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### Web Sites Worth Mentioning

**www.jpsalaser.com** JPSA Laser's expanded site offers information about the company's UV laser technology products for the microelectronics and semiconductor industries. It includes more pages, information resources and product and application news in an interactive format.

**http://forums.ate.agilent.com/pciexpress** Agilent's online "PCI-Express Automated Test (ATE) Forum" will be available 24 hours day at this Web site. The forum allows manufacturers to discuss and share PCI Express information, communicate about issues in the semiconductor test market and get answers to test-related topics.

**www.gsilumonics.com** The redesigned Web site for GSI Lumonics Inc. emphasizes improved navigation, context-sensitive menus and enhanced abilities for visitors to contact the company for assistance. The investor relations section has been expanded to include news releases, annual reports, stock information and investor frequently asked questions.

**www.cybertechologiesUSA.com** Cyber Technologies, a manufacturer of high-resolution measurement systems, has launched its new Web site in conjunction with its introduction of a non-contact laser sensor system to the U.S. market. The site offers information about the company, products, applications and news.



### Industry Resources

**www.pcdandm.com/pcdman/resource/pcb\_basics.shtml** The fourth edition of *Printed Circuit Board Basics* is now available. This edition contains an updated primer on single-, double-sided and multilayer PCB manufacturing processes; a review of new technologies; updated PCB specifications; a history of the industry; and an updated glossary of terms and definitions.



### Surveys and Guides

**www.circuitsassembly.com/bg\_intro** Visit our recently updated Online Buyers Guide, a comprehensive source of supplier information. You can search for specific products, supplier contact information or industry services. If you are a supplier, be sure to register if your company is not already listed.

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• Focus on HDI/Advanced Technology: Improving the Acceptance of Flip Chip  
*John Davis et al, Solectron*

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*Peter Krippner and Detlef Beer, Viscom*

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*Bob Willis, EPS*

Would you like to contribute to NET gain?

Contact Robin Norvell at [rnorvell@upmediagroup.com](mailto:rnorvell@upmediagroup.com)

## Kester Sold to American Capital

Kester (Des Plaines, IL, [www.kester.com](http://www.kester.com)), a business unit of Northrop Grumman Corp., has been sold to American Capital Strategies Ltd. (Bethesda, MD, [www.americancapital.com](http://www.americancapital.com)) for an undisclosed amount. The acquisition, announced during a press conference at APEX, allows Kester to break from the defense arena and return to supplying the assembly, component, electrical and industrial marketplace.

Kester comprises a large portion of American Capital's holding portfolio. Kester's management will remain intact, and the company has initiated a phase-gate system that will allow it to accelerate new product development from years to months.

American Capital's investment takes the form of a revolving credit facility, senior term loans, senior and junior subordinated debt and preferred common equity. Post-closing, American Capital will own 84% of Kester on a fully diluted basis. The remaining ownership in the acquiring company represents amounts under the employee options program, as well as equity co-investors.

## Universal, Hitachi Extend High-Speed Placement Collaboration

Universal Instruments (Binghamton, NY, [www.uic.com](http://www.uic.com)) and Hitachi High Technologies (HHT, Schaumburg, IL, [www.hitachi-hita.com](http://www.hitachi-hita.com)) have renewed their original equipment manufacturer (OEM) agreement for a further five years. HHT acquired Sanyo High Technologies, Universal's original OEM partner, in 2003. The partnership has enhanced Universal's turret-style high-speed placement (HSP) technology while affording HHT an extensive sales and support network.

Since it was first announced in 1989, the agreement has resulted in more than 1,200 HSP platforms sold. Continued success of the partnership and sustained market demand for HSP equipment have allowed the agreement to be renewed several times in the past.

In addition to customers' access to the entire line of 4797-series HSP machines, extending the agreement until 2009 will allow further joint efforts to continue. Such efforts include recent line software development work and may extend in the future to additional joint technical projects, technology transfers and further product sharing.

## TFS Acquires Customers, Employees of Integrex

Three-Five Systems Inc. (TFS, Tempe, AZ, [www.tfsc.com](http://www.tfsc.com)) has hired key employees and acquired the customer base of Integrex Inc. (Bothell, WA, [www.integrex.com](http://www.integrex.com)), a privately-held electronics manufacturing services (EMS) company. TFS will immediately begin working with customers to transfer existing programs from Bothell to its Redmond facility; the process is expected to take approximately six weeks.

