



PARTNERING

Pentagon EMS: Building Lasting Partnerships

By Randy Morrison, Pentagon EMS, Beaverton, OR

Today's economic climate is very reminiscent of 2002. There are differences, of course. In 2002, 9-11 had just happened, the dot-com bubble had burst, and everything tightened up. Everybody was required to do more with less. Companies slashed underperforming areas of their businesses and put limits on the number of suppliers that were available to use. More than ever, contract manufacturers were looking for suppliers that felt more like an extension of their own business; partners to handle quick-turn jobs and fix-ups, take on special projects, and be there when needed, growing with them as their needs grew.

It's been almost 7 years since four tooling guys and a process engineer came together with a common goal — to establish partnerships with electronic manufacturing companies, working together to solve their manufacturing needs. That was 2002, and the birth of Pentagon EMS (Electronic Manufacturing Solutions). Since that time, Pentagon has grown ten-fold, countless manufacturing needs have been seen and met, and the company's goal remains the same.

Pentagon EMS does not make PC boards. The company does not make components. It does not attach components to PC boards. Instead, it designs and manufactures tooling that makes PC board assembly operations possible with greater speed, accuracy and reliability.

Along the way, Pentagon has achieved strong customer/supplier partnerships that have led to some unexpected but welcome results. Here are a couple examples of how some of these partnerships began, progressed and ultimately benefited both companies.

Creating a Robotic Fixture

The first one is an example of how a customer/supplier partnership can solve a specific process problem. A potential customer presented Pentagon with the challenge of developing a special PC board carrier for a fully automated, robotic line. The automation parameters for this special project required:

- Bare PC board to be picked up and placed into the carrier.
- A mechanical method of securing the PC board to the carrier which did not require any additional twisting or sliding motion by the robot at each hold-down location.
- PC board accurately positioned and held solid through assembly and wave-solder operations.
- Loaded PC board removed from carrier upon completion.

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The specific handling needs of this project led to the development of a new style of PC board hold-down — a self-contained, spring-loaded, steel ball detent system. The detent modules mounted to the top of the carrier, and around the perimeter of the PC board pocket in as many

locations as necessary to adequately secure the PC board. By simply pressing the PC board down into the pocket, the spring-loaded detent balls retract to allow the PC board to locate accurately, and then spring back into place, both retaining and providing a small amount of downward pressure on the board, keeping it secure throughout processing operations. This system worked so well in this application and the customer was so pleased that the company filled many subsequent orders for the hold-downs, and have also made it one of the company's standard available hold-downs. We call it the "Ball Pincher".

As a result of this customer/ supplier partnership, the Ball Pincher has since become the hold-down solution of choice for many of Pentagon's customers. It has found its way into several applications, and is especially popular for use on x-ray and wave-solder fixtures.

Over the years, as PC board designs have become smaller, more exotic and densely populated, printed circuit board assembly tooling has necessarily become more complicated as well. Custom designed PC board assembly tooling and fixtures have begun requiring many more intricate metal and composite machined components to facilitate ever increasing PC board assembly specifications.

Long-Term Contract

One of Pentagon's long-time PC board assembly tooling customers had been taking note of this trend in board design and fixture complexity and asked if we might branch out and take on a year-long contract to machine some aluminum housings for them, as they were looking to switch vendors. Obviously, this kind of work was far different than the day-to-day quick turn prototypes and short run fixture building. But with

careful planning and process implementation, Pentagon was able to grow with the customer in this way, securing more manufacturing floor space and purchasing the machine necessary to do the job.

In addition, partnering with them on that project made it possible for Pentagon to expand its product offerings beyond the normal daily work of custom PC board assembly tooling and into a variety of machined assembly components such as heat-sinks, knobs, screws, fittings, flanges, chassis, case modifications — just about anything in the way of PC board fixtures. Some of these have become long-running contracted jobs; others are in the short-run or prototype category. In any case, this area has grown to represent 15 percent of Pentagon's gross sales in 2008.

This was a classic case of a customer/supplier partnership, helped both companies to grow, helping Pentagon to fund new equipment and diversify product offerings, while raising the quality and speed of delivery of the product the customer was receiving.

These are just a couple of examples of how selecting the right partners for your company to work with can and should be mutually beneficial. The combination of the partners should be greater than the sum of their parts. To make it through the current economic downturn, companies are going to have to make a lot of tough choices. The wisdom of those choices will determine how they are positioned as the new economy shakes out and stabilizes.

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