Getting control of labor costs can increase a job shop's profits by 15 to 30 percent.

Cash Course

BY LEO GOSS

If you own or manage a job shop, you know that the $15, $20 or $25 an hour you pay a machinist is not all that he costs you. Labor expenditures also drive secondary costs, such as insurance.

What you may not know, however, is how much a shop's profits are negatively impacted when labor hours expended on a single project exceed the hours budgeted. Shop managers often focus so intently on controlling material costs that they overlook the effects of direct labor on a job's profitability.

That was the case at one shop where I performed a financial analysis. After completing a job, the shop's supervisor boasted that despite exceeding its allocated labor-hour budget by more than 200 hours, the job still made its targeted profit. "We still made $50,000," he said. "It just took longer to make it."

While the shop certainly made a profit on the job, its *overall* profitability may actually have decreased. Whenever a job exceeds its labor-hour budget, a shop is penalized three ways:

- The cost of the excess labor hours over the job's budget.
- The additional overhead costs that arise from the excess direct-labor costs spent on the job.
- The profits lost because the job's machinist was not working on another project.

To help eliminate or sharply reduce this "triple penalty," I am going to introduce you to a method for boosting profits that's called the "profit per hour" (PH) system. It's built around a basic formula that states that by decreasing the number of direct-labor hours (DLH) needed to complete a job, profitability increases.

The Formula

The PH system was developed exclusively for job shops, including tool and die makers, mold builders, screw-machine houses, foundries, fabricators and other contract manufacturing shops. The reason it works for all these businesses is that they have one thing in common—labor. Labor is an important factor in every machine-shop job, and sometimes it is the key factor. (This contrasts with a production-type manufacturer, such as an automaker or pharmaceutical house, where labor is a secondary or tertiary factor.)

The PH system consists of three parts, each of which centers around a basic, but powerful, formula. The first part is about pricing for profit, the second part focuses on control and productivity, and the third covers unique timesavers and tested moneymakers.

A job's PH is found by dividing job profit by the number of DLH needed to earn it. The greater the profit per hour, the more money earned per hour and the more profitable the job. In equation form, it looks like this:

$$\frac{\text{Job Profit}}{\text{Direct-Labor Hours}} = \text{Profit Per Hour}$$

Targeting DLH—not the percentage of job profit divided by the sell price (see sidebar, page 49)—is the key to expanding job profits. The more job profit earned per DLH, the more money the job shop makes.

Percentages produce flawed and misleading information. They also deprive the owner of the opportunity to maximize job profitability at every step of the manufacturing process—

Kirk Mills

Determining a job's true profit-making potential

Job shop owners can improve profits by using direct-labor hours (DLH) instead of percentages based on job profit divided by sell price as the foundation for their pricing and for measuring closed-out jobs. My experience shows that 36 percent of all jobs are under-priced because job profit was insufficient to cover overhead and produce the customers' products.

The principal reason for these losses is the use of percentages to calculate markups on the total cost of the job when computing profits. Percentages can be deceptive in pricing and even more so for job control.

Unfortunately, the majority of job shop owners use some type of percentage markup to either establish or measure job profit. The remainder use labor hours, machine hours, production or some kind of hybrid. However, the more successful job shop owners use DLH because of its inherent accuracy and reliability.

For example, suppose a machine shop owner with 10 machinists saw a slump in profits the past few months, creating a weakened cash flow. As a result, he decides that if he can't make money on a job, he'll turn it down. Then the machine shop owner has his accountant re-analyze the budget and recalculate overhead. With the new information, the accountant informs the owner that overhead is $10,000 per week, and that the shop needs a 25 percent profit margin on every job to cover overhead and make money.

Then an important customer comes to the shop with specifications for three new jobs, each of which will repeat at least 10 times during the coming year. Additionally, the customer informs the owner that the three jobs must be run in a 2-week window and all the owner has to do is match the price of the lowest existing quote and the business is his.

Engineering and accounting analyze the three jobs using 20, 25 and 30 percent profit projections and submit the following job-cost information to the owner:

	Job A	Job B	Job C
Material cost	**$3,000**	**$8,400**	**$17,600**
Production costs	**$3,000**	**$2,400**	**$1,600**
Labor costs @ $30/hr.			
400 hours for Job A	**$12,000**		
240 hours for Job B		**$7,200**	
160 hours for Job C			**$4,800**
Total cost for each job	**$18,000**	**$18,000**	**$24,000**
Selling price for each job	**$27,000**	**$24,000**	**$30,000**
Job profit for each job	**$9,000**	**$6,000**	**$6,000**
$\frac{\text{Job Profit}}{\text{Selling Price}}$ = Job Profit %	**33%**	**25%**	**20%**

Now, using PH to evaluate the jobs, let's see which job actually makes the most money.

