Control projects by hours, not dollars,

suggests this operations director. The approach generates accurate status reports and a way to correct mistakes fast.

Have you lost control of your engineering projects lately? I mean, when you ask your accounting department to give you status reports by projects, do you know exactly where you stand? Or are you clobbered by overtime, different hourly rates and overhead costs that vary each month, so that the dollar report you receive is so confusing you can't determine its significance?

I got clobbered consistently trying to control projects by dollars until I learned that the only way to achieve control was by keeping track diligently of man-hours. If you specify the number of hours, the amount of overtime and the mix of pay levels within your department, you'll have a perfectly valid control.

Begin by specifying the number of hours needed to complete the project. In long, complicated projects it's virtually impossible to make this estimate accurately, from beginning to end, at one sitting. Simplify the estimate by breaking the project down into tasks of one to three months.

I don't authorize a task until I have one that's definable. I tell my engineers that if they can't see all the way to the end of the task, then they should define only the first pieces of it, and when they get through those, define the next level, and the next, until they reach the end. I have spent more time, money and hair on poorly defined tasks than on any other area of my job.

Charge projects at an average rate

Let's see how the man-hour approach to project budgeting works in practice. Averaging is important. From a department standpoint, there are a certain total number of man-hours available and a certain total of wages and salaries paid for those man-hours. As long as the average hourly rate for the entire department remains relatively constant, the question of specific salaries is academic.

If I attempt to report budget or actual job performance by job category, I inevitably wind up with a mass of figures that are very difficult and confusing to understand and use. If, on the other hand, I think and work in terms of average rates, I have only to budget and control the total man-hours expended; if they are properly controlled, then the over-all department performance must come out as planned.

Why do I no longer use dollar budgeting to attempt to control projects? Look at it this way: If I ask my project managers how many labor dollars it will take to complete a job, they'll only shuffle their feet and say, "Well, it depends on whether I have to use a senior mechanical engineer or a junior draftsman, and whether the overhead rate this month is 125% or 135%." There are too many variables to reach a decisive conclusion.

Contrast this with the hours approach.

Manpower mix adjusted

My project managers and their supervisors are responsible for adjusting the mix of manpower needed among draftsmen, designers, technicians, junior engineers and senior engineers to get the work out. That way I don't have to keep track of the job load by job title. I track the job by figuring out if it's lagging behind or maintaining the schedule.

My secretary logs the number of man-hours for me in the engineering department—independent of the accounting department—and she can have reports, which are given to the project engineer on Wednesday, posted to the preceding Saturday. The manager who has to report exactly how much time has been charged to these projects can find out who charged what. And he has that information in time to do something about it if the man-hour budget is not being met. If an engineer or technician is off on a wrong tangent, the worker will have spent only a week of such unproductive effort before the project engineer discovers it.

Of course, no management method will work automatically; like a water pump, the man-hour control system must be primed. Besides defining

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the task, I also follow these guidelines:

- Keep progress reports simple and accurate.
- Give engineering managers complete responsibility.

Keep in mind that this type of project control works best for companies in the $30-million-and-under range, and only for parts of projects no larger than can be visualized by the project manager. An engineer loses feel of a job larger than he can see, and he can be overwhelmed by the magnitude of what it is worth.

The tasks should usually be defined as no larger than a man-month. When I break down a project into pieces that are this small, the definition of a task is much easier. It's usually possible to write a simple, concise paragraph about this particular segment of work that can be understood by the engineer, the engineering manager, the sales manager, the customer, and maybe even the entire accounting department. It's important that the project task be small enough to be within the engineer's ability to estimate capability, and large enough so he doesn't try to expand it too far into the future.

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To be sure that the status of each project is reported, I hold informal weekly meetings. Each job is reviewed, with all the project engineers in attendance, to determine what has happened and what the problems are. We wind up with a report that is usually two to three sentences long for each project. It's widely circulated within the company, and it tells the project engineer that the rest of the company knows what's going on and is interested. It encourages him not to hide his head if he has project problems.

I've discovered that if I sit back and wait for the engineer to come to me with his problems, rather than generating the weekly report, he'll hope for the "good fairy" to come and take the problem away. This way we can discuss the problems person-to-person and get more out of it than we would in a regular, formal report.

Also, my project engineers are given a budget goal in dollars. I give them the authority to order materials; if the costs exceed the budget, the project managers must obtain clearance from me. To control costs, I ask the purchasing department to give me a report of commitments made by each project. If a project engineer oversteps his project budget at the commitment level, I know it within a week or two, and I can, if I wish, reverse the transaction and cancel the purchase before it's too late to correct mistakes.

Keeping those overruns respectable

As the project manager, I don't care what the accounting department shows as the status of the material orders on the project; I do care about the commitments that have been made. Once they've been established, the question of when the material arrives, is inspected, recorded and actually paid for is incidental. All that will happen regardless of how the engineer manages the project. But by controlling the commitment point and monitoring it, I can give the project engineer freedom and still maintain the ability to correct an error before it's cast in concrete.

If I'm doing a moderately good job of managing, most of my jobs will come in fairly close to budgets—both the hours and dollars 10% to 20%, one way or the other. I make the project engineer responsible every week for reaffirming that his total job budget is still correct, so far as he is capable of estimating that week. He's responsible for rebudgeting the moment he sees a significant variation in the tasks he has to do.

Generally the jobs that burn me up are the ones with the 200, 300 or 400% overruns. You can usually account for the 20, 50 or even 100% overrun. The ones you really lose control of are the ones that go two or three times the budget. Tracking projects by man-hours gives me the control I need to keep overruns respectable. ■■