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"Why Automation Makes "Cents": The Evolution of Automation in the Truss Plant" by Jerry Koskovich, P.E.

In 1964 I was working as a plan check engineer for the Los Angeles County Building and Safety Department, when I got a look at the first metal plate connected wood trusses to come into the area. A company in Norwalk had begun using the new concept in lieu of conventional roof framing.

In reflecting on those days, two notable changes come to mind. They were cutting everything on radial arm saws and all of the engineering was done long-hand. It would take hours for a plan checker to go through the design, confirming its adequacy using slide rules. I still have mine.

It wasn't until 20 years later, in 1984, that significant changes were taking place in the manufacture of metal plate connected wood trusses. Not in the plates and wood, since that was all pretty much the same; rather it was in the design and manufacture of these now familiar and accepted components.

By this time component saws had been in use for 25 years. The prominent manufacturers of the day were Clary, Idaco and DePauw. Prices for such machines varied from about \$35,000 to \$45,000 for these proven performers. Hundreds, perhaps thousands, are still in use today.

Bill Sauder, then general manager of a major facility in Florida, told me that his previous year's records showed their saws were averaging about 25 set-ups a shift. Now (1984), they were being required to do 50 and more. The reason? The computer! Computers had not only changed the efficiency of the truss design process, they had changed the demands on the production floor. There had, in fact, been a paradigm shift.

Bill's question to me was "When are you going to automate?"

We started when I got home.

PAST THE BARRIERS TO THE BENEFITS

In spite of these dramatic changes in the industry, not all truss manufacturers have bought into the shift to automation. Many assume, incorrectly, that they must be a large company to afford such an investment in cutting edge technology. While large companies can perhaps more easily commit the approximately two hundred thousand dollars for an automated saw, the payback for smaller companies is as easily justified. It may just take a little longer due to the lower sales volume of the small company.

At least two positive things should happen when a company implements automated cutting. The first is the notable increase in saw set-ups compared to a manual saw. “Onesi twosi” components that might formerly have been relegated to a radial arm type saw are now being handled on the automated component saws with greater accuracy and efficiency. The result is a significant improvement in the throughput of the average sawyer. Statistics collected from our customers will seldom show less than three times the production of a typical manual saw.

Because of this tremendous increase in production efficiency, a small company can find itself with greater production capacity for the same available manpower—a production reserve so to speak. This unused capacity gives the small plant the ability to accept more work than formerly possible. And best of all, it is done at a greater profit margin, since their production cost per component is approximately one third that of their former manual saws.

The second but more subtle benefit from automating your cutting shows up at the production table. It also manifests itself in at least two ways. The first is a long-standing problem in the truest sense—workers standing idle at the production tables for lack of components to build trusses. Due to the increased capacity of automated saws, this should seldom be a problem unless you've clearly outsold your ability to produce.

The second benefit at the production table is the hidden benefit of accuracy. If the automated saw is performing as advertised, its accuracy will influence the production at the tables substantially. Increased production numbers in the range of 10 to 20 percent is the norm. Factor that into your bottom line and you'll soon realize that it is the biggest payback of all!

NOT JUST FOR THE BIG GUYS

When automated cutting became available to the industry back in the mid-eighties, it seemed that the target market was going to be the big producers. That didn't prove to be the case. While large companies are a factor in the growth of automation, the clear majority in terms of customer numbers is small to medium-sized factories.

There are many companies that implemented automated machines when their sales volume was less than one million dollars. They're all still in business and have grown in the meantime. They also give a huge credit to the benefits of automation for getting them there. I know of some small companies who only use their automated saw part-time, yet they swear it's the best investment they ever made.

The typical payback period for an automated saw will vary from nine to eighteen months, regardless of the size of the company. After that everything goes to the bottom line! My point is that size is seldom a reason not to automate. If your company has future market potential, automating will pay for itself faster than anything else you can do—it's a proven fact!

MAKING THE MOVE TO AUTOMATION

When deciding on the purchase of an automated saw, the buyer should consider its shortcomings as well as its virtues. Have realistic objectives. Be prepared to change the way you do business.

Don't write off automation just because an automated machine won't do something you've always done on your manual machine.

