

Manufacturing Market TM

INSIDER

inside the contract manufacturing industry

Vol. 28, No. 10

October 2018

Few Positives Seen in Trump's \$250 Billion Tariffs for EMS Companies

The latest round of US tariffs is a 10% levy on \$200 billion worth of Chinese goods, which is set to rise to 25% by the end of the year. That's on top of the \$50 billion worth of tariffs on Chinese goods that went into effect in August.

EMS companies that *MMI* has interviewed are unanimous in their condemnation of the proposed tariffs, which by all accounts seem likely to achieve little other than to punish US EMS companies, raise prices on electronic assemblies, and threaten layoffs and thereby cause unemployment.

Let's review for a moment the theory behind tariffs and their proposed positive effect. The intent of a tariff, or a tax placed on imported goods, is to benefit domestic companies by making their product more affordable than a foreign alternative. If a car manufacturer suddenly needs to pay a 25% tax to import steel, in theory, it will purchase steel from an American supplier instead, and that will benefit the American economy and job market overall.

What Tariffs Do in Theory—and in Practice

However, that's not always how things work out. For example, Harley-Davidson announced that US tariffs on Canadian steel and aluminum imports could cost the company \$45 million to \$55 million this year, and analysts speculate that these tariffs will raise prices of its motorcycles by an extra \$2,200. "US tariffs on Chinese imports can drive up prices for consumers, squeeze profit

margins of the companies relying on those imports, or both," said Greg McBride, chief financial analyst at **Bankrate**.

Today, the electronics manufacturing industry is caught in the middle. To offset potential price hikes from the tariffs on PCBAs, for example, an affected EMS manufacturer might pass through this cost to the customer, move production to a region not affected by the tariffs (thereby creating potential domestic layoffs), or sell its products at a higher cost. None of these options are attractive for EMS companies, so most have developed mitigation strategies that involve a blend of these changes. But most will admit that in the end, the customer will have to absorb the cost by having to pay higher prices, at either the distributor or OEM level, and then passing these on to the end customer, according to the EMS suppliers interviewed by *MMI*. In some cases, at companies like **Kimball** and **Elemental Computer**, layoffs are being considered as production is moved to operations in Mexico, where the US tariffs do not apply.

The Office of the United States Trade Representative issued a comprehensive list of Chinese products that the Trump administration plans to target. The list includes everything from vegetables and seafood to chemical elements and construction materials. On September 24, a third round of tariffs went into effect at midnight. This round includes some products used by the electronics industry, such as copper, nickel, steel, and other metals; select tools; select wire products; select appliances, machinery, and automotive parts; select batteries, insulators, LEDs, and printed circuit assemblies; television and broadcast equipment; solar panels; a range of substances used in the soldering of electronic parts; and chemical preparations used in lead, metal, and plastics. These tariffs are currently at 10% but will increase to 25% on January 1, 2019, if the US and China fail to reach a successful agreement before the end of the year. This is a powerful incentive for China to negotiate. In mid-September, Beijing announced its plan to impose retaliatory tariffs on 5,000 American goods worth \$60 billion in total. The tit-for-tat trade negotiations will continue until the second quarter of 2019, at which point new policies could be finalized.

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Here is what some leading electronics OEM companies are saying about the tariffs:

Apple: The company claims a “wide range” of its products would be affected, including the Mac Mini, a low-priced computer that comes without a keyboard or mouse; accessories such as mice, keyboards, chargers, Apple’s Beats headphones, and the new HomePod smart speaker; and computer parts for its US operations. Apple’s iPhones and watches were exempted from the trade tariff.

Dell Technologies: Dell states that the proposed tariffs will increase costs of vital parts and components for its US services and manufacturing operations, specifically on products such as desktops, servers, computer parts, and network switches. Dell is heavily dependent on electronics assembly imports from China.

Intel Corp: The company said that the proposed tariffs would negatively affect US businesses and “stifle advancements” in telecom infrastructure, including next-generation technologies like 5G, and would also raise manufacturing costs for ICT products such as desktop computers, laptops, and servers.

Fitbit: The fitness tracker maker says the increased tariffs would compromise its investments in US-based innovation, specifically wearable products; however, these products may soon be exempt.

