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2014 Should Be a Better Year

In *MMI's* annual outlook, the newsletter tries to get a sense of how things will go for the EMS industry in the coming year. This is an imprecise exercise, to say the least. At the beginning of last year, there were several positive forecasts including the **International Monetary Fund's** projection of 3.6% growth for global economy and **World Semiconductor Trade Statistics'** prediction of 4.5% growth for semiconductor revenue worldwide. Mid single-digit growth seemed to be within reach for the outsourcing space in 2013. But it wasn't to be. For the first nine months of 2013, sales of 20 of the largest EMS providers and ODMs declined 3.7% year over year, while revenue from the top-11 EMS providers fell 4.5%. For the full year, trade association **IPC** estimates that total EMS plus ODM revenue went down by about 4.9% from 2012.

But the EMS industry may have performed better than that estimate. EMS giant **Hon Hai Precision Industry** should finish the year with annual growth of about 1.2% based on monthly statistics, and 2013 sales of the six largest US-traded EMS providers are projected to decline by just 1.2%. So for the top-11 EMS providers at least, there's a good chance that combined 2013 revenue will be roughly flat, give or take, versus 2012.

Whether or not 2013 turns out to be an essentially flat year for the EMS industry, the year has been a disap-

pointment given positive forecasts on the macro level. For 2014, IMF and WSTS forecasts are similar to those that were in place a year ago for 2013. Does this mean that the EMS industry will be let down again?

Not necessarily. For one thing, the global economy in 2013 grew at 3%, not 3.6% as was projected by the IMF a year ago. On a global scale, a 60 basis-point shortfall is significant. World output in 2013 actually shrank by 10 basis points from the previous year, not the sort of macro environment that OEMs like to see. This year could be a different story if IMF projections hold up. The IMF is forecasting global growth of 3.7% for 2014, up a hefty 70 basis points from last year. What's more, the IMF expects advanced economies to expand by 2.2%, up from 1.3% in 2013, with the US economy forecasted to grow at 2.8% versus 1.9% last year. Things are looking up for the euro zone as well. "The euro area is turning the corner from reces-

sion to recovery," the IMF stated, and its outlook calls for euro zone growth of 1% in 2014. Emerging and developing economies will gain 40 basis points of growth this year for a GDP increase of 5.1%, according to the IMF, although China's growth will slow a bit from 7.7% to 7.5%. An improving global economy should be good news for the EMS industry in 2014, even though projected growth is not strong by IMF standards.

For 2014, WSTS is forecasting that the worldwide semiconductor market will expand by 4.1%, compared with 4.4% growth last year. If the market's 2013 growth did not correlate with the absence of revenue growth in the outsourcing space, why would a 2014 projection carry any weight for an EMS/ODM outlook? The answer lies in the fact that the 2013 increase was driven mainly by double-digit growth in the memory product category. In another take on the semiconductor business, **Gartner** estimates that

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Outlook

worldwide semiconductor revenue grew 5.2% in 2013, but outside of memory, the growth in Gartner's model was a mere 0.4%.

WSTS's 2014 growth projection appears to be a more representative number than the 2013 figure published by WSTS in that all product categories and regions are forecasted to grow under the assumption of a macroeconomic recovery throughout 2014. A 4.1% growth projection for the semiconductor market in 2014 may not be a completely accurate reflection of end market demand this year, but *MMI* believes it does point to a modest increase in semiconductor demand if the projection comes close to actual market performance.

The IMF's outlook for a pickup in global growth meshes with WSTS's forecast for a modest increase in the semiconductor market. Both forecasts would lead *MMI* to believe that the EMS/ODM outsourcing space will see some sort of increase in end market demand in 2014. That in turn would lead *MMI* to believe that 2014 will be an improvement over 2013 for the EMS industry. The industry should not only benefit from a bump in end market demand but, perhaps more important, will cash in on new business won in 2013. Still, there are too many moving parts to come up with a specific forecast for the EMS industry in 2014 other than to say that an improving macro climate combined with new business should yield low to moderate growth for the industry this year.

With an outlook for low to moderate growth serving as a backdrop, here are six EMS industry trends worth watching in 2014. They appear in no particular order.

