Manufacturing Market INSIDER™
inside the contract manufacturing industry
Vol. 27, No. 12 December 2017

EMS Innovation Centers in Silicon Valley

Silicon Valley is synonymous with innovation, and for EMS everyone wants to be there. *MMI* decided to look at the EMS footprint in Silicon Valley and see who stands out. As it turns out, there is a substantial amount of innovative manufacturing capacity, with the majority of production being completed by EMS firms rather than OEMs, who have long since abandoned in-house production. The table on page 2 summarizes the leading EMS companies and manufacturing capacity in the Silicon Valley area.

"This is not your father's manufacturing in the US any longer," says Joanne Moretti, SVP and Chief Marketing Officer for **Jabil**. "Programmers versus factory workers are the new norm, and everything has gone digital." Hence, we find enormous investments being made in advanced manufacturing technologies, including robotics, 3D (additive) printing, AI/VR, smart packaging and supply chain, and the connected car and/or pharma device. All top-tier EMS firms have proprietary innovation programs, some with names like Jabil's Blue Sky platform and **Flex**'s Sketch-to-Scale program (**Sanmina** plans to launch its solution in 2018).

These three companies have the largest EMS investment in the competencies of product innovation, engineering, prototyping, production, and "orchestration" (a Jabil term that refers to intelligent digital supply chain visibility, network optimization, and procurement services). **Foxconn** provided no information publicly on its marketing efforts or forthcoming initiatives.

So why is Silicon Valley so important? Flex's Zahid Hussain, VP of Operations, states it best. "Silicon Valley is one of the premier locations for innovation and disruptive technology in the world, with most of the Fortune 50, 100, and 500 high-tech companies having a presence here. Combine that with the Bay Area's top-notch educational institutions—including Stanford and Cal Berkeley—a few National Laboratories and the presence of top representative companies in each of the industries leading innovation today, and Silicon Valley and the Bay Area serve as an epicenter of innovation and technological advancement, unlike any other place in the world." Even smaller EMS companies like Germany-based **Zollner** know that it provides "proximity to existing customers and new prospects in the tech industry."

So what types of products are they manufacturing in Silicon Valley? Flex's divisions include High-Reliability Solutions (Aerospace & Defense, Automotive, and Medical); Consumer Technologies Group (Connectivity, Mobility, Personal Systems); Industrial & Emerging Industries (Energy Management, Appliance & Lifestyle, Equipment & Automation); and Communications Enterprise Compute (Telecommunications, Networking, Server & Storage products). Jabil claims similar product categories, including Data Center Computing, Storage, and Networking solutions; Telecommunications products, including rack units and antennas; Fiber Optic products and pluggable photonics packages; Semiconductor Capital Equipment, including gas delivery systems, cabinet enclosures,

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and test equipment; Consumer Health products, including wearable electronics and e-textiles; Diagnostic and Test Equipment; and Consumer Electronics, including AR/VR solutions, connected robotics, and home automation.

As might be expected, the assembly production volumes tend to be low to medium. Jabil offered the most specific reason for this. "This is a fast delivery operation that can deliver initial production parts to customers in days instead of the months required for traditional manufacturing methods like injection molding. To accomplish this, we are using a variety of 3D printing systems, including **HP** Multi Jet Fusion, EOS, and Ultimaker and we are expanding our partnerships to include others in the coming weeks. Production volumes vary widely, but typical volumes range from 10–20 up through several thousand parts. As we scale production runs, typically in locations close to the end customer, capacity is in the range of 20,000–50,000 and up." **SigmaTron**'s VP of Sales, West Coast Operations, Curtis Campbell, also chimed in: "Volumes no, but increase in customers and number of assemblies, yes." Zollner's Manfred Amberger, Director of Marketing and Sales, West Coast Operations, was more enthusiastic, stating, "Yes! Services needed from the different branches are above the needs of pure PCBAs." Sanmina's Senior Vice President of Marketing, Gelston Howell, adds, "Having facilities here in Silicon Valley really improves a high-tech company's time to market. Their engineers can drive 15 minutes to our facilities and quickly address design or technical problems."

So, what are the disadvantages of manufacturing in Silicon Valley? Moretti of Jabil expresses it best: "Competition in Silicon Valley for the best and brightest talent continues to be fierce. Candidates have a natural tendency to lean toward Tier 1 OEM brands that they know, and it's an educational process to help them understand that as part of the Jabil team our employees get to work with not just one, but many of the Tier 1 OEM brands." Zollner's Amberger bluntly says the problem is "competitive environment and high salaries" and SigmaTron's Campbell simply states that the problem is "high cost and [low] workforce availability." Hussain, from Flex, states, "We do not see a downside of having a SV operation, and we have continued to expand this operation over the past couple of years. I would say that we are developing the right skill set for servicing the wide variety of new technology opportunities we come across. AR/VR, AI, and robotics are transforming markets, business places, and manufacturing."