Agilent Technologies: The company said that the increased duties would financially impede its US operations and its end customers in the US and abroad. It added that substantial tariff increases will limit its ability to reinvest in US operations, affecting employees engaged in R&D, design, and other support operations.

Office Depot: The company believes the tariffs will impact the non-household seating and furniture, and computer and electronics components it sells, and lead to immense supply chain disruptions and a likely loss of jobs.

Whirlpool: The company believes that higher-cost components from China would increase costs and create supply chain problems for US manufacturers, putting them at a competitive disadvantage. Whirlpool said the administration should remove “critical components” such as parts of refrigerators and mixers from the proposed list and add finished products such as dishwashers to mitigate the negative impact on US manufacturing.

Carrier: Transicold, a unit of Carrier Corp/United Technologies Corp, asked USTR to exclude items including parts for refrigerators, freezers, and other refrigerating or freezing equipment from the proposed tariffs.

Tariff Mitigation Strategies

Most EMS companies are employing mitigation strategies to avoid import tariffs when sourcing components that come from China. It’s not easy, because up to 90% of electronic components originate from China and finding replacements is an arduous task.

Some of the critical factors that have suppressed the overall tariff impact thus far are: the distributor inventory levels, the percentage of IP&E product made in China (where roughly 20–25% of the affected components are made), and manufacturers with multisite manufacturing capabilities. However, tariffs will start to have a greater impact on the market in 4Q18, as distributors are having to replenish their inventory levels and will start to pass along tariff charges. Fourth-quarter tariff impacts will become more severe, as the China 301 tariffs have expanded to some semiconductor product HTS codes as well. What’s not clear for 2019 is the duration of the China 301 tariff. It is conceivable that if the tariffs are not removed in 1H2019, their impact will be large enough to stall the current market growth rates.

T. H. Tung, chairman of **Pegatron**, has noted that his company has reestablished some manufacturing sites in Taiwan in recent years, and that moving production back to Taiwan, Pegatron has expanded its manufacturing capacity there by acquiring buildings and factories. (See more examples on pages 5–7.)

The Mexico Option

EMS companies without a Mexican manufacturing facility must be proactive in sourcing alternative materials. However, there is considerable capacity in Mexico for manufacturing electronics products. *MMI* counts 32 EMS companies and an estimated 72 facilities representing approximately 19 million square feet of manufacturing space. This is summarized in the side table at right, and while exporting production to Mexico is not always feasible or optimal, it represents the leading mitigation strategy for avoiding the Chinese import tariffs.

| Company | Location(s) |
|--------------|---|
| ASTEEL | Tijuana |
| Benchmark | Guadalajara, Guayas, Tijuana |
| Celestica | Monterrey |
| Compal | Juarez |
| Creation | Mexicali |
| Delta | Guadalajara, Tijuana, Tlalnepantla |
| Firstronic | Juarez |
| Flex | Aguascalientes, Guadalajara, Juarez, Reynosa, Tijuana |
| Foxconn | Chihuahua, Guadalajara, Juarez, Reynosa, Tijuana |
| IMI | Guadalajara |
| Jabil | Chihuahua, Guadalajara, Juarez, Tijuana |
| Katolec | Guanajuato |
| KeyTronic | Juarez |
| Kimball | Reynosa |
| Lite-On | Juarez |
| MC Assembly | Zacatecas |
| Micro-Star | Guadalajara |
| NEO Tech | Agave, Juarez |
| New Kinpo | Reynosa |
| Nortech | Monterrey |
| Pegatron | Juarez |
| Plexus | Guadalajara |
| Qisda | Mexicali |
| Sanmina | Guadalajara, Monterrey, Reynosa |
| Season Group | Reynosa |
| SigmaTron | Acuna, Chihuahua, Tijuana |
| SIIX | San Luis Potosi |
| SMTC | Chihuahua |
| Sumitronics | Tijuana |
| TPV | Tijuana |
| USI | Guadalajara |
| Wistron | Juarez |

Some Quarterly Results

TT Electronics reported interim results for the half-year ended 30 June 2018 of group revenue of £194.2 million (1H2017: £180.5 million), which included the contributions of the acquisitions of **Stadium Group plc** (“Stadium”) (acquired in April 2018) and **Precision, Inc.** (“Precision”) (acquired in June 2018); these totaled £14.6 million. Growth was driven by new sales wins and strong market demand. Revenue grew by 12% at constant currency and 3% organically, against a strong comparator. Excluding last year’s high-margin, one-off sales in Power and Connectivity (previously called Power Electronics), revenue growth was 5% on a like-for-like basis, with Sensors and Specialist Components and Global Manufacturing Solutions growing organically by 7% and 6%, respectively. Foreign exchange had a £6.4 million adverse impact.

