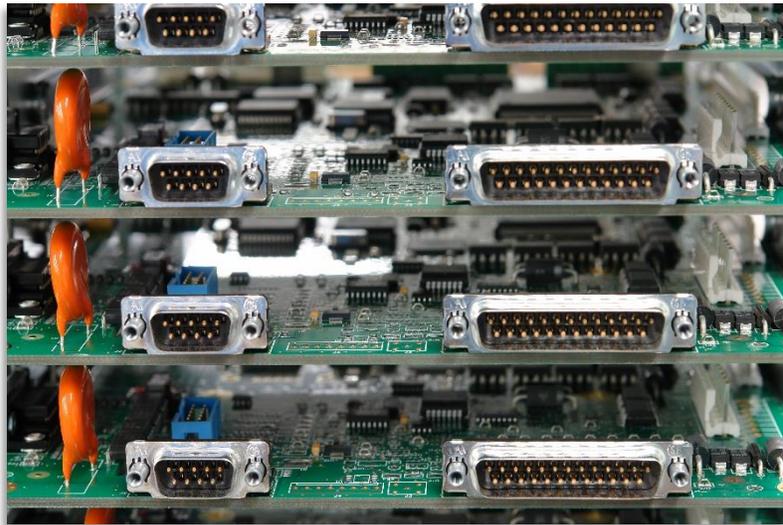




Helping Your Bottom Line Series



***PTH or SMT – Are Legacy PCBAs
Costing Your Team Money?***

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While many consumer-focused electronic products have lifecycles of only six months, products that are highly regulated or utilized in industrial applications with limited need for frequent revision may have long lifecycles. So long, in fact, that they may still incorporate component technology that is several decades old.

The Challenge of Redesign

Plated through-hole technology (PTH) does still have some advantages. For example, it is still popular in connector packaging because it provides a more robust attachment to a part of the printed circuit assembly (PCBA) that may be stressed as cables or connectors are inserted and removed.

The biggest reason legacy PTH products are not redesigned is often lack of internal design team resources or the cost of re-qualification. On the negative side, the production labor costs associated with PTH components are often much higher than those of PCBAs utilizing only surface mount technology (SMT). Legacy designs may also make these boards more costly to test. Other disadvantages can include higher component obsolescence risk and lack of functionality.

The Benefits of Redesign

Redesign of a PTH PCBA for a more automated assembly process can reduce production costs while eliminating the defect opportunities created by variation in manual or semi-automated PTH production processes. SMT packages for resistors, diodes and capacitors are typically more robust than their PTH counterparts. In addition to reducing cost, the redesign process can also be used to add product functionality. Redesign can also improve test point accessibility or reduce test cost by providing access to more advanced automated test technologies.

The team at Burton Industries regularly helps its customers with PTH to SMT conversions and/or more comprehensive redesign efforts. In one PTH-to-SMT conversion example the team was able to:

- Reduce risk of supply chain end of life and lead-time issues via the conversion of PTH parts to their SMT counterparts
- Reduce cost and production lead-time via automated processing
- Enhance automated test coverage.

The end result was a cost savings of \$37.00 per unit, which based on their average annual unit production resulted in an annual savings of \$74,000. The customer fully recovered the cost of the redesign in the first six months of production.

The Process

Burton Industries' engineering team works with each customer to define a mutually agreed upon scope of work that considers the legacy products requiring redesign, any potential feature enhancements that may need to be considered and any product constraints (size, interfaces, etc.) that are present. The team then presents a budgetary quote that outlines the non-recurring engineering cost, a budgetary product cost and potential design issues that should be considered during the redesign.

When the project is a straight PTH-to-SMT conversion, 100 percent reverse compatible SMT parts are used to replace the PTH parts based on the PCBA schematic. The source code for the firmware is used to choose the new microprocessor. The team uses Altium to identify the rest of the components and re-layout the board.

Redesign to add functionality is a similar process but may increase the complexity of microprocessor choices and the re-layout process.

Component lifecycle analysis is a key part of every redesign effort. In performing the analysis and developing a bill of materials (BOM) and approved vendor list (AVL), the team considers a number of factors including:

- Obsolescence risk based on the stage of each component's lifecycle
- Best packaging styles for availability within the current market constraints
- Availability of alternate components
- Most cost effective options
- Product family component commonality considerations
- Quality/delivery track record of specified suppliers.

Burton Industries' initial analysis and budgetary NRE quote are done free of charge to help customers determine if a legacy product redesign will be cost effective. In general, the labor savings alone often justify the conversion. The benefits of using a design partner with manufacturing capability is that the redesign process considers design for manufacturability and testability (DFM/DFA) and component availability trends, in addition to best reverse compatible part choices.

Contact a member of our team at (906) 932-5970 to learn more about ways Burton Industries can support your legacy product redesign needs.

About Burton Industries

For 40 years, Burton Industries, Inc. has had a long tradition of providing customized manufacturing solutions to OEMs in the medical, industrial, motor control, specialized consumer, security, building controls, defense and professional tool markets. We support the full product lifecycle from product development through end market support services.

We've built our business by listening to customer needs and efficiently supporting high mix, variable demand projects at both PCBA and higher level assembly (HLA) stages. Our manufacturing strategy includes:

- *Extraordinary communication with customers*
- *Teaming with suppliers*
- *Optimizing test*
- *Eliminating hidden cost drivers.*

Our primary manufacturing location is in Ironwood, MI and additional HLA manufacturing capability is located in Hazelhurst, Wisconsin.