

Bumpy start but business conditions improve as 2012 unfolds



Walt Custer and Jon Custer-Topai

The world's first quarter 2012 "electronics recovery" is quite varied – depending geography and products. On a 3-month (3/12) growth basis (Chart 1) electronic equipment shipments were up 16 percent for Taiwan listed OEMs for the 3 months ending Feb 2012 vs. Feb 2011. For the 3 months ending in January 2012, Europe was flat, the USA was still declining and Japan remained in very negative growth territory. Converted to monthly US\$ (Chart 2) SE Asia's winter "slow season" decline was not nearly as bad as a year ago and the rest of the world (relative to Asia) was comparatively flat.

Large EMS providers had a decent fourth quarter 2011 (Chart 3) and their combined "guidance" for 1Q'12 was surprisingly bullish (up 23 percent vs. the same quarter in 2011). Taiwan-listed ODM companies (Chart 4) were still in their post-holiday season downturn in February but should be rebounding in March/April based upon their historic seasonality.

Another measure of electronic equipment manufacturing activity (semiconductor shipments) remains

a bit hazy. Global chip shipments dropped in January (Chart 5) – down 8.8 percent on a 3-month basis and a disturbing 14.4 percent for the month of January 2012 vs. January 2011. With the stronger February electronic equipment production in SE Asia, perhaps the aftermath of Thailand's floods, hesitant ordering and inventory controls combined to stifle January semiconductor shipments? The February SIA data (released about April 1) will be interesting.

Looking forward Custer Consulting Group's semiconductor leading indicator (Chart 6) still points to minimal or slightly negative semiconductor shipment growth for early 2012. No massive, imminent upturn is on the horizon.

On the positive side the recessionary downturn of early 2012 is mild compared to 2009, the US stock market is doing well, unemployment is slowly declining and consumer and business confidence is improving. We believe 2012 is "playing out" as we had forecasted late last year – a weak first quarter with ongoing improvement as the year develops.

End Markets

General

- Digital information is expected to balloon from 2.7 zettabytes in 2012 to 8 zettabytes by 2015. – IDC
- Worldwide IT spending increased 5 percent at constant currency in 2011 and is expected to grow another 5 percent in 2012. —IDC's *Worldwide Black Book*
- Indian electronics hardware production constitutes only about 1.3 percent (or \$45 billion) of global electronics production and about 2 percent of India's GDP. —ISA *Vision Summit*
- U.S. consumer electronics sales reached \$144 billion in 2011. Apple was the #1 brand and Best Buy was the #1 retailer. —NPD Group

Computers & Peripherals

- Worldwide PC shipments are on pace to increase 4.4 percent y/y to 368 million units in 2012. —Gartner
- Global tablet PC shipments fell 30.6 percent to 14.97 million units in 1Q'12. —Digitimes Research

