Re: de−panelizing scored PCBs

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We often manufacture in small quantities, sometimes less than 100 boards at a time. Boards are not assembled in−house, but after assembly we do all testing in−house. Some products have options which require final configuration in−house, perhaps programming or component adjustment. When we do a new design, we know how big our boards are going to be. We know from past experience which of the assembly subs we use will best be able to handle this work; we ask those assemblers to define/specify the size of array (panel) that they want from us, usually it depends on the size of stencil or paste screen they can handle with their equipment. At this point, the assembler may need us to change our pcb design, perhaps alignment fiducials or tooling holes need to be added to our board design. The tooling used by our assembler defines how the panel must be scored or cut. Eventually we have final Gerbers to send out for pcb fab quotes, and now we can define for our pcb maker any of the special requirements set by the assemblers. There is still some juggling in the quote process, because different pcb fab companies will quote setup, NRE, and electrical test in different ways according to number of boards per panel, meaning you may go through another quote iteration to find the best panel size for both pcb fab and assembly. One of our products requires two small boards that fit in a box−like enclosure, the front panel of the box incorporates field wiring screw terminals, which interface to the boards via edge fingers. The boards slide in to extruded slots inside the enclosure. Plated edge fingers are one of those design features that will limit the number of boards per panel, as the pcb fab needs that edge to be outward facing on the panel. The enclosure slots will not allow any significant amount of roughness on the board edges after cleaving/cutting, so someone will need to dress each board. Again, work with your pcb fab and assemblers to figure out how best to accommodate these requirements. In our case, the best compromise was to assemble in arrays, the assembler has the tooling to cleave/cut panels so they do that, then delivers the assembled boards to us. We do the edge cleanup on the 3 board edges after assembly, it is a very small operation as the cut edges will only have a few rough spots, we do this in−house using a belt sander with a vacuum attachment.

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