Most EMS companies are protective of their customers, but in our survey on EMS in Silicon Valley, quite a few attractive customers were revealed, with permission. For example, many of Jabil's customers are well known and number over 330, but some of the recent Blue Sky customers include **Kymeta**, **Superfeet**, **Coriant** (wireless/optical/switch telecom), HP, and **Bloom Energy**, according to Moretti, who invited us to review their customer testimonials on the Jabil website. Flex's Hussain declined to be specific, but stated that his company has "over 190 customers we have registered on the campus, and ~90 of which may be active at any point in time." *MMI* discovered a similar rich mix of customers among the other top-tier suppliers.

In summary, having both a location in Silicon Valley and an innovation center are critical for finding success in EMS. Jabil's Moretti concludes, "This has definitely impacted our business and is having the effect that we wanted, hence there will be further investments in other parts of the world."

Company	Number of Locations	No. of Facilities	Total S.F.
Flex	Fremont, Milpitas	13	874,000
Jabil	Fremont, Pleasanton, San Jose	10	777,300
Sanmina	Fremont, Newark, San Jose	10	753,000
Celestica	Fremont, San Jose	2	300,000
Benchmark	Concord, Fremont, San Jose	3	288,000
Foxconn	San Jose, Santa Clara	2	240,000
Asteelflash, Creation, IMI, NEOTech, OSE, Plexus, Sigmatron, SMTC, Sparton, Venture, Zollner	Silicon Valley	1 each	877,195
Total			**4,109,495**

Firstronic Named EMS Company of the Year

Circuits Assembly has named **Firstronic** the 2017 EMS Company of the Year. The magazine determined that Firstronic deserved this recognition because of its continuous revenue growth, which in 2009 was $7 million and is now topping $160 million in 2017. Also, the company conceived and has developed a unique "lean" manufacturing culture that it has perfected through several incarnations. Firstronic consolidates its customer account base rather than expanding it, so it can focus on the best customers and excel in managing its supply chain.

The management team all worked together in another successful EMS enterprise, **EPIC Technologies**, which the team took from $3 million in revenue to about $300 million in a decade. It became part of NEOTech in April, 2015. President and CEO John Sammut has led both operations.

Automotive work is the company's leading market segment, followed by medical (15%), industrial electronics, and LEDs.

Nine-Month Sales Increase for Large CMs

Based on nine-month sales of 20 of the largest contract manufacturers, the outsourced manufacturing space is having a good year. Nine-month revenue for the 20 CMs totaled $261.7 billion, up 10.4% year over year. Sales in US dollars were up at 17 companies, with nine of them showing double-digit growth (Table 1, p. 4).

The 20 CMs consist of eleven EMS providers, six ODMs, and three hybrid providers. *MMI* recently began using the hybrid category to identify companies that do substantial amounts of both ODM and EMS work and to separate them for the purposes of analysis from those whose sales put them in the traditional EMS or ODM classes. *MMI* believes that this three-way system, though far from perfect, will yield a clearer picture of EMS versus ODM performance while acknowledging the rise of the hybrid model.

Nine-month sales were up for all three groups (the 11 EMS providers, six ODMs, and three hybrid providers). Combined sales for the EMS group increased 5.3% year over year versus 18.4% for the ODMs, and the three hybrid providers increased by 18%, thanks largely to **Venture Corp.**'s 42% increase (Table 1). For now, at least, the hybrid group is gaining share and poses a competitive threat to both the EMS and ODM sides.

EMS providers generated the majority of the 20 CMs' sales for the period. Revenue in the EMS category amounted to $151.1 billion, or nearly 58% of overall sales. ODMs contributed $62.6 billion, or 24% of sales, while the hybrid group accounted for $47.9 billion, or over 18% of sales.

Upon further review, *MMI* has made one change to the EMS group. **Kimball Electronics** has been added to the group, replacing **AmTRAN Technology**. **Wistron** has also been reclassified as a hybrid provider (Table 1).

Of the 17 CMs that grew their nine-month revenue, three are hybrid providers, five are ODMs, and nine are EMS providers (Table 1). One hybrid provider, Venture Corp., achieved the highest double-digit gains, in contrast to EMS provider **Cal-Comp Electronics**, which posted the lowest single-digit gains in the group.

Hon Hai Precision Industry, the EMS giant, had a minimal effect on the combined nine-month sales of the 20 CMs. Without Hon Hai, combined sales would have been up 13.3% from a year earlier, versus 10.4% including Hon Hai.

While nine-month sales were up overall for the 20 CMs, third-quarter results present a brighter picture. Totaling $96.1 billion, Q3 sales for the entire group rose 15.4% sequentially and 10.7% year over year. US dollar increases at 16 CMs carried the day, and seven of those gains were of the two-digit variety.

