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inside the contract manufacturing industry

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Exceptional Growth for the Top 25 EMS/ODM Firms in 2018

For the 13th time in the past 16 years, combined revenue for the top 25 contract manufacturers (EMS providers and ODMs) grew in 2018. Last year, top 25 revenue totaled \$428 billion, up 9.7% from 2017 (Chart 1). Because the top 25 group accounts for 80–90% of revenue in the outsourcing space, this upward tick in revenue serves as an approximate indicator of how the contract manufacturing market behaved in 2018.

Perhaps more encouraging than the increase in growth was the realization that the top 25 as a whole performed well and increased more than the global economy, which grew at a 3.6% rate in 2018, according to the **International Monetary Fund**. Longer-term industry attractiveness is raised by a plethora of near-term catalysts. This suggests that expectations have modestly risen, while the fundamental outlook could become more receptive due to rapid growth in key end markets such as telecom infrastructure, computing, consumer/smartphones, and semiconductor capital equipment. High-complexity/low-volume end markets (e.g., industrial/medical/test) appear to have garnered solid results and outlooks as evidenced by the high concentration of assemblies in the top 48 market percentages (Table 2). In addition, M&A activity has picked up within the supplier (semiconductor) and customer bases, (e.g., Nokia/Alcatel-Lucent) and this

could further shift power away from the EMS sector.

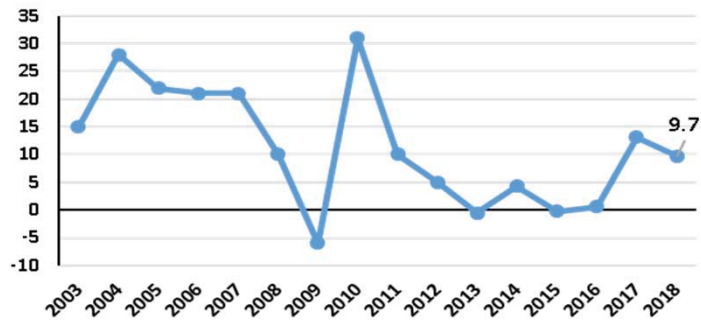
Annual sales growth for the top 25 over the last 16 years has averaged 11.5%. But annual results for the past three years haven't been anywhere near double digits except in 2017, when the growth rate was 13.1%. Once again, the question arises: Are the days of double-digit growth now behind the top 25 and, by extension, the entire contract manufacturing sector?

Hybrid Providers Outgrow EMS and ODM Players

The top 25 contract manufacturers for 2018 consist of three companies that rely on both EMS and ODM work—classified as Mix/Hybrid here. The list contains 14 EMS providers and eight companies that mainly rely on ODM work. In 2018, the Mix/Hybrid group increased more than the EMS side by 180 percentage points.

Combined revenue for the EMS providers increased by 10.7%, and sales on the ODM side increased by

Chart 1: Top 25 Growth Rates (%)



7.0% (Chart 2, p. 4). It's no surprise that 2018 was a smooth year overall for both the EMS and Mix/Hybrid groups, given their reliance on the PC market and the high growth experienced in the smartphone market.

For 2018, EMS providers contributed 59.6% of top 25 sales, up from 55.7% in 2017. The primary reason for the share increase was due to sales increases at **Jabil Circuit** and **USI**. Combined revenue on the EMS side amounted to \$255.3 billion, while the Mix group brought in EMS sales of \$57 billion, or 13.3% of the total.