Underlying operating profit increased by 45% to £14.6 million (1H2017: £10.9 million), excluding the impact of foreign exchange, with the improvement largely driven by operational leverage and better efficiency. A £3.1 million improvement was from the base business, driving a 60-basis-point increase in return on invested capital to 11.2% (FY2017: 10.6%). Underlying operating profit from acquisitions made in the period was £1.4 million.

The underlying operating profit margin was 7.5%, up 150 basis points as reported and 170 basis points at constant currency (1H2017: 6.0%). The strong margin progression has been achieved whilst making additional investment in the business to build capacity for future growth and expand the company’s capabilities. This investment includes training and capability expansion in strategic sales and business development to support the selling required for product solutions and £0.6 million in Power and Connectivity to support capacity increases, as indicated at the time of the trading update in May.

Revenue by Segment Sensors and Specialist Components (37% of group revenue): Revenue in the first half was £71.3 million (1H2017: £71.0 million), up 7% organically. The company has seen strong market demand continuing across the division. Overall, it has benefited from its strategy to position the business in areas with good market demand and having combined the sales force and launched a key account management approach, sales to its strategic distributors increased by 22%.

Power and Connectivity (20% of group revenue): Revenue for the first half was £38.7 million (1H2017: £33.2 million), an increase of 18% at constant currency, driven by the acquisitions of Stadium (April 2018) and Precision (June 2018). The 12% organic revenue decline relates largely to the absence of the high-margin one-off sales relating to the last-time-buy activity from a site closure in the US. Acquisitions contributed £9.9 million of revenue.

Global Manufacturing Solutions (43% of group revenue): Revenue for the first half was £84.2 million (1H2017: £76.3 million), up 13% at constant currency, and up 6% organically. Revenue from Stadium was £4.9 million. Organically, revenue growth was driven by demand in Asia and North America, primarily from medical customers.

Vtech. The company announced results for the year ended 31 March 2018, reporting record revenue and higher profit. Group revenue for the year ended 31 March 2018 increased by 2.4% to US\$2,130.1 million, driven by higher sales in North America and Asia/ Pacific. Growth of electronic learning products (ELPs) was negatively impacted by **Toys“R”Us**, as it filed for bankruptcy protection in the US and Canada in September 2017, followed by the liquidation of its US and UK businesses in early 2018.

Profit attributable to shareholders of the company increased by 15.3% to US\$206.3 million. The rise in profit was mainly due to higher revenue, as well as the absence of the one-off costs associated with the integration of

LeapFrog Enterprises, Inc. (LeapFrog) that were taken in the previous financial year.

The gross profit margin of the group fell from 33.2% in financial year 2017 to 33.0% in financial year 2018. This was mainly due to a higher cost of materials, which offset a positive currency impact and productivity gains. In financial year 2018, the group successfully brought most of the products of LeapFrog and **Snom Technology GmbH** (Snom) in-house for manufacture.

Group revenue is expected to rise in financial year 2019. TEL (telecommunication) products are anticipated to return to growth, while contract manufacturing services (CMS) sales are forecast to increase.

Company News

Acquisitions... **Celestica** announced a definitive agreement to acquire **Impakt Holdings**, a maker of processing equipment for the semiconductor and other industries, for \$329 million. The transaction is expected to be accretive to its consolidated non-IFRS operating margin.

Impakt also builds for the solar and OLED display industries. It was founded in South Korea in 1977, and is now headquartered in Santa Clara, California.

