Bunker Planner

BunkerMetric IvS

Bunker Forecast Final Report

For Danish Maritime Fund, project: 2019-069

Kgs. Lyngby
5-19-2020

Bunker Forecast Project

The Danish Maritime Fund has supported BunkerMetric IvS in adding new functionality to our tool, BunkerPlanner. This allows BunkerPlanner to forecast a vessels schedule, algorithmic considerations of several long-term schedule scenarios, consideration of TC rates and integration with a Voyage Management System (VMS).

With this added functionality BunkerPlanner can better assist shipping companies reduce their fuel expenditure while considering the already implemented features concerning technical, legal, and operational requirements, as well as these new ones.

Existing bunker procurement practice is largely based on spreadsheet calculations and rules of thumb. However, due to increasing operational complexity, the number of variables involved in bunker planning is growing beyond a level that can be controlled manually.

BunkerPlanner gives a recommendation on the quantity and type of fuel to be purchased at each port in the foreseeable sailing schedule. The tool already considers many factors as tank sizes, comingling restrictions, consumption at different speeds, prices of multiple grades, Emission Control Areas (ECAs), margin requirements, and port calling fees, among others.

BunkerPlanner generates savings of 1-3% in fuel expenditure – an enormous value opportunity given that the marine industry will consume close to 200 billion dollars in fuel each year by 2020.

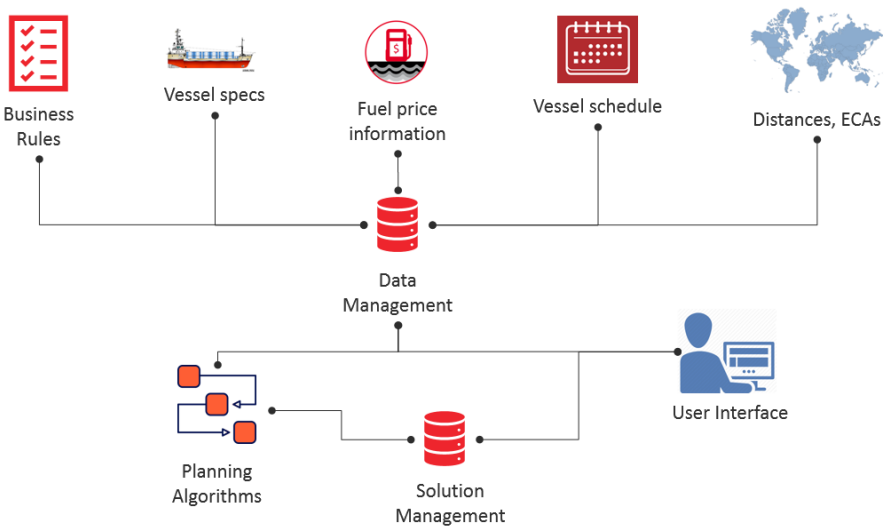

Figure 1: Overview of BunkerPlannner interfaces and system components

With the new features added to BunkerPlanner we will capture more of the real-world problems considered by vessel operators and provide an even better service to our clients.

The project has been conducted on four stages:

Stage A. A Handy size Bulk vessel discharges in North China in 1 month, what will happen next? Based on historical data for the vessel type and size we can forecast a likely next voyage for the vessel, which can be used to plan bunker purchases for, today. As bunker tanks can usually hold for a couple of months this will allow for better and planning of bunker purchases.

Stage B. Alternative schedule Extensions to BunkerPlanner. A BunkerPlanner user can quickly take an existing schedule, for instance imported from Voyage Management System, and extend this in several different ways, exploring the alternative results if the vessel goes North or East.

Stage C. Integration of Freight Market Logic. Economic margins in the shipping segment can be very low. Therefore, it is to the advantage of a charterer to look at possible charter opportunities in the context of the required bunker expenditure. A charter opportunity with an attractive TC rate may hide a high bunker cost that would negate the overall economic benefit of the engagement. A second alternative with a slightly lower TC rate may be superior in the end because of the attractive fuel prices that can be exploited during this voyage.

Bunker buyers will also make this tradeoff in low TC markets, which is now done automatically and in detail by BunkerPlanner.

Stage D. VMS Integration. Currently, we offer BunkerPlanner as a web-based service. In this approach, the user logs in through our web portal, and manages the bunkering plans using the web interface we provide.

Many customers favor an integrated solution, where BunkerPlanner is connected to their existing Voyage Management System (VMS). In this approach, the users interact with the VMS, and the VMS in turn makes calls to our algorithms in the background. BunkerPlanner may interact with the existing VMS in a variety of ways: as a stand-alone application taking requests via an API; as a callable library that sits next to the VMS; or as a collection of cloud-based containers that provide microservices to the VMS.

Results

The project was finalized, and project goals met in May 2020.

Based on a vessel type (Size, tank/bulk) we can meaningfully forecast the next voyages for a vessel, not precisely but significantly, in a bunker planning context. This functionality is further supported by newly developed schedule considerations, which ensure that the suggested bunkering's lower cost, while also considering that a certain amount of bunker is required to keep commercial options open, enabling chartering to negotiate for several different contracts.

