

*Simulation-based production scheduling system:*

## **A Steel Tubing Manufacturer Expects More Market Share...**

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### **The Company**

A steel tubing company produces build-to-specification rolled-steel tubing for a variety of industries. Quality and on-time delivery account for the most important metrics at this steel tubing manufacturer. The company describes their manufacturing system as a series of processes that unroll steel from one reel and rolls it on to another reel. This occurs after the forming, welding, editing or inspecting process completes. The final product, a reel of rolled steel tubing, weighs about 40,000 lbs. That reel then ships to the customer.

### **The Challenges**

Manufacturing management struggles with meeting KPIs. Their manufacturing system is so complex that it is virtually impossible to create a spreadsheet, algorithm, or optimization to schedule the facility. As such, management finds it difficult to have confidence in any solution claiming to predict on-time delivery performance. The current tools and methods for scheduling the factory include a combination of SAP reports, Microsoft Excel spreadsheets and shop-floor decisions. The problem they face rests in the fact that these tools do not capture key scheduling considerations and rules. In the plant, worker schedules and qualifications, equipment availability, material allocation complexity and random aspects of the process head the list of critical considerations.



### **The Solution**

The solution implemented by Diamond-Head Associates predicts with 90% confidence, in less than ten minutes, the effect new, large customer orders will have on daily production operations. The master scheduler then runs experiments to find suitable solutions to meet KPIs. The reason this tubing manufacturer turned to a predictive analysis approach is that their process is too complex (too many different rules) to use mathematical optimization. The predictive approach uses a flexible Simio simulation model that takes into account all of the factory process complexity, production order/material matching algorithms, and due date considerations. Also, Simio's offering, called risk-based planning and scheduling (RPS) provides a suite of user interfaces and reports easily configured for manufacturing management.



### **The Results**

Management expects a significant increase in on-time delivery. For problem orders, the risk-based planning and scheduling system will be able to warn the master scheduler that the order has some probability of being late. Those orders can be managed more effectively with the customer. Adjustments may be made sooner to correct the problems with the order. According to the master scheduler "what took an hour and a half (1.5 hours) to make a critical change can be accomplished in ten (10) minutes with RPS." Success for this steel tubing manufacturer is directly tied to product quality and on-time delivery. By using Simio's predictive RPS capability, the company expects additional market share.

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