MILWAUKEE ELECTRONICS NEWS



Q2 2021

About Milwaukee Electronics

Milwaukee Electronics designs and manufactures custom circuit board assemblies for the medical, transportation, military, logistics and a variety of other industries. The company has ISO-13485 medical manufacturing capability in its Portland plant.

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 and DFM services through its San Diego PCB Design business unit and quick -turn prototyping and on-demand assembly through its Screaming Circuits business unit.

IT Strategy Focused on Security and Enhancing Customer Experience

Structuring the flow of information in an electronics manufacturing services (EMS) company has become as important as structuring production processes. The challenge is coordinating that flow among multiple systems, factories and customers. Justin Moulton, Milwaukee Electronics' Director of Systems and Technology has developed a five-year plan designed to ensure the Company is as innovative in IT strategy as

it has been in developing a gap-filling strategy for delivering engineering and electronics manufacturing services.

"This past year we've focused on forti-



Milwaukee Electronics is building a secure and scalable solution that integrates its systems.

fying our foundation for execution, providing us a secure and scalable solution that integrates our systems. We've also enhanced our internal capability to develop

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Bringing Stability to a Challenging Market

While 2020 will be remembered as the year of COVID-19 shutdowns, 2021 has become the year of complete disconnect between supply and demand. A carefully balanced system has been disrupted by changes in end market con-

Message from Jered



Jered Stoehr

sumption, disruptive weather events, labor shortages and changes in transportation capacity. The rebalancing process will likely extend well into 2022.

That said, as an electronics manufacturing services (EMS) company we are expected to find solutions to these challenges and we are ready to meet that role. We've made changes to our organizational strategy in three areas to address current market challenges and improve our responsiveness to customer needs:

Our Supply Chain Management (SCM) team sized has been increased to better address material market volatility and identify opportunities for material cost or availability improvement.

Wages are being increased where necessary to attract and retain good employees. Automated assembly capacity in Portland is being increased by two SMT lines to add capacity to meet increasing demand.

We are also continuing to execute our strategic plan in terms of systems enhancement and security. Our IT and leadership team are building on prior investments in world class ERP and MES systems to improve our real-time interactions with supply chain partners, internal production teams and customers. Some of these enhancements are discussed in greater detail elsewhere in the newsletter.

As an engineering-centric company, we are also committed to working with customers wherever possible to reduce cost through alternate component selection, redesign or process improvement. Our San Diego PCB Design division's ability to help in this area is also discussed in this issue.

Our goal continues to be ensuring that our customers have perfect product where they need it, when they need it. There is no question that achieving that standard of performance is more difficult this year, than in any previous year. However, our mix of engineering support resources, SCM team, systems and manufacturing expertise position us well to meet the current challenging environment.

Jered Stoehr CEO



Layout in Action San Diego PCB Design Attacks Cost, Quality and Availability Challenges

For many companies developing electronic products, printed circuit board (PCB) layout is just a step in the product development process. PCB designers run the gamut from experienced professionals who balance design tool automation with their knowledge of specific technology and design for manufacturing (DFM) tradeoffs to entry level designers who rely on the automation features in their design tools.

The team at San Diego PCB Design represents the high end of that expertise spectrum, which

translates to an ability to quickly identify layout issues and optimize designs to reduce cost. They are part of Milwaukee Electronics' family of support services designed to help its customers fill gaps in product development and product redesign support



The team at San Diego PCB Design helps customers quickly identify layout issues and reduce cost.

resources.

Screaming Circuits and Milwaukee Electronics utilize San Diego PCB Design's Stoplight Report to check layouts for DFM and fabrication issues prior to starting production, on customer request. The report color codes each review item by:

- Green no issues found
- Yellow item should be reviewed
- Red item will cause specific issues

Some of the common issues found include inadequate part spacing and arrangements of parts likely to cause thermal issues when reflowed.

The advanced expertise of the team also helps in optimizing layer count in PCBs.

"Our team is good at maximizing the efficiency and use of each layer in the PCB. That helps reduce layer count and PCB fabrication cost. Those savings can be significant on higher volume projects," said David Carmody, Division Manager.

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IT Strategy

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customized solutions that will improve the customer experience by leaning out processes and improving access to real-time information," Justin said.

The Company is driving towards a cloudbased computing strategy.

"We believe in leveraging world class cloud computing services to delight our customers with secure, scalable solutions," Justin added.

Justin's customer-oriented software development teams build tools customers love that deliver faster.

"We are continually looking for new ways to enhance efficiency and the customer experience. That often involves developing internal programs that automate processes previously done manually. We're focused on agile processes that can be ideated, designed, tested, validated and implemented not in months or years, but in days and weeks."

Quoting automation is a good example.

"While there are a number of off-the-shelf quoting programs out there in the market, we believe our deep industry experience combined with solid systems and world class integration capabilities differentiate us in our customers' eyes," said Justin.

These proprietary tools enable program management and purchasing teams to quote faster and more rapidly assess the impact of engineering change orders (ECOs) or material price changes on constrained parts.

