

The Agile Enterprise

Production Scheduling Optimization



RIVERLOGIC™

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Production Scheduling Optimization simultaneously considers all possible product-routings; then determines the most profitable path. The optimal schedule, which addresses performance trade-offs, costs and bottlenecks, must be expressed in financial terms and adhere to the company's strategic and financial objectives.



Production Scheduling Optimization

Effective and efficient Production Scheduling is often the manufacturer's greatest challenge. Current orders, on-hand inventory, capacity constraints, forecasted sales, seasonal demand planning, shipping requirements, pricing and availability of raw materials, carrying costs, safety stock constraints... the list goes on and on. Global supply chains, fluctuating energy costs, rapidly-changing customer behaviors, and the like, are complicating the already exceedingly-complex task of optimizing production schedules.

With literally hundreds, sometimes thousands, of moving parts, interactions and dependencies, meeting the requisite shipping schedule, while building inventory for future shipments, is often nothing more than organized chaos. Add in the need to contain costs and maximize profits, while meeting the customer's service requirements, and the task of efficient scheduling surpasses human capabilities.

Understanding the interacting constraints of a production environment is extremely difficult to say the least. The true economic implications of each independent activity is buried, or at least masked, in mountains of data flowing through the stream of processes – both up and downstream. To make things more challenging, each process is limited by production constraints around the customer, shipping, product, suppliers, raw materials, etc.

Current approaches to production scheduling focus on segmenting products based on run characteristics; then block fitting them to a time schedule. This approach completely ignores the economics of the situation, and only attempts to maximize throughput during a given time period. This limited view is suitable for determining feasible production schedules, but not optimizing them.

Production scheduling solutions typically determine the production schedule based on limited insight and understanding. Most solutions incorporate various heuristic methods to determine a schedule that is feasible at best – one that works.

This limited view causes two critical issues:

1. Costs and other routings are ignored. This often leads to suboptimal scheduling and may indicate a plant is at capacity, when in fact it is not.

2. The financial impact of other strategies or approaches is not considered. For example, substituting products on-hand to meet existing commitments in order to free-up capacity; allowing for the production of "higher value" products.



River Logic Solution

Built on the revolutionary COR technology and Enterprise Optimizer® | Server 2008, River Logic's Production Scheduling Optimization solution enables managers to determine the production schedule that best supports the company's operational and financial objectives.

As part of River Logic's Integrated Business Planning (IBP) system, the Production Scheduling Optimization solution incorporates activity-based costing, constraint-oriented process modeling, and comprehensive financial modeling. Specific elements of Enterprise Optimizer's (EO) Production Scheduling solution include:

River Logic's Production Scheduling Optimization solution enables managers to determine the production schedule that best supports the company's operational and financial objectives, while optimizing the production decisions.

- A single business model using operational, financial and KPI metrics, as well as business constraints, to act as a planning and decision-support platform
- Activity-based costing and advanced financial modeling methodologies for calculating full costs associated with production, cash flow and profitability
- Segmentation of products based on demand forecasts, profitability, cash flow and alignment with financial and operational KPIs
- Quantification of marginal opportunities associated with increased inventory holding, bottleneck utilization, and staffing
- Impact of routing policy decisions on cash flow and balance sheet line items at the location, division and enterprise levels, as well as by product segment
- Impact on the cash conversion cycle by incorporating the necessary accounts payable and receivable data for suppliers and customers
- Optimal performance by defining the best production schedule in a given time period, using financial, operational or KPI metrics as the objective function

Through Integrated Business Planning, River Logic's Production Scheduling Optimization solution simultaneously considers all possible product-routings; then determines the most profitable path. EO's optimal route, which considers all performance trade-offs, is a function of the opportunity cost of all possibilities, and their respective costs and bottlenecks. By providing visibility into these performance trade-offs, EO determines the optimal production schedule in financial terms. Additionally, EO allows managers to think creatively about their production schedule and strategies using "what-if" scenarios tied to accurate financial outcomes.

Result/Impact

Companies using Enterprise Optimizer's Production Scheduling Optimization typically obtain a 3 – 10% return on sales. Near-term benefits are obtained through better decision-making around product mix, routing, and bottlenecks.

Longer-term benefits typically occur as Integrated Business Planning becomes more pervasive. By enabling holistic planning, improved decision-making spreads across procurement strategies, order allocation, SKU rationalization, budgeting, and capital expenditure analysis.



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