REED ELECTRONICS RESEARCH

The European Electronic Manufacturing Services Industry 2016-2021

A Strategic Study of the European EMS Industry

THE EUROPEAN ELECTRONIC MANUFACTURING SERVICES INDUSTRY 2016-2021

A Strategic Study of the European EMS Industry

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1 Introduction

1.1 Scope & Methodology

This is the Fifteenth edition of the European Electronic Manufacturing Services Industry report and updates the Fourteenth edition published in November 2016. Although building on the database of information which has been gathered since the publication of the first edition in 1993 the new report has been fully revised with increased emphasis being placed on analyzing the EMS providers, the countries and market sectors in which they operate and the key trends which will impact the industry in the period to 2021.

As in the previous reports, EMS is defined as electronic manufacturing offered as a service to other companies. It does not include the in-house activities, which also provide an EMS service. The production of printed circuit boards is to some extent included, since some EMS companies have acquired PCB production capabilities and all are often involved in the design aspects of the PCB layout when offering design services as part of the EMS activity.

The generation of the market numbers has been completed using both a ‘bottom up’ approach where details of EMS companies have been accumulated from the very large to the very small companies, and a ‘top down’ view of published data from variety of sources. Statistical information which was obtained from government departments, trade associations, company annual reports and various other publications, and in particular the Yearbook of World Electronics Data, was combined with data obtained from individual companies, to evaluate the state of the market and future developments. The previous report along with data from RER’s database were used as a base point in evaluating market developments during the interviews with key personnel of a cross section of EMS companies. Further information was obtained by Questionnaires in personal and telephone interviews.

Forward looking forecasts are constructed from the last full reported year (2016) and include known information to date on EMS activities such as collaborations, mergers, acquisitions and closures. These forecasts also include information from EMS and other companies on their expectations for growth in the coming years.

For sales to individual sectors such as computer, communications, medical etc., we have used information from the companies themselves either in the main from published accounts, from their websites or from other known information about plant specialization, number of employees, quality awards etc..

Annual reports, company brochures and corporate literature were collected from 230 EMS companies. Where information of a confidential nature was obtained, this was used solely to evaluate market trends in product and end-user sectors. In addition a further 800 plus companies, primarily the smaller national EMS providers, were checked for the directory.

The consultants also visited trade shows including Electronica 2016 and Productronica 2017 in Munich; What’s New in Electronics (UK) 2017, Southern Manufacturing (UK) 2017 and SMT & Hybrid 2017 in Nuremberg, Germany, and Electronics and Automation, Utrecht (Netherlands) 2017. In addition we have attended conferences and meetings held by evertiq.

Where applicable local currencies have been converted to Euro values. The forecasts assume constant Euro values and those used in the report are given in the Appendix.

Original Design Manufacturers (ODM) and Electronic Manufacturing services (EMS)

The key differentiator between the two types of organisations is that ODM’s own intellectual property (IP) as well as providing electronic manufacturing services. The EMS is considered to only provide the manufacturing services. In Asia, there are large manufacturing services companies who also own intellectual property in the products that are sold as branded products by the OEM. Whilst there are companies in Europe that do offer the

ODM service and state that ODM sales have been made, it is frequently not separated from the overall sales in Europe in its published form.

Given the difficulty in separating out specific ODM sales data, we have incorporated this within the total EMS sales. From the research and interviews we have undertaken, we would estimate that the total ODM element is less than 5% of the total EMS values and mainly within the top 25 companies. The ownership of IP such as in the ODM model by EMS companies appears to be reducing in frequency and value over the last few years.

The printed circuit board industry is in the main, considered as component manufacturing rather than EMS. Some activity is included in the valuation, as major EMS companies have acquired PCB operations. The manufacture of PCBs requires considerable investment in plant and process technology, not directly related to the assembly technology. There are a few PCB companies, which are able to supply volume manufacture and all types of PCBs, such as multilayer, fine pitch, flexi-rigid, etc. However, the relationship between the EMS company and the PCB manufacturer is of prime importance since the layout of the PCB is part of the design phase of the product.

1.2 Report Structure

Following Section 2, the Management Briefing, Section 3 provides a detailed analysis of the trends impacting the industry in the period to 2021. EMS revenues are provided for individual countries and split by region. A figure for the European EMS market by sector is also provided. Again, for this edition, the report has also analyzed the trends impacting the four principal groups of EMS company;

- Global.
- Multinational European.
- Sub-regional.
- National.

Section 4 provides profiles of the Top 25 EMS providers in Europe and North Africa/Middle East with an estimate of their sales for 2016. The structure of the industry and a summary of the latest developments are also provided.

Section 5 provides a breakdown by country and region. For each section an overview of the electronics industry is provided along with a summary of the key factors impacting the EMS industry. For each country or region we have outlined the role the global ‘Group 1’ companies are playing, a ranking of the Top 15 in 2016 along with profiles of the leading EMS companies in that area.