Through this acquisition, Celestica expects to gain significant new capabilities in large-format, complex, high-mix manufacturing solutions for multiple industries, and to broaden its precision component manufacturing, full system assembly, integration, and machining capabilities. In addition, Celestica anticipates that it will benefit from Impakt’s full spectrum of specialized vertical services, including its South Korea-based machining and manufacturing expertise.

The acquisition of Impakt will enhance Celestica's position as the largest end-to-end capital equipment manufacturer in its industry. Through Impakt's extensive capabilities, Celestica will be able to provide customers with even deeper and broader capital equipment manufacturing services, including in-region and vertical offerings. Impakt will also expand Celestica's second-largest end market within its growing \$2.2 billion ATS segment, and is well aligned to the company's strategy of expanding and diversifying its overall revenue and margin mix through targeted investments and acquisitions.

Impakt's deep expertise in its core markets will fit well with Celestica and its leading position in capital equipment manufacturing. Together, Impakt and Celestica have the opportunity to create compelling end-to-end solutions for customers across multiple markets and in key geographies... **Compass Electronics Group** has acquired wiring harness and cable assembly provider **Qualitronics** for an undisclosed amount. Qualitronics does an outstanding job meeting the needs of its customer base, most of which has counted on Qualitronics as a key partner for a decade or more. Adding Qualitronics's extensive history and experience in the transportation industry to Compass's platform will further bolster its already impressive wire and cable capabilities... **Cohu** announced the completion of its previously announced acquisition of **Xcerra**, the provider of back-end semiconductor equipment and services, and printed circuit board test.

The transaction is expected to be immediately accretive to non-GAAP earnings per share and generate over \$20 million of annual run-rate cost synergies within two years of closing, excluding stock-based compensation and other charges. Cohu expects to achieve an additional \$20 million of annual run-rate synergies over the three- to five-year mid-term from products and facilities consolidation.

The acquisition of Xcerra accelerates Cohu's strategy to diversify its product offerings and customer base, expanding Cohu's addressable market to

approximately \$5 billion across semiconductor test and handling equipment, thermal subsystems, test contacting, vision inspection, MEMS, and PCB test. This combination also further strengthens its ability to fully capitalize on the growth opportunities in its key target markets of automotive, industrial, IoT, and communications. Although softening in the mobility market combined with current geopolitical uncertainty are creating near-term headwinds, the company remains confident about the long-term growth opportunities in these markets as well as its ability to deliver on its synergy goals and to profitably grow Cohu in the years ahead... **Jabil** will acquire the manufacturing operations of **Johnson & Johnson Medical Devices** in an \$80 million deal. The acquisition covers J&J's endoscopy, surgical, spine, trauma, and instrumentation devices, according to published reports.

As part of the deal, Jabil will acquire 14 sites. Jabil expects annual revenue to grow to more than \$1 billion as a result.

The deal's integration costs and charges associated with the deal reportedly could be some \$80 million. The cash outlay is expected to be applied to working capital and inventory, say reports.

New Facilities... **Alpine 4 Technologies** and its subsidiaries have entered into a joint project to build a contract electronics manufacturing facility in Fort Smith, Arkansas.

Alpine 4 will utilize roughly 18,000 square feet of an existing 68,000-square-foot facility that its subsidiary American Precision Fabricators operates in. The new space will initially be used for higher-volume cable assembly.

Alpine 4 expects the project will add \$2.5 million in annualized sales between the two companies over the next 18 months. Alpine 4 subsidiary Quality Circuit Assembly is also part of the venture.

Fort Smith, with its skilled labor pool and lower entry wage base, provides an attractive opportunity for Alpine 4 and its subsidiaries to expand its US-based contract manufacturing services by means that are more competitive with companies abroad... Starting the first week of October, electronics manufacturer **Scott Electronics** is moving to an 80,000-square-foot building in Salem, New Hampshire, expanding from its current 24,000-square-foot space. Renovations are expected to cost \$1.5 million, according to reports. The firm plans to use 40,000 square feet of space on the second floor by January.

In the past year, the company has hired 34 new employees, for a total of 156. Scott Electronics expects about 20% growth in sales for 2018, compared to 17% growth in 2017.

Some 60% of the firm's production takes place in Salem, while 40% occurs in Mexico.

