

MILWAUKEE ELECTRONICS NEWS

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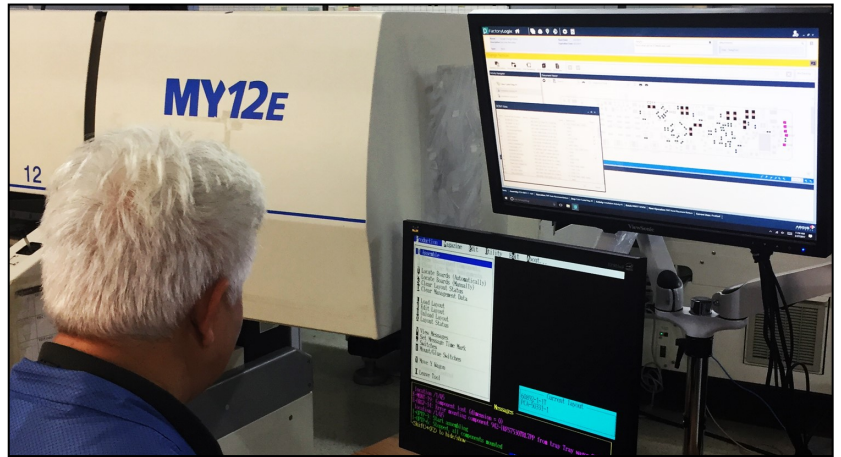
About Milwaukee Electronics

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.

Aegis FactoryLogix MES Implementation Underway

Milwaukee Electronics recently chose Aegis' FactoryLogix manufacturing execution software (MES) to implement in their Portland, OR facility. The software was selected for its ability to drive faster new product introduction through manufacturing.

"As a contract manufacturer, our customers are our first priority. This is the next step in



Above, the new software is beginning its pilot test phase.

our long-term systems enhancement strategy that began with our company-wide Epi-

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Message from Mike

As I look at 2017, the phrase that comes to mind is "Start your engines." This year we are positioned to lead the pack in many ways. Our merger with San Diego PCB is resulting in new business opportunities. A high volume box build project we started in Tecate last year has hit its millionth piece and we are ramping other new programs with significant potential.



We continue to invest in our business in terms of both staff and systems. We are centralizing Supply Chain Management and strengthening our Engineering Team. We've also selected Aegis FactoryLogix as our Manufacturing Execution System (MES) and will be rolling that out in our facilities over the coming year, beginning with Portland.

In short, we are seeing the improvements we've been making pay dividends and are doubling down to multiply those gains. We see this as an exciting time to be in the electronics business, particularly with a comprehensive solution that supports product development engineering, layout, prototyping,

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Tecate Builds One Millionth Piece

The team at Milwaukee Electronics' Tecate facility recently celebrated the completion of the one millionth unit of a telematics device used to measure driving behavior. The project started in Q3 2016.

The automatic aftermarket device interfaces with a mobile phone and attaches under a car dashboard to measure driving behavior. Screaming Circuits built the original prototypes. Tecate is building the printed circuit board assemblies (PCBAs) and ultrasonically welding the case. An integrated test, pack and ship station is used at the end of the line to ensure correct MAC address labeling in final test phase. The units are shipped directly to end markets in the US and Japan.



Right: Team members celebrate shipping the one millionth piece with cake and congratulations from both facility management and the customer.

Hanson Named Engineering Manager

Clint Hanson has joined Milwaukee Electronics as Engineering Manager. He was previously, VP of Engineering & Operations at Granite Microsystems, a multinational, privately-held, embedded solutions provider specializing in engineered solutions for OEM capital equipment manufacturers.



Clint Hanson

neering firm. He brings both an understanding of markets we'd like to enter and best practices in terms of systems and processes that can enhance the efficiency of our team," said Mike Stoehr, President and CEO.

"I'm extremely impressed with the engineering talent I've seen at Milwaukee Electronics. The seniority and relevant experience of the group is outstanding. My goal is to be a resource that helps our team focus on engineering, so that we can increase the velocity of the work being done," said Clint.

Clint also sees opportunities for expanding the team's relevant experience into new markets such as the internet of things (IoT) and markets, such as embedded controls, where connectivity for

data sharing is becoming a requirement. He also sees opportunities in service contracts for support and maintenance of the software associated with those applications, both from an engineering and EMS customer perspective.

