

IPC YEAR IN REVIEW: 2024

In 2024, IPC exemplified its unique role as the global electronics association. While maintaining a robust schedule for new and revised standards, IPC expanded the breadth and depth of its industry programs to promote innovation, sustainability, workforce development, and supply chain resiliency. IPC kept its focus, as we have for close to 70 years, on working with and for electronics companies globally. The hallmark of IPC's success remains the value we deliver to the industry.

In this report, we highlight the incredible work that IPC and the industry accomplished together in 2024.

IPC STANDARDS



The IPC Standards Department maintained a robust trajectory in 2024, making significant global strides in advancing the electronics industry through impactful standards development and community engagement. Throughout the year, A-Team meetings and teleconferences kept a full calendar, driving progress on updates to key standards such as IPC J-STD-001, IPC-A-610, IPC-7711/21, and IPC-7095. Simultaneously, innovative new standards emerged in design, printed electronics, sintering materials, and plastronics. Efforts expanded into vital areas like IC substrates, system-in-package technologies, and sustainability, reflecting IPC's commitment to addressing emerging industry trends.

- Face-to-face events underscored the department's global engagement. WinterCom 2024 brought volunteers from five continents to Barcelona for a groundbreaking European event, while APEX EXPO in Anaheim and IPC Builds in Raleigh showcased nearly 100 standards development meetings. Regional meetings in Europe, Asia, and at IPC HQ sustained momentum across the globe.
- Online engagement through IPC Works empowered task group members with tools like wiki pages and a vibrant community platform. A-Teams, the engine of IPC's standards development, tackled essential tasks like comment resolution and graphics creation, with over 150 teams worldwide contributing to IPC's success. The Golden Gnomes awards at IPC Builds celebrated these collective achievements.
- Outreach efforts flourished, with staff presenting at global conferences, hosting industry roundtables, and updating the IPC Checklist to clarify standards products. The Emerging Engineer program welcomed 17 new participants, fostering the next generation of standards development leaders. With a multilingual, around-the-clock team, IPC's standards development activities in 2024 exemplified collaboration, innovation, and a vision for the future.
- The IPC-CFX Qualification list grew by 50 percent – and now includes more than 150 pieces of equipment.
- From the United States: To continue IPC's standards missions, hundreds of in-person standards meetings were held at IPC APEX EXPO and IPC Builds, as well as numerous Zoom and Teams meetings.
- From India: IPC's first committee-developed publication, "Automotive Suppliers Checklist" was posted on IPC's website and downloaded 500+ times. IPC India is making major steps in reputation by supporting Indian Defense modernizing their PCB specification requirements.
- From China: Market leaders AT&S and Unimicron joined the committee developing IPC standards for IC substrates.
- From Europe: Supporting global sustainability, IPC started work on a standard to address component reclaim/reuse.
- Presentations on IPC standards were made in 17 countries.
- Contributed to releasing the "IPC Design Process Flow" document at productronica 2024.

Contact: [David Bergman](#), vice president, standards and technology.

EDUCATION AND TRAINING

Through its multifaceted initiatives, IPC significantly influenced global industries and educational systems in electronics manufacturing. The IPC Education Foundation expanded its Student Chapter program, increasing from 20 active schools to 66 and amassing more than 700 student Members. This growth is complemented by a 125% surge in scholarship applications, illustrating a heightened interest in IPC's educational opportunities and signaling a robust future workforce.

- > IPC secured \$542,650 in grants for future endeavors, demonstrating a strong commitment to workforce development. The introduction of 150 individuals into pre-apprenticeship and apprenticeship programs, coupled with IPC's recognition as an Apprenticeship Ambassador by the U.S. Department of Labor, underscores its pivotal role in shaping skilled professionals.
- > The value of IPC's workforce training was further reflected through a dramatic 89 percent increase in participation in IPC member benefit courses, rising from 7,928 in 2023 to 14,959 in 2024. Additionally, the 36 percent increase in registrations for paid programs, the release of four new workforce training programs, and the publication of an IPC workforce white paper highlight IPC's proactive stance on industry education and workforce readiness.



Contact: [David Hernandez](#), vice president, Education.

CERTIFICATION

IPC certification demonstrates a foundation of proven knowledge for our most vital electronics manufacturing systems. These certification programs issue an industry-recognized certification with endorsements based on the following IPC standards; IPC J-STD-001, A-610, A-620, A-600, 7711/21, and 6012.

- > In 2024, IPC, with the help of industry's subject matter experts, revitalized four programs and released updated versions to the most current revision of the IPC J-STD-001, IPC-A-610, IPC-7711/21, and IPC-6012 training and certification exams and training materials. Not only were these new revisions released but IPC now offers these new exams in up to 16 different languages to meet the needs of a multilingual audience.
- > IPC now boasts more than 150 partner certification centers worldwide to administer for exams and prepare students for them. These centers provide the necessary training for the workforce to be certified and earn the proper credentials needed in today's robust and complex workforce. Employers rely on IPC's Certifications to maintain their workforce and demonstrate their commitment to excellence and growth within the Electronics industry. These new programs and IPC's current offerings were used by approximately 130,000 individuals globally in 2024.

Contact: [Joe Williams](#), director, Certification.

ADVOCACY

NORTH AMERICA

North American Government Relations shifted the narrative in Washington, D.C., following decades of policymaker indifference to electronics manufacturing. In 2024, we saw major actions in Washington signaling a move toward supporting the growth of the domestic electronics industry. As the Chips and Science Act of 2022 was implemented, IPC vigorously advocated to the U.S. Government to expand its strategy from “chips only” to a Silicon-to-Systems approach.