Facilities Expansion... **ACC Electronix** has acquired an additional 20,000 square feet of manufacturing space to meet higher demand for EMS services. With the expansion, the contract manufacturer will nearly double its existing plant size, to 46,000 square feet... **Sanmina-SCI** is planning to expand capacity in Tatabánya, Hungary, with a €20 million investment, according to reports. The company will focus on manufacturing automotive electronics, while creating 220 new jobs.

Sanmina-SCI reportedly is expected to increase its volume of electronic equipment produced and tested by 50%... **Plexus** has expanded its Engineering Solutions business in Penang, increasing capacity and efficiency of the Penang Design Center by moving from its former location in the Penang-Riverside facility to the Penang-Islandview facility. The move could permit a 50% or more increase in technical staffing.

The EMS company has more than 600 development engineers globally, with Penang a major hub of operations. The Penang Design Center is one of eight Plexus operates around the world.

Contract ends... **Dell EMC** has ended its contract with **Celestica** and will move production in-house, according to reports. Celestica in Galway was reportedly providing server builds and labeling hard drives for Dell.

Some 300 Celestica staff could be impacted by this decision, say reports. In addition, Dell may increase its staffing in Cork.

Facilities Closure... **Jabil** will temporarily shut down two factories in Silicon Valley and furlough workers in response to weak business conditions. Some 435 workers will be affected, Jabil reported to local media.

The two sites are located in Livermore and Fremont and perform CNC machining and mechanical assembly. The sites are a combined 150,000 square feet, according to the company website.

The company told local media that workers would be given six days' paid time off during the furloughs, which will include one week each in November and December, respectively. Jabil took a loss of \$57 million in its most recently concluded quarter.

Innolux Names New Vice Chairman, President

Innolux has appointed its president Robert Hsiao as vice chairman and also promoted its vice president James Yang to president, effective immediately, according to an announcement by the LCD panel maker.

Yang, with 24 years of experience in the flat panel industry, has expertise spanning R&D, manufacturing, marketing, and business management. He also helped Innolux pioneer the production of 19- and 20-inch widescreen monitor panels in 2004.

Partnerships... The market for the connected home is advancing rapidly. Swedish EMS provider **NOTE** has signed a collaborative agreement with **Plejd**, a high-growth smart lighting enterprise. Batch production is scheduled to start at NOTE's manufacturing unit in Lund, in the south of Sweden, in the first quarter next year.

Apple Buys Part of Dialog's Business for \$600 Million

Dialog Semiconductor announced an agreement with **Apple** to license certain of its power management technologies, and to transfer certain of its assets and over 300 employees to the Cupertino company to support chip research and development.

According to the agreement, Apple will pay US\$300 million in cash for the transaction and prepay US\$300 million for Dialog products to be delivered over the next three years. The employees who are being transferred have already worked closely with Apple for many years. This move is expected to foster a deeper collaboration between the two companies.

Dialog says that it has also been awarded a broad range of new contracts from Apple for the development and supply of power management, audio subsystem, charging, and other mixed-signal integrated circuits. Revenues from the new contracts are expected to be realized starting in 2019 and accelerating in 2020 and 2021.

Apple will employ more than 300 Dialog engineers and other employees already supporting Apple chip development, representing approximately 16% of Dialog's total workforce. This means that Apple will assume certain Dialog facilities in Livorno (Italy), Swindon (UK), and Nabern and Neuaubing (Germany).

Dialog has deep expertise in chip development, and the company is thrilled to have this talented group of engineers who've long supported its products now working directly for Apple.

New Orders... Technology and manufacturing company **Cemtrex** says that it has received over US\$13 million in new orders in its Electronics Manufacturing Services (EMS) segment during its most recent quarter ended September 30, 2018.

The company's new orders were driven primarily by customers in wearable smart devices, medical devices, industrial technology, automation, and measurement devices. The orders came from both new customers and existing customers such as ERBE, ABB, and Heinzmann. With these new orders the EMS segment's backlog remains over \$50 million in total, which puts the segment on a path toward organic

growth of 10% over the next twelve months, the company writes in a press release.

IMI Opens Manufacturing Site in Serbia

Philippines-based EMS provider and **AC Industrial Technology Holdings** subsidiary **Integrated Micro-Electronics, Inc.** has officially inaugurated IMI Serbia, its latest manufacturing facility located in the city of Niš, Serbia.

