

## Just-In-Time Material Management for the PCB Industry

As with any production industry, businesses in the PCB industry need to maintain a healthy balance between the components they keep in stock and those they use for meet client orders. Ordering too many components comes with serious disadvantages, as does not ordering enough, and PCB manufacturers need to stay as close as possible to a happy medium between the two.

When ordering components for PCB manufacturer, overstocking ensures that the manufacturer is prepared for eventual customer orders and is able to complete unexpected orders quickly. However, it also extends risk to the manufacturer – if customers don't order PCBs that use those parts, they essentially represent wasted money.

On the other hand, understocking leads to serious deficiencies in order fulfillment. If a PCB manufacturer has to contact multiple suppliers before fulfilling every order, it will never be able to guarantee fast, reliable service.

### Just-In-Time Material Management Solutions

Throughout the 20th century, economists and management professionals have proposed various solutions to this problem. The most successful of these solutions rely on *Just-In-Time* (JIT) material management.

The JIT system focuses on methods by which manufacturers can reliably maintain a minimum stock necessary to meet customer orders. By restocking their components in response to customer orders when they occur, businesses that adopt JIT practices can rely on having a relatively constant stock of components on-hand at any given time.

This is where the system gets its name – the needed components come *just in time* for the next expected customer order. Excess cost is minimized since component supply is a result of customer demand.

One of the ways that PCB manufacturers use JIT systems to ensure fast and reliable assembly service is through a system called *Kanban*.

### The *Kanban* JIT Material Management Solution for PCB Assemblers

The *Kanban* system owes its existence to Toyota's former vice president [Taiichi Ohno](#), who developed the system in order to cut down on massive waste at the automaker's production facilities. *Kanban*, which translates to *sign* or *placard*, uses an automatic system of signals to determine when stocks need replenishing.

These signals trigger when clients purchase items that use materials in stock and stock runs below a certain threshold. The system limits the number of materials that can be placed in a production queue while ensuring a minimum amount of available materials at any given time.

Numerous academic studies have been performed using the *Kanban* system for PCB production, where expensive and often hard-to-find components must be regularly sourced on short notice. Most of these simulations agree that *Kanban* systems' method of *pulling* for stock replenishment [outperforms standard material management strategies](#) of *pushing*.

A PCB manufacturer using the *Kanban* system automatically orders materials and products to have in stock at all times. If a customer orders any of the most commonly needed items, they are already available and ready to ship out ASAP – some manufacturers call this a *safety stock program* – but it becomes *Kanban* when the process is automatic.