

The Benefits of measuring real-time dwell and Peak of your wave solder process

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Overview



- Show and discuss some of the current methods of profiling and measuring other aspects of the wave solder manufacturing process.
- Discuss wave solder process defects to emphasize the root causes of these defects and how the wave solder process and especially how the wave portion of it affects these defects.
- Explain how we solve for through-hole defects in the wave solder process by using the current technology.
- Discuss how we benefit from knowing real-time wave solder dwell and Peak.

How to solve for defects using current wave solder profiling and other wave solder measurements

- Current methods of profiling



How to solve for defects using current wave solder profiling and other wave solder measurements



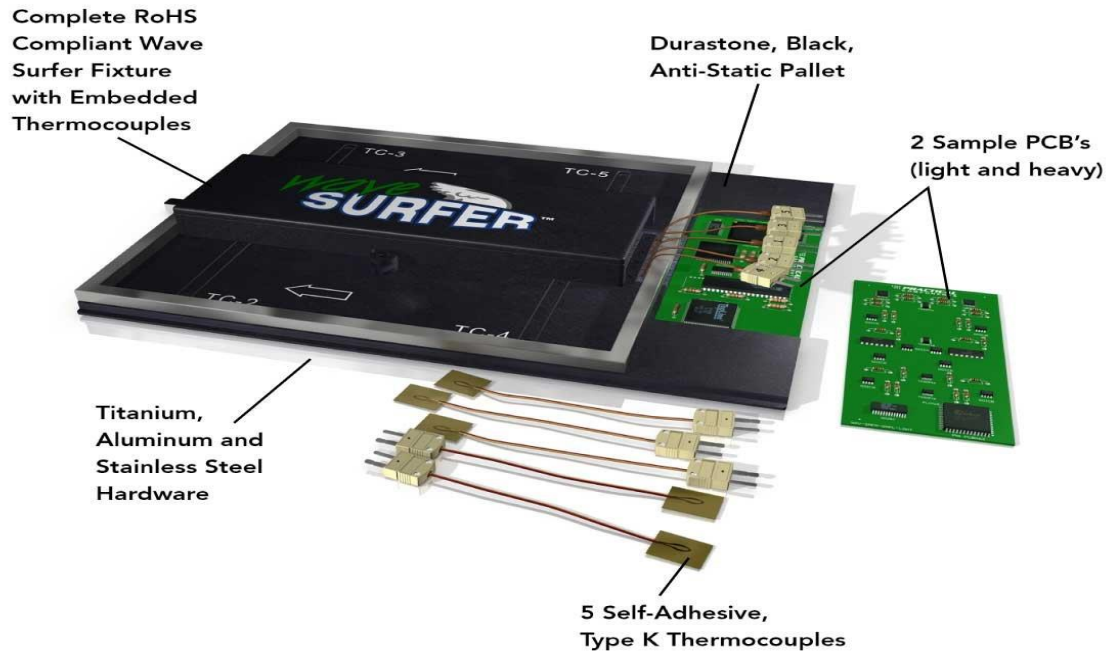
- Current methods of profiling



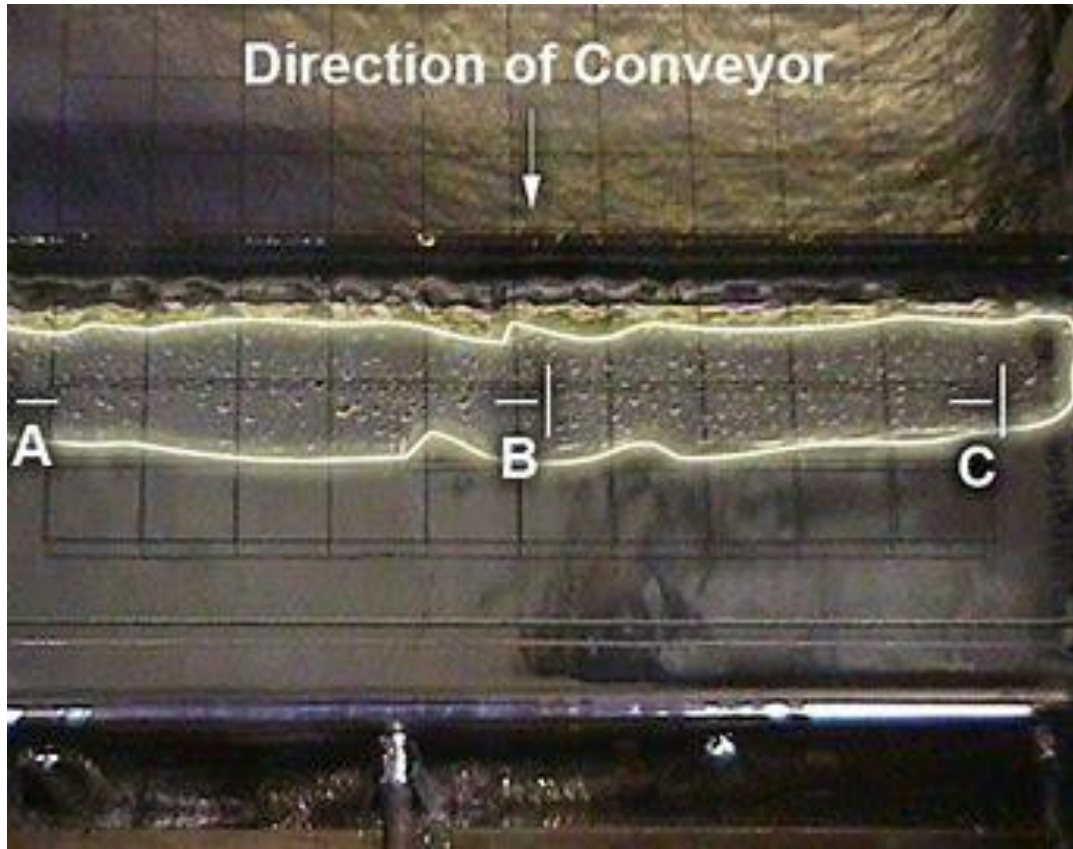
How to solve for defects using current wave solder profiling and other wave solder measurements



- Other tools and methods for measuring the wave
 - Wave Fixtures



How to solve for defects using current wave solder profiling and other wave solder measurements



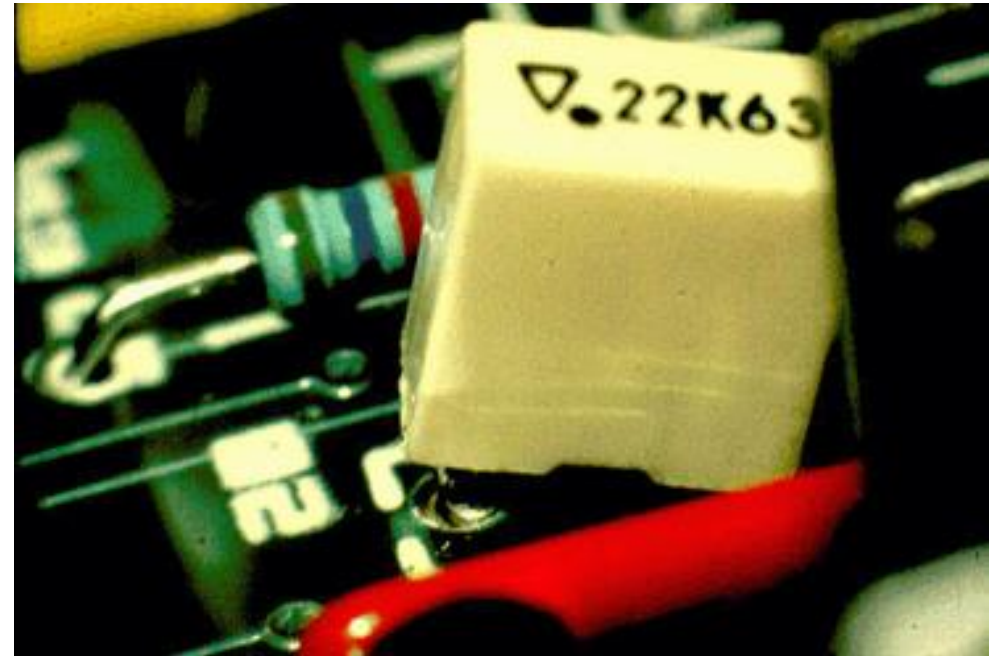
- Other tools and methods for measuring the wave
 - Glass plate

