Manufacturing Market™ INSIDER
inside the contract manufacturing industry
Vol. 28, No. 4 April 2018

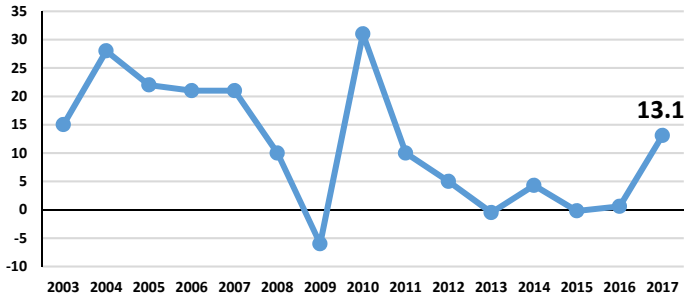
Exceptional Growth for the Top 25 in 2017

For the twelfth time in the past 15 years, combined revenue for the top 25 contract manufacturers (EMS providers and ODMs) grew in 2017. Last year, top 25 revenue totaled $410.5 billion, up 13.1% from 2016 (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 was developing in 2017.

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 3.5% rate in 2017, according to the **International Monetary Fund**. Longer-term industry attractiveness has been improved by a plethora of near-term catalysts. This suggests that expectations have risen modestly due to rapid growth in key end markets such as telecom infrastructure, computing, consumer/smart phones, and semi-cap equipment. High-complexity/low-volume end markets (e.g., industrial/medical/test) should garner solid results. In addition, M&A activity has picked up within the supplier (semiconductor) segment and industry opportunities appear stronger than ever. The **Nokia/Alcatel** deal bodes well for EMS as the parties are committed outsourcers.

Annual sales growth for the top 25 over the last 15 years has averaged 11.6%. But annual results for the past three years haven't been anywhere near double digits. 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?

Chart 1: Top 25 Growth Rates (%)



Hybrid Providers Outgrow EMS and ODM Companies

The top 25 contract manufacturers for 2017 consist of four companies that rely on both EMS and ODM work, classified as Mix in Table 1. There are 13 providers defined as EMS in the table, and eight companies that mainly rely on ODM work. In 2017, the Mix group increased more than did the EMS and ODM groups, by 410 and 290 percentage points, respectively. Combined revenue for the EMS providers increased by 12.1%, and sales on the ODM side increased by 13.3% (Chart 2, p. 4). It's no surprise that 2017 was a smooth year overall for all three groups, given their reliance on the PC market and the exponential growth experienced in the smart phone market.

For 2017, EMS providers contributed 55.7% of top 25 sales, down from 56.2% in 2016. One reason for the share loss was due to a sales decline at **Plexus**. Combined revenue on the EMS side amounted to $228.7 billion, while the ODM cohort brought in EMS sales of $108.5 billion, or 26.4% of the total.

As shown in Table 1 on the next page, *MMI* ranked the top 25 contract manufacturers (both EMS and ODM suppliers) in order of calendar 2017 sales in US dollars. It was significantly harder to make the 2017 edition of the top 25 than the previous year's version, as the cutoff was $85 million higher. A place in the top 25

Continued on page 3

Some articles in this issue

Table 1: Top 25 Contract Manufacturers for 2017							
Business Model	Company	Headquarters	Sales Calendar 2017 (Millions US$)	Rank by 2017 Sales	Sales Calendar 2016 (Millions US$)	2016 Rank	Growth '16–'17 in US$ (%)
EMS	Hon Hai Precision Industry (Foxconn)	New Taipei, Taiwan	154,906	1	135,201	1	14.6%
Mix	Pegatron	New Taipei, Taiwan	39,262	2	35,934	2	9.3%
ODM	Quanta Computer	New Taipei, Taiwan	33,589	3	27,741	3	21.1%
ODM	Compal	New Taipei, Taiwan	27,545	4	23,795	4	15.8%
Mix	Wistron	New Taipei, Taiwan	27,501	5	20,478	6	34.3%
EMS	Flex	San Jose, CA	24,893	6	23,774	5	4.7%
EMS	Jabil Circuit	St. Petersburg, FL	19,545	7	18,250	7	7.1%
ODM	Inventec	Taipei City, Taiwan	15,378	8	13,498	8	13.9%
ODM	TPV Technology	Hong Kong	9,585	9	9,811	9	–2.3%
ODM	Delta	Taipei, Taiwan	7,354	10	6,652	12	10.6%
ODM	Lite-On	Taipei, Taiwan	7,058	11	7,124	10	–0.9%
EMS	Sanmina	San Jose, CA	6,893	12	6,667	11	3.4%
EMS	Celestica	Toronto, ON, Canada	6,111	13	6,017	13	1.6%
Mix	New Kinpo Group	New Taipei, Taiwan	4,538	14	4,452	14	1.9%
ODM	Qisda	Taipei, Taiwan	4,501	15	4,020	15	12.0%
ODM	MicroStar	Taipei, Taiwan	3,500	16	3,171	17	10.4%
EMS	USI	Shanghai, China	2,910	17	2,286	16	27.3%

