Synchronous Flow

Helping the Countertop Fabricator to *synchronize* the business system

March 2017

Ed Hill
Synchronous Solutions

Custom countertop manufacturers are much like companies in any industry. They struggle to meet a fluctuating market demand and they deal with constant pressures on price, quality and lead times. But, a major difference in countertop manufacturers compared to traditional manufacturing is that every item is unique. This is truly a custom industry because every product made has special characteristics in color, texture, shape and features that apply only to a specific order.

This industry is also distinctive because it is commonly owner-operated. Many successful countertop fabricators started in someone's garage and grew to a full-sized establishment with all the complexities of managing a real business. The concepts that worked when it was a small business (hard work and "do whatever it takes") will not be enough when the owner transitions to a Manager who must organize the efforts of others. The "homegrown" approaches to business management, which may have worked well in the past, may not suffice in modern times with increased technology and a wide variety of products needed to remain competitive.

Moreover, business owners must ultimately transition to becoming *entrepreneurs* who work *on the business* rather than acting as an internal manager who works actively *in the business.* Owners need a system by which business managers can operate the company to the standards of the owner, but without the need for daily involvement. Thus, the owner can concentrate on larger issues such as market growth, equipment technology and long-term planning.

A proven, scientific approach to business Process Flow Management is needed. Actually, there are many such management systems available in the market today. Virtually all of the popular systems (Lean Manufacturing, Demand Flow Technology, Six Sigma) are particularly applicable to mass production processes like the auto industry. When thousands of copies of each product are needed, those systems have a place. But for a custom product manufacturer, a flow control system is needed that is specifically designed to recognize the special needs of a custom process.

The concept of *Synchronous Flow* is based on the fundamental principle that any business process is *one system* with common characteristics such as variability, finite capacity and an identifiable constraint; which, therefore, determines the capacity of the entire system.

By identifying the system's constraint and scheduling it to a predetermined dollar volume amount each day, the business system can be *synchronized* around this identified Control Point. By controlling the time orders consume in flowing through defined zones in the business system, *total process lead times* from Template through Install can be controlled to a reliable fixed time, usually one week. This is accomplished by coordinating the release of jobs into the manufacturing system (*input*) at a rate consistent with the completion of jobs at Install (*output*).

Control of the entire business system is rooted in the basic metric called Throughput, which is the measure of *value* added for the business system. More on *Throughput* in the box below. The system recognizes that operating with less work-in-process (WIP) inventory is easier to manage and allows much more responsiveness in manufacturing to meet the demands of the fluctuating market.

Finally, and perhaps most importantly, *Synchronous Flow* provides a methodology to deal with the routine issues of the day in a *proactive* rather than a reactive manner. Daily ***Buffer Management*** meetings replace the typical production meetings with a system that identifies all the issues that have a potential of affecting the Installation Schedule. Identifying and dealing with the issues in a prioritized manner before impact is much better than "jumping through hoops" once the schedule has been interrupted.

How it Works…

Synchronous Flow looks upon the entire business as one system of separate, but dependent events. That *chain of events*, when mapped from beginning to end, shows that the capacity of the entire chain is limited by only one process step, that being the weakest link in the chain (aka the business system's Constraint). Anything that the business does to increase the capacity and productivity of that Constraint, strengthens the entire chain and makes the business more productive. This is the basic concept of "The Theory of Constraints," which is best described in The Goal, by Dr. Eliyahu Goldratt. *Synchronous Flow* is rooted in this concept.

Using an overall process flow map, from marketing & Sales through Installation and invoice collection, the strategic identification of the system's Control Point, planned "buffers" of work-in-process and a mechanism to control the release of new jobs into the system at the Template operation can be designed. By synchronizing all the functions of the business to a strategic Control Point, the entire operation can coordinated, controlled and optimized.

The Control Point is finitely scheduled each day based on its capacity to produce Throughput ($T). All other functions in the company from Sales through Manufacturing, and including all the support functions, operate to serve the Control Point. Every function in the company is "synchronized" around the Control Point.

