

New Plant Layout - New Product Introduction

Vertical

Manufacturing | Pharmaceutical | Healthcare | Portfolio | **Logistics** | Financial | Government | Business

Genre

Case Study | **Project Review:** | White Paper | Technology Overview

Client

Major Innovator in The Oil Drilling Industry

Situation

The client is an innovator in the oil drilling industry for drill bits and the pipe strings that drive the bits thousands of feet to oil. To help counter the rising costs of drilling and exploration they envisioned a product that provides rig operators information about what is happening at the drill bit.

With the product nearly developed, engineers and architects designed an 80,000 square foot building for the manufacture of the new drill pipe and remanufacture of bits returning from the field. This joint venture had to reach profitability quickly after coming on-line. Start up risks had to be reduced, and certainty was needed in the ramp up to reach planned capacity.

Objectives

To achieve success, the client had to be certain the selected equipment and layout would support the demand requirements.

Solution

Working closely with the client's project team, ProModel's experienced manufacturing & logistics consulting team built a simulation model of the facility using the client's scaled AUTOCAD drawing and validated process times. Six months of production were simulated. The analyst had more than 50 parameters available to control the assignment of labor, process times and handling times. The manufacturing schedule included new product data and six classes of rework/remanufacture.

Most process times were known from the prototype production, and other process times could be closely estimated. The simulation model accounted for variation, the structure of the system in terms of process and layout, and the dynamic impact of the interactions of the running plant.

By examining detailed results data, including confidence interval data, the consultant devised alternative scenarios until 100% planned throughput was achieved. Sensitivity analysis showed which elements required change.

The analysis predicted that the existing design would produce only 64% of the required throughput. Using the solution's powerful what-if capability, machine tools and a facility layout were developed that supported 100% of required throughput with current planned capacity. The resulting plant layout and process changes were minor, and could be accommodated WITHOUT product or process redesign, and WITHOUT facility changes. The simple process changes and reallocation of labor was adequate.

Results

- Identified the most cost effective Course of Action such that the new facility could produce to the demand requirements.
- Ensured that the \$8.5 million investment would meet the venture objectives.
- Predicted the impact of repairs and remanufacture of products returning from the field.
- Developed the basis for a supply chain analysis for the flow of returns from the field for remanufacturing, rebuilding, and upgrade.

Results

Example solution (analysis/output) charts used by the consultant to identify the most cost effective course of action to ensure that the current facility would meet 100% of the production schedule:

Figure 1 Machine Tool Utilization

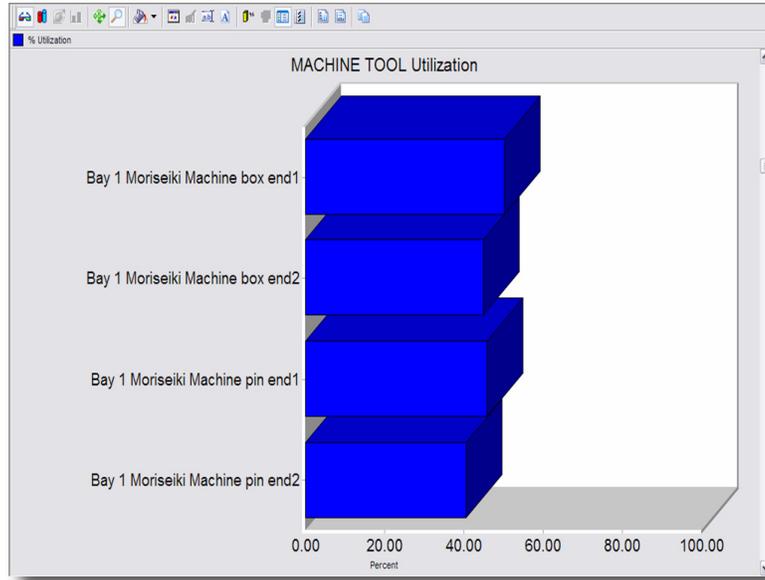
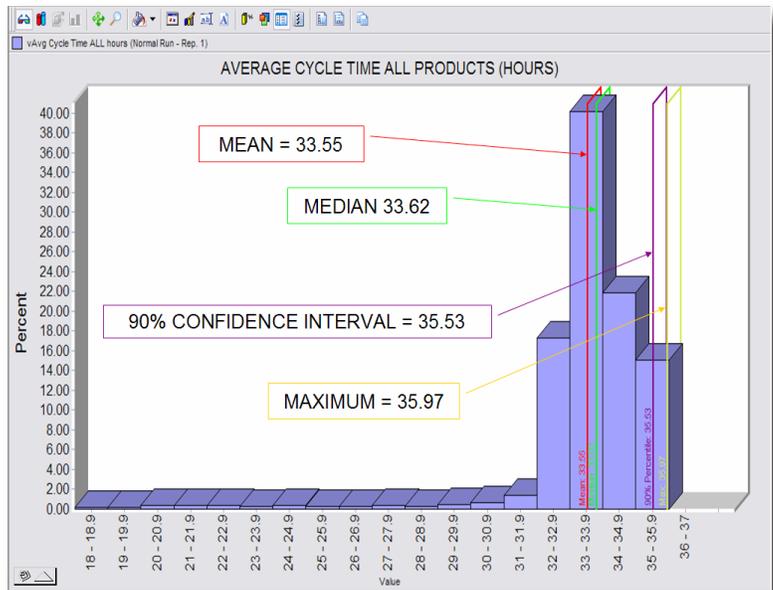


Figure 2 Cycle Time with Analytical Statistics



ROI Range

