

MILWAUKEE ELECTRONICS NEWS

Q1 2022

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.

Jeffrey Theys Named Milwaukee Facility GM

Jeffrey Theys has joined Milwaukee Electronics as the Milwaukee facility's General Manager. Previously, he was SMT Facility Plant Manager for J.W. Speaker, Inc. He was earlier associated with Gehl Foods, LLC; ABB, Inc.; and Rockwell Automation, Inc., in a variety of operations management, engineering management, quality management or technical positions.



Jeffrey Theys

"Jeff brings over 20 years of experience overseeing a variety of manufacturing-

related functions. He has significant experience in SMT manufacturing and process control. He also has experience in Lean manufacturing and Six Sigma problem solving disciplines. He is an asset to our Milwaukee team and has the skillset needed to help the facility evolve as our company continues to grow," said Rick McClain, President & COO.

Jeff received his Bachelor of Science degree in Electrical Engineering Technology from the Milwaukee School of Engineering. He is a Six Sigma Black Belt and also holds certifications in Lead Lean and Project Management from the Milwaukee School of Engineering. He is a Certified Surface Mount Technology Process Engineer through the Surface Mount Technology Association (SMTA).

Message from Rick

Adding Resources to Improve Customer Outcomes

As we end the first quarter of 2022, we continue to see many of the same challenges found in 2021. On a positive note, Oregon has ended its mask mandate and we continue to return to more normal levels of workplace interaction.



Rick McClain

Materials availability shows no sign of improvement and I think it is unlikely to ease for at least the next 18 months. That combined with the higher levels of inflation we are all now seeing, will continue to drive

increases in PPV as well. As this issue highlights, we are enhancing our Supply Chain Management's resources to better address this. From a forecasting perspective, we are encouraging all customers to provide forecasts for as much of 2023 as possible and extended purchase orders to cover the additional inventories we carry in house. We are doing our best to provide customer-facing material status reporting that will help when making decisions between redesign or accepting increased PPV on critical parts. Our engineering team is available to help with redesign efforts.

We also continue to see labor shortages and that is impacting capacity. That said, we are continuing to look for ways to work smarter and increase efficiency.

Our team continues to be very nimble in this environment. We have some outstanding suppliers who are working issue by issue to solve customer shortages. We are also increasing resources in operational excellence and our systems to expand our capacity and better predict future gaps in supply chain. We remain committed to transparency. Sharing information as quickly as we receive it, is the best way to solve challenges, one issue at a time. Right now, no company in our industry has the silver bullet needed to change the dynamics we all face. However, the team at Milwaukee Electronics is committed to addressing every issue creatively and identifying all options for improving outcomes.

Rick McClain
President & COO

Milwaukee Electronics Increases SCM Resources

Milwaukee Electronics is adding and redeploying resources within its Supply Chain Management (SCM) organization to better address continuing issues with the electronics component market.

“The materials constraints we’ve been facing will continue to be an ongoing challenge. We are adapting our organization to better distribute workload and put stronger focus in areas with the greatest challenges,” said Gary DeGrave, Corporate Director Supply Chain.

Two buyers have already been added in the Tecate, Mexico facility and Purchasing Managers will be added in both Tecate and Milwaukee in Q2 2022.

“Tecate is seeing significant growth in production. We’ve traditionally done purchasing by customer there and are now switching the team to be commodity-

focused. The new buyers will help lighten the workload on our veteran buyers so they can focus on the most challenging commodities,” added Gary.

Application programming interface (API) capabilities have also been expanded. APIs enable Milwaukee Electronics to link more closely within their suppliers’ systems. The team currently has 15 API suppliers. Calcuquote ShopCQ is in a pilot phase as a purchasing automation tool for the team. When fully implemented, they will have automated APIs with 35 different suppliers and will be able to set up standard criteria for the system to issue awards and purchase orders.

“The digitization and automation that API offers is a game changer for us,” said Gary.

That said, relationships are still very im-

portant in finding needed materials.

“We are doing more and more high level calls with component manufacturers to keep product flowing. Networking at the manufacturer level is critical in this environment,” said Gary.

Use of non-franchised distributors, also known as brokers, is expanding. The team uses trusted brokers who validate product quality via independent third-party testing prior to shipment. Payment is held in escrow or not required until the shipment passes test.

Milwaukee Electronics’ Singapore International Purchasing Office (IPO) is also a valuable resource. One challenge in the current market is that counterfeit components are proliferating. The Singapore IPO team checks out ques-

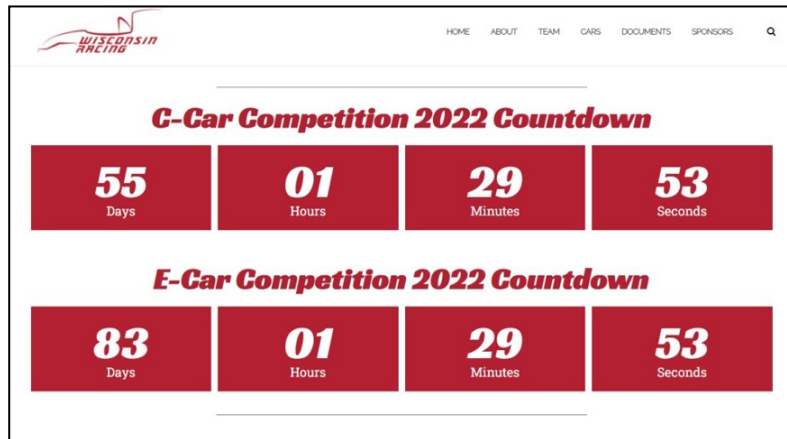
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Focus on Engineering

