

Strategic Optimisation - Linfox Logistics

Background

Linfox is the largest privately-owned logistics company in Pacific Asia. They operate 3.2 million square metres of warehousing and 5,000 vehicles across 10 countries and employ more than 23,000 people in Australia, New Zealand and Asia.

For this project, Opturion was contracted to model one of the larger supermarket networks, which is comprised of separate ambient and temperature-controlled components. The objective was to look at options within the operating model and determine the potential benefits of each.

Strategic Optimisation

To carry out this exercise we typically require historical data for a period of time up to 12 months. Then the parameters of interest can be optimised. These include:

- Fleet composition (number and types of vehicles).
- Delivery windows.
- New DC locations.
- Service locations (which deliveries to be sourced from each DC).
- Pick times(s) for each DC.
- Fixed or roaming trailers and/or prime movers.



Approach

The problem was approached by first modelling the trailers as a Pick-Up and Delivery Problem (PDP) and then using the solutions to create pickup/delivery stops to optimize the prime movers.

Initially the entire scenario was run but eventually split into orders that can only be serviced by rigids, orders that can only be serviced by semi-trailers.

Prime movers were allowed to have "dynamic" capacity to simulate moving different types of trailers, with the size restricted by which location the vehicle was visiting. The vehicle size and location constraints were modelled using the delivery location.

The Solution

The model consisted of supermarket deliveries across an entire state. Opturion constructed both a base case and an optimised case. This was done to ensure we had successfully captured all relevant operational procedures as well as to establish a base from which to gauge any improvements in the optimised solution.

Following the optimisation, Opturion conducted further modelling to determine the trailer requirements for the prime mover solutions. The aim of this modelling was to give a better understanding of what types of trailers would best suit the problem. Hence, if certain trailers are not available they may be substituted with either rigid vehicles or with a larger trailer depending on dock restrictions.



The Result

In this sort of scenario there are potential benefits in a number of important areas:

- Roaming fleet (where trailers and/or prime movers can service any delivery) is more efficient than assets tied at a single DC.
- Dropping off trailers for loading and using that prime mover for another task reduces cost (albeit with some increased complexity).
- Widening delivery windows enabling more efficient routing.
- Coordinating pick timing with delivery windows.
- Determination of the correct fleet composition and estimating the cost to service any future contract

Further Information

Please contact Opturion for a demonstration, or give us some data that we can use to identify potential benefits.



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