Manufacturing in the US will receive more attention this year, but Mexico will also benefit from the megatrend toward regional production.

It's no secret that more and more OEMs are reconfiguring their supply

chains to accommodate regional manufacturing – making a product in a region for that region. This has been going on for several years. In North America, the regional megatrend means more EMS in the US and Mexico. This year, the US will garner more attention in the wake of highly publicized decisions by **Apple** and **Motorola Mobility** to have Mac Pro desktops and Moto X smartphones respectively assembled in Texas by **Flextronics**. Not only that, EMS giant **Hon Hai Precision Industry** intends to move production of 60-in. and 70-in TVs to the US from Mexico and increase its investment in the US by a factor of 10 this year, *Reuters* reported, citing Taiwanese media. So production of high-volume consumer-type products is no longer out of the question for the US. Will this activity usher in a stampede of production transfers from China to the US? *MMI* thinks not, but it will give EMS providers in the US more ammunition for convincing customers to put at least some production in the US.

US manufacturing attracts attention in part because OEMs often want their US customers to know when OEM brands are made in the US. That's a legitimate selling point. But not to be overlooked is Mexico, which will continue to pull in more programs for US delivery despite OEM reluctance to publicize the fact.

The rise in regional manufacturing could have some unintended consequences.

In a perfect world, regional manufacturing centers would be served strictly by suppliers in the region, preferably close by. Unfortunately for North America and Europe, supply base ecosystems are lacking in such areas as ICs and displays. On the other hand, Asia does possess an extensive and well-oiled supply base, one of the chief advantages of manufacturing in that region. The dirty secret behind an increase in regional manufacturing is

the need to import some parts from Asia. So in a growing number of cases, instead of importing finished products from EMS providers in Asia to supply North America or Europe, OEMs will find their EMS providers in North America or Europe bringing in components and/or assemblies that can't be sourced in the region. Distributors can obviously help with obtaining such parts. But in *MMI*'s opinion, this need will make supply chains more complex and more vulnerable to disruption. Now, the lack of a single part sourced from Asia could bring an entire supply chain to a screeching halt.

As a result, OEMs and their EMS providers will lean on suppliers to take a more regional approach in allocating their resources.

More and more companies in China will curb unlimited overtime, increasing upward pressure labor costs. Last year, **Foxconn Technology Group** did not achieve its goal of a 49-hour work week in China as mandated by Chinese law. But the company did make progress in reducing working hours after the **Fair Labor Association's** 2012 investigation of three Foxconn facilities found that working hours exceeded the standard of 60 hours per week endorsed by both the FLA and the **EICC** (Electronic Industry Citizenship Coalition). The FLA's final assessment found that Foxconn is largely observing a 60-hour work week, which sends a message to other companies in China, especially those who supply EICC member companies. EICC members have already signed on to the 60-hour work week; now their suppliers in China will increasingly be held to that standard. As the 60-hour work week spreads through supply chains in China, suppliers will be forced to bring in more workers to achieve the same amount of production.

As Foxconn nears compliance with the 49-hour work week, the bar will be raised again for other suppliers, but

probably not in 2014.

Apple is single-handedly fueling the growth of the hybrid provider model.

Within the outsourcing space, EMS providers and ODMs have been joined by a third class of contract manufacturer, the hybrid provider, which does substantial amounts of both EMS and ODM work. Currently, the most prominent hybrid provider is **Pegatron**, one of the three largest CMs worldwide, which owes much of its growth and EMS revenue to **Apple**. It is said that Pegatron serves as a second-source assembler of iPhones and iPads (Foxconn being the primary one). Now, Apple is reportedly adding more suppliers to its stable of contract manufacturers to do basically EMS work, and these are companies that normally function as ODMs. According to published reports, Apple is bringing on **Wistron** for iPhone production and **Compal Communications** (to be merged into **Compal Electronics**) for iPad mini assembly. Furthermore, *Dig-*

imes reported that **Quanta Computer** will build a large-screen iPad, and that Quanta and **Inventec** will manufacture a new Apple device for the wrist.

