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Evaluate Margin Models for Your Truss Shop by Todd E. Drummond

Check out a new formula that adjusts pricing based on plant maximum production capacity.

Whether you have been selling roof trusses for a short time or for a very long time, have you thought about the formula or formulas that you use for your pricing? If you have worked in the component industry for any length of time, I would hazard to guess that you have felt the formulas you have been using are carved almost in stone. The mentality is "why look at something that has worked all these years?"

In the component manufacturing industry, a common formula is:

Cost (material + labor) divided by a number
(e.g., 0.5 or 0.6 or 0.7 etc. to create a fixed margin ratio)
= Sales Price

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Margin Formula: (Mat + Labor) / 0.7 (assumed margin) = Price

Day 1 at Maximum Production

Order #	Material	Labor			Price	Margin	Margin %	Labor %	Mat %
1	$4,000	$2,000	70%	=	$8,571	$2,571	30%	23.3%	46.7%

Day 2 at Maximum Production

Order #	Material	Labor			Price	Margin	Margin %	Labor %	Mat %
2	$250	$500	70%	=	$1,071	$321	30%	46.7%	23.3%
3	$1,800	$900	70%	=	$3,857	$1,157	30%	23.3%	46.7%
4	$750	$600	70%	=	$1,929	$579	30%	31.1%	38.9%
Totals	$2,800	$2,000	70%	=	$6,857	$2,057	30%	29.2%	40.8%

Difference of Margin from Day 1 to Day 2 => $514

Table 1.

On the surface this formula would guarantee an equal amount of margin for every job. If the cost of labor or material varies, the divisor properly adjusts the sales price. But if you look at the whole picture of manufacturing, does it really?

- **Material:** We all pay what the markets dictate for our material cost. Lumber, plates and miscellaneous materials are all controlled by the prevailing market cost.
- **Labor:** Similar to material, we pay the prevailing wages in our area. We maximize our efficiencies to lower our per component labor cost, but it is largely fixed according to our manufacturing setup.

I think this formula overlooks some important factors. When maximum output is reached in the production line, the overall labor for the shop becomes a fixed amount. Think of the production facility as a machine. This machine has limits that cannot change easily. Only a certain amount of orders per day can be completed, which can be measured by using total man-hours per day. Why then would someone apply a margin formula that does not give equal weight to every job? Let's look at an example (see Table 1):

Truss Shop (All numbers used are for example only)
Max Production = 100 man hours/day
1 man hour = $20
$20 x 100Mh = $2000/day

In my example, Day 1 and Day 2 production are at the maximum of $2,000 (e.g., equal to 100 man-hours). Yet, we all know that material and labor varies according to the order type. Labor and material vary widely as a percentage according to complexity of designs and loading. In this example there is a $514 margin for the day difference. This margin formula will not only produce varying daily production margins, but weekly, monthly and yearly totals also vary. Using this type formula will not allow a shop to produce the same amount of margin every day.

Producing the expected amount of margin from a shop every day is what everyone strives for. After a great deal of fussing over this problem, I realized the flaws in the formula I described above. When such a formula is used, subjective adjustments are made to selling prices as component manufacturers know intuitively that low labor orders can be produced quickly and thus prices are decreased accordingly.

Given this the question one needs to consider is: Why not come up with a margin formula that adjusts according to the time it takes to produce that can serve as a pricing guide? If material is removed from the initial equation, then labor becomes the primary number to adjust the margin needed to obtain an expected rate of return. After a great deal of evaluation, I came up with a margin formula which I believe accomplishes this goal.

Drummond's Margin Formula:
Margin = Labor / Margin Ratio
Sales Price = Labor + Material + (Labor / Margin Ratio)

We will use the previous example used in Table 1 for the Day 1 and Day 2 orders produced. Let's assume that we want to obtain a contribution margin of $2,500 per day from our shop. The material and labor stay the same, along with the maximum daily production of 100 man-hours.

Margin per day = Labor $ per day / Margin Ratio
$2,500 per day = $2,000 / Margin Ratio
Margin Ratio = Labor $ per day / Margin per Day
.8 = $2,000 / $2,500
Margin Ratio = .8

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Drummond's Margin Formula:
Price = Labor + Material + (Labor / Margin Ratio) where Margin Ratio = 0.8

Day 1 at Maximum Production

Order #	Material	Labor	L / MR		Price	Margin	Margin %	Labor %	Mat %
1	$4,000	$2,000	$2,500	=	$8,500	$2,500	29%	23.5%	47.1%

Day 2 at Maximum Production

Order #	Material	Labor	L / MR		Price	Margin	Margin %	Labor %	Mat %
2	$250	$500	$625	=	$1,375	$625	45%	36.4%	18.2%
3	$1,800	$900	$1,125	=	$3,825	$1,125	29%	23.5%	47.1%
4	$750	$600	$750	=	$2,100	$750	36%	28.6%	35.7%
Totals	$2,800	$2,000	$2,500	=	$7,300	$2,500	34%	27.4%	38.4%

Difference of Margin from Day 1 to Day 2 => $0

Table 2.

Notice that in Table 2 there isn't any difference between Day 1 and Day 2 total margin dollars. When the margin was able to fluctuate according to the time it takes to produce the order, then the target margin is reached. The margin was automatically adjusted above and below the first example's 30 percent. The price differences between Table 1 and Table 2 did vary according to the margin's differences. Notice that order #2 changed the most by $304. Even though order #2 was the smallest sales price, it had a much bigger impact on the time it tied up the production for its smaller sales price. Please note that each manufacturer will need to formulate their own margin ratio that fits their particular market, takes into account prevailing market prices and meets the requirements of the company's ownership.

I have found that you can also write your margin formula directly into the pricing program of your truss software. If you have any trouble doing this, consult with your truss software supplier. I'm sure they would be more than happy to assist you. Be aware of one point about this and that is if the labor costing of your truss program is off, this formula example will not adjust that aspect of it. This formula example is solely designed to establish an equal contribution of each job as it ties up a production facility.

I bet that your salespeople never consider the impact of production time needed when they see the smaller priced orders. In fact, I bet they do not even consider how much time any order ties up the production in relationship to other orders. Usually what happens is that the sales team has to consult management because of a larger order being bid on and they need management's help in determining the margin they will use in order to win the bid. When management is consulted, don't they always think about the time it would take to produce it? Certainly they do, along with several other factors that come into play to account for market conditions, but at least the starting point can be a little bit more accurate for the bottom line. In my opinion, the Drummond Margin Formula takes out the guesswork. If properly employed you can let the production environment of others get bogged down based on a margin calculation that may be flawed from the get-go.

Todd Drummond got his start in the component manufacturing business working in

his father's central Maine truss plant in 1988. Drummond has a four-year degree in business management and is pursuing a Master's Degree. He is currently the manager of a truss production facility in New Hampshire. For more information on this article, contact Todd at tjdrum@nhvt.net.

Editor's Note: There are hundreds of opinions about the best way to define costs, prices and margins for manufactured components. Mr. Drummond has provided his thoughts on this very important subject. We'd like to hear comments from others regarding his approach, other methods or variations on them. Your input will help SBC Magazine readers to gain the benefit of a broad spectrum of opinions. Email comments to editor@sbcmag.info.

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