



Weak summer but encouraging signs for autumn



Walt Custer and Jon Custer-Topai

Electronic industry demand is improving! Global electronic equipment shipments, after an anemic performance this summer, rose 3.6% in September 2013 vs. September 2012 and 8.5% sequentially from August 2013 (Chart 1).

What equipment end markets are driving this increase? Chart 2 is Electronic Outlook Corporation's estimate of how the estimated US\$2 trillion electronic equipment made worldwide in 2013 is distributed by product type.

Looking forward September's world electronic equipment shipment upturn is likely to continue based upon global leading indicator performance. 3/12 growth rates of the key regional Purchasing Managers Indices were all in positive territory in September and have a rising trajectory (Chart 3).

Semiconductor shipments are also improving. Taiwan chip foundry sales have been a reliable leading indicator of global semiconductor sales. Both foundry and

semiconductor shipments are growing significantly (Chart 4).

Printed circuit board demand is also improving. My colleague Ed Henderson forecasts a 4.6% increase in PCB sales in 2014 (Chart 5).

Chart 6 summarizes the forecasts of key prognosticators for the 2014 growth of the electronic supply chain. It is nice to finally see all positive numbers!

As we write this column in mid-October the future of the electronics industry is looking brighter. Unfortunately the recent U.S. government budget and debt ceiling related shutdown had a negative impact on recent domestic electronics industry activity. Hopefully this "shutdown" silliness is now behind us.

End markets

Worldwide IT spending is projected to expand 3.6% y/y to \$3.8 trillion in 2014.—Gartner
China

- mobile phone shipments reached 110 million units and smartphones shipments totaled 86 million units in 2Q'13.—IDC
- smartphone shipments are expected to grow from 360 million units in 2013 to 450 million in 2014.—IDC
- Taiwan's telecommunications industry output is forecast to grow 5.9% y/y to NT\$2.22 trillion (US\$75.2 billion) in 2013.—MIC

Computers & Peripherals

- Worldwide PC shipments declined 8.6% y/y to 80.3 million units in 3Q'13.—Gartner
- Worldwide thin client and terminal client device shipments increased 7.4% q/q to 1.3 million units in 2Q'13.—IDC
- LCD monitor shipments dropped 5.45% y/y to 71.1 million units in 1H'13.—Digitimes
- Flexible OLED market revenue will grow from \$21.9 million in 2013 to \$94.8 million in 2014.—IHS
- Notebook touch screen panel shipments declined 4.9% q/q to 4.4 million units in 2Q'13.—IHS
- PC monitor shipments decreased 0.7% y/y to 33.5 million units in 2Q'13.—IDC
- 3-D printer shipments (priced less than US\$100,000) are forecast to grow 49% y/y to 56,507 units in 2013.—Gartner

Communication Equipment

- Cellular baseband processor market grew 5.4% y/y to \$4.4 billion in 2Q'13.—Strategy Analytics.
- Enterprise video conferencing and telepresence market increased 8% y/y to \$735 million in 2Q'13.—Infonetics
- Macro base stations deployments are expected to grow from 1.017 million units in 2012 to 1.125 million deployed base stations in 2013.—MRG

Internet of Things

- Internet of Things technology and services spending is expected to grow at a 7.9% CAGR from \$4.8 trillion in 2012 to \$8.9 trillion by 2020.—IDC
- Machine to Machine market is expected to grow at a 26.1% CAGR from 2012 to 2017 to \$85.96 Billion by 2017.—

