



# Market Research from IPC

The Electronics Industry's Source of Original Data and Insights for Smart Business Decisions



## Studies and Reports Covering:

- *Printed Circuit Boards*
- *Electronics Manufacturing Services and Assembly*
- *Supply Chain*
- *Geographic Trends*
- *Compensation*

# Market Intelligence and Business Data for the Electronics Industry and Interconnect Supply Chain

## Your Trusted Source for Market Research

- **Reliable** — IPC has been serving the electronics manufacturing industry and conducting market research for more than 50 years.
- **Exclusive** — IPC's data sources are unique. No other provider of market research has access to data from so many companies in so many segments of the industry.
- **Global** — IPC has a worldwide reach, serving member companies in 65 countries around the world.
- **Extensive** — IPC's members include the leading companies in the global electronics supply chain, from materials to PCBs to EMS companies to end-product and equipment manufacturers, and IPC's market research covers all of these segments.

From the industry's most trusted source, IPC's market research studies and reports are designed to give industry executives competitive advantages:

- See market trends as they develop
- Track changes in your company's market share
- Identify growing and declining markets
- Compare your company's performance to industry averages

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## Additional Market Research Benefits for IPC Members

**Participation in IPC's Statistical Programs** is an exclusive benefit of IPC membership. Participating companies enjoy access to free and timely data specific to their industry and product markets every month or quarter. Statistical programs cover the EMS, PCB, solder and assembly equipment segments.

**Market Update at a Glance** is a quarterly business summary report is published for IPC members only. It provides a quarterly update on sales growth by industry segment for PCB, EMS, semiconductors, solder and assembly equipment, as well as U.S. new orders for electronic end-products. Each issue discusses the latest economic trends and leading indicators, including IPC's Electronics Market Index. IPC members receive this report free as a benefit of membership.

IPC members receive substantial **discounts** on all market research reports purchased.

To join IPC or to learn about additional member benefits go to [www.ipc.org/membership](http://www.ipc.org/membership).

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For more information about IPC's market research services, go to [www.ipc.org/IndustryData](http://www.ipc.org/IndustryData), or contact the market research team at [MarketResearch@ipc.org](mailto:MarketResearch@ipc.org) or +1 847-597-2868.

## Printed Circuit Board (PCB) Industry Reports

The monthly **North American PCB Market Report** provides timely data on PCB market size, sales and order growth, order backlogs, returns, book-to-bill ratios and near-term forecasts. Data are reported for rigid PCBs and flexible circuits separately. The rigid PCB data are further segmented by company size tiers. Flex data includes trends in bare circuit versus assembly revenue sources. Trends in prototype sales are also reported. The reports are typically 60 to 70 pages.

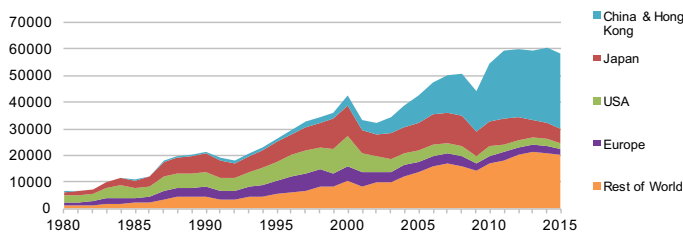
**Rigid PCB Order Backlog as a Percent of Shipments for the Current Month by Company Size**



Annual Subscription	IPC member	Nonmember
	\$600	\$1200

IPC's annual **World PCB Production Report** is the authoritative source of data on PCB production value by country and by product type. The estimates are developed through a consensus process by a team of the world's leading industry analysts. The report includes commentary on global and regional PCB industry trends, as well as historical PCB production data and regional production trends, and a special report on high-speed electronics.. 55 pages. Published in September 2017.