By awarding these ODMs work that is essentially EMS, Apple is giving them an entrée to compete on the EMS side. Large EMS providers should take note.

More mixing of EMS and microelectronics will take place.

Microelectronics manufacturing, traditionally in the form the thick- and thin-film hybrids, has been around as long as SMT assembly, maybe even longer, but the two technologies have been largely kept apart in the outsourcing world, microelectronics CMs on one side and EMS providers on the other. Now that's changing. A prime example is EMS provider **Plexus**, which is tripling the size of its Boise Microelectronics Center of Excellence in Nampa, ID. Another EMS provider, **Flextronics**, has also positioned itself as a microelectronics manufacturer

with its 2012 acquisition of **Stellar Microelectronics**. But the merging of EMS and microelectronics is not confined to EMS providers adding microelectronics capabilities. In at least one case, a microelectronics manufacturer, **Natel Engineering**, purchased an EMS provider, **EPIC Technologies** (Oct. 2013, p. 5).

Microelectronics capabilities give an EMS provider the ability to shrink customer designs and further penetrate markets such as defense and aerospace and healthcare.

This year, many EMS providers should have the opportunity to run their facilities more efficiently.

If 2014 turns out to be a low or moderate growth year, providers will be in a position to run their facilities at higher loading for two reasons. First, not a lot of capacity was added last year in the face of customer uncertainty and weak demand from end markets. Second, a number of providers have been restructuring, which removes excess capacity from the system.

Some Quarterly Results

Jabil. For its fiscal Q1 ended Nov. 30, 2013, Jabil reported sales of \$4.61 billion, down 4% sequentially and 0.6% year over year. Non-GAAP EPS amounted to \$0.51, down 9% sequentially and 16% year over year. Sales came in near the high end of guidance (\$4.35 billion to \$4.65 billion), while non-GAAP EPS fell near the low end of guidance (\$0.50 to \$0.60). A higher tax rate had a negative impact on the EPS result.

GAAP operating income was \$172.7 million, or 3.7% of revenue, compared with \$170.3 million, or 3.6% of revenue, in the year-ago quarter. GAAP net income attributable to Jabil totaled \$117.9 million, or \$0.57 a share, up from \$105.8 million, or \$0.51 a share, in the year-earlier period. GAAP EPS rose 12% year on year and exceeded guidance of \$0.25 to

\$0.35 a share. Included in earnings were restructuring charges of \$21 million and a \$25-million boost to income, the latter reflecting the reversal of performance-based stock compensation expense.

Non-GAAP operating margin equaled 3.8%, unchanged from the prior quarter but down 40 basis points from a year earlier. Non-GAAP operating income was \$177.1 million, down 2% sequentially and 8% year over year.

At 50% of total sales, Diversified Manufacturing Services revenue grew 5% from the year-ago quarter as a result of adding revenue from Jabil's recent **Nypro** acquisition. Non-GAAP operating margin for the DMS segment stood at 4.9%, level with the prior quarter's result but down 90 basis points from a year earlier.

Enterprise and Infrastructure business (29% of sales) declined 6% year

over year in keeping with the overall macro environment. The E&I segment produced a non-GAAP operating margin of 3%, down 30 basis points sequentially but up 60 basis points year over year.

Revenue from Jabil's High Velocity segment (21% of sales) dropped 5% from a year earlier, as strength in printing and set-top boxes offset to some degree reduced handset volumes. The segment's non-GAAP operating margin was 2.6%, up 10 basis points sequentially but down 60 basis points year on year. Jabil expects the wind down of its **BlackBerry** relationship to negatively impact the segment's non-GAAP operating margin on a go-forward basis (Oct. 2013, p. 3).

With cash flow from operations at \$118 million and capital expenditures at \$195 million, free cash flow in fiscal Q1 went negative. However, the company anticipates free cash flow of

\$400 million to \$500 million for fiscal 2014.

