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Another Annual Increase in M&A Deals

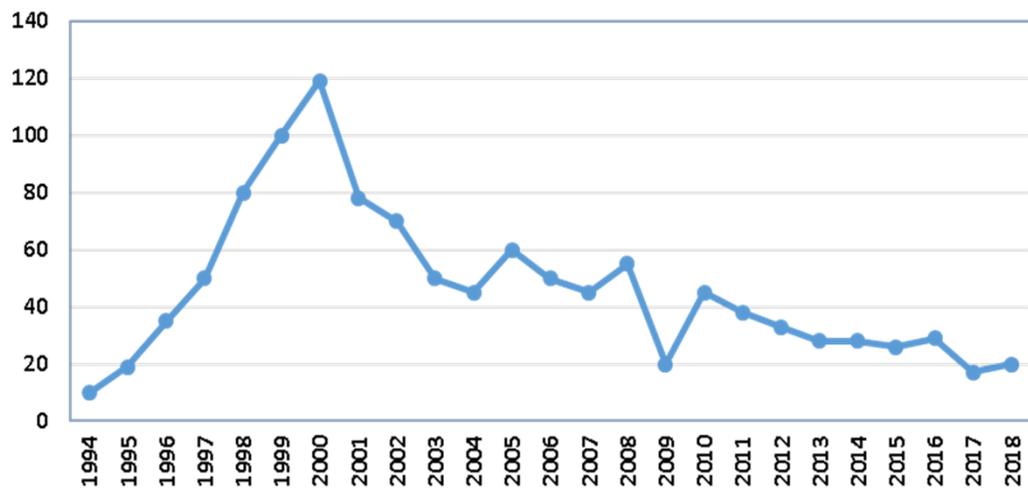
In 2018, the number of EMS industry mergers and acquisitions increased from the year before. M&A transactions closed during 2018 totaled 20, up 17.6% from a revised count of 17 in 2017. Transaction totals have been in decline since a postrecession high of 45 in 2010 (Chart 1). The lackluster macro environment and associated uncertainties that followed the recession have not been conducive to deal making.

MMI's annual Scorecard of EMS industry M&A deals on pages 2 and 3 lists the transactions closed in 2018 and classifies them according to four categories developed by MMI.

The most common deal in 2018 was a service or supply chain extension (marked S on the Scorecard). This type of deal being the most popular type was unlike the year before. In 2018, there were 10 instances of EMS providers buying operations for supply or service chain extension, up from seven the year before (Chart 2, p. 4). As the industry has matured and providers have built out their service offerings, fewer companies generally need to acquire capabilities (Chart 3, p. 4).

The second most common deal in 2018 was acquiring operations of competitors. In 2018, this was the second most popular type of deal; it

Chart 1: EMS Industry Mergers and Acquisitions



had ranked highest the year before. Last year, there were eight instances of EMS providers buying competitor operations (marked C on the Scorecard), the same number as the year before (Chart 2, p. 4). Most of these 2018 deals resulted in consolidation, or the loss of an independent provider. So industry consolidation persists, though the

number of consolidation deals has bounced around from year to year (Chart 3, p. 4).

In the early part of the 2000s, OEM divestitures contributed a significant number of deals. As the industry progressed, these deals, often in high-cost areas, became less and less attractive. But they didn't go away completely.

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Table 1: MMI Scorecard: EMS Industry Mergers and Acquisitions in 2018

