

The Right Tool for the Job

Bob Bilbrough

Determining the right-sized EMS provider for your high-mix, low-volume work.

Imagine these scenarios: You're in the dentist's chair for a filling, and the dentist produces a jackhammer to commence the drilling. A home is in flames, and the firefighters arrive with water pistols. High-mix, low-volume printed circuit board assembly (PCBA) is awarded to a Top Five electronics manufacturing services (EMS) provider. You need to outsource the assembly of 10 million modem cards, and the winner is your uncle's cousin who does a little soldering in his basement on the weekends. Preposterous statements? Yes, all of them, but only one of them is likely to occur.

What is "High Mix, Low Volume"?

The definition of high-mix, low-volume assembly must necessarily rest within the EMS industry. The mission and/or marketing statements of nearly all EMS providers include a component defining the type of business they target and prefer. Typically, EMS providers will brand themselves as either low mix, high volume (LMHV) or high mix, low volume (HMLV). The differences between LMHV and HMLV may be aptly characterized as apples and oranges—both fruits grow on trees, but the similarities end there.

HMLV requires enhanced organization and process discipline to embrace a high degree of multitasking. A successful HMLV provider will be accustomed to frequent and intense customer interface and a high number of rapid performance cycles (plan, build, ship). The successful HMLV provider must have the resources and will to provide the tender loving care required of its customers. The number of customer performance cycles is much lower at an LMHV provider. Therefore, LMHV providers may not provide the distinct level of support required of HMLV.

As for those EMS firms who brand themselves as offering both services, an HMLV provider has a much better chance of successfully providing LMHV services than that of an LMHV provider attempting to provide HMLV services. Manufacturing capacity is the gauging factor in the provision of LMHV services. With the costs of plant and equipment at historic lows, an HMLV manu-

facturer may be easily able to add capacity to accommodate increased volume. On the other hand, LMHV providers must fundamentally change the way they do business to effectively serve HMLV customers.

In 2000, the world's largest EMS provider defined LMHV as a turnkey engagement with minimum annual production of at least 50,000 per stock keeping unit (SKU) and the total value of the engagement at \$20 million and up. These numbers represent the large EMS companies' minimum threshold of profitability and effective service provision. However, many large EMS players have reduced their engagement criteria in consideration of the slow economy, and now we're seeing large EMS providers scrapping over HMLV work. One caution: Look before you leap.

Why Engage Large EMS Providers for HMLV Assembly?

• **Because they specialize in high mix, low volume?** The large EMS company's salesperson may assure his/her potential customers that the company specializes in HMLV, but remember that this sales professional is financially rewarded for bringing in business. During these difficult economic times, the pickings are slim. Even if the service expected is received, what happens when the 10 million modem card deal comes in? A likely scenario could be that the HMLV original equipment manufacturer (OEM) customer suddenly finds his/her calls to the large EMS provider's program manager going straight to voicemail. The OEM's business just became too slim.

• **To save money on material?** The large EMS providers often pay less for material, and material costs are driven by volume. So what's your volume? If the cost driver on your annual quantity of 6,000 CCA drivers is the 123-4567, whose sole source is *Widgetcom*, you may find that the large EMS provider doesn't have a volume price agreement (VPA) with *Widgetcom*. If the large EMS company does have a VPA with *Widgetcom*, it might have to buy and take delivery of 50,000 units to get the price you love. What happens to the 44,000 extra parts? When the large EMS provider

decides they are excess material, you buy them, eliminating your “savings.”

• **To save money on labor?** True story. I noted unusual interest from a local OEM who outsourced 100 percent of its PCBA business to a mega-EMS provider in China. The OEM asked for a quote, and my company provided it—10,000 units per month, 23 surface-mount placements per board for ¢97 each. “Your labor is too high!” the OEM exclaimed. “We pay ¢23 for 23 placements in China.” My company explained that we could not meet that price and earn a profit.