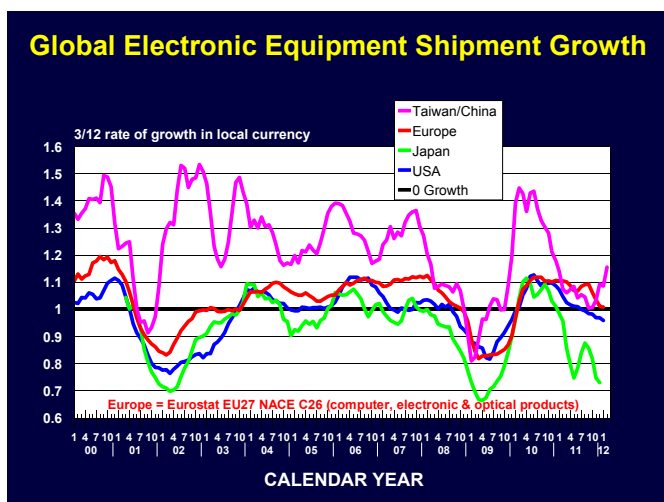


Chart 1

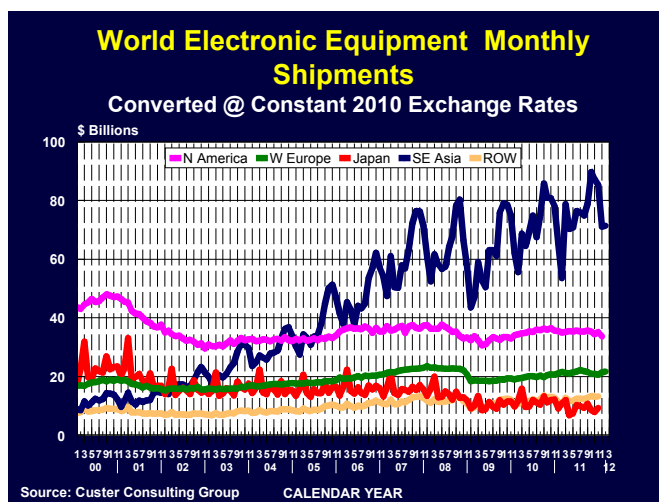


Chart 2

- Mobile PC shipments grew 12 percent q/q and 44 percent y/y to 88 million units in 4Q'11. —NPD DisplaySearch
- Worldwide server revenue fell 5.4 percent y/y in 4Q'11 to \$13.9 billion. —Gartner
- Global HDD production capacity increased to 140-145 million units in 1Q'12, about 80 percent of the level before flooding hit Thailand in late 2011. —Digitimes
- Worldwide disk storage systems market grew 7.7 percent y/y to just under \$6.6 billion in 4Q'11. —IDC
- Worldwide Ethernet switch market revenues grew 1.4 percent q/q and 5.1 percent y/y to \$6.06 billion in 4Q'11. —IDC
- Worldwide external controller-based disk storage market grew 4.8 percent y/y to \$5.9 billion in 4Q'11. —Gartner
- Flat panel display equipment market is expected to fall 63 percent y/y in 2012 and then rebound in 2013. —NPD DisplaySearch
- Global optical network equipment market grew 8 percent sequentially in 4Q'11, from \$3.4 billion to \$3.6 billion. —Infonetics Research
- Graphics add-in board shipments fell 6.5 percent q/q to 16.1 million units in Q4'11. —Peddie Research
- Worldwide hardcopy peripherals shipments declined 4.5 percent y/y to 34.9 million units in 4Q'11. —IDC

Mobile Communications

- Global smartphone shipments

- increased 55 percent to 158 million units in 4Q'12. —IDC
- LTE device market shipments will grow at 104 percent CAGR from 8 million units in 2011 to 300 million units in 2016 with revenues of over \$82 billion. —MarketResearch
- Worldwide smartphone sales to end users soared 47.3 percent y/y to 149 million units in 4Q'11. Total smartphone sales in 2011 grew 58 percent y/y to 472 million units and accounted for 31 percent of all mobile device sales. —Gartner
- Broadband aggregation equipment market revenue increased 15 percent sequentially to \$2.3 billion in 4Q'11 driven by heavy spending in Asia and Latin America. —Infonetics Research

Consumer Electronics

- Global digital camera shipments are expected to increase 1.6 percent y/y to 117.3 million units in 2012. —Camera & Imaging Products Association
- Global e-book reader shipments are forecast to reach 30-35 million units in 2012. —Digitimes
- Global LCD TV shipment growth is expected to fall from 12 percent in 2011 to 7 percent in 2012, totaling 225 million units. —GfK

EMS & Assembly

- Walt Custer was named one of the top 100 people influencing EMS in 2012 by VentureOutsource.com.
- ACDi acquired Fawn Electronics.

- ACW Technology relocated its Southampton plant to a smaller facility.
- AEM received ISO9001:2008/AS9100C certification.
- Asteelflash appointed Chuck Thistle VP of Business Development for the Americas.
- AWS purchased three AOI machines for each of its SMT facilities.
- Blue Chip Technology installed AOI equipment, a SMT pick & place machine and SMT feeders in 2011.
- Connect Group's Kladno, Czech Republic facility achieved international railway industry standard certification.
- ControlTek added two Heller 1809 MKIII reflow ovens and a 3 chamber Trident LD automatic defluxing system in Vancouver.
- Corintech appointed Sean Wigmore Managing Director.
- CT Production invested in a Mirtec M3VL 5 camera system.
- Empower Technologies acquired Northstar Network from Northstar Electronics.
- Enventure Technology Services achieved ISO 9001:2008 reaccreditation.
- Eolane acquired Elcoteq, Tallinn.
- E-Tronics received financial support from the Canadian government to acquire a production line for its recently opened Laval plant.