Section 6 is a directory of around 1,400 manufacturing locations for over 1000 companies. The directory is split by country. Companies who are focused solely on the production and assembly of cable and wire harnesses are not covered within the directory.

For this edition we have again provided a ranking of the Top 50 EMS providers in Europe based on 2016 revenues in Section 7.

We have also ranked the Top 50 European-owned EMS companies based on their current structure and estimated global revenues in 2016.

SAMPLE PAGES

UK EMS and OEM's may seek to establish more manufacturing in CEE to retain a foothold in the European Community as a potential solution to the consequences of Brexit.

Table 2.2 Percentage of EMS value by Region 2016-2021

Euro Millions	2016A	2017E	2018F	2019F	2020F	2021F
Western Europe						
CEE, MENA & Other						
% Western Europe						
% CEE, MENA & Other						

In the past few years we had seen the percentage of electronic production in the CEE/MENA region gradually increase on an annual basis as the total value in Western Europe diminished and this production moved eastwards and south to lower labour cost plants. However this migration as a percentage, has slowed as Western European values have stabilised and now marginally increased due to the increase in high value-low volume production through the increasing applications of the Internet of things, industry 4.0 and the number of start-up companies. Additionally, the large volumes of 3C products predominantly made in CEE/MENA have slowed as we examine in the sector commentary later in this section.

The higher proportion of new start-up business and the introduction of new products and technologies are more likley to be designed, proven and introduced at plants in Western Europe where they are close to the OEM's and some of this production will later migrate to low cost countries. We have not yet seen any slowdown of transfer of production due to the cost of labour, between the West and CEE/MENA starting to close, but undoubtedly, the salaries of skilled engineers and operators in many of the lower labour countries are coming closer to those in the West.

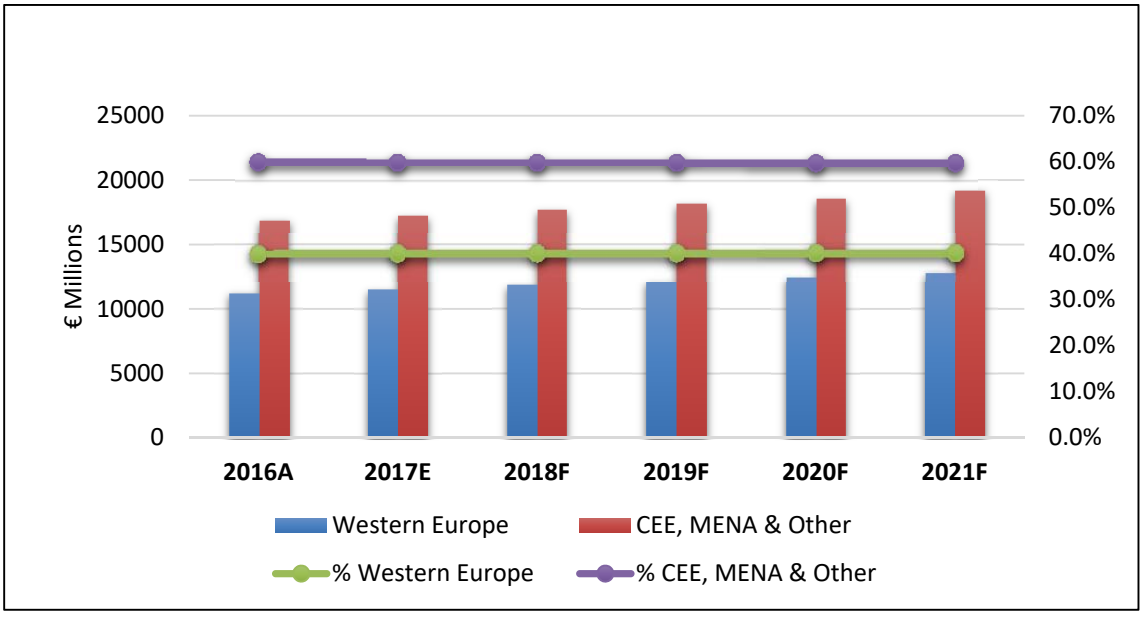

Figure 2.2 Percentage of European EMS by Region 2016-2021

In comparison to the forecast in the 2016 report, we now believe that the growth in Europe as a whole for the Consumer & Mobile and Computer sectors will flatten in the forecast period but still be positive. The major gainers in terms of growth are seen to be Communications, Control & Industrial, Medical and Automotive due to the increasing adoption of electronic content in the products in these sectors.

Where possible, we have researched the production value and/or listed sales revenues attributed to sites in lower labour cost countries to arrive at a forecast which places the value of EMS production, by country and by company in Europe, the Middle East and North Africa.

In 2016, we calculate that the total market for EMS in Western Europe, on a like-for-like basis, was Euro 11,231 million (2015 Euro 11,010 (Restated)) with the principle countries of Germany, France and UK totalling Euro 6,754 million (Euro 6,638 million (Restated)). Over 2016, the UK EMS revenue expressed in Euro has reduced, following the fall in the value of sterling compared to the Euro as a direct result of the Brexit decision. The EMS revenues in 2016, have increased slightly on 2015 and begun to climb again, following several years of slow decline.

