Talking with Prototron's Mark Thompson about Via Fill

Dan: First of all Mark, why did Prototron see a need for having the Via Fill process in house?

Mark: Basically because our customers wanted us to. More and more of them are requiring Via Fill and since this was an out-service process for us we decided it would be much more effective to bring it in house.

Dan: I know that Taiyo appreciates that you chose their materials and ITC equipment; can you tell us what drove that decision?

Mark: Of course, that's simple; Taiyo had the best overall package when it came to ITC equipment especially when you consider their reliability, technology and engineering support.

Dan: So Mark explain to me what exactly is Via Fill?

Mark: It is actually more of a process than a technology per say, this is where we fill the Via holes with an epoxy using a device designed to fully fill the holes, specifically an ITC THP 32. We then "planarize" or level the surface after the fill with a WISE FLATSTAR and flash plate to encapsulate the filled Vias. The Vias themselves already have plating in the barrels of the holes for continuity prior to the epoxy fill. Fully filled Vias can be a benefit in a number of ways depending upon the customers' applications.

Dan: Okay so tell me who needs Via Fill on their boards?

Mark: Good question Dan. In a fast turn and prototype world an epoxy fill can be used for a number of different functions most of which have everything to do with available part real estate. Such as BGA's where typically you want a mask clearance on one side but not the other. This can form a polymer cup of mask material that entraps chemistry at the well of the hole. If you can simply fill the hole in question with an epoxy or silver epoxy it does not matter whether or not a mask clearance exists as the holes themselves are closed. Other "real estate" reasons would be VIA-IN-PAD where again a clearance or partial clearance can result in things like mask bleed or chemical entrapment, but again if you can simply fill the holes in question, the mask configuration would be of no consequence.

Dan: You have had the Via Fill process in house for a number of months now, how is it working for you?

Mark: We are very pleased with what we have seen so far. Not only with the equipment but also the support we have received from Taiyo. I can honestly say that we made the right decision.

Dan: And finally I always have to ask what's next…what do you think is going to be the next big thing when it comes to technology?

Mark: Dan, I always love it when someone asks me that question, keep in mind I come from a prototype culture. As simplistic as it sounds I think we are just going to see improvements in the areas of multiple functionality (best of Analog/Digital resulting in less total parts needed for a given product). I also think we will be seeing less on the physical PCB and more on their components when we really start getting into the sub .003/.003 world. Lastly, there will always be HIGH SPEED/LOW LOSS constraints so I also think there will be more and more advances in copper foils in the areas of surface roughness. In conjunction with that, the material manufacturers will have to come up with more advanced peel strengths for the bond between the copper foils and the substrate materials while still maintaining a low Dk. Lastly, we will be exploring and testing thinner and more flexible substrates this year.

Dan: Good enough. Thanks Mark, always a pleasure.

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