

ADVANCED PLANNING AND SCHEDULING TECHNOLOGY PAPER



Managing Material and Inventory with Advanced Production Scheduling Software

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Why Not MRP / ERP?

You have a full functioning ERP / MRP system that handles inventory, bills of material (BOMs), and BOM explosions. Why might you want your production scheduling software to also handle materials?

Your production scheduling system doesn't need to handle material if you only want to schedule "short interval" work released by your ERP system for which you already have material in house. However, if you limit your planning and scheduling to such a short time horizon, you are leaving all kinds of money on the table. Assuming you want to extend your scheduling horizon, why do you need your production scheduling software to handle material?

Advanced Production Scheduling Handles Material and Inventory

Depending upon your situation, more than one of the following reasons could be relevant:

1. As you extend your time horizon, material can become a capacity constraint. Even in flat bill of material environments, incoming material needs to be purchased and may be in short supply. In deeper bill of material environments, higher level items depend upon the production of lower level items. ERP / MRP's estimated, average lead times just aren't good enough to give the predictive information that you need to make good management decisions.
2. In some flat bill of material environments, incoming material is a commodity, and is relatively available. However, in these kinds of environments, you may be tempted keep plenty of material on hand since you don't know exactly when you'll need it, increasing carrying costs. Production scheduling software that considers material as well as capacity can tell you exactly when you need incoming materials based on other

capacity constraints (machines, tooling, labor). You can significantly cut inventory (and carrying costs) by synchronizing material purchases to your capacity constrained production schedule.

3. In material constrained, make to order environments, the ability to check material constraints as well as capacity constraints is essential to promising realistic customer delivery dates. In addition to considering all relevant capacity constraints, the production scheduling software also needs the capability to explode bills of material. Why not use your ERP / MRP system to explode bills, you might ask? Because ERP / MRP has no simulation capability. To get the bill to explode, you'll need to first give the customer some guess at a delivery date and accept the order. You will then need to wait until the exploded orders make it to the production scheduling system before you can schedule them. The realistic date you'll get out of your production scheduling software may be very different than the estimated date you gave the customer, and it may be too late to change the date.

A much better strategy is to enter the customer order into the production scheduling system on a simulated basis, explode the bill netting available inventory, schedule created orders considering both capacity and material constraints, and come back to your customer with a highly accurate estimated completion date. Once the customer has accepted this accurate date, the order can then be entered into the ERP / MRP system.

Extend Horizons for Big Benefit

To get the full benefit of production scheduling software, extend your time horizon and consider materials. This strategy can give you significant benefit in make to order and make to stock environments, whether material is constraining or is readily available.

About the Author

Charles J. Murgiano is a principal with Waterloo Manufacturing Software. He has had more than ten years experience helping clients apply manufacturing decision support software. Mr. Murgiano received his MBA, Masters in Engineering in Operations Research and BS in Mechanical Engineering from Cornell University. Mr. Murgiano is active in the American Production and Inventory Control Society and is certified in production and inventory management by this organization.

More Information

This Paper is being provided with compliments from Waterloo Manufacturing Software. For more information about Waterloo Manufacturing Software's advanced finite capacity planning and scheduling system, TACTIC, Mr. Murgiano's other papers, contact:

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