

[<< Back](#) | [Print](#)

Born in the USA—and staying

By Bridget Mintz Testa -- 9/1/2005
Electronic Business

Reports of the demise of the U.S. contract manufacturing industry have been greatly exaggerated. Despite some obvious hurdles, many small electronics manufacturing services (EMS) companies are surviving—even thriving.

"The smaller, U.S.-based contract manufacturers that carve out a niche, provide great customer service and excel at quality will be around for some time," says Adam Pick, senior analyst for EMS at iSuppli. "Bigger is not always better if a small company's value proposition is clearly articulated and embraced by the market."

Even when their suppliers and customers are located in the U.S., small and midsize EMS manufacturers labor under obvious disadvantages compared to the big companies. For one thing, they have shallower pockets and lower production capacity. When large EMS companies move their operations to low-cost regions, the disadvantages for their smaller competitors multiply. For an offshore company, labor, property and overhead costs drop precipitously. Not so for a domestic player, which still has to pay U.S. rates for everything.

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It sounds pretty gloomy, but small U.S.-based EMS manufacturers haven't disappeared and aren't likely to. First, these companies' business models differ vastly from the big manufacturers'. "A big tier-1 player has volume going for it," says Pick. By contrast, Pick says, business models for most small companies include specific niches; "intimate" customer service; and proximity to their OEM customers, where "proximity" means anywhere in North America. Most, but not all, smaller players

also tend to support customers with low-volume needs.

Second, small players aggressively and continuously strive to increase quality and efficiency. That alone can entice customers to bring production back to the U.S. Offshore production can have surprising hidden costs and penalties, such as low product quality, missed deadlines and a need for lots of unexpected and expensive support from engineers back home (see "**Reality Bites**," March 2005).

EMS companies **Avo Photonics**, **Electronic Technologies International** and **SMC Electronics Manufacturing Services** illustrate how small U.S.-based businesses can successfully compete in the highly competitive \$100 billion global EMS arena. All three are privately owned, and each has annual revenue of less than \$50 million.

Avo Photonics, founded in 2004 and located in Horsham, Pa., is an optoelectronics company with 90 percent of its customer base equally divided among the military, medical and telecom sectors. Commercial/industrial customers comprise the other 10 percent. Its business model follows Pick's description exactly: niche market, intimate customer service and physical proximity to its customers.

As for niche markets, says CTO Paul Magill, "We work in design, prototyping and low-volume production runs for smaller companies that can't do this work themselves. Compared to other contract manufacturers, we have a very strong focus on design."

In terms of customer service, the "smaller" companies Avo supports are often startups. They can build a working model but can't turn it into a reliable packaged product that can withstand the rigors of regular operation. Avo designs the final product and makes it in small quantities.

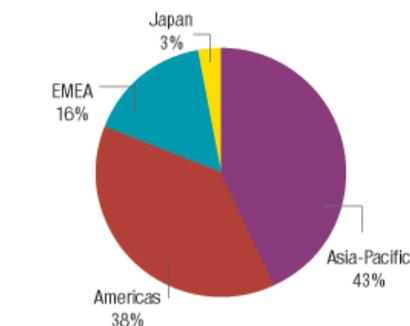
"In low-volume prototyping runs, customers want to be close, so they have their own people there to get and give immediate feedback," says Magill, referring to the need for proximity. "Close" doesn't just mean near the company's Pennsylvania location. "Being in the U.S. is 'close' to any of our North American customers," says Magill. "Customers want suppliers to have a significant overlap of working hours. Most people work from 8 a.m. to 8 p.m. When you do that here and in China, there's no overlap. If there's no overlap, it's hard to develop a product."

That U.S. location also means that the company can win business it wouldn't otherwise. "The military wants to stay in the U.S., for obvious reasons," Magill says. "Medical companies also want to stay here, because of quality and liability issues." Some of Avo's telecom customers flirted with overseas production but found that their design engineers spent all of their very expensive time supporting the offshore operations. "You can't provide support by phone," Magill says. "For design, you have to communicate back and forth all day. It's a hidden cost. It's actually cheaper to design here."

Although Avo focuses on design and low-volume production—less than 10,000 units for low-complexity products—the company can produce more. With semiautomated or fully automated production, it can currently manufacture up to 20,000 complex modules or subsystems per month. However, Magill adds, "We are willing to add capacity to support whatever volumes our customers need."