Deal Maker	Home Base	Type	Target	Location	Some Details
ARRIS	United States	O	Pegatron	Taiwan	ARRIS announced an agreement with long-time partner Pegatron Corporation for the sale of ARRIS's manufacturing facility in New Taipei City, Taiwan.
TT Electronics	United Kingdom	S	Stadium Group plc	United Kingdom	With the addition of Stadium, TT will enhance its portfolio and capabilities as well as strengthen its position in certain sectors where demand for electronics is growing quickly.
Löfvånger Elektronik AB	Sweden	S	Spocs AB	Sweden	Löfvånger Elektronik AB acquired Spocs AB in March 2018.
Hindley Circuits	United Kingdom	C*	Magnum Electronics	United States	Magnum is the first acquisition made by Hindley and is part of a growth strategy that includes significant and ongoing investment in people, technology, and equipment which, in the last 12 months, stands at GBP550,000.
Celestica	Canada	S	Atrenne Integrated Solutions	United States	Celestica, Inc. acquired Atrenne Integrated Solutions, Inc. for US\$139 million in cash. This acquisition will advance Celestica's capabilities, improve its diversification, and bolster its leadership position within the aerospace and defense industry.
Integrated Micro-Electronics	Philippines	S	Toppan Touch Panel Products	Japan	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.
Elemaster	Italy	C*	GDM Electronics	Belgium	Italian EMS provider Elemaster is strengthening its global footprint by acquiring GDM Electronics, which has locations in Belgium and Romania.
VTech Holdings	Hong Kong	S	Pioneer Technology (Malaysia) Sdn. Bhd.	Malaysia	VTech Holdings, Limited says it has signed an agreement with Pioneer Corporation under which VTech will acquire a manufacturing facility in Malaysia owned by Pioneer's Malaysian subsidiary.
Hindley Circuits	United Kingdom	S	Irridian Industrial Electronics	United Kingdom	Hindley Circuits has acquired Irridian Industrial Electronics for an undisclosed amount. Irridian is a five-man product design and repair team.
SlingShot Assembly	United States	C*	BEI Electronics	United States	The combined company provides a unique offering of ultra-fast, high-quality prototype assembly integrated with higher volume PCB assembly and related product services.
Kimball Electronics	United States	C	GES Holdings, Inc.	United States	Kimball Electronics says that it has completed the purchase of substantially all of the assets and assumed certain liabilities of GES Holdings, Inc., Global Equipment Services and Manufacturing, Inc., and its subsidiaries (collectively, "GES").

Deal Maker	Home Base	Type	Target	Location	Some Details
CCS Customer Care & Solutions	Switzerland	C*	NewTal Elektronik	Germany	CCS Customer Care & Solutions acquired NewTal Elektronik in June 2018.
PhotonStar LED	United Kingdom	O	Camtronics Vale	United Kingdom	EMS firm Camtronics Vale announced the completion of a management buyout from its parent company PhotonStar LED.
VirTex Enterprises	United States	C*	PPI-Time Zero	United States	Austin, Texas–based EMS provider VirTex Enterprises acquired fellow EMS provider PPI-Time Zero (PPI).
Foxconn	Taiwan	S	Belkin	United States	Foxconn Interconnect Technology Limited (FIT) and Belkin International have signed a definitive agreement under which FIT agreed to acquire Belkin International for approximately US\$866 million in cash.
East West Manufacturing	United States	C	Team Manufacturing	United States	East West Manufacturing, LLC acquired Team Manufacturing, a provider of specialized electronics manufacturing, wire harness assembly, and box-build services.
GPV International	Denmark	C*	CCS Customer Care & Solutions	Switzerland	GPV International announced the acquisition of Swiss rival CCS Customer Care & Solutions in a deal worth 800 million krone (\$121.9 million).
NOTE	Sweden	S	Speedboard Assembly Services, Ltd.	United Kingdom	The acquisition is made by NOTE UK, Ltd. and the purchase price initially amounts to GBP7 million.
Celestica	Canada	S	Impakt Holdings	United States	Through this acquisition, Celestica expects to gain significant new capabilities in large-format, complex, high-mix manufacturing solutions for multiple industries, as well as broaden its precision component manufacturing, full system assembly, integration, and machining capabilities.
Myotek	United States	S	Amptech, Inc.	United States	The acquisition will allow Myotek to provide its customers with domestic production capabilities for its automotive lighting products.

C = CM acquiring or merging with CM operation. O = OEM divesting OEM operation. S = service or supply chain extension. N = new player. *Consolidation deal.

For 2018, there were two divestitures, compared with none of this transaction type the year before.

One might think that a mature EMS industry, notorious for low margins, would not attract any new players. This has indeed been the case for 2018. No new companies entered the EMS

This has indeed been the case for 2018. No new companies entered the EMS industry via acquisition in 2018, versus one the year before.

MMI also keeps track of alliances and equity partnerships, which are an alternative to M&A deals. In 2018, there were four of these partnerships, down

from eight formed the year before (see Table 2, p. 4).