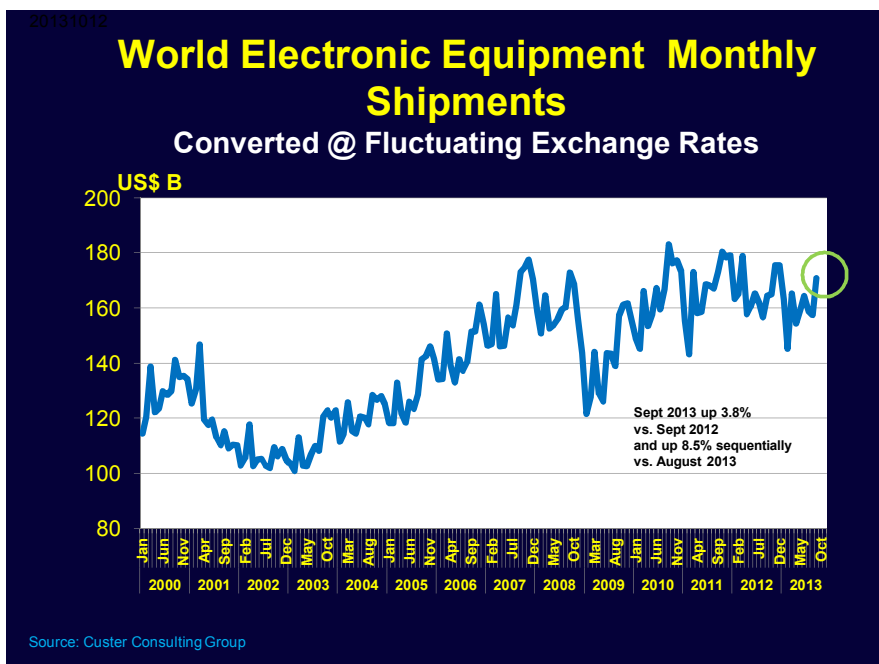


Chart 1.

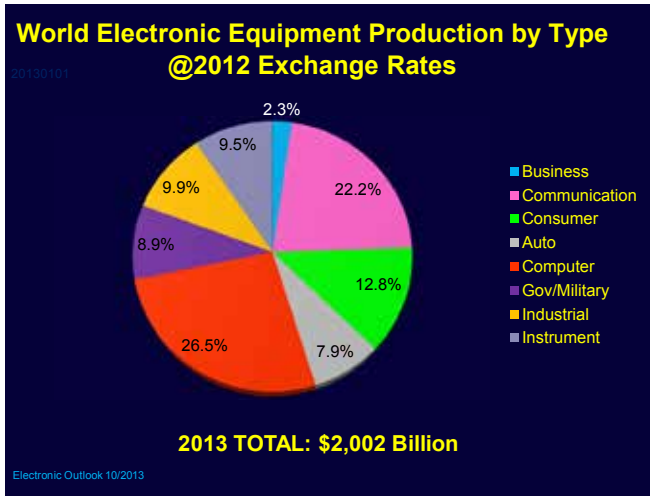


Chart 2.

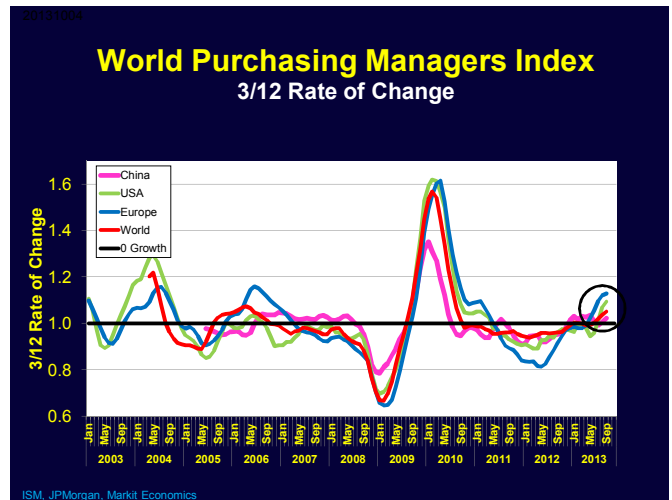


Chart 3.

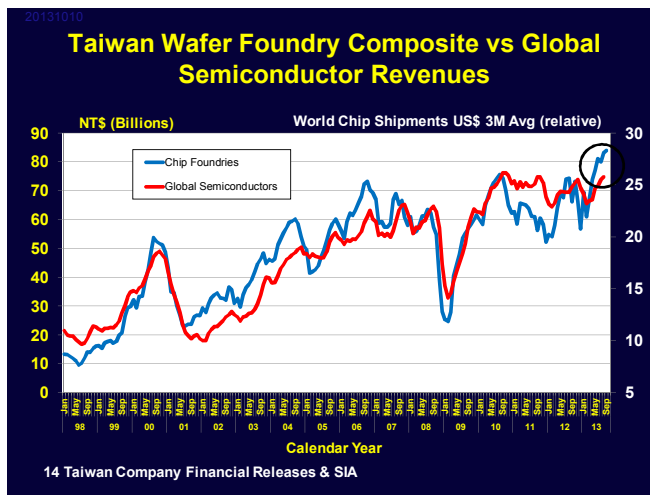


Chart 4.