Flextronics

- acquired Stellar Microelectronics.
- entered a hybrid and electric vehicle drivetrain systems cooperation agreement with Sevcon.
- sold its camera module brand and assets to DigitalOptics.
- Foxconn/ Hon Hai
 - added automated inline X-ray inspection systems to its plants in China.
 - laid off nearly 500 employees in Nitra, Slovakia.
 - raised wages of its Chinese workers by 16-25 percent, the third rise since 2010.
 - is setting up a R&D center in Chongqing, China.

GPV Asia Electronics obtained Bureau Veritas' ISO 1348 medical certification.

I.Technical Services added a high speed SMT production line with Assembléon AX201 and AX301 placement machines in Alpharetta, Georgia.

Incap appointed Mikko Hirvinen Director, Special projects; Sami Kyllönen Director, Operations Europe and Jari Koppelo Director of both the Energy efficiency and Well-being solutions divisions.

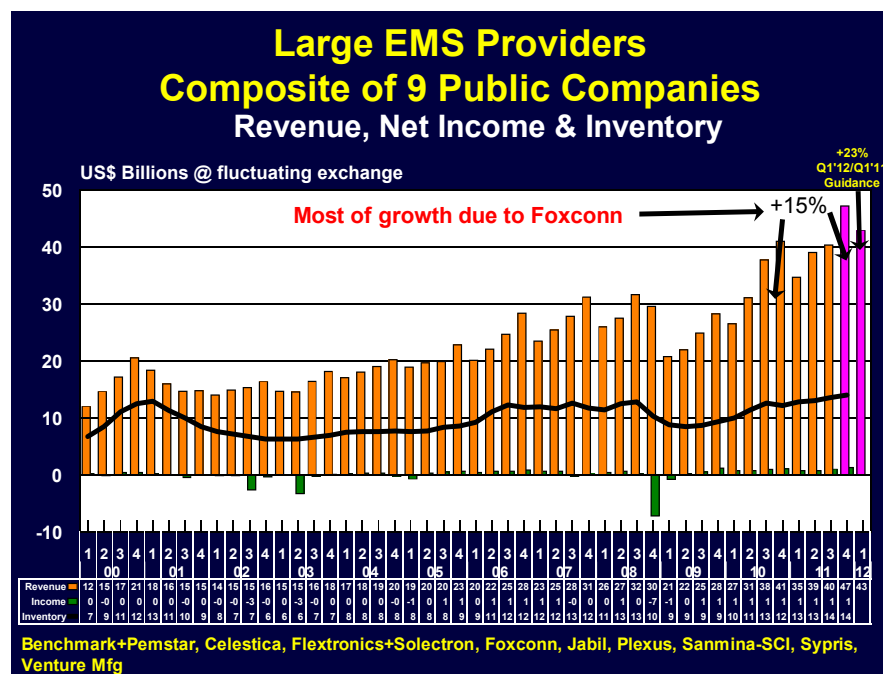


Chart 3

Jabil

- hired Scott Gebicke as VP Global Business Units and President, Jabil Defense and Aerospace Services, a wholly-owned subsidiary
- Design Services introduced its new Sandy Creek reference design.
- hired 500 workers in Bydgoszcz, Poland.

Lacroix Electronics doubled its production and warehouse space in Poland to 8,500 m².

Milwaukee Electronics Company promoted Rick McClain to COO.

Nam Tai Electronics appointed M.K. Koo acting CEO.

OCM Manufacturing doubled the size of its manufacturing facilities to 15,000 SF.

Plexus delayed construction of 20,000 SF data and development center in Neenah, Wisconsin due to poor economic conditions.

Qual-Pro added a PVA 650 selective coating dispensing unit with an IR2000 infrared curing chamber.

RiverSide Electronics purchased an Advantis 3 from Universal Instruments.

Sanmina-SCI

- expanded its partnership with GigOptix for a next generation 100G modulator.
- India's design center received AS9100-Rev C for avionics systems and ISO 9001-2008 certification.
- plant workers locked management in a compound in Batam, Indonesia.