Electronic Technologies International also sports Pick's small-EMS attributes. Founded in 1990, the Fort Atkinson, Wis.-based company focuses on OEMs that need prototypes and/or low-volume production of five to 10,000 units—quantities for which it's not cost-effective to go overseas, according to Kurt Hartwig, marketing and sales manager.

2005 MANUFACTURING PROFILE
BY REGION



SOURCE: ISUPPLI

Despite the volumes, ETI's OEM customers aren't necessarily small. "Ten thousand units can be prototypes for *Fortune* 500 companies," says Hartwig. "They need that many for product testing."

ETI is ISO 9001-certified and adheres to lean manufacturing and just-in-time practices. Its 25,000 square-foot facility houses three separate assembly units: PCBs, cable and wire harnesses and box builds. ETI can assemble a complete product—electronics, wire and box—all under one roof. "This product flow eliminates transportation costs," says Hartwig.

About its U.S. location, Hartwig says, "Some customers want us to be close. Even the coasts aren't too far. If there are changes to a product, they're easy to do, because of local time, close geography and easy communications. We all speak the same language, and that's huge when you're talking about big money."

SMC, founded in 1978, is a different kind of small EMS. SMC's business model is a lot like that of a big manufacturer. Instead of having a niche, SMC aims to minimize customers' total acquired cost (TAC): all the costs involved in making products, from initial sourcing through design, development, manufacture and delivery. SMC squeezes the TAC with global materials sourcing and highly efficient operations. The company can even transfer manufacturing overseas if there's a cost advantage.

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—Adam Pick, senior analyst for EMS, iSuppli

SMC's global sourcing clout comes through membership in the five-company EMS Alliance (for more on the Alliance, see "[Greater Than the Sum of its Parts](#)," January 2005). Besides SMC in the U.S., members are located in India, Brazil, China and Sweden. The group's international procurement office, in Hong Kong, finds low-cost materials and helps Alliance companies get them. "The members of the Alliance combine buying power where we can to get the best materials prices," says John Zurborg, SMC's vice president of sales and marketing. "When we identify the lowest materials costs, we import those materials into each of our respective countries. We end up with materials costs comparable to those of China."

SMC's ability to transfer manufacturing overseas comes through the Alliance too. Zurborg says the Chinese member makes some boards for SMC, and SMC may transfer production to other members as well. In turn, they may transfer production to SMC.

SMC's competitive formula has two prongs: lean manufacturing and making the most of its equipment expenditures. On the lean manufacturing side, for example, the company has created two dedicated and highly automated production lines, one for surface-mount assembly and the other for through-hole production. Both lines provide all operations necessary to make specific products, so the products don't have to be moved to other lines. "Many manufacturers do not design a single line for specific products," says Zurborg. "You'd have to move the product. That adds extra labor costs plus more square footage, which is overhead."

Another example of lean manufacturing is line balancing, which is a lot like shooting a modern movie: filming all the scenes in each location at one time and then sequencing them properly. Line balancing puts different products that need the same operations on the same line, making for a fast, efficient process flow.

SMC maximizes its spending on equipment by reusing it as much as possible. Replacement isn't considered until a piece of equipment is utilized 80 percent of the time. By reducing the money spent on equipment, this approach minimizes costs for SMC and its customers.

All three of these companies have made the most of their small-company status, Avo and ETI by focusing on design/prototyping niches and SMC by focusing on cost savings. Their location in the

U.S. is also a competitive advantage, because it means that OEM design engineers don't have to spend time supporting remote operations. Because of their location, both SMC and Avo have won contracts from customers that weren't satisfied with the low quality and hidden costs of foreign labor. Says Zurborg, "Overseas labor may be cheap, but if it isn't focused on quality, then it doesn't matter."

COSTS AND EASE OF DOING BUSINESS
(number equals multiplier of U.S. rate)

Country or region	Cost	Ease
Mexico	2.1	2.2
E. Europe	4.8	3.8
India	5.0	4.0
China	5.2	4.6
SE Asia	3.0	0.8

On a scale of 10, low score is most desirable.

SOURCE: TECHNOLOGY FORECASTERS

EMS/ODM REVENUE FORECAST (2003-2009)
(in millions of U.S. \$)

	2003	2004	2005	2006	2007	2008	2009	CAGR
Projected EMS Revenue	100,581	117,616	134,028	146,668	158,596	165,703	177,473	9.9%
Projected ODM Revenue	57,565	74,254	92,370	111,096	127,163	135,029	144,619	16.6%
Total CM Revenue	158,146	191,870	226,398	257,764	285,759	300,732	322,092	12.6%

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