As shown in Table 1 on the next page, *MMI* ranked the top 25 contract manufacturers in order of calendar 2018 sales in US dollars. It was more challenging to make the 2018 edition of the top 25 than the previous year's version. A place in the top 25 required a minimum of \$1.35 billion, or \$250 million above the 2017 cutoff

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Table 1: Top 25 Contract Manufacturers (EMS and ODM) for 2018

Business Model	Company	Headquarters	EMS Sales Calendar 2018 (US\$M)	Rank by Sales for 2018	EMS Sales Calendar 2017 (US\$M)	EMS 2017 Rank	Growth '17-'18 in US\$ (%)
EMS	Hon Hai Precision Industry (Foxconn)	New Taipei, Taiwan	171,700	1	154,900	1	10.8%
Mix	Pegatron	New Taipei, Taiwan	44,510	2	39,262	2	13.4%
ODM	Quanta Computer	New Taipei, Taiwan	34,120	3	33,589	3	1.6%
ODM	Compal	New Taipei, Taiwan	32,118	4	27,545	4	16.6%
EMS	Flex	San Jose, CA	26,491	5	24,893	6	6.4%
EMS	Jabil Circuit	St. Petersburg, FL	23,016	6	19,545	7	17.8%
ODM	Inventec	New Taipei, Taiwan	16,824	7	15,378	8	9.4%
ODM	TPV Technology	Hong Kong	9,150	8	9,585	9	-4.5%
ODM	Delta Electronics	New Taipei, Taiwan	7,867	9	7,354	10	7.0%
EMS	Sanmina	San Jose, CA	7,553	10	6,893	12	9.6%
Mix	Wistron	Taoyuan, Taiwan	7,370	11	7,425	5	-0.7%
ODM	Lite-On	New Taipei, Taiwan	6,874	12	7,058	11	-2.6%
EMS	Celestica	Toronto, ON, Canada	6,633	13	6,111	13	8.5%
ODM	Qisda	New Taipei, Taiwan	5,174	14	4,501	15	15.0%
Mix	New Kinpo Group (est.)	New Taipei, Taiwan	5,137	15	4,538	14	13.2%
ODM	MicroStar	New Taipei, Taiwan	3,934	16	3,500	16	12.4%
EMS	USI	Shanghai, China	3,405	17	2,910	17	17.0%

EMS	Plexus	Neenah, WI	2,935	18	2,570	19	14.2%
EMS	Venture	Singapore	2,575	19	2,901	18	-11.2%
EMS	Benchmark Electronics	Scottsdale, AZ	2,566	20	2,467	20	4.0%
EMS	Shenzhen Kaifa	Shenzhen, China	2,205	21	1,936	21	13.9%
EMS	Zollner	Zandt, Germany	1,820	22	1,560	22	16.7%
EMS	SIIX Corp.	Osaka, Japan	1,593	23	1,468	23	8.5%
EMS	Fabrinet	Grand Cayman, Cayman Islands	1,458	24	1,432	24	1.8%
EMS	Integrated Micro-Electronics, Inc.	Laguna, Philippines	1,350	25	1,090	n/a	23.9%
	Total		428,378		390,411		9.7%

Companies with multiple businesses were classified as EMS or ODM as indicated in the Business Model column. Model descriptions are not meant to capture every business a company might pursue. For Taiwan-based ODMs and Hon Hai, converting NT\$ into US\$ was done using average quarterly exchange rates based on US Federal Reserve data.

of \$1.1 billion. Sales increases among the bottom ranks of the top 25 resulted in a higher cutoff. Interestingly, the cutoff jumped the highest since 2011 (Chart 3, p. 4). Indeed, it's somewhat understandable

that entering the top 25 has become progressively harder over the last several years. On the other hand, the barrier to entry will fall if there are sales declines at the bottom of the previous year's top 25 and any replacements haven't grown enough to support the prior year's cutoff. To *MMI*, this progressive increasing of the cutoff indicates that in the \$1 billion to \$10 billion range, enough CMs have been growing.

At \$171.7 billion in sales for 2018, **Hon Hai Precision Industry** again stood unchallenged atop the top 25. The company's share of top 25 revenue increased in 2018, reaching 40.2% for an increase of 250 basis points year over year. Like the previous four years when Hon Hai gave top 25 growth a substantial boost, in 2018 Hon Hai's effect was favorable. Last year,

revenue for the 24 companies excluding Hon Hai increased by 8.9% from a year earlier, versus an increase of 9.7% for the entire group. Hence, Hon Hai widened the top 25 decline by 80 basis points.

