

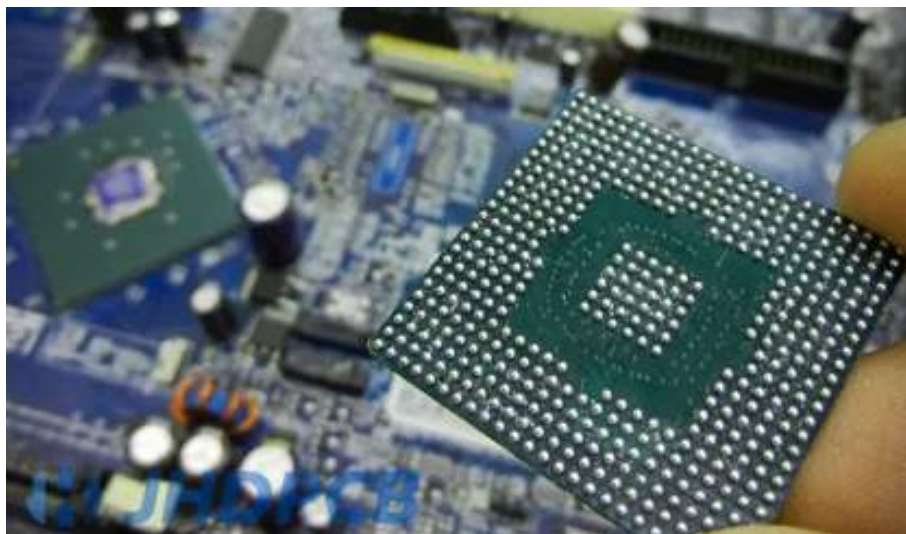


## **Precision Rework for PCBAs with Large Footprint BGA Components**

### **Using Automated Tools to Improve Quality and Reduce Risk**

Ball Grid Array (BGA) packaged integrated circuits are widely used in electronics design today and offer tremendous benefits – compact design, very high connection density, enhanced thermal conductivity and better signal fidelity. BGAs can now exceed over 3700 pins in larger packages.

For manufacturers, assembling PCBs utilizing high-density BGA packages brings unique challenges in manufacturing – smaller solder balls, potential for solder cracking or voids and challenges in inspection. Due to higher cost for boards using dense BGA designs, the ability to remove and rework BGA-based PCBs with a consistent and repeatable process, with low risk of damage is critical. CST has the right machines and skilled team to perform this complex BGA rework with high precision and quality.



Reworking BGAs typically requires specialized equipment at CST that can accomplish the following:

- Reflow the solder at a localized area.
- Remove the defective component while the solder is molten.
- Perform a site cleaning operation using a vacuum to remove residual solder on the surface mount pads.
- Inspect the pads for damage, then prep and reflow a replacement component.

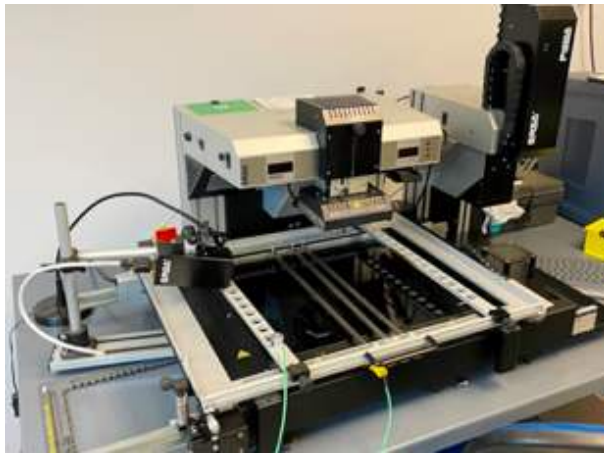
Typically, these rework systems are fully automated with precise positioning systems such as:

- Theta positioning, used to rotationally align and orient the BGA to the pads.
- Optical inspection using superimposition imagery of the component and the board.
- Closed loop force control of the Z-axis for automatic picking, cleaning, fluxing, and placing of components.

Rework machines at CST even have functions that can perform operations that would normally need to be done by hand or mechanically such as applying paste or applying pressure while reflowing a component. Examples of these automated rework stations are shown below.



***Onyx 29 Semi-Automated Rework System with integrated force measurement and vision system. For PCBAs up to 500 x 500mm.***



### ***ERSA P650A Rework System***

***Semi-automated rework station for PCBAs sized from 20 x 20mm to 460 x 560mm.***

These systems at CST can be used for reworking BGAs, CSPs, Flip Chip components, Micro-discretes, surface mounted connectors and fine pitch QFPs as well as traditional leaded devices such as PLCC's, SOIC's and sockets.

It's important to find a manufacturing partner that can assist customers when critical business needs require debugging a new PCBA design quickly and efficiently, shortening time to market. At CST, we have the right tools to enable efficient BGA rework with a predictable and low-risk process to support our customers with the right solutions.

Cascade Systems Technologies is an Oregon-based contract manufacturer, servicing customers for the last 34+ years. CST offers services for PCBA assembly, rework, test, wire bonding, conformal coat and box build focused on the Semiconductor, Medical, Industrial, Clean Energy, and IOT/Cloud markets.

CST has been partnering with customers along the US West Coast and Nationwide for full turnkey and kitted assemblies, to deliver cost-effective quick turn solutions that accelerate their Time to Market. Our customers' production runs range in size from small prototype, test fixtures and NPI verification boards, to fully released-to-production runs of thousands of boards per year.

Our company is a world class ISO 9001:2015 certified contract manufacturer and we fully meet all the criteria described in this article. We look forward to partnering with you on your next manufacturing project. Please email us at [info@cascadesystems.net](mailto:info@cascadesystems.net) or call us at 503-640-5733.