New Manufacturing Plant Layout and Transition

New Facility Design

Success Story

Metals, Plastic, Ceramic, Misc. Materials

ProModel Optimization Suite

SITUATION

Flanagan Industries, a major contract manufacturer of aerospace hardware specializing in highly engineered and high value machined components and assemblies, needed additional capacity for their growing manufacturing operations. The original space was not conducive to a manufacturing environment and had become an impediment to taking on more business.

Additionally, they realized the need to be more cost competitive in the global economy in order to continue growing. However, to do that, they would need newer, faster machine tools, but the tools would not fit into the current facility.

Thus, the need for expansion or acquisition of additional manufacturing capacity became imperative. Flanagan executives decided to purchase existing space at an empty facility a few miles away. The challenge then became how to best layout the new plant and execute the transition to the new facility without disrupting the delivery of customer orders.

To help ensure it would be right the first time, Flanagan decision makers concluded that simulating their ideas and plans before implementing was the smart thing to do.

OBJECTIVES

- Capacity planning of production capabilities during transition to the new plant
- Determine if current production schedules could be met by resources that remain online
- Maximize productivity and guarantee uninterrupted customer delivery
- Develop a capability to examine on-going capacity planning for future growth

RESULTS

Using a ProModel solution resulted in the following success to date:

- Designed the optimum layout for the new facility
- Executed the move with very minimal to no effect on customer delivery
- Final model configuration resulted in a 28% increase in throughput
- Saved time and money by determining potential bottleneck areas prior to acquiring and placing new machines.

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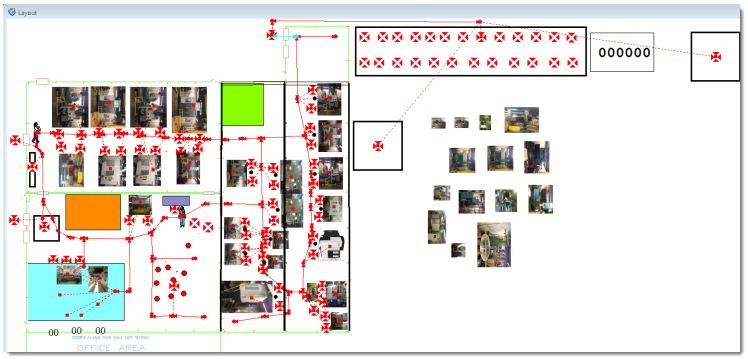
- Provides capability to prove to customers that Flanagan can accommodate an order increase of up to 10 times their current level as is expected in the aerospace industry over the next decade.

Scenario	% Throughput Change	% Cycle Time Change
Flanagan Historical Values from Original Facility Layout	-	-
New Facility – Baseline Layout	0.8%	0.0%
New Facility – With Increased Turning Machines & Personnel	3.5%	-13.33%
New Facility – With Increased Turning Resources & Milling & Inspection Personnel	28.0%	-20.00%

SOLUTION

The Flanagan team partnered with ProModel's consulting team to develop a virtual simulation model of the proposed new plant in the risk free environment of ProModel prescriptive analytic technology. They devised a baseline model and ran multiple "what- if?" scenarios in order to test and compare potential layouts for the new building. The baseline model replicated Flanagan's current production using current machines and resources and provided statistics that can be compared with the results of subsequent model layouts.

The first model scenario was designed to increase resources to both machines and personnel and to pack as many machines into the layout as possible in order to maximize use of the facility. However, this layout presented problems due to the placement of the large metal cutting machines. Although throughput was projected to increase, machine use would not be balanced and the Flanagan team discovered that a densely packed facility could restrict forklift and maintenance access to some of the machines.



New Facility Layout: The red paths represent the forklift routes that have been placed to ensure aisle way requirements have been met for forklift movement and maintenance

After creating a second model scenario the team learned that layout and throughput could be significantly improved by segregating machines by size instead of by type and leaving some of the older machines at the original facility. This allowed the team to place the machines closer together at the new facility in order to reduce unnecessary lag time but without creating a bottleneck through restricted forklift and maintenance access. The team also learned that slight increases in inspection personnel and re-routing some parts to underutilized machines would improve throughput even more.

The ProModel solution enabled the Flanagan team to design a seamless layout strategy that maintained customer delivery during a complex transition to a new facility and allowed them to maximize productivity post transition. Going forward the Flanagan team will use this technology as the basis for future capacity studies to determine the impact that new production orders would have on resource utilization and delivery dates.

New Facility Layout: Opening up space in the new facility allowed the team to place machines closer together to reduce lag time without creating potential bottlenecks