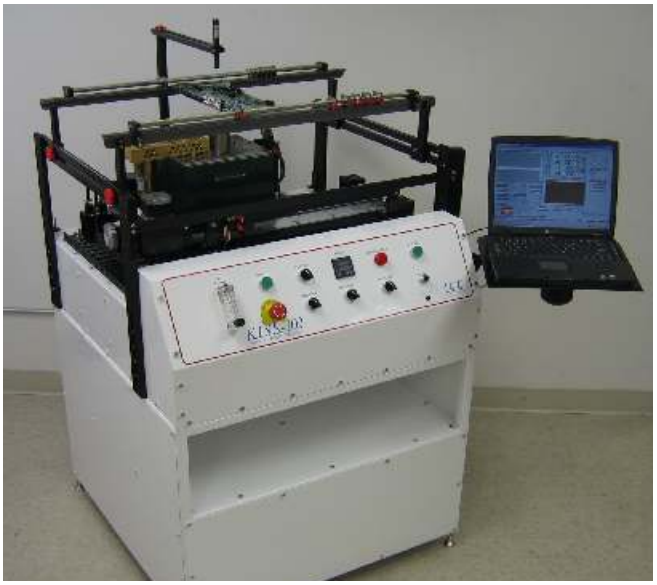
A.C.E.
Production Technologies:

Model KISS-102

"Keep It Simple Soldering"
"The Affordable"
Selective Soldering Machine



DESCRIPTION:

The **K.I.S.S.-102** is a fully automated, simple to use low cost bench top selective soldering machine using the proven 'traveling mini–solder wave". It is used to remove or install through hole components on SMT boards within close proximity of adjacent components. This system overcomes the limitations of operator dependent soldering with a truly flexible molten solder delivery system.
Designed to fill the gap between hand soldering and expensive automated in-line robotic selective soldering. The **K.I.S.S.-102** couples high throughput with precise process controls. The programmable features provide the tools to set all process parameters, including immersion depths, pre-heat dwells, travel distances and speeds, solder temperature and wave height. Once set, the system will repeat precisely.

FEATURES:

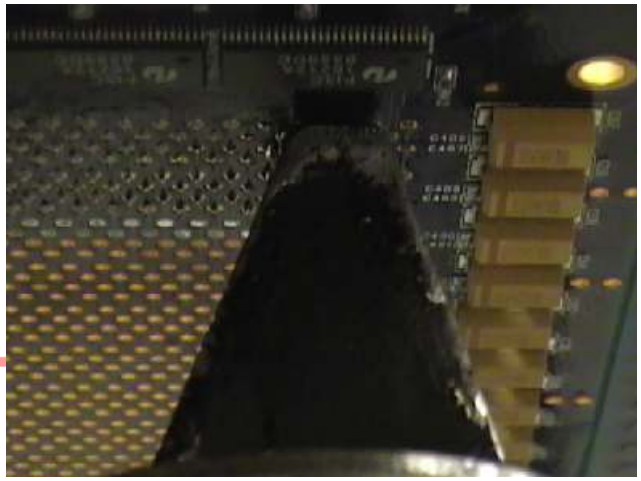
- Lowest cost programmable "Selective Soldering" system to use the flexible "traveling mini wave" soldering process.
- Windows XP O/S with simple CNC programming.
- Rapid setup and time to "first production" using CAD importing or the "traveling alignment laser" and "teach" functions.
- Solders connectors and other components into PCBs within 1.5 mm of nearby components under automated control.
- Creates top-side solder fillets to EIA and SMTA standards.
- Removal and replace routine.
- No nozzle or tooling changes required for most applications.
- Absolute control over all critical process parameters:
  - Solder temperature interlocked to within 2 degrees C.
  - Height, and travel speed of the solder wave.
  - Programmable initial pre-heat soak time
- No-Lead alloy compatible solder pot with PID proportional temperature control.
- Accommodates connectors up to 10" Long
- Will accept PCB panels up to 18" x 24".
- Step and repeat capability in both X and Y axis for multiple boards in a panel.
- Optional automated flux applicator, color witness camera, support stand and a variety of standard nozzles.