Note that the M&A Scorecard does not include private equity deals or divested assets sold to industry outsiders.

Table 2: EMS Industry Alliances and Equity Partnerships in 2018

Micron	United States	Intel	United States	Micron and Intel have agreed to complete development of their third generation of 3D NAND technology, which will be delivered toward the end of this year and into early 2019.
Stadium Group	United Kingdom	Mouser	United States	The agreement signed with Mouser covers the distribution of Stadium Group’s standard technology products, including power supplies.
Qualcomm	United States	Universal Scientific Industrial	Taiwan	Signed an agreement to form a joint venture for the design, development, and fabrication of modules and components for smart phones and IoT devices in Brazil.
Libra Industries	United States	CoPro Technologies	Germany	Libra Industries has partnered with CoPro Technologies to support its customers with mechanical design and PCB layout services.
Yamaha SMT	Japan	Shinkawa and Apic Yamada	Japan	The surface-mount and industrial robotics technologies in Yamaha’s robotics business will be combined with Shinkawa’s bonder and Apic’s mold technologies to create new growth businesses and provide total solutions for semiconductor backend processes. In March, Shinkawa is to make a tender offer for Apic (¥570/share; closed at ¥538 on 13 February), and then conduct a private placement (¥382/share; closed at ¥453) in which Yamaha pays in ¥10bn (¥7bn to fund the tender offer for Apic; giving Yamaha a 56.63% stake in Shinkawa). Shinkawa will ultimately become a holding company, and the surviving, listed entity. By offering total solutions for semiconductor back-end production lines and cross-selling to each other’s customers, the companies aim to expand business opportunities, develop new products for entire production lines, optimize manufacturing bases, share IP, achieve greater administrative efficiency and bolster procurement.

Chart 2: Deal Breakdown 2017 versus 2018

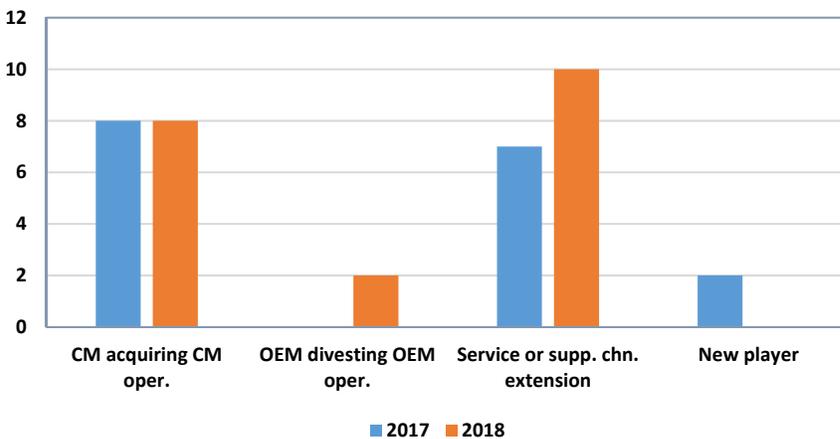
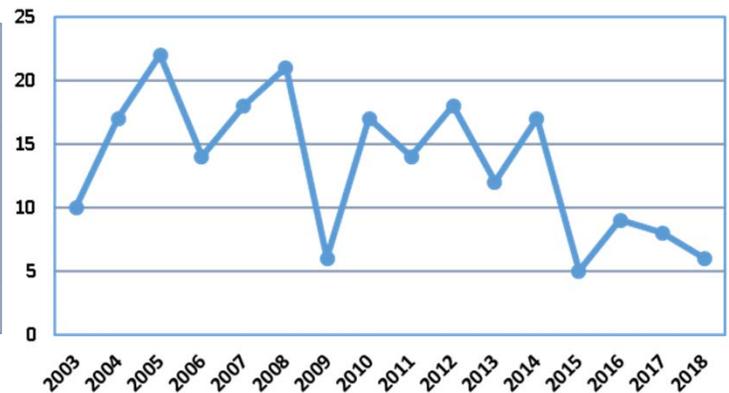


Chart 3: Consolidation Deals



Growth Year for US-Traded Group

Growth in combined revenue for the six largest US EMS providers was a positive 10.4%. Fortunately, fourth-quarter results on the whole came in better than expected, and 2018 will go down as a growth year for this US-traded group.