Through-hole Wave solder defects and what steps in the process can influence them

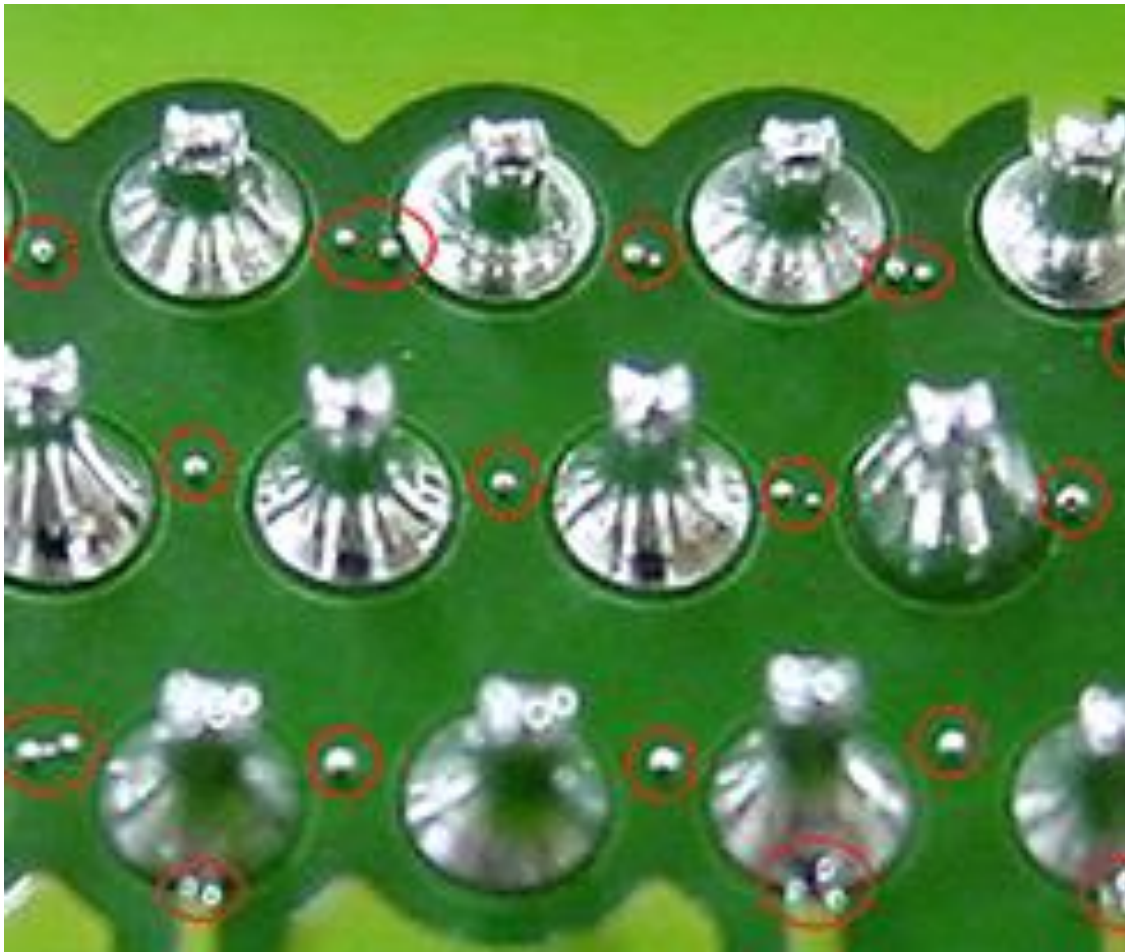
Lifted Components

Considerations

- Insufficient solder/ barrel fill or circumferential wetting (Wave parameter-wave height, wave type, contact time)
- Components
- Tooling
- Board- design, handling/contamination
- Flux- type
- Preheat
- Wave Machine



