

# Oilfield Equipment Manufacturer Optimizes New Facility Design

New Facility Design

Success Story

Manufacturing

ProModel  
Optimization Suite



## CHALLENGES

A leader in the design, manufacture, and supply of oilfield equipment had recently purchased land to build a world-class manufacturing facility. The new location would be designed to capture future growth but needed to be sized correctly; not a wasteful over-construction yet not too small at the same time.

The senior executive team thought simulation modeling would allow them to analyze their manufacturing processes, identify bottlenecks, capture productivity improvements, and properly size the new facility. After a lengthy vendor sourcing exercise, ProModel Corporation was selected as the best provider to answer this modeling challenge.

## OBJECTIVES

- Model the existing manufacturing processes
- Identify current process constraints using various customer demand scenarios
- Simulate maximum throughput potential with the current processes and equipment layout
- Using LEAN process improvement skills, simulate a more productive manufacturing process and scale that upward to capture growth
- Simulate the new manufacturing facility and validate the desired growth rates. Upon completion of this step, the layout would be given to the architects for structural design

## VALUE PROVIDED

- Immediate identification of a critical bottleneck that once resolved, increased cell throughput by 53% and overall production by 19%
- Throughput has grown 45% since the launch of the initiative due to a much better understanding of their manufacturing methods and related constraints
- Manufacturing standards used by the production planning team were far from accurate thus creating a workflow imbalance
- Equipment previously slated for purchase was determined to add no throughput benefit thus saving several hundred thousand in capital expenditures
- Numerous future state layouts were modeled thus allowing the team to ultimately select the most productive equipment arrangements

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- The simulation model became a powerful sales tool with customers; understanding the flow in the facility and how it could absorb their incremental orders
- Even during a severe industry downturn, the company continued to capture market share due to improved manufacturing methods

## SOLUTION

A ProModel senior consultant worked with the engineering staff to build dynamic models of their current production facility and planned future construction.

First, a dynamic flexible model of the existing facility was created and validated. That model was used to define the true capacity of the existing facility, analyze current constraints, evaluate capital improvement options, and test new LEAN concepts that were under consideration for the current and future facility.

A major challenge to creating the model was accommodating the tremendous variety of products manufactured. A user-friendly interface for running the model was developed to provide the ability to run any variation of mix/demand against several operational configurations.

The key learnings from the existing facility model were then applied to the new facility design. Alternate facility layouts and new material handling concepts were evaluated to ensure the plant of the future would meet all capacity targets.



3D view of a portion of the plant layout