

SAI in Action

## P&E Microcomputer Systems Focuses on Customer Solutions



SAI builds PCBAs for P&E Microcomputers' Cyclone product.

Ask P&E Microcomputer Systems what they are great at and the answer is: giving customers the solutions they need. The company is an industry trendsetter in hardware and software development tools for NXP microcontrollers, that takes pride in its commitment to providing professional, competitively priced develop-

ment tools and prompt, knowledgeable customer support.

"Our core competencies are applying our design, engineering and technology expertise to give our customers the solutions they are looking for. Therefore we've found it's

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### About SAI

Founded in 1993, Spectrum Assembly, Inc. is a one-stop source for all your contract manufacturing needs. We combine an expert team, flexible automation and a world class supply base to provide responsive, on-time delivery for even the most complex projects.

Our manufacturing operations are housed in a state-of-the-art 60,000 sf facility in Carlsbad, CA. We are small enough to provide a highly personalized approach, yet large enough to address your requirements from new product introduction through end-of-life.

## SAI Focused on Continually Finding Ways to Work Smarter

Spectrum Assembly, Inc. was an early adopter of the move toward a paperless factory, utilizing Aegis and Mydata systems for shop floor control and real-time information access. But Quality Manager Glenda Avance is helping drive those efficiencies even further.

Glenda joined SAI in November 2015. One of her major points of focus has been aligning procedures so that SAI's ISO

13485:2003 and ISO 9001:2008 quality systems can be combined.

"The two quality systems have a number of similarities and combining them makes sense, given our volume of medical business. It makes things easier for our production team, plus minimizes the effort required should a procedure require a change," Glenda said.

The Company's systems strategy is continuing to evolve with a focus on reducing entry transactions and improving access to real-time data. For example, a switch from an Access database to an SQL database is beginning to enable quality data entered once via the ERP system to be shared over all three systems.

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## Working Smarter

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Previously, redundant entries were often required.

SAI's focus on systems aligns well with its focus on mission critical products and their concomitant requirements for device history recordkeeping. For example, SAI's Aegis system tracks operators to work order and the processes performed. It also tracks lot code, date code, process quality data and inspections/tests performed.

Additionally, system accessibility is being expanded. While system access is still limited by personal login to support confidentiality ISO and International Traffic in Arms (ITAR) requirements, personnel with login access can now view data from any computer linked to any system in the building.



Employees can now easily access Aegis data from any terminal in the building.

"Customers come to SAI because they like our combination of flexible service and strong systems. As technology is improving we are improving efficiency. Minimizing data entry transactions, con-

tinuing to enhance traceability and improving access to real-time production floor production status and quality data support that goal," said Adrian Nishimoto, SAI's Director of Operations.

## SAI Works With a Wide Range of Substrates

Spectrum Assembly, Inc. serves a wide range of industries and a number of its customers have requirements that simply aren't addressed by printed circuit boards (PCBs) utilizing an FR4 substrate.

"Different applications require different level of thermal conductivity and this can drive use of aluminum or copper PCB substrates. Shrinking product size often drives the need for flex or rigid flex

PCBs. Each of these PCB types require process modifications," said Adrian Nishimoto, SAI's Director of Operations.

Aluminum and copper PCBs have much tighter process tolerances than FR4.

"The solid metal substrate is a heat sinks during reflow. As a result it is important for PCB layout designers to stay within the recommended pad layout indicated by the datasheet for each component. It

is really critical to play by the design guidelines. We also try to limit PCB panel size to approximately 12 x 14 inches to optimize thermal profiling," Adrian added.

Lighting applications such LEDs often use specially modified aluminum PCBs that dissipate heat faster. One such

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## SAI in Action

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most beneficial for us to partner with a manufacturer who has extensive manufacturing expertise we can rely on, strong process controls, and advanced production capabilities," said Anita Bloom, P&E Micro's Materials Manager.

"When evaluating potential vendors, competitive pricing is very important to us, and so is keeping production on-shore where possible," she added.

Spectrum Assembly, Inc. was selected

as a result of industry word of mouth. Bloom asked P&E's component distributors and several recommended SAI. A factory tour sealed the deal.

"When we toured the facility, we felt they had much more advanced equipment and processes than the other suppliers we had looked at," said Edison Tam, Senior Design Engineer.

"SAI's problem-solving abilities have also been a factor in improving the manufacturability of our product," added Tam. "We couldn't get resolution on

what was driving higher test fallout rates. We showed the PCBA to SAI and they were able to help us resolve the issue."