In the year-on-year comparison, 18 companies achieved sales growth in Q3, more than offsetting the declines at the remaining two CMs. Venture Corp., Wistron, **Quanta, Ability Enterprise**, and others all achieved double-digit increases. On the other hand, sales fell by single-digit percentages at **Kinpo Electronics** and **Celestica** (Table 1).

There was a wide range in Q3 sales results among the three CM groups. On a year-over-year basis, Q3 sales in the hybrid category increased 18.2% compared with a 20.5% increase for ODMs and 4.7% growth for the EMS providers. When compared with the prior quarter, the hybrid group led with a 25.8% gain, followed by the EMS firms with a 13.3% increase and the ODM providers at 12.5% growth (Table 2, p. 4).

When combined, Q3 income for the 20 CMs was approximately $1.7 billion, up from about $1.3 billion in the prior quarter but down from about $1.9 billion a year earlier. (Net income was approximate because not all companies follow the same accounting rules.) Net profit fell about 11.5% year over year despite the corresponding sales increase of 10.7%. At 10 companies, Q3 net income decreased versus a year ago, overwhelming the gains made at 10 others. Both Kinpo Electronics and Ability Enterprise reported net income of less than $5 million. Hon Hai represented about 41% of Q3 net income, yet accounted for 37% of sales.

For the first nine months, the 20 CMs together earned net income of approximately $4.6 billion. Net income declined in contrast to sales, as net income was down about 1.3% year over year compared with the 10.4% increase in sales for the period. Net margin overall came in at about 1.7% for the first nine months. Aggregate net margin for the EMS providers stood at about 2.1%, above the CM average, while the net margins for the ODM and hybrid groups were below average at about 1.3% each.

Table 1: Q3 and Nine-Month 2017 Results for 20 of the Largest Contract Manufacturers (M US$ or %)

Company	Primary Business	Head-quarters	Reports in US$	3Q2017 Sales	2Q2017 Sales	Qtr.–Qtr. Chg.	3Q2016 Sales	Yr.–Yr. Chg.	3Q2017 Net Inc.	2Q2017 Net Inc.	3Q2016 Net Inc.	Q1–3 '17 Sales	Q1–3 '16 Sales	Yr.–Yr. Chg.	Q1–3 '17 Net Inc.	Q1–3 '16 Net Inc.
Hon Hai	EMS	Taiwan	No	35,578.8	30,322.6	17.3	34,306.3	3.7	693.5	587.8	1,105.0	98,036.0	92,658.3	5.8	2,209.5	2,510.0
Quanta	ODM	Taiwan	No	9,107.8	7,737.2	17.7	7,136.6	27.6	131.7	130.8	126.2	24,356.4	19,706.6	23.6	354.6	347.1
Pegatron	ODM/EMS	Taiwan	No	11,108.9	7,902.1	40.6	10,087.4	10.1	120.0	113.0	171.6	26,887.7	25,017.5	7.5	360.9	422.8
Compal	ODM	Taiwan	No	7,637.8	7,027.6	8.7	6,313.1	21.0	76.6	8.4	69.5	20,842.5	17,162.6	21.4	120.4	173.1
Flex	EMS	Singapore	Yes	6,270.4	6,008.3	4.4	6,008.5	4.4	205.1	124.7	(2.5)	18,141.3	17,658.0	2.7	416.7	164.6
Wistron	ODM/EMS	Taiwan	No	6,998.8	6,372.1	9.8	5,376.8	30.2	30.3	26.9	16.3	18,921.1	14,107.3	34.1	75.2	47.3
Jabil	EMS	Florida	Yes	5,023.0	4,489.6	11.9	4,430.8	13.4	45.7	(25.3)	38.1	13,958.2	13,145.1	6.2	41.1	122.2
Inventec	ODM	Taiwan	No	4,087.9	3,652.9	11.9	3,562.0	14.8	76.7	63.3	38.7	11,028.3	9,883.3	11.6	162.3	120.8
Sanmina	EMS	California	Yes	1,755.0	1,711.4	2.5	1,665.8	5.4	25.8	36.4	100.8	5,148.6	4,946.5	4.1	94.0	160.7
Celestica	EMS	Canada	Yes	1,528.2	1,558.5	-1.9	1,554.0	-1.7	33.4	34.4	53.6	4,556.6	4,392.8	3.7	90.6	115.4
Cal-Comp Electronics	EMS	Thailand	No	846.3	721.7	17.3	836.6	1.2	6.4	8.7	9.9	2,323.2	2,297.9	1.1	24.3	24.1
Qisda	ODM	Taiwan	No	1,159.4	1,081.4	7.2	1,020.4	13.6	42.2	44.9	45.6	3,285.1	2,984.5	10.1	127.6	86.3
Universal Scientific Industrial	EMS	China	No	1,097.2	945.8	16.0	982.3	11.7	46.0	39.7	39.9	2,980.6	2,494.4	19.5	127.4	80.1
Plexus	EMS	Wisconsin	Yes	669.9	618.8	8.2	653.1	2.6	29.0	25.6	19.1	1,893.0	1,939.3	–2.4	83.9	62.0
Benchmark Electronics	EMS	Texas	Yes	603.6	616.9	-2.2	574.3	5.1	17.5	17.2	21.7	1,787.0	1,702.9	4.9	44.4	45.5
Shenzhen Kaifa	EMS	China	No	530.0	544.7	-2.7	495.1	7.0	24.3	28.1	10.0	1,574.5	1,684.5	–6.5	69.4	39.6
Venture Corp.	ODM/EMS	Singapore	No	782.0	735.8	6.3	517.5	51.1	82.0	50.7	34.8	2,121.1	1,493.6	42.0	167.5	93.6
Kinpo Electronics	ODM	Taiwan	No	1,011.6	925.8	9.3	1,059.4	-4.5	1.3	7.1	6.2	2,887.6	2,959.2	–2.4	15.6	33.2
Kimball Electronics	EMS	Indiana	Yes	253.2	241.3	4.9	226.5	11.8	8.4	8.1	10.1	727.4	661.0	10.0	24.6	23.4
Ability Enterprise	ODM	Taiwan	No	90.4	101.5	-10.9	70.9	27.4	4.3	2.3	7.2	283.7	249.7	13.6	7.1	7.9
Total/Avg.				**96,140.1**	**83,315.8**	**15.4**	**86,877.4**	**10.7**	**1,700.4**	**1,332.8**	**1,922.0**	**261,739.9**	**237,145.0**	**10.4**	**4,617.1**	**4679.7**
Total/Avg. without Hon Hai				**60,561.3**	**52,993.2**	**14.3**	**52,571.1**	**15.2**	**1,006.9**	**745.0**	**817.0**	**163,703.9**	**144,486.7**	**13.3**	**2,407.6**	**2,169.7**

