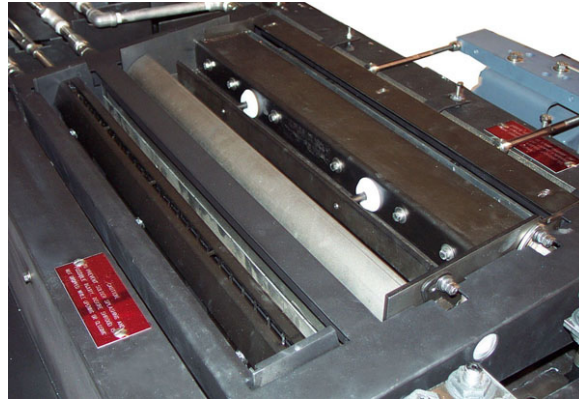


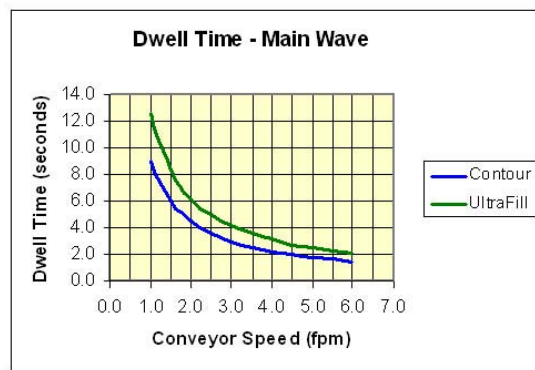
The UltraFill nozzle is the solution for soldering in lead-free environments. By increasing the contact length over the solder wave, the UltraFill nozzle increases dwell time, improves hole fill and maximizes product quality.



## Lead-Free Wave Soldering

In the harsh environment of lead-free soldering, it is important to understand the different characteristics of the lead-free materials. Wetting times of lead-free alloys are slower than tin/lead and flow characteristics are more viscous. In order to solder in lead-free environments, solder temperatures may increase and nitrogen may be added to reduce wetting times. It is also imperative to increase the dwell time of the PCB in the solder because of the slower wetting times of lead-free alloys.

The patented UltraFill nozzle design from Speedline is the solution for lead-free soldering. The UltraFill nozzle is 40% wider than the traditional tin/lead nozzle to increase contact length and dwell time. The nozzle placement reduces the temperature drop between nozzles as there is less superheat required to reflow solder joints in the second wave which improves hole fill.



Dwell time comparison between coN2tour and UltraFill nozzles

## UltraFill Nozzle Benefits

- Improves soldering results
- Nozzle placement increases wave contact
- Increases hole fill or topside fillets
- Reduced bridges or solder shorts with Lambda wave exit characteristics
- Easily changed between air and nitrogen environments

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Knowledge in process

## Nitrogen Shroud

A nitrogen shroud is available to improve the benefits of nitrogen soldering. The UltraFill allows either air or nitrogen operation through the same design, without switching nozzles. Nitrogen can now be selected through the desired recipe, preventing the need for changing nozzles. The shroud encompasses the nozzles in the pot and contains the dross in the solder pot. The shroud easily lifts for maintenance and dedrossing without the removal of the nozzles. This decreases maintenance time to maximize production.

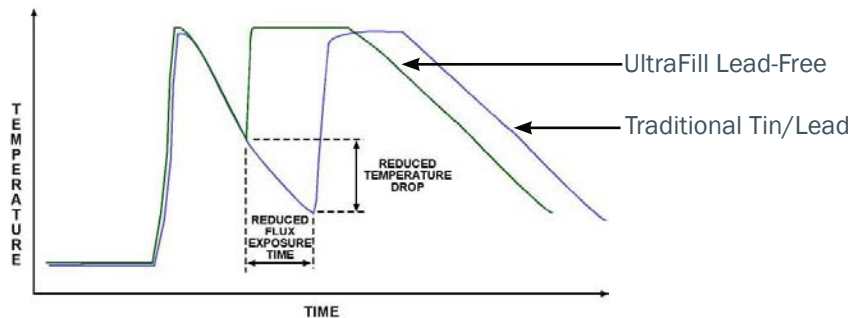


## Reduced Temperature Drop & Reduced Flux Exposure

The UltraFill nozzles reduce the temperature drop between the chip and main nozzles to minimize the heat required to be added to the solder joint. An additional benefit is the reduced exposure of the flux to elevated temperatures which helps maintain the activity of the flux.



The UltraFill is available as an option on the Electra®, VectraElite™ and VectraES™ wave soldering systems. These systems as well as the Vectra™, Econopak® Gold, Econopak Plus and Econopak 1 SMT (with cast iron pot) are easily upgraded in the field.



### UltraFill™ Temperature Profile Comparison

#### ULTRAFILL SPECIFICATIONS

Distance between waves	<90 mm (3.5 in.)
Typical Nitrogen Flow	23m <sup>3</sup> (800 SCFH)
Nitrogen Boundary Purity	<25 ppm O <sub>2</sub>

#### ABOUT SPEEDLINE TECHNOLOGIES

Speedline Technologies is the global leader in process knowledge and expertise for the PCB assembly and semiconductor industries. Based in Franklin, Massachusetts, U.S.A., the company markets five best-in-class brands – Accel microelectronics cleaning equipment; Camalot dispensing systems; Electrovert wave soldering, reflow soldering, and cleaning equipment; MPM stencil and screen printing systems; and Protect global services, support, and training solutions. For more information, visit us at [www.speedlinetech.com](http://www.speedlinetech.com).

Speedline Technologies maintains an ongoing program of product improvement that may affect design and/or price. We reserve the right to make these changes without prior notice or liability.