Automated machines don't always do everything the same way manual machines do. In fact, there may even be some things that are better done on a manual machine. Cutting floor truss webs for example. While most of the automated saws can cut floor truss webs, why would you want to, unless perchance it was your only saw? Setting up to cut hundreds of identical parts is not what computer-controlled saws were designed for.

The automated machine will do everything it's capable of much faster and better than a manual machine, putting you way ahead of the game, even if you have to do some things a little differently. An unwillingness to accept change will cost your company far more than you can imagine!

Finally, along with the willingness to make changes and proper commitments, you may be faced with another problem. Who are you relying on to make the decision to automate?

Many owners or managers involve the production people who will be using the machine in the decision making process. To a point this may be advisable, but those people should not necessarily be the final decision-makers.

Oftentimes production people have worked their way up through the ranks of the operation. This is the good news—they know their job and how they like to see things run. There are, however, occasions when those people might be saddled with any number of prejudices or fears that could affect their judgment in a manner that might not be beneficial to the company. Let me list a few:

- They may be afraid of change. Using automated equipment will likely change certain material handling and job scheduling processes.
- They're unfamiliar with computers and feel it will jeopardize their job security.
- The new machine may look different from their manual machine.
- They may actually be convinced they can do things faster on a manual machine.
- They may be beneficiaries of the Peter Principle.

I've been involved in all of the scenarios cited above. I'm sure you could list others as well.

If you, as an owner or manager, find yourself in such a situation, you have to ask yourself a very fundamental question: "Is this individual obstructing a decision or operation that could or should be having a significant positive effect on your company's bottom line?" If the answer is yes, then the die is cast. You can't let your company's competitive and financial future be controlled by the prejudices of an individual whose motives may be governed by a sense of self-preservation.

Attitude is all-important. If the existing workers or sawyers are intent on proving the new machine won't work, I can assure you, they will make it fail! Before you purchase an automated saw, make sure you have buy-in from the production employees who will be using it.

BUY VS. BUY-IN

I also have a word to those companies that have purchased this new technology. There's a difference between buying and "buying in" to technology. If you do the former instead of the latter, you could be in for some disappointments. Let me explain.

Some companies wrongly assume that since they paid about \$200,000 for their automated saw they ought to be able to plug it in and never have to do anything to it. Let me assure you, they're in for a surprise. You can buy a 747 from Boeing, but you're not in the airline business until you buy into all of the infrastructure and technical support that goes with it!

Computer controlled equipment of all types can bring huge advantages to companies, but it takes a commitment on the part of the buyer to support such technology. If you're not willing to take that step, then I would strongly suggest you stick with your present manual equipment.

Computer controlled machines, in general, require an enhanced level of technical support. Most forward-thinking companies are prepared to assume that responsibility and either have in place, or will put in place, the procedures necessary to maintain such equipment. We're not talking about having an electronics technician or programmer on staff, just competent individuals who are willing to learn and, if necessary, change their way of doing things.

Having made your decision to automate, you'll want to explain to an employee that may be resistant to automation that you've evaluated and respect his opinions, but feel that this decision is in the best interests of the long-range goals of the company. Since he will be involved in implementing the new system you want him to "buy in" to the concept. Inform him that he will be expected to make it work (not necessarily the same as keeping the machine running). Let him know that if he's uncomfortable signing on to the program you've mapped out, you'll be happy to try to find him another position in the company (assuming there is such a position). Thereafter, you'll need to monitor the level of his commitment to make sure he's not backsliding. As noted previously, it takes committed people to make such systems work.

IN CONCLUSION

Hopefully all of the above will assist you in evaluating your operation, be it manual or already automated. Most of what I've said applies to both scenarios.

Some of the above might scare some companies, or perhaps even offend some. That is clearly not my intent. Automation is here to stay. You have to decide whether your company is going to be a part of this new revolution or would rather sit on the sidelines. If you and your people do "buy in" to it, you stand to reap substantial benefits—likely greater than you imagined!

There can be difficulties and obstacles to overcome, but it's kind of like the space shuttle—it doesn't always get off of the pad on time, but when it finally goes, it's one heck of a ride!

Jerry Koskovich, P.E., is President of The Koskovich Company and has been credited with the invention of the first successful automated component saw. Koskovich received the James R. Price/Automated Builder Achievement in Housing Award at the 1997 Building Component Manufacturers Conference in Nashville, TN.

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