

MILWAUKEE ELECTRONICS NEWS

Q3 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.

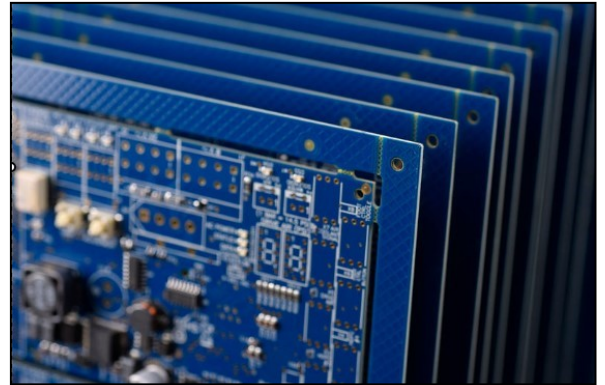
The Company operates over 135,000 square feet of manufacturing in Portland, Oregon; Milwaukee, Wisconsin; and Tecate, Mexico. In addition to EMS and product design and engineering services, it offers PCB layout and DFM services through its San Diego PCB Design business unit and quick-turn prototyping and on-demand assembly through its Screaming Circuits business unit.

Getting Ahead of the Supply Chain with Custom Purchasing Software

Milwaukee Electronics' IT team is helping reduce workloads in material quoting and purchasing utilizing a combination of internally-developed and off-the-shelf software.

"Different business units have different needs. We've developed SuperQuoter internally for Screaming Circuits to address some of the unique needs of that business. We are deploying CalcuQuote, which is a third party-developed quoting tool for our EMS business," said Justin Moulton, Director of Systems and Technology.

SuperQuoter is online and integrated with



Automating repetitive tasks, enables the Purchasing team to better focus on critical issues.

10 different suppliers via an API. When an order is received by Screaming Circuits,

(Continued on page 2)

Message from Rick

Attacking Industry Challenges Head On

We continue to focus on aligning our organization with the business challenges all EMS companies are currently facing. On the materials front, we've enhanced our IT tools to automate repetitive



Rick McClain

quoting and price/availability confirmation tasks, enabling our team to be more responsive across both our Screaming Circuits and EMS divisions. We've initiated an Executive Development Program designed to improve our team's skills and broaden succession planning.

We also recognize that in this business environment many companies are reluctant to fill out traditional customer satisfaction surveys because high marks confirm acceptance of material-related service insufficiencies and low marks blame personnel for issues that were not in their control. That said, customer feedback is critical in ensuring we are focused on improving areas of insufficiency that we do control so we've changed our EMS survey format this year. A third-party consultant will call select EMS customer contacts directly for a short survey of past year's performance and areas where improvement is needed. We will use automated third-party surveys for a broader range of contacts for our Screaming Circuits customers.

On a positive note, we've added a defense

-related customer that will ramp to production next quarter thanks to close collaboration among the customer and our teams in pipelining materials during their product development phase. While material availability remains challenging, new product introductions are possible with careful planning early in the process.

We are committed to not only navigating the current business environment, but also to innovating in ways that improve responsiveness and the quality of our solutions. If you receive a request for a survey call, we'd appreciate it if you would schedule time to provide the valuable feedback we need to fine-tune our improvement focus.

Rick McClain
President & COO

Building a Strong Future with Employee Investment

While Milwaukee Electronics has long run Leadership Development Team (LDT) programs, it is now broadening that focus to employees who are at an earlier point in their career with an Executive Development Program (EDP) focused on targeting mid-career managers.

“This EDP is something that I am passionate about for a many reasons. For our company, I want to build a path forward for some of our brightest talents. For each person who participates, the opportunity to grow means a chance to improve the lives of themselves and their families,” said Jered Stoehr, CEO.

The EDP will involve participants in middle or senior manager level positions, and give them additional skills and training to prepare them for success in executive positions. The program’s primary goals



The EDP will combine personal assessments with training and team-based projects.

include:

- Improve bench strength / talent development
- Strengthen corporate culture
- Improve retention of key managers
- Improve cross pollination between business units and locations.