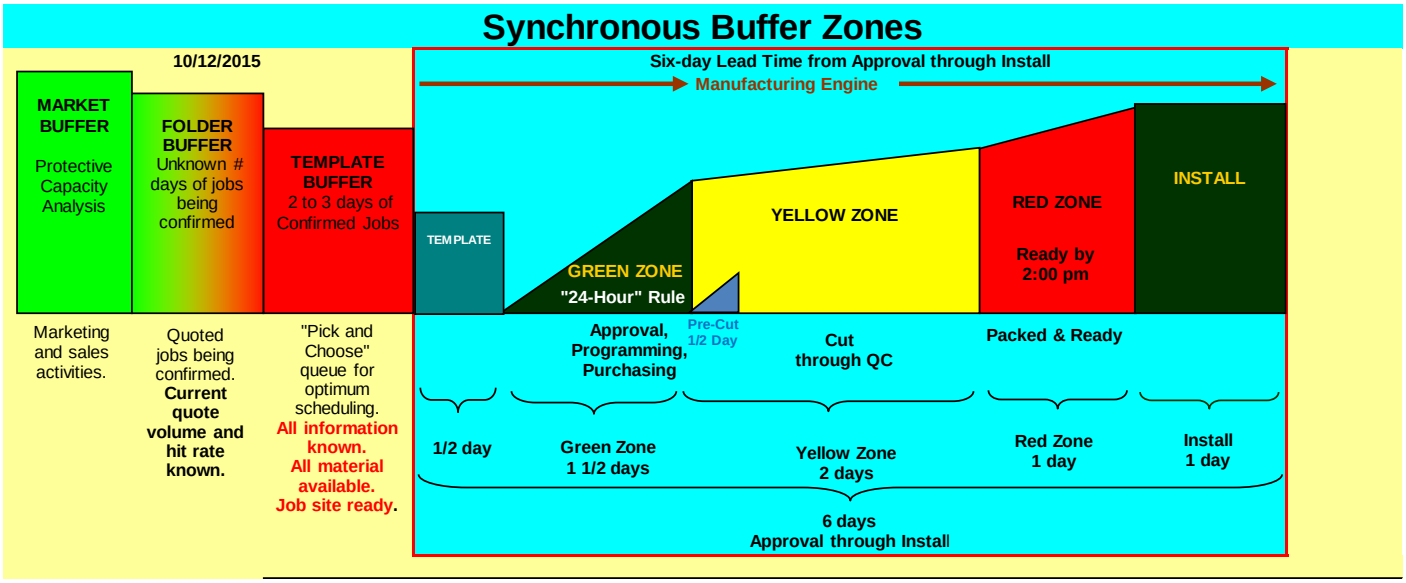
Throughput, expressed as **$T**, is the measure of value added by the company. Fabricators "value added" is the transformation of sheets/slabs of raw material into custom countertops for its Customers. That "transformation" is measured as the sales price minus the investment in materials, freight and outsourcing. The result of that calculation is $T.

A job priced at $5,000 and having $2,000 worth of materials would have $3,0000 worth of $T. That is a 60% Throughput Ratio.

The desired mix of products and Customers is scheduled each day based accumulating the $T value of each job to achieve the maximum profitability and Customer service. This finite schedule based on the $T for each job becomes the "drumbeat" for the company.

To manage the daily operations in a proactive (rather than reactive) manner, companies use another key element of *Synchronous Flow* called **Buffer Management**. The idea behind Buffer Management is recognition that there *will* be problems in the normal work day. Material issues, Customer information issues, quality issues, equipment issues, people issues, etc. are inevitable and the business system must be prepared to deal with them. Designing into the

business process a method to ***manage proactively*** is much better than constantly "fighting fires" with little effort toward preventing them in the first place. The disciplines of Buffer Management bring those virtues to the operations of the business enterprise.