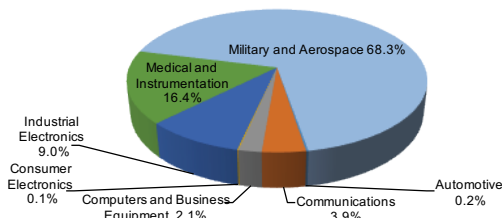
**Trends in PCB Production Globally and for the USA (in millions of nominal U.S. dollars)**



Annual Study	IPC member	Nonmember
	\$475	\$950

The **2017 Annual Report on the North American PCB Industry** is a comprehensive overview of the industry with data and analysis on market size, sales growth, sales by product type, product mix (regular production vs. prototype), operational metrics, vertical end-markets, and U.S. imports and exports. 49 pages. Published in September 2017.

**Vertical Markets Served by Reporting Flexible Circuits Companies in North America in 2015**



Annual Study	IPC member	Nonmember
	\$450	\$900

**Trends in the North American Market for PCB Prototypes 2017** This report shows trends in PCB prototype sales and growth based on data from IPC's North American PCB Statistical Program covering 2014 through mid-2017. Data on prototype sales percentages by month compared to regular-production PCB sales, and estimates of North American prototype market sizes, are reported for all PCBs as well as for rigid PCBs and flexible circuits separately. The vertical market percentages for the industry's PCB sales overall are included for reference. 29 pages. Published October 2017.

Fast Facts Study	IPC member	Nonmember
	\$250	\$500

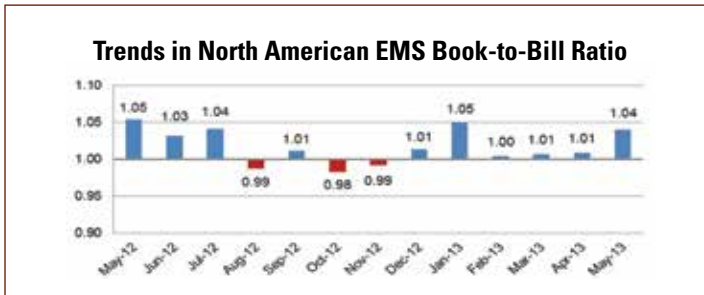
**PCB Technology Trends 2016** is a global study based on data from 118 electronics assembly companies and PCB fabricators worldwide. It presents data on the current state (2016) of PCB fabrication and assembly, and the industry's predictions for the data by 2021. The data are segmented by five applications: automotive, defense and aerospace, high-end systems, industrial and medical electronics. Topics include board properties (thickness, layer count, heat dissipation, tolerances), miniaturization (line width and spacing, I/O pitch, via diameters, aspect ratios, via structure, etc.), materials (rigid, flexible, stretchable, metal core, reinforcement, thermal properties, loss characteristics, lead-free, halogen-free, surface finishes, etc.), special structures (embedding, optical channels, chip packages, etc.), printed electronics usage (types, processes, applications and use of 3D printing), traceability, compliance and technical challenges, and general trends. 237 pages. Published in April 2017.

Biennial Study	IPC member	Nonmember
	\$675	\$1350



## Electronics Manufacturing Services (EMS) and Assembly Reports

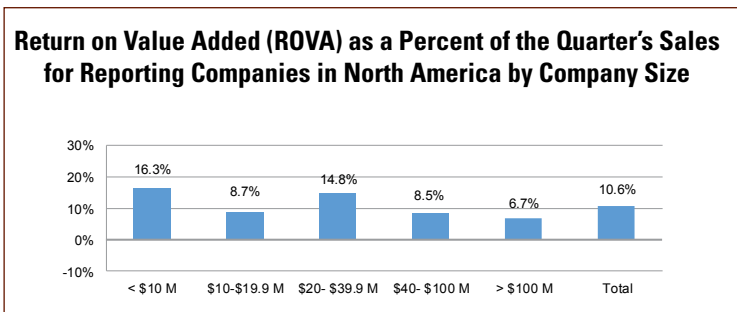
The monthly **North American EMS Market Report** offers a timely update on EMS market size, sales and order growth, order backlogs, book-to-bill ratios and near-term forecasts, as well as vertical market percentages. Sales growth is reported for PCB assembly, box build, other types of production and other services, and is segmented by company size tier. Confidence indices show the industry's 90-day and 12-month sales outlook. The monthly reports are typically 27 pages.