Through-hole Wave solder defects and what steps in the process can influence them



Solder Balls Considerations

- Wave parameters Board- design, handling/contamination
- Flux- type and application (excessive flux)
- Preheat- board temperature/heat transfer prior to and in the wave (not drying the flux out)

Through-hole Wave solder defects and what steps in the process can influence them



Icicles, Flags and Excessive solder Considerations

- Wave parameters- contact time/dwell-time, solder pot temperature, parallelism
- Board- design, handling
- Flux- type and application
- Wave Machine- bend fingers, solder pot level, poorly seated or clogged nozzles.
- Preheat- board temperature/heat transfer prior to and in the wave

Through-hole Wave solder defects and what steps in the process can influence them



Bridging Considerations

- Wave parameters- dwell-time too long
- Board- design, handling
- Flux- insufficient application or penetration
- Preheat- too long or not activating flux properly

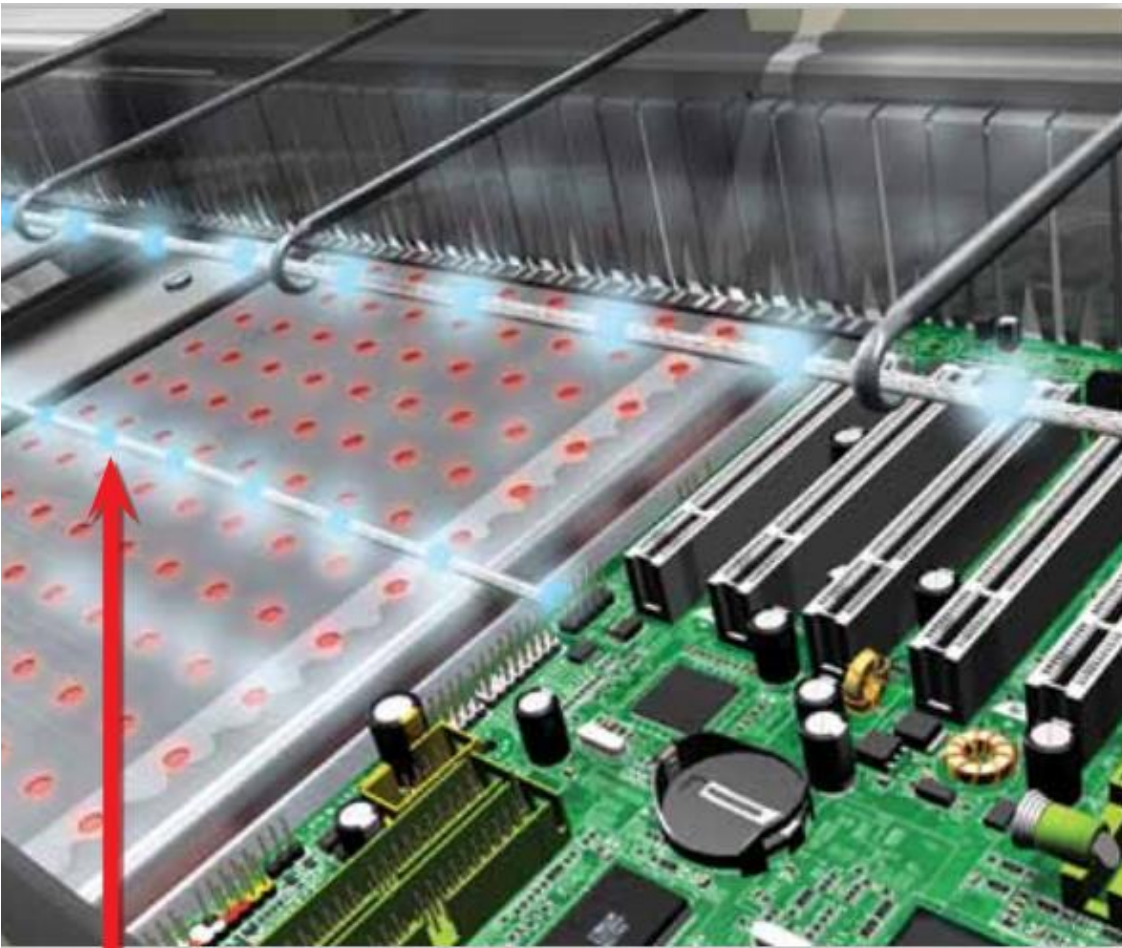
Benefits of using real-time Dwell and Peak to solve for through-hole defects.

