Synchronous Solutions

The continuous pursuit of excellence

The *ART* of Scheduling

Scheduling orders in a custom manufacturing environment is much more ***art*** than science. The scheduler must consider a myriad of factors every day for the manufacturing system. If installation of the finished product is also required, the scheduling system becomes even more complicated.

> Scheduling is the process of arranging, controlling and optimizing customer orders in a production process.

Essentially, the job of the Scheduler is to load sold orders into the manufacturing system to its capacity while meeting customer demands. The result should be a plan that meets customer due dates within the internal capacity of the business.

To do this, you must first know the system capacity. In fact, your system has finite, not infinite, capacity. With the fickle and unpredictable market demand day to day, your process must reduce that market variability to a manageable daily schedule. Some companies simply take the daily demand and cram it into the manufacturing system without careful consideration of actual capacity. This approach is doomed to failure. You must know your system's capacity and schedule to it. Submitting a schedule that exceeds your manufacturing capacity will never work and will certainly create lots of chaos. Ultimately, this "wishful thinking" approach will not satisfy the customer and will create ill will in the market.

It takes negotiation with the customer base. It is hard work for the scheduler and requires a skillset that not everyone has. A talented scheduler is a great asset to a custom manufacturing business.

The scheduling function is the bridge between Sales and Manufacturing. It is an operational function and should report to the Operations Manager.

The "Level Load" schedule

An ideal schedule creates a daily "level load." That means that the scheduler works to minimize the variability day to day. Every manufacturing manager will understand this issue. When the schedule creates a "roller coaster ride" with way too much work one day and not enough another day, the shop is virtually impossible to manage. A "Level Load" will actually increase system capacity. In other words, with careful consideration for minimizing schedule variability day to day, your business will actually produce more. Guaranteed.

"Level Loading" requires use of a metric that relates to actual labor demand. Any dimensional metric, like square feet, linear feet or linear inches, will not do this. The metric we recommend is Throughput. *(See "Square Feet vs. Dollars" in the July 2018 issue of The Slippery Rock Gazette for more information on this subject.)* Throughput ($T), which is defined as *the measure of value added*, represents the transformation of raw material investments into the income for finished products. $T is the value of that transformation and is an accurate reflection of the labor content for a job, including factors such mitered edges and sink cutouts which would not be recognized by a dimensional metric like square feet. More importantly, $T is directly relative to the financial performance of the company. At a planned $T earning for the month, you can know how much profit you will make. Not so with square feet.

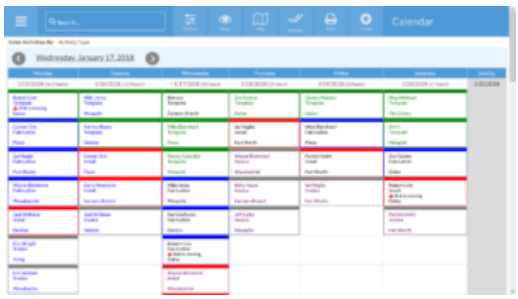
True "Level Load" scheduling can only be accomplished with a metric like $T. Note that this could mean a different amount of square feet per day, but a consistent amount of $T which will occupy about the same labor content.

How many schedules are needed?

Your business capacity is determined by your system's constraint. Just as a chain is only as strong as the one weakest link, your business capacity is determined by the one process step that has demonstrated the least daily capacity. That is the only place that determines the capacity of your entire business system. Every other resource should strive to feed the system's constraint.

In the countertop industry, the point at which money is earned is normally at installation. This is "where the company's cash register rings." As such, this is a desirable location for the business schedule and one that can be visible upstream to all

manufacturing functions. Therefore, only one schedule is needed. Multiple schedules create confusion. Establish one schedule and make it visible to everyone.



Clean sheets

In most companies, orders come in with some open questions. The order may be closed, but the customer may have not made the final decision on color, edge, backsplash, or some other important piece of information. It is important to never release a job to scheduling (much less the shop) until all these questions are answered. We call this “clean sheets” meaning all the blanks are filled in. Scheduling should only work on jobs that are “clean.” In fact, it is desirable to manage a group of “clean” jobs so that scheduling can plan a good routing and can consider all the factors that are important, such as:

- Customer service and due dates
- Equipment capacity
- Employee capacity
- Product mix
- Level loading
- Installation geography
- Plan for Murphy
    - Employee absences
    - Weather conditions
    - Customer demands and rush jobs
- Installer skillsets
- Maximizing company profitability

“Clean sheets” should mean that three tests are considered before jobs are even made available to the scheduling function:

- All information known. No open questions about exactly what the customer wants.
- All material available. Either the needed material must be on site or there must be confidence that it will be available in a timely manner so as not to delay any manufacturing function.

- Jobsite ready. A customer service or project management person must have confirmed with the customer that cabinets are set and no delays should be expected at template or at installation.

Two elements of scheduling

Your vehicle runs best with the proper mixture of gasoline (fuel) and air (oxygen). If that mixture is not correct, the engine will not run well, if at all. Scheduling is much the same. A good schedule requires the proper mix of volume (how much) and velocity (how fast). The volume should be "Level Loaded" using $T to assure the labor content is about the same day to day. The velocity, or time allowed, must be controlled too. A desirable and common process time for the countertop industry is one week from template through install. A good schedule will allow the same process time for all jobs. In fact, scheduling jobs with different process times will cause manufacturing disruptions and chaos. The best schedule is one that is "level loaded" and all jobs planned to flow at the same pace.

Plan, schedule, track.

The best business performance is one that creates a plan for action in advance of each month. You should know how much value added ($T) you need per day in order to make a given level of profit. You should set up these goals for your scheduling department to load that amount of $T for each product line each day of the month. "Level Loading" means to keep this consistent day to day and maintain an even flow of jobs (no "leap-frogging" of jobs). And, you will need to track this performance plan every day to assure that the goals can be met at the end of the month.

Having done all this will be your best shot at optimizing the *art of scheduling.* But it is still a difficult job in a custom manufacturing business. It requires a special person to do it well.

For more information on *The Art of Scheduling* including a detailed job description, contact:

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