

Bunker Planner

BunkerMetric IvS

BunkerPlanner Final Report

For Danish Maritime Fund, project: 2018-103

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BunkerPlanner Project

The Danish Maritime Fund has supported BunkerMetric I/S in the process of designing and developing its IT system, BunkerPlanner. BunkerPlanner is a decision support tool for marine fuel (Bunker) procurement which supports shipping companies in choosing the right Port, Volume and Grade of bunkers to purchase for a specific vessel and voyage.

This innovative platform for marine fuel procurement will assist shipping companies to reduce their fuel expenditure while remaining in compliance of all technical, legal, and operational requirements.

Existing procurement practice is largely based on spreadsheet calculations and rules of thumb. However, due to increasing operational complexity, the number of variables involved in procurement planning is growing beyond a level that can be controlled manually. In addition, the upcoming IMO Sulphur regulations will introduce new dynamics in the bunkering market, rendering many of the traditionally accepted rules of thumb obsolete.

BunkerPlanner will make a recommendation on the quantity and type of fuel to be purchased at each port in the foreseeable sailing schedule. The tool will consider many factors, including tank sizes, comingling restrictions, consumption at different speeds, prices of multiple grades, SECA/NECA segments, margin requirements, and port calling fees, among others.

Based on trials during the project, we anticipate that BunkerPlanner will generate 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.

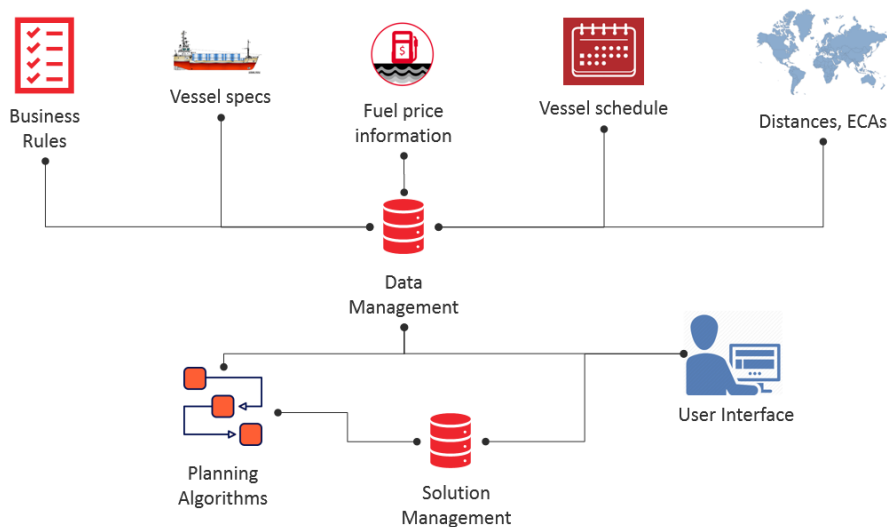


Figure 1: Overview of BunkerPlanner interfaces and system components

The project has been conducted on three stages:

Stage A. Problem scoping and design. The key element of this stage was an active dialog and collaboration with end-users and three pilot companies, where we learned about their business rules in granular detail. An interesting aspect of this stage is that different companies have different goals and different interpretations of the planning constraints. We arrived at a model design that can be parameterized to fit the different interpretations, while remaining concise and tractable. In addition to designing the business rules, we designed a user interface that is intuitive and appealing to the planners, see screen shots below.

Stage B. Model implementation. Based on the design achieved in Stage A, we proceeded to implement, test, and refine the optimization algorithm and its data interfaces. Stage B has been largely completed by the founders, as this is our core expertise.

Stage C. Web interface implementation. Based on the design achieved in Stage A, we proceeded to implement, test, and refine the user interface. We worked with an external Danish web development company for this stage.

Results

The project was finalized, and project goals met in July 2019.

Data sources

Where possible we have used external data providers for data as bunker prices, port call costs and distances. Client specific data as vessel bunker tank sizes and consumption figures have been provided by clients. In a few cases we have gathered data directly.