For CEE/MENA in 2016 we estimate that the total market for EMS was Euro 16,869 million (2015 Euro 16,382 (Restated)) and with the majority of revenues coming from the huge sites, mainly of the “Big 6 EMS” companies in Czech republic, Hungary, Poland and Slovakia.

Table 3.2 EMS Revenues for Western Europe, CEE/MENA and other 2016-2021

Euro Millions	2016A	2017E	2018F	2019F	2020F	2021F
Western Europe						
CEE, MENA & Other						
Total Europe						

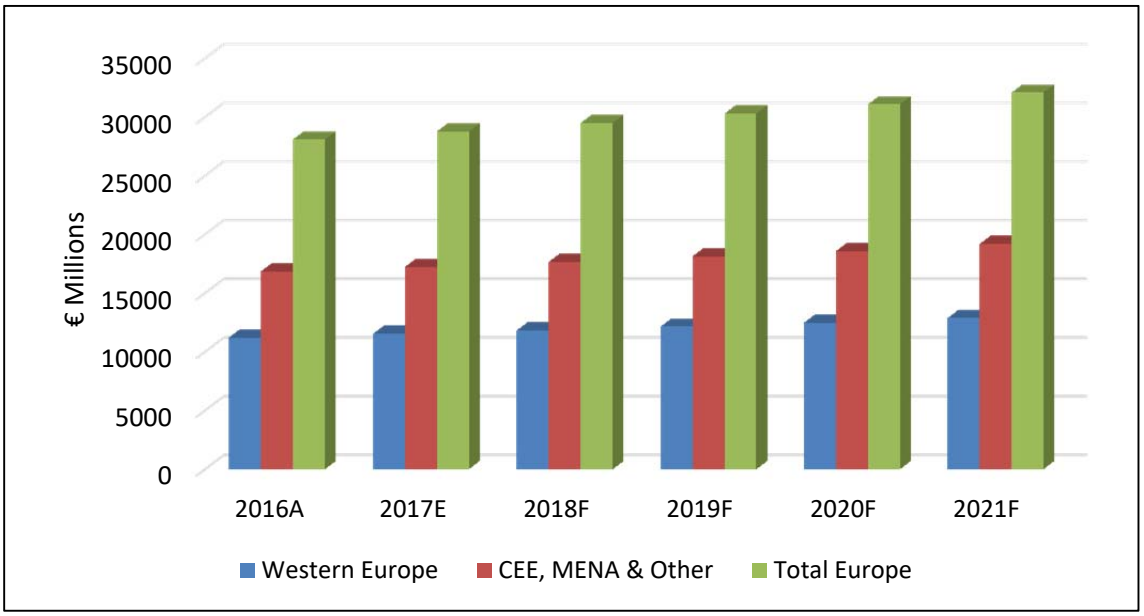

Fig 3.15 EMS Revenues for Western Europe, CEE/MENA and Other 2016-2021

EMS revenues in Western Europe in 2016 advanced by approximately 2% from 2015 on a like for like basis and this would have been higher at approximately 3.2% allowing solely for the effect of the Sterling-Euro exchange rate due to Brexit and excluding other restated values. EMS revenues in CEE/MENA in 2016 grew 3% over 2015 and this was also overshadowed by a contraction in values for the largely 3C production in the Czech Republic.

Table 3.7 European EMS Revenues by Country 2016-2021

	2016A	2017E	2018F	2019F	2020F	2021F	CAAGR
Austria							
Belgium							
Denmark							
Finland							
France							
Germany							
Ireland							
Italy							
Netherlands							
Norway*							
Portugal							
Spain							
Sweden							
Switzerland							
UK							
Total West Europe							
Bulgaria							
Czech Republic							
Estonia							
Hungary							
Israel							
Lithuania							
Poland							
Russia & Ukraine							
Romania							
Slovakia							
Slovenia							
Turkey							
Algeria							
Morocco							
Tunisia							
Other							
Total CEE & NA							
Total Europe							

3.2.7 EMS Revenues by Market sector

3.2.7.1 Total Europe

In comparison to the forecast in the 2016 report, we now believe that the growth in Europe as a whole for the Consumer & Mobile and Computer sectors will flatten in the forecast period but still be positive. The major gainers in terms of growth are seen to be Communications, Control & Industrial, Medical and Automotive due to the increasing adoption of electronic content in the products in these sectors. However, there are sharp

Table 3.9 CEE, North Africa and Other EMS revenues by Market Sector 2016-2021

Euro Millions	2016A	2017E	2018F	2019F	2020F	2021F	CAAGR
Aerospace & Defence							
Consumer & Mobile							
Communications							
Computer							
Medical							
Automotive							
Control & Industrial							
Other							
Total							

