ISSUE 19 – OCTOBER 2026

NEWS FROM EFX 2026

EFX 2026: Successful Debut for Electronics Manufacturing

With 165 exhibiting companies, EFX in Stuttgart brings together technologies and expertise across the electronics manufacturing process chain.

EFX – Expo for Electronics Manufacturing has come to a close with positive results. For the inaugural edition of the new electronics manufacturing exhibition, 4,800 visitors came to Messe Stuttgart. A total of 165 exhibiting companies from 16 countries presented their technologies, products and services. For three days, the central question was how to manufacture electronics efficiently, reliably and in a way that is fit for the future. The inaugural edition brought together experts from development, production and quality assurance with manufacturers, suppliers and service providers to address these challenges.

Theresa Börsig, EFX Project Manager, draws a positive conclusion: “The prèmiere of EFX has shown how important it is to have a meeting place that brings together the full diversity of electronics manufacturing. The positive response and the many valuable discussions confirm that our concept is on the right track. Our aim was not only to showcase technologies, but also to create opportunities for meaningful dialogue about their practical applications. “We will continue to develop this concept in close collaboration with the industry and further refine EFX step by step.”

The new event concept combined the specialist exhibition with a curated programme. Consistent, open stand designs showcased the companies’ offerings, while expert presentations and practical advice complemented the presentation of technologies and

solutions. The evening events provided additional opportunities for discussion: on the first two days, exhibiting companies, industry professionals and partners were able to continue networking in the exhibition hall from 5 pm until 10 pm.

High level of involvement in purchasing decisions

The visitor survey highlights the significant role of attendees in purchasing decisions: the vast majority of respondents are involved in purchasing and procurement decisions. The exhibition also received positive feedback: even at its debut, EFX met the expectations of 75% of respondents.

According to the survey, the largest visitor groups came from industrial electronics and automation (23%), Electronic Manufacturing Services (EMS) (20%), and mechanical and plant engineering (17%). International visitors accounted for 16% of attendees.

Solutions across the entire process chain

EFX focused on the entire process chain and how its individual stages work together. The range covered everything from electronic components and printed circuit boards to assembly and interconnection technology, component placement and soldering technology, as well as packaging, inspection and testing. Software solutions for digital production, along with development and manufacturing services, complemented the offering. A key focus was miniaturisation: higher component densities and more complex assemblies place demands on material selection, design, manufacturing processes and quality assurance alike.

The EFX Rally and the “Daily Life Products” special exhibition illustrated how the individual stages of electronics manufacturing fit together. Using a vehicle alternator as an example, the rally guided visitors through several stages of the process chain. The special exhibition showcased the corresponding vehicle, generator component and electronic assembly, thereby linking the manufacturing process to the finished product. Guided tours provided further insights into technologies and applications at the exhibitors’ stands. At the EFX Techie Cube, visitors could discuss their own prototypes and technical questions with experts, covering everything from design optimisation and EMC issues to readiness for series production.

The conference programme explored technical and strategic challenges in greater depth. The FED programme covered quality assurance, the digital product passport, and the interplay between environmental sustainability and reliability. Smart manufacturing, artificial intelligence and resilient supply chains were also among the topics covered at EFX. The BME Procurement Day complemented the manufacturing perspective with a focus on procurement issues. As well as providing an overview of technologies, the exhibition offered guidance for specific decisions relating to development, production and purchasing.

Christoph Bornhorn, Managing Director of the German Association for Electronic Design and Manufacturing (FED), emphasises the link between development and production: “The quality of an electronic assembly is largely determined at the design stage. To improve manufacturability, reliability and cost-effectiveness, design and manufacturing must come

together at an early stage. EFX's new concept has provided an excellent platform for precisely this: exchanging expertise across disciplines, gaining fresh insights and establishing many valuable new contacts."

Concept wins over exhibitors

Bernhard Fritz, Global Head of Marketing at ASMPT SMT Solutions, highlights the setting for face-to-face discussions: "With its calm, relaxed atmosphere and a welcome reception featuring music and coffee, EFX provides a pleasant setting for productive conversations. With 165 exhibitors, Messe Stuttgart has already achieved an important milestone with EFX's inaugural edition. I can only recommend that everyone takes part in two years' time."

In addition to face-to-face networking, Rehm Thermal Systems highlights its appeal to younger generations and its resource-efficient stand concept: "I am delighted with the first EFX and its innovative concept, which is particularly effective in inspiring younger generations to engage with the electronics industry and its future-focused topics. The open, welcoming atmosphere and the sustainable, resource-efficient stand concept encourage personal interaction and international networking – almost like a living room for electronics manufacturing. We welcomed many interested visitors from Germany and abroad and experienced genuine networking. My conclusion: Let's head to Stuttgart and the next EFX!" says Michael Hanke, Global Sales Manager at Rehm Thermal Systems GmbH.

Synergies with VISION and Quantum Effects

The co-located VISION and Quantum Effects trade fairs offered EFX visitors additional perspectives on electronics manufacturing, ranging from machine vision for testing and inspection processes to quantum technologies. Specific programme events explored these intersections: a guided tour of Quantum Effects with Hahn-Schickard and the "Morning Minutes" session with Quantum BW on the EFX Stage offered insights into the links between quantum technology and electronics manufacturing.

Looking Ahead to EFX 2028

ISSUE 19 - OCTOBER 2026

NEWS FROM EUROPE

European Union included printed circuit boards and IC substrates alongside semiconductors in its first defence industry programme after a call backed by 68 companies and 17 trade associations, with 350 million euros or more of capacity estimated - Global Electronics Association

October 14, 2026
Alison James
Global Electronics Association

By Alison James, senior director, European government relations, Global Electronics Association, with Philip Stoten, journalist, speaker and host specialising in the global electronics manufacturing services industry.