Scanfil EMS and Sievi Capital

- was awarded EUR 2 million in damages from Ojala-Yhtymä Ltd. and its shareholders.
- laid-off 90 workers in Sievi, Finland.

Schippers & Crew installed an Europlacer iineo II SMT Pick-and-Place machine.

Senior Systems Technology appointed Don Jeffery as Director, Supplier Management.

STI Philippines added a SIPLACE X-Series placement machine in Cebu, Philippines.

Walton Chaintech entered an alliance with Colorful and returned to graphics card and motherboard production.

PCB Fabrication

Dennis "Denny" Fritz received the IPC Raymond E. Pritchard Hall of Fame award. Congrats Denny!

European Institute of Printed Circuits elected Alun Morgan, Chairman of its Board. Congratulations to you too Alun! India's PCB market size grew 17 percent

y/y in 2011 to around Rs 43.4 billion. — IPCA

Japan's PCB industry revenue increased 4.9 percent m/m and declined 12.3 percent y/y to 53.04 billion yen in December 2011. Total year revenue decreased 14.9 percent y/y to 616.05 billion yen in 2011. —*METI*

Taiwan's PCB production value is forecast to rise 4.9 percent to NT\$526 billion (US\$17.8 billion) in 2012, after nearly flat growth in 2011. —*IEK*

Taiwan's total 2011 PCB production value reached \$17.5-17.6 billion in 2011 with about \$7.5-7.6 billion coming from Taiwan and an additional \$10 billion+ produced in China. —*Dr. Hayao Nakahara*

ACB NV was acquired by ARKEA Capital Investissement and EUREFI.

All Flex purchased a Paragon 9800 LDI system and a Mydata 15 component placement machine.

ASRock began production of industrial PC motherboards on an ODM basis.

AT&S became the head of Hermes Consortium.

BB Electronics implemented component and process traceability at its Horsens, Denmark and Suzhou, China facilities.

BBG

- opened its Canada division.
- named Tony Scott Sales Director.

Beta Layout installed a MX1 single station system high speed drilling system from Schmoll Maschinen.

CadSoft and Eurocircuits delivered one-

click integration between PCB design and prototyping.

Cencorp nominated Ismo Rautiainen Vice Chairman of the Board.

Crest Circuit added a Uyemura Presa RGA-14 Silver line.

Datest acquired XD7600NT500 Ruby X-ray inspection system from Nordson DAGE.

DownStream released new version of PCB post-processing solutions, CAM350 and BluePrint-PCB.

Electronic Technologies International acquired CMK Enterprises.

Endicott Interconnect Technologies appointed Eltek as sales partner in Israel.

Enventure Technology Services received ISO 9001:2008 recertification.

Founder PCB was certified to produce PCBs that utilize Shocking Tech's Voltage Switchable Dielectric material.

Fuji Film developed a high heat resistant flexible circuit using hybrid substrate of aluminum oxide/metal aluminum/stainless steel.

Fuji Name Plate withdrew from PCB business due to tightening margins.

H&T Global Circuits launched web-based division —H&T Express.

Ishii Hyoki had 71 employees (18 percent of the whole company) accept early retirement in its downsizing program.

JJS Electronics invested in Mirtec MV-3L AOI equipment.

Merlin Flex-Ability achieved AS9100 Rev C certification.