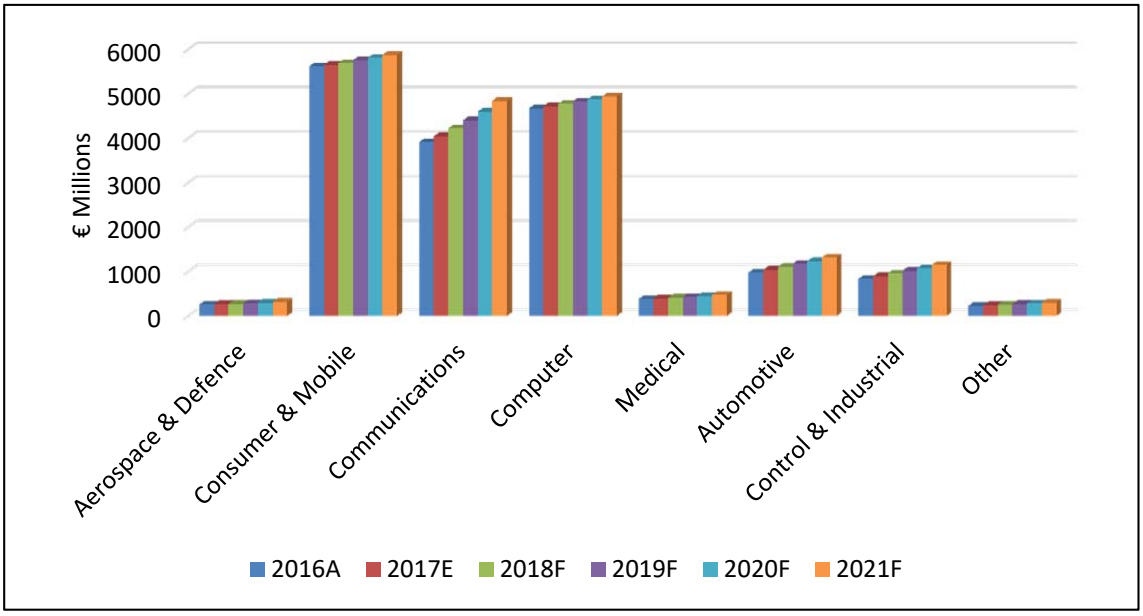

Figure 3.21 CEE, North Africa and Other EMS revenues by Market Sector 2016-2021

3.2.7.3 Western Europe

Most of the electronic production for both EMS and OEM's in the 3C sectors, consumer & mobile, communications (telecom) and computer has been moved some years ago to lower labour cost countries with much having been outsourced to Asia and China in particular. As earlier stated, the 3C products in the European region are largely made in the CEE and those that are manufactured by EMS in Western Europe are almost exclusively of a specialist type. Some high end consumer products are still made in Western Europe and also selected telecommunications systems and computers for engineering and technical use and typically in small batches. The remaining communications sector is bouyed up by increasing sales for supporting the digital revolution and industry 4.0 but much of this will move gradually to CEE over time. The automotive sector in Western Europe remains strong and is likley to increase well in the next five years as motor manufacturers continue to add electronics to vehicles to support the aspects of driver assistance, safety, emisions control and connectivity vehicle to source and increasingly vehicle to vehicle. The medical sector and its demands for electronic content will also continue to advance as hospitals, clinics and surgeries increase their demands for automation and real time information on patient wellbeing. The control and Industrial sector, the biggest sector in Western Europe is also seen to grow in the region of an average 4.85% per year being driven by the sub-sectors of control, automation, wireless interfaces and reuqirments in the transport sector, particulaly rail.