For fiscal Q2 ending in February, Jabil expects revenue to drop about 17% year over year to within a range of \$3.5 billion to \$3.7 billion. Fiscal Q2 guidance also includes non-GAAP operating income of \$40 million to \$80 million, non-GAAP EPS of \$0.05 to \$0.15, and a GAAP loss per share of \$0.20 to \$0.06. This guidance leaves out Jabil's aftermarket services business, which the company intends to sell (Dec. 2013, p. 1). Calling the guidance disappointing, CEO Mark Mondello cited three events that together will have an impact on fiscal 2014: the sale of the AMS business (operated under DMS), Jabil's unforeseen disengagement with BlackBerry, and an unexpected shift in demand from a DMS customer. Jabil assumes the demand change to be temporary. At least two analysts believe the unidentified customer is **Apple**.

On a year-over-year basis, Jabil is forecasting that revenue in both the DMS and High Velocity segments will fall 25% in fiscal Q2, while E&I sales will remain consistent.

Plexus. For its fiscal Q1 ended Dec. 28, 2013, the company recorded sales of \$534 million, down 6% sequentially as sales were impacted by a \$40-million revenue drag resulting from the company's previously announced disengagement with **Juniper Networks**. Still, revenue was up slightly by 0.6% from the year-ago period. Non-GAAP EPS stood at \$0.61, down 9% sequentially but up 30% year over year. Both revenue and non-GAAP EPS came in near the midpoint of guidance for each.

GAAP net income totaled \$17.7 million, compared with \$24.5 million in the prior quarter and \$16.6 million a year earlier. GAAP EPS, which included \$0.10 from Plexus' Fox Cities, WI, consolidation, amounted to \$0.51, down 28% sequentially but up 9% year over year.

Networking/Communications sales fell 17% sequentially in line with expectations. Excluding Juniper from the comparison, revenue in this sector increased 4% quarter on quarter as a result of new program ramps and growth of Plexus' top customers in the sector. In the Healthcare/Life Sciences sector, sales grew 4% sequentially, which was slightly above an expectation of flat sales. Industrial/Commercial business dropped 5% from the prior quarter in line with expectations, and the Defense/Security/Aerospace sector was up 1%, a result that was softer than expected.

Gross margin for fiscal Q1 was 9.6%, unchanged from both the prior quarter and the year-earlier period. Non-GAAP operating margin came in at 4.8%, in line with expectations and up 10 basis points sequentially and 80 basis points year over year. Plexus attributed the year-over-year improvement to progress made in operational initiatives, which are designed to return the company to its operating margin goal of 5% as it exits fiscal 2014.

The company reported negative free cash flow of \$18 million for the quarter, mainly due to investments in inventory and equipment and the return of \$26 million in excess cash deposits to Juniper.

During the quarter, Plexus won 29 new manufacturing programs expected to generate about \$205 million in annualized revenue when fully ramped, a result that was well above the company's quarterly target of about \$150 million. Trailing four quarter manufacturing wins of \$715 million were 32% of trailing four quarter sales versus the company's goal of 25%. In addition, the company landed about \$17 million in engineering business.

Guidance for fiscal Q2 (the March quarter) calls for revenue of \$535 million to \$565 million and non-GAAP EPS of \$0.57 to \$0.63. The midpoint of revenue guidance suggests that sales will rise about 3% sequentially, while

the EPS guidance is the same as what was provided for fiscal Q1. Plexus expects a non-GAAP operating margin of 4.4% to 4.6%.

On a sequential basis, Plexus is projecting a high single-digit percentage decline for Networking/Communications in fiscal Q2, flat sales for Healthcare/Life Sciences, low teens percentage growth for Industrial/Commercial, and a percentage increase in the low to mid 20s for Defense/Security/Aerospace.

At present, the company anticipates modest single-digit growth for fiscal 2014.

News

Kimball to Spin Off EMS Unit

The board of directors at publicly held **Kimball International** (Jasper, IN) has approved a plan to spin off the company's EMS business as an independent publicly traded company. When separated, the EMS business, now known as Kimball Electronics Group, will become Kimball Electronics, while Kimball's other line of business in furniture will operate as Kimball International. The board expects the spin-off to be completed in about 8 to 12 months.