The top 25 order from first to fourth place did not change in 2018. **Pegatron** held on to second place, followed by **Quanta Computer, Compal, Flex, Jabil Circuit, Inventec, and TPV Technology**. **Wistron** moved down to 11th position from fifth. Wistron's downward move is due to its smartphone business. According to an article by *Taipei Times*, revenue from server storage increased "a lot" last year, while smartphone contribution fell significantly. Wistron has been suffering from overcapacity over the past few years. The company's ability to manage its mobile phone capacities is key to profiting from the smartphone manufacturing business, given high labor and component costs.

There were few new entrants to the Mix (Mix/Hybrid) group in 2018 compared with the previous year's

version. One spot on the 2018 list opened up when EMS provider **New Kinpo Group** was reclassified into the Mix group, as it generates a majority of its revenue from both EMS and ODM work. Pegatron also became part of the Mix group in 2018.

Sales were down at four CMs (Table 1), whereas 11 players posted double-digit growth. Jabil Circuit achieved the highest sales growth, at 17.8%.

Note: The EMS-versus-ODM analysis presented here does not allow for the fact that some companies pursue both EMS and ODM business. Also, the top 25's sales of \$427 billion were not all derived from EMS and ODM work. As shown in Table 1, some companies mix in revenue from other businesses such as components and own-brand manufacturing. To some degree, top 25 sales and growth figures have been influenced by revenue from businesses outside the realm of contract manufacturing. There may be cases where the addition of other business to contract manufacturing revenue might have unfairly boosted a provider's rank.

Chart 2: 2018 Growth Percentages in US\$

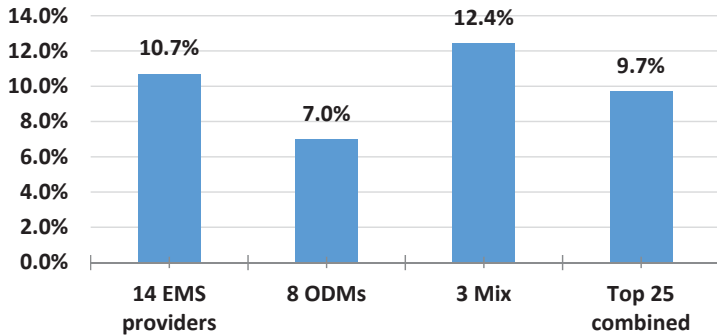
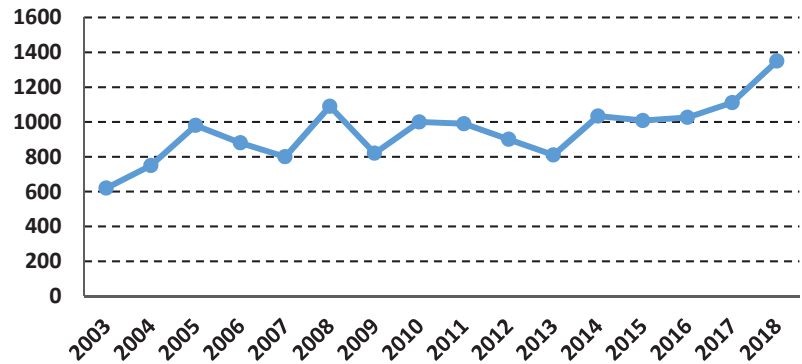


Chart 3: Top 25 Cutoff (Millions USD)



New Analysis of Market Segments

MMI has completed its latest analysis of EMS market segments by utilizing data from its annual Top 50 survey. Data from 48 of the MMI Top 50™ EMS providers show that traditional areas comprised the largest source of combined revenue for these players in 2018. The traditional segments—consumer, mobile, and communication commodities—together represented 55.3%, or more than half of the total sales of \$327.9 billion (Chart 4, p. 6). In a similar analysis of 40 of the Top 50 data for 2017, the traditional areas also claimed the biggest share of total revenue (April 2018, p. 4). For many providers, traditional areas continue to be the most productive segments for their business development efforts.