IPC’s expertise was sought out by policymakers as they strategized on how to secure supply chains for critical electronics components in national defense and infrastructure. IPC brought the industry’s voice to Washington at the highest levels of the U.S. government on Capitol Hill, in the White House, and across the executive branch at agencies including the Department of Commerce, Department of Labor, and Department of Defense. We look to continue building on these relationships in the coming year as we expect a continued focus on building domestic manufacturing and shoring up supply chains.

- > The National Advanced Packaging Manufacturing Program (NAPMP) cited IPC’s report on advanced packaging in the agency’s published strategy to build a domestic advanced packaging ecosystem.
- > The Senate Armed Services Committee included IPC’s recommended language in its committee report, directing the Department of Defense to brief Congress on how it proposes to close industrial base gaps in electronics manufacturing.
- > The Senate Appropriations Committee included IPC’s recommended language in its committee report, allocating \$45 million in the Defense Production Act account specifically for printed circuit board manufacturing. The report also encouraged prioritization of investments in PCB manufacturing and continued future year funding.
- > Six IPC members met with more than a dozen congressional offices during an IMPACT day, including influential Members of the appropriations, commerce, armed services, tax committees and congressional leadership to advocate for the domestic electronics industry.
- > IPC President and CEO John W. Mitchell represented the electronics industry in a White House roundtable discussion on workforce development with the Director of the National Science Foundation.
- > IPC submitted a formal comment to the Department of Labor opposing the creation of a 700-page regulation that would add enormous administrative burden on employers seeking to use apprenticeships to build their workforce. The proposed regulation was later withdrawn.
- > IPC participated in a research project with the Department of Commerce to identify risks in the supply chain for AI Data Centers. IPC’s report was referenced in the findings of the department which recommended federal support to simulate the growth of domestic printed circuit board and PCB assembly manufacturing.



Contact: [Richard Capetto](#), senior director, North American Government Relations.

ADVOCACY

EUROPE

In 2024 we made major strides to elevate the electronics manufacturing ecosystem in Europe as a strategically important industry, bringing together industry partners in a campaign across the European Union at a time of political and geopolitical change. IPC European Government Relations collaborated with leading European electronics manufacturers in developing a key economic study, “Securing the European Union’s electronics ecosystem,” creating a call to action with key policy recommendations for the industry and building a coalition of companies and associations aligned to the call. The campaign and related activities brought forward the understanding of the importance of the industry, resulting in meetings at the highest levels in Brussels and outreach meetings by coalition partners across the EU.

- > Led and initiated an Electronics Call to Action endorsed by 59 European electronics companies, 17 major Trade Associations across the European Union representing thousands of companies and the European Space Agency.
- > Secured meetings at the highest level with EU leaders including the Head of Cabinet for the Vice President of the European Commission, the Chief Economic Advisor to the President of the European Council and the Chief Advisor to the Belgian Prime Minister and Members of the European Parliament in Brussels, Belgium.
- > Organized the launch of the Call to Action and economic study with the participation of European Commission Directorate Generals for Industry, Directorate General for the defense industry and space and the European defense agency in Brussels, Belgium.
- > Organized the first ever European Commission Delegation visit to a European Printed Circuit Board facility, ACB in Belgium.
- > Launched an Industry coalition and campaign from the Call to Action determining the strategy, hosted well-attended monthly meetings and provided weekly updates aligning partners and coalition members across the EU.
- > Active support in meetings on the Call to Action including with the French and Estonian Economics Ministries, industry events in Poland and with the European Space Agency in the Netherlands.
- > Initiated meetings with leading European think tanks and third-party stakeholders resulting in the endorsement of IPC’s study and reference in a third-party paper.
- > Facilitated the first participation of the European Commission at electronica24 in Germany, organizing a highly attended policy panel.
- > Sent coalitions letters to the Political leaders of the 27 EU Member States in Council and to the newly appointed President and Executive Vice Presidents of the European Commission.



Contact: [Alison James](#), senior director, European Government Relations.

ADVOCACY

ASIA

In 2024, IPC broadened its government relations in Asia with new, focused programs in Japan, India, and Southeast Asia. These programs positioned IPC to strengthen its relationship with its members, better represent the electronics manufacturers, and partner with governments regionally to support the growth of the industry.

In Japan, IPC worked closely with the semiconductor industry to support continued investment and innovation in advanced packaging and other electronics to ensure that those packages can be integrated into complex integrated systems. Our work included meetings with top government officials and industry executives, especially on the importance of greater international collaboration on standards development.

In India and Southeast Asia, IPC focused on strengthening the skilled electronics manufacturing workforce to support the industry's incredible growth in the region. In addition to the work of our regional and education teams to facilitate the distribution of our programs across Southeast Asia, the government relations effort focused on building partnerships for these programs so companies can access them more quickly and affordably.

IPC's expanded investments in Asia underscore the organization's commitment to global advocacy. In 2025, IPC will continue to grow its team in Asia to support our engagement with member companies and government officials.

JAPAN HIGHLIGHTS

- > Partnered with leading business federation Keidanren on a June standards summit and executive luncheon.
- > Hosted industry roundtable discussion on semiconductor advanced packaging featuring government and industry executives.
- > Engaged Japan's Ministry of Economy, Trade, and Industry on international standards development activities, including advanced packaging and supply chain assurance.
- > Advocated for government funding for semiconductor advanced packaging and electronics manufacturing.