Buffer Management is accomplished by dividing all business operations into sequential "zones" reflecting a "time scheduling" approach for controlling the jobs as they move through the business system. Based on the date of *Install* (or ship, deliver, pick-up), each job is planned for a certain Buffer Zone location each day. As jobs are processed, Management can monitor the status of each and can identify actions required to assure that each one can meet its schedule. Overall, Buffer Management brings a system of control to the process by optimizing the volume of WIP within each zone on a continuous basis.

As a process of accountability, the first issue to be discussed in the agenda of each Buffer Management meeting is the follow-up on all assignments of the previous day. Assigned persons simply report that they have (or have not) completed the resolution of the identified issue. *How* it was accomplished is not reported, only that it has been resolved. If a resolution is not complete, a new assignment (possibly the same person, possibly not) is made as necessary. In this manner, no issue can "fall through the cracks" and cause more serious problems for the company as it is compounded over time.

During the meeting, the current status of the business is reported including performance relative to preset goals in daily Throughput ($T) for each product line. Current, actual lead times in manufacturing from Template through Install and from Cut through Install are reported for each product line. The amount of work yet to enter manufacturing, expressed in elements of time and Throughput dollars, is reported indicating the demand in the coming weeks for each product line. At the conclusion of these brief reports, everyone present knows the current business status, updated each day of the month, relative to the performance goals and the coming demand within each product line.

Then, the status of each Buffer Zone is reported by the operations person in charge of each area. A "hole" is reported if a particular job is not in the position within the process that it should be according to the *Synchronous Flow* scheduling process. The zone location of the issue in question determines its priority for action. A "buffer hole" in the Red Zone will affect the Control Point in a few hours, whereas a "hole" in the Green Zone will not affect the Control Point for several days. Therefore, assignments are made and *proactive* actions are planned with these priorities in mind.

A review of the Buffer Management Log Book, in which a brief description of each "issue" is recorded, will allow identification of the most chronic issues for a managed effort to truly solve the problem and prevent the issue from reoccurring. The test for effectiveness is that the identified issue does not reappear in the records of the Buffer Management Log Book in succeeding months. By definition, this approach will address the issues that are occupying the valuable time of the operations people and the management staff within the business. As the most serious of these are solved, the time that those issues required each day is converted into planning time during which *proactive management* is accomplished. Inevitably, the stress levels of the operations and management staff is reduced and a sense of calmness and control is introduced into the daily routine. Users of the *Synchronous Flow* Business System report that the ***quality of life*** improves for the people within the business system. Others report that an extraordinary period of growth was accomplished only because the business practiced the principles of *Synchronous Flow* and used the planning tools it provides to grow intelligently and profitably.

Throughput Accounting

Throughput Accounting is the *operational decision-making* tool of *Synchronous Flow*. Cost Accounting is necessary for the IRS and the bank, but Throughput Accounting focuses on key operational metrics designed to provide control and stability to the business flow system.

The fundamental metric of that approach is Throughput ($T), which is defined as the measure of value added by the company. All manufacturers simply transform raw materials into finished products. That transformation can be measured as the Throughput of the business. For any order or for any period of time, the sales revenue value of the finished products, less the cost of the materials, freight and outsourcing in those products, equals $T. Using this basic metric, the business system can be managed to an optimum mix of products, Customers and market segments toward a predetermined financial goal.

In the effective *Synchronous Flow* business system, every key person is aware of the current $T goals and understands the $T value of each job. The common language of daily communication becomes $T rather than square feet, sales value or numbers of jobs. All of the management metrics are based on $T rather than cost or efficiency statistics.

Throughput Accounting focuses on revenue generation, not product costing. As such, it focuses on the positive potential of a company (the generation of wealth) and not on the reduction of costs. That is not to say that good stewardship of resources is ignored. It's just that the focus is on generating revenue, not cutting costs.