The consideration of TC rates has been integrated at the heart of BunkerPlanner's algorithms, and recommendations will also suggest the optimal sailing speed for a voyage considering the cost of bunker in relation to TC rate. E.g. in a high TC rate market it could make sense to buy (expensive) bunkers at loading port, but in a low TC rate market, it could make sense to deviate for cheap bunkers and delay schedule a day or two and loose some revenue, but save more on bunkers. Considering the effect of low / high bunker costs further complicates this consideration, which is considered.

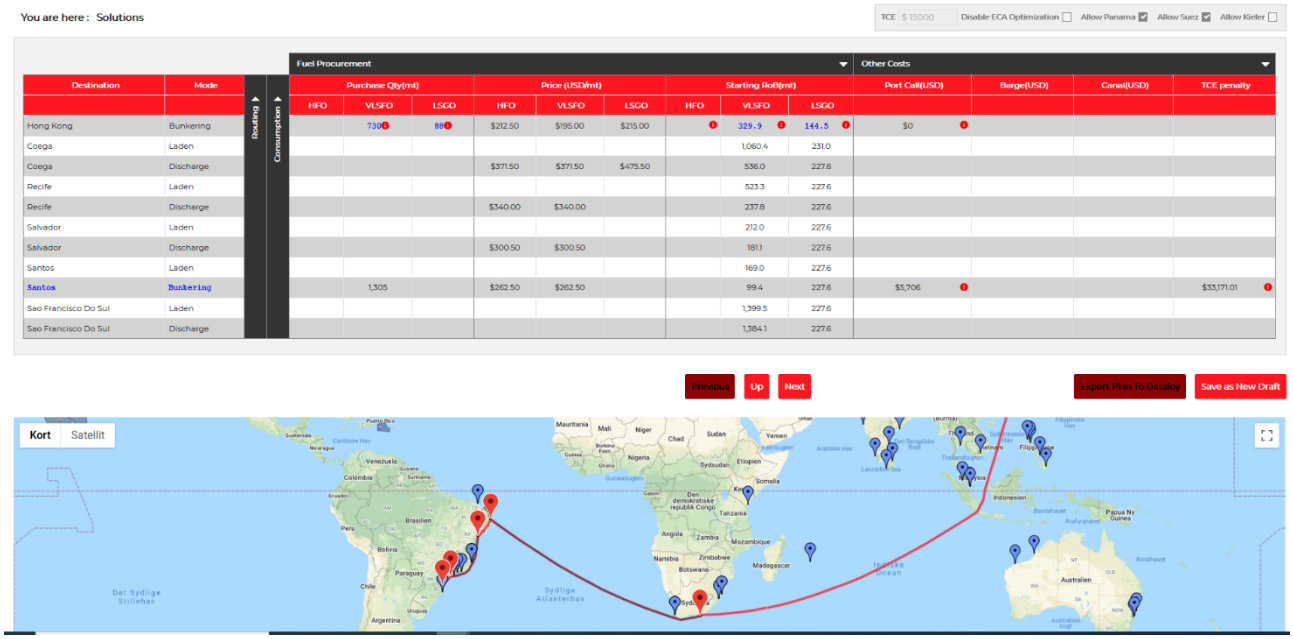

Figure 2: BunkerPlanner screenshot

Lastly BunkerPlanner have been well integrated with the major Voyage Management System (VMS), Dataloy, and can pull vessel specs and schedule details automatically. This integration allows seamless user experience for existing Dataloy users, whom can directly access bunker plans, with latest data from their VMS, making it much easier to access good bunker plans.

Pilot Customers

The project has been carried out in cooperation with several pilot customers, one tanker and two bulk operating company. In total the pilots have covered ~100 vessels.

Based on the data and input from the pilots we have continuously refined and improved the algorithms and interfaces to provide value adding bunker suggestions for the client.

> Based on these trials and earlier back tests on a larger number of vessels we estimate the average savings from using BunkerPlanner is at 2 – 4 % of total bunkering costs.

Next steps

We are very pleased with the results and interest we have received for BunkerPlanner / Bunker Forecast and will continue developing and marketing the system. This will be partly carried out through a newly approved InnoBooster project and through further investments in the company.

During the project we have engaged in various presentations and articles covering BunkerPlanner:

Media

- August 2019, Buying Power, BunkerSpot, https://www.bunkerspot.com/images/mags/flipbook/bs_v16n4_AugSep19/mobile/index.html#p=71
- October 2019, https://www.hellenicshippingnews.com/updated-bunkerplanner-solves-buyers-sulphur-headaches/
- October 2019, https://www.manifoldtimes.com/news/d/bunkerplanner-adds-new-imo-2020-functionalities-to-assist-users
- October 2019, https://www.manifoldtimes.com/news/d/bunkerplanner-is-now-available-in-asia-says-bunkermetric-co-founder
- December 2019, BunkerPlanner was featured in four Japanese printed maritime journals:


インターエイシアライン株式会社

- February 2020, https://blog.dataloy-systems.com/dataloy/dataloy-integrates-with-bunkerplanner
- February 2020, https://medium.com/@Searoutes/the-science-behind-bunkerplanner-performance-e72be05ab494
- May 2020, https://vpoglobal.com/2020/05/15/time-charter-rate-and-vessel-speed-balanced-by-bunker-procurement-optimisation-tool/