Four months later, we received the same request for quote (RFQ.) And we quoted the same price. “Your pricing looks better,” was the amazing response, “But it’s still a bit too high.” Our response: “We’re sorry; that’s the best we can do.”

Three months later, we receive, yet again, the same RFQ. This time, our vice president of sales met with the OEM to discuss the business. And he met a desperate materials manager. Historically, our local OEM had been having a tough time competing in its market with its domestic in-house production. Sales and profits sagged. The board of directors fired the CEO and hired a new executive who immediately shut down in-house manufacturing and directed all assembly to be outsourced to China. U.S. EMS providers were not considered whatsoever. And off to China the OEM went.

The results were a “lower price”—for a carload shipment received each month of 1.5 times the sales demand for the product. Work in process (WIP) and finished good were stacked to the ceiling. Furthermore, the OEM’s Chinese manufacturing partner required partial payment for the product 30 days in advance of planned shipment and the balance upon shipment. The “lower price” was beginning to strangle cash flow. Before closing, the OEM’s in-house factory had achieved six-sigma performance. However, the “lower price” was producing a defect rate of 14 percent. To top it off, the “lower price” wasn’t the lowest price. In fact, the ¢23 labor charge was not “burdened,” which includes those intangible costs such as setup, packaging, freight, insurance and tariff. By the time the product was delivered in Georgia, the

“lower price” was \$1.27 per unit! Middle management was afraid to challenge the new CEO’s outsourcing direction. While they were building up the courage to demand a change, our local OEM was forced to file for bankruptcy and shutter their operations.

• **Because the large EMS provider is already building your 10 million modem cards?** “Certainly,” you may think, “my large EMS provider wouldn’t mind assembling 100 of these motherboards with our consigned materials for delivery on Friday?” Yes, they would mind. If you’re lucky, they’ll tell you. And, if you’re wise, you’ll listen.

• **Because the large EMS provider has a design/new product introduction (NPI) center right around the corner?** Yes, and I shared a cab with Tiger Woods once, but he won’t play golf with me now.

• **Because you intend to build a million boards next year?** Yes, but you’re only going to build a thousand of them this year! If I had a dime for every time I’ve heard such wishful thinking, I’d be living in lavish retirement now.

• **Because your company is constantly looking for equity capital?** Some OEMs may think that the larger the EMS partner they use for outsourcing, the better the OEM looks to the investor community. However, investors, large and small, are looking for firms with promising products who can execute their business plans on budget and on time. If your investors are excited about the prospects of a large EMS company assembling 100 per of your 14 SKUs this year, it’s time to find new investors.

Let’s face facts: Engaging with a behemoth EMS provider is not for all OEMs. And, just because you *can* doesn’t mean you *should*. Big EMS providers are similar to big automobile manufacturers. They are great at mass-producing many of the same item at highly competitive prices. However, they do not excel at providing quick delivery of inexpensive made-to-order vehicles.

Selecting the Appropriate EMS Provider

Many small EMS providers offer services that are simply not available from

larger EMS providers. Why take the time to look at smaller companies?

• **Small EMS providers specialize in high mix, low volume.** In good and bad economic times, small EMS providers are there for your high-mix, low-volume work. Their equipment, people and processes are designed specifically for the high-mix, low-volume market. Large EMS providers might be able to lure you into a high-mix, low-volume engagement while their low-mix, high-volume business is slow. However, their cost models may not allow them a profit on your engagement or the level of service you expect, which is not a good omen for a long-lasting relationship. In fact, some large EMS players have become so big that they're outsourcing their high-mix, low-volume assemblies to the right-sized players!¹ Small EMS providers excel at HMLV work because it's all they do.

• **Smaller EMS providers do have purchasing power.** The EMS providers who are right-sized for your high-mix, low-volume business purchase the large majority of their materials from electronics distributors. The largest of these international distributors is Arrow Electronics. In Arrow's last fiscal year, the company purchased \$10.9 billion of materials directly from manufacturers.² Does your EMS partner have \$10.9 billion of purchasing power? Small EMS providers harness the immense purchasing power of distributors to provide competitive pricing.

