

## Complete Verification for PCB Assembly

Potentially the most costly item associated with any PCB assembly application, inappropriate or unqualified materials can have significant impact on budget. Without verification of materials, a facility is gambling with quality, delivery and more, placing the bottom line inevitably at risk.

One of the world's most competitive industries, the PCB production market dictates "untouchable" quality without additional cost. Thus verification solutions for materials must eliminate mistakes before they happen, with only qualified materials used during the production process. This can become a complex task, particularly when working with approved vendor lists or appropriate parts, time parameters and regulatory compliance requirements.

Designing a complete verification system for materials used in electronics assembly involves a number of factors which must be synchronized to work together. Efficient capture and sharing of essential data is crucial to error avoidance and effort duplication, as well as prevention of gaps in the verification process. The following aspects of a verification solution must be carefully considered.

- Registered Material: *Registration includes the process of labeling each individual supply form with a unique ID number, license plate, or printed bar code.*
- MSD Control: *Each supply form designated as an MSD device will be connected to a virtual countdown timer which continuously and dynamically monitors time remaining for qualified use.*
- Kitting: *This process is used to join component data to a feeder ID when the reel is installed onto a specific feeder unit, often referred to as a kitting feeder.*
- Offline Verification: *This process is used to verify material setups on trolleys. Pre-kitted feeders are installed onto the trolley feeder band according to the pre-defined locations.*
- Recipe: *Each of the above components must be synchronized to the manufacturing recipe as required by the work order. A deviation from the recipe will cause the process to stop.*

### Risk of an Incomplete Solution

During the verification process, consider your weakest link. A few questions to consider while designing a complete solution:

- Are you verifying materials as required by the work order?
- Are you able to automatically prevent MSD or RoHS violations?
- Do you prevent illegal part substitutions on a systematic level?
- Do you block bad date codes in production?
- Do you enforce the correct parts used in repair?
- Do you ensure the correct parts are used in assembly?
- Is the correct product routing enforced?
- Do you automatically prevent expired parts or materials from being used?
- Do you avoid the use of expired or incorrect solder paste?

*This article is based on an original publication by Mentor Graphics.*