Soldering circuit board posts with lead or lead-free solder preforms

Objective To heat post, lead or lead-free solder preforms for various circuit board soldering applications.

Material Upper and lower circuit boards, small and large lead or lead free preforms.

Temperature < 700 ºF (371ºC) depending on the preform used

Frequency Three turn coil 364 kHz
Small two turn coil 400 kHz
Large two turn coil 350 kHz

Equipment
- Ambrell 2.0 kW induction heating system, equipped with a remote workhead containing two 0.66µF capacitors for a total of 1.32 µF
- An induction heating coil, designed and developed specifically for this application.

Process Three individual coils are used to heat the various locations on the circuit board depending upon if the location is a single application or a group application. The time varies from 1.8 to 7.5 seconds depending upon location. In production the heat stations and coils are moved into position over the post for automation purposes. Either lead or lead free solder preforms are used. The process time on the lead free solder is slightly longer.

Results/Benefits Induction heating provides:
- Hands-free heating that involves no operator skill for manufacturing, lends itself well to automation.
- Solder controlled by preforms, no excess left on board.
- Good solder flow without over heating the board and damaging adjacent circuits and components.

Soldering of twelve posts with preforms

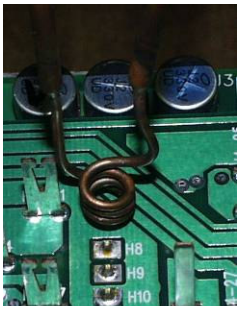
Twelve preforms in place for soldering

Coil in place to heat the 12 preforms

Completed soldering of the 12 post

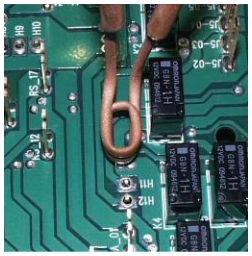
Single post with preforms

Post are heated individually

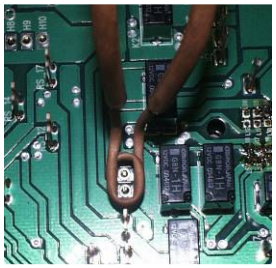


Completed soldering of single post

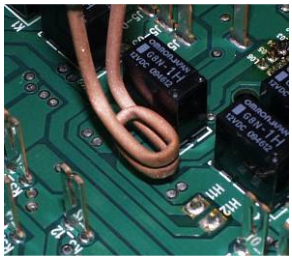
Two post with preforms



Two post to be soldered



Coil in place to heat two preforms



Completed soldered posts