There is a French saying I am fond of, and I used it to open my presentation in Paris: les petits ruisseaux font les grandes rivieres. Little streams make big rivers. It is, to my mind, the whole of European government relations in six words. No single company, however large, and no single association, however active, changes the direction of European policy on its own. But enough voices, aligned and patient, moving in the same direction, become a current that is very hard to ignore. That is the story of the last few years for our industry, and it is worth telling, because it is easy to forget how far we have come.

Rewind just a few years. The electronics industry was not thought of as an ecosystem, by itself or by anyone in Brussels. It was siloed. Semiconductors were one conversation, printed circuit boards another, assembly another still, each speaking for itself, none speaking for the whole. Policymakers, understandably, saw fragments rather than a system. And a fragmented industry is easy to overlook, because it never quite adds up to a priority.

Then came the shocks. The pandemic and the invasion of Ukraine exposed, brutally, how dependent Europe had become and how fragile its supply chains were. Out of that came an understanding we had been trying to convey for years: that the whole is only as strong as its weakest link, that a chain running from silicon to system is exactly that, a chain, and that a dependency anywhere in it is a vulnerability everywhere. That reframing, from fragments to ecosystem, changed everything that followed.

So, with many of you, we started a call to action. It was supported by 68 companies and 17 trade associations across the European Union, and I want to dwell on that number, because it is the saying made real. Sixty-eight streams. Seventeen more. Each one, on its own, a modest voice. Together, a river that Brussels could not step around. We asked for an industrial strategy for the entire ecosystem, not just chips. We asked for funding instruments that reached beyond semiconductors to the back end, to boards and assembly and integration. We asked for long-term demand instruments, a European preference for critical industries. And we asked for better framework conditions, less administrative burden, better terms for investment.

I will not pretend the European process is quick or simple. It is neither. There are 27 member states, multiple parties, genuinely different ideologies, and all of them have to align at a high level before anything moves. Someone once said democracy is the worst form of government, except for all the others, and anyone who works in Brussels feels that in their bones. But slow is not the same as immovable. And the current we built has moved real things.
Let me point to what the streams have carried. In the first European defence industry programme, adopted this year, defence electronics was not an afterthought, it was prioritised, and critically, the definition included printed circuit boards and IC substrates alongside semiconductors. We had argued, with the evidence of our own studies, that Europe cannot be autonomous in defence without a reinforced electronics ecosystem from silicon to system, and that argument landed. We estimate that programme could generate 350 million euros or more in new defence electronics capacity across Europe.

Then there is the Chips Act. The first one was an important instrument but a narrow one, focused on semiconductors. We spent the last couple of years in an active campaign, with your executives, your data, your voices, to make the case that the ecosystem does not stop at the chip. And in the proposal for Chips Act 2.0, the European Commission has recognised exactly that: first-of-a-kind funding not only for semiconductor manufacturing but for electronics manufacturing and integration, and a new category of strategic projects explicitly intended to reinforce the value chain, with printed circuit board assembly named in the text. A few years ago, that would have been unthinkable. It is now on the table. That is what a river does.

I would be doing you some disservice if I suggested the work is finished. It is not, and this is the part I most want you to hear. A proposal is not a regulation. The negotiations and fine-tuning on the Chips Act will continue for months, and industry has to stay at the table for every line of it, because in the end it all comes down to the legal text, what is in it, what is left out, and whether it actually helps you. The Industrial Accelerator Act is a beginning, not a destination; the made-in-Europe content criteria for electric vehicles are the first instrument of their kind, and how they evolve depends on us staying engaged. The Cloud and AI Development Act is coming, and with it the question we will explore in our new study: do we have the electronics we need, and who is capturing the value? And defence is not going away as a priority; if anything, it is intensifying.

All of which brings me back to the stream and the river. The temptation, when a few battles have been won, is to assume the current will carry itself. It will not. The moment the voices fall quiet, the moment companies decide government is someone else's problem, the river starts to run dry. Government can feel very far from your daily reality of meeting customer demand and fighting supply shortages. But it is also very close, closer than it has ever been to the decisions that will shape whether this industry thrives. Policy that is not fed by industry data and industry voices drifts away from industry needs.

So, my ask is simple, and it is the same one I made in Paris. Keep contributing to your stream. Give us the data, the evidence, the real facts from your factories. Stay at the table, at the local level, the national level and the European level, and keep explaining who we are and why we matter, because our policymakers do not always know, and they cannot act on what they do not understand. We have proved, together, that the water rises when we do. Let us keep it rising.

ISSUE 19 – OCTOBER 2026

NEWS FROM INDIA

electronica India and productronica India 2026 drew 52,411 business visitors and 793 exhibitors to Bengaluru and will launch Defence Electronics NEXT in Delhi-NCR in April 2027.

Bengaluru (Karnataka) [India], October 8: From identifying new component suppliers to evaluating production equipment and addressing gaps in domestic manufacturing, electronica India and productronica India 2026 concluded in Bengaluru after three days of focused commercial and technical engagement across the electronics value chain.

Organised by Messe Muenchen India from 1618 September 2026 at the Bangalore International Exhibition Centre (BIEC), the co-located trade fairs welcomed 793 exhibitors and 52,411 business visitors. The exhibition occupied 60,000 square metres and featured exhibiting companies from over 30 countries. Together, visitors, exhibitors, speakers and industry delegations represented more than 50 countries.

The event covered electronic components, embedded technologies, printed circuit boards, electronic manufacturing services, production machinery, automation, testing, inspection and related manufacturing solutions. Its breadth allowed decisionmakers to examine several stages of electronics production within a single business platform.

The Bengaluru edition was inaugurated by Shri M. B. Patil, Honourable Minister for Large and Medium Industries and Infrastructure Development, Government of Karnataka, and Mr. Hiroshi Nawata, Consul-General of Japan in Bengaluru.

Industry attention shifts from capacity to capability

The conversations across the exhibition indicated a clear industry priority: increasing manufacturing capacity must now be supported by stronger capabilities in components, equipment, quality, testing, design and production processes.