INDIA HIGHLIGHTS

- > Organized the 3rd Edition of IEMI with support from the Government of India and the State Government of Karnataka in Bangalore, India. The July event drew 1200+ industry professionals and featured pavilions hosted by the Governments of Singapore and Malaysia.
- > Secured Government of India Defence Agency (Directorate General of Quality Assurance) engagement in IPC's standards development activities.
- > Facilitated the Government of India's sponsorship of the "India Pavilion" with 15 companies at the Electrical Wire Processing Technology Expo in Milwaukee, Wisc.

SE ASIA HIGHLIGHTS

- > Organized the IEMI Malaysia 2024 with support from the Government of Malaysia. The Governments of Australia, Vietnam, and the Philippines sent speakers for the Advanced Packaging program.
- > Engaged Malaysia's government to support electronics workforce development programs through new MoUs.
- > Partnered with the Government of Singapore, ITE College, and the Association of Electronics Industries of Singapore for a Technical Session on the Synergy of Electronics Skills and AI.
- > Extended IPC workforce education and training to Bhutan at the request of the Government of Bhutan.

Contact: [Chris Mitchell](#), vice president, Global Government Relations.

U.S. PARTNERSHIP FOR ASSURED ELECTRONICS (USPAE)



2024 was a busy and successful year at USPAE in support of our mission to ensure the U.S. Government (USG) has access to trusted, assured and resilient electronics supply chains. A transition to 501(c)(3) non-profit business in combination with numerous engagements and directed outreach promoted growth of our industry alliance partner network.

USPAE facilitated many interactions between USG and industry to raise awareness, educate, advise and promote solutions and strategies to address electronics supply chain needs. This leveraged our relationship as subsidiary and partner with IPC to add value and expertise and raise industry awareness. Our alliance partners recognized networking opportunities, including very productive engagements with USG stakeholders and the investment community in more intimate environments.

Signature programs including Defense Business Accelerator Microelectronic Challenge and Cluster Accelerator, executed by USPAE on behalf of our USG sponsor, the Manufacturing Capability Expansion and Investment Prioritization (MCEIP) office within OUSD A&S, were recognized for impact and flexibility. While Printed Circuit Board Market Catalyst (PCBMC) was paramount to education and raised awareness within the USG community and leadership that informed strategic investments to industry.

USPAE is formalizing 2025 strategic initiatives as part of the transition towards more active engagements to identify opportunities for alliance partners, assemble and lead teams, and educate USG stakeholders on industry trends and strategies to improve assurance and resiliency. This includes addressing the need for assurance standards to drive demand signals to more assured sources while addressing Critical Infrastructure vulnerabilities to promote success for USG and industry infrastructure investments.

- > Grew to 100+ alliance partners as of November 2024.
- > In just a ten-week period, the DBX MC effort supported 279 applicants, selected 25 finalists who pitched to investors and industry experts, and chose seven awardees to receive a total of \$9.6M.
- > In the process of executing DBX MC and Cluster programs on behalf of MCEIP, totaling \$10.8M in USG investment, to expedite maturation of key technologies and identification of essential attributes to enable successful regional industrial base clusters.
- > Recognized by DoD's National Defense Industrial Strategy Interim Report and Implementation Plan for flexible acquisition in recognition of committing \$9.6M in USG funding to DBX MC awardees within 48 hours to begin execution.
- > Partnered with IPC to host "Bolstering U.S. IC Substrate Capabilities" workshop for industry and USG stakeholders to develop recommendations on addressing critical gaps and bolstering onshore manufacturing capabilities.
- > Provided updates, briefings and report in partnership with IPC as part of \$754K program executed on behalf of DoD MCEIP office to educate and provide recommendations to USG addressing U.S. PCB, substrate, and UHDI needs.
- > Assisted with education on needs for UHDI capability, in coordination with IPC, which contributed to USG awareness as part of \$30M investment to industry.

Contact: [Jim Will](#), executive director, USPAE.

INDUSTRY INTELLIGENCE

In 2024, IPC solidified its position as a global thought leader by delivering actionable insights shaping the future of electronics manufacturing. Partnering with top industry leaders, IPC produced reports on workforce development, semiconductor advanced packaging, sustainability, AI, manufacturing policy, and design. These reports provided valuable guidance to electronics manufacturers and informed strategic investments.

IPC's work also served as a tool for educating governments on challenges in the electronics industry. In Europe, IPC collaborated with Decision Etudes y Conseil and in4ma to publish [Securing the European Union's Electronics Ecosystem](#). This report, supported by 80+ companies and associations, gained attention at the highest levels of the EU and across European capitals. In North America, IPC released [AI-Based Data Centers for the United States](#), building on research for the U.S. Government. These reports help governments address industrial vulnerabilities and embrace innovation.

IPC strengthened its statistical programs, increasing EMS and PCB data participation in North America and deepening its partnership with in4ma on European EMS data. Additionally, IPC continued publishing monthly economic and [global sentiment reports](#).

The launch of Industry Intelligence Insights, IPC's new industry intelligence newsletter, offers monthly updates and recommendations to become a vital resource to the growing readership.

