

Synchronous Solutions

The continuous pursuit of excellence

Synchronous Flow

Helping the manufacturer to Synchronize the business system

Manufacturing companies are much like businesses in any industry. They struggle to meet a fluctuating market demand and they deal with constant pressures on price, quality and Lead (cycle) times. Add to that the difficulties of managing a group of people upon whom the company is reliant to satisfy the Customers and at times it can seem to be an overwhelming challenge.

Synchronous Flow is a business system designed to address these issues. Realizing that any performance improvement initiative must achieve a bottom-line impact, Synchronous Flow focuses on just that. We seek an improvement in overall company performance by implementing a business approach that can address the serious constraints that manufacturers face. The approach encompasses elements of Six Sigma and Lean Manufacturing principles within the overall umbrella of Constraints Management.

In addition to improving **profits**, the this program is designed to **reduce process lead times** from order entry through product completion to a reliable and consistent number of days based on the work content of the product and the prevailing market demand. This is accomplished by coordinating the release of jobs into the manufacturing system (*input*) at a rate consistent with the completion of jobs for shipping (*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. The system recognizes that operating with less work-in-process (WIP) inventory is easier to manage and allows much more flexibility 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 performance of the Control Point completion schedule. Identifying and dealing with the issues before impact is much better than “jumping through hoops” once the schedule has been interrupted.

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 an engineering 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. 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* can be 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

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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. Even during periods of reduced demand, the system provides the framework to adjust capacity to achieve reasonable financial goals.

How it Works...

It's all based on a clever business control system called **constraints management** in which the entire business is looked upon as a system. The process flow, from marketing & Sales through product completion and invoice receipt, is mapped with 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 manufacturing system. By synchronizing all the functions of the business to a strategic Control Point, the entire operation can be coordinated, controlled and optimized.

Synchronous Flow is a business control concept that focuses on a single point in the operations system as the strategically selected Control Point. That function is finitely scheduled each day based on its capacity to produce Throughput (\$T). All other functions in the company from Sales through

Throughput, expressed as \$T, is the measure of value added by the company. Manufacturers "value added" is the transformation of raw material into custom products 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.

The desired mix of products and Customers is scheduled each day based on 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.

Manufacturing, and including all the support functions, operate to serve the Control Point. Every function in the company is "synchronized" around the Control Point.

Buffer Management

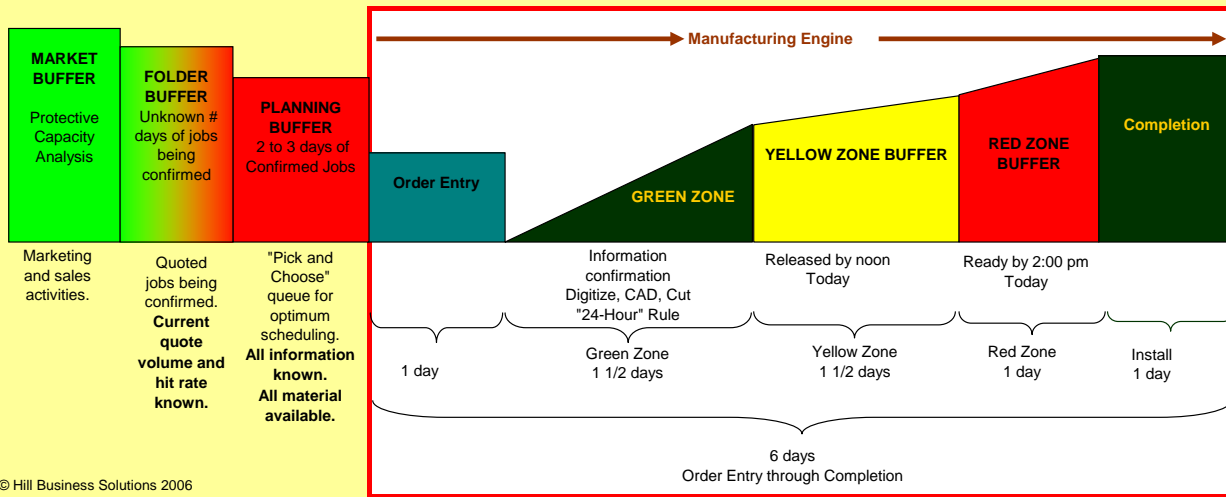
To manage the daily operations in a proactive (rather than reactive) manner, companies use another key element of Synchronous Flow called **Buffer Management**. The idea behind Buffer Management is recognition that there *will* be problems in the normal work day. Material issues, Customer information issues, quality issues, equipment issues, people issues, schedule changes, 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.

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Synchronous Buffer Zones

Fixed Lead Time from Order Entry through Job Completion



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 planned date of completion, 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.

Each morning (or at the beginning of each shift), a Buffer Management meeting is held at which any problems encountered and/or predicted in the business process are briefly discussed. Attendees include all persons who "make decisions" regarding the flow of materials and information in the business system. Typical job titles are General Manager, Plant Manager, Production Manager, Production Foreman, Scheduler, Purchaser, Customer Service Manager, Controller and Owner.

The meeting is led by one person who follows a preset agenda. Discipline in following the agenda is an important element of success for the process. Leadership of the meeting is often rotated among the attendees to improve *involvement* of all the key people in the principles of the Synchronous Flow management approach.

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 Order Entry through completion 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.

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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.

Limiting the discussions during the Buffer Management Meetings to *what* is the cause of an identified issue is important. Buffer Management is not a time to discuss *why* a problem occurred, or *who* caused it, or *how* it happened. These topics may be important, but Buffer Management is not the time to discuss them. The Buffer Management meeting follows a scripted agenda and does not stray into details that are not of interest to all in the meeting. *Identification and assignment* are the key objectives. As a result, the meeting lasts only a few minutes. Excellent communication is accomplished without wasting the valuable time of the key people in the business.

When an issue is identified, a single person is assigned to take ownership of dealing with and resolving each one before it has the chance to affect the completion schedule. Only “*what*” the problem is and “*who*” is to be assigned to deal with it are discussed and recorded. Solutions are not discussed in this meeting. That is the responsibility of the person assigned to address each issue. That person is charged with assuring that the identified issue is resolved in a timely manner according to the location of the “hole” in the buffer. The assigned person is not necessarily the one who will actually solve the problem, he/she is just the one assigned to make sure that the problem gets resolved...whatever it takes. The meeting never lasts longer than fifteen minutes, yet every important issue of the day and for the coming weeks is identified and is assigned to someone for action. Synchronous Flow Buffer Management is a matter of discipline as much as it is an operational technique. This is the essence of *proactive management*.

Finite Scheduling using \$T

Throughput, expressed as \$T, is 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 job or for any period of time, the sales price 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 is a simple, yet extraordinary, way to look at a company’s finances. It 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

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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.

Protective Capacity

It is important 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. 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 tool will alert the company as to when to take certain actions to keep three important business metrics in alignment: market demand, manufacturing capacity and financial goals. This report indicates the current status of each 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 to a fixed number of days from order entry through job completion. 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.

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 is affected by the

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process changes. While the essential elements are standard within the Synchronous Flow approach, each implementation is specifically customized to apply to the particular processes and unique features of that business.

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

For more information about the Synchronous Flow business system for manufacturers, contact:

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