James Thyen, Kimball's president and CEO, gave three reasons for the spin-off. First, it will allow both companies to allocate capital and deploy resources in a more focused way, while executing strategies that will be most effective within their particular markets. At the same time, both will be able to optimize their capital structures in a manner that enables each to make the necessary investments for the future and maximize shareholder value. Second, both companies will continue to market their well-known brands and leverage the capabilities of very experienced people. Each company will become more nimble and be better

able to capitalize on market opportunities that create sustainable growth and enhance shareholder value. Third, the spin-off will be tax-free to current shareholders and provide them with more flexibility to maintain or enhance their investment in more focused companies with distinct growth opportunities.

In addition, the board believes that separating into two public companies will enable investors to value Kimball's different businesses separately, creating value and opportunities for both companies and their shareholders.

Upon completion of the spin-off, Thyen will retire from his role as Kimball's president and CEO, and Douglas Habig, chairman of the board, will also retire from the company. Donald Charon, currently president of Kimball Electronic Group, will serve as chairman of the board and CEO of the new EMS company Kimball Electronics. Kimball's CFO, Robert Schneider, will become chairman and CEO of Kimball International.

Kimball's EMS business, a top-20 EMS provider in 2012, serves the automotive, medical, industrial and public safety markets. Following the spin-off, Kimball Electronics is expected to have annualized revenue of about \$700 million on a pro forma basis and maintain a strong balance sheet.

Execution of the transaction requires further work on structure, management, governance and other significant matters. Among conditions that must be satisfied for the spin-off is a conversion from two classes of stock to a single class.

Deal Expands Footprint of Texas-Based Provider

VirTex Enterprises, an EMS provider based in Austin, TX, has enlarged its geographic footprint by acquiring another EMS provider, **MTI Electronics**, located in Menomonee Falls, WI, which is a suburb of Mil-

waukee. With the expanded footprint, VirTex is ideally located to provide electronic assembly services throughout the Midwest and Southwest regions of the US, the company stated.

"MTI Electronics' customer base and focus is very complementary to that of VirTex," said Brad Heath, CEO of VirTex. "In MTI, there is a tremendous opportunity to cross-sell services and leverage the smart sourcing concept that VirTex has pioneered with its Austin and Juarez facilities."

A provider of turnkey contract manufacturing services since 1978, MTI specializes in the industrial, automotive, defense and aerospace, medical and homeland security markets. MTI employs about 100 people, the *Austin American-Statesman* reported.

MTI will become a wholly owned subsidiary of VirTex and operate as such. "There are no planned changes to the operating entity or personnel," said Heath.

Founded in 1999, VirTex offers turnkey solutions including design, manufacturing, supply chain management and fulfillment services. VirTex generated sales of nearly \$30 million in 2013, and the deal will boost the company's annual sales to more than \$50 million, Heath told the newspaper.

VirTex did not disclose what it paid for MTI.

Acquisition plan reported... EMS giant **Hon Hai Precision Industry** (New Taipei, Taiwan) intends to acquire **Socle Technology** (Hsinchu City, Taiwan), a provider of SoC (system on a chip) design and implementation services, Taiwanese news site *Digitimes* reported, citing industry sources.

Alliances... **Flextronics** (Singapore) and **Powermat Technologies**, developer of wireless charging technology, have teamed up to embed wireless power in a variety of electronics. Under an agreement between the two

companies, Flextronics has invested in Powermat, and the parties will collaborate closely on the design, manufacturing and go-to-market of wireless charging solutions for mobile OEMs. ...EMS provider **Surface Mount Technologies, Inc.** (Anaheim, CA) and **Eruston** (Irvine, CA), a manufacturer of press-fit motherboards and enclosures, have joined forces to offer complete turnkey manufacturing.