Revenue for the six providers totaled \$69.04 billion in 2018, compared with \$62.55 billion in 2017. Sales increased at all six providers, with the second company in the table (**Jabil**) holding the highest growth position at 17.8% sales growth. Annual growth rates ranged from 17.8% for Jabil to 4.3% for **Celestica** (Table 3, below).

In Q4, the six providers together generated sales of \$18.77 billion, increasing 10.7% from the same period a year ago. This increase was driven by **Sanmina** and, to a lesser extent, Jabil, while only **Benchmark** posted declining growth. All companies except Benchmark posted appreciable Q4 growth on a year-over-year basis.

On a sequential basis, the group's Q4 revenue increased 7.5%, again largely due to Sanmina, with support from Jabil and **Flex**. There were five

providers that increased their sales sequentially. Sanmina and Jabil posted double-digit gains and these gains were enough to outweigh decline at **Plexus** (Table 3).

Five out of six providers follow GAAP accounting rules, while the sixth, Celestica, adheres to IFRS reporting standards. Jabil, Sanmina, and Benchmark Electronics were able to raise their gross margins from Q3, while only Sanmina and Plexus were able to improve their margins from the year-earlier period.

With regard to operating margin performance, all providers except Flex were able to increase operating margin from Q3. Plexus reported the highest operating margin, at 4.8%. As for the lone IFRS reporting company, Celestica saw its IFRS operating margin increase from the prior quarter but decrease from the year-ago period (Table 3).

On a sequential basis, GAAP net income for the five companies in Q4 grew faster than sales did. Their aggregate net income of \$258 million increased 43.1%, while sales went up 8.2%. Jabil, Sanmina, Benchmark, and Plexus were responsible for the sequential increases in net income, as they were the GAAP companies that posted net income in the fourth quarter.

On a year-over-year basis, GAAP net income increased to 9.1% compared to a 10.6% increase in revenue. Only three companies—Jabil, Sanmina, and Plexus—succeeded in boosting their net income from a year earlier, whereas Flex posted the biggest decrease in net income. Q4 net margin for the GAAP reporting companies was up 1.51%, up 370 basis points sequentially and down 20 basis points year over year.

For 2018, combined GAAP net income for the five companies fell despite sales growth. Net income for the year decreased 16% to \$770.2 million, while sales increased 11.1%. Only Jabil and Plexus were able to accomplish annual increases in GAAP net income.

Table 3: Q4 and 2018 Results for the Six Largest US-Traded EMS Providers (US\$M or %)

Company	4Q18 Sales	3Q18 Sales	Qtr.—Qtr. Chg.	4Q17 Sales	Yr.—Yr. Chg.	4Q18 Gross Marg.	3Q18 Gross Marg.	4Q17 Gross Marg.	4Q18 Oper. Marg.	3Q18 Oper. Marg.	4Q17 Oper. Marg.	4Q18 Net Inc.	3Q18 Net Inc.	4Q17 Net Inc.	2018 Sales	2017 Sales	Yr.—Yr. Chg.	2018 Net Inc.	2017 Net Inc.
Flex	6,944.8	6,710.6	3.5	6,751.6	2.9	5.7%	5.7%	6.3%	0.3%	2.2%	2.6%	(45.2)	86.9	118.3	26,490.3	24,892.8	6.4	138.2	535.0
Jabil	6,506.3	5,771.8	12.7	5,585.5	16.5	8.1%	7.7%	8.2%	3.2%	2.6%	2.6%	136.9	54.1	63.8	23,016.2	19,543.8	17.8	301.7	104.9
Sanmina	2,188.0	1,876.3	16.6	1,744.8	25.4	6.8%	6.5%	6.3%	3.3%	0.6%	1.0%	38.0	(0.2)	7.1	7,553.3	6,893.4	9.6	96.3	101.1
Benchmark	657.1	640.7	2.6	666.0	-1.3	8.0%	7.9%	8.8%	2.5%	2.1%	3.5%	13.2	7.8	21.3	2,566.5	2,454.5	4.6	48.4	65.5
Plexus	765.5	771.2	-0.7	677.3	13.0	9.5%	9.5%	9.4%	4.8%	4.7%	4.8%	115.1	31.6	26.0	2,961.8	2,570.3	15.2	185.6	109.9
Subtotal/Avg.	17,061.7	15,770.6	8.2	15,425.2	10.6							258.0	180.2	236.5	62,588.1	56,354.8	11.1	770.2	916.4
Celestica	1,711.3	1,695.2	0.9	1,532.8	11.6	6.3%	6.0%	6.4%	1.7%	1.6%	2.9%	8.6	16.1	34.8	6,460.1	6,196.2	4.3	55.2	112.8
Total/Avg.	18,773.0	17,465.8	7.5	16,958.0	10.7										69,048.2	62,551.0	10.4		