- > **[Outlook for Data Analytics in the Electronics Manufacturing Industry](#)**: Highlighted the transformative role of data analytics, focusing on real-time analysis and workforce upskilling.
- > **[Building Electronics Better](#)**: Addressed workforce shortages with scalable solutions and structured career pathways.
- > **[Securing the European Union's Electronics Ecosystem](#)**: Advocated for strategic investments in PCBs and assembly to support Europe's digital and green transitions.
- > **[Better Electronics by Design](#)**: Explored Design for Excellence (DfX) strategies for interoperability in electronics systems.
- > **[Advanced Packaging to Board-Level Integration](#)**: Tackled challenges in advanced packaging for 5G and aerospace applications.
- > **[AI-Based Data Centers for the United States](#)**: Provided strategies to enhance U.S. competitiveness in AI-driven manufacturing.
- > **[Why Double Materiality Assessments Matter](#)**: Offered guidance for navigating the EU's CSRD and leveraging double materiality assessments for sustainability.
- > **[New Communication Channels](#)**: Launched [Industry Intelligence Insights](#), a newsletter with exceptional engagement, delivering monthly updates to industry professionals.
- > **[External Engagement](#)**: Produced synopses and blogs of major reports, ensuring accessibility for non-industry stakeholders and amplifying their impact with policymakers and media.

Contact: [Chris Mitchell](#), vice president, Global Government Relations.

SUSTAINABILITY

In 2024, IPC's Sustainability for Electronics program made significant impacts through multiple channels of engagement by providing the industry with insights and tools needed to build electronics better.

IPC representatives shared expertise at industry events, demonstrating how standards, education, and advocacy support sustainability goals. Industry leaders reciprocated by presenting their successful sustainability initiatives at IPC events, offering valuable real-world perspectives on implementing sustainable practices.

Responding to calls for industry alignment, we formed strategic partnerships with other electronics associations to consolidate and distribute sustainability resources across our extensive industry network. Our efforts focused on harmonizing approaches and maximizing impact through collaborative action.

We played a crucial role in highlighting critical industry challenges, including emerging global plastics policies, new due diligence requirements, circular design innovations, and sustainable chemical alternatives. A key achievement was the publication of our white paper on double materiality assessments (DMAs), which addresses new due diligence laws. This document serves as the first in a series of resources aimed at helping the industry navigate reporting and disclosure requirements, which industry identified as major obstacles to achieving sustainability objectives.

Throughout the year, IPC maintained its position as a trusted source of guidance on complex sustainability matters, helping the electronics industry adapt to evolving demands while promoting more sustainable practices.

- Expanded our global sustainability community through 20 technical events, including a notable Electronics Goes Green workshop where 33 participants from 27 companies collaborated on electronics circularity initiatives.
- Delivered comprehensive sustainability coverage at APEX EXPO, featuring 27 technical presentations, multiple on-camera exhibitor interviews, and executive leadership discussions, highlighting industry progress in sustainability for electronics.
- Strengthened industry partnerships by collaborating with key organizations like Clean Electronics Production Network, Responsible Business Alliance, and ChemFORWARD, hosting an online seminar for 123 unique companies on greener cleaning standards (e.g., IPC-1402) and innovative tools (e.g., CleanScreen app).
- Enhanced industry knowledge sharing through 20 published articles on electronics sustainability, with half authored by industry experts, while significantly growing our social media presence with over 1,000 followers and 2,000 engagement actions on LinkedIn.
- Developed white paper on double materiality assessments (DMAs) with input from 15 industry experts, providing timely guidance for 2025 reporting requirements.

Contact: [Kelly Scanlon](#), lead strategist, Sustainability.

TECHNOLOGY SOLUTIONS

The IPC Technology Solutions team’s mission is to drive next-generation technology advancements and supply chain transformation across the electronics industry. The team identifies critical industry needs and challenges and works to develop new solutions by collaborating with governments, academia, companies, other associations, and IPC members worldwide.

In 2024, the IPC Technology Solutions team continued its engagement with key stakeholders to address critical challenges in core technology areas: design, advanced packaging, Factory of the Future and e-mobility.

This includes expanding the global reach for design, influencing advanced packaging adoption and acceleration through thought leadership, increasing our footprint with Factory of the Future enablers and continuing to address key challenges with electric vehicle systems.

DESIGN

- Presented IPC design offerings at 12 conferences, trade shows, workshops, and webinars worldwide in 2024.
- Published white paper “Better Electronics by Design: Next Generation Design Needs” by the Design Leadership Council and the Chief Technology Council
- Published report IPC Design Process Flow and Its Link to IPC Design Standards by the GIDT (Global IPC-internal Design Team)
- Worked with the global Design Leadership Council (DLC), consisting of 15 subject matter experts spanning multiple industry sectors on thought leadership, advising new standardization and training needs, revising current standardization, and implementing IPC design standards contents, requirements and recommendations in EDA software.
- Introduced new IPC DFM Profiles solution, attracting around 100 users from 23 countries checking their new designs independent of their ECAD software according to IPC’s performance classes 1,2, and 3 and producibility levels A, B, and C. The implementation into CAD and CAM software enables Design Rule (DRC) and Design for Manufacturability (DFM) Checks for all kinds of electronic designs on PCB and PCBA level.



Contact: [Peter Tranitz](#), senior director, Technology Solutions.