"As technology advances, so do the opportunities for creating new service models that support the changing requirements of our customer base. Service contracts help fill gaps in many customers' support infrastructure and provide a predictable revenue stream to smooth out the revenue peaks and valleys in engineering work. So it is a win-win for both groups. The expertise we need to do this is already in-house," Clint added.

Corporate Supply Chain Director Position Created

John Fleischman has joined Milwaukee Electronics as Corporate Supply Chain Director. He is located in the Portland, OR facility. Previously, he was



John Fleischman

Purchasing Manager for SR Smith. He was earlier associated with Forest Dental, PECO, Inc. Ultra Clean Technology Celerity, Evergreen Aircraft Sales & Leasing and Intel Corporation in a variety of supply chain management roles.

“One of the challenges in contract manufacturing is serving a diverse set of customers that often have unique material requirements. John has a diverse background that includes work with dental, aerospace, military, semiconductor and capital equipment original equipment manufacturers (OEMs). He also has the commodity management and systems

expertise to capitalize on the resources we’ve been developing over the past few years,” said Rick McClain, COO.

John has laid out an aggressive set of goals for his first few months that include:

- Developing key relationships with top suppliers to facilitate supply chain agreements that:
 - Ensure quality materials, on time for our customers
 - Fully leverage our suppliers’ capabilities
 - Ensure continuity of ongoing supply of critical components
 - Maximize cost reduction while enhancing flexibility
- Setting up cost reduction roadmaps with customers that look at driving cost out in current designs and involving Milwaukee Electronics’ engineering personnel in redesign for cost reduction efforts
- Becoming a centralized resource for

each facility’s purchasing team

- Better leveraging the International Purchasing Office (IPO) in all facilities’ purchasing efforts
- Centralizing processes and procedures.

“Milwaukee Electronics is at an exciting point in its evolution in terms of support systems and expertise. Much of my job involves enhancing the use of those resources to better serve our customers from a supply chain management perspective,” John said.

John received his Bachelor of Science degree in Business Management from the University of Phoenix. He is pursuing certification as a Certified Supply Chain Professional through the American Production and Inventory Control Society (APICS). In his spare time, he coaches his daughter’s 10 and under softball team and is a Volunteer Fire Fighter with the McMinnville Fire Department.

Message from Mike

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manufacturing and fulfillment. Most of our current new projects started either as engineering projects or prototype projects at Screaming Circuits.

We also see increased activity on both sides of the border in terms of the reshoring effort back to North America. While it

is too soon to tell what the new Administration’s policies will bring, the recognition that manufacturing is a key industry is a good start. Our focus on enhancing our capabilities, efficiency and responsiveness has never been stronger. And we are confident that our North American manufacturing solutions will be able to

support evolving customer outsourcing strategies. Whether it is Made in Mexico or Made in USA, we have cost competitive solutions that will help our customers stay in front of their competition.

P. Michael Stoehr

President & CEO

Milwaukee Electronics Adds a New Rep Firm

Milwaukee Electronics has signed a manufacturer’s representation agreement with Stein & Associates out of San Diego.

“Sherrie Stein had previously represented San Diego PCB and it made sense to ex-

pand representation to include Milwaukee Electronics’ manufacturing operations, particularly with the proximity of the Tecate facility to Southern California. This is one more way our recent merger with San Diego PCB is opening the door

to new opportunities,” said Jered Stoehr, VP of Sales and Marketing.

Engineering in Action

The Pitfalls of Contract Design

One of the mistakes many original equipment manufacturers (OEMs) learn the hard way is that in design, you often get what you pay for. A standalone contract designer has minimal overhead and may appear to be attractively priced, but this isolation may also translate to antiquated design tools, lack of knowledge of critical design rules, failure to consider optimum part selection and failure to adhere to best practices in design for manufacturability/testability (DFM/DFT).

Milwaukee Electronics' engineering team saw this situation develop with a printed circuit board assembly (PCBA) used in an industrial application. A contract designer had done the original product design and layout, and the team's design review immediately showed issues. There were problems with signal integrity, little onboard diagnostics to support test debugging and a no-frills user interface. The product was mixed technology with many through-hole parts, as the designer had worked from older versions of the OEM's product and had hadn't done any component engineering analysis.