Algorithm

The BunkerPlanner algorithms have been developed internally and are proprietary to BunkerMetric. During the project the algorithm has continuously been refined and extended to reflect the clients needs and deliver low-costs results, fast. An API has been wrapped around the algorithm making it generally accessible to our own web interface, as well as any third-party client who would need to access it. Although comparable services exist, we believe that our core algorithm is, by far, the most detailed and fastest working algorithm existing.

Interfaces:

To support BunkerPlanner we have built numerous interfaces to above mentioned data providers, and direct interfaces to several client systems to facilitate fast and easy use of BunkerPlanner. Furthermore, a web-based user interface has been developed, which can both support review and management of user data, and static vessel data, as seen in Figure 2.

Bunker Planner

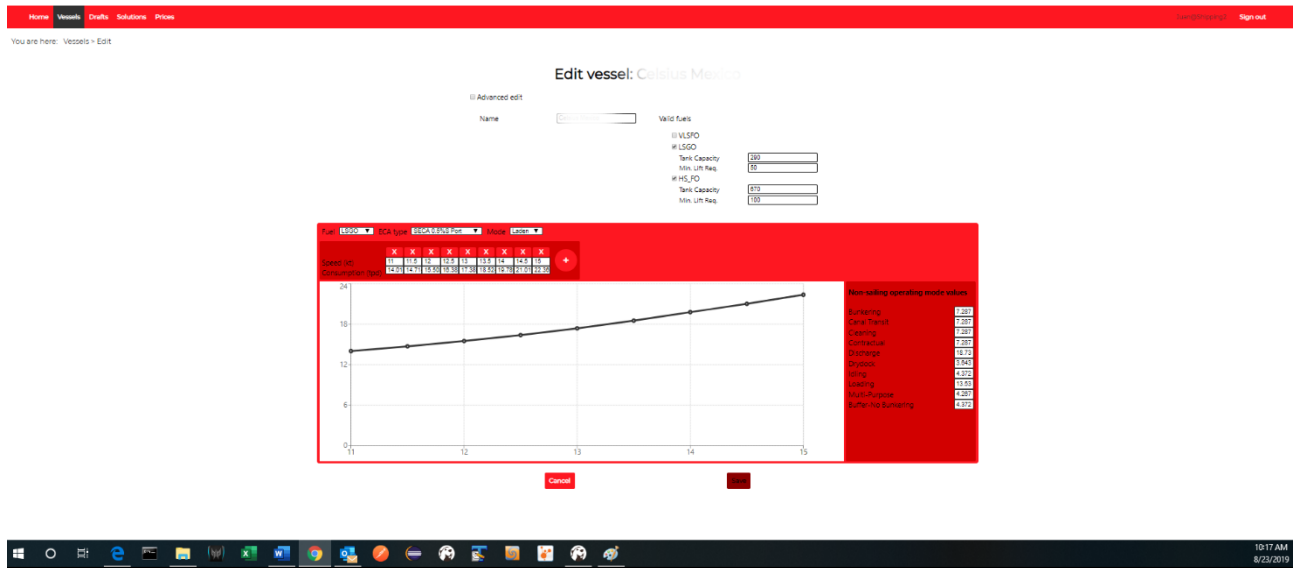


Figure 2: Screen shot of vessel data screen

A user can also review a given BunkerPlan (generated based on daily automatic data feed) graphically as seen in Figure 3:

