



ELECTRONIC MFG. SERVICES (EMS)

Motion Sensors Partners with Juki to Become World-Class

By Nic Meadows, Engineer, Motion Sensors, Inc.

Small manufacturing companies often have to battle the preconception that their size means that they do not have the capabilities necessary to create the highest-quality products. Motion Sensors, Inc. (MSI), a family-run OEM that creates custom sensors for specific customer applications, partnered with Juki so it could satisfy a broader client base.

Founded in 2002, the company is located in Elizabeth City, North Carolina. Owner Marcy Pritchard assumed the role of president when her father retired in 2006. Since taking over the company, Pritchard has focused on continuous improvement and upgrading technology to grow the business.

In-House Capabilities

MSI is a low-to-medium volume OEM that builds custom sensors for flow meter applications, sensors that withstand harsh environments for the rail industry, and numerous products for aerospace and military applications. These include the sensors used in space programs, nuclear submarines, missile systems, aircraft, and armored vehicles.

The company can administer and oversee qualification testing, and has the in-house facilities and capability to provide comprehensive ATP testing to meet stringent military and aerospace requirements.

The company also provides services such as PCB board assembly and testing, and customer engineering services that include electrical and mechanical product engineering, reverse engineering, prototyping, PCB layout, and circuit simulation.

The company has faced many challenges. MSI has lost business in the past because large prospective customers viewed it as “too small” to handle their needs. In reality, MSI has implemented management systems and capabilities that are similar to its larger competitors.

All Motion Sensors’ quality management systems are ISO 9001- and AS9100-certified. It has in-house certified IPC trainers, as well as in-house functional and environmental testing, including tests for temperature, pressure and vibration.

The company has recently designed and manufactured products for some of the largest and most demanding clients in a variety of industries.

Equipment Upgrades

Pritchard recognizes the benefit of investing in new equipment to optimize technology and efficiency. She decided to completely update the company’s PCB assembly equipment. Her goal was for MSI to have all the capability and advanced technology of any bigger world-class company.

After extensive evaluation by Pritchard and her engineering team, MSI replaced every PCB

assembly machine with new, state-of-the-art equipment.

The new PCB assembly line includes a Juki GL fully-automatic screen printer, KE-3020 high-speed flexible moulder, RS-800 reflow oven, a CUBE.460 selective soldering machine and a SouthTek nitrogen generator.

According to Pritchard, quality is the main reason for choosing the Juki machines over those of the competition. But, there were several other factors. “First of all, from a



Jarrell Paxton, MSI electronics assembler, loads reels into the KE-3020.

capability and price standpoint, Juki definitely was at the top of the list,” comments Pritchard. “What clearly made them stand above the rest was a combination of the support we received from our Juki rep, Bob Doetzer, and the fact that Juki had an office in North Carolina. We spoke with other Juki customers and actually visited one facility and all were consistent in describing the phenomenal support that Juki offered both during initial implementation and set up and also on an ongoing basis. As a small company with limited resources, we knew that having strong support and involvement was key to our ability to maximize our equipment investment.”

The Juki GL printer replaced the company’s manual printer, providing higher quality printing and eliminating the issues with getting consistent paste deposits. The KE-3020 with electronic feeders replaced an old Universal GSM two-machine line. This system has only been in use since February 2017, but the company has seen substantial improvements in precision, quality, throughput and an immense increase in speed.

The Juki RS-800 eight-zone hot air/nitrogen reflow oven with efficient power design and air management system greatly improves energy savings while increasing quality and throughput. Finally, the CUBE.460 selective soldering machine has improved consistency and quality by eliminating the hand soldering process.

Continuous Improvement

Prior to purchasing the equipment, MSI was performing a lot of processes manually or using equipment with a fraction of the capabilities of the new Juki systems, including manual solder paste application, pick-and-place machines from the early 90s and hand soldering.

Implementation of the new equipment has allowed MSI to increase productivity and efficiency, but far more importantly, it has enhanced product quality and repeatability. As a manufacturer focused on low volumes, and with a high product mix, versatility is a must. The company also needed the repeatabili-

ty that comes from automating operations that were previously operator-dependent. This translates into a repeatable, high-quality product, greater efficiency, and fewer overall defects.

Local Juki representative Bob Doetzer worked closely with the company through the transition. “MSI has always been committed to building the highest quality products, and now they have the tools to be considered world-class,” says Doetzer. “Marcy committed to outfitting her production facility and has followed through on that commitment.

All equipment is state-of-the-art and all the company’s operators are IPC-certified. The plan has gone better than expected. Efficiency is up, defects are down and quality is outstanding. MSI is poised and ready for growth.”

Motion Sensors has an in-house machine shop, PCB assembly line and welding, as well as sensor assembly operations. The company’s smaller size allows flexibility and responsiveness which leads to exceptional customer support. This competitive advantage is greatly improved by the new Juki equipment.

“Juki has become a go-to option for Motion Sensors when dealing with process-related issues and opportunities for continuous improvement,” says Pritchard. “Information and recommendations, as well as troubleshooting and support are timely, consistent and thorough. I fully trust the expertise of Bob Doetzer and the rest of the Juki team, and will continue to rely on their advice and recommendations in the future. Their

entire approach tells us that we are more than just another order to them; they care about Motion Sensors’ success and future growth and want to be part of that process.”

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Juki KE3020 high-speed flexible component molder.