P.D. Circuits celebrated 22 years in

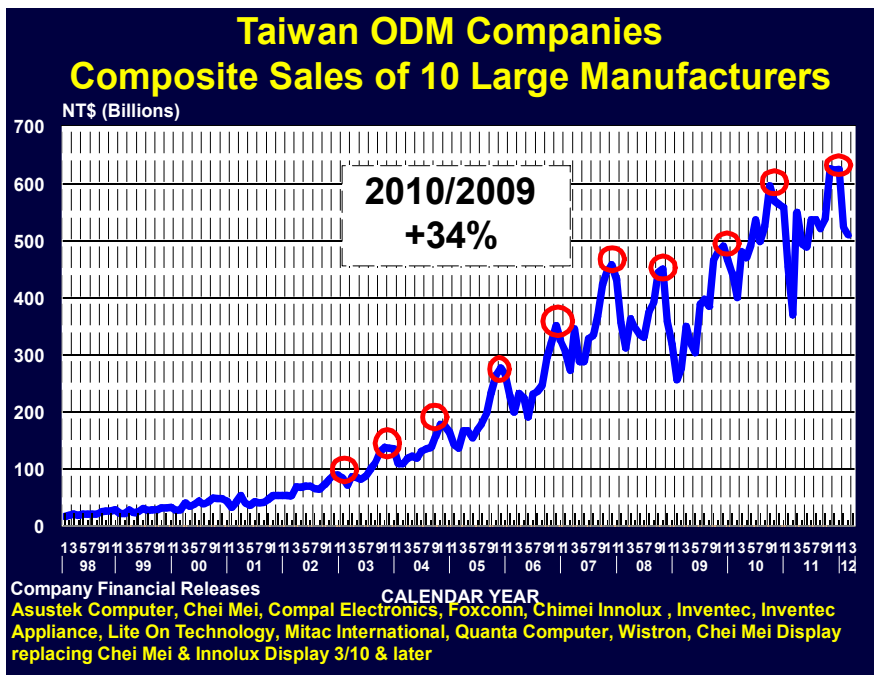


Chart 4

business.

Panasonic completed its ALIVH PCB plant in Taoyuan, Taiwan.

Printca entered liquidation and its main assets and activities were transferred to Printca Denmark.

Printed Circuits purchased a ProX5 scanner/measurement machine from IMPEX Leiterplatten.

Prototron Circuit named Russ Adams National Sales Manager.

Rainbow Technology Systems named Lawson Lightfoot International Sales Manager. Congratulations Lawson!

Red Lion Controls

- appointed Jim Gilbert VP of Automation and Wireless and Laura Hoffman VP of Global Marketing.
- expanded circuit board production capacity to meet orders for military contracts from N-Tron.

Router Solutions celebrated its 20th anniversary.

Spirit Circuits (Waterlooville, UK) added an automated Co-ordinate Measurement Machine from Viking Test.

Stevenage Circuits appointed Les Browne Director of Sales.

Sunstone Circuits celebrated 40 years of service.

TC Cosmotronic received NADCAP accreditation for rigid, flex, rigid/flex, and high density interconnect PCB manufacturing.

Wrekin Circuits purchased a Schmol X-Ray Drilling machine.

Materials & Process Equipment

Metal finishing chemicals market is expected to reach US\$9.2 billion by the year 2017 driven by demand from electronics and electrical, motor vehicle equipment and aerospace industries. —

GIA

Thermal management revenues are forecast to grow from \$8 billion in 2011 to \$11 billion by 2016. —*MarketResearch.com*

3M promoted Inge Thulin to CEO.

Adept Technology received an \$820K order for vision-guided robots from a SE Asian consumer electronics manufacturer.

AIM appointed Kelvin Wu Sales Manager in China.

Air Products acquired DuPont's stake in DuPont Air Products NanoMaterials.

Asahi Glass developed ultra-high speed processing technology for micro hole drilling processing of ultra-thin glass with a thickness of 0.1 millimeter.

Bergquist Company added an additional production line at its Thermal Substrates facilities in Prescott, Wisconsin.

Bofa International appointed the Solder Connection as non-exclusive distributor for the UK and Ireland.

Corning expects 2012 glass substrate demand to grow by 12.5 percent to 360 million SF

Count On Tools

- expanded its manufacturing operations in Gainesville, GA.
- purchased a Haas TL-2 Toolroom Lathe.
- appointed The AdoptSMT Group as its distributor for Europe.

DfR Solutions opened an office in Espoo, Finland and appointed Dr. Petri Savolainen as Sr. Member of Technical Staff for its European office.

Dymax named Christopher Morrissey as Market Segment Manager.

Eastman Chemical bought Solutia.

Enthone acquired select assets of A Brite Company.

ESI released its new esiFIT technology for

advanced microfabrication.

Europlacer and Speedprint

- named Chris Round Global Marketing Manager.
- appointed MIDwest TEKnologies as its representative in U.S. Midwest regions of ND, SD, and MN.

Exopack Advanced Coatings added a coating machine in Matthews, North Carolina.

Frequency Electronics bought Elcom Technologies.