The attraction of the traditional areas can be seen in the popularity of the consumer segment, which drew 27 out of 48 providers. No other segment in this analysis came close to getting that many “votes.”

Market segment percentages for the 48 Top 50 EMS providers appear in Table 2 on page 5. Percentages came directly from the providers’ responses to the Top 50 survey. Two companies in the Top 50 either did not provide a breakdown of their sales by market segment or supplied data inconsistent with MMI’s categories.

Computing and storage took the second largest share of the 48 providers’

aggregate sales in 2018. The computing and storage segment accounted for 23% of combined sales.

One company, **Shenzhen Kaifa**, obtained more than 70% of its sales from the segment, while another, **Orient Semiconductor Electronics**, derived more than 60% of its sales from the segment.

For 23 providers out of 48, the computing and storage segment was one to avoid, which is no surprise. Much of the outsourcing in the computing and storage space is controlled by the EMS giant **Hon Hai**, number-two EMS provider **Pegatron**, and the ODM companies. Their considerable presence in the space shrinks the amount of business available to other EMS providers and even more so for those who eschew high volumes. Still, some providers have carved out niches for themselves within the space.

The nontraditional segments—industrial/commercial, medical, automotive, defense/security/aerospace and other—took the third largest share of the 48 providers’ aggregate sales in 2018. The nontraditional segment accounted for 16.8% of combined sales. Two companies in particular—**Enics AG** and **Computime**—derived 100% of their revenue from this segment.

Consumer electronics, mobile phones, and other high-velocity products comprise a segment that, though generally popular, many Top 50 providers stay away from. Of the 48 Top 50 providers in this analysis, 22 steer

clear of this high-velocity segment. Of course, providers that follow a lower volume, high-mix strategy, which is common among players below the top tier, want no part of the high-volume work required in this space. Three providers—**V.S. Industry Berhad**, **Pegatron**, and **Hon Hai Precision Industry**—generated more than 50% of their revenue from the high-velocity segment.

2018 was a year of notable growth for the Top 50 and the same can be said for the four main market segments shown in Chart 4 based on the results of this analysis. To see which areas grew and which did not, MMI performed an apples-to-apples comparison by using market segment data from 48 companies in both the 2018 and 2017 analyses.

After combining the segment data from the 48 providers for both years, analysis showed that whereas all sectors gained revenue in 2018 versus the prior year, the computing and storage segment had the lowest growth, at 7.8%. The consumer, mobile, and other high-velocity segment posted excellent growth. The increase can be attributed to Foxconn’s inclusion in the analysis this year. The nontraditional segment posted the largest increase, at 18.7% compared to the previous year.

For the 48 providers as a whole, 2018 sales from the traditional segment increased by 9.4%. The above-average growth of this segment is likely a somewhat pleasant surprise in light of slower than expected overall growth

in world markets. Inclusion of Foxconn helped the segment's growth markedly. Further, demand for consumer products in China and other developing countries continues unabated, giving this segment a built-in engine for growth. (Table 3, page 6).

Revenue from computing and storage products grew at a softer rate than what was observed for the communications infrastructure area. The 7.8% growth rate for computing and storage was driven by cloud infrastructure spending. According to **IDC**, vendor revenue from sales of IT infrastructure products (servers, enterprise storage, and Ethernet switches) for cloud environments, including public and private clouds, grew 28.0% year over year in the fourth quarter of 2018 (4Q18), reaching \$16.8 billion. For 2018, annual spending on public and private cloud IT infrastructure totaled \$66.1 billion, slightly higher (1.3%) than forecast in 3Q2018.