All results are based on GAAP except those of Celestica, which has adopted IFRS reporting. With the exception of sales, GAAP and IFRS results are not necessarily comparable.

Company News

Nortech Systems Names Jay D. Miller President and CEO

Nortech Systems, Incorporated (NASDAQ: NSYS) named Jay D. Miller as president and chief executive officer, effective February 27. He has been serving as interim president since January 1 and has been an independent director of the company since May 2018.

Miller brings Nortech broad executive leadership and business experience with a wide range of medical technology companies. He also serves on the boards of a number of medical imaging and medical device companies. Previously, Miller held medical imaging industry CEO positions with **IMRIS, Inc.**, **Zonare, Inc.**, and **Vital Images, Inc.** Earlier in his career, Miller worked for the medical divisions of both **Siemens** and **GE**.

He earned a master's degree in business administration in marketing and management from the Kellogg School of Management at Northwestern University, a master's degree in biomedical engineering from the University of Virginia, and a bachelor's degree in chemistry from Dartmouth College.

Vexos Wins Circuits Assembly Service Excellence Awards 2019

Vexos Corporation, a global electronics manufacturing services (EMS) provider, received top honors in the *Circuits Assembly* 2019 Service Excellence Awards.

Sponsored by *Circuits Assembly*, the Service Excellence Awards (SEAs) for electronics manufacturing services providers honor companies that excel in customer service. The program, now in its 27th year, functions as a way for companies to see how they compare with their peers in various categories centered around customer satisfaction.

Circuits Assembly recognizes companies that receive the highest ratings, as judged by their customers regarding the categories of dependability

and timely delivery, technology, responsiveness, manufacturing quality, and value.

On Tuesday, January 29th, during the 2019 *Circuits Assembly* Service Excellence Awards ceremony at IPC Apex Expo, Vexos took home the top honors for two awards in the EMS providers category for companies whose revenues are between \$101 million and \$500 million. Vexos was recognized by its customers as best in class for two categories: manufacturing quality and technology. Cyril Fernandes, SVP Business Development for Vexos, was on hand to receive the awards.

Pace Electronics Purchases Peter Parts

Contract electronics manufacturer **Pace Electronics** has purchased **Peter Parts Electronics**, which specializes in electronic parts, components, and assemblies.

Pace Electronics's CEO Dawn Smith said Peter Parts employees have moved from the former Ontario operation to the Sodus headquarters.

Pace now has 38 employees, with 14 new employees as a result of the acquisition. Pace is considering putting in additional assembly operations at its headquarters.

Peter Parts Electronics will become a division of Pace, adopting the name Pace Products Electronics (PPE).

Kitron Completes Acquisition of EMS Division of API

Kitron has completed the \$14.8 million acquisition of the EMS division of **API Technologies**.

Kitron will consolidate the acquired business effective immediately. Kitron expects the transaction to be earnings neutral in 2019 and earnings enhancing in 2020 and beyond.

"This acquisition is a step change for Kitron in the US market and comes in response to customer demand for a more substantial presence in this important market," said Cathrin Nylander, CFO and acting CEO of Kitron.

The acquired business is focused on defense, aerospace, medical/industrial, and communications/consumer. Its 115 Windber employees operate six production lines in a facility of approximately 10,000 square meters. Total revenues in 2017 amounted to approximately \$30 million.

CPL Expands into Third Unit in the UK

Electronics manufacturing services firm **Contract Production (CPL)** has purchased a head office and production facilities in the UK, expanding into a third adjoining unit.