**Annual Subscription**

IPC member	Nonmember
\$400	\$800

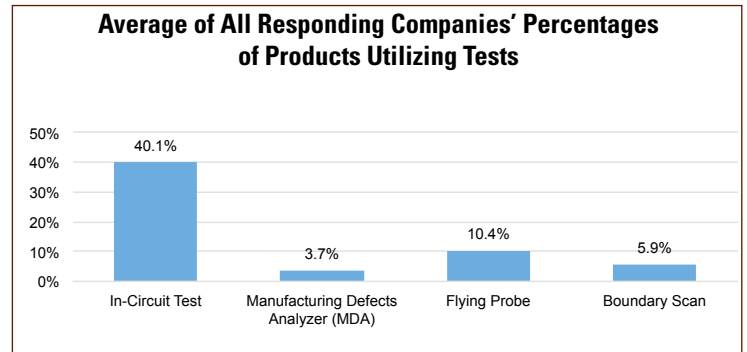
The quarterly **North American EMS Business Performance Report** provides insight into EMS business metrics and growth. The report includes estimates of total market size and forecasts of current-year growth for the Americas and the world, as well as quarterly sales and bookings growth data and book-to-bill ratios. Average business performance data from the participating companies covers cost of goods sold; sales, general and administrative costs, and return on value added as percentages of quarterly sales; profit margins; cash-to-cash cycle time; days sales outstanding; standard credit terms; days of supply in inventory; and capacity utilization. Data are broken out by company-size tier. The quarterly reports are typically around 35 pages.



**Annual Subscription**

IPC member	Nonmember
\$600	\$1200

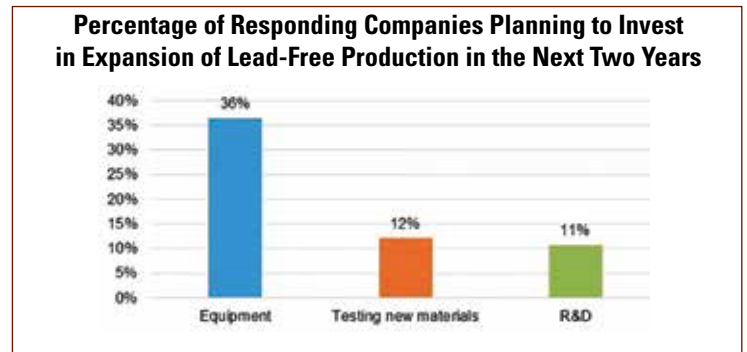
The annual **IPC Study of Quality Benchmarks for Electronics Assembly** reports current industry averages, median values and 25th and 75th percentile data on production, assembly attributes, yields, defect rates (DPMO), customer returns, supplier performance, customer satisfaction and certification status. This report enables an electronics assembly company to compare its performance to aggregate results for companies in its size tier, region and product segment. 145 pages. Published in August 2016.



**Annual Study**

IPC member	Nonmember
\$675	\$1350

**Issues and Outlook for Lead-Free Electronics in Military & Aerospace Applications** is a "fast facts" study focused on a single issue. Based on data from 83 manufacturers supplying electronics to the military and aerospace market, this study covers the current use of lead-free materials and components in mil/aero electronics. It examines how manufacturers required to use lead in their assemblies are coping with the trend toward lead-free electronics, including the use of reballing. It assesses the added costs of producing leaded assemblies and identifies the tipping points that are expected to move military electronics toward lead free. The report includes historical data on the ratio of lead-free to tin/lead solder consumption and a 10-year forecast. 19 pages. Published April 2015.