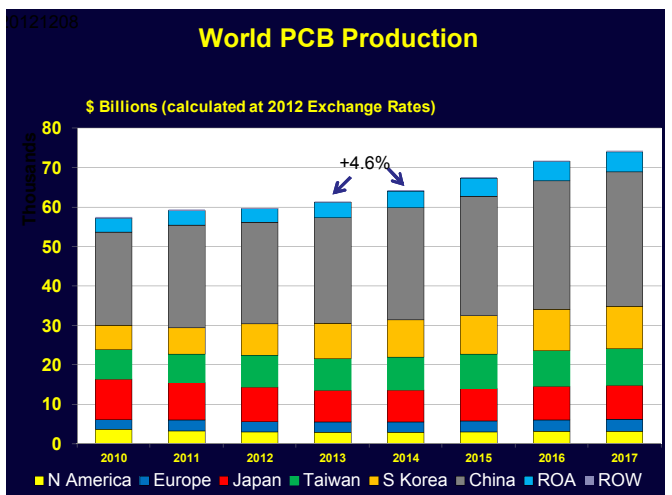


Chart 5.

MarketsandMarkets

- Combo sensor market will grow from \$446 million in 2013 to \$1.97 billion in 2018.—Yole Développement

Automotive

- auto electronics market is expected to grow from \$157 billion in 2010 to \$240 billion in 2020.—IHS
- front collision warning systems and lane departure warning systems market will increase from 6.6 million units in 2012 to 140 million units in 2020.—ABI Research

Global industrial robotics market revenues are expected to exceed US\$37 billion by 2018.—Global Industrial Robotics Market Forecast & Opportunities

U.S. consumer electronics retail sales in November and December 2013 are expected to increase 4.0% y/y to \$738 billion.—CEA

Security appliance factory revenues grew 6.1% y/y to \$2.1 billion in 2Q'13. Shipments decreased 1.5% to 483,354 units.—IDC

EMS, ODM & related assembly activity

Indian electronics systems design and manufacturing market is expected to grow at a 9.9% CAGR between 2011 and 2015 from \$75.6 billion in 2013 to \$94.2 billion by 2015.—Frost & Sullivan

Absolute EMS purchased SE500 SPI and QX600-L large board AOI inspection systems from CyberOptics.

Benchmark Electronics acquired the EMS segment Of CTS Corporation.

Bestronics named former Sanmina-SCI executive Nat Mani, CEO.

Cirtrionics achieved AS9100 certification.

Compal Electronics bought all of Compal Communications outstanding shares for \$546 million.

Darlington EMS added a Mydata MY100LXe14 pick-and-place machine to its newly expanded, custom-refurbished 27,000 SF facility.

Ducommun named Jerry Redondo, VP of Operational Excellence for its electronics and aerostructures business units.

eXception EMS entered key PCBA partnership agreements with Pan International and Team Precision.

Fabrico appointed Christopher Coyne as Medical Market Sales & Business Development Manager.

Flextronics SBS made its Althofen, Austria facility its product innovation center for Europe.

Foxconn

- will begin manufacturing handsets in Indonesia in 2014.
- plans to spend USD 100 million to build a smart TV assembly facility in Jiangsu Province, China.

Incap appointed Fredrik Berghel, President and CEO.

Interphase moved its office and plant to a 43,374 SF location in Carrollton, Texas.

Kimball International appointed Julia Heitz-Cassidy VP, Deputy General Counsel.

Kingfield Electronics appointed Mark Appleton, Materials Director.

KTech Telecom added a SJ Inno Tech

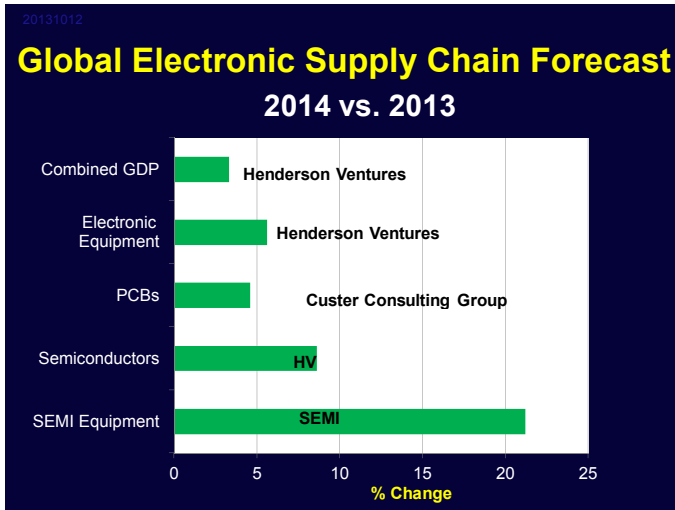


Chart 6.