PROCESS OVERVIEW:

The operator places the PCB onto the location rails and starts the automated cycle. The cycle begins by applying flux (optional) to all the programmed sites. Next the mini solder wave is automatically moved under the component to be soldered. The pot raises to "wet" the first pins. The solder wave travels the length of the component soldering the through hole leads to the PCB. At the completion of the travel the solder pot lowers and moves to the next site. All programmed sites are soldered in the same cycle. A automated stepping function allows solder arrays of boards in an X-Y matrix. After completing the cycle the pot returns to the start position ready for the next cycle.

APPLICATIONS:

The **K.I.S.S.-102** is designed to selectively solder components such as connectors, and odd-form devices into printed circuit boards, panels, and other assemblies without disturbing nearby SMT components. The system may also be used to selectively remove and replace components in a rework routine.



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SOLDER POT:

The solder pot wetted surfaces are constructed of specially treated 316 stainless steel able to withstand aggressive no-lead solders. The heaters are sized to bring the solder safely to temperature within 30 minutes. Recirculation of solder is accomplished via a speed-controlled motor coupled to a treated stainless steel impeller assembly. The solder distribution system is designed to minimize dross build up while providing an extremely consistent and repeatable solder wave shape.

A nitrogen blanket captured within the enclosed solder pot inerts the molten solder surfaces minimizing dross. The nitrogen escapes surrounding the solder nozzle and PCB as the solder wave contacts the terminals functionally minimizing icicles and solder bridges while providing an inerted return of the solder from the nozzle back into the pot.

The solder temperature is interlocked within ± 2℃ of set point. The capacity of the solder pot ensures sufficient solder mass for even the largest assemblies.

The nozzles are magnetically fixed and can be exchanged in seconds. Two spherical "bullet wave" nozzles are supplied with the system. These are sufficient for most applications. Additional standard and special purpose nozzles can easily be used enabling selective soldering of wide patterns (multiple rows) in close proximity to previously soldered components without danger of reflowing them.

SET-UP:

The initial programming is accomplished by one of two methods. At a desktop or on the machine PC, import the PCB CAD file and pick the start/stop positions for all devices to be soldered. The process path and script is automatically created for you. Circular or angular interpolation allows soldering large round arrays in a spiral pattern and connectors not perpendicular to the X-Y plane.

Optionally, use the top side laser pointer and joystick function to jog the solder pot/laser beam directly over the start and end of the row of terminals to be soldered. Teach these positions for all sites.

Position the board in the location rails above the solder pot in contact with the adjustable "location fingers".

You can fine tune the X,Y and Z positions, speeds, solder wave height and other parameters to perfect the process.

Start the cycle.

OPTIONS:

- Matching support bench with storage shelf, casters and leveling feet
- Look-up witness camera with color LCD monitor
- Automated flux application system
- Additional solder nozzles (see data sheet)

SPECIFICATIONS:

PCB Panel Size

	Minimum	Maximum
•	2" x 2"	18" x 24"

Motion

• Z-Axis	Accuracy/Repeatability +/-.002" Speed 0-2 inches/sec Travel Distance = 1.5"
• X and X Axis	Accuracy/Repeatability +/-.002" Speed 0-4 inches/sec

Solder Pot

• Temperature Controller	PID proportioning (0-350℃) ± 2℃
• Solder Capacity	30 lbs.
• Pump	PC controlled

Controls PC with Windows XP O.S.

Physical

• Dimensions	30" wide x 32" deep x 24" high
• Weight	275 lbs.

Facilities

• Power	120VAC/1 Ph/60 Hz 15 amps
• Nitrogen consumption	15-50 CFH
• Air	40-80 PSI with minimal consumption
• Exhaust	Hood with 500 CFM recommended