Manufacturers attending the event evaluated technologies against practical requirements such as application suitability, production output, process control, inspection accuracy, automation and supplier support. Component and equipment providers, in turn, gained direct exposure to the requirements emerging from Indian electronics manufacturers.

Bhupinder Singh, President IMEA, Messe Munchen, and CEO, Messe Muenchen India, said "The value of a trade fair is ultimately determined by the quality of the business conversations it enables. In Bengaluru, we saw manufacturers arriving with specific sourcing, production and technology requirements. Suppliers were able to respond with relevant capabilities and technical expertise. This level of engagement shows that Indias electronics sector is progressing from broad expansion plans towards more defined manufacturing decisions".

The BuyerSeller Forum supported this process through 3,225 focused B2B meetings over three days with 645 unique buyer companies and 1,682 VIP buyers. The discussions gave both sides a structured setting to examine technical requirements, supplier capabilities and potential areas of cooperation.

The exhibition floor was complemented by the Podcast Studio, Executive Club Lounge and dedicated networking areas, creating additional settings for conversations among business leaders, technology specialists and industry representatives.

International participation reflects demand for closer market engagement

Companies from Germany, China, France, Italy, the United Kingdom, Japan, Israel, the United States, Korea and other markets participated in the Bengaluru edition.

Dedicated pavilions from Germany, Japan, Taiwan and China brought together technologies and suppliers from their respective electronics industries. The Japan Pavilion was organised in partnership with the Japan External Trade Organization (JETRO), while the Taiwan Pavilion was presented with the Taiwan Electrical and Electronic Manufacturers Association (TEEMA).

Rather than serving only as international showcases, the pavilions enabled participating companies to hold direct discussions with Indian buyers, understand local manufacturing requirements and explore potential commercial relationships.

Dr. Reinhard Pfeiffer, CEO, Messe M**u**nchen GmbH, said, Global electronics companies are increasingly in need of a closer understanding of Indias manufacturing requirements and business environment. The Bengaluru edition gave international suppliers direct access to the companies investing in production, sourcing and technology adoption. For Indian participants, it provided an efficient way to compare the capabilities of several established technology markets.

Conference discussions examine the foundations of competie accompanying programme moved the industry conversation beyond manufacturing volume to the capabilities required for long-term competitiveness.

The India Electronics Conclave comprised 14 conferences at the BIEC Conference Centre. Across the event, approximately 150 speakers participated in 18 supporting programmes covering electronics policy, capital goods, artificial intelligence, exports, free trade agreements, printed circuit boards, flexible electronics, standards, compliance and power electronics.

The programme included the eFuture Conference with Avanteum as Knowledge Partner, CEO Forum with ELCINA, Industrial Electronics & Capital Goods Summit 2026 with ICEA, Exports and FTAs: Electronics Sector with MEDEPC, Bharat PCB Tech Conference with ELCINA, VDMA Symposium and OE-A Symposium on Flexible Electronics.

Reinforcing its role as a platform for industry dialogue and future-focused thinking, electronica India and productronica India 2026 hosted the launch of MMI and Avanteum Advisors e-paper, eFuture 2035: Engineering Indias Next Electronics Revolution. The report outlines the strategic shifts and opportunities that could shape Indias electronics manufacturing and its position in the global value chain over the next decade.

Technical learning was addressed through the IEEE Standards Workshop on EMI/EMC Compliance and the Power Electronics & Power Supply Design Workshop.

Indias electronics industry is entering a phase where competitiveness will be measured by consistency, reliability, process maturity and the ability to meet global customer expectations. Forums at electronica India and productronica India 2026 helped bring sharper attention to these priorities by connecting industry leaders, technology providers and policy stakeholders around the practical capabilities required to move from capacity creation to globally competitive manufacturing, said Rajoo Goel, Secretary General, ELCINA.

The Industrial Electronics & Capital Goods Summit 2026, organised with the India Cellular & Electronics Association, examined the role of domestically available equipment and production technologies in supporting manufacturing growth.

Shri Pankaj Mahindroo, Chairman, India Cellular & Electronics Association (ICEA), said: As Indias electronics manufacturing ecosystem continues to expand, reliable access to advanced equipment, automation, testing and quality-control technologies will be critical to sustaining growth. The summit provided an important platform for industry and policymakers to examine these requirements from the perspective of real-world production needs and identify the areas where Indias capital-goods and technology ecosystem must continue to evolve.

The OE-A Symposium brought international and Indian experts together to consider the commercial potential of flexible and printed electronics across mobility, healthcare, energy, consumer products and industrial applications.

Sandip Roy, General Manager, VDMA India, said, The opportunity in flexible electronics depends on connecting research and technology development with viable industrial applications. The symposium created a useful exchange between international specialists and Indian stakeholders exploring how these technologies can move towards adoption and commercial deployment.

Speakers participating in the supporting programme said that the value of the discussions lay in bringing policy, manufacturing experience and technical expertise into the same forum.

The session provided an opportunity to examine the emerging power paradigm in the context of the decisions manufacturers are making today. The discussion highlighted the immediate challenges facing the industry, while also bringing into focus the technologies and capabilities that need to be developed to meet the evolving demands of power electronics over the coming years, said Amit Kumar, Vice President & Business Unit Head Metering and Protection Systems, Schneider Electric India.

India has a significant opportunity to strengthen its position in next-generation PCB design to manufacturing, but realising this potential will require closer collaboration among industry, government, academia and technology providers. The event brought these stakeholders together for a practical and meaningful exchange of perspectives on bridging the journey from design to manufacturability, said Savita Ganjigatti, Sr. Vice President Engineering & Operations, Sienna ECAD Technologies (An Avalon Group Company), during the session Engineering for Tomorrow: Design to Manufacturing.