HP-520S printer with 2D inspection and a Mirae Mx200LP placement machine from APEX Factory Automation.

Manu-Tec purchased AV862 series AOI system from ASC International.

Natel acquired EPIC Technologies.

Neways Electronics, Kassel, Germany ceased production after a major fire.

Pace hired Peter Lingurovski as VP of Sales and Marketing.

Saline Lectronics achieved AS9100 Revision C certification.

Season Group appointed Keith Stone as UK Quality Director, Alex Colquhoun, GM and Allen Bennink, Operations Manager of its San Antonio, Texas plant.

Skyworth India Electronics and **Quad Electronics Solutions** set up a LED TV manufacturing unit in Andhra Pradesh, India.

MPE-Inc's Founder, Steve Williams (former Commodity Sourcing Manager for Plexus) released his Quality 101 Handbook "Biggest Little Book on Quality You'll Ever Need" at <http://www.quality101book.com/>

TCL began operations at its new handset plant in Huizhou with an annual production capacity of 65 million handsets.

Texcel added a flying probe and a Europlacer Pick & Place machine.

Williams 6 Enterprises partnered with **Zebulon Solutions** on electronics manufacturing solutions.

Zollner Elektronik

- opened a subsidiary in Hombrechtikon, Switzerland.
- is investing \$10 million to establish its HQ for Americas in a Costa Rica Free Zone.

PCB fabrication

World PCB market grew 1.7% to nearly \$60 billion in 2012; China's share of world production is now 42.8% and Japan is

now second with 16%.—IPC World PCB Production Report

Altium promoted Martin Harris to Chief Sales Officer

AT&S sold 15,527,412 shares for a total of EUR 100.9 million to finance its planned IC substrate expansion.

Bay Area Circuits relocated to a 30,000 SF manufacturing facility in Fremont, CA.

Boulder Wind Power invested over US\$ 1 million in PCB stator testing capabilities in Louisville, Colorado.

Candor Industries developed a "Partial Plating Process" that uses positive-acting, electrodeposited organic photoresist used for pattern creation.

Career Technology added Orbotech Paragon LDI systems for flex circuit production.

Cistelair installed an Itecircuit ITC THP30 machine.

CML expanded its "embedded" PCB facility in China by 50% to 1,800 m²

CSI Sud-Ouest invested in an Orbotech Fusion 22 AOI system in Toulouse, France.

Eagle Circuits joined the FabStream network of global PCB manufacturers.

EBW Electronics plans to break ground in spring 2014 on an addition that would double the size of its existing manufacturing facility in Holland, Michigan.

Elma Electronic appointed Fred Ruegg, CEO.

ESCATEC appointed Thomas Dekorsy as GM of ESCATEC Switzerland.

Falcon PCB Group consolidated its operations and was re-branded as Merlin PCB Group. It will cease manufacturing in Littlehampton by the end of 2013.

Firstronic spent \$2.45 million to expand its 35,000 SF operation in Grand Rapids, Michigan.

Graphic achieved Nadcap merit status in Devon, UK.

GS Swiss PCB AG appointed Daniel Puschmann, CEO.

ICAPE Group opened its "ICAPE Deutschland" subsidiary in Frankfurt, Germany.

Isu Petasys acquired a 60% stake in Kingboat Technology.

Kyocera Circuit Solutions (formally NEC Toppan Circuit Solutions) named Yohsuke Nishiyama, President.

Laser Zentrum Hannover is developing production processes for multilayer circuit boards based on glass with 145 µm thicknesses.

LIB3 moved into 3,000 SF manufacturing facility in South Troy, New York.

Mekoprint appointed Esben Kold, CEO.

MFLEX appointed James McCluney as Class I independent director for company's Board of Directors.

NCAB Group France added Beatrice Colbeau as Key Account Manager.

Printca Denmark A/S was renamed PrintcaGRAPHIC A/S.

Printed Circuit, Inc. added a Uyemura ENIG/ENEPIG plating line to their wet process area.

TTM Technologies ended operations at its Suzhou, China facility.