The 14,000-square-meter production facility—the company's twenty-first factory—will allow IMI to expand its global footprint and support the growing market for automotive components in the European region.

This investment also forms part of the continuing effort of IMI and AC Industrial to assemble a global manufacturing platform capable of capitalizing on key megatrends such as increasing electronics in vehicles, autonomous driving, the shift to electric power, and shared mobility.

The factory will boost the manufacturing of electronic car components in the region, and will work as an extension of IMI Bulgaria.

Management Changes... **NOTE** announced that current board member Johannes Lind-Widestam has been appointed CEO and President. Lind-Widestam succeeds Per Ovrén, who will leave the company.

The new CEO had previously been Managing Director of **Kitron** Sweden and **Elos Medtech**, and brings experience from various senior positions at **ASSA**, **Flex**, and **Nobel Biocare**. With his operational background in industry and with experience from the EMS business focusing on growth and efficiency, Lind-Widestam is considered particularly well suited to lead NOTE in the future.

Compal Mulling Restarting Production in Vietnam

Compal Electronics is evaluating the feasibility of restarting its assembly lines in Vietnam amid growing US-China trade tensions and will come to a conclusion by

the fourth quarter of 2018, according to company president and CEO Martin Wong.

Compal will be able to fully reactivate its plants in Vietnam in 4–6 months, said Wong. When asked whether the company's clients would be willing to absorb the costs of the production relocation, Wong said that the clients will eventually need to make a decision amid the prospect of a 25% tariff from the US.

With the US government having placed a 10% tariff on many imported goods from China and planning to raise the tax to 25% in 2019, most Taiwan-based supply chain players have been actively adjusting their production lines in response to their clients' requests recently. In addition to Compal, **Quanta** and **Wistron** have also been reportedly adjusting their production.

Compal established manufacturing plants in Vietnam in November 2007, but the facilities stopped operation in 2013 due to a lack of supply chain support and difficulties in labor management. The company had mulled using the plants to manufacture handsets in 2015, but the idea never materialized, leaving the facilities in an idle state since.

Compal vice chairman Ray Chen has recently noted that the company's production costs will increase by 3% if its notebook manufacturing operations are moved back to Taiwan. Chen also pointed out that Compal had visited the Philippines to evaluate the feasibility of building new production lines there.

Because Compal already has plants in Vietnam, moving production there would be the best option in terms of speed. But a lack of supply chain support remains a big issue.

Compal's server and desktop products are also affected by the tariff, but Compal is not currently considering moving its server production elsewhere because the production volume is still limited, as reported by *DigiTimes*.

Foxconn Extending Smart City Deployment to Wisconsin

As part of the effort to transform itself from an EMS provider into a tech service group, **Foxconn** has been actively proceeding with deployments in the smart city and smart residential community sectors, and its latest deployment is to set up the Foxconn Place Racine in the US state of Wisconsin.

Foxconn has just announced plans to acquire the One Main Center in the downtown of Racine, Wisconsin, with the center to be renamed Foxconn Place Racine. It will house at least 100 Foxconn employees and serve as a major foothold for the group's smart city solutions R&D base, as well as an innovation center of the Wisconsin Valley.

According to C. L. Yang, Foxconn's director of North American strategic investment, the planned Foxconn Place Racine and the Wisconsin Valley located in Mount Pleasant will jointly build connections with enterprises and high-level educational institutes in Wisconsin, seeking to build an application environment based on the AI and 8K+5G ecosystems.

Industry sources said that Foxconn, which is carrying out major manufacturing investment projects in Wisconsin, will also host the "Smart Cities - Smart Futures" competition to inspire all the students and faculties of universities and tech schools in Wisconsin to engage in innovative R&D on smart city system solutions, as reported by *DigiTimes*.

Dell, Wistron Teaming Up to Extract Gold from E-Waste

Dell has teamed up with **Wistron** to recycle gold from e-waste and use the recycled gold in its products, marking an upgrade of its closed-loop project launched in 2012 to recycle plastic materials from end-of-life electronics into new Dell products.