ISSUE 19 – OCTOBER 2026

NEWS FROM THE USA

HDP User Group Fall Member Meeting is scheduled for two days in October at the IBM facility in Rochester, Minnesota

The event is being hosted by IBM at its facility in Rochester, Minnesota on October 21st – 22nd. This agenda includes a keynote address on quantum computing, updates on current projects, a technology direction presentation and new projects workshop.

The keynote address—Computing at the Quantum Advantage Frontier—will be delivered by David Lokken-Toyli, Principal Research Scientist at IBM.

Updates on more than twenty-five active projects will be presented. Of these, four will be closeout presentations for projects being completed before the end of 2026.

Attendees will have the opportunity to participate in a new projects workshop. In this interactive session, participants focus on generating new project ideas via open discussions on common challenges.

Potential new members are welcome to attend Day-1. If interested, email Madan Jagernauth at madanj@hdpug.org.

United States share of global printed circuit board production fell from approximately 30% to 4% since the 1990s, with domestic fabricators down from more than 2,000 to about 145 - Printed Circuit Board Association of America

Advanced chips have been getting hit by tariffs for years, with policymakers framing them as efforts to rebuild America's semiconductor supply chain. But one piece of that supply chain hiding in plain sight rarely gets the same attention: the printed circuit board (PCB).

While the U.S. has invested tens of billions of dollars through the CHIPS Act to reshore chip manufacturing, the PCB remains a critical, unsolved link in the electronics supply chain. Reduced resources, a lack of policy incentives, and a shrinking pool of qualified talent have left this part of the industry largely to fend for itself.

Fabricating the chip is only one early step in the long process of manufacturing a full system. Every CPU, every GPU, and every other piece of AI hardware needs a PCB to connect it to power, memory, sensors, and other boards. The PCB layout is also the one component in any electronic system that's never a commodity. Chips are mass-produced and sold off the shelf, but every board needs to be custom designed for its specific application before even one can be fabricated.
That design step is the bottleneck, both in AI hardware and equally in robotics, defense, aerospace, EVs, and telecom.

The PCB Bottleneck, By the Numbers
The numbers tell the story. Since the 1990s, the U.S. share of global PCB production has dropped from approximately 30% to 4% today, according to data from the Printed Circuit Board Association of America. The number of domestic PCB fabricators has fallen from more than 2,000 to about 145 over the same period, and the U.S. now produces only about 1% of the world's PCBs directly. Thus, engineers in the U.S. rely largely on Asia for roughly 90% of their boards, with more than half coming from China.

Years of offshoring has left the U.S. with a structural dependency on foreign supply chains, creating an infrastructure gap in which American companies still can't build fast enough to meet demand.

New Investments Trickle Down to PCB Production
Policymakers have started to notice. A 2018 Department of Defense industrial base assessment, conducted under Executive Order 13806, called the domestic PCB industry "aging, shrinking, and failing to maintain the state of the art," and flagged that some advanced board types were "simply not producible in the U.S."
Mike Cadenazzi, the current U.S. assistant secretary of war for industrial base policy, has since warned that chips, substrates, and PCBs represent "multiple avenues of attack for a potential malicious actor," with worst-case scenarios including missiles that malfunction in flight due to compromised boards.
In early 2023, the U.S. invoked Defense Production Act Title III to support domestic PCB production, and the Department of Defense has since put more than $118 million in DPA grants behind manufacturers. That includes $11.7 million awarded in 2024 specifically to

expand PCB assembly capacity for hypersonic weapons.
A bipartisan bill, the Protecting Circuit Boards and Substrates Act (HR 3597), would add a 25% tax credit and a $3 billion assistance program modeled on the CHIPS Act. But it remains in committee.

The Bottleneck Behind the Bottleneck: PCB Design
Every one of these interventions targets the same three things: fabrication, substrates, or assembly. None of them touch the bottleneck upstream of all three: design.
The AI boom driving unprecedented demand for PCBs is also the force most capable of addressing the talent and throughput constraints on the design side. Tax credits and DPA grants can build a fab. They can't shorten the design queue feeding it, and a reshored fab running at partial utilization because customers still need three months for a layout doesn't solve the strategic problem.

That's the bet behind a new wave of AI-assisted layout tools, including the one developed at Quilter: Take the slowest, most repetitive parts of the layout process off a designer's plate so a fixed-size team can carry meaningfully more volume. Teams using these tools cut layout time from multiple months to a matter of weeks. The goal isn't to replace engineers, but to give the ones we have left the leverage that policy alone can't legislate into existence on a useful timeline.

The U.S. has made real progress at the chip level, but chips don't function in isolation. Congress can fund new fabs in a few years, but we can't legislate a new generation of senior PCB designers into existence on that same timeline. Without a resilient domestic design ecosystem to match the manufacturing investment, the broader push to rebuild America's electronics supply chain risks running into a bottleneck almost no one is talking about. While we still need to rebuild the talent pipeline, automated PCB design is one of the only levers available at the speed necessary to tackle this problem. The electronics industry's best path forward is equipping the designers it does have with tools that multiply their output.

ISSUE 19 – OCTOBER 2026

PCB INDUSTRY NEWS

World printed circuit board market grew to $85.8 billion in 2025 from $73.6 billion in 2024, and rigid copper-clad laminate rose 24.4% to $18.7 billion, on artificial intelligence datacenter and networking demand - Prismark

October 16, 2026
Viasion

The PCB industry is entering 2027 with demand shifting toward denser designs, smarter factories, higher material costs, and more diversified supply chains. Demand for higher circuit density, better signal integrity, improved thermal management, and more sophisticated manufacturing processes is being driven by AI infrastructure, high-speed networking, automotive electronics, advanced industrial systems, and compact consumer devices.

At the same time, PCB makers and OEMs are being pressured to lower costs, face longer lead times for advanced technologies, increased regional supply chain complexity, and meet growing environmental and regulatory requirements. These trends are converging to make PCB design, manufacturing, procurement, and compliance more interdependent decisions, not distinct stages of the electronics development process.