The agreement is the second EMS transaction by TFS in the Northwest in the past 15 months. TFS acquired the EMS company ETMA (Redmond, WA) in December 2002 and maintains operations in the Redmond location.

Integrex was founded in 1999 as a full-service EMS company providing turnkey manufacturing services, including design, new product introduction (NPI), printed circuit board assembly (PCBA), system integration, test and after-market support. Primary investors included Benaroya Capital, Fluke Venture Partners and Sunrise Capital. Representatives for the investor group indicated that several companies competed to obtain the Integrex business, and TFS was selected because of its existing presence within the Northwest regional customer community, combined with strong offshore manufacturing capability and a solid balance sheet.

TFS is buying the raw material inventory of Integrex as needed to begin manufacturing products for its new customers and is providing Integrex with an up-front, one-time payment to offset customer transfer costs. TFS is not acquiring Integrex's manufacturing facility in Bothell, and the transaction is not expected to generate a goodwill asset for TFS.

## In Brief

**Dek** (San Jose, CA) has announced representative changes in the Pacific Northwest and Southern California regions. The company will now be represented by **Systems Specialists Inc.** in Washington, Oregon and Idaho. **Competitive Edge Manufacturing Equipment** will represent DEK in the Southern California counties of San Luis Obispo, Kern, San Bernardino, Santa Barbara, Ventura, Los Angeles, Orange, Riverside, San Diego, Imperial and in Baja, Mexico.

**ESSEMTEC** (Aesch, Switzerland) has opened its first U.S. sales and service organization in Glassboro, NJ. ESSEMTEC USA can be reached at: 816 N. Delsea Dr. #308, Glassboro, NJ 08028; (856) 218-1131; email: [sales@essemtec-usa.com](mailto:sales@essemtec-usa.com).

**Lista International Corp.** (Holliston, MA), a manufacturer of technical, industrial and office workspace furniture and equipment, has purchased the assets of the Ergomation product line of adjustable height workbenches and accessory systems from Aero-Motive Co. The product line will maintain its operations center in Grand Rapids, MI.

**Qual-Pro Corp.** (Carson, CA) has installed its third MYDATA machine. The addition of the machine allows the company to handle even larger board assemblies and components as small as 0201s.

**Aqueous Technologies Corp.** (Rancho Cucamonga, CA) has appointed **Technical Resources Corp.** as a manufacturer's representative serving Florida and Puerto Rico. The company will represent Aqueous' full line of cleaning equipment for surface-mount and wafer applications.

Electronics manufacturing services provider **AeTec** (Tempe, AZ) has transferred the manufacturing operations of Reliability Inc.'s DC/DC and Bias Power's AC/DC Power Sources Converter operations to the company's Costa Rica facility, along with select employees. AeTec has also been awarded a new contract with automotive product manufacturer **Wetherill Assoc. Inc.**

**Sealant Equipment & Engineering Inc.** (Plymouth, MI)'s certification for Precision Manufacturing of Meter/Mix/Dispense Equipment has been upgraded to ISO 9001:2000. The certification was granted by Chamber Certification Assessment Services Ltd.

## Plexus To Supply Patientline Units in UK

Plexus Corp. (Neenah, WI, [www.plexus.com](http://www.plexus.com)), a provider of electronics manufacturing services (EMS), has secured an exclusive contract with Patientline PLC (Slough, UK, [www.patientline.co.uk](http://www.patientline.co.uk)) to manufacture, supply and install the Patientline bedside multimedia and entertainment system.

The contract gives Plexus sole manufacturing rights over a two-year period and covers the whole of the UK. According to the agreement, Plexus will provide complete product engineering, testing, volume manufacturing and installation services for the bedside units.

The contract also includes Plexus managing the complete supply chain for Patientline from component sourcing to warehousing, logistics, installation and repairs. The bedside unit has now been installed in over 100 hospitals throughout the UK. It brings TV, telephone, radio, email, Internet and entertainment access directly to the patients' bedside.

## Sanmina-SCI Licenses Nortel Networks' Routing Technology

Sanmina-SCI Corp. (San Jose, CA, [www.sanmina-sci.com](http://www.sanmina-sci.com)), an electronics contract manufacturer and printed circuit board (PCB) fabricator, has become the first company to enter a worldwide licensing agreement under Nortel Networks' Channel Routing technology licensing program, authorizing it to design and manufacture PCBs using Nortel Networks' patented technology.

