MILWAUKEE ELECTRONICS NEWS

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About Milwaukee Electronics

Milwaukee Electronics designs and manufactures custom circuit board assemblies for the medical, transportation, military, HVAC and a variety of other industries. The Company operates over 135,000 square feet of manufacturing in Portland, Oregon; Milwaukee, Wisconsin; and Tecate, Mexico. In addition to EMS and product design and engineering services, it offers PCB layout services through its San Diego PCB business unit and quick -turn prototyping through its Screaming Circuits business unit.

Milwaukee Electronics Adds Customers in all Three Facilities

Milwaukee Electronics' sales team is adding new business at a record pace.

A global leader in industrial automation has selected Milwaukee Electronics' Portland, Oregon facility for its printed circuit board assembly (PCBA) manufacturing.

"This client has acquired several companies and wanted to consolidate PCBA manufacturing with one supplier. Our strength in program management and supply chain management along with our frontend bill of material (BOM) risk assessment support led them to select us for this multimillion dollar project," said Paul Forker, Director of Business Development West



Above, an SMT line in the Tecate, Mexico facility.

Region.

Paul also won a project for Milwaukee

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Message from Rick Our Engineering-Driven Focus is Our Customers' Preferred Solution

Milwaukee Electronics has always taken a nontraditional approach to electronics manufacturing services (EMS). We've offered a very engineering-



centric busi- Rick McClain

ness model and provided both transactionbased and relationship-oriented service options via our Screaming Circuits and SDPCB Design subsidiaries. Over the past year, we've seen our nontraditional business model align strongly with the challenges OEM customers are facing today. As a result, we are setting internal records in new account acquisition and business growth, in many cases from projects that either started as engineering projects or use services from multiple subsidiaries. In short, our engineering-driven business model has become a mainstream solution for a growing number of companies.

Our annual customer survey responses also paint a picture aligned with this engineering-centric approach. We had a higher number of responses than the prior year and record-setting performance metrics for our EMS facilities and our "would you recommend us" question. The number one challenge listed among EMS customers was a tie between shorter project leadtimes and more complex test requirements. Increasing pressure to reduce costs was the third largest challenge, closely followed by variation in market demand. In terms of preferences on where we should focus most, EMS customers felt lead-time reduction was more important than capabilities enhancement, a reverse of the responses in the prior year.

As we look toward 2020, we feel the investments made over the last year in added equipment across multiple facilities and added square footage in our Tecate facility position us well to sup-



Layout in Action

The Team at SDPCB Design Loves a Good Challenge

San Diego PCB Design received a printed circuit board (PCB) layout request that challenged all aspects of design and technology. Lack of a schematic and part number information added to the challenge.

"The product was a defense application and only a few parts had been netlisted into the PCB and they were sitting there in a jumble. It was our job to make it neat and connect all of these parts on organic materials to the 0.8mm BGA pattern on the bottom of the PCB, or more accurately in this case, chip. Normally, Low Temp Co-fired Ceramic, or LTCC is the chosen path for this, but our customer wanted to know if it would work on organic materials, such as FR4," said David Carmody, Division Manager.

The team needed to push the limits on a lot of aspects of the design.

"Feature sizes were ridiculously small. We know now exactly how small the trace/space/vias need to be in order to fanout a chip similar to a BGA, but with a pitch of only 0.15mm... yes, less than 6mil. We also needed vias anywhere technology, but with 18 layers, that is hard to do without turning your board to dust. So, we ended up using Ormet via sintering paste in order to build up. Also, the desire was to get 10Gbps through



those thin traces so we needed to do a bunch of sims and make sure we were using exotic materials," added David.

The final result was a manufacturable PCB

per the fab vendor with a few stipulations and a price reflecting the design's leading edge challenges.

"While not in place for this project, SDPCB Design's new Insulectro partnership can help address similar materials selection challenges even faster than done in this situation. The bottom line at SDPCB Design is that we love a good challenge and our design team's expertise ensures that things that have never been done before, get done at SDPCB Design," said David.



SDPCB Design's combination of expertise and cutting edge design tool routinely helps them solve layout challenges.

Sales

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Electronics' Tecate, Mexico facility. This project involves a solar-powered, GPS and cellular communications-enabled device used to track field assets in a variety of industries. It is expected to represent \$4 million in business over the next year and exceed \$10 million a year at full volume.

"This project is a ruggedized unit that includes a communication module and requires our potting/encapsulation capabilities. We'll be building the entire unit and supporting advanced functional testing," added Paul.

Director of Business Development East Region Scott Pohlmann has won a medical customer who has selected the Milwaukee, WI facility. In this program, Milwaukee Electronics will be building five different PCBAs used in X-ray and MRI machines. The project will likely exceed \$1 million at full volume.

"This customer likes the proximity of our facility to its facility and the convenience

of an EMS provider that also has quickturn prototype and PCB layout capabilities," said Scott.

"The pace of our production wins is increasing and we are continuing to see parallel opportunities for our PCB layout, prototyping and engineering services operations. I'm really pleased with the performance of our team and the strong interest our market is showing in our engineeringdriven complete solutions," said Jered Stoehr, VP Sales & Marketing.



Message from Rick



Milwaukee Electronics' engineeringdriven business model includes design engineering support for product development teams, PCB layout through SDPCB Design, quickturn prototypes through Screaming Circuits and a complete EMS solution via U.S. and Mexico factories.







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port the business growth we are seeing. More importantly, we feel our combination of design engineering, PCB layout, quickturn prototyping and EMS production capabilities position us well to help customers navigate the lead-time, test complexity and cost reduction challenges they are facing. Our systems investments of the last several years are helping us address the variable demand challenges effectively. Annual survey responses related to impact of material constraints indicated it was a non-issue for our customers. I'd like to wish you a Merry Christmas and a healthy and happy 2020! Rest assured the team at Milwaukee Electronics is ready to nimbly and costeffectively address your project challenges in the coming year.

Rick McClain President

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