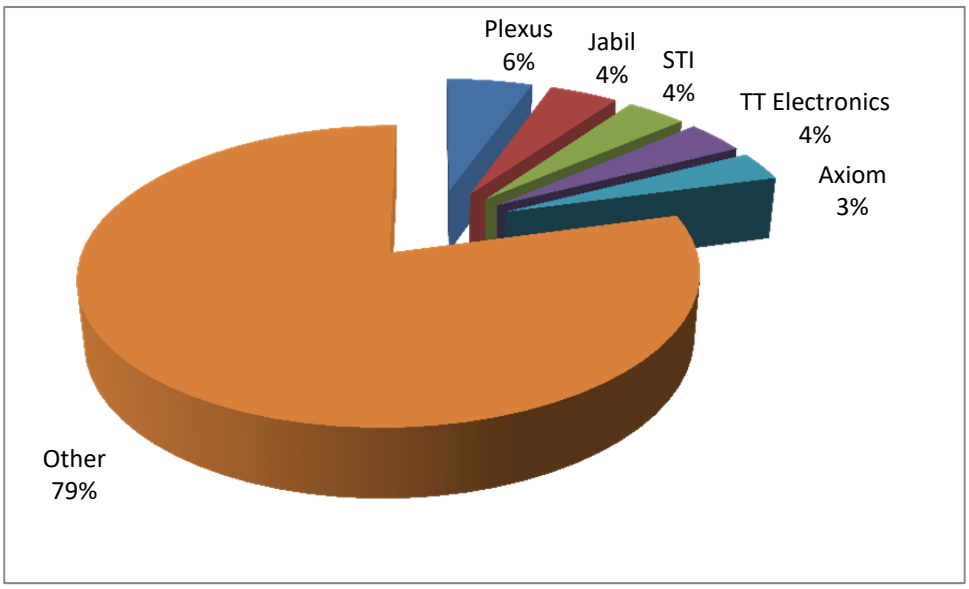

Figure 4.6 The Percentage of UK EMS Revenues by Leading Manufacturer 2016

4.3 Acquisitions

Medium to larger European EMS providers, and in some cases Group 4 companies, have used acquisitions to enter new markets, add complimentary skills and services and to expand their manufacturing footprint. Financial companies have also targeted the EMS sector with a number of EMS companies benefiting, although not always successfully, from increased capital and financial resources to support growth

Major acquisitions since 2011 for the leading European-owned EMS companies are summarised in Table 4.1.

Table 4.2 Major Acquisitions for the Top Leading European-Owned EMS Providers 2011-2017

Company	Acquisitions
ALL CIRCUITS, France	In June 2015, the sensing specialist IEE acquired the ALL CIRCUITS Group with manufacturing sites in France and Tunisia from industrial investor American Industrial Acquisition Corporation (AIAC). Both ALL CIRCUITS and IEE will run independently with IEE benefiting from ALL CIRCUITS capabilities in electronics manufacturing while ALL CIRCUITS will benefit from IEE's position in Germany and in supporting growth outside of Europe.
Asteelflash, France	In a move to expand into the German market the company acquired EN ElectronicNetwork in 2012. Domestically, Asteelflash acquired the Langon site of the insolvent TES electronic solutions in 2011.
Becom Electronics, Austria	In July 2017, Becom merged with the German company IVP GmbH the move strengthening the Austrian company's low cost manufacturing footprint with a site in Shenzhen, China.
CCS Holdings, Switzerland	In June 2011, CCS Holdings acquired fellow Swiss company Adaxys to create a company focused on serving small and medium-sized companies in the industrial, control and instrumentation, transport, communication, building services, medical and avionics sectors primarily in the DACH region. Further acquisitions have strengthened the company's capabilities and market position. In February 2012, the company acquired the German EMS Gohlke Elektronik and in August 2014, following a two year strategic alliance the Austrian mechatronics and cable provider AKAtech with operations in Austria and Slovakia.

4.7.6 Scanfil

Established in Sievi in 1976, Scanfil has grown from a Finnish manufacturer of sheet metal mechanics for the electronics industry into an international contract manufacturer and system supplier. In 2016, Scanfil reported sales of Euro 508.0 million and at the end of the year employed 3,300 people the company having production units in Europe, China and the USA. Urban Applications accounted for 36% of sales in 2016; Networks 19%; Energy & Automation 16%; Meditech, Life Sciences, Environmental Measurement 14%; Defence, Oil & Gas, Maritime 3%; and Other 12%.

At the beginning of July 2015, Scanfil acquired the Swedish EMS provider PartnerTech and completed the integration of the two companies operations during the first half of 2017. This included the closing of the former PartnerTech facilities in Norway, the UK and China and the sale of two former PartnerTech operations in Sweden – PartnerTech Aerodyn AB and PartnerTech Karlskoga – in 2016 and in 2017 the closure of Scanfil Vantaa Oy in Finland and Scanfil Kft Hungary.

Manufacturing Operations

The company currently has production plants in:

- Sievi, Finland (mechanics/assembly).
- Åtvidaberg, Sweden – Systems Integration Technology. Former PartnerTech facility.
- Malmö, Sweden – Electronics (Low volume production, NPI). Former PartnerTech facility.
- Schenefeld, Germany (Electronics) – Formerly Schaltex Systems GmbH acquired by Scanfil in April 2014, the plant focuses on the value-added assembly of complex systems.
- Pärnu, Estonia (electronics, mechanics, cables, integration).
- Sieradz, Poland – Electroncis (Volume production). Former PartnerTech facility.
- Myslowice, Poland – Systems Integration Technology . Former PartnerTech facility.
- Suzhou, China (electronics).
- Hangzhau, China (sheet metal mechanics, integration).
- Atlanta, USA. Former PartnerTech facility.

Company Developments

Following the acquisition of PartnerTech, Scanfil has streamlined is global manufacturing footprint with a number of plants either closed or divested:

- In January 2016 and following the completion of negotiations which started in November 2015 Scanfil announced that it would end production at PartnerTech's plant in Moss, Norway, a part of the PartnerTech's Metal Precision Technology Division.

- In February 2016, Scanfil announced it was divesting its Swedish subsidiary PartnerTech Aerodyn AB in a deal valued at Euro 350,000. Located in Karlskoga, PartnerTech Aerodyn AB manufactured large machined parts for the marine industry and hydroelectric power stations.