Fujifilm and Multiline International Europa named Eltech as its French distributor.

Furukawa Electric shifted part of production from its damaged subsidiary, Furukawa FITEL (Thailand) to China.

Goepel appointed nanoX Technology as its distributor for its AXI system OptiCon X-Line 3D in Asian-Pacific area.

Hitachi appointed Kazuhiro Mori President for China and Asia Pacific.

Isola

- completed beta site testing and internal qualification for I-Speed™.
- launched ultrathin 40 micron laminate with Circuit Foil.

Juki Automation Systems

- signed long-term exclusive cooperation and distribution agreement with Shenzhen JT Automation Equipment.
- has shipped more than 25,000 machines worldwide since 1987.

Kyzen

- CTO Mike Bixenman, Ph.D. received the President's Award from IPC.
- named Pete Grys Midwest Regional Manager.

Machine Vision Products appointed Interflux as its representative in Poland.

Melecs developed efficient thermal

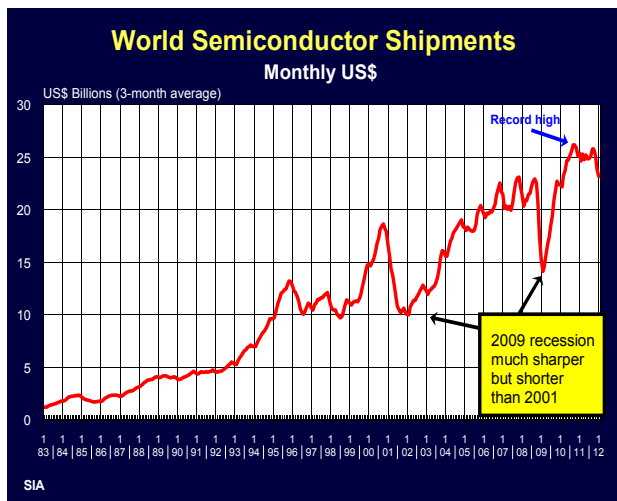


Chart 5

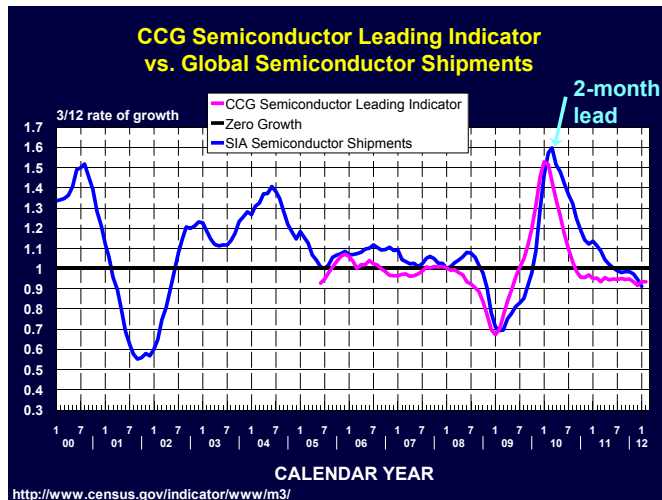


Chart 6

management solution as an alternative to expensive insulated metal substrates.

Metallic Resources purchased a 68,000 SF manufacturing facility in Twinsburg, Ohio.

Nordson

- elected Arthur George, Jr. and Frank Jaehnert to its Board of Directors.
- named Elematec as its distributor for Japan.

OK International introduced Eric Chen as GM for the Greater China region.

ORPRO Vision named Ken Lunde Global Marketing Manager, Enrique Gomez National Sales Manager and Ramon Hernandez Regional Sales Manager.

Photo Stencil selected Miles Prim as VP Operations.

Polar Instruments named Cheryl Prochaska North American Sales Manager.

Rogers appointed Jeffrey Grudzien VP of Advanced Circuit Materials division.

SEHO Systems named Alexander Riedel, Director of Customer Service and Thomas Herz Technical Director of Selective Soldering Department.

SEICA acquired a site in Strambino, Italy.

Sumitomo Bakelite permanently terminated flood damaged manufacturing operations in Thailand due to repair costs.

Sumitomo Metal Mining ended

manufacturing of bonding wire, lead frames and subtractive type COF substrates for LCD driver modules.