Some new business... **SGI** (Milpitas, CA), a company in the business of high performance computing, recently finalized terms under which **Jabil** (St. Petersburg, FL) will serve as SGI's primary EMS and supply chain management provider. This outsourcing will take the form of a "manage in place" model, whereby Jabil will buy SGI's primary manufacturing facility in Chippewa Falls, WI, and certain other manufacturing assets for about \$6 million in cash. SGI expects that about 130 of its manufacturing personnel in Chippewa Falls will transfer to Jabil. The purchases are expected to close in February....Hon Hai Precision Industry is working with **Mozilla** on a new tablet running on Mozilla's Firefox operating system, according to *Digitimes*. The two companies reportedly formed an alliance for product development earlier this year (June 2013, p. 7)....A new smartwatch from **Nike** is in pilot production at Flextronics, reported *Digitimes*, which cited supply chain sources in Taiwan. Also, **Imergy Power Systems** (Fremont, CA), which specializes in a vanadium-based flow battery system, has entered into an agreement with Flextronics to design modular flow batteries for energy storage. The two companies are also considering expanding their relationship to include a manufacturing agreement for the flow batteries. ...**Pegatron** (Taipei, Taiwan) has gained PlayStation 4 business from **Sony** and orders from **Apple** for its iPad mini with Retina display, supply

chain sources told *Digitimes*. . . . **Cosworth** has awarded Kimball Electronics Group an automotive contract, which includes manufacturing of PCB assemblies as well as full system assembly of the camera and telemetry system used in the Cosworth Performance Data Recorder for **General Motors'** Corvette Stingray. In addition, Kimball Electronics recently received an automotive contract from **Brose Automotive** (Coburg, Germany) in an expansion of the relationship between the two companies. The contract includes production of PCB assemblies for electronic controls used in power open tailgate or lift gate assemblies. Manufacturing for both automotive contracts, which are multiyear, multimillion-dollar programs, will take place in Jasper, IN. . . . **Kitron** (Billingstad, Norway) has signed an agreement to expand its relationship with **Maquet Critical Care**, the largest subsidiary of a global medical technology company – Sweden's **Getinge Group**. Providing for greater use of Kitron's global operations, the agreement covers complex production of medical equipment including PCBs, mechanical assembly and testing. Kitron has also obtained more business from **Husqvarna Group** (Stockholm, Sweden), which describes itself as the world's largest producer of outdoor power products. Husqvarna has decided to renew its contract with Kitron and has increased the contract scope by adding new products. Annual revenue through 2017 from the new EMS contract could be in the range of NOK 25 million (\$4.0 million), twice current levels. Manufacturing will occur at Kitron's factory in Lithuania, while some technical services will be provided by Kitron Sweden close to Husqvarna's facility in Husqvarna, Sweden. . . . **Premier Holding Corporation** (Tustin, CA) has announced that its patent licensee, **Muni-Fed Energy**, has selected **Probe Manufacturing** (Irvine, CA) to build Premier's propri-

etary technology for saving energy used by industrial lamps and streetlights. . . . **Davtron** (Emerald Hills, CA), which designs and manufactures avionics instruments, has contracted **PIRANHA EMS** (San Jose, CA) to provide a range of services from layout through prototype to assembly and final integration.

Update on the BlackBerry-Foxconn relationship. . . . Last month, *MMI* reported that **BlackBerry** and Hon Hai subsidiary **FIH Mobile**, which is part of the **Foxconn Technology Group**, entered into a partnership, under which Foxconn will jointly develop certain new BlackBerry devices and manufacture new devices in Indonesia and Mexico, with the initial focus being a consumer smartphone for Indonesia and other fast-growing markets (Dec. 2013, p. 8). Anyone following Foxconn knows that Foxconn does not yet have a factory in Indonesia. Until Foxconn has a facility up and running in Indonesia, the group will produce BlackBerry handsets in China, *Reuters* reported last month.

Facility investments. . . . Last month, *Digitimes* reported that Hon Hai intends to set up an R&D center in Hsinchu, Taiwan, to support Hon Hai's display and touch screen technology R&D in Japan (July 2013, p. 7). . . . According to another, more recent *Digitimes* report, **Cal-Comp Electronics** (Bangkok, Thailand) intends to invest up to NT\$1.7 billion (\$56 million) this year to expand capacity in Thailand and Brazil and add up to 8,000 workers between the two countries.

Facility project stopped. . . . Kitron has decided to end a project for establishing a common distribution center for the company. The project proved to be costlier and more complex than originally assumed and would have increased operating costs going forward, the company said.