- Also in February 2016 Scanfil entered into negotiations concerning the future of its UK operations the company announcing in April 2016 that it would close the former PartnerTech electronics plant in July 2016.

- In May 2016, Scanfil announced it was selling the entire share capital of its subsidiary PartnerTech Karlskoga AB, located in Karlskoga, Sweden, for a nominal selling price. PartnerTech Karlskoga AB manufactures machined products for the defence, maritime and offshore sectors.

- As part of a move to streamline its operations in China the company has closed the former PartnerTech plant in Dongguan.

- Following the completion of employee negotiations in November 2016 Scanfil announced it was closing the plant in Vantaa, Finland by the end of June 2017.

- In November 2016 Scanfil announced it was closing its factory in Biatorbagy, Hungary, the move completed in the second quarter of 2017.

In June 2016, Scanfil announced it would double the size of its electronics plant in Sieradz, Poland the 8,500 sq m expansion being completed in August 2017. In addition to the production facilities, the investment covers significant machinery and equipment for electronics manufacturing, which increases the plant's SMT -capacity and boosts the assembly of box build products.

During the first quarter of 2017 Scanfil continued with its investment programme the company installing a new SMT line in Suzhou, China; punching machines as well as bending lines in Myslowice, Poland and a SIPLACE SX2-Series SMT line from ASM at its manufacturing plant in Malmö, Sweden, the new line becoming operational in July. Furthermore, the company made the decision to double its production space in Atlanta, USA, the company moving to the new site in August 2017,

Scanfil Leading Financial Indicators – Year end December

Turnover in 2016 totalled Euro 508.0 million (2015: Euro 377.3 million), up to 34.6%. Operating profit in 2016 amounted to Euro 7.2 million (2015: Euro 14.4 million), 1.4% (2015: 3.8%) of turnover. In 2016, Europe and USA accounted for 79% of turnover (2015: 75%) and Asia 21% (2015: 25%). PartnerTech AB has been consolidated into Scanfil Group as of 1 July 2015. The largest customer accounted for 11% (2015: 13%) of sales and the Top 10 56% (2015: 55%).

Scanfil Leading Financial Highlights

Sales by Geographic Segment

Euro millions	2016	2015	2014	2013	2012
Europe & USA	401.4	282.2	131.9	112.2	108.1
Europe Intersegment	(3.9)	(4.5)	(2.9)	(2.3)	(2.0)
Asia	129.0	113.2	86.8	79.6	75.8
Asia Intersegment	(18.5)	(13.6)	(1.3)	(1.0)	(1.0)
Total	508.0	377.3	214.5	188.5	180.9

Sales by Market

Euro millions	2016	2015	2014
Urban Applications	179.6	133.8	81.0
Networks & Communications	98.8	79.0	46.8
Medtec, Life Sciences, Environment	70.4	43.5	17.0
Defence, Oil & Gas, Maritime	15.7	11.2	-
Energy & Automation	80.7	71.2	61.3
Other Industries	62.8	38.6	8.4
Total	508.0	377.3	214.5

Sales by Customer Location

Euro millions	2016	2015	2014	2013	2012
Finland	90.0	73.3	76.4	79.8	76.9
Sweden	153.3	83.1			
Poland	8.5	4.8			
Rest of Europe	152.2	119.2	59.0	35.2	34.7
Asia	85.2	82.7	72.3	69.9	66.1
USA	17.6	12.8	5.4	2.5	1.9
Other	1.2	1.4	1.4	1.1	1.3
Total	508.0	377.3	214.5	188.5	180.9

Leading Financial Highlights

Euro millions	2016	2015	2014	2013	2012
Sales	508.0	377.3	214.5	188.5	180.9
Net Profit	0.1	8.4	12.3	8.2	5.7
Average Number of Employees	3483	2641	1773	1673	1669

Scanfil’s turnover in the first nine months of 2017 amounted to Euro 385.5 million (Nine Months 2016: Euro 385.7 million). The Group's operating profit for the same period was Euro 21.7 million (Nine Months 2016: 4.4 million), representing 5.6% of turnover (Nine Months 2016: 1.1%). The operating profit for the previous year includes adjustments total of EUR 13.2 million, consisting of the costs of the reorganisation, sale and closure of poorly profitable units of PartnerTech AB's plant network and the Metal Precision business acquired in the year 2015. The Group's turnover for in the third quarter of 2017 amounted to Euro 130.8 million (Q3 3016: Euro 121.7 million), an increase of 7.4% compared to the corresponding period of the previous year. Operating profit was Euro 8.5 million (Q3 2016: Euro 7.6 million), or 6.5% of turnover (Q 3 2016: 6.2%). Operating profit grew 12.5% compared to the corresponding quarter of the previous year. The previous year's third quarter included Euro 0.1 million adjustment items. In the third quarter sales to the Energy & Automation segment amounted to Euro 20.7 million or 15.8% of sales (Q3 2016: Euro 20.0 million); Medtec, Life science, Environmental Measurements Euro 21.5 million or 16.4% of sales (Q3 2016: Euro 16.2 million); Network & Communications Euro 27.3 million or 20.9% of sales (Q3 2016: Euro 27.4 million); Urban Applications Euro 39.4 million or 30.1% of sales (Q3 2016: Euro 44.7 million); and Other Industries Euro 22.0 million or 16.8% of sales (Q3 2016: Euro 13.5 million). During the quarter the largest customer accounted for 13% of turnover and the top ten 59%.