Results in non-US currencies were converted to US dollars by applying a three-month average exchange rate for the corresponding quarter. Average exchange rates were based on monthly 2017 and 2016 data from the US Federal Reserve. Company net profits shown here are attributable to shareholders. Net profit totals are approximate because not all companies follow the same accounting standard.

Table 2: Comparing Results with Companies Grouped by Primary Business (M US$ or %)

Company (in order of 9-mo. sales)	Primary Business	3Q2017 Sales	2Q2017 Sales	Qtr.–Qtr. Chg.	3Q2016 Sales	Yr.–Yr. Chg.	3Q2017 Net Inc.	2Q2017 Net Inc.	3Q2016 Net Inc.	Q1–3 '17 Sales	Q1–3 '16 sales	Yr.–Yr. Chg.	Q1–3 '17 Net Inc.	Q1–3 '16 Net Inc.
11	EMS	54,155.6	47,779.5	13.3	51,733.3	4.7	1,135.2	885.5	1,405.7	151,126.4	143,580.7	5.3	3,225.9	3,347.6
6	ODM	23,094.8	20,526.4	12.5	19,162.4	20.5	332.9	256.7	293.5	62,683.6	52,945.9	18.4	787.6	768.4
3	EMS/ODM	18,889.7	15,010.0	25.8	15,981.7	18.2	232.3	190.6	222.7	47,929.9	40,618.4	18.0	603.6	563.7
20		**96,140.1**	**83,315.8**	**15.4**	**86,877.4**	**10.7**	**1,700.4**	**1,332.8**	**1,922.0**	**261,739.9**	**237,145.0**	**10.4**	**4,617.1**	**4,679.7**

Net profit totals are approximate because not all companies follow the same accounting standard.

Mixed Results for North American Group

For a group of eight mid-tier and smaller EMS providers based in North America, combined Q3 sales either were not bad or were rather disappointing, depending on how they are compared. On a year-over-year basis, the group's revenue was up 0.7%, but versus the prior quarter revenue was down 1.6%.

Q3 sales for the group of eight North America-based providers totaled $685 million, representing modest growth from the group's year-earlier revenue of $680 million. Among the group, year-over-year sales performance varied greatly, ranging from 20.3% for **SigmaTron** to –19.4% for **SMTC**. Sales increases at three providers outweighed declines at the remaining

five (Table 3, p. 5). The group's 0.7% growth from a year earlier was far below the 6.5% collective gain of the six largest providers in the US-traded sector (Nov., p. 4).

In the sequential comparison, Q3 sales increases at four out of eight providers were offset by decreases at the other four providers. As a result, the group's revenue growth was negative. Only **IEC Electronics** raised its revenue from the previous quarter in double-digit fashion. On a sequential basis, the North American group's 1.6% decline in Q3 was far behind a 5.6% gain achieved by the six largest US-traded providers (Nov., p. 4).