There are three components to program: individual development, succession planning/ organizational development and team development. The EDP team will meet annually for training and team building activities with first meeting set for Oct. 11-12 in Oregon. There will also be both individual assignments and team projects ongoing during each year.

This year’s participants are: the Tecate Production Manager, a Tecate Program Manager, the

Portland Materials Manager, the Portland facility Controller, the MKE EMS General Manager, the VP Engineering, the India General Manager, the Director Software Development, and the Director Enterprise Systems.

Improvements

(Continued from page 1)

the bill of material (BOM) is scrubbed and then quoted with the sources most appropriate for the timeframe selected. Once the customer makes a decision, the tool automatically refreshes material prices and availability, and material is purchased following customer approval.

The EMS team is using the QuoteCQ and ShopCQ modules in Cal-Q-Quote. The Shop CQ module is in proof of concept and will go live in Q4 2022. The goal with ShopCQ is to better automate the pricing accuracy and purchasing process than is possible via the purchasing module in Milwaukee Electronics’ ERP system. Currently ShopCQ runs independently of the ERP system. The ERP system runs MRP nightly and that generates the demand that ShopCQ purchases to. ShopCQ purchases to customer’s approved material

list (AML) and will automatically check stock and switch to an alternate source if the first choice is unavailable. ShopCQ also does API stock checks to monitor pricing accuracy. When fully integrated by the end of the year, ShopCQ will work seamlessly with the ERP system, automating repetitive buyer tasks and updating the system when PO changes are issued by suppliers, so that buyers can focus on managing demand exception issues.

“We used to say pricing was good for 60 days. Today, we can’t give 30-day pricing. When a customer accepts an order you have to validate pricing again immediately because it is changing so quickly. Our goal is to improve both our customer and buyer experience by automating repetitive processes to improve response time while reducing buyer workload,” said Gary DeGrave, Jr., Corporate Materials Director.

Superquoter and ShopCQ are already reducing situations where POs are rejected by suppliers for incorrect pricing. The automated system updates are also eliminating human error and reducing rework.

The quoting and purchasing upgrades represent the first phase of much larger integration strategy that will eventually integrate ERP, quoting and supply chain systems for enterprise management and shop floor equipment optimization, and the FactoryLogix manufacturing execution system (MES) for factory management.

Milwaukee Electronics Wins Defense-Related Contract

Milwaukee Electronics was recently awarded a defense-related contract that involves 20 unique printed circuit boards assemblies (PCBAs). Production will be done in the Portland facility. NPI is in process and the project is scheduled to be in

production in Q4 2022.

"This award is a testament to the strength of our team's manufacturing processes and strong focus on ITAR compliance. We were able to accomplish this schedule by pipelining materials prior to

final design packages by collaborating with our customer on this effort. We look forward to providing a strong 'Made in USA' solution for this customer," said Rick McClain, President & COO.

Recent Articles

Milwaukee Electronics was recently featured in two publications: Designing Electronics North America and Electronics Sourcing North America. Click the image below to read each article. Both articles start on page 24.

DESIGN

Designing through parts shortages

Is there anything worse than having a complete electronics design that can't be built because one of its components has a 52-week lead time?

I work for an electronics manufacturer. We've been building small and medium volume PCB assembly runs since 2008. Back in 2018, my company started getting serious warnings from components suppliers about an impending state of extreme shortages. And this was before the COVID-19 pandemic and its accompanying disruption in labor and transportation.

I don't think I've ever seen a components market this messed up. At any given time, there can be a hundred

different projects in our factory in the process of being built. I won't give you an exact percentage that are waiting for long-lead parts, but it's a lot.

You may think that, as a manufacturer, I'm just at the end of the cycle and don't have much to say about the rest of the process, but that's really not the case. The sooner you involve your manufacturing partner, the better off you will be, especially for high-volume boards. We, and others like us, can give you thoughts on what to avoid doing and what to do to help navigate messed-up supply chains.

