



## ELECTRONIC MFG. SERVICES (EMS)

# Yamaha Improves Capacity for Legacy EMS Provider TSI

By Ed Nauss, Global Account Manager, SMT Business Group, Yamaha Motor IM America

**T**echnical Services, Inc. (TSI), is the oldest EMS provider in the Northwestern U.S., according to Abdul Sharif, TSI's VP and COO. Founded in 1973, the company has progressed from hand assembly to high-speed manufacturing, using today's most challenging components. With multiple SMT manufacturing lines, TSI has found that a legacy EMS company can continue to benefit from investments in new technology, such as improved capacity and capability.

New technology has allowed the company to expand into offshore markets that were once out of reach. TSI's overall customer base has also broadened, as it is now able to produce a wider variety of products more quickly. Keys to the company's success are equipment from Yamaha and unflinching service and support from Trans-Tec Worldwide.

### Built by Hand

In the early days, after Gary McGregor founded the company, TSI built products for the telecommunications and consumer electronics industries, such as answering machines and radar detectors. Everything was soldered by hand. It wasn't until about a year and a half later, when Dee Boothe joined, that the company purchased its first wave soldering machine.

TSI saw steady growth throughout the 1980s, with many big-name companies as customers. During the 1990s, the company built phones that were installed in the backs of the seats of major airlines. In the early 2000s, the focus shifted and the company began assembling electric toothbrushes, ultimately building more than 25 million.

Today, the company operates two facilities and is owned by its employees. Operations manager Chris Edenburn cites TSI's employees as a major factor of the company's success. TSI has an on-site IPC-certified trainer and all employees

undergo comprehensive training before stepping onto the manufacturing floor. Since 2011, the company has made more than \$13 million in capital equipment investments. All four pick-and-place assembly lines have been upgraded. New X-



*From left: Karl Wasickanin, SMT manager, Chris Edenburn, operations manager, and Abdul Sharif, VP and COO of TSI, and Rick McCollough, Trans-Tec.*

ray, test equipment and conformal coating systems have been added. All of the company's production equipment, across the board, has been upgraded.

TSI builds products for major airline in-flight entertainment systems, Wi-Fi remote controls, parking gate readers, advanced dentistry chairs, irrigation systems, medical devices, consumer audio equipment, and even hair removal

and replacement machines. This wide-ranging selection of products requires flexible manufacturing equipment.

### Improved SMT

In 2011, TSI connected with Yamaha and was introduced to Trans-Tec Worldwide. Trans-Tec stepped into a void left by TSI's previous service provider and helped to take care of its Yamaha Gem series equipment.

When the company commissioned its first new line from Yamaha, it was up and running in two days. TSI found that the equipment was similar enough to its Gem series machines that it experienced no downtime and its operators had no trouble learning the new equipment. "The Yamaha machines are very flexible," says Karl Wasickanin, SMT manager at TSI. "I can run product on any line and get the same results."

With the new Yamaha machines, TSI can place more than a million components per hour, significantly increasing capacity. This means that the company can accept more customers who are SMT component-focused. "Improved throughput in the Yamaha lines has helped us expand our business to encompass more challenging technology, including 0201, 01005, finer-pitch, and micro-BGAs," says Wasickanin.

The company does not treat NPI builds any differently than production. Sharif says that this sets the company apart from its competition. This enables TSI to optimize its manufacturing process and eliminate any glitches when those products make the transition to production. The company also performs full AOI inspection, even on small runs.

"AOI is very important to us," says Sharif. "If we have a secondary through-hole process, we run the boards a second time through AOI to make sure that if any defects have been created during the process, we catch them at that point and correct them." As a result, the company is considering Yamaha's YSiV AOI system to further improve its inspection.

### Consistent Solder Paste Print

After receiving Yamaha's YSP printer, the TSI team decided to make Yamaha its only supplier of printers going forward. The reliability of the YSP printer and its overall print quality was much better than the company's previous systems. After using the Yamaha printer, the team felt as though they did not even have to inspect the solder — the print quality was consistent.

Improvements to the Yamaha equipment and other well-thought-out features offer significant advantages to the company. TSI has seen ongoing improvements to the software and P-Tools. The operators find the interface easy to use and all of the software is similar between the printer, placement machine and AOI system, making it simple to transition from one machine to the next. "Also, the extra feeder space on the YSM20 is a huge

advantage," says Wasickanin. "The fact that we can use our older mechanical feeders on all machines, including the YSM20, is a big plus."

### Trans-Tec's Critical Support

Throughout TSI's relationship with Yamaha, Trans-Tec's support has been vital in keeping the machines up and running properly. That the company's employees can contact Trans-Tec directly, without intervention by Sharif, is a great help, Sharif says. This frees up his time. TSI also has multi-

ple contacts within Trans-Tec, so there is always somebody available to take a call. The company also aided TSI with financing, since four lines in three years is a large investment.

Sharif recalls, "When we first received our new machines, Karl, who was out of the office, was the only one trained on programming at the time. Wouldn't you know, we landed a hot project that needed to be turned around that day. We contacted Trans-Tec and one of their engineers had us up and running in 45 minutes."

### Future Challenges

"Component lead times are going way out, even for your basic resistors and capacitors," says Edenburn. "Some parts are going into allocation where the distributor decides who gets the parts. Also, what's going to happen to NAFTA is a concern for many customers."

Earlier this year, TSI saw a surge in business from five of its top customers as they pulled business back from across the border. This has been a contributing factor in the acquisition of its newest lines. The company would not have been able to handle the influx of new business without the Yamaha lines.

In general, TSI is seeing a trend where customers are increasing their percentage of product built in North America, which has been pulled back from overseas. Companies like TSI are now more competitive. Many of its competitors are now facing capacity issues. With the higher throughput that the Yamaha machines offer, the company is seeing reduced labor costs and greater competitiveness against overseas EMS companies as well. TSI's equipment choices, in partnership with Yamaha and Trans-Tec, have helped it stay competitive and handle the ebb and flow of business as it moves forward.

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*One of TSI's four new Yamaha SMT lines.*

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