After declining by 21% in 2015, the production of computer related equipment declined by an estimated 7% in 2016 a trend which is expected to continue in 2017 before easing, although the downward trajectory is forecast to continue throughout the period to 2020.

Germany remains the focal point of the West European electronics industry accounting for an estimated 32% of the total in 2016 and its share is expected to edge up slightly by 2020. Over this period the German electronics industry will continue to be centred on industrial applications. The communications sector is also expected to post growth on the back of higher defence spending and the growth in the Internet of Things and in particular Industry 4.0.

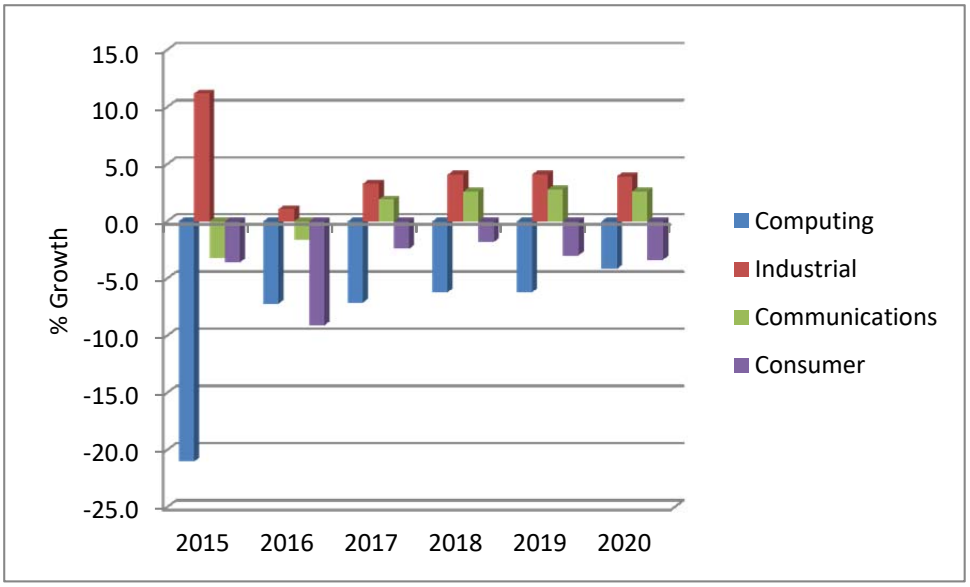

Figure 5.6 Growth in the German Electronics Equipment Production by Segment 2015-2020

Table 5.4 German Electronics Equipment Production 2015-2020

Euro Millions	2015	2016	2017	2018	2019	2020
Computing	3278	3042	2826	2651	2487	2383
Industrial	27566	27859	28777	29954	31184	32408
Communications	4533	4459	4544	4662	4791	4917
Consumer	1135	1032	1007	989	960	927
Total	36512	36392	37155	38255	39422	40636

Notes: Based on NACE Rev 2, C26 Computer, Electronic & Optical Products. Computing includes office equipment; Industrial combines control and instrumentation and medical and industrial; and communications combines fixed and wireless communications (inc. defence). Source: Yearbook of World Electronics Data, Volume 1 2017 (Reed Electronics Research)

Outside of the electronic equipment segments of computing, communications and industrial, and which is tracked in the data above, the German electronics industry will also benefit from the country's leading position within the automotive electronics industry, the country the largest vehicle producer in Europe, and the increase adoption of electronics within a broader range of machinery and equipment.

5.2.2 EMS Market & Industry Trends

- The German electronics industry is the largest national market in Europe and although it holds some very large household names, is supported by a large number of medium sized enterprises which have been established, and thrived over a number of years. This internal market has provided a buffer against the migration of production to lower cost countries, although many German EMS and OEM now have manufacturing operations in low labour cost locations usually in neighbouring countries.

On the back of a strong order book Sero opened a new warehouse in November 2015 and completed the construction of a new production hall and administrative building in the second quarter of 2016. The 4,000 sq m of additional space is in addition to the existing 4,200 sq m of production space, 1,000 sq m of office space and an 800 sq m warehouse.

In Fiscal 2015, the company invested Euro 4.5 million including the installation of the company's fifth SMT line and the upgrade of its existing lines. In Fiscal 2016, the company plans to invest a further Euro 4.75 million.

The company is certified to ISO 9001, ISO 14001 and ISO/TS 16949.