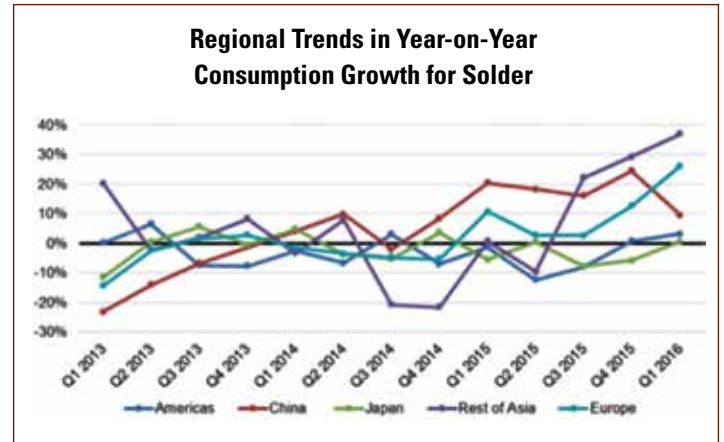
**"Fast Facts" Study**

IPC member	Nonmember
\$250	\$500

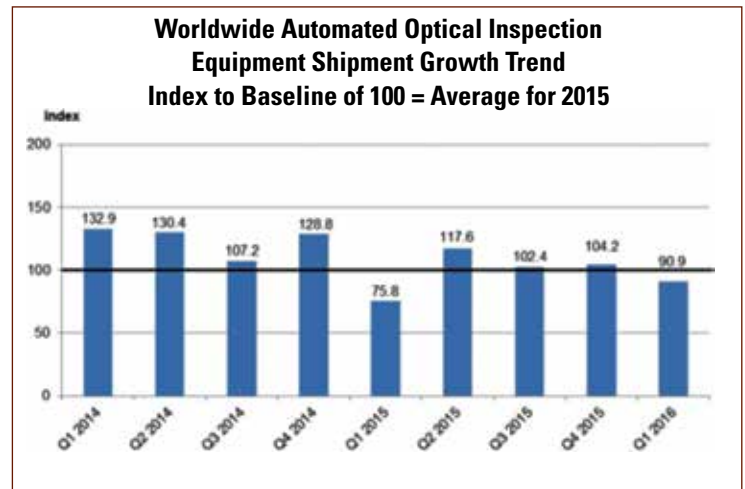
## Supply Chain Reports

The quarterly **Global Solder Market Report** is available by subscription. It covers trends in electronics-grade solder and flux consumption worldwide and by region, based on findings from IPC's Global Solder Statistical Program. Historical growth trends and current growth rates are segmented by product type, including solder paste, cored wire solder, solder alloy (bar and solid wire) and flux, and growth rates are based on unit consumption. The ratio of tin/lead to lead-free solder, including historical trends, is presented by region and by product type. The regions covered are China, Japan, the rest of Asia, Europe and the Americas, and current regional percentage shares are shown for each product type. The current percentage of SAC alloys in lead-free solder are reported, as well as the industry's three-month and 12-month growth outlook, historical metal price trends, and historical and forecast trends in metals and oil prices. The quarterly report is typically 36 pages. Also available in Mandarin Chinese.

The quarterly **PCB Assembly Equipment Market Report** is available by subscription. It covers trends in sales of PCB/electronics assembly equipment, based on findings from IPC's Global Assembly Equipment Statistical Program. Historical growth trends and current growth rates are shown for all equipment and also segmented by product type. Growth trends in the worldwide market are covered for screen printers, dispensers, ovens, automated optical inspection equipment, x-ray inspection equipment, other inspection equipment, test equipment and selective soldering equipment. Growth trends for the Americas market, presented separately, also include pick-and-place equipment. PCB assembly equipment growth trends are compared with those of semiconductor equipment, and the industry's three-month and 12-month growth outlook is included. The report is typically 47 pages.