Channel Routing allows designers the opportunity to improve the routability of signals out of dense array packages and potentially reduce the number of layers required to interconnect components. It is an algorithm that utilizes blind vias and/or microvias to open up routing channels in dense array packages allowing for improved wiring density. A software layout tool works with Sanmina-SCI's current ECAD tool to allow for auto-routing of designs with high I/O array packages, such as ball grid arrays (BGAs), speeding up the design process.

With this license, Sanmina-SCI is immediately able to offer Channel Routing to all of its board layout and PCB customers.

## Speedline Ships 100th Dispensing System

Speedline Technologies Inc. (Franklin, MA, [www.speedlinetech.com](http://www.speedlinetech.com)) has manufactured and shipped its 100th CAMALOT XyflexPro dispensing system. The dispenser was purchased by Mektec Manufacturing Corp. of Thailand.

Mektec produces flexible printed circuit boards (PCBs) for computers, cameras, printers and mobile phones. The company will use the dispenser for flip chip underfill on flexible PCBs. With this purchase, Mektec operates 15 of the new dispensers, becoming the second largest XyflexPro installation in the world.

The CAMALOT benchtop, stand-alone and in-line systems dispense solder paste, conductive adhesives, encapsulants and flip chip underfill. The dispensing system has a calibration-free linear gantry drive system and a small footprint.

## SMTA International Forms 2004 Technical Committee

The Surface-Mount Technology Association (SMTA, Minneapolis, MN, [www.smta.org](http://www.smta.org)) has announced the formation of the SMTA International (SMTAI) technical committee for 2004. The SMTA will again co-locate its SMTAI conference on Sept. 26-30 with Assembly Tech Expo (ATEXPO) in Chicago, IL, at the Donald Stephens Convention Center.

The 2004 team of industry professionals includes: Gerry Adams; Donald Banks; Dr. Srinivas Chada; Dr. John Evans; Rich Freiburger; Dr. Reza Ghaffarian; Dr. Ken Gilleo; Steve Greathouse; Lisa Hamburg Bastin; Jeff Kennedy; Andrew Mawer; Dr. Julian Partridge; Dr. Viswanadham Puligandla; and Dr. Paul Vianco.

They will be led by conference chair and RadiSys process engineering manager Rob Rowland. Rowland is the primary author of *Applied Surface Mount Assembly*, and he has conducted classes for the SMTA Academy and the SMTA annual conferences at SMI and SMTAI.

## PDA Market Still Evolving

While shipments declined in 2003, personal digital assistants (PDAs) have continued their evolution into multimedia and business data devices, reports In-Stat/MDR (Scottsdale, AZ, [www.instat.com](http://www.instat.com)). The high-tech market research firm finds that most companies in this industry are hoping for a rebound into positive growth, with manufacturers still focusing on growing the market by attracting new users and convincing current users to upgrade.

As the economy improves and IT spending recovers, PDA manufacturers are also hoping for increased shipments to corporations. While growth will only be in the single digits, PDA shipments are forecasted to have a 6.5% compound annual growth rate (CAGR) over the 2003 to 2008 period, with shipments forecasted to reach 10.8 million units in 2004.

"Even with poor economic conditions, there was no shortage of PDA product introductions in 2003," says Cindy McCurley, an industry analyst with In-Stat/MDR. "PPC devices got smaller, prices continued to decline and there was greater availability of products with integrated Bluetooth and Wi-Fi from all manufacturers."

According to the report, palmOne still led in unit shipments, with nearly twice the market share of Hewlett Packard (HP), its closest rival. Also, three distinct tiers of products emerged: low-end, middle-range and high-end devices, with most companies offering devices with a range of functionality and prices.

## Component Orders Rise in January

The monthly order index compiled by the Electronic Components, Assemblies and Materials Association (ECA, Arlington, VA, [www.ec-central.org](http://www.ec-central.org)) moved upward in January, confirming industry optimism during the last four months.

"The index has been moving up steadily," said Bob Willis, ECA president. "It's not the meteoric boom of the late 1990s, but we might never see that again. This is nice, manageable growth that looks like it will be sustained throughout the year."

