THE WORLDWIDE ELECTRONICS MANUFACTURING SERVICES MARKET – 2014 EDITION

The Most Comprehensive Study Available on the Worldwide EMS Market

2014 EDITION

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New Venture Research (NVR) was formed in 1988 to assist industry executives in their decision making. We began as an independent consultancy and have recently evolved into a publisher of off-the-shelf market research reports in key areas of the electronics industry. The reports are written by a team of staff analysts and independent consultants. We also offer consulting services when our clients need information not found in our reports.

The backbone of each report is based upon primary market research information. Our market information originates from direct interviews with vendors, users, and other industry participants. We use secondary research to test for reasonableness, technical backgrounds, and, in some cases, for top-level forecasts. We distill the research into coherent forecasts and recommendations.

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Chapter 1 – Introduction

1.1 Report Objectives and Scope

The objective of this report is to provide a macroeconomic understanding of the worldwide contract manufacturing (CM) services market for interested electronics manufacturing services (EMS) firms, original design manufacturers (ODMs), original equipment manufacturers (OEMs), component manufacturers, equipment suppliers, distributors, consultants, and investment analysts. Throughout this report, CM will refer to the combined industry, whereas EMS and ODM companies are the primary subcontractors.

In this report, 88 contract manufacturers and original design manufacturers are profiled. NVR (and its predecessor Electronic Trend Publications) has followed this market for twenty years, continuously expanding its coverage and market analysis. With each new report, NVR's research methodology, quality of data, and collective knowledge has improved, to the benefit of the reader and the entire industry.

For the last twenty years, the generic term "contract manufacturing" has been identified almost solely with a very specific niche within the overall durable goods market—that of electronics equipment. This is ironic, as the notion of "contract manufacturing" could be applied to any industry segment (aerospace, appliances, automotive, construction, etc.) that manufactures finished goods, yet over the last few years it has been exclusively linked to the electronics—specifically the high-tech electronics—market segment. As the electronics manufacturing industry has evolved over the years, the term "electronics manufacturing services" (EMS) has come to be used to refer both to the overall industry and to a specific class of subcontractor.

The current report focuses on the entire CM market, but pays special attention to the production of advanced, state-of-the-art electronics products, which are having a considerable impact on the world today. Indeed, the availability of microprocessor-driven wireless communication devices, handheld computing

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products, remote sensors, and semiconductor-based technologies is dramatically impacting the way people live. Yet it is probably fair to say that these products would not be so widespread were it not for the emergence of the EMS industry, which has lowered product costs and increased manufacturing efficiency.

The EMS market experienced continuous growth in the fifteen years prior to 2001, when it underwent a two-year slump and consolidation. In 2003, the market began to recover and grew strongly up to 2009 when it experienced another slump and was flat in 2010. Since then, the market has rebounded strongly in 2011 and continues to expand with each successive year. With the entry of low-cost ODMs over the last ten years or so, the market has become increasingly competitive.

The purpose of this report is to analyze the changes that have taken place over the last year and offer some opinions on how the CM market will unfold over the next five years. Although the industry has resumed its growth, this is not—and will not be—without changes in market share and composition. This report analyzes those changes and discusses the implications of the key dynamics impacting the market in the near future.

1.2 Organization

This report is organized into eight chapters. Chapter 1, "Introduction," outlines the scope, organization, and methodology for the report. Chapter 2, "Executive Summary," presents top-level data from throughout the report.

Chapter 3 is titled "Economic Outlook and Worldwide Electronics Industry Forecast." Key products are forecast in seven major electronics market segments, including computers, communications, consumer, industrial, medical, automotive, and defense/other transportation.

Chapter 4, "Industry Structure," analyzes the total EMS market by region and product segment.

Chapter 5, "EMS Industry Forecast," forecasts growth in the EMS marketplace from 2013 to 2018. As in Chapter 4, data is presented by region and product segment.

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Chapter 6, "Financial and Production Benchmarks," looks at a variety of key metrics from 2013 that can be used to judge the production efficiency and financial health of the large public CMs and ODMs.

Chapter 7, "Mergers and Acquisitions," presents information on the many deals that are driving the EMS market. Deals from 2008–2013 are detailed.

Profiles of major EMS companies and ODMs are given in Chapter 8. These profiles provide a look at these companies' strategies, service offerings, and financial data.