In this comparison, sales from the communications infrastructure segment increased 8.4% from 2017, a not unexpected result in that end-market demand in general was healthy in 2018. The segment lost 15 basis points of market share in 2018, which brought its share down to 4.9%.

Finally, the nontraditional (plus "other") segment's revenue increased 18.7% from a year earlier, while rising 142 basis points of market share. This exceptional growth probably indicates a surge of new outsourcing opportunities in these areas, which tend to be less penetrated than the more mature computing and storage and communications infrastructure segments.

The four top-tier providers in this analysis contributed 81% of total sales. As a result, these four providers heavily influenced market segment results for the entire group of 48. What do the market segments look like for providers below the top tier? When these four companies were excluded, a different picture emerges. For the remaining 44 EMS providers with sales under \$8 billion, the

Table 2: Market Percentages for 48 of the Largest EMS Providers in 2018

Company	EMS Sales Calendar 2018 (US\$M)	Auto-motive	Comm Infrastructure	Comm Commodities	Computer	Consumer	Industrial	Medical	Military/Avionics	Other
Hon Hai Precision Industry (Foxconn)	171,700	1		51	27	19	2			
Pegatron	44,510			60	20	18	2			
Flex	26,491	9	11	10	9	25	20	7	9	
Jabil Circuit	23,016	5	15	20	29	7	12	8	4	
Sanmina	7,553	11	36		10	5	17	15	6	
Wistron	7,370			37	46	17				
Celestica	6,633	1	41		26	2	16	3	10	
USI	3,268	5		45	15	25	10			
Plexus	2,935		16				37	31	16	
Venture	2,575		20		23		57			
Benchmark Electronics	2,566		13		23		33	15	16	
Shenzhen Kaifa	2,205	4		10	70		10	6		
Zollner	1,820	24		0	14	1	45	11	5	
SIIX Corp.	1,593	54			9		32			5
Fabrinet	1,458	6	73			1	19	1		
Integrated Micro-Electronics, Inc.	1,350	40	10		1	13	25	1	4	6
UMC (est.)	1,289	16	21	3			50	5	5	
Kimball Electronics	1,110	42					22	30	6	
Sumitronics	1,054	23		3	54	13	3	4		
Asteelflash	1,050	16	21	3			48	5	7	
Ultra Electronics	1,012						17		83	
V.S. Industry Berhad	990					100				
Pan International (est.)	979	19	14		20	16	18	13		
Kaga Electronics	814	30		5	5	10	30	20		
NEO Tech	800						53	25	22	
VTech Communications	771	1	4	21		44	24	6		
VIDEOTON	696	45			2	1	35			17
Scanfil	665		18				48	17		17
ATA IMS Berhad	653	5				90		5		
Enics AG	642						100			
Ducommun, Inc.	629						10		90	
Katolec	617	40	0		27	28	2	2	0	
Neways Electronics	599	24					58	16	2	
3CEMS Group	587	14	36			10	33	7		
Wong's International Holdings, Ltd.	575				41		53			6
WKK Technology	501	6	15	5	19	31	18	6		
Computime	494						100			
Shenzhen Zowee Tech	488		5	40	5	22	18	10		
SVI	485	15	40			13	27	5		
Orient Semiconductor Electronics	478	1	2		67	2	15	2	10	
KeyTronic	446	6	21		4	30	25	12	2	
ALL Circuits	429	75		4			18	3		
éolane	400	20	5				30	15	30	
LACROIX Electronics	400	51					18	3	5	23
Valuetronics Holdings	370	18				32	50			
Hana Microelectronics	357	8	33		25	21	10	3		
Fideltronik	335	11		5			81	3		
Kitron	322		15.8				45.3	20	17.2	1.9

nontraditional areas overall take on greater importance. In 2018, the nontraditional segments (plus other) accounted for 49% of the combined revenue of those 44 providers. This result is consistent with a 2017 analysis of 36 providers, in which the nontraditional areas captured a 41% share (April 2017, p. 6). If these results can be extrapolated to the industry at large, then it can be said that the nontraditional segments supply nearly half of the revenue for providers below the top tier.