Wicko added a Limata type UV-P200-2 LDI machine.

Materials & process equipment

Agilent Technologies separated into two publicly traded companies: Electronic Measurement with Ron Nersesian as CEO-designate and Agilent Life Sciences with Bill Sullivan remaining as President and CEO.

Aismalibar received UL certification for Flextherm conformable IMS laminates.

Albemarle acquired Cambridge Chemical Company.

Balver Zinn acquired the right to sublicense the lead-free solder SN100C patent by Nihon Superior.

BTU International received a seven unit order for its DYNAMO equipment from a Chinese consumer electronics manufacturer.

Conductive Compounds appointed Janice "Eileen" Banfield as President, Samuel Pollard, GM and Ryan Banfield, VP Technical Services.

CyberOptics appointed Subodh Kulkarni as Executive Chairman.

Electrolube named Arthur Foxton, Technical Sales Engineer.

Ellsworth Adhesives appointed Carl Lechner, General Sales Manager for the South Region.

Essemtec, Switzerland ownership was transferred from the Ziehbrenner and Tschumi families to new private investors.

Henkel opened the world's largest (150,000 M²) adhesives factory in Shanghai, China.

IBL Technologies acquired R&D Technical

Services.

Intrinsic Materials closed a \$4.1 million funding round led by Cayuga Venture Fund.

ISVI appointed Gerard White, VP of International Operations.

JOT Automation celebrated its 25 year anniversary.

Koh Young America moved its Chandler, AZ offices, process development lab and showroom to a larger facility.

MacDermid was sold for \$1.8 billion to Platform Acquisition Holdings.

Microscan appointed Michael Harkin, Regional Sales Manager for UK & Ireland.

Panasonic Factory Solutions

- celebrated its 25th anniversary in North America.
- added an Electronic Materials South Asia R&D center in Singapore.

President Group sold its 74% stake in Singapore Windsor to director of Consendo Capital.

Toray is constructing a high-performance resin plant for automobile battery and electronics in South Korea.

Uyemura and **Europlasma** entered a partnership for advanced vacuum plasma treatment technology (Nanofics®) for electronic

manufacturing.

Veeco purchased Synos Technology.

Zuken appointed Humair Mandavia as Executive Director of new Zuken SOZO Center in San Jose, California.

Semiconductors & other components

Semiconductor IP market will grow 21.1% y/y to over \$4 billion in 2013.—Semico Research

Worldwide semiconductor materials spending will grow 1% y/y to US\$47.54 billion in 2013 and an additional 7% to almost \$50 billion in 2014.—SEMI

Worldwide semiconductor manufacturing equipment spending is projected to decline 8.5% to \$34.6 billion in 2013.—Gartner

North American semiconductor equipment industry had \$1.06 billion in orders worldwide in August 2013 (3-month average basis) and a book/bill ratio of 0.98. —SEMI

Automotive

- global average semiconductor content per motor vehicle increased 65% from \$200 in 2002 to \$330 in 2012.—IHS
- OEM connected car system processor market will grow from US\$360 million

in 2012 to US\$1.6 billion in 2020.—ABI Research

LED

- package market value is expected to grow from US\$12.5 billion in 2013 to US\$13.39 billion in 2014.—LEDinside
- packaged lighting application revenues are forecast to rise from \$3.6 billion in 2013 to \$7.1 billion in 2016.—IHS

Smartphone applications processor market grew 44% y/y to \$4.4 billion and tablet applications processor market grew 46% y/y to \$759 million in 2Q'13.—Strategy Analytics

Power semiconductor discretes and modules market revenue fell to slightly less than \$15 billion in 2012 from nearly \$18 billion in 2011.—HIS

Supercapacitor market is forecast to grow from US\$466 million in 2013 to US\$836 million in 2018.—Lux Research

Top 10 connector manufacturers (by sales) had combined revenue of \$28,477 million in 2012, accounting for 59.8% of the world connector market.—Bishop & Associates



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over 400 worldwide
over 100 in USA



IR Vacuum Reflow
Table Top System 450°C / 700°C



Fast ramping
quartz tube Furnace



SiC power devices



Hybrid Diebonder,
dispenser, tester, repair



Diamond Scribes
200 mm Ø



Hot Plates/Chucks 450°C



IGBT/DCB processing



Direct IR heating



MEMS cap/package lid
sealing with Getter activation



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