Business Model	Company	Headquarters	Sales Calendar 2017 (Millions US$)	Rank by 2017 Sales	Sales Calendar 2016 (Millions US$)	2016 Rank	Growth '16–'17 in US$ (%)
EMS	Venture	Singapore	2,901	18	2,083	22	39.3%
EMS	Plexus	Neenah, WI	2,570	19	2,574	18	–0.2%
EMS	Benchmark Electronics	Angleton, TX	2,467	20	2,310	19	6.8%
Mix	Shenzhen Kaifa	Shenzhen, China	1,936	21	2,160	20	–10.4%
EMS	Zollner	Zandt, Germany	1,560	22	1,384	23	12.7%
EMS	SIIX Corp.	Osaka, Japan	1,468	23	1,330	21	10.4%
EMS	Fabrinet	Grand Cayman, Cayman Islands	1,432	24	1,211	24	18.2%
EMS	UMC	Saitama, Japan	1,111	25	1,026	25	8.3%
Total/Average			**410,523**		**362,948**		**13.1%**

Companies with multiple businesses were classified as EMS or ODM as indicated by the first acronym in the business model description. 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.

required a minimum of $1.1 billion versus a cutoff of $1 billion in 2016. 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, but that is what the data shows. 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 $154.9 billion in sales for 2017, **Hon Hai Precision Industry** again stood unchallenged atop the top 25. The company's share of top 25 revenue increased in 2017, reaching 37.7% for an increase of 50 basis points year over year. Like the previous four years when Hon Hai gave top 25 growth a substantial boost, in 2017 Hon Hai's effect was again favorable. Last year, revenue for the 24 companies excluding Hon Hai increased by 12.2% from a year earlier, versus an increase of 13.1% for the entire group. Hence, Hon Hai widened the top 25 decline by 90 basis points.

The top 25 order from second to eighth also changed in 2017. **Pegatron** held on to second place, followed by **Quanta Computer**, **Compal**, **Wistron**, **Flex**, **Jabil**, and **Inventec**. Wistron moved up one position to fifth, thanks to its smart phone business. According to Lauly Li of *Taipei Times*, Wistron began assembling iPhones at the end of 2016. It shares orders of the larger 5.5-inch Plus model with Hon Hai. The firm's server and storage business, which contributed 14 percent of the firm's total revenue last year, is expected to deliver better margin performance and revenue growth this year because of growing demand from clients for data centers.

There were few new entrants to the Mix group in 2017 compared with the previous year's version. One spot on the 2017 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. Also, Pegatron became part of the Mix group in 2017's top 25 table.

Sales were down at four CMs (Table 1), whereas 13 players posted double-digit growth. **Venture** achieved the highest sales growth, at 39.3%.

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 $410.5 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. The top 40 are a combination of EMS and ODM revenue, so are not comparable.

Chart 2: 2017 Growth Percentages in US$

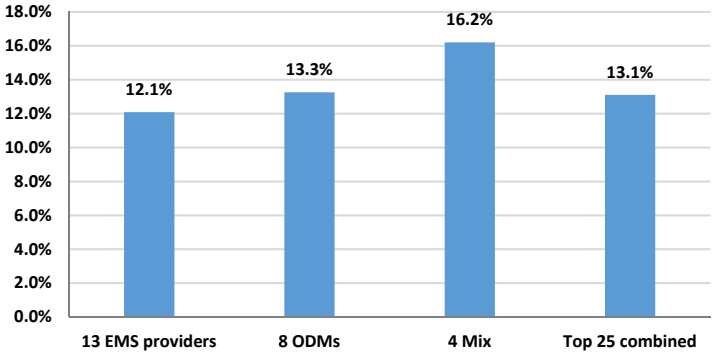
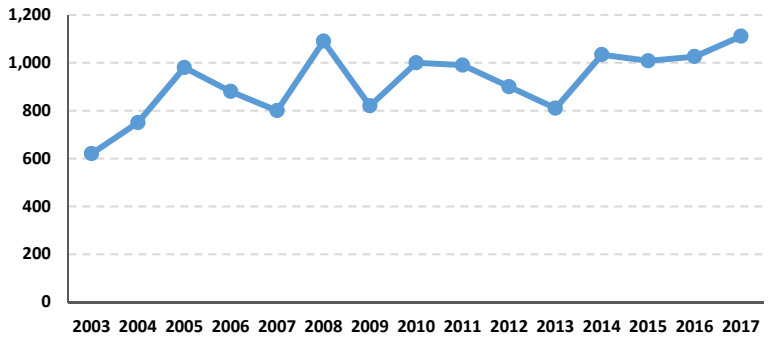