Data from providers below \$8 billion in sales show how the individual segments within the nontraditional category break down for them. For this subgroup of 44 Top 48 EMS providers, the industrial/commercial area furnished more revenue than any other segment, nontraditional or otherwise. The industrial/commercial segment represented 23.9% of total sales, dwarfing the other nontraditional segments (Chart 5, at right). Industrial/commercial also came out number one in the 2017 analysis of 36 providers (April 2018, p. 6). Again, if these results can be generalized, then the industrial/commercial segment has become the number-one revenue producer for providers below the top tier.

Next in size was the computing and storage segment, with 18.1% of revenue. Growth of the global computer industry in 2018 probably contributed to this share. Close behind the computing segment was the communication infrastructure segment with a 15.3% share, which was 10 basis points lower than in the 2017 analysis.

Over the past four years of analysis, the communication commodities share has ranged from 6% to 9%, evidence that the communication business is not gaining market share despite the emphasis that many providers have placed on this segment. Business from the consumer segment came in at 9.6% of total sales, showing once more that this business is significantly smaller than the industrial or computer segments, at least for Top 44 providers below the industry's first tier.

Publisher's note: This analysis covered providers who sometimes differ as to which products go in what categories. As a result, there is some uncertainty with respect to the results presented here.

Chart 4: Market Mix for 50 Top 50 EMS Providers in 2018

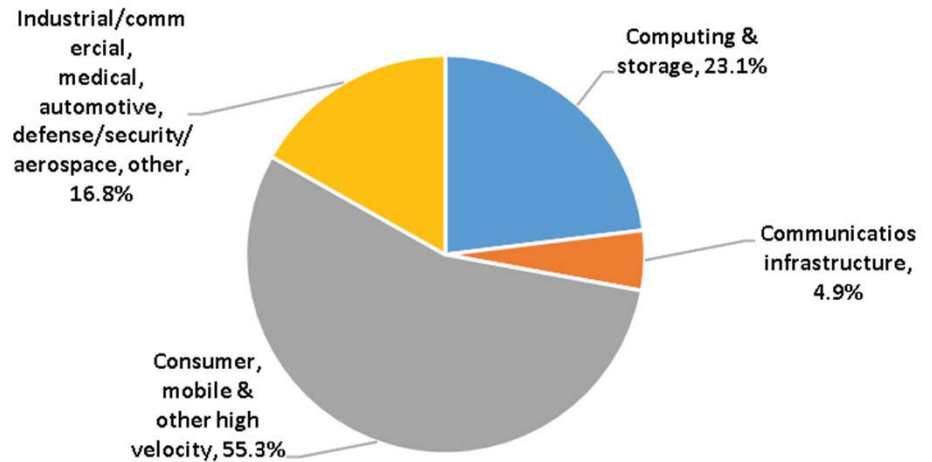


Chart 5: Individual Markets for 44 EMS Providers Under \$8 Billion

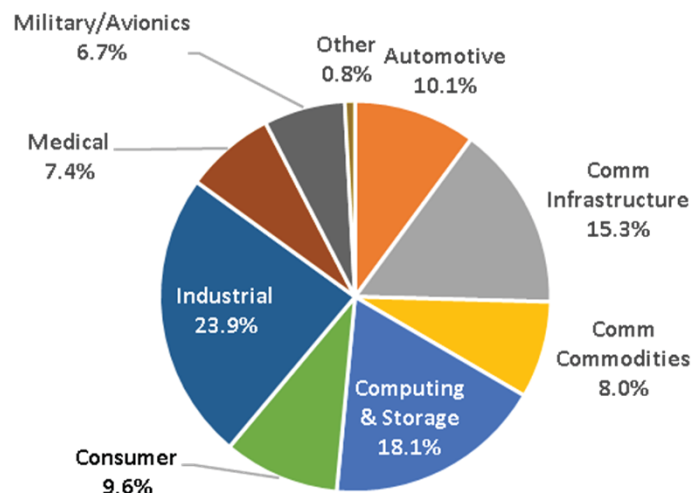


Table 3: A Comparison of Segment Revenue for the Same 48 Top 50 EMS Providers

Segment	2018 Share	2017 Share	2018 Sales (\$M)	2017 Sales (\$M)	Change
Computing & storage	23.1%	23.0%	75,590	70,130	7.8%
Communications infrastructure	4.9%	5.0%	15,904	14,675	8.4%
Consumer, mobile, & other high velocity	55.3%	54.8%	181,342	165,714	9.4%
Nontraditional*	16.8%	15.4%	55,160	46,476	18.7%
Total			327,996	296,995	10.4%

* Includes other.

Company News

Jabil Opens Innovation Center Near FL HQ

Jabil opened its newest Innovation Center, a 40,000-square-foot site, in Florida near the company headquarters.

The new research and development site will employ about 100 workers across five labs.

Jabil plans to build three more buildings on the campus, including a 170,000-square-foot manufacturing site, due to open in March 2021.

At a grand opening, chief executive Mark Mondello said, “I think it’s great for the community, good for the state of Florida and this is just stage one.”

Another existing building will be renovated over the next 30 months, the company indicated.