Legal actions. . . . In a lawsuit filed last month, **Xilinx** (San Jose, CA), a provider of programmable ICs, alleges that Flextronics has engaged in a practice of pretending that it is buying Xilinx parts on behalf of preferred Xilinx customers in order to obtain the parts at a discount. According to the complaint, Flextronics has been selling those parts to other customers at higher prices and pocketing the difference. Xilinx also claims that Flextronics inflated purchase quantities in order to sell to surplus product to unauthorized purchasers at higher prices. In addition, Xilinx alleges that Flextronics was dealing in unreliably marked and potentially defective gray market and counterfeit Xilinx chips, at times selling them to authorized Xilinx customers. The lawsuit accuses Flextronics of making unauthorized sales of Xilinx devices to unknown purchasers in Asia in violation of US export control laws. Asked to respond to the lawsuit, Flextronics spokesperson Renee Brotherton said, "We are investigating the allegations. As part of company policy, we do not comment on any litigation aside from what we may be required to disclose in SEC filings. However, I can assure you that not only are we committed to complying with all the laws and regulations in every jurisdiction where we operate, but we are also deeply committed to operating with the highest standards of ethics and integrity." . . . Taiwan authorities have charged several former Foxconn employees with taking bribes from suppliers, *The Wall Street Journal* reported. About a year ago, Foxconn disclosed that it was investigating allegations that a number of Foxconn employees had received illegal payments from supply chain partners. Foxconn said it had brought in law enforcement officials without specifying the officials' country (Jan. 2013, p. 8). Reportedly, Chinese authorities were also involved in the bribery probe, having detained one suspect

who was returned to Taiwan. There's no word on whether anyone connected with suppliers was charged.

New directors with industry experience... Flextronics has appointed Marc Onetto to its board of directors. He was senior VP of worldwide operations and customer service at **Amazon** from 2006 to 2013. Onetto also has EMS experience, having served from 2003 to 2006 as executive VP of worldwide operations for **Solectron**,

which was acquired by Flextronics in 2007. Before coming to Solectron, he spent 15 years at **GE**...**Sanmina** (San Jose, CA) has also added a director with EMS experience. Recently tapped for the company's board is Michael Clarke, president and CEO of **Nortek**, a manufacturer of air management, security and technology products. He was group president of Integrated Network Solutions at Flextronics from 2005 to 2011 and president and GM for Sanmina's Enclosure Systems Di-

vision from 1999 to 2005. Another recent addition to Sanmina's board is Gene Delaney, a retired executive from the communications industry, who worked for **Motorola Solutions** and predecessor company Motorola for 35 years.

Management change... Don Doody, executive VP of **IEC Electronics** (Newark, NY), has voluntarily resigned from the company. IEC said Doody gave up his position in search of a better work-life balance.

Last Word

Interns vs. Apprentices

New blood is the lifeblood of any industry. But China's internship model is not the right way to find and train students for the EMS industry because the China model has shown itself to be vulnerable to abuse. Instead, the industry should consider Germany's apprenticeship system, which has become a major source of young, skilled workers for Germany's vaunted industrial base.

On paper, China's internship model would seem to be an ideal means for attracting vocational students to electronics manufacturing. After all, partnerships between schools and companies can provide students with opportunities to gain practical work experience and on-the-job training in industries such as EMS. And companies like **Foxconn Technology Group** pay students as if they were full-time workers.

Unfortunately, internship programs in China don't always have the student in mind. All too often, internships arranged by a school become a prerequisite for graduation. In such cases, students are not free to choose an internship program. Though students might be free to opt out of their internship program, they won't graduate if they do so. In essence, these internships are compulsory, and mandatory internships are on the rise in China, according to a recent report by *China*

Daily. When a school receives management fees or other rewards under its partnership with a company, that school has an incentive to ensure a supply of interns to the company.

Another abuse centers on how these students are used. *MMI* recently carried reports that engineering student interns were placed in **Sony** PlayStation lines at Foxconn's Yantai, China, campus (Oct. 2013, p. 1). Performing a single repetitive task on a production line cannot be construed as training for an engineering student, not to mention the fact that there were instances of students working overtime in violation of Foxconn's own policies.