Annual Subscription	IPC member	Nonmember
	\$600	\$1200



Annual Subscription	IPC member	Nonmember
	\$600	\$1200



**Geographic Trends Studies**

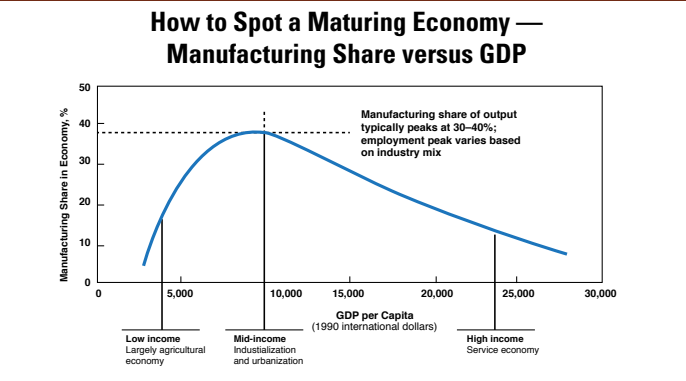
**Findings on the Skill Gap in U.S. Electronics**

**Manufacturing** reports on the results of a 2017 IPC survey of U.S. electronics assembly manufacturers on the impact of the skills gap. It identifies the hardest-to-fill production and engineering/professional positions, reasons applicants did not qualify, educational requirements for hard-to-fill positions, essential skills in short supply, the effect of H-1B visa availability, and companies' outlook for expanding their workforces and their businesses in the next year. April 2017. 31 pages.

Study	IPC member	Nonmember
	\$250	\$500

**Where in the World? A Regional Strategy Roadmap for Electronics Manufacturers**

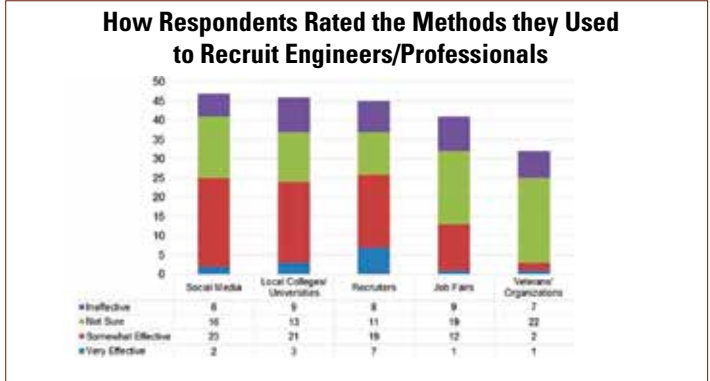
was developed by BPA Consulting Ltd. exclusively for IPC. It is a comprehensive guide for growth-minded companies around the world, particularly for executives planning global operations. The report discusses trends in the development of major regions for electronics manufacturing and offers a framework for comparison of both developed and developing economic regions. Thirty key countries are assessed as locations for possible investment in electronics manufacturing operations based on a comparison of relevant economic, social, legislative, educational, logistic and technical factors. It also describes how key industry sectors are benefiting from the local characteristics of each region. The report identifies the major assembly companies operating in each country, and the technological and market "hot spots" throughout the world. Also covered is the outlook for the development of industry capabilities and concentrations in key regions. 145 pages. Published in July 2014.



Study	IPC member	Nonmember
	\$450	\$900

**IPC Study of the North American Labor Pool for Electronics Manufacturing**

is based on data from 107 U.S. and Canadian electronics manufacturers and extensive secondary research. This report assesses the apparent shortage of qualified labor for electronics manufacturing. The data cover the causes of today's recruitment challenges, including public perceptions of the industry, dynamics of supply and demand growth, job candidate expectations, and supplier constraints. The current gaps in the labor pool are assessed by region and industry segment, as well as the issues impeding the recruitment of production workers and professionals, the industry's training needs and its image. An assessment of strengths, weaknesses, opportunities and threats in the current environment provides insight into strategies to address the current recruitment and training challenges. Recommendations and resources that can help manufacturers overcome the obstacles, such as sources of training grants and an assessment of recruitment channels, are included in the report. 52 pages. Published February 2015.