TECHNOLOGY SOLUTIONS

ADVANCED PACKAGING

- > Built a strategic focus in component to system level packaging.
- > Published two industry white papers that Identified key challenges in the advanced package-to-board integration and summarizing the challenges.
- > Formed technology project partnerships, including with the Atalla Institute for Advanced system Integration and Packaging (ASIP) at Purdue University and IEEE-Electronic Packaging Society Heterogenous Integration. These partnerships help bring IPC to the forefront of Advanced Packaging in the form of a first of its kind roadmap for system level packaging with the changes happening in the electronic eco system.
- > Invited, for the first time, to give a keynote talk at the prestigious IEEE Electronic Packaging Technology conference. IPC staff participated as a panelist and panel moderator in leading electronic packaging conferences in Europe and Asia.
- > Submitted several funding proposals to US DOC/NIST, DoD organizations and served as a trusted advisor.
- > Built a stronghold in Southeast Asia for IPC's advanced packaging initiatives.

Contact: [Devan Iyer](#), chief strategist, Advanced Packaging.

FACTORY OF THE FUTURE

- > Realized a 64 percent increase of equipment listings on the IPC-CFX-2591 Qualified Products List (QPL), with 60 new pieces of equipment being added.
- > Added updates to IPC-CFX for hand soldering stations, wave soldering equipment, and AGV/AMR, setting up 2025 for more qualified equipment.
- > Published white paper on data analytics and provided instructor-led, hands-on courses on data analytics.
- > Developed a new IPC standard on process control for AOI systems for board assemblies in 18 months.
- > Began development of new industry standards to support digital credential exchange (DCX) and sustainability data collection.
- > Launched project to map process requirements from Factory of the Future standards (traceability, Digital Twin, cybersecurity reporting) to IPC declaration schemas.
- > Provided online education for data analytics for AI and cybersecurity

Contact: [Chris Jorgensen](#) director, Technology Transfer.

e-MOBILITY

- > Conducted global OEM/T1 surveys to prioritize challenges.
- > Launched IPC J-STD-001/IPC-A-610 Automotive Addendum QML and conducted the first certification.
- > Established relationships with key organizations such as ChargeHelp and ChargeX to identify and address EVSE reliability issues.
- > Began system-level area projects starting with EVSE (Charging), Inverter, and BMS and drafted whitepapers on technology for EVs and related issues such as sustainability.
- > Presented at the North American Battery Show, Automotive Futures Propulsion Strategies, and led talks at the AIAG Quality Summit.
- > Hosted a three-episode Road to Reliability webinar series and a Special Session addressing topics like high voltage (300V+), hardware for the software-defined vehicle, power electronics substrate technology, and sustainability.
- > Started task groups for high voltage addenda for IPC-6012 and continued work in the IPC/WHMA-A620 and released IPC-TM-650, Method 2.5.7.4 High Voltage Moisture and Insulation Resistance Test of Fabricated Printed Board Test Patterns.

Contact: [Tracy Riggan](#) senior director, Technology Solutions.

IPC EVENTS

IPC drove progress and innovation in the electronics manufacturing industry through our impactful events in 2024. These gatherings — IPC APEX EXPO, the WHMA Annual Global Leadership Summit, and the Electrical Wire Processing Technology Expo (EWPTE) — inspired collaboration, cultivated education, and set the stage for technological advancements shaping our future.

At IPC APEX EXPO 2024, host to the 16th Electronic Circuits World Convention technical conference, we united global leaders, engineers, and innovators to address today’s most pressing challenges and opportunities. From advancements in smart manufacturing to sustainability initiatives, the event inspired actionable solutions that have strengthened supply chains and accelerated the pace of digital transformation.

The WHMA Annual Global Leadership Summit brought together decision-makers in the wire harness and cable assembly sector, emphasizing the critical role of connectivity in modern technology. Through leadership forums and global networking, the summit empowered leaders to address workforce challenges and implement forward-thinking strategies that drive operational excellence.

EWPTE showcased cutting-edge equipment, techniques and methodologies to enhance productivity and efficiency. Attendees engaged in hands-on demonstrations and exchanged insights, laying the groundwork for breakthroughs that will power industries ranging from automotive and aerospace to defense, medical and transportation.

IPC APEX EXPO

- Brought together 7,245 global electronics manufacturing professionals to share knowledge, drive innovation, create opportunities for new alliances, and foster growth.
- Achieved a 10 percent increase in exhibitor participation and a 13 percent increase in net square footage of exhibit space sold, demonstrating our industry influence, and reinforcing our role as a premier platform for showcasing innovations and fostering business opportunities.
- Out of 13,000 tradeshows held annually in the US each year, IPC APEX EXPO was recognized by Trade Show Executive as one of the top 50 fastest-growing trade shows in the United States for the number of exhibiting companies and attendance.

WHMA Annual Global Leadership Summit

- Empowered wire harness and cable assembly leaders with strategies to address workforce challenges, improve efficiency, and adapt to market demands.

EWPTE

- Achieved a 15 percent year-over-year increase in exhibitor participation and net square footage of exhibit space sold, highlighting significant growth and engagement at the event.
- Recognized by Trade Show Executive as one of the top 100 fastest-growing trade shows in the United States for net square footage and number of exhibiting companies—marking the first time in the event’s 20-year history to achieve this distinction.



Contact: [Alicia Balonek](#) senior director, Tradeshows & Events.

WIRE HARNESS MANUFACTURING ASSOCIATION (WHMA)



Changing the World Through Connectivity: The Wiring Harness Manufacturer's Association (WHMA), a proud council of IPC, continues to be a transformative force in the global electronics industry. In 2024, WHMA's dedication to advancing the design, production, and quality of wiring harnesses has strengthened connectivity across industries such as automotive, aerospace, healthcare, and consumer electronics.