Foxconn is not the only company to use interns on production lines. With labor shortages becoming more and more frequent in China, interns offer companies a tempting means for supplementing their workforce. *Digitimes* recently reported that more than 80% of notebook ODM workers in Chongqing, China, are students from local vocational schools. If this report is true, then large numbers of interns are working on ODM production lines there. It is unknown whether or not schools have made this ODM work a requirement for graduation. Either way, working eight hours a day on a production line is not what one would call an enlightened educational experience, especially if the student is 16 or 17 years old. Most parents in the US and Europe would never allow sons or daughters of that age to serve as stand-

ins for production-line workers.

It is quite telling that Foxconn ended its internship program early last year at three Foxconn facilities that manufacture **Apple** products. After the **Fair Labor Association's** investigation of those facilities in 2012, Foxconn agreed, among other things, to reform its internship program. Despite taking corrective actions to fix the program, Foxconn opted not to continue it at those facilities. What's more, *Financial Times* reported in October 2013 that Foxconn had reduced the number of students in its internship program by more than 50% over a 12-month period. If Foxconn, a company that has reformed its internship program in accordance with FLA recommendations, is scaling back its internship program, that doesn't speak well of China's internship model. Recall that Foxconn ran into internship problems at its Yantai site, not once but twice in a 12-month period (October 2013, p. 1).

To attract and train students, the EMS industry should be looking to Germany, not China, for guidance. Germany's apprenticeships, which are highly regulated, are set up so that a student's work experience will coincide with the skill that he or she is pursuing. In Germany's dual education system, vocational students spend part of their time in school and the rest of it at a company that provides training in the student's chosen occupation. Companies that take on these students are

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obviously in a position to hire them after they complete the program and pass the requisite tests. No only are companies getting young workers fully certified in a particular skill, these workers are already well versed in company operations.

Apprenticeship programs are not limited to Germany; France and some other European countries have set up their own systems for training apprentices. While apprenticeships are uncommon in the US, the Obama Administration has introduced a \$100-million program to provide high school students with industry-relevant education and skills.

To see how apprenticeships could apply to the EMS industry, look at Germany's **Zollner**, a top-15 EMS provider that is well-versed in the German system. Zollner on its website lists 12 different apprenticeships offered by the company ranging from electronics technician for devices and systems to warehouse logistics specialist. The company also has a work-study program for college students. As of October 2013, Zollner employed 251 young people between the two programs.

Sure, it's faster and cheaper to hire skilled technicians that are already trained. But this isn't always possible in areas where the local labor pool lacks the requisite skills or where

industry expansion has dried up the supply of skilled technicians. But expediency aside, bringing in vocational students is a good way of assuring a flow of young, skilled workers to EMS rather than some other industry.

Of course, it's expensive for a company to train vocational students over many months. That may well be the reason that apprenticeships are not a household word in the EMS industry. Then there's the argument that the investment in a person's training goes down the drain if that person leaves the company after completing the apprenticeship. Another drawback for EMS potentially lies in the training for a single occupation. Providers may want some of their skilled employees cross-trained, which requires more flexibility than in a traditional apprenticeship.

But there's nothing that says EMS providers can't develop their own model for vocational training. For one thing, training need not be restricted to high school students. Two-year colleges offer another source of students that could be turned into skilled technicians. And there's nothing that says students can't be cross-trained as long as they have the educational foundation to master more than one discipline. As for the cost of training, investing in people should be every bit as important as investing in equipment.

To protect training investments, trainees could be required to sign contracts obligating them to stay at a company for a certain period if offered a full-time position.

German-style apprenticeships may not be the complete answer across the EMS industry given the differences in size, financial resources and corporate culture that exist among companies in the industry. But these industry-specific training programs offer at least a starting point for those providers looking to infuse youth into their workforce.

Editor and Publisher: John Tuck
Circulation Director: Ann Connors
Board of Advisors: Michael Thompson, CEO, I. Technical Services; Ron Keith, CEO, Riverwood Solutions; Andy Leung, CEO, VTech Communications Ltd.

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