Lee Industries Kettle Manufacturing Simulation

Overview
Lee Industries needed a discrete simulation model to analyse their current processes of manufacturing kettles. This model had to be capable of identifying bottlenecks as well as running several process improvement experiments to understand differences with varying demand. Lee Industries wanted this model to be created in a software named simio as well as a separate flow diagram describing the model.

Objectives
The objective of this project was to give Lee Industries an in-depth model of the process of one kettle type being manufactured. This model had to be capable of identifying bottlenecks, running experiments of varying demand scenarios, and also be flexible enough to add in multiple kettle types.

Approach
- Gathered and organized data from Lee Industries
- Developed a process flow chart for kettle manufacturing
- Matched the data to the process flow chart according to the plant layout
- Created a framework simio model based on the production flow
- Verified and validated the model
- Replicated the model on a plant layout printout
- Performed three experiments to demonstrate the capability of the model
- Created a transition report to document our progress to serve as a manual for future engineers
- Transferred all relevant files to Lee Industries in the form of a Penn State drop box
- Presented final outcomes for Lee Industries executives

Outcomes
The team was able to deliver a framework model, three experiment models, and a transition report as promised in the initial deliverables. Through these deliverables the following outcomes were satisfied.
- We were able to organize and document their process flow in a standardized way
- Identified bottlenecks within the system
- Demonstrated different demand scenarios and the capability of their current system
- Provided a framework tool for future production and cost analysis of their current system

Final Framework SIMIO Model