At the heart of WHMA's impact lies its unwavering commitment to developing and promoting standards. The association's flagship standard, IPC/WHMA-A-620, sets the global benchmark for wiring harness quality and reliability. Updates in 2024 introduced guidelines addressing emerging technologies such as electric vehicles and smart devices, ensuring manufacturers can meet evolving demands with precision and consistency.

Through comprehensive training and certification programs, WHMA empowers manufacturers and technicians with the skills to produce world-class wiring harnesses. Thousands of professionals were certified in 2024, enhancing workforce expertise and boosting productivity across the supply chain.

HIGHLIGHTS:

- Approved a 1/3/5-year strategic plan for WHMA – Planning for implementation underway.
- Held a successful summit in Myrtle Beach Florida.
- Supported and participated in WHMA/IPC produced trade show, the largest event post Covid.
- Launched project to map process requirements from Factory of the Future standards (traceability, Digital Twin, cybersecurity reporting) to IPC declaration schemas.
- Provided online education for data analytics for AI and cybersecurity



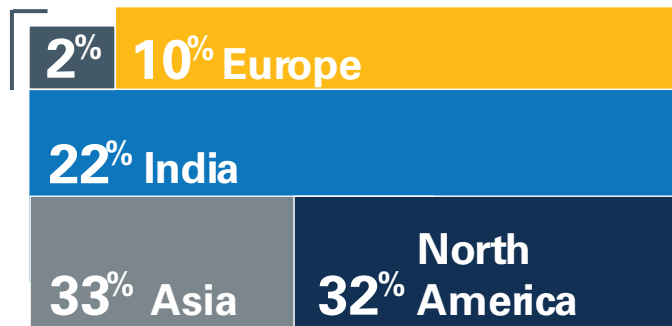
Contact: [David Bergman](#) executive director, WHMA.

IPC MEMBERSHIP

Membership in IPC drives quality, reliability, and consistency in the global electronics manufacturing industry and IPC's worldwide membership continues to grow.

- > Total of 3,028 Company members globally.
- > IPC welcomed more than 400 new company members and more than 500 member locations in 2024. These companies took advantage of a 50% first-time member discount. Member companies are worldwide and in different segments of the electronics industry such as OEM, EMS, PCB, Supplier, Wire Harness, Semiconductor, Design, and more.
- > IPC made significant improvements to shop.ipc.org, which has enabled us to transition many customers to place orders online. As we expand our product offerings in the store, our goal is to offer even more customers the ability to self-serve in the near future. Comparing 2023 to 2024, we observed a 17 percent increase in customers switching to online orders.

Around the World



- > IPC welcomed two additional partners organizations, offering subscriptions to IPC standards and IPC membership.



Contact: [Brian Knier](#), vice president, Member Success.

IPC REGIONAL OFFICES

IPC is a global organization with offices across Asia, Europe and North America. Each regional office worked to support IPC members and the global electronics industry from their corner of the world. Inherent to our vision of “helping the world build electronics better” is being ready, willing, and able to deliver IPC’s products and services anywhere on the planet where highly reliable electronics are being manufactured to support critical industries. Globalization has been a core initiative for IPC’s success over the last several decades, and today we have just as many members outside the United States as we have inside the United States. Each corner of the world is unique in its needs and IPC has regularly used a targeted and tailored approach to serve each unique market without reverting to a cookie-cutter or one-size-fits-all methodology. What’s more, the needs do not stay static even in a given region, so a focused effort that worked five years ago may not be the most effective today.

MEXICO

In 2024, IPC México solidified its position as a leading authority in the electronics industry by implementing a strategic plan focused on workforce development, industry collaboration, and brand visibility. The launch of the IPC Mexico website on July 1st showcased its potential as a business platform, with \$61,877 USD in potential customer quotes, reflecting the growing demand for IPC’s services.

Key events including IPC Days in Guanajuato, Sonora and Queretaro united professionals, academics, and policymakers to share knowledge and promote innovation.

A standout initiative showcasing IPC Mexico’s commitment to gender equity in the electronics industry was Women’s IPC Day, where we awarded scholarships to women in electronics. We also participated in the Juarez Skills+ program which trained 60 young students from under privileged communities, in the IPC-J-STD-001 standard. These programs highlight IPC’s dedication to fostering talent and creating opportunities for a more inclusive and innovative future.

In our journey to elevate IPC México’s presence and impact, we found a young boutique agency that understood our needs and vision. Their innovative approach and dedication brought remarkable growth to IPC Mexico over the past two years. They played a pivotal role in strengthening our communication strategies and positioning within the electronics industry. We have integrated Bambõa Marketing into IPC Mexico’s internal team, ensuring continuity and further growth as we move forward.

Participation in major forums, including the 3rd Mexico-U.S. Semiconductor Forum, and exhibitions like Wiretech Show, Binational Electronics Show and MRO Expo, allowed IPC México to influence discussions on workforce education and industry trends. Strategic alliances with local governments and training centers further bolstered efforts to tailor workforce training programs and develop regional talent pipelines. These initiatives reinforced IPC México’s leadership and its dedication to fostering a skilled workforce for the electronics sector in a particularly crucial moment in Mexico.

Workforce and Education:

- > Scholarships awarded: 20 for Women’s IPC Day, 60 for Juarez Skills +, and additional scholarships via Index UTCJ.
- > Workforce development programs tailored for the Bajío Region in partnership with local governments such as Guanajuato, Queretaro and Aguascalientes.

Event Attendance:

- > IPC Day Guanajuato: 148 attendees (including 30 workshop participants).
- > IPC Day Sonora: 154 attendees.
- > IPC Day Queretaro: 223 attendees and the first revenue-generating event through sponsorships
- > Women’s IPC Day Juarez: 210 attendees.

