Advanced Planning and Scheduling: Effective Early Warning Systems

by R. Michael Donovan

The Advanced Planning and Scheduling (APS) race is on! The ERP software industry's scramble to merge, acquire or establish alliances with APS vendors has set the future course for the next generation of planning and scheduling. After years of little movement in the APS marketplace, the message is clearly emerging that future planning and scheduling functionality will be in APS systems.

APS vs. MRP

Many years ago, merely implementing a working material requirement planning system was a significant step forward. However, MRP's schedule execution logic is only effective when the production environment is very stable and simple. After all, MRP would take hours to refresh information that, in most cases, is required in minutes. The old backward scheduling logic which is based on fixed lead times, constant queues, infinite capacity and the independent, rather than simultaneous, checking of material and capacity availability has now been rendered obsolete by Advanced Planning and Scheduling systems.

The essence of APS is clear. APS systems provide the ability to rapidly and simultaneously plan and schedule customer demand while considering material and capacity constraints. The potential to increase business performance with APS is enormous.

An appropriate APS can accelerate the flow of the right information so that the quality and speed of decision-making increases overall company performance.

Having the right product available at the time the customer wants it has always been, and still is, the primary objective of a planning and scheduling system. Today, the level of complexity has multiplied many-fold with customers requiring very precise, no-excuses delivery performance as well as shorter and shorter lead times. This reality is causing many manufacturers a great deal of difficulty. A quick evaluation of a company's planning and scheduling performance can be made on the following five points:

	YES	NO
• Regularly meet quoted delivery dates.	❒	❒

	YES	NO
• Manufacturing lead times are shorter than competitors?	❒	❒
• Production meetings focus on corrective action for anticipated future schedule problems identified by the system.	❒	❒
• Constraining/bottleneck work centers are highly visible and controlled?	❒	❒
• Schedule simulations can be easily performed for "what-if" analysis of plans and schedules, including "when will it ship?"	❒	❒

Any "no" answer on the above list is cause for concern and there are more questions with answers that seemingly multiply in difficulty as the production environment becomes more complex and diverse. APS systems are geared to rapid simulation scheduling to predict what is going to happen under the current existing conditions. There is no illusion of scheduling precision with an APS system that follows good logic and works with facts.

Certainly, significant improvement is on-time delivery, shorter cycle times, reduction in inventories and increased throughput would be more than enough for any executive to certify the system investment worthwhile. In addition, high overhead activity costs are a direct result of poor schedule performance. Think about the true cost of expediting, which cascades down the financial statements. This is often an unseen and unknown cost for most manufacturers. Expediting, schedule misses and schedule changes have a costly ripple effect by inefficiently consuming resources which can be counted in missed shipments, lost sales, higher production costs and quality problems, among other things. The question "Is it (APS) worth it? Is, in most cases, easy to answer with an overwhelming yes.

The future of APS

The problem manufacturers must contend with and conquer is the higher and higher supply chain velocity in which orders are initiated and products are delivered. The strategic and tactical solution is to develop the capability to reconfigure synchronized plans and schedules in a very short cycle time. For many industries this is an immediate requirement just to keep pace and it is certain the need will catch up with all industries in the near future.

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