Furthermore, nearly all distributors have stock rotation and return privileges with the manufacturers of the components they purchase. Two advantages: 1) excess materials have an excellent chance of being returned to the distributor by the EMS partner for full credit and 2) parts purchased by the EMS provider will be fresh, as old date codes are routinely rotated back to the manufacturer by the distributor.

Many larger OEMs have already negotiated VPAs directly with component manufacturers. Since many of these manufacturers recognize the value added by their distribution partners, in most instances, the component manufacturer's franchised distributor will be able to meet

your VPA contract price for your small EMS partner.

Finally, smaller EMS providers are now purchasing materials all over the world, just like larger EMS providers.

• **Smaller EMS providers may offer competitive labor costs.** Where are the labor savings promised by the large EMS providers? The answer is found in "low-cost regions," which are all located outside of the U.S. However, if the assembly of your products is largely automated, sending it to low-cost regions may actually cost you more. Look at the math. Assume 12 machine operators are needed to place one million components daily. Assume the fully burdened wage for U.S.-based labor is \$14 per hour, and the fully burdened wage for China-based labor is €50 per hour. The total direct labor cost in the U.S. for one million placements is \$1,344. The total direct labor cost in China for one million placements is \$48. The savings over one million placements is \$1,296—only \$0.0013 per placement. How much do you think it will cost to get those 2,000 assemblies from China to your distribution center in Kansas City? If the cost is \$1 a piece, you've already more than lost the labor savings the large EMS provider was to provide you in the "low-cost region."

• **Smaller EMS companies may accept consigned materials.** Chances are, large EMS providers don't like your consigned materials. Their cost models require gross profit dollars on the material they sell to you. They may not trust you to deliver your consigned materials on time and properly packaged to meet their production needs. Their materials resource planning (MRP) systems and material handling procedures may not be flexible enough to handle consigned materials.

• **Smaller EMS providers may lower NPI costs.** NPI should be performed at a location in near proximity to your designers. Effective face-to-face communication is required to get a product through NPI and to the market quickly. Those OEMs who perform NPI outside the U.S., in conjunction with a large EMS provider, may find that most of their time is spent traveling back and forth to facilities in Asia. Such travel can

create hundreds of non-productive hours in transit and could force employees to look for employment elsewhere—at a company requiring less travel. The cost per year for travel to support far-off NPI may also be prohibitive. As for the large EMS provider's NPI center down the street from your facility, if your business doesn't represent a minimum \$20 million in annual business to them, forget it.

• **Find your comfort level.** Many OEM startups hire manufacturing professionals from large, established OEM enterprises. If you've just concluded a stellar 20-year career with a Fortune 500 firm, large EMS companies might be the only ones you know. However, now that you're at a smaller OEM, you need to find the right-sized EMS partner. You may be able to leverage past relationships to persuade a large EMS company to bring your firm's products out of the ground. However, you may be disappointed when you show up at your large EMS partner with a box of parts Thursday at 3:00 p.m. to get five working units to demonstrate to investors on Monday. After your large EMS partner can't or won't provide that service, you may be forced to consider a right-sized EMS partner who will be more nimble with your business.

Thank you for allowing me to have a little fun at the expense of the large EMS providers. Remember, the right tool exists for every job. As a buyer of EMS services, you should carefully and honestly gauge the manufacturing work to be accomplished and the tactical and strategic results required before selecting your EMS partner. Good luck, and I must leave you now—there's a gentleman from *Behemoth EMS Tech* in the lobby waiting to light my cigar with his flamethrower. ■

References

1. "Small EMS providers find a place at the table," by Claire Serant, EBN (March 19, 2002)
2. Annual Report, Arrow Electronics, Inc. (ARW-NYSE)

Bob Bilbrough is founder, chairman and CEO of Quality Contract Manufacturing, LLC, Flowery Branch, GA; bbilbrough@qualcon1.com.