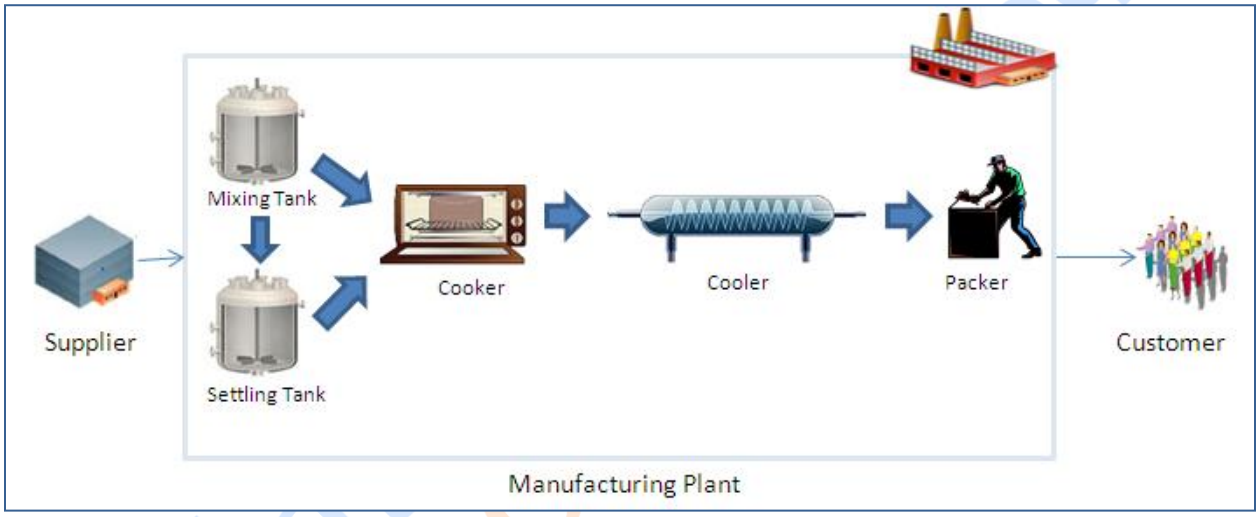
Plant Capacity Optimization for a top US Food Processing Company

Business Case

A food and beverage company based out of the US, was setting up a greenfield food processing plant. This plant consists of different equipment like mixing vats, settling vats, cookers, coolers, packers etc. as shown in the layout with each piece of equipment having its own characteristics.



In addition to the regular features associated with a processing plant, some of the other complexities that were modeled were

- Min/Max batch sizes
- Setup time and setup cost
- Product level perishablity/shelf life
- Minimum waiting time for cooling
- Min/Max inventory level

The objective was to find the resource bottlenecks, balance the line and arrive at the optimal capacity of each resource

Solution

Saddle Point Technologies developed a Decision Support System (DSS) based on a large scale Mixed Integer Programming (MIP) model to solve the business problem. The entire modeling was done in a very generic way so that various scenarios with multiple resource layout, resource capacities etc. could be modeled without changing the formulation.

The DSS had an user interface, through which the master as well as the transaction data could be changed. Adding new resources, new plants, new resource sequences, adding BOM data or changing the existing data and modeling parameters was extremely simple.

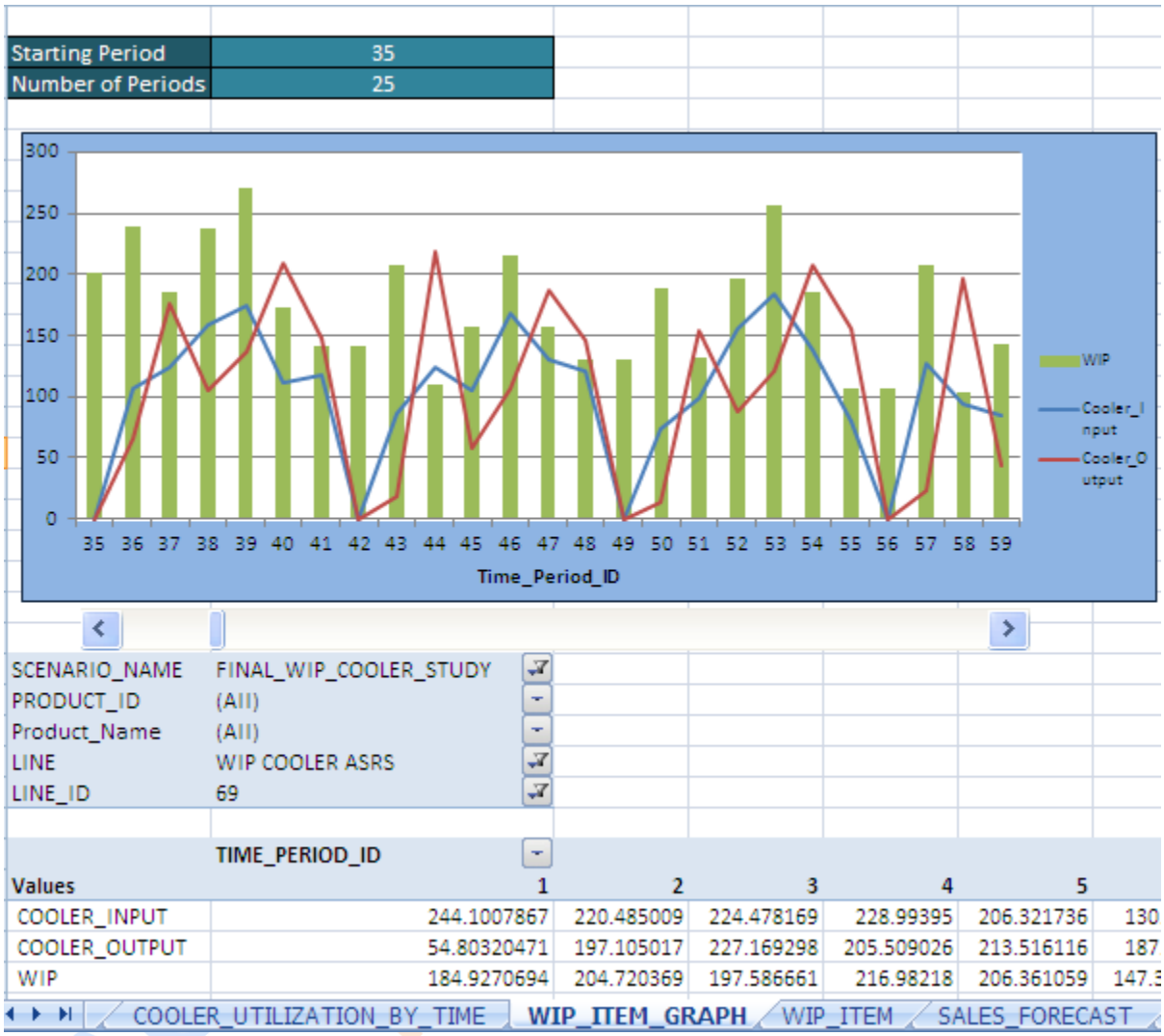
Scenario planning and evaluation was also an integral part of this solution.

Some of the main reports that were provided are

- Production report
- Demand fulfillment report
- Inventory report
- Resource utilization report
- Perished quantity report
- Bottleneck resource report

Various cost reports associated with the main reports were also provided.

Screenshots



Technologies

Front End	Excel
Modeling language/solver	IBM ILOG OPL/CPLEX
Back-end DB	MS SQL