Enics Appoints Eckstein President, CEO

Enics appointed Elke Eckstein president and CEO effective April 1.

Eckstein has been a member of the board of directors since 2017. She has a background in the electronics, lighting, and semiconductor industries.

Prior to Enics, she was a member of the management board, COO, and CDO at **Weidmueller Group** and in various executive management positions in operations, supply chain, and R&D at **OSRAM, AMD, Altis Semiconductors** and **Siemens**.

Foxconn, 43 Other Apple Suppliers Using Clean Energy

Apple said it has nearly doubled the number of suppliers using only clean energy in production, including **Foxconn**, according to reports.

Forty-four companies are now in the program, Apple said, compared to 23 suppliers it disclosed previously.

Last year the company said it uses renewable energy, but a significant portion of its carbon footprint comes from its supply chain.

Apple aims to have suppliers sign power-purchase agreements with new renewable energy projects, and the firm plans to pass its goal of adding 4 GW of renewable energy to the grids of its supply chain by 2020.

Manufacturing Market Insider, April 2019

Neways Moves to Larger Wuxi Manufacturing Site

Neways Electronics has moved to another building with its manufacturing facility in China.

The new site is located in Wuxi’s New District, near the Wuxi Airport, and covers a total area of 7,200 square meters (77,500 square feet). All quality audits and validations have been successfully completed.

The new production building covers three floors and offers a capacity increase of 30% as well as better overall production conditions compared to the previous location. The new location enables an optimized, lean manufacturing process with automated coating and drying and offers a dedicated process area for box build assembly activities. The material flow is organized by three-story shared Kardex systems and by a dedicated production floor material elevator.

The Chinese site, a wholly owned subsidiary of Neways Electronics, serves customers in the industrial, medical, automotive, and semiconductor industries. It specializes in PCBA (THT and SMT) and box build.

EMS Firms Looking to Mexico for Expansion

Multiple top-tier EMS companies are planning to add capacity, including new software development centers, in the Mexican state of Jalisco this year.

Sanmina, Jabil, and **Flex** are among the companies that are expanding south of the US border.

Among the planned expansions, Flex will expand existing plants in Tlajomulco de Zúñiga and Zapopan. Sanmina is opening a product design laboratory. **ALL Circuits** recently opened a state-of-the-art facility in Guadalajara. Jabil is reported to be also adding technology, although company executives declined to provide any details regarding the firm’s plans on a conference call this week.

OEMs such as **HP** and **Oracle** are also expanding operations in the area, according to reports.