CPL shareholders have purchased 9,600 square feet, spread across three adjoining units, investing more than £500,000 in the acquisition and a modernization program.

The EMS company had leased two of the units for the past 10 years.

"The additional empty unit is basically a shell, so we are starting with a blank space, which gives us plenty of options," said CPL managing director Simon Norris. "It's a very exciting time for the company and the staff who will have a big say in how we can best utilize the new areas. The space may well be used to create a dedicated area for our automated production line to expand into, and grow our component stores and warehousing, as well as provide much-needed admin space and meeting rooms."

The expansion follows a six-figure investment last year in production lines that led to a 30% increase in revenue over the last 12 months.

Foxconn Makes Little Progress on Milwaukee HQ Remodeling Plans

Last summer **Foxconn** said it planned to upgrade its Milwaukee headquarters into a state-of-the-art facility, but little progress has been made, according to reports.

Since the announcement, permit applications filed with the city show

Foxconn has done minimal remodeling on its seven-story, 145,000-square-foot building there, with a total cost of about \$31,000.

Foxconn is temporarily leasing a substantial portion of the building to another tenant, which accounts for much of the remodeling, say reports.

Foxconn bought the building last June for nearly \$15 million.

Orders... German electronics industry orders were down 12.2% year over year in December, according to ZVEI. “Unlike in 2017, there were no large orders this month,” said Dr. Andreas Gontermann, ZVEI chief economist. Domestic sales fell 6.8% in December and sales from abroad fell 15.8%. Orders received from countries outside the euro area fell 23.4%. Orders from customers in the eurozone were up 1% year over year. For 2018, orders were down 0.3%. “Here, too, the comparison with 2017 lags so far, when at that time significantly more large orders had been registered,” said Gontermann.

While domestic orders fell 2.3% during 2018, foreign orders rose 1.4%. Growth from the euro area (up 1.5%) and from third-world countries (up 1.4%) were about the same. At €15.2 billion (\$17.1 billion), nominal industry revenues in December were down 11.5% year over year. Domestic sales decreased 13.8% to €7.1 billion for the year, while foreign sales fell 9.4% to €8.1 billion. Business with customers from the eurozone declined 14.5% to €2.8 billion in December. Third-world country sales dropped 6.5% to €5.3 billion. For 2018, aggregated electricity sales totaled a new record of €195 billion, up 1.9% compared to 2017. Domestic and foreign revenues increased 1.5% (to €92.9 billion) and 2.2% (to €102.1 billion), respectively. Sales with customers from the euro area (up 3.7% to €37.7 billion) grew almost three times as fast as those with business partners from countries outside the common currency area (up 1.3% to €6.4 billion).

MC Assembly Sustains Fire at MA Plant

A fire reportedly broke out at MC Assembly’s EMS plant.

Employees reported heavy smoke and water from the sprinkler system at the 58,000-square-foot plant. They also reported that the fire was caused by a malfunctioning machine.

SMTC announced the acquisition of the company last fall. A voice mail to the factory director of operations was not returned as of press time, nor have company officials commented on the event.

New EMS Company in Boston Area

A new full-service EMS company has sprung up in the Boston suburbs.

Advanced Electronic Technology has taken over a previously vacant 18,483-square-foot, three-story facility, where it offers surface-mount and PTH assembly on prototypes and low-volume orders.

Company services also include quick turns, cable and wiring assembly, box build, and rework.

Owner and president Giap Tran will seek minority-owned status from the US Department of Defense.

Flex Names Eaton Exec Advaiti CEO

Flex named veteran electronics executive Revathi Advaiti chief executive of the EMS company, succeeding Michael McNamara.

Advaiti, 51, was president and chief operating officer for the Electrical Sector business for **Eaton**. She also had corporate responsibility for the Europe, Middle East, and Africa region. The unit is Eaton’s largest, and Advaiti is credited with landing more than \$13 billion in sales in 2018.

Advaiti began her career as a mechanical engineer in her native India, then moved to the US, where she started her Eaton career on the factory floor as a plant supervisor in Shawnee, Oklahoma. Over the years, she expanded her engineering role to international markets, adding operational management and supply chain expertise.

