

Challenge name: Automated Fuel Procurement Optimization

Description:

The challenge is to develop a fuel procurement model, entailing an algorithm and interactive interface, which provide bunker purchase suggestions based on how to optimise fuel costs. Maersk spends an estimated \$600 million per year on bunker oil, spread across approximately 2,000 separate bunker orders.

As bunker orders are placed between ten and two days before arrival, one aim of this challenge is to place the orders on the optimal days to achieve the lowest possible price per metric ton. Of equal importance is to determine the optimal bunker quantity, considering tank capacity, expected next port/region of call and the cargo loading requirements.

By automating the procurement system through an element of algorithm-driven prediction, there is an opportunity to make a real difference to challenge industry standards and support the creation of an in-house model for fuel procurement.

Current status:

Maersk Tankers typically refuels while in port loading cargo. Choosing the optimal port to bunker is supported by historical data, daily prices and contracts, along with in-house knowledge. There is currently no standard process or system for considering other relevant elements and alternative options.

Desired benefits:

An algorithm optimising all decisions on fuel procurement: how much, where, and when to order. Additionally, the outcome of this challenge could also assist in making recommendations on alternative options based on available idle time, cost of deviation and expected destination of next port of call.

Solution criteria:

- A valuation method of information parameters
- An algorithm/interface/application

Data sets:

- Platts forward prices (addition from MOT traders)
- Bunker-wire
- AIS data
- Terminal details (costs, draft restrictions, terminal/anchorage bunkering)
- Vessel schedules incl. available idle time
- Vessel bunker tank capacity

Clues to get started:

- Define key ports, trade patterns where we find best savings potential for Maersk Tankers

- Define value in idle time and additional port costs vs savings in fuel cost
- Define action state space (what are the potential actions at each decision node)