1. Design Trends
PCB design will be shaped in 2027 by the demand for more electrical functionality in less physical space. High-performance systems such as AI servers, advanced networking, automotive electronics, wearables, and others are raising the requirements for density, signal integrity, thermal management, and mechanical integration.

Ultra-HDI Moves PCB Design Closer to Semiconductor Packaging
Ultra-HDI will push PCB fabrication to sub-25-micron trace and space geometries for the most demanding applications. UHDI is defined by American Standard Circuits as PCB technology with line widths and spaces below 25 microns. Special fabrication processes are more and more used to achieve these dimensions.

IPC's 2023 PCB Technology Trends study found that the share of HDI usage and fabrication has risen from 37.5% to just over 49% in the last five years. The same study predicted that the median expected use of HDI would be 50% in 5 more years.

The increasing use of HDI indicates a general trend away from traditional multilayer construction toward finer interconnect structures. The use of AI computing, high-speed networking, advanced mobile devices, and other high-density applications is driving demand for fine-line routing and high-layer-count boards.

Prismark reported that the strong growth in the HDI and high-layer-count PCB segments in 2025 was driven by AI data-center and networking applications. The research firm also said the global bare-board PCB market was $85.8 billion in 2025, up from $73.6 billion in 2024.
Ultra-HDI offers new possibilities for designers to connect layout and fabrication. The choice of PCB layout trace width can result in a board that needs traditional subtractive etching, enhanced semi-additive processing or advanced semi-additive manufacturing.

Flexible Circuits Expand Beyond Consumer Electronics
Flex printed circuits will continue to be an important PCB technology in 2027, as they allow for electrical interconnection where normal rigid boards cannot easily go. They can be bent, folded, and conformed to mechanical structures and are increasingly relevant for automotive electronics, battery systems, wearables, medical equipment, and compact consumer devices.
Prismark had earlier projected global FPC and module revenues of about $16.47 billion in 2027, growing at a compound annual growth rate of 3.5% from 2022 to 2027.
Flexible circuits are an important application area for automotive electronics. Growth opportunities in EV and ADAS applications include low-loss FPCs and FPCs for EV battery-management systems, Prismark noted.
The flexible-circuit trend is also changing material requirements. Flexible copper clad laminates have to trade off the bend performance, the dimensional stability, the electrical performance, the thermal behavior and the manufacturing yield.
Rigid-flex construction will thus become increasingly important when designers have to combine mechanical flexibility with the density and electrical performance of rigid PCB sections. Technology can also cut the number of individual connection points by eliminating some connectors and cable assemblies.

Miniaturization Increases Design and Manufacturing Pressure
Miniaturization will further reduce the physical margin for routing, thermal management, and assembly. The INEMI roadmap lists 01005 components as a present challenge for rework, and anticipates rework of components smaller than 01005 will be a technology issue in 2027.
With components getting smaller all the time, manufacturing tolerances become more and more critical. Fine pitch components require accurate imaging, drilling, plating, solder mask registration, assembly placement, and inspection.

And the AI infrastructure is enabling the same miniaturization at the level of interconnects. Modern artificial intelligence systems require increasingly dense routing, with faster signals and more electrical power.
The net result is a design environment in which electrical, mechanical, thermal, and manufacturing constraints can no longer be treated as separate engineering problems. The PCB stack-up, material system, via structure, impedance strategy and component placement are starting to gel more and more.

2**. Manufacturing Trends**
In 2027, PCB manufacturing will see a greater integration of conventional process equipment with machine vision, connected production systems, artificial intelligence (AI), and automated process control. It's not so much about faster production as it is about better control of ever tighter manufacturing tolerances.

Automation Becomes a Process-Control Requirement

With less space available for manual inspection and process variability on advanced PCBs, automation is becoming more important. Higher layer counts, fine-line structures, microvias, and the use of advanced materials mean more opportunities for defects that are hard to find after the board is made.

IPC's PCB Technology Trends research reveals that major challenges for PCB manufacturers are better yields, movement toward higher technology levels, workforce development, and supply-chain lead times.

Industry 4.0 meets part of this challenge with the connectivity of manufacturing equipment and production data. The IPC Connected Factory Exchange standard is intended to facilitate the exchange of information between manufacturing processes and associated host systems in electronics manufacturing.

The value of connected manufacturing is greatest when process data can be leveraged before defects become costly. A manufacturing system that can detect a developing process drift during drilling, imaging, plating, or lamination can take corrective action sooner than a system that relies only on final inspection.

AOI Becomes More Intelligent

Artificial intelligence will play an increasing role in automated optical inspection to distinguish between manufacturing defects and process variation. IPC has identified AI-enhanced AOI as a significant application for computer vision, cloud AI, edge computing, and smart manufacturing.

AI-based AOI can increase defect detection accuracy and reduce manual intervention. The AI-for-AOI research from IPC also highlights deployment challenges in terms of data quality, standards, factory integration, and implementation practices.

The finer the PCB geometries, the more important AI inspection becomes. A relatively insignificant defect on a conventional board can turn into a functional failure when it is a fine-pitch connection, microvia, impedance structure or high-speed transmission path.

Industry 4.0 Adoption Will Remain Uneven

AI is now a standard part of the PCB manufacturing process, but its use across an entire factory is limited. According to a June 2026 report by DigiTimes, less than 10% of PCB makers had fully scaled AI deployments across their operations.

That gap means in 2027, the manufacturing landscape will include highly automated factories as well as plants still using isolated automation systems. The difference will increasingly have an impact on production consistency, traceability, inspection capability, and production economics for advanced PCB designs.

Traceability will become more important in digital manufacturing. Customers want more information on materials, process history, quality results, and environmental performance, and connected production systems can provide a structured record of how each board was made.

