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Key facts and essentials for implementing an APS system

Introduction to *The Little Blue Book on Scheduling*

Siemens Digital Industries Software

In 1984, Eli Goldratt first published his seminal book *The Goal*. This book and his later work, *The Theory of Constraints*, had an immense impact on the way production managers understood bottlenecks, constraints and sequencing in the world of manufacturing.

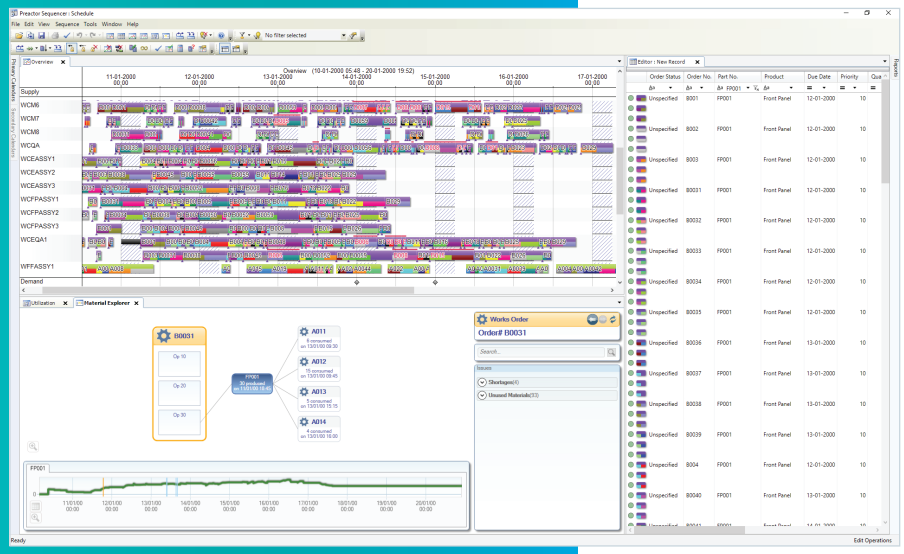
Today, it is almost inconceivable to imagine that a large percentage of medium-to-large manufacturing companies in the United States are still scheduling their plants manually, with spreadsheets *(Source: The Little Blue Book on Scheduling, by Mike Liddell)*, but we believe that is the case.

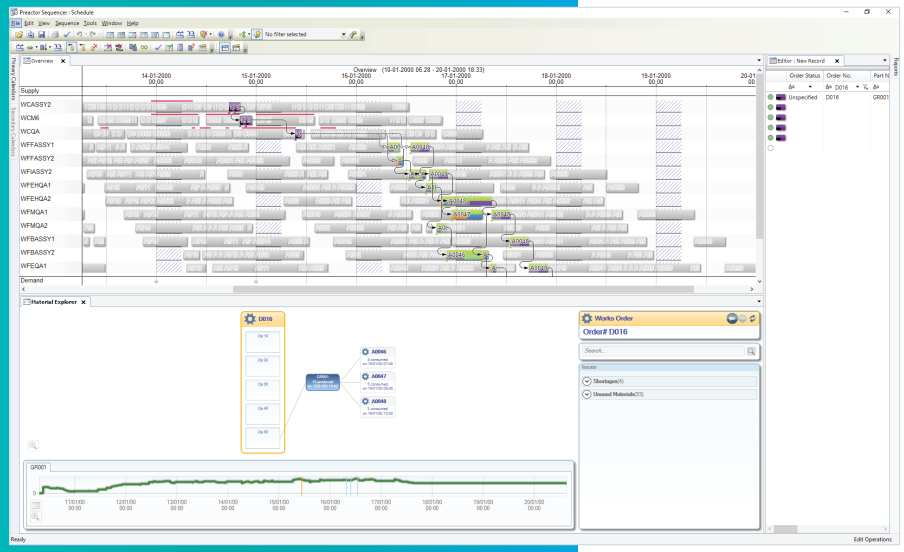
At this point, it is important to remember that there are many shining success stories about manufacturers who have been able to successfully implement advanced planning and scheduling (APS).

According to our estimates, a small percentage of the medium-to-large manufacturers in the United States have been able to automate their scheduling process. These companies are achieving massive benefits day after day, month after month and year after year just because they can intelligently schedule their plants in a fraction of the time it takes to schedule manually. Typically, these companies improve their on-time deliveries, increase their productivity and eliminate most of the confusion caused by manual scheduling and manual expediting. In summary, these companies have a strategic advantage over their competitors simply because they can react faster and smarter to change. This is even more true now with the industry 4.0 approach.

For a better understanding of the problem, it is helpful to look back to the 1980s when manufacturers first started using material requirements planning (MRP) software. Because MRP made it much easier for manufacturers to manage their material constraints, they started looking for ways to manage the bigger problems caused by their capacity constraints.

When software vendors started introducing enterprise resource planning (ERP) software, on the surface it appeared to be what everyone was looking for. As it turned out, ERP systems did a wonderful job of integrating data across functional areas and managing the transactional side of a manufacturer's business but unfortunately, what ERP systems didn't do was help manufacturers manage their enterprise resources.





Because most schedulers were comfortable with Microsoft® Excel, spreadsheets became the default mechanism most companies used to create schedules for 20 to 30 years.

It is not difficult creating a schedule with Excel, but updating that schedule and calculating the downstream impact when something changes is extremely painful and slow. Because of the knowledge and skill needed to create a manual schedule, schedulers became very important people and many companies started to realize just how vulnerable they were when they lost a scheduler.

The problem was that creating software that could create accurate, realistic schedules based on real-world constraints proved to be much more difficult than anyone could have imagined, including Goldratt himself.

In the early days, software developers started creating what they called finite capacity scheduling (FCS) solutions. Over time, FCS solutions expanded to handle planning and other constraints, and are currently known as advanced planning and scheduling (APS) solutions.

Software companies invested millions in developing high-end APS solutions they claimed would optimize the way a plant was scheduled, but most of these systems failed miserably in the real world.

The simple reason these systems failed was because they couldn't produce accurate schedules that considered the tribal knowledge that was critical to running most plants. More importantly, there was no mechanism to modify the way schedules were produced to consider this tribal knowledge.

If the schedule didn't make sense, nobody followed it. If nobody follows the schedule, it becomes a pointless exercise.

The good news is that today, we know how to create schedules that use heuristics (rules) to consider both the core data and the tribal knowledge.

There is a simple formula that guarantees you will be successful in implementing an APS system. In fact, you only need to have three things:

- The right APS software
- The right implementation partner
- The right internal resources

Without one of these, the consequences will be expensive and severely impact your chances of success if you ever decide to try again.

If you don't choose the right software, at some point you will have to scrap everything you have done and start again. If you don't find the right implementation partner it could take you two or three times as long to get to where you want to go (if you ever get there). Because the rewards of success are so high and cost of failure is so expensive, it makes no sense to go bargain hunting for the cheapest solution.

***The Little Blue Book on Scheduling* helps the reader understand why they need to automate their scheduling systems while preventing them from making the mistakes that almost guarantee failure when selecting and implementing an automated scheduling system.**

To download *The Little Blue Book on Scheduling:*
www.littlebluebookonscheduling.com.

Simatic IT Preactor APS solutions help manufacturers improve the synchronization of their manufacturing processes, giving them greater visibility and control to increase utilization and on-time delivery, while reducing inventory levels and waste.

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