5.2.4.14 Tonfunk

The Tonfunk Group was established in Ermsleben in 1958 and provides a complete range of manufacturing services from development through to supply chain management. Tonfunk GmbH Ermsleben is the principal production company while Tonfunk Systementwicklung und Service GmbH focuses on development including commercialising its own products.

The company has developed and marketed the Mopad an industrial tablet computer which can be built to meet specific market requirements.

In 2015, the company reported sales of Euro 82.9 million (2014: Euro 70.4 million) and employed on average 378 people. In 2015, domestic sales amounted to Euro 76.6 million (2014: Euro 65.7 million) and foreign sales Euro 5.3 million (2014: Euro 4.7 million). In 2016, sales were estimated at Euro 80 million.

SMT assembly is focused on Siplace machines the company also investing in a Zenith 3D AOI machine from Koh Young and the latest coating technology from Rehm Thermal Systems. In total the company has the capacity to place eight million components daily with the capability to process components down to 01005 and µBGA.

In November 2017, Tonfunk announced it had invested in a Takaya APT-1400F, the fastest flying probe test system in the world. The system has been developed specifically for the testing of complex assemblies and large quantities. Previously in April 2016, the company announced it had invested in Omron's latest generation of AOI equipment, the VT-S730.

With the number of employees involved in research and development increasing from 10-25 in recent years in June 2017 Tonfunk Systementwicklung und Services opened a new Euro 1.55 million 750 sq m technology and development centre in Ermsleben.

The company is approved to ISO 9001, ISO 14001 and ISO/TS 16949.

5.2.4.15 TQ-Group

The TQ-Group was established in 1994 and provides a complete range of manufacturing services including development, layout, prototype production, SMT and through hole assembly, assembly of modules, test, after sales service and obsolescence. Products produced by the company include embedded modules, industrial PCs and hardware kits for system integration.

The company has multiple manufacturing locations in Germany as well as production site in Switzerland and a low cost facility in China. In July 2017, the TQ-group employed approximately 1,440 people and reported a turnover of Euro 225 million in the 2016/2017 financial year ending June (Fiscal 2016: Euro 214 million). In 2016, European revenues were estimated at Euro 195 million of which EMS accounted for Euro 175 million.

For Further information on the company please see Section 4.7.22.

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Fax: +420 377 945357
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Parent Company: Fortec Group

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Website: www.arrs.cz

Company Name: **Asteelflash**
Address: Podnikatelská 1227/24, 301 00 Plzeň, Czech Republic
Tel: +420 373 740 905
Website: www.asteelflash.com
Parent Company: Asteelflash, France

Company Name: **Auspi Europe**
Address: u Smaltovny 716/3, 370 01 Ceske Budejovice, Czech Republic
Tel: +420 38 8880 128
Website: www.auspi-europe.cz
Parent Company Auspi Enterprises Co Ltd, Hong Kong

Company Name: **AWOS s.r.o.**
Address: Vyzkumna 79, 533 51 Pardubice, Czech Republic
Tel: +420 466 670 553
Website: www.awos.cz

Company Name: **Scanfil EMS Oy**
Address: Yritystie 6, 85410 Sievi, Finland
Tel: +358 8 4882 111
Fax: +358 8 4882 037
Website: www.scanfil.fi

Company Name: **Sirico Electronics Oy**
Address: Penviikintie 1, 68600 Pietarsaari, Finland
Tel: +358 6781 3350
Fax: +358 6781 3351
Website: www.sirico.fi

Company Name: **Sorv-Elektro Oy**
Address: Kiertokatu 21, 24280 Salo, Finland
Tel: +358 50 550 8854
Website: www.sorv-elektro.fi

Company Name: **Stera Technologies Oy**
Address: Tierankatu 5, 20520 Turku, Finland
Tel: +358 207 885 000
Website: www.stera.com

Company Name: **Tepcomp Oy**
Address: Kaurakatu 46, 20740 Turku, Finland
Tel: +358 2 275 8300
Fax: +358 2 275 8310
Website: www.tepcomp.fi
Parent Company: Varova, Netherlands

Company Name: **Xortec Oy**
Address: Höytämöntie 6, 33880 Lempäälä, Finland
Tel: +358 10 424 0900
Fax: +358 10 424 0909
Website: www.xortec.fi

6.10 France

Company Name: **A2E**
Address: 1 Ter rue Louis Pasteur, BP88, 70400 Hericourt, France
Tel: +33 3 84 58 55 10
Fax: +33 3 84 58 55 20
Website: www.a2e.fr
Parent Company: R2V, France

Company Name: **A2R Electronique**
Address: 5 Avenue Jean d'Alembert, 78190 Trappes, France
Tel: +33 1 30 66 08 08
Website: www.a2r-electronique.fr

Company Name: **ABC Prototype**
Address: 8 allee Catchere, Zac du Perget, 3177 Colomiers, France
Tel: +33 5 61 91 78 44
Website: www.abc-prototype.com

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