3. Cost Trends

The cost of PCBs in 2027 will be influenced by raw material prices, the complexity of technologies used, energy consumption, tariffs, local labor costs, and the utilization of manufacturing processes. The historical assumption that the size of the board is the primary cost factor for a PCB will be less useful for high-end products.

Advanced Materials Are Becoming a Larger Cost Driver

The growing need for high-speed and ultra-low loss materials for AI servers and high-performance networking systems is putting pressure on the cost of copper clad laminate. The global rigid copper-clad laminate market was valued at $15.0 billion in 2024 and increased by 24.4% to $18.7 billion in 2025, Prismark noted.

The pressure on costs is especially high for materials with specific electrical properties. High-speed AI and networking designs are generating the need for laminate systems that can support signal

integrity at higher data rates.
Copper pricing also affects the economics of PCBs since copper is a fundamental input for circuit traces, planes, copper foil and laminate structures. A Reuters report in April 2026 said copper prices had risen some 30% year-to-date in 2026 and PCB makers were facing shortages of resin, glass fiber and copper foil.
Material inflation does not affect all PCBs equally. Traditional products based on FR-4 will remain somewhat price sensitive, but advanced boards will face much greater cost pressures from specialty laminates, low-loss resin systems, HVLP copper foil, high-end glass fabrics and added processing steps.

Tariffs Add Another Layer to Landed Cost
In 2027, trade policy will remain a key consideration for firms importing PCBs into the US. Additional duties continue to be imposed under the U.S. Section 301 regime on covered products from China. The applicable duty rate will vary according to the particular HTS classification.
So the USTR has a product-search system where the importer has to figure out what the right HTS subheading is and what the Section 301 treatment is for that product, rather than just assuming that every product coming from China is subject to the same tariff.
Tariffs should be included in landed cost calculations and not treated as a separate procurement issue. Once you factor in duties, freight, customs fees, inventory carrying costs, and qualification costs, the lower factory quote may not be so competitive.

Regional Cost Differences Are Becoming More Complicated
China still has a lot of competitive advantage in PCB manufacturing with its huge production ecosystem, availability of materials and engineering resources, and the existing base of suppliers. By 2026, China will have captured some 60% of the world's PCB output, says Prismark.
But Southeast Asia is gaining manufacturing clout as companies seek to diversify regionally. Prismark pointed to a big investment being made in Thailand and other parts of Southeast Asia as the industry moves to build more capacity outside China.
The lowest manufacturing quotation does not therefore necessarily mean the lowest total cost. Regional decisions are increasingly requiring a comparison of PCB fabrication price, tooling, logistics, tariffs, lead time, qualification costs, engineering support, and supply continuity.

4. Supply Chain Trends
The PCB supply chain in 2027 will be more diversified than the traditional China-centric model, but diversification will not lessen the importance of China. Instead, manufacturers and OEMs will increasingly work with multi-region supply networks but still have access to China's vast production ecosystem.

Vendor Diversification Becomes a Risk-Control Strategy
Vendor diversification is shifting from geopolitical choice to capacity limitations. Companies are increasingly looking for regionalized supply chains because of supply-chain volatility, trade tensions, and regional dependencies, according to IPC research.
PCBs continue to be produced at high levels. Chinese PCB companies accounted for 36% of the global PCB production value in 2025, while China PCB and substrate suppliers accounted for about 30%, Prismark noted.
This focus creates both efficiency and risk. The dense ecosystem provides access to mature suppliers and materials but, at the same time, the disruption of a major production area can trigger a domino effect across several phases of the electronics value chain.

Lead Times Are Moving Higher for Advanced Boards

Advanced PCB products are under more and more pressure on lead times. In March 2026, Reuters reported that lead times for some of the PCBs used in optical transceivers had increased from around six weeks to as much as six months.

Advanced boards require special materials, equipment, process qualifications, and manufacturing capacity so the pressure is on high performance applications. You can't just add capacity. New PCB facilities require the installation of equipment, qualification of processes, customer approval, and stabilization of yield.

Longer lead times are also helping to support longer-term supply agreements. "We're seeing some customers signing three- to four-year supply agreements to lock in future capacity," Broadcom reported.

So, it will become a design consideration for 2027 procurement teams. Even if a PCB design is technically manufacturable, it can still create supply risk if it relies on a very constrained material or specialized fabrication process.

Regional PCB Capacity Continues to Shift

While China will remain the biggest producer of PCBS, production outside China will still continue to increase. Prismark has said that areas benefitting from AI-related demand and new capacity investment include Taiwan, Korea, Thailand, Vietnam and Malaysia.

A clear case of this regional expansion is Thailand. The PCB industry in Thailand has attracted significant investment, and IPC projects that local PCB manufacturing will grow 2% to 3% annually from 2025 to 2027.

The regional shift doesn't mean PCB manufacturing is moving out of China. This means the global industry is adding alternative production locations, while China continues to expand and upgrade its own capabilities.

This results in a more complex OEM procurement model. When choosing PCB suppliers, companies will focus more on technology capability, geographic exposure, logistics, tariffs, material availability, and production scale.

5. Regulatory/Environmental

By 2027, more and more PCB design and manufacturing decisions will be driven by the need for environmental compliance. The selection of materials and the production documentation are more and more affected by regulations on dangerous substances, chemicals, product information, recycling and transparency of the supply chain.

RoHS Remains a Core Compliance Requirement

The European Union's RoHS Directive limits the use of ten hazardous substances in electrical and electronic equipment. The restricted substances are lead, cadmium, mercury, hexavalent chromium, PBB, PBDE and four phthalates.

The selection of PCB materials, surface finishes, soldering processes, components and product documentation is affected by RoHS compliance. Material and process information can be provided by manufacturers of regulated electronic products to demonstrate compliance.

PFAS Regulation Could Increase Material-Selection Pressure

PFAS regulation will be an important issue for electronics manufacturers in the future. The European Parliament said the ECHA's broad PFAS restriction process could lead to restrictions beginning in 2027, though sector-specific exemptions could be granted for uses deemed essential.