Chart 3: Top 25 Cutoff (Millions US$)



New Analysis of Market Segments

MMI has completed its latest analysis of EMS market segments by utilizing data from its annual Top 50 survey in March. Data from 40 of the *MMI* Top 50™ EMS providers show that traditional areas comprised the largest source of combined revenue for these players in 2017. The traditional segments—consumer, mobile, and communication commodities—together represented 55.8%, or more than half, of the total sales of $297 billion (Chart 4, p. 6). In a similar analysis of top 40 data for 2016, the traditional areas also claimed the biggest share of total revenue (April 2017, 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 19 out of 40 providers. No other segment in this analysis came close to getting that many "votes."

Market segment percentages for the 40 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.

Computer and storage took the second largest share of the 40 providers' aggregate sales in 2017. The computer and storage segment accounted for 23.6% of combined sales. One company, Shenzhen Kaifa, obtained almost 70% of its sales from the segment, while one other, Sumitronics, derived more than 55% of its sales from the segment.

For 18 providers out of 40, the computer and storage segment was one to avoid, which is no surprise. Much of the outsourcing in the computer 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 40 providers' aggregate sales in 2017. The nontraditional segment accounted for 15.6% 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 commodity communications comprise a segment that a significant number of higher ranking providers stay away from. Of the top 40 providers in this analysis, 21 steer clear of this area. 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—**Alpha Networks**, Pegatron, and Hon Hai Precision Industry—generated more than 50% of their revenue from the communications commodities segment.

2017 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 40 companies in 2017 and 2016 analyses.

After combining the segment data from the 40 providers for both years, analysis showed that the velocity, computer and storage, and nontraditional sectors gained revenue in 2017 versus the prior year and the rest of the segments declined. The consumer, mobile, and other velocity segment posted exceptional growth. The increase can be attributed to Foxconn's (Hon Hai's) inclusion in the analysis this year. The communications infrastructure segment posted the largest decline, at –2.8% compared to last year.

For the 40 providers as a whole, 2017 sales from the traditional segment increased by 54.8%. 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 computer and storage products grew at a healthy rate, one much better than was observed for the communications infrastructure area. The 11% growth rate for computer and storage was driven by cloud infrastructure spending. According to IDC, spending on infrastructure for cloud environments will hit $122.5 billion in 2017, an increase of 24.4% over 2016. Over the 2015–2020 forecast period, overall public cloud spending will experience a 21.5% compound annual growth rate (CAGR)—nearly seven times the rate of overall IT spending growth. By 2020, IDC forecasts that public cloud spending will reach $203.4 billion worldwide.

In this comparison, sales from the communications infrastructure segment declined 2.8% from 2016, a not unexpected result, as end-market demand in general did not catch fire in 2017. The segment lost 180 basis points of market share in 2017, which brought its share down to 5%.

Finally, nontraditional segments (plus "other") revenue increased 23% from a year earlier. The growth of the nontraditional areas likely indicates an increase of new outsourcing opportunities in those areas, which tend to be less penetrated than the more mature computer and storage and communications infrastructure segments.

The four top-tier providers in this analysis contributed 80.3% of total sales. As a result, these four providers heavily influenced market segment results for the entire group of 40. 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 36 EMS providers with sales under $8 billion,