For the first nine months of 2017, the eight mid-tier and smaller EMS providers declined compared to their larger counterparts in the sales department. Nine-month sales for the eight mid-tier and smaller providers remained stagnant at 0% year over year, compared with a 3.9% growth for their larger competitors (Chart 1). Collectively, the eight mid-tier and smaller providers generated sales of $2 billion for the first nine months, as they did in the year-ago period. Sales decreases at five providers were enough to drag combined sales. Both SigmaTron and **Kimball Electronics** turned in double-digit gains, with 10.9% and 10% increases, respectively.

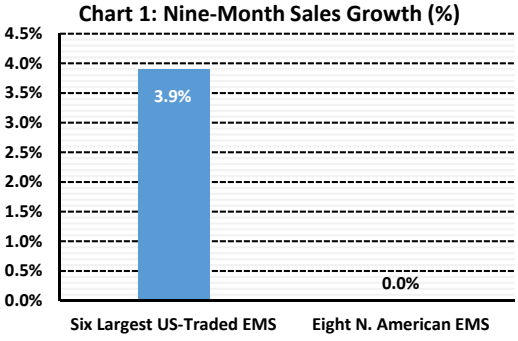
The group of eight mid-tier and smaller providers consists of seven companies in the EMS space, all publicly traded, and one EMS unit within a larger publicly held corporation. **Sparton Electronics** turned in a high gross margin of 15.3%.

Four providers increased their operating margins sequentially and two raised their margins year over year (Table 3). IEC Electronics achieved the highest operating margin at 6.6%.

The seven stand-alone providers combined for a Q3 net income of $6.6 million, compared with net income of $5.7 million in Q2 and $13.8 million in the year-ago period. Kimball Electronics achieved the highest net income in the group, of $8.4 million.

For the first nine months, net income for the stand-alone providers amounted to $21 million, an exponential increase from a year earlier, and a far cry from their decrease in sales of 0.9%. Kimball Electronics, which posted net income of $25 million, was single-handedly responsible for the net income result.

Chart 1: Nine-Month Sales Growth (%)



A Brief Look at Some Providers

Ducommun, Incorporated (NYSE: DCO). Ducommun's Electronic Systems segment net revenue for the current-year third quarter was $79.0 million, compared to $71.6 million for the third quarter of 2016. The year-over-year increase was primarily due to the following: $7.7 million higher revenue within the company's military and space end-use markets, mainly due to higher demand, which favorably impacted the company's fixed-wing, missile, and helicopter platforms; and $0.9 million higher revenue in the company's industrial end-use markets, partially offset by $1.3 million lower revenue within its commercial aerospace end-use markets, mainly due to continued softness in demand in the business jet market.

Electronic Systems' operating income was $8.2 million, or 10.4% of revenue, for the third quarter of 2017, compared to $6.6 million, or 9.2% of revenue, for the comparable quarter in 2016. The year-over-year increase was primarily due to higher manufacturing volume and lower manufacturing costs as a result of ongoing cost reduction initiatives, partially offset by an unfavorable product mix.

IEC Electronics Corp. (NYSE: IEC). IEC reported revenues of $26.5 million for its fourth quarter of fiscal 2017, compared

Table 3: Q3 and Nine-Month 2017 GAAP Results for Eight Mid-Tier and Smaller EMS Providers Based in North America (M$ or %)

Company	3Q17 Sales	2Q17 Sales	Qtr.–Qtr. Chg.	3Q16 Sales	Yr.–Yr. Chg.	3Q17 Gross Margin	2Q17 Gross Margin	3Q16 Gross Margin	3Q17 Oper. Margin	2Q17 Oper. Margin	3Q16 Oper. Margin	3Q17 Net Inc.	2Q17 Net Inc.	3Q16 Net Inc.	Q1–3 '17 Sales	Q1–3 '16 Sales	Yr.–Yr. Chg.	Q1–3 '17 Net Inc.	Q1–3 '16 Net Inc.
KeyTronic	109.2	118.5	–7.9	117.1	-6.8	7.2%	8.3%	8.3%	2.9%	3.6%	3.8%	0.4	1.3	1.8	341.4	359.5	–5.0	2.7	5.7
Sparton*	82.8	104.4	–20.7	100.3	–17.5	15.3%	19.0%	17.2%	0.4%	7.6%	1.3%	–2.9	1.7	0.1	282.6	309.4	–8.7	–0.7	–40.8
SMTC	34.4	33.0	4.3	42.7	–19.4	8.6%	4.3%	8.5%	2.5%	–5.2%	2.8%	–0.6	-6.0	0.0	100.6	128.2	–21.5	–6.9	0.3
SigmaTron	71.2	65.6	8.6	59.2	20.3	9.5%	11.6%	12.2%	3.1%	5.1%	3.0%	0.4	1.3	0.1	198.7	179.1	10.9	1.6	0.4
IEC Electronics	26.5	21.4	24.0	32.5	–18.5	14.0%	10.7%	16.8%	6.6%	1.3%	8.4%	0.8	-0.6	1.6	68.8	98.6	–30.2	–0.7	4.6
Nortech Systems	28.3	30.1	-6.1	29.7	–4.7	12.4%	11.2%	12.7%	3.3%	2.4%	2.6%	0.0	0.0	0.1	86.8	87.6	-0.9	0.0	–0.1
Kimball Electronics	253.2	241.3	4.9	226.5	11.8	7.7%	7.5%	8.1%	6.3%	6.2%	6.4%	8.4	8.1	10.1	727.4	661.0	10.0	24.6	23.4
Subtotal/avg.	**605.6**	**614.3**	**–1.4**	**608.0**	**–0.4**							**6.6**	**5.7**	**13.8**	**1,806.3**	**1,823.4**	**–0.9**	**20.6**	**–6.5**
EMS Unit of Larger Public Companies																			
Ducommun**	79.0	81.8	–3.4	71.6	10.3							8.2	8.8	6.6	239.5	222.4	7.7	24.1	19.8
Total/avg.	**684.6**	**696.1**	**–1.6**	**679.6**	**0.7**										**2,045.8**	**2,045.8**	**0.0**		