Conferences, Exhibitions, and Media:

- > Conferences delivered: 12.
- > Exhibitions participated in: 10.
- > Media exposure: 11 -TV and radio interviews/press features, industrial magazines covers.

Digital Reach:

- > Website success since launch: 13,379 (views and visitors).
- > Social Media Audience: Grew by 27.3 percent, reaching 65,877 followers.
- > Engagements: Increased by 157 percent, with 34,375 interactions.
- > Clicks: Achieved 572 percent growth, reaching 34,286 clicks.

Contact: [Lorena Villanueva](#) director, IPC Mexico.

ASIA

In 2024, IPC has played a pivotal role in advancing the electronics industry across Asia, driving global progress through innovation, collaboration, and impactful standards development.

From hosting milestone task group meetings to launching Asia's first CFX production demo line and securing government recognition, IPC has empowered industries to embrace smarter, more sustainable manufacturing solutions. Through workforce development, strategic partnerships, and record-breaking events like IPC APEX EXPO and IPC CEMAC, IPC has strengthened its influence as a trusted global leader. By fostering cutting-edge solutions, enabling industry-wide collaboration, and aligning workforce education with international best practices, IPC has created new opportunities for growth and progress.

These efforts have not only elevated operational excellence across Greater China, Japan, and Korea but also reinforced IPC's mission to connect industries, advance technology, and shape a sustainable future.

GREATER CHINA

- > **APEXEXPO 2024:** Achieved record participation with over 60 exhibitors from mainland China, Taiwan Region, Japan, South Korea. IPC Asia team engaged with exhibitors, who praised APEX EXPO as the premier industry platform.
- > **Standards Development:** Hosted the first-ever onsite Task Group meeting for IPC-6921 at APEX EXPO 2024, chaired by GreaTech Substrate Co., LTD, marking a significant milestone for Chinese leadership in IPC global standards development. The standard is scheduled for release in Q1 2025.
- > **Factory of the Future:** Partnered with Delta Electronics to launch Asia's first CFX production demo line in Jiangsu, integrating IoT-enabled data systems to advance smart manufacturing capabilities. Added 35 new CFX equipment QPLs, bringing the global total to 153.
- > **Workforce Development:** Achieved full recognition of IPC standards in China's National Skill Talent Curriculum Standards, aligning workforce education with international best practices.
- > **IPC CEMAC 2024:** Hosted with great success during October 24-25, featuring 48 speeches, 4 steering committee meetings and 8 standards task group meetings, annual member appreciation and award dinner, and participation from over 600 industry experts representing 400+ companies, fostering cross-sector innovation and collaboration.
- > **IPC Masters China 2024:** Held during electronica China (July 8-10), the event featured over 400 contestants from 18 provinces. Zhou Zhiheng, representing Jiangsu Jinling Mechanism Manufacture Factory, earned the top title by winning the world championship at Electronica in Munich (Nov 14-15).
- > **Government Recognitions:** Secured government recognition and funding to advance IPC standards development, strengthening IPC's leadership in industry innovation.



Contact: [Sydney Xiao](#) president, IPC Asia.

JAPAN

- > **Strategic Partnerships:** Strengthened collaborations with LDP, METI, Keidanren, NEC, and Panasonic; John W. Mitchell delivered a keynote at the Keidanren Executive Summit, addressing over 100 executives on international standardization.
- > **Standards Development:** The 7-31BV-JP group entered its third year, highlighted by a major meeting hosted at Toyota Motor Corporation. Launched the inaugural meeting of the D-33AA-JP group, marking notable progress in standards development.
- > **Knowledge Sharing:** Hosted the Advanced Packaging Seminar in Tokyo, featuring key leaders from IPC, NEC, METI, and AMD, to advance discussions on next-generation electronics packaging technology.



KOREA

- > **Leadership Representation:** Elected Jaesang Min (LG PRI) as the first Korean IPC board member, enhancing Korea's leadership presence on the global stage.
- > **Standards and Collaboration:** Successfully hosted the 2nd IPC K-FEST on October 29, attracting 160 attendees from 80 companies. The event featured technical seminars and IPC-A-610 task group meetings, driving adoption of IPC standards and technical education.
- > **Government Recognition and Awards:** IPC was officially recognized as a De Facto Global Standard Organization. Kyungshin Cable, Vice Chair of IPC-A-610 Korea RTG, received the prestigious Standardization Merit Award at the Korean De Facto Standard Forum, further validating IPC's critical contributions to global standardization.



Contact: [Sydney Xiao](#) president, IPC Asia.

INDIA

2024 was a year of unprecedented growth, global connections and industry engagement advancement for IPC India.