Foxconn Exploring New Investment Opportunities in Vietnam

Foxconn is eyeing the Quang Ninh province for its next investment in Vietnam, according to reports.

Foxconn general director in Vietnam, Harry Zhuo, met with the local People’s Committee vice chairman Nguyen Van Thang this week to discuss opportunities.

Foxconn has been in Vietnam since 2007, when it signed a \$5 billion investment plan. Last year the company said it was looking to set up a new site in the country to lessen the impact of the trade war between China and the US.

OSE Adds SMT Lines in Taiwan

Orient Semiconductor Electronics (OSE) is installing additional SMT lines to increase production capacity by 10% to 15% in Taiwan, say reports.

OSE has added four SMT lines and plans to add two more. The company expects to see double-digit sales increases from orders for SSDs this year.

OSE reported that consolidated revenues increased 28.6% from a year earlier to \$82.2 million in the first two months of 2019. EMS services account for about 35% of company revenues.

Foxconn: Wisconsin Factory To Be Operational in 2020

Foxconn says its planned manufacturing facility in Wisconsin will be producing LCD screens by the end of 2020, with construction starting later this year, according to reports.

“Our commitment from day one has been to establish a winning formula for Foxconn and for Wisconsin,” said Dr. Louis Woo, special assistant to Foxconn founder and CEO Terry Gou. “We continue to expand our presence around the state, create jobs, and deepen our partnerships, while innovating and adapting to meet changing market needs. We’re investing in Wisconsin because we know manufacturing here is going to drive even greater success and growth for Foxconn and for the community.”

Plans for the site have moved in fits and starts, with reports that the EMS/ODM is scaling back its campus and commitment. The company has refuted those reports.

Growing EU Electronics Sector Notes Shortage of Skilled Workers

Employment in the European electronics sector is expected to grow, according to a new study. Such a trend would exacerbate issues created by an existing shortage of skilled workers, IPC says.

Employment in the European electronics sector is climbing but still below pre-2008 recession levels. Germany remains the clear employment leader, employing approximately 813,000 workers in 2018, equivalent to just over a third of total employment in the EU28. France, Italy, the UK, and Poland round out the top five.

The electronics industry is moving eastward, says IPC. From 2011 to 2018, electronics industry employment in central and eastern Europe grew at an average annual rate of 2.1%, more than double the rate in the EU15.

Wage growth in the UK electronics sector has run well ahead of the economy average and the rest

of the manufacturing sector since 2011. Such a trend is consistent with the existence of a skills gap, which has weakened the negotiating power of firms in the labor market, although further research is required to reach any definitive conclusions.

The shortage of skilled workers is the industry's top business concern. Companies cannot attract enough young workers to replace those retiring, says IPC. With unemployment in many UK counties near record lows, market conditions are surely a factor. At the same time, electronics manufacturers are requiring ever-greater skill sets as the industry moves to advanced manufacturing.

Advanced manufacturing, which relies heavily on robotics and automation, opens new horizons for the European electronics industry. The workers in these cutting-edge facilities tend to have less hands-on interaction with manual tools and greater reliance on computer-managed machinery. This trend is making manufacturing cleaner and safer than in the past, but it is placing new skills requirements on workers.

NOTE and DeLaval Enter Extensive Electronics Production Cooperation

Swedish EMS provider NOTE says that it has, together with DeLaval, established a complete supply chain for electronics production. As of 2019, NOTE will become a strategic partner to DeLaval for industrialization and manufacturing of

PCBAs.

DeLaval is a Swedish producer of dairy and farming machinery and part of the Tetra Laval group. The company develops, manufactures, and markets equipment and complete systems for milk production and animal husbandry worldwide.

"DeLaval will hereby become one of NOTE's most important customers and the production is currently ramping up and will reach approximately SEK60 million on an annual basis," says Johannes Lind-Widestam, NOTE's President and CEO.

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