Table 2: Market Percentages for 40 of the Largest EMS Providers in 2017

Company	EMS Sales calendar 2017 (millions USD)	Automotive	Comm. Infrastructure	Comm. Commodities	Computer	Consumer	Industrial	Medical	Military/ Avionics	Other
HonHai Precision Industry (Foxconn)I'	154,906	1		51	27	19	2			
Pegatron	39,262			60	20	18	2			
Flex	24,893	9	11	10	9	25	20	7	9	
Jabil Circuit	19,545	5	15	20	29	7	12	8	4	
Wistron	7,425			37	46	17				
Sanmina	6,893	11	26		17	5	19	16	6	
Celestica	6,111	1	40		26	2	18	3	10	
New Kinpo Group (est.)	4,538		10	25	35	30				
USI	2,910	5		45	15	25	10			
Venture	2,901		20		23		57			
Plexus	2,570		23				30	31	16	
Benchmark Electronics	2,467		13		22		34	15	16	
Shenzhen Kaifa	1,936	2		13	69		10	6		
Zollner	1,560	27			13	1	42	12	6	
SIIX Corp.	1,468	51		1	9		37			2
Fabrinet	1,432	6	77	1		1	14	1		
UMC (est.)	1,111		30	50	20					
Integrated Micro-Electronics, Inc.	1,090	41	11		1	17	21	2	2	5
Kimball Electronics	986	41					24	28	7	
PKC Electroncs (acquired by Enics - 2017)	974	50								50
V.S. Industry Berhad	913					100				
Sumitronics	913	19		3	57	16	4	1		
Asteelflash	850	14	10	15	5	20	28	4	5	
NEO Tech (est.)	785						51	29	20	
VTech Communications	675	1	30	4		41	19	6		
Alpha Networks	627		30	70						
Enics AG	614						100			
Scanfil	600		20				48	16		16
3CEMS Group	597	10	46			11	29	4		
VIDEOTON	594	48	2				32			18
Creation Technologies	591	6	21		6		38	19	4	6
Ducommun, Inc.	558						10		90	
Katolec	551	37			26	21	15	1		
Neways Electronics (est.)	496	24					58	16	2	
Key Tronic	467	6	21		4	30	25	12	2	
WKK Technology	455	6	15	5	19	31	18	6		
Wong's International Holdings Ltd. (est.)	450				41		53			6
Orient Semiconductor Electronics	438		6		46		46		2	
éolane	426	10	15				30	15	30	
Computime	416						100			

the nontraditional areas overall take on greater importance. In 2017, the nontraditional segments (plus other) accounted for nearly 41% of the combined revenue of those 36 providers. This result is consistent with a 2016 analysis of 37 providers, in which the nontraditional areas captured share of 52% (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 $7 billion in sales show how the individual segments within the nontraditional category break down for them. For this subgroup of 36 top 40 EMS providers, the computer and storage segment posted share of 21.5% of revenue. Growth of the global computer industry in 2017 probably contributed to this share. The computer segment furnished more revenue than any other segment, nontraditional or otherwise.

The industrial/commercial segment represented 20.4% of total sales, dwarfing the other nontraditional segments (Chart 5). Industrial/commercial came out number one in the 2016 analysis of 37 providers (April 2017, p. 6). Again, if these results can be generalized, then the industrial/commercial segment has became the number-two revenue producer for providers below the top tier.

Next in size was the communication infrastructure segment with a 15.4% share, which was 480 basis points below that in the 2016 analysis. Over the past four years of analysis, the communication commodities share has ranged from 7% to 11%, 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 10.3% of total sales, showing once more that this business is significantly smaller than the industrial or computer segments, at least for top 40 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 the Top 40 EMS Providers in 2017