Supporting Engineering’s Next Generation

As an engineering-driven company, Milwaukee Electronics recognizes the importance of supporting students pursuing degrees in engineering. As part of that effort, its Screaming Circuits business unit has been a long-time sponsor of university affiliated organizations that help engineering students get hands on experience with leading edge technologies.

One example is Wisconsin Racing, a Formula SAE Team based at the University of Wisconsin-Madison. Screaming Circuits has been a sponsor of Wisconsin Racing since 2017. The Society of Automotive Engineers (SAE) Formula SAE is an international collegiate competition where students design, build and compete with a small scale open wheel prototype racecar. Wisconsin Racing spends each fall semester designing new vehicles, constantly



Follow Wisconsin Racing’s 2022 competition results at www.wisconsinracing.org.

searching for ways to improve performance and increase reliability. During the winter months, the team develops the vehicle with comprehensive manufacturing processes. In this phase, the team works tirelessly to build and test the vehicles, continuously resolving any issues that

arise. Everything comes together for competition in June, where both the combustion and electric teams will be competing at FSAE California. Wisconsin Racing has a proud, 30+ year history of building innovative, groundbreaking, fast cars. The team competes in two different formula competitions: internal combustion and electric. Its combustion team took the 2008 World Championship, and its electric team won first place in the 2018 design event.

As part of its sponsorship, Screaming Circuits typically builds a two-PCBA inverter/motor control for the electric team, assembled to Wisconsin Racing’s design and specifications. Screaming Circuits provides many of

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Next Generation

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the components used, as well as assembly services as part of its sponsorship. Some high cost components are supplied by other sponsors. Typically, Screaming Circuits has supplied two sets of assemblies per year. However, no assemblies were built in 2021 due to challenges in getting parts from sponsors.

"The inverter assembly is one of the most complex PCBAs on the car and also one of the most critical to safety. The two-board design gate drive does the switching plus a motor control. Motors are custom so an inverter/motor control is necessary to reduce the risk of motor failure," said Quinn Sabin, Wisconsin Racing's Electrical Technical Director.

A key part of Wisconsin Racing educational process is the hands-on element of translating a design to a manufacturable vehicle with engineering students designing the vehicle and then assembling sponsor-donated parts and subassemblies. Screaming Circuits' participation gives engineering students a taste of the benefits of outsourcing.



Screaming Circuits built the PCBAs for the first satellite designed and built entirely in Oregon.

"While Screaming Circuits is assembling build-to-print PCBAs designed by our team, we have incorporated design for manufacturability (DFM) recommendations their team has made over the years. They've also helped with documentation verification and optimum panelization recommendations. The biggest contribution has been their ability to take over parts purchasing. This streamlined the process. We export a bill of materials (BOM), plus provide sponsor-contributed high dollar parts and they purchase and donate what is needed. If parts aren't available, they

recommend appropriate substitutions," added Quinn.

Screaming Circuits is also a long-time sponsor of the Portland State Aerospace Society (pdxaerospace.org), a rocketry design group within Portland State University in Oregon.

Screaming Circuits recently built PCBAs for the group's OreSat initiative (www.oresat.org). The small satellite launched on March 15, from Kodiak Island, Alaska, aboard the 34-foot-tall Astra 3.3 rocket.

This is the first satellite of any sort designed and built entirely in Oregon. Portland State Aerospace Society reports that all systems are nominal, and they are receiving "tons of data" from the craft, now orbiting at about 300 miles.

Engineers make innovation possible. Milwaukee Electronics and its Screaming Circuits subsidiary, are proud to support engineering students on their journey to creating amazing innovations.

SCM Resources

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tionable companies.

"We recently were considering a \$250,000 component lot that the team was concerned about. It subsequently failed test of a known component attribute in third-party testing and was labelled suspected counterfeit. The Singapore IPO's experience is helping us avoid costly mistakes," said Gary.

A final area of improvement is customer

reporting. Milwaukee Electronics offers its customers full transparency on the issues they are seeing so that customers can devote internal resources. To support this effort, the team has developed some fairly complex customer-facing reports. This visibility into lead-times, non-cancellable, non-returnable (NCNR) liability and purchase price variance (PPV) is helping customers understand the need to forecast out 18 months and make better decisions on when design changes are needed. When appropri-

ate, Milwaukee Electronics' Engineering team can help customers with redesign.

"I don't see market conditions changing for the better anytime soon. We are trying to ensure our team leverages technology and relationships to address this chaotic environment. We also are trying to give customers the visibility they need to make good decisions related to their product requirements," said Gary.

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