Operating and net income are not necessarily equivalent to GAAP results on a stand-alone basis. Segment operating income did not include corporate general and administrative expenses. (*) Sparton was acquired by Ultra Electronics. (**) For Ducommun, we have considered its Electronic Systems segment figures.

with revenues of $32.5 million for the fourth quarter of fiscal 2016. Gross profit margin for the fourth quarter of fiscal 2017 was 14% as compared to 17% in the same quarter last year. Selling and administrative expenses decreased on a dollar basis and as a percentage of sales to $2.5 million, or 9.0%, in the fourth quarter of fiscal 2017 as compared to $2.8 million, or 9.9%, of sales in the fourth quarter of fiscal 2016. The company recorded net income for the fourth quarter of fiscal 2017 of $0.8 million compared to net income of $1.6 million in the same quarter last year.

Revenues for fiscal 2017 decreased to $96.5 million as compared to $127.0 million in fiscal 2016. Gross profit margin for fiscal 2017 was 11.7% as compared to 16.0% in fiscal 2016. Selling and administrative expenses decreased on a dollar basis and as a percentage of sales to $10.2 million, or 10.6%, in fiscal 2017 as compared to $14.0 million, or 11.1% of sales, in fiscal 2016. Net income for fiscal 2017 was $81,000, or $0.01 per share, compared to net income of $4.8 million, or $0.47 per share, in the prior fiscal year.

KeyTronic Corporation (NASDAQ: KTCC) For the first quarter of fiscal year 2018, KeyTronic reported total revenue of $109.2 million, compared to $117.1 million in the same period of fiscal year 2017. Net income for the first quarter of fiscal year 2018 was $0.4 million, or $0.04 per share, compared to $1.8 million, or $0.16 per share, for the first quarter of fiscal year 2017. For the first quarter of fiscal year 2018, gross margin was 7.2% and operating margin was 2.9%, compared to 8.3% and 3.8%, respectively, in the same period of fiscal 2017.

During the first quarter of fiscal 2018, revenue was unexpectedly impacted negatively by approximately $4 million, along with a corresponding unfavorable impact on income as a result of delays in shipments due to massive flooding in Houston and unrelated industry wide shortages of key electronic components affecting a few larger programs. In addition, the company incurred approximately $0.3 million in statutory severance expense during the quarter in its Juarez facility.

For the second quarter of fiscal year 2018, the company expects to report revenue in the range of $110 million to $115 million, and earnings in the range of $0.07 to $0.14 per diluted share. These expected results assume an effective tax rate of 25% in the quarter.

Kimball Electronics, Inc. (NASDAQ: KE) Kimball reported first-quarter 2018 net sales of $253 million, a 12% increase year over year. Reported net income was $8.4 million and diluted EPS was $0.31. Operating activities used cash flow of $0.2 million during the quarter, which compares to cash flow provided by operating activities of $14.0 million in the first quarter of fiscal year 2017.

Cash conversion days (CCD) for the quarter ended September 30, 2017 were 59 days, which increased from 58 days in the same quarter last year. CCD is calculated as the sum of days sales outstanding plus production days supply on hand less accounts payable days. Investments in capital expenditures were $6.1 million during the quarter.

Cash and cash equivalents were $38.3 million and borrowing outstanding on credit facilities was $14.0 million as of September 30, 2017. Return on invested capital (ROIC) was 9.0% for the first quarter of fiscal year 2018, which compares to 9.6% for the prior year's first quarter.