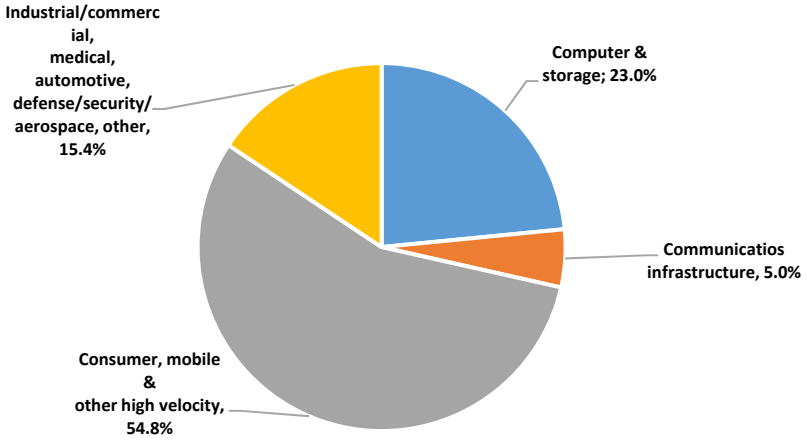


Chart 5: Individual Markets for 36 EMS Providers Under $7 Billion

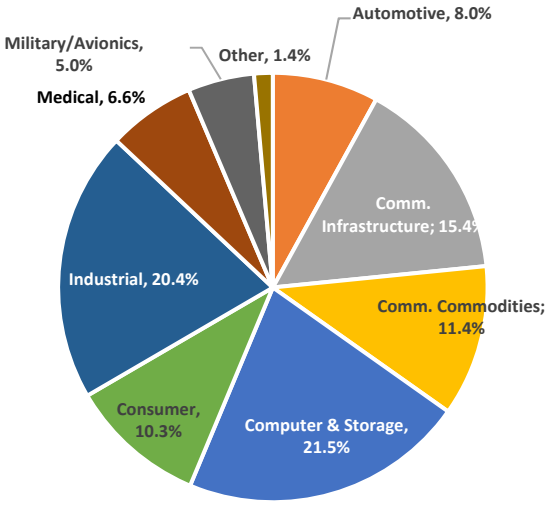


Table 3: A Comparison of Segment Revenue for the Top 40 EMS Providers

Segment	2017 Share	2016 Share	2017 Sales (M)	2016 Sales (M)	Change
Computer and storage	23.0%	28.6%	70,130	63,177	11%
Communications infrastructure	5.0%	6.8%	14,675	15,099	–2.8%
Consumer, mobile & other high velocity	54.8%	47.8%	165,714	105,613	57%
Nontraditional*	15.4%	16.8%	46,476	36,996	26%
Total			**296,995**	**242,223**	**23%**

* Includes other.

Company News

Zollner's Zandt HQ Nears Completion

Zollner Elektronik said its Zandt headquarters is nearing completion.

The expansion of the 12,500-square-meter (134,548-square-foot) production site began in spring of 2017. The new building is able to house some 220 employees.

Interior construction is ongoing, along with installation of technical building facilities and layout of the grounds.

Move-in will take place in the second quarter of 2018.

Nippon Mfg. Services Subsidiary to Open EMS Site in Vietnam

TKR Corp., the EMS business of **Nippon Manufacturing Services**, passed a resolution in February to expand into Vietnam. The tentative name of the new site is TKR Manufacturing Vietnam Co.

The firm has production facilities in Dongguan, China and Malaysia, but the need for local production for local consumption is increasing, with a growing necessity to enhance production in the ASEAN region, the company says.

The 40,000-square-meter (431,500-square-foot) facility in Vinh Phuc Province will include a pressing plant and a surface-mount assembly plant.

Operations are expected to begin there in April 2019.

Sumitronics Manufacturing to Build Own Factory in Cambodia

A subsidiary of **Sumitronics Manufacturing** will build its own factory in Cambodia, firming up stakes established by the Japan EMS company's leasing of its first plant in the country two years ago.

Sumitronics Manufacturing (Cambodia) announced an agreement to lease land in the new Poipet Special Economic Zone. The company purchased one hectare of land, with an option for two additional hectares.

Poipet is a city in Banteay Meanchey Province in western Cambodia, on the border with Thailand.

Sumitronics Manufacturing (Cambodia) is a jointly owned venture between Alpine Technology Manufacturing (Thailand) and Sumitronics (Thailand). Most of the products assembled in Cambodia are for export to Thailand, Japan, and other east Asian countries.

Celestica Completes Acquisition of Atrenne

Celestica has completed its previously announced acquisition of **Atrenne Integrated Solutions.**

With the acquisition, Celestica is expanding its portfolio of end-to-end product life cycle solutions. Celestica is gaining expertise in the design and manufacture of ruggedized electromechanical solutions primarily for military and commercial aerospace applications.

The firms previously announced that Celestica would pay $139 million for Atrenne, funded by cash on hand and existing credit lines.

Flex to Expand Auto Plant in Hungary, Add Jobs

Flex will invest about $11.7 billion in its auto electronics manufacturing plant in Hungary, according to reports. The investment will create 100 new jobs, the reports added.

The Hungarian government said it would extend some $3 million in a non-repayable grant.

Flex will introduce surface treatment technology at the site, increasing overall capacity.

Flex manufactures and supplies auto parts in 34 locations in 16 countries for more than 450 models.

IMI Subsidiary Acquires Toppan Touch Panel Products

A subsidiary of **Integrated Micro-Electronics** has acquired a majority stake in **Toppan Touch Panel Products**, a provider of copper-based metal mesh touch sensors.