Highlights:

- > From December 2023 to December 2024, IPC India achieved a 27% increase in membership, reflecting its expanding influence across the value chain and deeper engagement with Indian electronics manufacturers. Certifications & workforce development programs saw a steep rise in 2024. The Indian electronics industry is growing and the government has set a target of USD 300 billion by 2026, and IPC is providing resources for “Make in India” & “Skill India” missions.
- > The 3rd edition of the Integrated Electronics Manufacturing Interconnections (IEMI) at Bangalore, India & Penang, Malaysia witnessed Trade Development activities with 600+ B2B meetings organized & participated by industry delegates from India, Malaysia, Singapore, USA, Sri Lanka, UAE, Australia, South Africa, Belgium, Germany, Japan, Spain, Hong Kong, Israel & Egypt, Vietnam, Philippines and Bangladesh.
- > IEMI in India, focused on “Defence & Aerospace,” drew 1200+ delegates, and IEMI in Malaysia, focused on “Semiconductor Advanced Packaging,” witnessed 500+ delegates.
- > 100+ IPC Indian members actively engaged in Standards Development activities. Indian Members interacted for the first time at the global standard forum at Wintercom Barcelona. The Indian defence industry and government are engaging with IPC in the standardizing process. IPC started initiating standard development activities in consumer electronics.
- > Organized industry networking and technical sessions at South Africa, Australia, UAE, Saudi Arabia, Sri Lanka, Bhutan, Bangladesh, Singapore and Malaysia creating awareness of IPC standards, education programs and global events. These efforts expanded IPC’s global influence and strengthened international collaborations.
- > Formed an Advanced Packaging Committee in Malaysia, showcasing its leadership in semiconductor packaging and fostering collaboration for innovative solutions in electronics manufacturing.
- > Signed two MOUs in Malaysia to initiate workforce development programs.
- > IPC President and CEO John W. Mitchell hosted a “CEO Meet” in Penang, Malaysia on eve of IEMI. Industry leaders & Government representatives from ASEAN countries engaged & discussed industry trends and IPC’s advanced packaging initiatives.
- > IPC WorksAsia Quality and High Reliability Conference returned to Thailand and Vietnam after a four-year absence. In both countries, the events were well attended by managers, engineers, suppliers and other decision-makers.
- > IPC courses and workshops were conducted at top universities and technical institutes in Thailand and Vietnam. In Vietnam, included factory visit for the students at Dien Quang HiTech, a company specializing in lighting technology.
- > Hand Soldering and Rework competitions at Malaysia, Thailand, Vietnam and India witnessed great success in engaging with industry and motivating technicians. India won 2nd position at IPC World Hand Soldering Competition in Munich.
- > Partnered with ITE College in Singapore & Association of Electronics Industries of Singapore in organizing Technical Session on Synergy of Electronics Skills and AI.



Contact: [Gaurab Majumdar](#) executive director, IPC India.

EUROPE

In 2024, the IPC Europe team focused on delivering value to European members in the areas of standards and advocacy.

On standards, IPC hosted one of the semi-annual standards development committee meetings in Europe and targeted both “the usual suspects” and new entities to participate. The result: IPC WinterCom, a landmark standards development event held in Barcelona on 22-25 January, featured over 300 participants (75% from Europe), daily keynotes to recognize European thought leadership, and 10 sponsors and exhibitors. It was the largest gathering at an IPC-hosted meeting in Europe since pre-COVID.

On advocacy, IPC served as the industry’s chief champion and organizer by authoring a call to action for a European Silicon to Systems Electronics Manufacturing Strategy, emphasizing resiliency and competitiveness. IPC, then, developed a series of events in coordination with national level trade associations allowing our members to meet key policy makers in the EU to increase shared knowledge of the industry’s needs for growth. The results: IPC Day Advocacy Europe, held in Brussels on 10 June, featuring over 60 executive level participants representing the European OEM, EMS, PCB, Equipment, and Materials Suppliers industries plus EU government agencies including European Space Agency, European Defence Agency, and DG GROW.

Other Key Highlights:

- > IPC Forum @ electronica – industry panel discussion held in Munich on 12 November with nearly 100 participants representing the European EMS, PCB, and Equipment industries and keynoted by DG GROW.
- > 16 other European events focused on either workforce development/training or PCB design initiatives resulted in a combined audience of 1000+ participants!
- > February – HSC-Regional Qualification UK, Farnborough - 23 participants from 13 companies including 6 company teams
- > March – HSC-Regional Qualification France, Paris - 35 participants from 16 companies including 12 company teams
- > April – HSC-Regional Qualification Hungary, Budapest - 43 participants from 19 companies including 8 company teams
- > May – HSC-Regional Qualification Italy, Vicenza – 32 participants from 9 companies including 8 company teams
- > May - IPC Day Design Italy, Genova - 40 participants
- > May - IPC Day PCB Czech Republic - Frenštát - 60 participants
- > June - IPC Day EMS Executive Council UK, London - 50 participants
- > September – IPC Europe A-Team Meeting, Munich, Germany - 40 participants
- > September - IPC Day EMS Europe - Gdansk, Poland -150 participants Europe EMS and PCB industry
- > September - IPC Day PCB Slovakia, Zilina - 100 participants
- > October - HSC-Regional Qualification Estonia, Tallinn Technical University - 30 participants from 19 companies, 2 universities and including 8 company teams
- > October - IPC Day PCB Italy, Maranello - 100 participants
- > October - IPC Day PCB Türkiye, Istanbul - 300 participants
- > November - HSC-Regional Qualification Germany, electronica Munich - 25 participants
- > November - IPC/Siemens Event - Munich, Germany – 15 participants Europe design industry
- > November - HSC-World Final, electronica Munich, Germany - 14 champions from 12 countries with a great podium (China, India and Europe on the top-3)

Contact: [Philippe Leonard](#) senior director, European Operations.

2025

WHAT'S AHEAD?

There is no doubt that geopolitical, economic, and technical challenges along with regulatory issues will continue into 2025 and beyond. With the support and engagement of members and the industry, IPC's volunteers and staff will continue to deliver valuable educational and networking opportunities, advocacy, standards, industry intelligence, and technical resources.



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