Willis says recent news substantiates the upward trend that has been seen in the ECA order index during the last four months. For instance, ECA members, such as Vishay Intertechnology, Littelfuse and KEMET, reported substantial revenue increases in Q4 2003 compared to Q4 2002. Also, Reuters reports that major electronics manufacturing services (EMS) companies are seeing stronger demand in 2004, helped by an improving economy and a trend to outsource personal computers, servers, cell phones, handheld computers and other electronics gear.

## What Electronics Manufacturing Will Remain in North America?

The practice of outsourcing electronics manufacturing gained popularity in the 1970s—largely in the U.S., and, today, most of the world's largest contract manufacturers (CMs) are headquartered in North America. Yet the never-ending search for lower cost manufacturing has prompted these companies to shift manufacturing to other regions—primarily to Asia. In fact, electronics manufacturing strategist Technology Forecasters Inc. (TFI, Alameda, CA, [www.techforecasters.com](http://www.techforecasters.com)) estimates that today more than a third of the world's outsourced electronic products are built in China and that by 2007 the portion will increase to half.

For the study, *Electronic Manufacturing Services Industry in North American Market: Current Outlook and Positioning for the Future*, TFI interviewed executives at CMs around the world, as well as name-brand product companies' outsourcing decision makers choosing among regions.

"Although most of the executives we interviewed were able to identify some niche markets or region-appropriate functions likely to remain in North America, without exception every executive predicted further loss of manufacturing jobs on the continent," said TFI president Pamela Gordon. "The keys to CMs retaining as many jobs as possible are to offer multinational manufacturing options—whether at their own facilities or through alliances—and to serve local customers with such close attention as to create a nearly impenetrable barrier to leave."

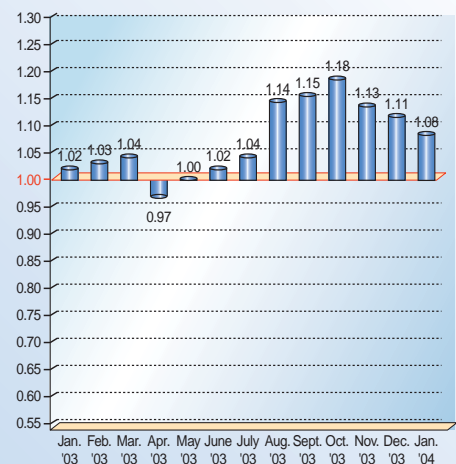
Yet even for the types of business likely to remain, disagreement exists among CMs and their customers regarding the staying power of manufacturing in North America. The chief executive officer at a mid-sized North American CM said, "The strength will be the responsiveness of the industry in North America. This will not be available half way around the world. Cheaper product undelivered does not help the customer's bottom line."

A different response was offered by an outsourcing decision maker at a large North American customer company: "It's mainly price. Mexico, the Dominican Republic and Puerto Rico have some cost advantages, but, if total cost is less elsewhere, then the product won't stay in North America."

## January 2004 Book-to-Bill

The North American IMS/PCB Industry Book-to-Bill Ratio for January 2004 remained positive at 1.08. The ratio is calculated by averaging the index numbers for orders booked over the past three months and dividing by the average index numbers for sales billed during the same period. A ratio of more than 1.00 suggests that current demand is ahead of supply, which indicates probable near-term growth.

Industry sales billed (shipments) in January 2004 increased 28.4% from January 2003, and orders booked increased 19.8% from January 2003.





### News from SMART Group's Lead-Free Seminar

In February, the SMART Group (Bucks, UK, [www.smartgroup.org](http://www.smartgroup.org)) held its 6th annual Lead-Free Seminar at Wycombe Football Club Conference Centre. Delegate numbers were cut-off at 173 a week before the event (another 50 engineers wanted to attend). According to the group, the exhibition area could have sold out four times over.

According to a survey conducted during the conference, most delegates are still conducting investigations on lead free; few had actually built demo or test boards or selected a lead-free alloy, although most expect it to be tin/silver/copper. Help and advice are still needed, including a help desk, hands-on experience and regular lead-free forums.

SMART Group is associated with LEADOUT, a European-funded scheme that will expand the SMART Group PPM Monitoring Project in a lead-free environment. In cooperation with over 20 organizations across Europe, LEADOUT will examine reliability, process change and the training needs of small- and medium-volume organizations.

