

Find the Right 'First Step'

... define the problem before defining the solution

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The complexity of metals manufacturing and the need to get the right products to the right customer, at the right time, while meeting the goals of the business, requires a lot of help from experienced planners and schedulers. Even when supported by sophisticated IT systems this complexity, and the large volume of detailed information, can make it difficult to understand the impact of change on any single part of the process — or even which part of the process needs to be changed.

So where do you start when you want to solve a particular business problem? If the sales division is complaining that customer orders are late, manufacturing wants to increase utilization, and finance is unhappy about the costs of operations and of maintaining high levels of inventory; which problem do you solve first? Do you look for improvements in the area of scheduling, or planning, or forecasting; or is there some other area of the supply chain that needs improvement? If you look at a discrete solution in one area, are you actually sure that this is the real cause of the problem?

Scheduling impacts throughput and costs

One solution is to improve the scheduling of orders through the plant. Scheduling generates the actual sequence of work to be done at each machine, considering the detailed operating constraints, practices, and rules, while considering overall plant inventory, utilization,

and on-time delivery. Orders need to be scheduled to optimize equipment use and to minimize handling and equipment changes. A good scheduling system will provide short-term synchronized schedules

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that coordinate all parts of the plant from primary to hot mill to finishing areas. The result is that equipment is more heavily utilized (e.g. longer runs and less switchovers) and there is less machine downtime. The plant is able to produce more and costs are reduced. This produces results that address some business problems, but is this the complete story?

Planning for success

There is no substitute for a good planning system. Failure to plan is planning to fail, and inadequacies in planning can have a significant impact throughout the supply chain. Planning systems must be able to manage multiple bottlenecks, which will depend on product mix and plant configuration. Planning systems need

to optimize and balance the flow of material through the supply chain considering inventories, equipment capacity, production cycles, and process restrictions, while taking into consideration customer and product/segment priority.

Each plant has different characteristics and there may be a higher priority for having a solution to solve just one particular part of the planning process. For example, there may be justification for looking at attribute matching, trim optimization, piece-size optimization, or mass allocation as the underlying issues to be solved in order to solve the higher-level business problems. Because of the close interaction with the scheduling process and some blurring of distinctions between the two, it can be more difficult to identify which area to look at for a solution.

You may expect a good planning solution to produce results that minimize lead times and inventories for the actual product mix; improves productivity and throughput through better management of bottlenecks; and maintains a flow of material based on campaigns and batching rules. This can lead to increased production, improved lead times, and better customer service — including increases in on-time deliveries.

Last month's forecast

Maybe the problem is higher up the food chain. The business plan depends on having an up-to-date demand forecast that includes the

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most likely demand pattern for expected orders during the 'planning to production' cycle. It is important that the schedulers and operators work with the most up-to-date information and can produce a demand plan that is best for the business. The most effective demand forecast is one that has an intimate knowledge of the details of metals manufacturing; can look ahead to identify ways that orders might be planned for the plant; and can optimize the forecast to achieve the best productivity, delivery, mix, profit etc. Such a solution will result in better on-time delivery, improved profitability, and reduced costs.

A rational approach

It is therefore apparent that the solutions to these types of business prob-

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lems could come from any of the above areas, all of them, a combination of them, or even other areas. Availability-to-Promise and Capability-to-

Promise functions may also contribute to better delivery and improved utilization ... and there are other possibilities, too. So what should you do first?

The best way to solve this type of business problem involves a combination of a detailed understanding of the production process, together with a careful review of all areas of the supply chain from demand planning to scheduling and actual production. Going for a solution in one area will not be the answer if the problem is actually in another.

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