Executive Summary

In this project the sequence of operations in a manual production line has been simulated through discreet event simulation software. The company in which this project was run is one of the largest companies in its field in the USA. Currently they just use about 12% of their capacity in manual line and it is very critical for them to find a solution to increase product velocity.

Simulation modeling is a useful tool to study and analyze the operation of complex systems. A simplified model of the system is used to study and analyze different production scenarios, improve system performance, find bottlenecks, study material flows, improve resources utilization, etc.

The goal of this study is to increase productivity by adding more resources (operators) to a manual production line. The resource is one (or two) additional operator(s) who floats between machines to perform inspections and material handling in order to increase product velocity.

Three different models were built to simulate the current production line and two possible scenarios to increase productivity. The models were run for one month period and eight hours per day. The results show that generally adding one more operator will increase the production speed. Comparison between two different scenarios shows that one operator can perform quality inspection and material handling for two machines and increase productivity significantly.