She has a bachelor’s in mechanical engineering from the Birla Institute of Technology and Science in Pilani, India and an MBA in International Business from the Thunderbird School of Global Management in Glendale, AZ. She is a

non-executive director at **BAE Systems**.

Dorigo Breaks Ground on EMS Plant in Burnaby, BC

Electronics manufacturing services provider **Dorigo** broke ground on its new manufacturing facility in British Columbia this week.

The new plant, announced last June, will be 105,000 square feet and is due to be completed this fall. All EMS functions will be on one level, including SMT, test, and warehousing.

Parent company **Pillon Holdings** hosted a ceremony February 4. “To me, we are truly building a legacy,” said Dorigo president Mark Pillon. “The new Dorigo building will continue the legacy of hard work and achievement, a legacy in which I take much pride.”

IPO... **Cal-Comp Technology** (Philippines) expects an initial public offering (IPO) by the third quarter to finance expansion plans, according to reports. The local unit of **New Kinpo Group** initially planned to raise some \$131.3 million, but withdrew plans as a result of market conditions. Cal-Comp Philippines previously received approval from the Securities and Exchange Commission for fundraising. To proceed, the firm would have to get approval from the Philippine Stock Exchange. The company looked to sell more than 378 million shares, equal to nearly 27% of its total issued shares. The size of the IPO may be adjusted this year. Cal-Comp plans to open a new 24,000-square-meter facility in the Philippines, as well as develop phases two and four of its manufacturing site, adding 48,000 square meters of manufacturing space.

Smartphone Demand Continues to Stall, IDC Says

Smartphone vendors shipped a total of 375.4 million units during the fourth quarter, down 4.9% year over year.

It was the fifth consecutive quarter of decline, said IDC.

The holiday quarter closed out the worst year ever for smartphone

shipments, with global smartphone volumes declining 4.1% in 2018 to 1.4 billion units shipped. With challenging market conditions continuing into the first quarter of 2019, the likelihood of a declining market this year becomes more of a reality.

Despite all the challenges the smartphone market is facing, the largest focal point remains the China market as recovery continues to get pushed further forward. China, which accounts for roughly 30% of the world's smartphone consumption, had an even worse 2018 than the previous year, with volumes down just over 10%. High inventory continues to be a challenge across the market, as is consumer spending on devices, which has been down overall. At the same time, the top four brands in the China market, all Chinese—**Huawei, Oppo, Vivo, and Xiaomi**—grew their share of the market to roughly 78%, up from 66% in 2017.

On a worldwide basis, the top five smartphone companies continue to get stronger and now account for 69% of smartphone volume, up from 63% a year ago. If No. 6 Vivo is included, the share of the top companies is 75% and growing. While the market faces some very serious challenges in general, none are greater than the challenges

facing the brands that continue to lose market share and channel positioning.

Samsung saw volumes decline 5.5% with total shipments of 70.4 million units. Share fell to 18.7%, a few points above **Apple** and Huawei. Full-year 2018 volumes were down 8% to 292.3 million units. Apple saw volumes drop 11.5% for the quarter and 3.2% for the year.

Huawei's quarterly volumes rose 43.9%, bringing up 2018 volumes 33.6%. China represents about half of Huawei's smartphone business, but that is dropping as the company continues its international success with growth in almost every international market in which it participated in 2018.

Oppo had full-year shipments of 113.1 million units, up 1.3%. Xiaomi's full-year shipments rose 32.2%, passing the 100-million-unit mark.

Compass Electronics Group Acquires EMS Firm Protech

Compass Electronics Group has acquired electronics manufacturing services provider **Protech Global Solutions** for an undisclosed price. Other terms were not disclosed.

"Protech has an excellent reputation as a producer of high-quality electronic components with absolutely reliable logistics operations," said Jeff Roberts, president and chief operations officer of CEG. "We're thrilled to bring the

Protech team's electronics expertise to our platform. It solidifies our position as a one-stop shop for customers' design, development, and fulfillment needs while also enhancing our already formidable assembly capabilities."

Established in 2001, Protech provides electronics manufacturing, cable/wire harness assembly, box build, and supply chain services to OEMs in several industries, including consumer goods, security, transportation, and alternative energy.

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