Since the beginning of 2018, Dell has used gold recycled from waste

motherboards in its Latitude 5285 2-in-1 business-use notebook, debuted at the Consumer Electronics Show in January 2018 and to be shipped to customers in the second quarter of fiscal 2019.

The closed-loop gold recycling process comes in two stages. In the first stage, recycled electronic wastes are delivered to Wistron Green Tech's Texas plant in the US to undergo initial dismantling. The plant adopts a metal surface chemistry process to extract precious metals, including gold, silver, and copper, from printed circuit boards, according to S. H. Huang, president of Wistron Advanced Materials. The Texas plant can process 13,000 tons of electronics waste a year, sourced from the US and Europe.

In the second stage, Huang continued, the waste chassis plastics are sent to Wistron Advanced Materials' plant in Kunshan, China for further refining, where the plastics wastes are recycled into environmental plastics to be adopted by Dell's downstream ODM partners.

Over the past few years, Dell has had 152 product items adopt recycled plastics materials, mostly for chassis, and has set the goal of using 100 million pounds of recycled-content plastic and other sustainable materials in its products by 2020.

As part of its new circular economy plan for the next 10 years, Dell will expand its closed-loop recycling to include more waste materials, so as to allow the circular economy concept to further ferment in more products, according to Vivian Tai, head of Dell Environmental Affairs and Product Sustainability for the Asia-Pacific and Japan Region, as reported by *DigiTimes*.

Production Relocation... A growing number of Taiwan-based IT product makers, which are relocating their production in China back to Taiwan or other places in southeast Asia amid escalating US-China trade tensions, may see weaker results in fourth-quarter 2018 and first-half 2019, industry observers have warned.

With the US government beginning to impose 10% tariffs on about US\$200 billion worth of Chinese imports, Taiwan-invested companies in China that manufacture an array of products, including motherboards, networking equipment, servers, and other electronics components, will all be affected, said the sources.

There are few difficulties for Taiwan-based makers, long known for their flexibility in products, to implement production relocation plans, noted the sources, but added that among the issues involved are that such moves will result in higher production costs with less output and consequently reduced profits.

In response, most of Taiwan's suppliers are likely to renegotiate with clients on pricing in order to pass on part of the increased production costs to them, said the sources.

As mentioned above, notebook ODM **Compal Electronics** has said that it is evaluating the feasibility of restarting its assembly lines in Vietnam on clients' demand to prepare contingency plans. While notebook products are not yet subject to higher tariffs in the US, Compal vice chairman Ray Chen pointed out that the relocation of its notebook production lines from China back to Taiwan will result in a 3% increase in total product cost, which is very high compared with notebook ODMs' low gross margin.

Inventec, a major supplier of server motherboards, actually kicked off an expansion project at its plant in Taoyuan, northern Taiwan in September, slated for completion in October. The expansion project is being implemented due to requests by its clients in North America for the company to relocate its production back to Taiwan in the early phase of the US-China tariff war, according to sources, which added that the company also plans to adjust its production lines in Mexico.

Server makers **Quanta Computer** and **Wistron** have also already moved part of their server production back to Taiwan, and Quanta is also expanding its capacity at its production base in Taiyuan, northern Taiwan, indicated the sources.

Network equipment maker **Accton** is to add two additional production lines at its plant in Taiwan, which already has three production lines, according to company sources. The company also plans to purchase a new plant in Taiwan, with the investment project to be finalized soon, reports *DigiTimes*.

While most makers are still negotiating with clients on how to split the increased production cost, some observers believe that the most likely outcome is that clients may contribute part of relocation costs, while leaving Taiwan's makers to absorb the increased production costs.

Taiwan Keen to Accommodate Manufacturers Back from China

The Ministry of Economic Affairs (MOEA) has stepped up efforts to accommodate Taiwan-based makers moving their production lines back from China amid the escalating US-China trade war, according to government officials.

Many makers have been asked by clients to move their production lines in China back to Taiwan, or to southeast Asian countries such as Vietnam, Indonesia, Thailand, and the Philippines, to avoid the US tariffs on China-made products, the officials said.

Economics minister Shen Jong-chin revealed that the government is closely watching the development concerning Taiwanese firms' production line relocation, and has asked the Industrial Development Bureau to contact companies to better understand their plans.