1.3 Assumptions

The following assumptions have been made with regard to information provided in this report:

- Respondents are providing truthful information to the best of their ability.
- Values are mainly provided in current US dollars.
- Revenues are converted from national currencies into US dollars by using the current Federal Reserve average annual rates.
- Wage rates have not been adjusted to reflect the appreciation of the Euro or the undervaluation of the Chinese yuan or the New Taiwanese dollar.
- All tables presented in this report are subject to small rounding errors. Therefore, column and row numbers, as presented, may not add up exactly to the total presented.

1.4 Definitions

Table 1-1 lists the industry segments that are detailed in Chapters 3, 4, and 5 (with slightly varying levels of aggregation). This list is fundamentally the same as that used in related NVR reports.

Several critical terms will be used frequently in this report. They are:

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- *PCB Assembly*: for this report, PCB assembly refers to the attachment of various electronic components onto a bare printed circuit board, plus any test activities performed at this level of assembly.
- *PCB Assembly Value*: the value (cost of goods sold, or COGS) of all material, labor, and overhead associated with an assembled printed circuit board.
- *Box Assembly*: for this report, box assembly refers to the assembly of one or more printed circuit boards, plus other items such as cable harnesses and enclosures, into a final product (or a largely self-contained electronics assembly that will be embedded into a larger piece of equipment). This also includes any test activities performed at this level of assembly.
- *Box Assembly Value*: the value (COGS) of all material, labor, and overhead of the box assembly, not including the value of the assembled PCBs within the box assembly.
- *OEM Assembly*: electronics assembly performed by the OEM. If assembly is performed by a subcontractor that is held captive by the OEM or in a *keiretsu* arrangement such as exists in Japan, the assembly is considered OEM produced.

1.5 Research Methodology

Information for this report was collected from a number of external sources. Primary sources included marketing professionals, manufacturing and engineering directors in contract manufacturing firms, and OEMs. Also, Mr. John Tuck's *Manufacturing Market Insider* newsletter has been a valuable source for tracking industry events and specific company activities. Secondary sources included trade publications such as *Circuits Assembly, SMT Magazine, EMSNow Daily, Business Week, The Economist,* and a variety of government economic reports.

For this report, the author had the cooperation of many EMS company employees who answered the questionnaire provided below, which helped to size and segment the industry to a degree not previously achieved. The author's

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gratitude is extended to all those gracious enough to have responded to this request for information.

1.6 Field Questionnaire

The following questionnaire format was generally used as a starting point for the primary research conducted for this report.

NVR Contract Manufacturing Company Profile

1. What were your EMS revenues for 2013 (USD)?

2. What percentage of your sales were manufacturing services (EMS) versus your own branded products (ODM)?

3. Please list your plant/facility locations, sizes (sq. ft.), number of SMT lines and employees.

Location	Plant Size	SMT Lines	# of Employees	Revenue (USD)

4. What industries and customers does your company serve?

Industry		Percent	End Products	Customers
Automotive	_____	_____	_____	_____
Communications	_____	_____	_____	_____
Computer/Peripherals	_____	_____	_____	_____
Consumer Products	_____	_____	_____	_____
Industrial Products	_____	_____	_____	_____
Medical Products	_____	_____	_____	_____
Defense/Aerospace	_____	_____	_____	_____
Total	100%			

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5. Can you estimate you company's revenue for 2014 and its growth by industry?

Industry	**Percent Growth**
Automotive	_____
Communications	_____
Computer/Peripherals	_____
Consumer products	_____
Industrial Products	_____
Medical Products	_____
Defense/Aerospace	_____

Est. Revenue 2014 $_____

6. If not provided in question 4 above, please identify your leading customers.

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Table 1-1 Industry Segments	
Computers/Peripherals	**Communications**
Notebook PCs	Cellular Handsets
Desktop PCs	Cellular Infrastructure
Tablets	Other Phones
Servers	Enterprise LANs
Workstations	WLANs
Enterprise Storage Systems	DSL/Cable Modems
Flash Drives	PBX/Other CPE
Monitors	Carrier-Class Equipment
Printers	Other Telecom
E-Readers	**Industrial**
Other Computer	Control/Processing
Consumer	Test and Measurement
Analog TVs	Clean Energy
Digital TVs	Other Industrial
MP3 Players	**Medical**
Other Audio	Medical Diagnostics
Video Console Games	Therapeutic
Set-Top Boxes	Monitoring & Surgical
Camcorders	
DVD Players	**Commercial Aviation**
Digital Cameras	In-flight Entertainment
Personal Navigation	Flight Navigation
Memory Cards	Other Aviation
Other Consumer	**Aerospace/Defense/Other Transportation**
Automotive	In-flight Entertainment
Engine Control	Flight Navigation
Instruments	Weapons
Safety	C3
Entertainment	Other Transportation

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