

Bill Of Materials Accuracy—A Battle Cry

As participants throughout supply chain, we work hard to balance demand planning, inventory levels and production. A key component of timely production is accurate Bills of Material (BOM). This paper provides tips to overcome the challenges of maintaining BOM accuracy by acknowledging and addressing common failure points. Throughout a product life cycle the BOM will change - often multiple times - demonstrating the need for strong collaboration between engineering and the shop floor.



Short of joining the military or working the land, there are few things manlier than taking some raw materials and fashioning them into something new, something worthwhile, and something that someone will pay you much more for than the actual cost of acquiring the materials.

I've worked in manufacturing all of my adult life. And I love it. I hate when it's done half-heartedly. I hate it when someone does something they know they could do better, just to take a paycheck.

I could have been a maker. I served an apprenticeship where they taught me to weld. They taught me sheet metal fabrication, machining, detail fitting, electrical and plumbing. And I loved it all. But I chose not to spend my life doing these things. Why? Because I saw others already doing these well. What I saw being done badly was all the stuff that led up to the making - the planning, the procurement, the making sure all the materials, tools and machinery were there when the maker needed them. And the organizing of the work, so that the customer got what he or she wanted in the least time, with the least fuss, at a fair price that left the maker with a handy profit.

I still have days I regret my decision – mostly because I would have loved being a maker, but also because I'm not sure that the organization is that much better. We still have manufacturers that can't get everything ready for their makers and disappoint their customers as a result. One

piece of this is the quality of the data the organizers use. I would point to two pieces of data that seem to me to be of the utmost importance, yet two that we still struggle with - inventory integrity and bill of material (BOM) accuracy. We don't know what we have on hand and what components we need to build something of value. For all we've learned, my observation is that we are not getting much better at either very quickly.

I've discussed inventory integrity elsewhere. But I wanted to share my thoughts today on the second evil – inaccurate BOMs.

It ought to be easy, right? LEGO® does it pretty well, after all. But there can be challenges. BOMs aren't permanent. Good businesses are constantly improving their designs, resulting in edited BOMs. Some businesses engineer or tweak the design as part of taking the customer order. But the biggest challenge is that the designer and the maker are rarely the same person. Both know a lot about how it goes together - but from a completely different perspective. Too often, either the designer made a mistake or the maker thinks he knows a better way, and the as designed BOM and the as made BOMs diverge. And then the maker doesn't share this with the designer, or the designer doesn't listen. The distance between the office and the floor is apparently too great.

There may be systems in place to handle this communication, often called something like a DCR – Design Change Request. All too frequently these are poorly administered and backlogs are allowed to extend way too far. Imagine you are the maker. You're told to use this, but you KNOW you should be using that. So you submit a DCR. And wait. And wait some more, because there are 60 days of other DCRs to get through first. The same job comes through with the same discrepancy - a few times. This happens with a significant percentage of all BOMs, and the floor simply loses patience and faith.

So how does this get fixed? I've seen wholesale purges. Perhaps a team of engineers is tasked with reviewing and "correcting" all the BOMs for a product line. I've seen full court press on a new release. Frankly, I've never seen these one-off onslaughts work. For my money there is no better way to achieve BOM accuracy than to simply insist on it. What does that mean? It means that Engineers and Makers are educated and made to work together. They both need to man up.

For the engineer:

Respect the man who makes the product you dream up into a reality. He is your comrade in arms. It would be wise (manly even!) to listen to him - but how? Here are some ideas:

- Include shop floor in the design process, both in initial concept and prior to release.
- Have the design engineer spend more time on the floor. Perhaps even rotate so that periodically he IS the maker.

- Immediately after design, have the engineers make the pre-production or early production units. I love this one.
- Train and convince the engineer that fixing an old design is MUCH more important than continuing to develop a new one. This is the real reason DCR backlogs are permitted to be so long. Working on new stuff is much more fun than listening to your old design being challenged, "Why does the Engineer think he has the right to work on something new when the old one was sent out wrong?" Drop everything, listen to the maker and see if there was a mistake that needs fixing. Immediately. Incorporate this into the job description, complete with disciplinary consequences.

For the machinist, the fabricator and the assembly fitter:

Respect the architect of your destiny. He is your comrade in arms. You need to let him know

when it doesn't go together quite how he planned. Again, some ideas:

- Empower and train the shop floor that they must expect accurate BOMs. Set a process where they stop production rather than put it together wrong – or THINK it might be going together wrong. Switch on a blue light or march up to the design office for immediate attention.
- Have a policy that it HAS to follow the design. It's part of the job description, complete with disciplinary consequences.

And to you ladies: Forgive my resort to appeals to masculinity and battle. But understand, it's all I know. I am a man. Worse, I'm old enough to be more of a 20th century man than a 21st century man. But please know this: there is little that moves me more than a woman who fights for what she believes in and knows to be true. So if you're a maker or a designer, male or female, man up!

This article is authored by Nigel Cox, a lean inventory and manufacturing expert at enVista. For more information, please contact us at 877-684-7700 or info@envistacorp.com.

Nigel Cox is Managing Partner and VP of Services for Enterprise Solutions at enVista. He is an established expert in Lean Principles, Quality, Supply Chain Management, Manufacturing and Demand Planning. His experience spans a variety of industries and specialties that includes Engineer-to-order, Assemble-to-Order, Semiconductor, Construction, Pulp and Paper, Textile and Apparel, Light Assembly and Fabrication. Cox is also (Master Certified) for Microsoft Dynamics-AX and is a respected expert, especially in Product Builder and Lean Manufacturing.

Nigel is a certified fellow in Production and Inventory Management, certified in Integrated Resource Management and has been involved for many years with APICS delivering certification workshops and as a speaker. He also teaches bachelor level business administration classes.