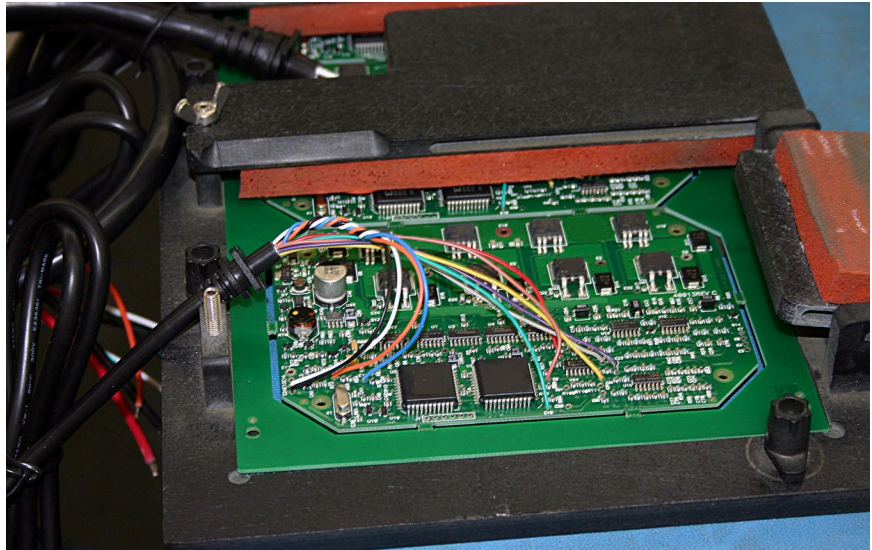


Creative Fixturing, Automation Extends Cost-Effective Selective Soldering for Contract Assembler Singletec

Randy Allinson, ASCENTECH

When Singletec Inc. switched over to lead-free electronics assembly, the Sanford, Florida-based contract manufacturer was looking for a simple, flexible selective soldering system that would allow them to transition to lead-free without fear of cross-contamination. They were also looking for a means to handle higher volume and automate a number of soldering tasks that were being done manually. After a comprehensive search among available equipment and vendors, they chose A.C.E.

Production Technologies' KISS 102 Selective Soldering machines, for reasons that included simplicity, benchtop configuration, comparatively low initial investment, and simplified automation with easy programming.



Dedicated fixturing for this difficult assembly – managing heavy connecting wiring, etc. – in combination with the selective soldering process, made this job faster and the results more reliable.

Kurt Storey, Singletec's President and owner,

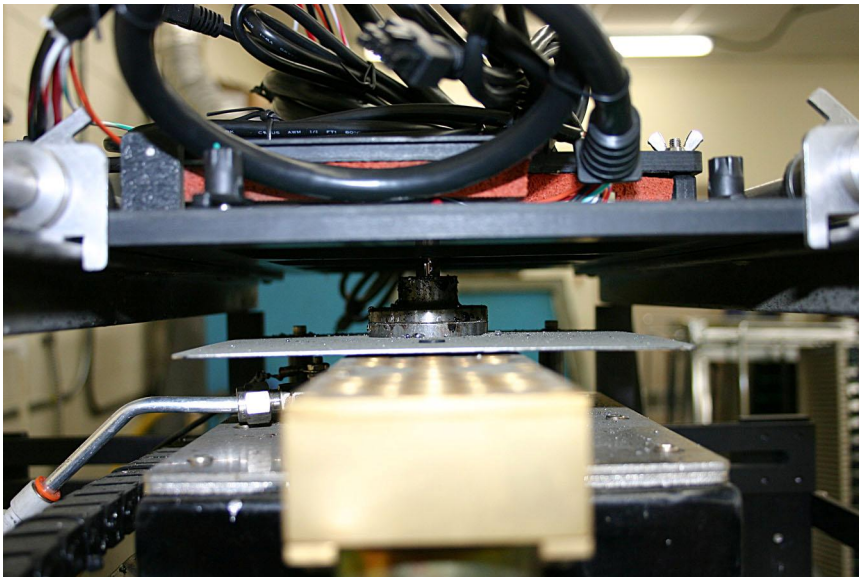
quickly realized that in addition to the intended uses of the machines, there were many more applications for this new soldering technology.

