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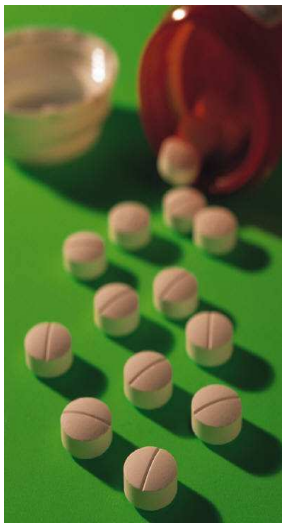

Managing WIP for the Pharmaceutical & Batch Process Industries

You might ask:

"How can an Advanced Production Scheduling system help me reduce WIP when it does not control inventory movement or work order release?"

The Taylor Scheduler (Taylor Scheduler) helps you reduce your WIP by making your material management systems work ***smarter***. Four underlying causes of excess WIP in a pharmaceutical production plant are:

1. Poorly timed work order release.
2. Poor work order management – a lack of coordination between work orders producing items needed early in the process and work orders producing items needed later.
3. Large batch sizes.
4. Poor critical capacity management, particularly at bottleneck work centers.

Taylor Scheduling Software can help you employ Advanced Production Scheduling to address all four of these causes of excess WIP. Let's look at each and see how Taylor Scheduler can help.

Poorly timed work order release

The Problem

Traditional MRP-based systems and even most supposedly "advanced" supply chain management systems rely on a summation of average lead times to trigger work order release. This work order release plan, in turn, triggers material movement to the plant floor. This crude strategy does not take into consideration all the complex interactions and constraints required to accurately match production capacity, due date performance and material availability.

What Taylor Scheduler Can Do To Help

Upon initial implementation, Taylor Scheduler takes the work orders released by the current planning system and makes that plan as **achievable** as possible. This means that Taylor Scheduler maximizes throughput for the given workload and production environment, considering all constraints.

Once Taylor Scheduler begins to successfully synchronize the shop floor with the material plan, you can next improve the planning process that drives work order release. Standard lead times can be tightened within the planning system. Queue times can be reduced or eliminated. Material plans can be adjusted "on the fly". Ultimately, you can evolve to an "execution-driven" material plan as opposed to a "material-driven" capacity plan. Execution-driven manufacturing is a key to Just-In-Time performance.

How Taylor Scheduler Does It

First, Taylor Scheduler accurately models the manufacturing process. For any given load and work order mix in the plant and at any given time, you can actually "see into the future". An accurate process model allows you to confidently anticipate critical resource and material shortages, and react accordingly.

What makes improving your planning systems with Taylor Scheduler so easy is the intuitive and user-friendly presentation of key performance data – not just now but in the future as well. Check the material consumption graphs and instantly see material shortages down the road. Drill down to find the work orders both causing the shortage and affected by the shortage. Monitor usage of all materials, or only those key "high demand/high value" items.

Second, Taylor Scheduler builds on this accurate process model to provide you with a whole new span of control over your plant operations. You've got your material plan right – now you can improve the flow and sequencing of orders through the plant to even further reduce WIP levels. Taylor Scheduler can help you optimize your sequencing by:

- Setting up and controlling packaging campaigns
- Employing user-defined automatic scheduling rules aimed at WIP reduction
- Allowing you to see and redirect work orders when unexpected events, such as equipment outages occur.

In summary, Taylor Scheduler lets you refine your plant's material plan and link it to your execution schedule, thus giving you the confidence that you can deliver the right work orders to the right place at the right time.

Poor work order management

The Problem

Even though pharmaceutical production does not typically require a deep or complex bill of material, lack of coordination between downstream packaging and upstream bulk processes can result in significant accumulation of WIP. How often have you seen high-value/high-demand products being held, waiting for low-cost packaging material? Unfortunately, enterprise-wide planning systems, in the process of netting and lot-sizing work orders, usually lose the link between bulk items and finished goods.

What Taylor Scheduler Can Do To Help

Taylor Scheduler allows you to re-establish that link from end-item demand back to bulk processing.

How Taylor Scheduler Does It

Taylor Scheduler allows you to "peg" your packaging and production orders. Simply put, Taylor Scheduler links the completion of the upstream orders to the earliest start of the downstream operation. This link can be either a "hard" peg (one work order tied logically to another) or a "soft" peg (downstream work orders require the availability of a critical intermediate item that is, in turn, replenished by the upstream work order).

Large batch sizes

The problem

Pharmaceutical production is often characterized by large batches in the early bulk processes. Two of the chief causes of this are:

1. Equipment sizes, limitations, and efficiencies

2. Variations from approved recipes in the formulation stage are often limited or not allowed in regulated industries

Sadly enough, these large batch sizes early in the process are often imposed upon the higher-velocity, agile, downstream processes. The reason for this is not that the downstream operations cannot be split, combined, tracked and generally managed in the plant. The reason for this often is that the material planning system cannot represent variations in batch sizes within the order or the operation.

What Taylor Scheduler Can Do To Help

Taylor Scheduler allows you to model and manage your shop floor based on the way material best flows through the processes in you plant. As a result, smaller batches move more quickly through the plant, thereby improving throughput and reducing WIP.

How Taylor Scheduler Does It

Taylor Scheduler allows you to break up work orders into smaller batches at both the order level and the operation level. You can model your process so that Taylor Scheduler automatically creates the optimum batch size for certain items and at certain operation steps. Additionally, Taylor Scheduler allows you to "split" and "join" batches "on-the-fly" with just a few mouse clicks.

Poor critical capacity management

The Problem

You've improved your material release strategies and taken control of your shop floor. Now that you've done this, how can you continue to drive down your WIP? One of the best ways is to maximize your capacity utilization at the bottleneck work center in your plant. Every improvement at your bottleneck means less material waiting to be processed for a shorter period of time.

What Taylor Scheduler Can Do To Help

Taylor Scheduler can help you identify your bottleneck resources. Then Taylor Scheduler can help you optimize the throughput in those bottleneck resources.

How Taylor Scheduler Does It

Taylor Scheduler has resource utilization and average wait time graphs the let you quickly confirm what equipment or process step is your current bottleneck.

(This is important because bottlenecks can change, depending on the current load and mix of work orders.)

After identifying the bottleneck, you can unleash the power of Taylor's multi-pass optimization module to find the best possible order sequence through the bottleneck. This module employs powerful search algorithms to try out and compare thousands of order sequence alternatives in minutes. Each alternative is compared to the others based on the user-defined goals. So, not only can you direct the Taylor Optimizer to seek to reduce WIP, you can also ensure that increased throughput doesn't come at the expense of meeting your customer's due dates.

Conclusion

Taylor Scheduler can be an important tool for any pharmaceutical production facility that is interested in driving WIP levels down. Reducing WIP levels reduce costs that, in turn, show up in your company's bottom line.

Taylor Scheduling Software has the expertise that can help your plant reduce its WIP levels. And we've got the reference stories to prove it.