				Job Profit Percentage
Job A	**$\frac{\text{Job Profit}}{\text{Direct Labor Hours}}$**	**$\frac{\$9,000}{400}$**	**= $22.50 PH**	**33%**
Job B	**$\frac{\text{Job Profit}}{\text{DLH}}$**	**$\frac{\$6,000}{240}$**	**= $25.00 PH**	**25%**
Job C	**$\frac{\text{Job Profit}}{\text{DLH}}$**	**$\frac{\$6,000}{160}$**	**= $37.50 PH**	**20%**

If the machine shop owner chooses to match the bid for Job A at a 33 percent job profit, as many would, he would lose money. Job A requires 400 machining hours, which is every available shop hour for a week. With weekly shop overhead at $10,000 and the job profit at $9,000, the owner loses $1,000 on each of the 10 part runs—not good business.

If the owner opts to bid on Job B, he just breaks even when he factors in the overhead rate of $25 per man for the 240 man-hours required. Lastly, Job C is worth doing and is the only profitable job available from this "very good" customer.

Note that Job C has the lowest percentage in terms of job profit, but produces the only actual profit. Consider it this way: If someone offered you $6,000 to work for them for 4 weeks or $6,000 to work for them for 6 weeks, which offer would you take?

—L. Goss

from the pricing and quoting phases to the in-process phase and all the way to the close of the job.

Material, DLH Costs

Before discussing the impact of labor on job profitability, an understanding of the effect of material costs on profitability is needed. When you lose money on a job due to a material overrun, there is a one-time cost related to job profit. For example, if a job were priced to make a $15,000 profit and it required 500 DLH to complete the job, here is how the profit per hour would look at the time the quote was prepared:

$$\frac{\$15{,}000\ \text{(Job Profit)}}{500\ \text{(Direct-Labor Hours)}} = \$30\ \text{(Profit Per Hour)}$$

If there is a $3,600 material overrun, the job profit falls to $11,400 and profit per hour drops to $22.80.

$$\frac{\$11{,}400\ \text{(Job Profit)}}{500\ \text{(Direct-Labor Hours)}} = \$22.80\ \text{(Profit Per Hour)}$$

Now, turning to direct labor, let's say that a job has a DLH overrun of 120 hours. At $30 per hour, that would equal the $3,600 in extra material cost previously mentioned.

The first penalty is the $3,600 reduction in job profit because of the labor overrun. Job profit based on profit per hour plunges from $30 to $18.39 ($11,400/620), as shown here:

Original job profit $15,000
Less labor overrun -$3,600
Actual job profit $11,400 = $18.39 Profit Per Hour
Direct-labor hours = 500 (original) + 120 (overrun) = 620

The following is a side-by-side comparison of both overruns.

	Labor overrun	Material overrun
Original job profit	**$15,000**	**$15,000**
Less:		
Material overrun	**$0**	**$3,600**
Labor overrun (120 DLH x $30)	**$3,600**	**$0**
Job profit	**$11,400**	**$11,400**

Many job shops would stop right here and say the profit for the job is equal either way. But what they don't realize is that labor overruns, unlike material overruns, penalize the shop two more ways.

The second penalty appears during the application of administrative overhead to the job. Overhead is just as much a cost of a job as direct costs. If overhead is not covered by the job profit, the job loses money. In the PH system, overhead is applied based on hours and is, therefore, expressed as an hourly cost. Here, a cost of $20 per hour is established.

	Labor Overrun	Material Overrun
Job profit	**$11,400**	**$11,400**
Overhead: (120 excess hours at $20/hr.)	**$2,400**	**$0**
500 budgeted overhead hours at $20	**$10,000**	**$10,000**
Total budgeted and excess overhead hours	**$12,400**	**$10,000**
Profit or (loss)	**($1,000)**	**$1,400**
Direct-labor hours	**620**	**500**
Company profit or (loss) as profit per hour	**($1.61)**	**$2.80**

The third penalty is the future profit lost because of the 120 excess hours. To measure that lost profit, multiply the 120 hours times the planned profit per hour ($30), for a total of $3,600.

Here is a summary of the three penalties for each case:

	Labor overrun	Material overrun
Lost job profit	**$3,600**	**$3,600**
Additional overhead cost (120 x $20)	**$2,400**	**$0**
Future profit lost (120 x $30)	**$3,600**	**$0**
Total	**$9,600**	**$3,600**

To find the true cost per hour, divide $9,600 by 120 overrun hours, which yields a cost of $80 per hour. If the person whose total cost of $30 per hour is $22 in monetary compensation and $8 for benefits, at $80 per hour, that person costs nearly three times his hourly rate. That's no way to run a shop as profitably as possible.

The supervisor mentioned earlier learned that lesson—and gained a new idea about what profitability really is.

About the Author

Leo Goss, CPA, is president of Job Profit Inc., a Crystal Lake, Ill., consulting and training company. His book, The PH System for Contractors and Job Shop Owners, *focuses on accurate job costing. For more information, call (815) 459-9312, or visit www.jobprofit.com.*