Law world:

"Even in a post-Moore's law world, semiconductor technology continues to advance, seeking to yield improvements and pivoting into new technical directions, such as the advanced packaging of multiple heterogenous integrated semiconductor dies, or chiplets. The result is new manufacturing processes that add complexity and defectivity — making test a key component for success.

Advanced packaging continues the benefits of Moore's Law in ways other than just scaling fab process nodes. Disaggregating functions, the opposite of the monolithic SoC approach, allows for focusing advanced fab process design on just the core compute and accelerators, thus saving design effort and cost by not changing other functions.

The present-day focus is "optimization per use case" enabled by the flexibility to more easily choose functions to include in the packaged device. The result continues to deliver the performance and power wins previously seen with Moore's Law."



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NEWS FROM THE IPC

North American PCB Industry Sales Down 11.7 Percent in March

IPC releases PCB industry results for March 2022

BANNOCKBURN, Ill., USA, April 21, 2022 — [IPC](#) announced today the March 2022 findings from its North American Printed Circuit Board (PCB) Statistical Program. The book-to-bill ratio stands at 1.05.

Total North American PCB shipments in March 2022 were down 11.7 percent compared to the same month last year. Compared to the preceding month, March shipments rose 5.6 percent.

PCB year-to-date bookings in March were down 25.9 percent compared to last year. Bookings in March fell 1.3 percent from the previous month.

“Stronger shipments suggest marginal improvement in supply chain dynamics but a drop in orders alludes to slowing demand across a number of downstream sectors,” said Shawn DuBravac, IPC’s chief economist.

Detailed Data Available

Companies that participate in IPC’s North American PCB Statistical Program have access to detailed findings on rigid PCB and flexible circuit sales and orders, including separate rigid and flex book-to-bill ratios, growth trends by product types and company size tiers, demand for prototypes, sales growth to military and medical markets, and other timely data.

Interpreting the Data

The book-to-bill ratios are calculated by dividing the value of orders booked over the past three months by the value of sales billed during the same period from companies in IPC's survey sample. A ratio of more than 1.00 suggests that current demand is ahead of supply, which is a positive indicator for sales growth over the next three to twelve months. A ratio of less than 1.00 indicates the reverse.

Year-on-year and year-to-date growth rates provide the most meaningful view of industry growth. Month-to-month comparisons should be made with caution as they reflect seasonal effects and short-term volatility. Because bookings tend to be more volatile than shipments, changes in the book-to-bill ratios from month to month might not be significant unless a trend of more than three consecutive months is apparent. It is also important to consider changes in both bookings and shipments to understand what is driving changes in the book-to-bill ratio.

IPC's monthly PCB industry statistics are based on data provided by a representative sample of both rigid PCB and flexible circuit manufacturers selling in the USA and Canada. IPC publishes the PCB book-to-bill ratio by the end of each month.

North American EMS Industry Up 2.3 Percent in March

IPC releases EMS industry results for March 2022

BANNOCKBURN, Ill., USA, April 21, 2022 — [IPC](#) announced today the March 2022 findings from its North American Electronics Manufacturing Services (EMS) Statistical Program. The book-to-bill ratio stands at 1.44.

Total North American EMS shipments in March 2022 were up 2.3 percent compared to the same month last year. Compared to the preceding month, March shipments rose 14.3 percent.

EMS bookings in March fell 13.3 percent year-over-year but rose 18.7 percent from the previous month.

“Industry output improved in March, despite the headwinds from geopolitical conflict straining already stressed supply chains,” said Shawn DuBravac, IPC’s chief economist. “The book-to-bill remains high suggesting strong orders, but we have seen order flow slow in recent months which are likely the early signs of weakening demand.”

Detailed Data Available

Companies that participate in IPC’s North American EMS Statistical Program have access to detailed findings on EMS sales growth by type of production and company size tier, order growth and backlogs by company size tier, vertical market growth, the EMS book-to-bill ratio, 3-month and 12-month sales outlooks, and other timely data.

Interpreting the Data

The book-to-bill ratios are calculated by dividing the value of orders booked over the past three months by the value of sales billed during the same period from companies in IPC’s survey sample. A ratio of more than 1.00 suggests that current demand is ahead of supply, which is a positive

indicator for sales growth over the next three to twelve months. A ratio of less than 1.00 indicates the reverse.

Year-on-year and year-to-date growth rates provide the most meaningful view of industry growth. Month-to-month comparisons should be made with caution as they reflect seasonal effects and short-term volatility. Because bookings tend to be more volatile than shipments, changes in the book-to-bill ratios from month to month might not be significant unless a trend of more than three consecutive months is apparent. It is also important to consider changes in both bookings and shipments to understand what is driving changes in the book-to-bill ratio.

IPC's monthly EMS industry statistics are based on data provided by a representative sample of assembly equipment manufacturers selling in the USA and Canada. IPC publishes the EMS book-to-bill ratio by the end of each month.



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