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Editor's Message



The Production Challenges of Custom Manufacturing by Daniel Holland

For component manufacturers, production efficiency issues are heavily impacted by inventory, production labor, equipment and effective communication.

This issue of SBC is devoted to manufacturing issues faced by building component manufacturers. I hope you find it helpful in making decisions if you are a component manufacturer. If you aren't, I hope it helps you understand some of the unique challenges we face in making a custom product.

Building component manufacturing is very different from traditional manufacturing. Traditional manufacturing designs a product they believe will sell, then they make it, and once it is made they try to sell it. For the most part, we do not build the product and then try to sell it. We sell the product first, then design it, and then manufacture it. This fundamental difference in the way we do business makes our inventory, equipment, labor and information handling different from traditional manufacturing. Let's look at inventory needs first.

INVENTORY NEEDS

Material is the largest component of our selling price. Fundamentally, we buy and sell materials. For most of us the bulk of that material is lumber. Lumber prices are volatile. The last few months we have experienced fluctuations of more than 100 percent in some items. This volatility changes the way we need to manage our inventory when compared to traditional manufacturing. Most manufacturing concerns try to minimize their inventory and turn it as often as possible to reduce "carrying" costs. In our business, carrying costs are insignificant compared to possible price escalation. Component manufacturers must choose the level of inventory they will carry carefully to balance the carrying costs with the price protection that makes sense for their contract cycle time. Of course this idea of price protection by owning inventory is made difficult by the custom nature of our product. What items do I need in inventory for the products I am going to have to build based on the sales and designs in progress? What price should I use for items that I do not have in inventory when I am bidding a job? Every component manufacturer gets to answer these tough questions in the way that suits their circumstances, but the answers are crucial to the long term success of the business. Now that we've looked at inventory, what about equipment for the custom manufacturer?

EQUIPMENT

The most important feature our equipment must have is flexibility. The custom nature of structures and components require that all of our sawing machines accommodate a wide range of material sizes and all of our assembly machines accommodate an infinite variety of shapes. In addition, all of the equipment must set up rapidly and accurately. Traditional manufacturing operations involve runs of significantly higher quantities amortizing setup costs over hundreds of items. Our setup costs are typically divided over three or four items.

Most of the equipment makers in our industry understand our need for flexibility and rapid accurate setup. If you were fortunate enough to attend BCMC in October, you saw several innovative improvements, particularly in sawing equipment. Many of you are probably still contemplating equipment purchases as a result of the BCMC show. I'd like to offer some free advice. First, view your whole manufacturing process as one machine and fix the slowest, most inefficient part.

Don't just buy a machine because it is efficient by itself. Your process will still be just as slow and inefficient if that machine does not fix the slowest part of your shop. Second, hire and keep good maintenance personnel. Maintaining a machine is much less costly than buying a new one. Most maintenance costs are deducted from taxable income 100 percent. Finally, make certain the movement of material in your plant makes sense. Moving pieces from point A to point B does not increase their value, but it does cost you something. Don't do it if it can be avoided.

PRODUCTION LABOR

Let's turn our attention away from machinery toward labor. The custom nature of our product affects us in the area of labor more than we think about sometimes. Our employees have to be able to understand and follow the instructions to build our products because they have never made one exactly like the one they are about to make. In fact, they will probably never make one exactly like it again. In traditional manufacturing where the same products are produced over and over again it makes the communication to shop employees much easier. Traditional manufacturing can also be automated much more easily, reducing the need for labor. All of this means that we must place more emphasis on a labor force that can follow instructions and make certain that labor force is getting complete and accurate information.

COMMUNICATON

How do you get information to your shop employees? How should you get information to the shop? These questions are much more critical for component manufacturers because of the custom product they produce. When one begins to contemplate the volume of information that is required to describe each piece of lumber in the frame of a typical light frame wooden structure, it is an overwhelming amount of information. Yet, that is our task, to describe the stock from which each piece is to be cut, the geometry of the finished piece, the location of the piece within the component being assembled, and the location of the component in the building. All of this information must be available to our manufacturing process at the right time in an organized way if we are to make our products correctly and efficiently. Many in our industry have begun to send this information to the shop electronically at least for a portion of the manufacturing process.

That brings us to a project near and dear to me, which I will refer to as the Building Component Manufacturing Data Standard. This idea is simply that our industry would benefit by having a standard way of storing and sharing the information that is required to manufacture a building component. Almost all building components can be described fully enough to be manufactured using a relatively uniform, finite number of facts. This would allow for machinery from different vendors to readily be used in the process as well as software products from various vendors without each vendor having to maintain translation programs to accommodate communication. This would be especially useful when upgrading any part in the system, whether it is software or hardware. The bottom line would be lower cost production of building components and increased ability to compete with other methods, like "stick framing." The challenge is to make sure that no vendor or component manufacturer gains any unfair advantage in the process and that the standard can be updated in the future to accommodate new methods.

I hope the discussion above has stirred your thoughts about the manufacturing issues that the component industry faces. I look forward to seeing the ways that we will improve our inventory control, equipment, labor and information management in the future.

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