

DEVELOPED A SUPPLY CHAIN PLATFORM FRAMEWORK TO MINIMIZE OVERALL COST-TO-SERVE



For a leading manufacturer of thermal insulation materials

ABOUT THE CLIENT

The client is the North American branch of a leading thermal insulation materials manufacturer. It has 5 plants and 10 warehouses with an average yearly distribution of 1 billion pounds (lb) and an annual growth rate of 7%.

CHALLENGE

The client's existing operations set-up posed two main challenges – the plants/warehouses were operating in silos and production was decided only based on the line's production capability, without consideration of whether it would be optimal to distribute the manufactured product from the same plant. Additionally, the production schedule was not determined based on a comprehensive long-term view of production and distribution needs and constraints.

To optimize the overall cost to serve we created a robust supply chain optimization platform with emphasis on production cost, inter warehouse transfers cost, distribution costs, and inventory holding costs.

APPROACH

Created a supply chain optimization framework with key focus on:

- **Technical aspect:** The framework works on an evolutionary version of the Simplex algorithm. It solves Multiple Integer Programming form of optimization problems. It's scripted in python

and hosted on Microsoft Azure server.

- **Complexity of the solution:** The framework has 1M decision variables with multiple input files and 27 constraints.
- **Robustness of the framework:** We can change or impose multiple business rules/constraints to see the behavioural and costs optimization differences in the results. The platform is enabled to run multiple scenarios to analyse future course of actions such as addition of new warehouses, changes in customer

KEY BENEFITS

- ✓ *A holistic optimized production, distribution, inter warehouse transfer and inventory plan for the next 18 months*
- ✓ *The platform tracks the deviation between the forecasted and actual demand to keep the demand forecast process in check*
- ✓ *The framework provides a comprehensive evaluation of the past performance with the ideal solution so that practical constraints of performance could be identified and incorporated in the future recommendations*
- ✓ *Enables the client to test strategic decisions and verify impact on cost to serve while meeting demand constraints*

RESULTS

- The platform provided realized savings of \$17 M p.a. in overall cost-to-serve which was a 6% improvement on the costs