MOEA's Investment Commission and Department of Investment Services have also jointly set up a task force to help returning makers solve problems in acquiring factory sites and securing power, water, and labor supply, the officials said.

But not all firms may move their production back, as it will be cost-inefficient to manufacture low-

value-added products in Taiwan, and those unable to meet the country's strict environmental protection regulations will not be able to come home, the officials said.

Inventec and **Quanta Computer**, at the request of their US-based clients, reportedly are shifting server motherboard production lines from China to their existing factories in Taiwan.

ODM **Compal Electronics** has also been requested by clients to shift production lines from China, and the company is considering expanding a factory in northern Taiwan or constructing another in Vietnam to house the shifted production lines.

Syrma Opens Fifth EMS Plant in India

Syrma Technology announced the opening of an electronics manufacturing plant in Bawal, its fifth in India. Bawal is located between Delhi and Mumbai.

The electronics manufacturing services provider is committing \$10 million over the next three years toward the new plant, which will focus on the automotive, industrial, aerospace, defense, and medical sectors.

The 26,000-square-foot facility includes a Class 10,000 clean room and can be expanded to over 125,000 square feet. Syрма, India's largest domestic-based EMS, said the plant could employ up to 1,000 workers once fully built out.

TSMC To Be Only Supplier of Apple A13 Chips in 2019

Taiwan Semiconductor Manufacturing Company (TSMC) is set to win all orders for A13 chips that Apple will release in 2019, extending its dominance in the pure-play foundry sector, according to supply chain sources.

TSMC grabbed a 56% share of the global pure-play foundry market in the first half of 2018. With TSMC set to

remain Apple's exclusive supplier of A-series chips in 2019, the Taiwan-based foundry stands a good chance of seeing its global market share top 60% next year, the sources said.

The sources said TSMC is set to remain Apple's exclusive contract chipmaker, fulfilling all orders for the next-generation A13 chip in 2019. TSMC has been the exclusive supplier of Apple's A-series chips since 2016.

TSMC's 7-nm process technology is also expected to obtain orders from **AMD, Huawei, MediaTek, NVIDIA, and Qualcomm**. A ramp-up of 7-nm chip orders will boost the foundry's market share to a new high in 2019, the sources noted.

TSMC's in-house-developed integrated fan-out (InFO) wafer-level packaging technology has made its 7-nm process technology more competitive than that of its counterparts, the sources suggested. TSMC is also expected to introduce the industry's first commercially available 7-nm EUV process, the sources believe.

With **GLOBALFOUNDRIES** putting its 7-nm plans on hold indefinitely, TSMC will have fewer competitors in the advanced sub-10-nm process segment. TSMC is also ahead of Samsung in the 7-nm foundry business, as the Korea-based foundry has secured orders only from Qualcomm and its own mobile division, the sources noted.

Norwegian Geophysical Company Signs Contract with Kitron

Kitron and **Magseis ASA** have entered into an agreement to manufacture Magseis's MASS (Marine Autonomous Seismic System) nodes to support their growth.

Magseis is a Norwegian geophysical company specializing in OBS (ocean bottom seismic) acquisition. Magseis has developed proprietary MASS nodes and a fully automated handling system, which are used to acquire high-quality seismic data for clients. The OBS market is in steady growth and the demand for OBS nodes is increasing.

Based on the contract, Kitron will supply electronics, high-level assembly, and system testing of the MASS nodes. Production will take place at Kitron's plant in Arendal, Norway, and the contract is valid for three years with an option to extend, a press release reads.

This contract provides renewed growth in Kitron's Offshore/Maritime market sector.

New Machinery... Swiss electronics manufacturing provider **Cicor** announced that the company has invested in a new laser trimmer for its production site in Ulm, Germany.

The new laser trimmer was put into operation at the Ulm site during the summer. The machine not only replaces the older systems, but also adds an automatic loading and unloading system in addition to fast "flying probes" that can be moved freely in all directions.

The machine was purchased in order to master the balancing act between fast prototype production in the smallest series and short running times as well as series production with higher quantities. With this investment, Cicor expands its machinery in the thin film sector.

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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. Copyright 2018 by NVR™. ISSN 1072-8651

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