For an undisclosed sum, **VIA Optronics** has acquired 65% of Toppan Touch Panel and launched a new joint venture. The name of the new joint venture company will be **VTS-Touchsensor Co.**

VTS will develop and manufacture the metal mesh touch sensors in Japan on the existing premises of Toppan. VIA will leverage its experience of market requirements, system-level design, and production in the automotive, consumer, and industrial markets to support further development of the core sensor technology.

Stadium Now Part of TT Electronics

TT Electronics plc has completed its acquisition of **Stadium Group plc**, a supplier of design-led technologies with product capabilities.

Stadium designs and manufactures products for a wide range of applications, including the smarter home, industrial robotics, medical equipment, and aircraft cabin controls, working with customers in the industrial, aerospace and defense, medical, and transportation sectors.

Tempo Builds New Factory in San Francisco

EMS provider **Tempo** has closed a $20 million Series B financing round to increase its manufacturing capacity and double its team in key roles in software engineering, sales, and manufacturing.

Driven by high demand, Tempo plans to increase manufacturing capacity with a new connected factory and company headquarters in the heart of San Francisco. Paired with its factory software, this will increase its overall capacity tenfold over the next couple of years, a press release states.

The successful funding is underscored by 2017 revenue growth of over 500 percent. The prototyping specialist plans to increase staff numbers from the current 60 to well above 100 over the next few months, specifically in engineering, sales, and manufacturing. The new factory is based in SOMA and is currently in build-out, with an expected move-in during summer 2018. At over 42,000 square feet, Tempo's manufacturing capacity will expand to handle up to five full production lines.

The new facility will also double as Tempo's new headquarters, the press release continues.

Xiaomi Expands in India with New PCBA and Smart Phone Plants

Chinese technology company **Xiaomi** is opening three new smart phone plants in India, as well as its first SMT plant dedicated to local manufacturing of PCBA units, in Sriperumbudur, Tamil Nadu, in partnership with Foxconn.

The company says that 95% of its smart phones that are sold in India are also made in India, and this expansion is a reflection of Xiaomi's localization strategy in the country.

In partnership with **Hipad Technology**, Xiaomi has also started manufacturing smart phones at its power bank plant in Noida, Uttar Pradesh. This results in a total of six smart phone manufacturing plants in India to date, the Chinese company writes in a blog post.

Sanmina Achieves FDA Registration at Its Facilities in Chennai

EMS provider **Sanmina** says that it has received FDA registration at its manufacturing facilities in Chennai, India, enabling Sanmina to manufacture finished medical instruments and devices in India.

The company also operates a product design center in Chennai with an ISO 13485 medical design registration, enabling Sanmina to design medical instruments for its customers close to its manufacturing facility.

Sirin Labs Chose Foxconn to Manufacture Blockchain Smart Phone

Swiss technology company **Sirin Labs** has chosen **FIH Mobile** (Foxconn International Holding) as its partner to debut the design and manufacture of Finney, the world's first blockchain-based smart phone.

The agreement will have FIH Mobile lead the original design and manufacturing of the phone, with Sirin Labs leading the development of the "cold storage" wallet hardware (vs. the Internet-connected "hot" wallet), and the SIRIN OS.

Following the co-development, FIH Mobile will manufacture the Finney devices in its facilities.

EMS Production Disrupted by Passive Components Shortages

Increasingly serious shortfalls in the supply of passive components have disrupted production at some major EMS firms in Taiwan, undermining their shipments to brand clients, with consumers facing possible price hikes in end markets, according to *DigiTimes*.

The sources from the EMS sector said that brand vendors have been informed several times since mid-2017 that passive components will see shortages and pressure for quote hikes will linger through the end of 2018 at least.

Usually, large brand vendors such as **Apple** will not have to worry about possible supply shortages of labor and components at EMS partners, as its orders are big enough to secure priority services from the manufacturing partners, the sources indicated. Apple has reportedly even stepped in to sign long-term contracts directly with suppliers of cobalt to help its EMS partners secure a stable supply of the material needed to produce lithium cobalt batteries, the sources revealed.

Publisher: Randall Sherman

Editor: Anna Reynolds

Research Analyst: Vivek Sharma

Board of Advisors: Michael Thompson, CEO, I. Technical Services; Andy Leung, CEO, VTech Holdings, Ltd.

Manufacturing Market Insider is a monthly newsletter published by New Venture Research Corp., 337 Clay St., Suite 101, Nevada City, CA 95959. Phone (530) 265-2004, Fax (530) 265-1998. ISSN 1072-8651

E-mail: rsherman@mfgmkt.com

Website: www.newventureresearch.com