The end result was that the level of issues inherent in the design made starting over faster than modifying the design. Milwaukee Electronics' team was able to complete this effort in time to support the customer's production time schedule targets. The team's design effort fixed the signal integrity



Milwaukee Electronics' Engineering team considers Dfx issues as part of design efforts.

issues and added onboard diagnostics to speed test debugging. The user interface display was enhanced to convey more information.

The team also did a bill of materials (BOM) scrub, identifying SMT alternates for all but the terminal blocks which needed to remain through-hole due to the physical stresses they would encounter. This improved component availability while lowering cost, plus increased the amount of automated assembly.

Today, Milwaukee Electronics does a box build assembly for this customer that in-

cludes a main control, a gas sensor module, a mounting plate for the control and a cable that connects the sensor module to the main control.

As this case study illustrates, the benefits of considering a design partner with manufacturing expertise can have significant implications on component availability and cost, cost of test, degree of automation, and overall quality. In that situation, the benefits typically add value that far exceeds design cost.

Two New Projects Ready for Launch

Milwaukee Electronics is preparing to launch two new customers in its Midwest facility this quarter.

The first product is an LED light controller for pools and spas. The project represents another teaming effort between Screaming Circuits and the EMS business, as Screaming Circuits is doing

a portion of the pilot run. The Milwaukee facility will do a pilot run in Q2. The project involves both printed circuit board assembly (PCBA) and box build. The Milwaukee facility will be doing the volume production

The second product is a wireless RF asset tracker that includes PCBAs, a subassembly

and a final system build. The project is starting with pilot run in Q2. Screaming Circuits did three separate prototype builds plus made Dfx recommendations which were implemented in the third revision.

FactoryLogix

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cor ERP system implementation in 2013. Investing in technology that will help speed our NPI process and enhance real-time data collection will help us deliver the highest quality products in the timeliest manner. We chose FactoryLogix based on its ease of use and proven ability to increase operational efficiency,” said Rick McClain, COO.

An internal goal to reduce the time from development to manufacturing and pro-

vide digital documentation on the shop floor led the team to select FactoryLogix. The company has been an Aegis customer since 2011, using earlier versions of the MES vendor’s solution for work instruction authoring.

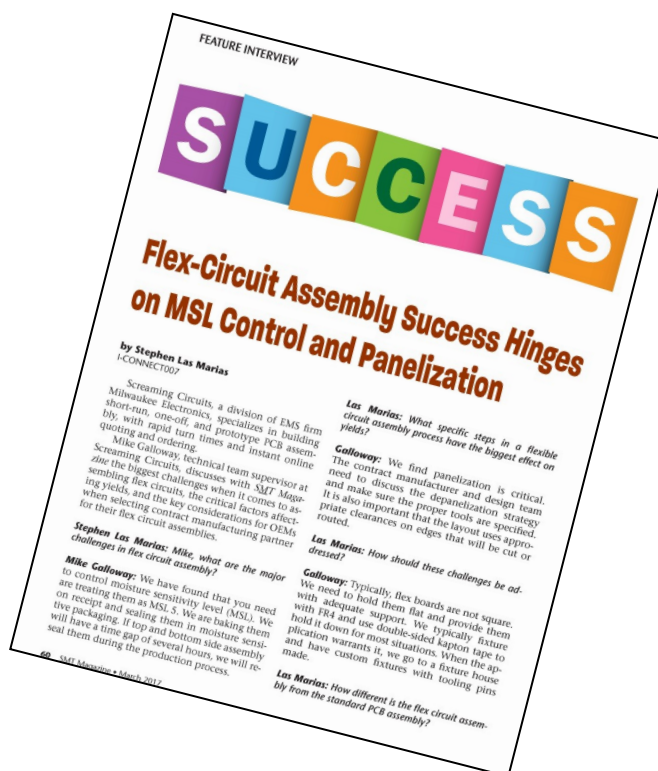
“The move to a centralized digital documentation platform of this caliber has several benefits. It speeds documentation transfer from the customer, enhances internal documentation control and contributes to reducing the time required for

line changeovers. The MES system’s ability to efficiently collect real-time data helps us better monitor trends on the production floor, plus support our mission critical customers’ need for quality data collection and traceability,” added Rick.

The pilot phase of the implementation project begins in April and the system will go live later in second quarter.

Latest Article of Interest

Mike Galloway, Screaming Circuits’ Technical Team Leader, shared some thoughts on best practices in assembling flex circuits in SMT Magazine’s March 2017 issue. Read the full article [here](#).



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