DEVELOPING JOB SCHEDULING

by
Mark A. Coudray
Impressions Magazine
September 1994

For most screen printers, scheduling jobs effectively is very unpredictable. They either overschedule and fall behind, or underschedule, resulting in underutilization of available machine time. Worse yet is a reasonable schedule that falls hopelessly behind due to poor planning of resources and materials. In this month's column I would like to explore some of the common challenges and solutions that will lead to more effective scheduling and use of your billable time.

Effective scheduling begins with predictable performance. This is probably the single biggest obstacle for most printers. In the hundreds of shops that I have visited over the years there have been very few that I would consider predictable. The foundation of predictable performance lies in a manufacturing or printing system that has established parameters. Most small and medium shops evolve in this area, but do not evolve in any type of systematic way. The lead printer that has been there for some time usually will assign or "guesstimate" how long it will take to do a job. Sometimes this is very accurate (as in single color left chest imprints). With increasing complexity of art being generated today, it is more difficult to get accurate off-the-top-of-your-head estimates.

At the very minimum you must have some method of keeping track of the time it takes to do various parts of the job. This can be as simple as a clock on the wall, or as sophisticated as a bar code reader that is swiped over an assigned computer-generated bar code. Regardless of what is used, there must be some method of determining how long it takes you to set up, print, and break down each job. By having a method of keeping track of the time, you will soon notice relationships that develop. You will begin to get a feel for the amount of set-up time necessary for simple jobs and four-color process. You will begin to identify which jobs you run easily, and which ones you continually struggle with. Keep this in mind as it will be important later on.

Printers initially are resistive to recording the amount of time that it takes to do a job. This is a natural reaction to what I call the "Big Brother Method of Management." Employees tend to feel that you are watching them and that the recording of time is a way of assessing their productivity. While this may be true to a certain degree, the main objective here is to accumulate job profile information that can be used to improve productivity, *not* monitor individual performance. It is easily explained that you wish to focus on the types of jobs that set up and run smoothly. It is also your intention to try to identify factors that slow down production, so they can be minimized or eliminated.

Closely tied to the recording of time, you must also have an accurate specification sheet that will allow you to record and document all of the physical and environmental aspects of the job. This allows you to document screen mesh, color order, placement of flash units, ink matches, shop temperature, humidity, who printed the job, and all other factors that went into production of the order. An excellent example of a print specification sheet is available from the Screen Printing Association International (10015 Main Street, Fairfax, VA 22031-3489; (703) 385-1335) in its Textile Business Forms Manual. There is a nominal charge for the manual, but it well worth the cost.

Whether you are in the preprint business, custom, or contract, the print spec sheet is the recipe followed to get a job to look the same each time. I talk to printers all the time who complain that they cannot get consistent results from job to job. In the same breath they will also tell me that they change meshes and don't really watch mesh tension as they should. How do they think they are going to get ink color to match between runs if they are not keeping the printing parameters constant?

The specification sheet does more than record basic information about a job. It also reinforces in the printer's mind what was done. It is one of the basic tools used to help the printer "learn" more effectively. It is like taking notes in school. When you write down what you did each time, you become more consistent in the work that you do. Differences between individual printers becomes less of an issue. Consistency of work is what you are after. If you must rely on Joe printing the job each time for best results, you will retard your business development. What happens when Joe is sick or on vacation, or worse yet, quits or is fired? The specification sheet is the link you need.

Information on the spec sheet can be accumulated in a spreadsheet format that will allow you to develop profiles of different types of work. We use simple (no register or loose register), tight (butt registration), and process color (critical color match and registration). A value per color is determined based on difficulty. Simple jobs may take 3 minutes per color, tight 5 minutes per color, and process 8 minutes per color. You can also look at your run times to determine a profile. Using this simple method, you will be able to develop some reasonably close estimates of how long it will take you to do a job. As you get going with your scheduling program, assign an estimated time on the job order, and then have the printers record the actual time. This will allow you to monitor accuracy of your system. Like anything else in this business, it takes some effort to get results. If you are interested in being more productive, there is an investment in time and effort to record and monitor data.

With a method to estimate, record, and review in place, we now need to look at the second component of the system, the scheduling board. This is a visual system that allows the production manager to look at what is scheduled for production, and how many hours are loaded on the machines. It is the link that allows for an efficient production day. Overscheduling or underscheduling can be minimized with the use of good time estimates and a flexible visual scheduling board.

All of us know that scheduling changes are due to any one of a number of factors. Customer approvals, stock shortages, cancellations, additions, and rush orders all have a way of wiping out the best-laid plans. In today's competitive marketplace the name of the game is fast turnaround and flexibility. The scheduling board must have a number of features that allow for

flexibility so that we can shorten turnaround times.

The most important item should be the ability to move jobs easily in a visual way. There are three methods that I like. The first is an erasable white board. It looks clean, is easy to change, and you can get markers in any number of colors. The disadvantage of this type of system is that you have to do a lot of erasing and rewriting. This can lead to mistakes and omissions. You can buy fully assembled white boards for $60 to $350. The smaller version is 3' x 4', and the larger is up to 4' x 8'. You can save yourself a lot of money by going down to the local home improvement center and buying 3' x 6' "Marlite." This is used in bathrooms and shower stalls. It is waterproof and is basically enameled Masonite. It works exactly like the more expensive commercial white boards, but costs only $20.00 - $40.00 per sheet.

The second type of board is made of enameled steel with magnetic scheduling clips. This is very good and very flexible. The clips are color coded and easily movable. Your job information is written on a small card that fits into the clip. I have seen different versions that allow you to use clips based on time. In other words, you can get clips that are 1" long to 8" long with one inch equal to one hour of time. Using your estimated time, you would choose a clip equal to that time. If you had two jobs that were 2-1/2 hours each, you would put both on a 5" clip. The board would allow for only 8" of clip in any given day. This way you could see exactly how much time you have scheduled, and how many jobs for the day. The disadvantage is that the clips are small and the cards do not have much room for information on them. The system is expensive compared to other alternatives.

The third type is a combination of the above. It consists of a white board with plastic strips mounted in parallel rows. The distance between the rows is about 3". A colored file card with the necessary job information is filled out and inserted between the strips. If something changes, the card is simply moved. You either write the estimated time on the cards, or use cards of different lengths to estimate the time. Like the first system, you can make this in a 4' x 8' version for less than $100.

Whichever system you choose, make sure that it has at least 5 or 6 weeks of capacity. This allows you to get the big picture of what is going on over a pretty good time frame. It also helps in determining how much production must be sold and filled to keep you going. The ability to move jobs easily is what gives the flexibility to do rush orders and quick turnaround times. Production employees will see what the board looks like and what the anticipated workload will be like. It minimizes surprises.

The last component of the system is the actual card that goes up on the scheduling board. It should contain the due date, order date, order number, customer name, job type (process color, flat color, etc.), estimated time, and whether it is a manual or automatic print job. There should also be provisions for checking that all of the necessary approvals are done, screens are ready, and stock is complete and on hand. These last items are what kill the productivity of many printers. I can't tell you the number of times a job has been set up to run, only to find out that all of the stock hasn't arrived. An easy way of handling this is with the use of colored dots. If they are in a specific sequence, the production manager only has to look at the edge of the card to see that everything is in order.

While this is a very introductory approach of handling scheduling, it should be helpful in improving your overall

efficiency. Having a method to estimate, track, and feedback performance is essential toward improving profitability and effective use of available time you have in the shop. A clean visual method of displaying workload helps to mentally prepare everyone in the production environment so that they can get more work done in a shorter period.