- We suspect the wave process can change during production
- We suspect the fluxer may also have some deviation during production
- There could also be board handling issues that may affect the solderability
- There may other factors that affect solderability in the wave solder process as well...

Benefits of using real-time Dwell and Peak to solve for wave solder defects.

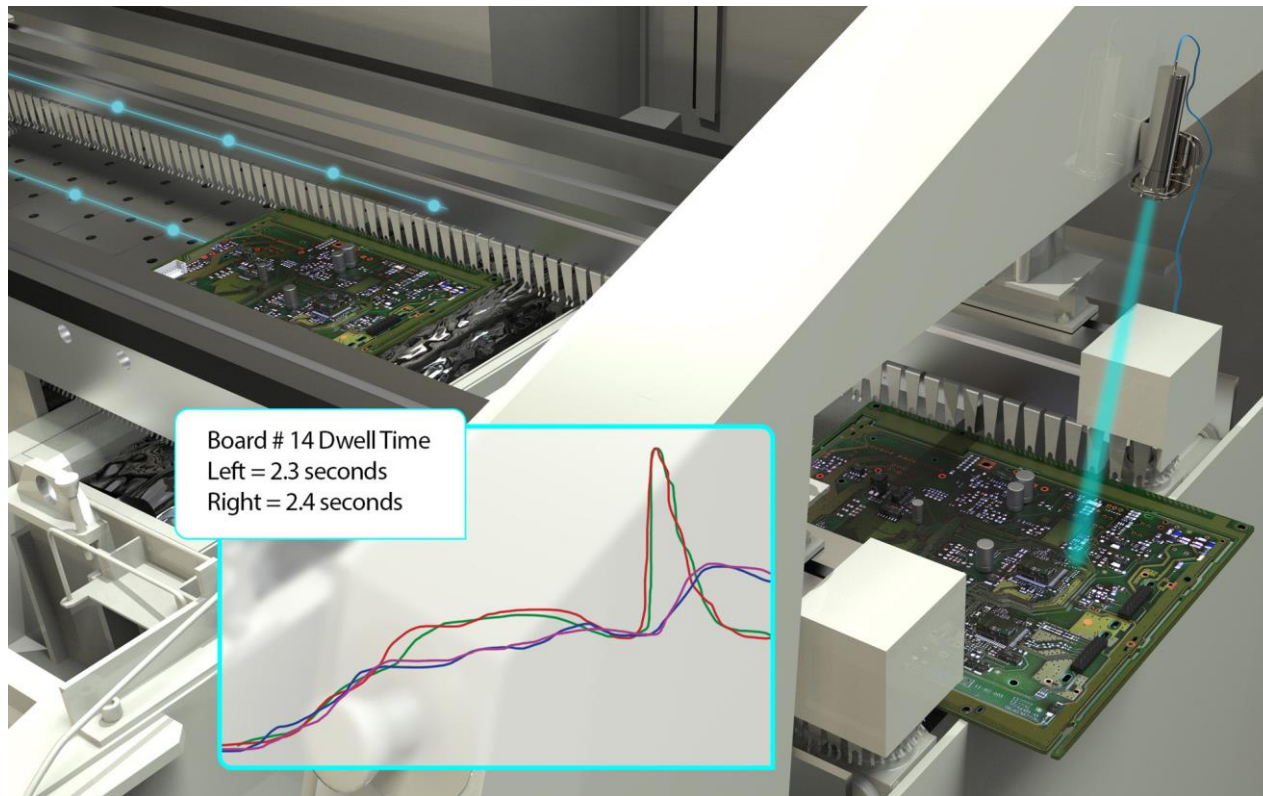
- Where are the current defects coming from?
- We have the tools to measure the wave solder preheat and wave.
- We have the tools to measure process parameters.
- Stop production to measure the process.