Security is also a key point of focus. Justin is a Certified Information Security Systems Professional (CISSP) through the International Information System Security Certification Consortium (ISC).

"Our ability to organize data flow and connect it to all aspects of our business and our customers' business is a source of competitive advantage. Additionally, we are focusing heavily on IT security within our systems strategy, considering our customers' security needs, expectations and compliance. We are evaluating each customer in terms of their security strategy and data security compliance need," said Justin.

The focus on improved information handling efficiency also improves information security.

"Efficiency and security are related. The more times systems need to be accessed to enter or manually manipulate information, the more vulnerabilities that adds. When systems integrate properly, you eliminate the number of times project data needs to be entered or manually manipulated. That eliminates wasted activity and opportunities for introducing errors, plus it enhances security by reducing the number of system access points," said Justin.



Engineering in Action

IOT Well Tank Control Changes the Way Businesses Interact

The internet of things (IOT) doesn't simply make life easier, it also helps change the way businesses interact with their customers. Milwaukee Electronics' engineering team recently designed an IOT well tank control for a well tank manufacturer. Consumers. businesses and agricultural concerns often depend on wells for all or some of their watering needs. Typically, a control device monitors pressure on the tank and when the water level drops to a specific point, it signals the tank pump to refill the tank. In the traditional business model, a tank manufacturer sells a tank to the company drilling and setting up the well and the relationship with the customer ends at that point since water wells normally operate trouble-free for years. When the pump eventually fails, it does so typically without warning leaving the well owner without water. The customer typically calls a plumber rather than the well contractor resulting in lost revenue for the well contractor.

The new control changes that. The tank manufacturer partnered with a third party software provider and Milwaukee Electronics' design engineering team to develop a control that interfaces with an app on the end customer's phone providing information on equipment status and water usage. During setup, the tank is characterized



Milwaukee Electronics' engineering team helps customers fill resource or expertise gaps in their product development teams.

so that the control can monitor performance variables over time and predict when the well is starting to degrade prior to failure. It can also be set to warn if refill time increases beyond assigned parameters. That helps identify leaks or situations where a faucet may have been accidentally left on. As a result, the customer has visibility into water usage and potential maintenance issues. Another beneficial application is remote water well monitoring. On large ranches livestock is often dependent on water tanks supplied by wells and those wells are checked by ranch hands infrequently because of the distances involved. If a well fails it may not be

discovered for weeks and livestock will be without water. This type of system enables all wells on a ranch to be monitored 24/7 and ranch hands sent out to any well indicating pump degradation.

The result is a win-win business relationship. End customers have better intelligence about the state of their well equipment and water usage patterns. The well contractor has a continuing relationship with those customers.

Milwaukee Electronics team started on the control design in April 2020 and the product is launching in 2021.

Our Strong Front End Solutions Attract New Business

The Milwaukee facility has added another agricultural market customer. The project involves printed circuit board assemblies (PCBAs) that are potted and used in automated planting operations. The facility has received an initial production order and purchasing authorization to procure parts for a follow-on order. "Another one of our agricultural customers recommended us for the project. This new customer is very impressed with the depth of our engineering team and our ability to support a product likely to have frequent updates. Our potting and conformal coating capability also stood out," said Scott Pohlmann, Director of Business Development. Screaming Circuits is also supporting this customer with a 40-piece proof of concept on a next generation product.

"Our ability to provide a strong front-end solution for product development teams combined with full service manufacturing capability continues to attract companies with evolving products," added Scott.



Design Services

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Some common mistakes that drive up layer count include:

- Not utilizing signal layer and power planes together. When all signals are sent out of three-quarters of the grid and power out of the last quarter, a layer set can be eliminated.
- Not putting enough planar capacitance between layers. When the ground is tightly nestled to the signal and power plane it helps address the electromagnetic interference (EMI) issues.
- Not utilizing ground backfills to ensure planar capacitance. When done properly, this method can eliminate the need for a ground layer by utilizing space often left open.



San Diego PCB Design's team are expert at optimizing efficiency on each PCB layer.



Further, our team's expertise can reach beyond the design and can help with the supply chain issues confronting the industry today. When a component has been identified as at risk for shortages, delays or end of life by our materials team, our layout specialists can often mitigate or eliminate the problems by changing the layout to accommodate newer or more available equivalents in different packages.

The benefit of including SD PCB Design's team in either layout review or layout design is access to an experienced group of designers able to balance the challenges of cost containment, integration of new technology and manufacturing constraints. Learn more at <u>www.sdpcb.com</u>.

Newsletter Contact

Paul Forker, Corporate Director of Sales Email: pforker@milwaukeeelectronics.com www.milwaukeeelectronics.com Sales inquiries: sales@milwaukeeelectronics.com Copyright © 2021 Milwaukee Electronics All Rights Reserved 5855 N. Glen Park Road Milwaukee, WI 53209 Tel: 877.960.2134