This possible restriction is important to PCB manufacturers as fluorinated substances can be found in specialized high-performance electronic applications. This could mean, for example, that future restrictions could require material substitutions, qualification testing, redesigns or additional documentation for impacted products.

Its practical impact will depend on the ultimate scope of the rule and any exemptions. PCB designers should not assume that all current high-performance materials are immune.

Product Traceability Is Becoming More Important

The EU Ecodesign for Sustainable Products Regulation provides a framework for Digital Product Passports that can provide information on products and improve traceability across value chains. According to the European Commission's current work program, ICT products are in the 2029 priority, not in the 2027 priority. But the wider framework is already pushing electronics makers to disclose more about products and supply chains.

This direction is important for PCB manufacturing because information on material composition, production, recyclability, and component-level details is increasingly required across the electronics value chain.

Sustainability Is Moving Into Factory Operations

Sustainability is evolving from a standalone corporate initiative to a required component of operations. The results of IPC's 2025 sustainability survey show that 59% of respondents expect their companies to expand sustainability work, with 66% citing regulatory compliance as a major driver. Therefore, PCB manufacturing will pay more attention to energy consumption, water consumption, chemical management, material utilization, waste minimization, and recycling. These factors affect the operating costs of a factory and the ability of suppliers to meet environmental demands of customers.

In 2027, therefore, PCB manufacturing will be defined by a combination of simple scale economics with technology, data, materials, and supply-chain resilience.

PCB design will continue to trend toward Ultra-HDI, flexible circuits, smaller components, higher layer counts, and more stringent signal-integrity requirements. Manufacturing will respond with automation, AI-assisted inspection, connected factories, and better process control.

Cost structures will remain sensitive to copper, resin, glass fiber, advanced laminates, tariffs and regional operating conditions. Supply chains will be more geographically diversified, but China will remain the dominant production hub.

The biggest change is that these trends are converging. The designer's choice of an ultra-fine HDI stack-up is also a function of manufacturing capability. A procurement team choosing a region is also making a tariff, lead-time, and technology decision. Environmental-compliance decisions are becoming an important consideration when a materials engineer is selecting a laminate.

The 2027 PCB industry will therefore reward companies that treat design, manufacturing, cost, compliance, and supply continuity as one engineering system rather than as separate functions.

Summary Table

2027 Trend	Key Indicator	What It Means
Ultra-HDI adoption	HDI usage/fabrication rose from 37.5% to just over 49% over five years, according to IPC	PCB designs will continue moving toward finer interconnect structures
Flexible circuits	Global FPC and module market was forecast at $16.47B for 2027 by Prismark	Flex and rigid-flex technologies will remain important in compact and automotive systems

2027 Trend	Key Indicator	What It Means
Miniaturization	INEMI identifies smaller-than-01005 component rework as a 2027 technology issue	Smaller components will increase placement, inspection, and rework requirements
AI manufacturing	Fewer than 10% of PCB companies had fully scaled AI manufacturing deployments in 2026, according to DigiTimes	AI factory adoption still has substantial room to expand
Advanced materials	Rigid CCL reached approximately $18.7B in 2025, up 24.4%, according to Prismark	High-performance laminates will remain an important cost variable
PCB supply concentration	China was projected to account for approximately 60% of global PCB production by 2026, according to Prismark	Diversification will grow without eliminating China's central role
Lead times	Some advanced PCB lead times expanded from about six weeks to six months in 2026, according to Reuters	Procurement planning will need longer capacity horizons
Thailand expansion	Thai PCB production was projected to grow 2%-3% annually from 2025 to 2027 by IPC	Southeast Asia will continue gaining PCB manufacturing capacity
Sustainability	59% of IPC survey respondents expected greater sustainability efforts	Environmental performance will increasingly influence supplier selection
PFAS compliance	EU restrictions could begin applying from 2027, according to the European Parliament	Material qualification and chemical compliance will become more important

News from
WECC members

WECC
World Electronic Circuits Council

Issue 18 – October 2026

NEWS FROM THE IPCA

The TPCA Show 2026, the Taiwan Printed Circuit Association's annual exhibition, is set for October 20 to 22 with more than 680 international brands, 1,840 booths and 70,000 expected buyers.

As explosive AI computing demand drives hardware architecture change, Taiwan Printed Circuit Association (TPCA) is set to open its annual flagship event, with the 21st International Microsystems, Packaging, Assembly and Circuits Technology Conference (IMPACT-IAAC 2026) kicking off on October 19, followed by the 27th TPCA Show 2026 from October 20 to 22.

The TPCA Show 2026 is running under the theme "Energy-Efficient AI: From Computing to Systems and Applications." At the opening ceremony and keynote on the first day, Unimicron chair SC Chien will speak on Taiwan's printed circuit board (PCB) industry in the era of heterogeneous integration, spanning supply chains to the ecosystem. It is expected to outline how Taiwan manufacturers are transforming and positioning themselves for the AI era.

The second day's leadership summit will also feature a strong lineup, with Phison chief technology officer Wei Lin, Unimicron executive general manager Ting Lan, C Sun Mfg general manager Yu-Wen Liang, and Prismark partner Xu Gao Jiang sharing the stage to examine industry opportunities and challenges under AI demand.

The afternoon forum on AI enablement and global expansion trends will bring together representatives from key AI supply-chain companies, including Zhen Ding Technology, Qnity, and KLA, to discuss technology development and global strategies under AI trends.

That same day will also include a PCB net-zero sustainability forum, a through-glass via (TGV) discussion session, and a presentation by Kinsus R&D vice president Lin Ding-Hao on advanced packaging glass material applications, offering a deeper look at technological innovation across the industry.

According to the TPCA, the 2026 show will gather more than 680 international brands and more than 1,840 booths and is expected to draw 70,000 professional buyers from around the world, with the scale likely to set another record high. The event will showcase the best solutions encompassing AI, PCB, and advanced packaging solutions.

