Simulation Modeling to Schedule Multiple Foundry Processes

Overview
The process of making refiner plates for Andritz Inc. is not optimal, and efficient. Their current production model allows for 30 refiner plates to be made per hour, but there are days when they can not produce 30 plates per day. Processes in place now take a long time due to so many different variables, such as weight and quantity of each plate. The main reason for the inefficient production line is the scheduling process used on a day to day basis.

Objectives
The main objective for this project was to analyze the current foundry process for Andritz Inc. and to create a simulation model on the process that can assist the company in future scheduling of the day-to-day casting activities. With that being said, our team focused on making a simulation model that can be easily modified to the exact specifications of what Andritz wants.

Approach
Our First Steps
- Visited Andritz facilities
- Understand what the scope of the project is
- Created a logic flow diagram
- Asked for data related to specific processes
- Created a model for the process
- Inputted data
- Analyzed system outputs

Several Assumptions Made
- Scrap is zero
- FIFO Processes modeled as one server

Outcomes
After analyzing the outcomes of this project, the most important conclusion related to the project was that the Simio software package was not the best simulation software for Andritz. Andritz will do more research on better simulation packages available on the market for what they exactly need.

Based on the simulation model the team created for Andritz on their current process, the model predict 1690 molds being made per day. Our team also made recommendations to get higher utilization of heat treatment, by recomeding Andritz batch processes using a batch size of 4 per day for heat treatment. Also the group recommends to cut down on inefficient processes such as queing as decreasing the amount of time a segment waits in the queue line will result in higher throughput.