“Highest on the list of labor and cost reduction applications that we had was the soldering process required to attached wire ends to a circuit assembly's through-hole contacts. This process has always been accomplished by hand soldering. Now, with the A.C.E. system, the task is completed many times faster, and at a fraction of the cost. Additionally, our

ability to automate the process has brought greater consistency to the resulting solder connections.”

Automating the solder attachment process has brought greater repeatability and consistent quality to the process, since the quality of the connection is no longer dependent on operator skill and variability.

The ability to swap solder pots in and out of the machine alleviated Singletec’s concerns about lead cross-contamination. “As we transition to lead-free assembly, obviously there



The ‘Traveling Mini-Wave’ solders all of the board’s connections from beneath.

are going to be some products that still use lead solder, while the newer ones do not” Storey says. “Being RoHS compliant is important to us. There are a lot of issues associated with lead cross-contamination, product reliability issues as well as regulatory compliance.” Keeping

lead-bearing and lead-free solders separate is simplified with quickly swappable solder pots, an innovative feature of the KISS 102 systems.

Most users simply have two solder pots, one for lead-based solder, and one for no-lead. The pots are clearly marked and color-coded to prevent mix-ups that can result in cross-contamination. Each pot is equipped with its own solder pump and solder delivery system.

Singletec, Inc. is a 15-year-old contract design and manufacturing services company, so they're not new to the business of building electronic assemblies. Still, they're always looking for creative new approaches to solving soldering and board assembly challenges. As volumes have grown, so has the need for greater automation and programmability to handle to ever-widening range of components and soldering tasks, many of which simply cannot be addressed with hand soldering. After working diligently at developing a new process approach, and consulting with the engineers at Spokane-based A.C.E., the company implemented a system that combines the use of custom fixtures with their A.C.E. "traveling Mini-wave" selective soldering machine.



Dedicated solder pots – for lead-based or lead-free solder, each clearly marked and color-coded – prevent cross-contamination, and are quickly swappable.

"A.C.E.'s open design and user access has made it possible for us to set up these assemblies in custom designed fixtures and achieve great through-put and excellent solder quality" Story says. "Over molded gasket and 14 gauge to 20 gauge wire assemblies are easily handled by our KISS 102 soldering systems – this approach is saving us time and money every time we run a batch of boards through."

Why Selective Soldering?

Electronics assemblers are increasingly turning to selective soldering rather than hand or wave soldering for the same reasons as Singletec, Craig Curk, A.C.E.'s National Sales Manager says. "Many of today's printed circuit boards are predominantly SMT; however there is often interconnect hardware, displays or other components that nents are generally soldered either by wave or by hand. The KISS machines will precisely solder only the components necessary without disturbing nearby SMT chip components. Selective soldering is precise, programmable, fast, and consistent."

The looming change to lead free solder as part of the required RoHS compliance has many board assemblers faced with having to spend upwards of \$100K for new lead free compatible wave solder equipment and often additional money for a high capacity nitrogen installation. Multiple RoHS compatible KISS systems can be installed for less than the price of most new wave solder machines.

The KISS-102 features programmable motion and a PC-based control system. The operating system is easy to use and provides the capability to program a virtually unlimited number of points or areas to be soldered and to store the parameters to be recalled as that job is set up again in the future. CAD files are used either off line or at the machine to teach the datum points. Programming can be accomplished by teaching on the machine using the built-in laser position indicator. PCB's with hundreds of points to be soldered can be processed automatically in a matter of minutes with repeatable results. This system provides the flexibility to individually tailor all the necessary parameters. The fountain position, preheat time, traverse speed, and wave height can all be varied uniquely for each device allowing the user to handle the variations of thermal mass caused by ground planes, heat sinks, and large components while still protecting thermally sensitive devices. The KISS-102 has an optional spray fluxer that dispenses a controlled application of flux only to the areas that will be soldered. It can accommodate PCB's from 2" x 2" up to 18" x 24", and connectors up to 10" long. Its footprint is 30" x 32".

For more information, contact:
Randy Allinson, President,
Ascentech, LLC
127 Goose Hill Rd., Chester, CT 06412
Phone: 860-526-8903
e-mail: rallinson@snet.net

Kurt Storey, President
Singletec, Inc.
2647 N. Design Court, Sanford, FL 32773
PH: (407) 324-0440; E-mail: kurt@singletec.com
Web Site: www.singletec.com