Benefits of using real-time Dwell and Peak to solve for wave solder defects.



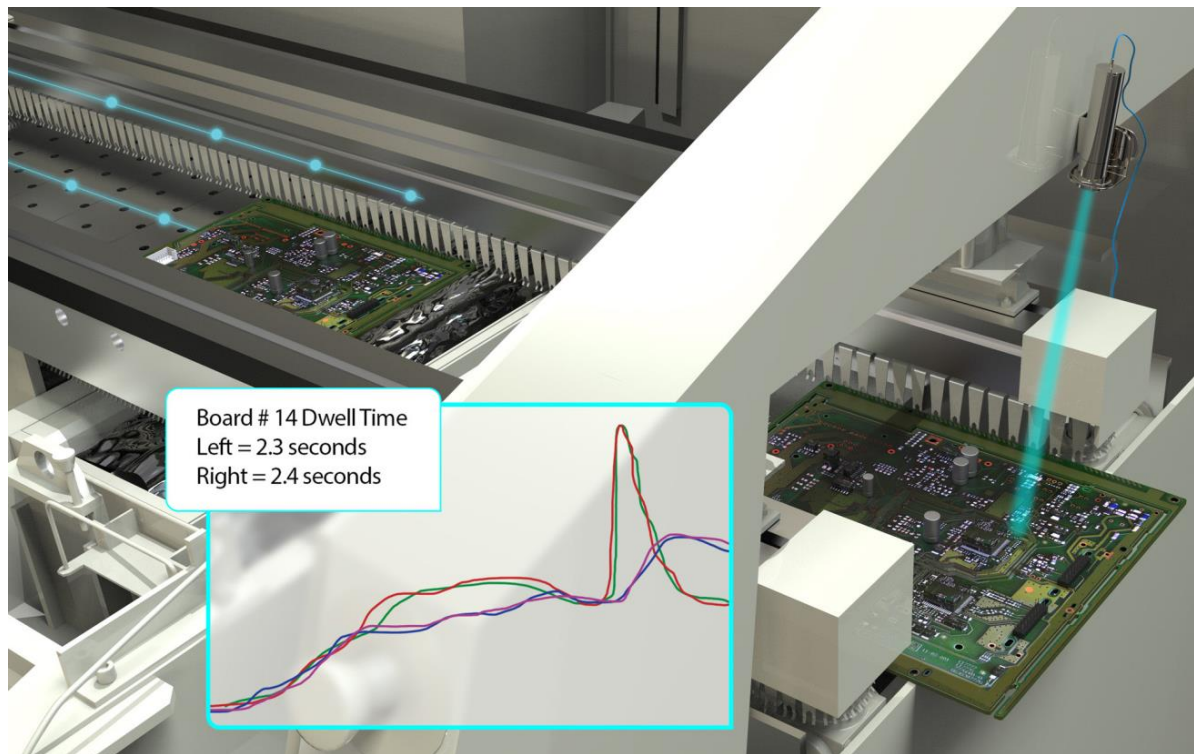
- Tools to measure the **preheat** of the wave solder process real-time and even the **solder pot** temperature

Benefits of using real-time Dwell and Peak to solve for wave solder defects.



- **Now** we can measure the real-time Dwell and Peak in the wave.

Benefits of using real-time Dwell and Peak to solve for wave solder defects.



Knowing real-time all aspects of the wave solder process, itself allows us to know:

- Areas of the wave solder process are not performing during production.
- Improvements we can make.
- The wave solder process is performing as it should
- Avoid down time during production
- Trouble shoot other areas of the process

Thank you!

For further discussions, please
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