Tanaka Holdings began volume production of copper bonding wires in Taiwan.

Teledyne acquired VariSystems.

Test and Rework Solutions became Assembléon's sales agency in South Africa.

Test Research appointed Richard Rivas Strategic Account Manager for In-Circuit Test Systems.

Ucamco joined the IPC-2581 consortium.

Unic Technology began selling electronic materials.

Veeco appointed Keith Jackson to its Board of Directors.

Videoton subsidiary, VT-ASYST sold a custom made production line to Denso Gyártó Magyarország.

Vishay Intertechnology celebrated its fiftieth anniversary.

WACKER expanded and relocated its South Korea technical laboratories and offices to a 3,600 m² site near Seoul.

YesTech Europe opened its UK training and demo facility for AOI and x-ray inspection technologies.

Semiconductors and Other Components

Global semiconductor sales grew 0.4 percent y/y to record \$299.52 billion in 2011. —WSTS

Worldwide semiconductor sales are expected to grow 10.11 percent y/y in 2012. —Semico Research (by contrast on March 13, 2012 Gartner forecasted 4 percent growth).

Active electronic components market is expected to grow at a 9.7 percent CAGR from \$137.6 billion in 2011 to \$230 billion by 2017. —MarketResearch

Taiwan's IC sector is expected to grow 6.5 percent to US\$56.1 billion in 2012 on rising demand for smartphones, Ultrabook computers and tablet devices. —IT IS

DRAM market will continue to shrink in 2012, by 3 percent against a 24 percent contraction in 2011. —IC Insights

Semiconductor fab equipment spending will remain flat at US\$38.85 billion in 2012, but climb to a record US\$45.5 billion in 2013. —SEMI

Semiconductor manufacturers closed 49 fabs worldwide between 2009 and 2011. —IC Insights

European semiconductor distribution sales shrunk by 9.1 percent y/y to 1.35 billion Euros in Q4'11. For total year 2011 they increased 7.6 percent to 6.37 billion Euros. —DMASS

Global gyroscope revenue increased 66% Y/Y TO \$655.4 million in 2011. —HIS

Global smartphone applications processor market grew 70 percent y/y to USD 7.9 billion in 2011. —Strategy Analytics

Global HB-LED market grew 9.8 percent y/y from \$11.3 billion in 2010 to \$12.5 billion in 2011. —Strategies Unlimited

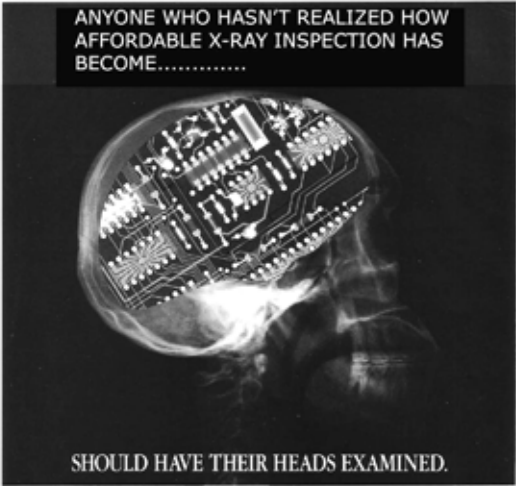
High-brightness LED output value is expected to grow 13.4 percent in 2012 and LED lighting penetration will increase 11.3 percent. —Digitimes Research

LED market penetration is expected to grow from 2 percent in 2012 to 10 percent in 2014 and 25 percent in 2017. —IMS Research

LED supply exceeded demand by 30 percent in 2011 due to poor LED TV sales and slow growth in LED lighting; glut will be 19 percent in 1Q'12 and is expected to drop to 16 percent in 2Q'12. —NPD DisplaySearch

LED-backlit TV penetration rate will top 60-70 percent in 2012. —Displaybank

ANYONE WHO HASN'T REALIZED HOW AFFORDABLE X-RAY INSPECTION HAS BECOME.....



SHOULD HAVE THEIR HEADS EXAMINED.

Glenbrook's Patented X-ray Imaging Technology creates compact and affordable systems advancing electronics assembly.

To learn more go to:
www.GlenbrookTech.com