SMTC Corporation (NASDAQ: SMTX) Revenue for the third quarter was $34.4 million, compared to $42.7 million in the third quarter of 2016. Sequentially, revenue increased 4.2%, from $33.0 million in the second quarter of 2017. The increase from the prior quarter is primarily due to revenue from new and existing customers serviced and the company's embedded business.

Gross profit for the third quarter of 2017 was $3.0 million, or 8.6% of revenue, compared with $3.6 million, or 8.5% of revenue, for the same period in 2016. Adjusted gross profit was $3.1 million, or 9.0% as a percentage of revenue, in the third quarter of 2017, compared to 8.5% in the same period of the prior year. The decrease in gross profit dollars was due to the decrease in revenue compared to the same period in the prior year. However, the increase in gross profit percentage was due to an improved product mix, a lower fixed cost structure as a result of SMTC's restructuring plan, and more favorable exchange rates.

Net loss was $(0.6) million for the third quarter of 2017, compared to a net loss of $(0.02) million in the third quarter of 2016 and a net loss of $(6.0) million in the second quarter of 2017. Adjusted EBITDA was $1.1 million in the third quarter of 2017, compared to $1.3 million for the same period in the prior year. The reduction in the third quarter of 2017 is due to the lower revenue compared to the same quarter in the prior year. However, adjusted EBITDA increased when compared to $(3.6) million in the second quarter of 2017, partially due to the improved gross profit percentage discussed above and additional charges included in the second quarter of 2017.

Sparton Corporation (NYSE: SPA). Sparton reported first-quarter fiscal year 2018 net sales of $82.8 million and a gross profit margin of 15.3%. SG&A expenses were $15.2 million, or 18.4% of sales; adjusted SG&A was $12.9 million, 15.5% of sales. Loss per share was $0.29, and adjusted earnings per share were $0.00. Adjusted EBITDA was $2.9 million, with a 3.5% adjusted EBITDA margin.

The company has two reportable segments: Manufacturing and Design Services (MDS) and Engineered Components and Products (ECP). MDS segment operations are comprised of contract design, manufacturing, and aftermarket repair and refurbishment of sophisticated printed circuit card assemblies, subassemblies, full product assemblies, and cable/wire harnesses for customers seeking to bring their intellectual property to market. Additionally, Sparton is a developer of embedded software and software quality assurance services in connection with medical devices and diagnostic equipment. Customers include OEM and ET customers serving the medical and biotechnology, military and aerospace,

and industrial and commercial markets. In engineering and manufacturing for its customers, this segment adheres to very strict military and aerospace specifications, and Food and Drug Administration guidelines and approvals, in addition to product and process certifications. Reported gross sales were $55.3 million. The $10.4 million decrease in net sales was due to the continued insourcing of a large customer in the medical end market and the loss of a customer in the industrial end market, reducing sales by $18.7 million, as well as program delays and volume reductions of $2.3 million. These losses were offset by revenues from new program wins and increased volumes with other customers of $10.6 million. MDS's backlog was $130.5 million on October 1, 2017, compared to $125.3 million on October 2, 2016. Commercial orders, in general, may be rescheduled or canceled without significant penalty, and, as a result, may not be a meaningful measure of future sales. A majority of the October 1, 2017 MDS backlog is currently expected to be realized in the next 12 months.

ECP segment operations are comprised of design, development, and production of proprietary products for both domestic and foreign defense, as well as commercial needs. Sparton designs and manufactures anti-submarine warfare (ASW) devices known as sonobuoys for the US Navy and foreign governments that meet Department of State licensing requirements. This segment also performs an engineering development function for the United States military and prime defense contractors for advanced technologies, ultimately leading to future defense products, as well as replacements for existing products. The sonobuoy product line is built to stringent military specifications. These products are restricted by International Tariff and Arms Regulations and qualified by the US Navy, which limits opportunities for competition. This segment is also a provider of rugged flat panel display systems for military panel PC workstations, air traffic control, and industrial and commercial marine applications, as well as high-performance industrial-grade computer systems and peripherals. Rugged displays are manufactured for prime contractors, in some cases to specific military-grade specifications. Additionally, this segment internally develops and markets commercial products for underwater acoustics and microelectromechanical (MEMS)-based inertial measurement.

Modest Growth in Q3 for European Providers

Third-quarter sales for a group of four European EMS providers was modest compared with the year-earlier period. Revenue for the four providers totaled €365 million, versus €353.2 million in the year-ago quarter. Sales in Q3 increased by 3.3%.

Revenue increases at three providers, **Neways Electronics**, **LACROIX**, and **Kitron**, offset a euro-based decline at **Scanfil** (Table 4).

Neways Electronics and Kitron were the two EMS providers to achieve double-digit growth. Neways and Kitron accomplished Q3 sales increases of 12.5% and 15.7% year over year, respectively.