"SAI has an outstanding team who make us feel welcome. There are rarely any quality issues and if one arises, it is resolved immediately. Product flows through their factory quickly and it's always delivered on time. Most importantly, our customers are happy because our products are performing well. It's a win-win situation all around," Bloom said.

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**Spectrum Assembly, Inc.**  
*contract manufacturing redefined*

SPECTRUM ASSEMBLY, INC.

## SAI Named Finalist in San Diego Business Journal Awards

Spectrum Assembly, Inc. was named a finalist in the 2016 San Diego Business Journal Manufacturing Awards.

The awards ceremony was held on Sept 15th at the La Jolla Marriott.

“We are pleased that our presence as a leading manufacturer in the San Diego area continues to be recognized. It is also great that the San Diego Business Journal has created an event focused solely on

recognizing manufacturing,” said Alexandra Topp, SAI’s Sales and Marketing Manager.

### Substrates

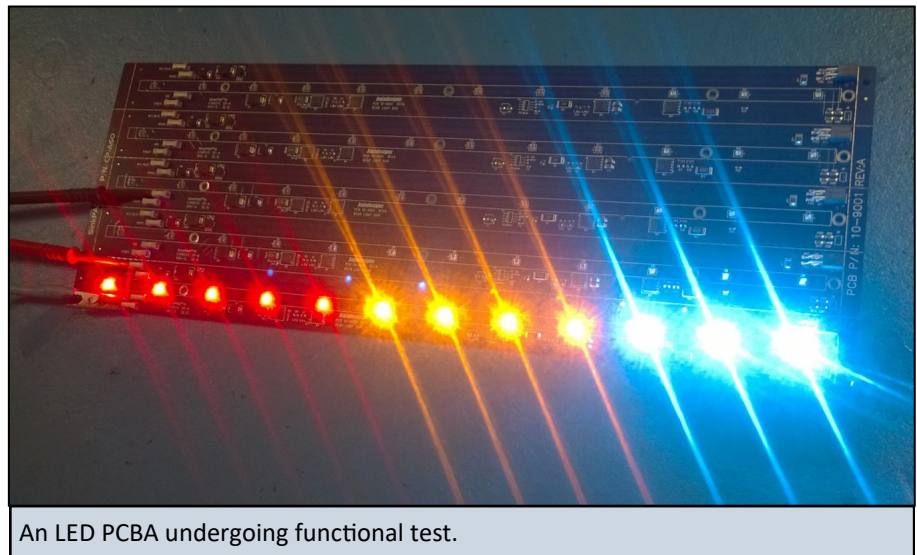
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technology is known as SinkPAD™, a PCB technology developed by SinkPAD, LLC. This technology removes the dielectric insulative material from the ground pad, stepping it down a few mils. In LED applications, this reduces the LED junction temperature, which can increase LED life, reliability and lumens per LED. This in turn, can help reduce the cost per lumen. Similar technologies are in use with other high heat applications.

SAI’s Mycronic MY500 solder paste jet printer provides an advantage with this type of technology.

“The MY500 allows us to precisely control solder paste deposition on a pad-by-pad basis. This enables us to get exactly the right amount of solder paste volume on PCBs utilizing SinkPAD technology,” Adrian said.

Thermal profiling is also important. FR4 consists of polymeric cross-linked material which has a repeating polymer structure. This makes it a very stable material at reflow temperature. Aluminum copper and flex substrates do not have this property and can bow and twist if thermal changes occur too rapidly. To address this, SAI utilizes KIC K2 thermal profiling software to help develop an optimum reflow temperature profile on each new PCB type.



An LED PCBA undergoing functional test.

Process carriers are utilized with flex PCBs to provide additional stability.

One final area where SAI’s expertise with multiple substrate types can help customers, is supply chain management. SAI’s procurement team has several known suppliers for each PCB type. When customers have only limited knowledge of specialty PCB suppliers, or if there is a recurring quality issue with a customer-designated supplier, SAI can offer qualified supplier options. AQL sampling is used in incoming inspection on all PCBs, which can help to identify quality issues early in the process. Key areas of inspection include critical tolerances, solder mask finish quality, silk screen finish quality, plating quality and whether or not there is any

over or under etching in accordance to IPC-A-600.

“While these are the most common specialty PCB substrates we see, we are capable of working with an even wider variety. The principles of building with specialty substrates are the same regardless of the material used. We will do the homework researching known issues associated with use of the substrate. The new material will then undergo thermal profiling. We are not afraid of expanding our support of specialty substrates and have a robust method for optimizing our processes to accommodate the requirements of the new material,” added Adrian.

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