The eight exhibition zones will fully connect the industrial chain, covering substrates and high-end PCB manufacturing, high-grade materials and chemicals, wet and dry processing equipment, automation solutions, inspection equipment, electronic packaging, surface mount technology (SMT) smart manufacturing, and green technology. In response to global market demand, a dedicated advanced packaging zone will also be set up.

Facing a new round of competition driven by AI, only the combined strength of upstream and downstream partners can boost the reliability of Taiwan's PCB industry chain as a manufacturing partner for global customers, as well as becoming a co-definer of AI hardware technical standards.

Taiwan printed circuit supply chain posted nine-month year-over-year revenue growth at all 10 tracked laminate, circuit board and IC substrate companies, led by Elite Material, up 103.7% to NT$141.23 billion, and Taiwan Union Technology, up 99.4% to NT$42.3 billion

October 13, 2026

DIGITIMES

Taiwan's copper-clad laminate (CCL), printed circuit board (PCB) and IC substrate suppliers are seeing uneven returns from AI infrastructure spending. All 10 tracked companies recorded nine-month year-over-year revenue growth, and seven generated more revenue by September 2026 than in all of 2025, although their momentum differed markedly.

CCL: M8/M9 upgrades and tight supply propel sales

Taiwan Union Technology (TUC) recorded September revenue of NT$6.13 billion (approx. US$191.6 million), up 114.8% year-over-year and 3.6% month-over-month. January-September revenue rose 99.4% to NT$42.3 billion, already above 2025's NT$30.34 billion. Management expects 2027 AI-server, switch and optical-transceiver projects to adopt M9-grade laminates. Analysts anticipate fourth-quarter gains from higher M8 pricing and delayed shipments, with supply tightness favouring advanced products.

Elite Material (EMC) generated NT$21.53 billion in September, up 168.9% year-over-year and 6.9% sequentially. Nine-month revenue more than doubled, rising 103.7% to NT$141.23 billion, well beyond 2025's NT$94.24 billion. Analysts cite custom AI chips and 800Gbps switches as drivers. EMC plans capacity of 9.45 million sheets by end-2027 and 11.25 million in 2028.

ITEQ's September revenue reached NT$5.82 billion, up 110.7% year-over-year and 15.5% sequentially. Its nine-month total increased 50.1% to NT$36.29 billion, exceeding 2025's NT$33.10 billion. Management warns that tight fiberglass-cloth supply is limiting order fulfilment but expects fourth-quarter improvements. Nvidia-qualified M9 materials and new overseas capacity offer longer-term opportunities.

PCB: AI-server orders contrast with a fading rebound

FHt reported September revenue of NT$1.05 billion, down 4.6% year-over-year and 5.0% month-over-month. Its January-September total grew 28.1% to NT$8.8 billion, still below 2025's NT$9.64 billion. September marked its first year-over-year decline for a month since 2024; third-quarter growth of only 1.6% points to a subdued near-term outlook despite the earlier recovery.

Gold Circuit Electronics (GCE) posted NT$9.32 billion in September, up 55.5% year-over-year but down 10.2% month-over-month. Nine-month sales climbed 69.1% to NT$73.38 billion, surpassing 2025's NT$59.73 billion. The company approved NT$7.9 billion in expansion spending, while analysts anticipate demand for next-generation AI-server boards, Trainium chips and 1.6T networking equipment.

Tripod Technology delivered September revenue of NT$10.65 billion, up 53.5% year-over-year and 4.1% month-over-month. Its nine-month total rose 40.6% to NT$76.52 billion, ahead of 2025's NT$73.40 billion. The company attributes growth to rising orders and shipments, with server and memory-module demand and a better product mix underpinning its outlook.

Global Brands Manufacture (GBM) registered NT$4.25 billion in September, up 36.1% year-over-year and 11.7% month-over-month. January-September revenue gained 28.2% to NT$31.26 billion, below 2025's NT$33.71 billion. Management previously outlined Malaysia-Singapore capacity expansion targeting high-layer boards for AI servers and networking, alongside pressure from rising laminate costs.

Substrates: ABF scarcity supports pricing and capacity expansion

Unimicron's September revenue rose 64.7% year-over-year and 5.1% month-over-month to NT$18.65 billion. Nine-month sales grew 37.7% to NT$132.99 billion, edging past 2025's NT$131.24 billion. The company targets AI products to exceed 60% of 2026 revenue and plans 30-40% more ABF capacity by 2027. It has also begun shipping substrates for co-packaged optics.

Kinsus recorded NT$5.18 billion in September, up 44.5% year-over-year and 7.7% month-over-month. Nine-month revenue rose 33.6% to NT$38.14 billion, short of 2025's NT$39.35 billion. Management is building capacity for advanced, high-layer-count substrates as AI servers, high-performance computing and advanced packaging raise demand, although suitable industrial land remains scarce.

Nanya PCB (NYPCB) posted September revenue of NT$5.59 billion, up 57.8% year-over-year and 4.4% month-over-month. Nine-month revenue increased 41.8% to NT$41.13 billion, exceeding 2025's NT$40.17 billion. Analysts expect ABF and BT substrate price increases, better production yields, and greater server exposure to bolster margins, although those forecasts depend on sustained supply tightness.

International Diary

2026

TPCA
20-22 October
Taipei, Taiwan

EIPC @ Electronica 2026
10-13 November
Munchen, Germany

FED Austrian Electronics Day
26 November
Dornbirn, Austria

HKPCA
2-4 December
Shenzhen, Hong Kong

2027

EIPC Winter Conference
February

EIPC Summer Conference
8 & 9 June

Electronics Manufacturing & Packaging Symposium (EMPS)
28 June-1 July
ESA/ESTEC Noordwijk, NL

ECWC17 Electronics Circuit World Convention
18-20 August
Bangkok, Thailand