Study	IPC member	Nonmember
	\$450	\$900

**On-Shoring in the North American Electronics Industry: 2014 Update of Trends and the Impact on Companies**

includes the results of past IPC studies of planned and actual on-shoring and domestic sourcing activity, as well as new data from companies with actual onshoring experience about the impact on their operations and performance. The data identifies the industry segments engaging in on-shoring as well as the types of operations involved, origin and destination of relocated operations and numbers of jobs created by the responding companies. The 2014 survey data covers the impact of on-shoring on costs, delivery time, time to market, quality controls, inventories and sales. On-shoring drivers, deterrents and issues are discussed, as well as updates on recent on-shoring activity by major electronics companies. 54 pages. Published in June 2014.

Study	IPC member	Nonmember
	\$225	\$450

## Compensation Studies

IPC is the exclusive source for wage, salary and executive compensation studies specific to the companies that make up the electronic interconnect industry.

The biennial **2015 Wage Rate & Salary Study for the North American Electronics Assembly Industry** contains aggregate data on 31 positions and related job descriptions for North American EMS companies and OEMs, including salaried, hourly and sales positions. Industry averages, median values and 25th and 75th percentile data are reported by industry segment, regions and company-size tiers. The report also includes data on HR policies, benefits and sales compensation structure. The 71 companies in the survey sample reported on 162 facilities in the USA and Canada. 51 pages. Published in December 2015. **2017 edition to be published in December 2017.**

	<b>IPC member</b>	<b>Nonmember</b>
<b>Biennial Study</b>	<b>\$450</b>	<b>\$900</b>

The biennial **2012–2013 Wage Rate & Salary Study for the North American PCB Industry** contains aggregate data on 41 positions and related job descriptions for North American PCB manufacturers, including salaried, hourly and sales positions. Industry averages, median values and 25th and 75th percentile data are reported by regions and company-size tiers. The report also includes data on HR policies, benefits and sales compensation structure. The 16 companies in the survey sample reported on 29 PCB facilities in the USA. 45 pages. Published in February 2014.

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<b>Biennial Study</b>	<b>\$450</b>	<b>\$900</b>

Job Titles	Total No. of Workers	Average Annual Salary	Minimum Annual Salary	Maximum Annual Salary	10th Percentile	25th Percentile	50th Percentile	75th Percentile
Buyer	213	\$44,577	\$37,352	\$53,281	\$31,000	\$39,152	\$44,606	\$49,850
Engineering Manager	46	\$89,400	\$83,568	\$94,782	\$66,661	\$75,000	\$82,259	\$94,100
Job Planner/ Scheduler	86	\$49,274	\$43,999	\$54,110	\$33,023	\$42,094	\$49,952	\$54,949
Process/ Manufacturing/Industrial engineer	184	\$57,576	\$49,225	\$65,609	\$42,296	\$51,250	\$57,536	\$64,330
Production/Manufacturing operations manager	70	\$83,859	\$73,758	\$91,705	\$64,197	\$74,360	\$83,859	\$12.70
Program Manager	143	\$67,210	\$54,689	\$78,395	\$50,146	\$59,400	\$10.93	\$10.52
PCB design engineer	41	\$68,595	\$58,627	\$76,495	\$58,630	\$68,595	\$14.62	\$17.38
Quality engineer	88	\$58,749	\$51,946	\$67,383	\$49,625	\$58,749	\$11.84	\$13.40
Chief supervisor/team manager	223	\$46,387	\$39,934	\$55,681	\$34,700	\$46,387	\$10.93	\$11.84
Test engineer	119	\$59,373	\$53,184	\$68,556	\$49,625	\$59,373	\$12.41	\$12.66
Shipper/Receiver			\$11.00	\$14.38	\$9.80	\$11.25	\$12.32	\$13.87

IPC's **Executive Compensation Study for the North American Electronics Industry** provides comprehensive data on executives' base salaries, bonuses, other forms of compensation and benefits. It covers 12 key executive positions and reports current industry averages, median values and 25th and 75th percentile data. The findings are reported by industry segment, including end-product manufacturers (OEMs), EMS companies, PCB fabricators and assembly equipment manufacturers. They are also segmented by type of company (legal entity), region and company size tiers. 77 pages. Published in March 2013.

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<b>Biennial Study</b>	<b>\$675</b>	<b>\$1350</b>

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