The amount of $T planned for each day in each product line is a calculated amount that considers three very important factors necessary in effective business planning:

- market demand
- manufacturing capacity
- financial goals

In the ideal world, and that which the *Synchronous Flow* system seeks, there is alignment in all three of these elements. In that situation, Customers are being satisfied, the manufacturing system is in control and the company is making money. Daily *Synchronous Flow* reports make known the performance status of the company relative to the published goals on a real-time basis. Overall company performance status can be posted daily in the form of a *Productivity Score*, which reflects the ratio of $T generated relative to the operating expense of the business. This means that Managers can know the status of performance every day rather than after the financial statements are prepared several weeks into the following month. Since the Productivity Score does not reveal sensitive financial information, it can be shared with the workers and can be used as a primary motivational tool by the Operations Managers.

Another important principle of *Synchronous Flow* is the importance to establish and maintain *Protective Capacity* within all the functions up-stream and down-stream of the Control Point. Protective Capacity is additional capacity at each resource step planned for absorption of the inevitable delays, mistakes and confusions that occur during the work day. The system's capacity must be *unbalanced*. This is one of the "counter intuitive" elements of Synchronous Flow. The idea is that it is essential to plan for the necessary capacity to absorb the "attacks by Murphy" that are sure to occur. Protective Capacity is not "excess capacity" which implies waste; rather it is essential capacity required for a smooth and predictable process flow. Protective Capacity does not increase costs, it provides opportunity for creation of more $T. Maintaining the planned amount of Protective Capacity at all times allows a company to:

- Achieve and maintain short lead times
- Absorb the daily attacks by "Murphy" without affecting the Control Point schedule
- Finitely schedule the business with confidence that the schedule can be met
- Bring stability and calmness into the business system
- Confidently sell because there is knowledge that manufacturing can meet the demand

The *Synchronous Flow* Protective Capacity Planning Report is the tool to use in planning for profitable growth. Kept up to date, this report indicates the current status of the business plan and will allow a "what if" analysis to check the effects of most any action. It is the "long-term planning tool" for the business. It allows proactive management of the demand growth in the coming months. It is the essence of planning using the *Synchronous Flow* business system.

It's all about behaviors…

Synchronous Flow brings an array of procedures, policies, tools and techniques to transform the business process from a chaotic, reactive, out-of-control process into a disciplined, proactive and fully-in-control business system. The entire business operation is transformed from a "cost oriented" balanced system to a "Throughput oriented" *synchronized* system. All functions of the business process are focused on serving the Control Point and measures are readily available to indicate the "health" of the operation at any point in time. The approach brings an opportunity for the Operations Managers to deal with the inevitable issues of the day in a *proactive* rather than a reactive manner.

Total process lead times are fully controllable at one week from Template through Install. As needed, the lead times can be reduced even further. Most importantly, the concept provides an

improvement in the reliability of the quoted lead times. Being both quick and reliable is accomplished.

Manufacturing and Operations Managers report that the *Synchronous Flow* program brings a sense of calmness and stability to an otherwise chaotic environment. Being able to address an issue before it has a chance to affect productivity and Customer service is an important part of a successful operation. *Synchronous Flow* brings that ability.

Results

The results of the concept from a group of Fabricators who have implemented have been impressive. Under full load, the average improvements in key operation metrics are:

- Lead Times from Template (information complete) through Install have been maintained at one week.
- Communication and accountability have significantly improved through the practice of Buffer Management.
- Planning and budgeting tools are being used monthly to improve profitability
- Level loading has improved through the use of $T as a scheduling metric.
- Chaos has been significantly reduced in the entire operation through the practice of *Synchronous Flow* principles.
- Net Profit increases have exceeded the established goals.

It is important to note that transformation of a business system to *Synchronous Flow* is not an easy task. Effective use of the principles means that essentially every employee in the company will be affected by the process changes. While the essential elements are standard within the *Synchronous Flow* approach, each implementation will be specifically customized to apply to the particular processes and unique features of each company.

While it is a challenging task, the results of an effective transformation to *Synchronous Flow* can be an exciting journey for the forward thinking Countertop manufacturer.

Ed Hill is President of Synchronous Solutions and is based in Charlotte, North Carolina. He can be reached at EdHill@SynchronousSolutions.com and at 704-560-1536.

www.SynchronousSolutions.com