Avoid questionable substitutions
Be wary of finding a substitute in the gray market or brokers. When desperation takes

hold, the line of the gray market can be overpowering. Resist this, or at least do as much vetting as you can. I've seen brokers and less than legitimate sellers rack prices up 10X, 50X, or even more.

Another problem with sketchy vendors is in counterfeit or re-labeled parts. For example, you may get a completely different component that has been re-labeled. Alternatively, you may receive the correct or similar part, but from the manufacturer's reject bin. The first device may last out okay, but how many will later fail in test or in the field?

"The same, only different," does not mean equal
If you pick a functional equivalent, double check the product. This is probably

the most common issue we see with last-minute substitutions. A good example would be a three-terminal voltage regulator issue, as in the LM1085 low drop out (LDO) regulator. It looks, for all intents and purposes, to be a standard three-terminal pin-out part. You'd look at it and assume that it's a direct replacement for any old three-terminal regulator. But, rather than the common In-Ground-Out, the 1085 is pinned as Ground-Out-In.

I ran into another case not long ago with a GPS module. The replacement part was functionally equivalent with the original, but the pinout was mirrored. The only difference in the part numbers was a "C" added to the part number suffix on the version we were given

I qualified and tested to assemble PCBs



EMS

PCBA prototypes: leveraging buying power

Scramming Circuits explores how evaluating prototype requirements and consolidating orders best manages one-off and small batch orders while also reducing their unit and volume cost.

Outsourcing electronics manufacturing is typically a well-defined purchasing function. On volume production projects, prototypes are normally built during the new product introduction (NPI) phase by the EMS provider partner handling volume production. However, product development teams at larger OEMs often source their own prototypes earlier in the design process to smaller suppliers, since early-stage designs may not go to volume production. These transactions are often priced as one-off purchases and may add administrative activity to the engineering team workload.

Building prototypes likely to ramp to volume at the EMS provider handling volume production is definitely the most cost-effective way to source those prototypes. If there is component commonality on related projects, it may be possible to leverage those projects' component inventories for the material needed to build those prototypes. That

said, one-off engineering prototypes may not fit because these companies often lack the quick turn, transactional, no-fills environment common to these types of prototypes.

Using a local job shop for occasional one-off engineering prototypes can be cost effective because these companies are set up to work responsively on short runs. However, the same amount of administrative time may need to be spent setting up each purchase if these projects are infrequent.

For a significant number of engineering prototypes on an annualized basis, identifying a source that specializes in prototypes and is willing to set up a corporate account with the project institutional memory and procurement support capabilities found at a full-service EMS provider, with the flexibility and speed of a job shop.

For example, Scramming Circuits, a company specializing

in prototypes, offers both transactional and corporate business models with varying levels of support and speed. While corporate accounts can help eliminate much of the front-end administrative work necessary for order processing, the real benefit is setting up a system that conforms with the customer's standard practices and/or special requirements.

For example, some customers use non-standard documentation or terminology. Once a customer service representative knows this, that knowledge reduces communications errors and delays. Customer service also notes the types of orders or special process add-ons that a customer places or needs. That familiarity helps ensure questions are answered quickly. This can be particularly important in leading edge technologies where industry standards may need modifying to specific customer requirements. It is also easier to accommodate logistics issues such as last minute part

shipments on partial turnkey orders, when the customer team is well known and that potential issue was anticipated.

In the current materials environment, this type of relationship also pays benefits. At this supplier, material is typically not handled differently between corporate and individual customers. However, customers establishing a longer term relationship often develop recognizable patterns in material requirements. An example is a large bill of materials with one or two parts on a long lead time. For corporate customers with a track record, this supplier can often order and hold available parts until the long lead time components are available. That protects against other parts on the bill of materials going out of stock while waiting for the long lead time parts.

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