### Aegis Launches European Subsidiary

Aegis Industrial Software Corp. (Horsham, PA, [www.aiscorp.com](http://www.aiscorp.com)) has formed a wholly owned international subsidiary, Aegis Industrial Software Europe Ltd., headquartered in the UK. With 75 European customers, six value added resellers and 10 European-based machine vendor partners, Aegis is well established in Europe.

The European team is headed by Barrie Murray-Upton, managing and operations director, and Peter Clegg, business development director. Heading up customer support is Christian Teasdel, who brings more than four years' experience in Aegis software through its machine vendor partners.

Aegis Europe will be actively looking for additional representation in many European regions, specifically France and Germany.

The European office can be contacted at +44 1242 233527; or by email: [peterclegg@aiscorp.com](mailto:peterclegg@aiscorp.com).

### FEINFOCUS, GOEPEL Partner for AOI/AXI System

FEINFOCUS (Garbsen, Germany, [www.feinfoocus.com](http://www.feinfoocus.com)), a manufacturer of x-ray inspection systems and tubes, and GOEPEL electronic (Jena, Germany, [www.goepel.com](http://www.goepel.com)), a vendor of electronic and optical test and inspection systems, have combined their 30 years of test and inspection experience with a recent technology partnership.

The new cooperation and development project has resulted in the launch of the OptiCon X-Line inspection system, which was unveiled at Productronica 2003. The new system combines automated optical inspection (AOI) and x-ray inspection technology for the automated analysis of hidden solder joints.

The system, based on the OptiCon series from GOEPEL, provides automatic recognition of shorts and solder bridges, as well as missing solder balls on ball grid array (BGA) and microBGA devices. FEINFOCUS contributed to the development of the system with x-ray tube technology that was implemented according to GOEPEL's specifications. The companies will publish joint technical papers and application findings through the use of the combined technologies.

Would you like to contribute to **Europe WATCH**?  
Contact Robin Norvell at [rnorvell@upmediagroup.com](mailto:rnorvell@upmediagroup.com).

## First Functioning 10 Gbps Backplane Reference Design Demonstrated

At DesignCon 2004, Winchester Electronics ([www.winchesterelectronics.com](http://www.winchesterelectronics.com)) and Interconnect Technologies ([www.littoninterconnect.com](http://www.littoninterconnect.com))—business units of Northrop Grumman Corp. (Los Angeles, CA)—and Xilinx Inc. (San Jose, CA, [www.xilinx.com](http://www.xilinx.com)) demonstrated the world's first implementation of a fully functioning 10 Gbps backplane reference design. This backplane was manufactured using Winchester's SIP1000 I-Platform Passive Interconnect Technology, Interconnect Technologies' printed circuit board design and fabrication expertise and Xilinx Virtex-II Pro X field programmable gate arrays (FPGAs). It was tested using Agilent 10 Gbps test and measurement equipment.

Consistent with the input/output technology detailed in the UXPI standard, the companies demonstrated that 10 Gbps backplanes can be manufactured with off-the-shelf products and services available today.

"The inherent scalability and cost advantages of high-speed serial make this technology imperative for current and next-generation telecommunications, networking and storage applications," said Erich Goetting, vice president and general manager of the Advanced Product Group at Xilinx. "The demonstration proves that technology continues to push the envelope; backplanes can be built today that support 5G, 6.25G and 10G serial rates, allowing tomorrow's backplanes to be built and deployed today."

The platform is a true interconnect platform designed to enable 10 Gbps+ serial data transmission in copper backplanes without the need for active equalization techniques. Conceived as a passive system-level interconnect, the platform seeks to reset the balance between the passive and active elements in what have become known as active interconnect systems. It will deliver a new interconnect technology architecture that provides solutions for ultra high-speed, high-density differential applications.

## IMAPS Announces New Slogan, Four-Tier Technical Program

The International Microelectronics And Packaging Society (IMAPS, Washington, D.C., [www.imaps.org](http://www.imaps.org)) has adopted the slogan: "Everything in electronics between the chip and the system." The slogan will be used to identify the mission and technologies of the society.

During IMAPS 2004, scheduled for Nov. 14-18 in Long Beach, CA, the technical program will be structured around this principle using a four-tier model. The first tier will include microelectronics services and backend wafer fab; the second tier will be first-level packaging (single chip and multichip); tier three is second-level packaging (board level) and tier four is system-level packaging (box or product level).