At Neways Electronics, Q3 sales came in at €108.6 million in 3Q17; net turnover in the first nine months was up 9.6%, at €322.7 million. Order intake was up 39.8% and 20.8% (year on year) for 3Q17 and 9M17, respectively. With higher levels of activity in virtually all sectors, the medical sector remained stable. Neways reiterated its forecast for the full year 2017: It expects a higher net turnover and improved operating result compared with 2016. Net turnover increased fully organically by 12.5% in Q3, compared with the same period of last year. Higher contributions to turnover growth were mainly realized in the Semiconductor and Automotive sectors.

LACROIX Electronics posted a revenue of €79.5M for the third quarter, slightly higher (+0.4%) than the previous year, as higher customer demand did not generate extra revenue due to the shortage of some components (allocation).

Scanfil Group reported turnover for January–March of €122.2 million from €130.4 million in 2016, a decrease of 6.3%. The decline was mainly due to the divestiture of the Metal-Precision divisions. The Group's operating profit for January–March was €6.2 (0.5) million, representing 5.0% (0.4%) of turnover. The previous year's operating profit includes €4.7 million in adjustments arising from impairment and provisions related to the discontinued operations of PartnerTech AS.

Kitron's revenue for the third quarter was NOK535 million (from NOK463 million in 2016), an increase of almost 16% compared with the same period last year. Growth compared to the same quarter last year was particularly strong in the Industry market sector. Energy/Telecoms also recorded solid growth, while Medical Devices was essentially flat and Defence/Aerospace showed a slight decline. Offshore/Marine continues to decline, but has reached a level where the impact on group revenue is minimal. Operating cash flow was NOK22.4 million (NOK36.4 million in 2016) for the quarter.

Table 4: 3Q2017 Results for Six European EMS Providers (M€ or %)

Company (in order of 3Q17 sales)	Headquarters	Reports in Euros	3Q17 Sales	3Q16 Sales	Yr.–Yr. Change
Scanfil	Finland	Yes	122.2	130.4	–6.3%
Neways Electronics International	Netherlands	Yes	108.6	96.5	12.5%
LACROIX Electronics	France	Yes	79.5	79.2	0.4%
Kitron	Norway	No	54.5	47.1	15.7%
Total/Avg.			**364.80**	**353.2**	**3.3%**

Results in non-euro currencies were converted to euros by applying a three-month average exchange rate for the corresponding quarter. Average exchange rates were obtained from OANDA. Connect Group was excluded from our analysis, as its latest quarterly results were unavailable.

Company News

VIDEOTON Plans Major Expansion in Hungary

VIDEOTON plans to invest HUF5 billion ($18.8 million) in a new 215,000-square-foot factory in Hungary.

The company has allocated an additional $9 million for equipment and other technology for the building, its third on the campus. VIDEOTON will add more than 200 workers to staff the new site, which is scheduled for completion by the end of next year. The building will include 91,493 square feet of production space and 48,438 square feet of warehouse area. The two existing buildings take up 182,986 square feet and house 770 workers.

VIDEOTON will pay for the capital investment with cash on hand, according to published reports.

Connect Group to Expand in Romania

EMS company **Connect Group** said it will expand its production capacity in Romania by 35%, citing growing demand.

The Oradea plant will add more than 7,000 square meters of new office and production area, with a projected completion date in mid-2018.

The plant employs more than 900 people and is Connect Group's biggest unit.

Neways Expands EMS Ops in Czech Republic

Neways Electronics will more than double the size of its production operations in the Czech Republic to accommodate higher demand for automotive electronics.

The electronics manufacturer will increase its production area to 8,250 square meters (88,802 square feet) from 3,750 square meters, with the space to double its production area again later.

Construction is expected to be completed by the end of 2018. The company plans to add about 120 new staff.

Benchmark Electronics Appoints Lakkaraju CFO

Benchmark Electronics appointed Roop K. Lakkaraju as executive vice president and CFO. Lakkaraju replaces Don Adam, who is retiring at the end of the year.

Lakkaraju has more than 25 years of management experience in overall financial strategy, including treasury, financial planning and analysis, cost management, capital allocation, and balance sheet optimization. He was most recently CFO at Maana, a software firm.

Plexus Expands Romanian Design Center

Plexus is expanding its Oradea Design Center in Romania to accommodate continued growth in demand for its design and engineering services from customers in Europe.

The firm's total investment in Oradea is now more than $50 million. In the last fiscal year, Plexus's EMEA revenue grew approximately 13%, and its Oradea manufacturing revenue grew over 30%.

The Oradea Design Center's test engineering group also works directly with on-site manufacturing teams.

Publisher: Randall Sherman

Editor: Anna Reynolds

Research Analyst: Vivek Sharma

Board of Advisors: Michael Thompson, CEO, I. Technical Services; Ron Keith, CEO, Riverwood Solutions; 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

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