

Re: MANUFACTURING SOFTWARE

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- *From:* "Michael A. Terrell" <mike.terrell@xxxxxxxxxxxxxx>
 - *Date:* Sun, 27 May 2007 23:48:48 GMT
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Joerg wrote:

Michael A. Terrell wrote:

Joerg wrote:

Kanban may not be all that bad. Introduced something similar together with a production manager. I have never understood the concept of "kitting". It just doesn't make sense to me.

It does, when there is a base model with several, or even dozens of variations. The base model is considered a component as far as production planning is concerned. It is very useful for small runs and quick turn job shops. More than once we had an emergency order from an important customer, and could pull a complete radio together in under two weeks, instead of the six week, or longer order cycle. Boards that were already in production were diverted to the emergency order, and the ones made for that radio would replace them. We generally shipped everything at least two weeks early, so the delay was never seen by the customers.

At one point we had almost 100 base chassis in the production stockroom, so all we needed was the IF and tuner modules, plus any options, and that customer's EPROM for the front panel. that way, 90% of the system assembly work was done before it hit final assembly. A month or so later, most of them were gone, and we were back to a few in stock. that extra stock let us claim an early delivery bonus from a large contract. If the design wasn't kitted, we would have never made it, and the bonus was \$500,000.

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In your type of design it wouldn't be very useful.

Many of my designs are similar. Big ultrasound machines with lots of options to pick from. With or without Doppler, ColorFlow, various disk drive sizes, filter modules for different transducers and so on. All our large systems are custom-configured, there is no such thing as standard models like you have with cars on dealer lots. Still the Kanban-style pull system was a lot better than kitting. Less inventory, less shop space need, plus lots of saving in labor since nobody was kitting anymore. So we left it to the floor manager to determine the number of starts. They were also allowed to pull whatever they thought they needed from stock, whenever they needed it. Of course this requires a decent MRP system to stay on top of the stock forecasting.

Some contracts were for delivery over a number of years, to replace older equipment. The kitting allowed the required parts to be reserved, so that all the units were identical. We had several hundred variations, plus some customer specific modifications. The MRP package tied all of the departments together seamlessly. We had over 200 people at that plant, with over 100 different jobs running at once, and it worked for us. It replaced a cumbersome and mistake prone card file system.

There was initially some resistance because kitting seems to be the usual scenario in the US. But when leadtimes did not get worse and cost went down big time people began to like it. Special order leadtimes actually shrank because system production never had to wait anymore for a kitting session to complete. They could start building right when the order bell rung. Yes, we did have a big old ship's bell that was rung whenever Sales called in a firm order. Could be heard clear across the parking lot ;-)

A board or module level was considered as 'Kitted'. The only time we actually kitted a board order for an outside assembly of VME SMD boards. We sent out \$80,000 worth of parts and got back ten very poorly made boards that needed \$10,000 worth of rework to salvage. The board house claimed they used PickNPlace, but different boards had wrong parts in different places, some of the ICs were installed with the wrong orientation, and the paste solder they used looked like it was ten years old. Lots of scaly joints with slag and balls all over the place. I had to reflow thousands of bad joints on each board, but I managed to salvage all but one, because of damage they did to the PC board. It was

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framed and hung in the ME office to show to anyone who suggested they try it in the future. I wanted the name of the company that screwed it up to be put on a brass plate, but they were too chicken to do it. All I know is that the crappy work was done by a board house was in Orlando, Florida.

The bell was over the head of production's desk, but they only rang it for million dollar orders, or when they had bad news. You KNEW that when they offered a 'free lunch', something had hit the fan.

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Service to my country? Been there, Done that, and I've got my DD214 to prove it.

Member of DAV #85.

Michael A. Terrell
Central Florida

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