Bunker Planner

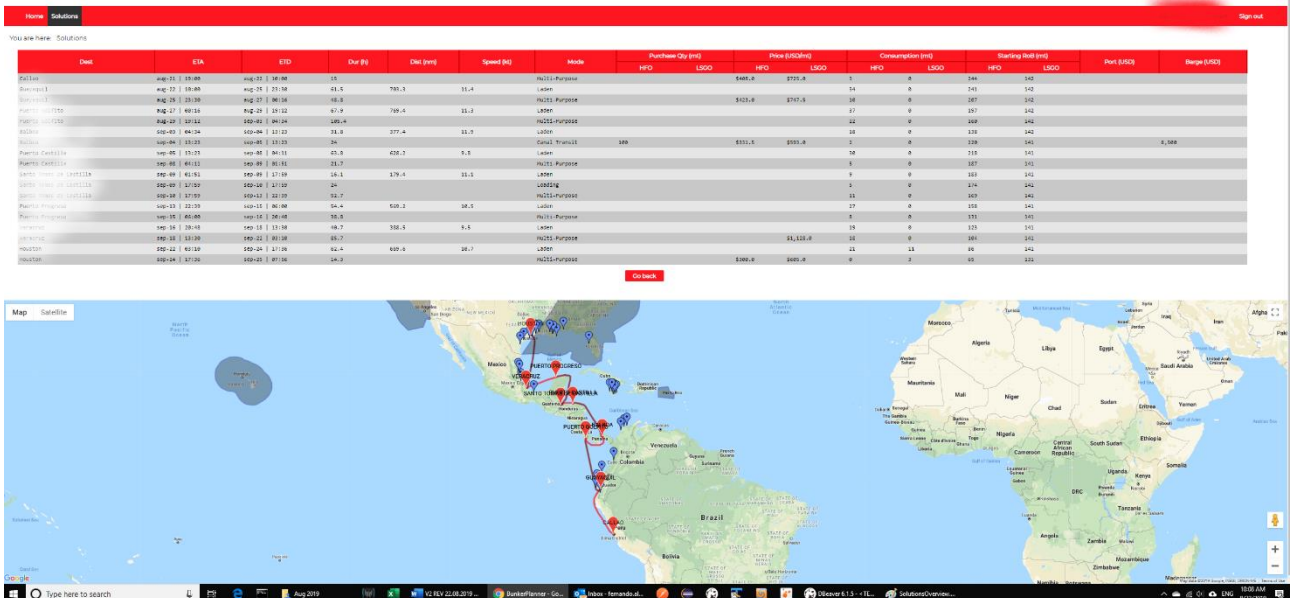


Figure 3: Screenshot of schedule shown in Table and Map

And can edit the schedule by altering ports, ETA's, prices, etc. and quickly recalculate the plan to see best bunkering options.

Pilot Customers

The project has been carried out in cooperation with three pilot customers, two tanker and one bulk operating company. In total the pilots have covered ~40 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 backtests on a larger number of vessels we estimate the average savings from using BunkerPlanner is at 1 – 3 % of total bunkering costs.

Next steps

We are very pleased with the results and interest we have received for BunkerPlanner and will continue developing and marketing the system. This will be partly carried out through follow-up Danish Maritime Project “2019-069, BunkerMetric, BunkerForecast” and through further investments in the company.

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

Media

- [In press: "Buying Power" by Lesley Bankes-Hughes, BunkerSpot.](#)
- May 8th 2019, Keeping costs down after 2020, World Bunkering, https://issuu.com/constructivemedia/docs/wb_summer_issue_2019/64
- April 26th 2019, A smart approach to bunker management, <https://vpoglobal.com/2019/04/26/a-smart-approach-to-bunker-management/>
- April 4th 2019, MOL Nordic Tankers A/S Extends Live Trial Of BunkerPlanner Marine Fuel Analysis Tool To Entire Fleet, <https://www.marineinsight.com/shipping-news/mol-nordic-tankers-a-s-extends-live-trial-of-bunkerplanner-marine-fuel-analysis-tool-to-entire-fleet/>
- January 29th, 2019, DataTech, Dansk startup vil spare rederier millioner på brændstof med dataanalyse, <https://pro.ing.dk/datatech/artikel/dansk-startup-vil-spare-rederier-millioner-pa-braendstof-med-dataanalyse-1972>
- November 12th, 2018, shipandbunker.com, Algorithm bunker buying tool promises optimal results, <https://shipandbunker.com/news/emea/735263-algorithm-bunker-buying-tool-promises-optimal-results>
- November 8th, 2018, Lloyds List, Tech start-ups face challenge to provide shipping solutions, <https://lloydslist.maritimeintelligence.informa.com/LL1124999/Tech-startups-face-challenge-to-provide-shipping-solutions?vid=Maritime>
- September 18th, 2018, shippingwatch.dk, Shipping companies can save money by changing bunker hubs, <https://shippingwatch.com/secure/Services/article10876717.ecez>

Presentations

- June 18th, 2019, International Bunker Industry Association (IBIA): Panel Debate Sulphur 2020 Countdown: what you need to know. <https://ibia.net/event/sulphur-2020-countdown-what-you-need-to-know/>
- November 8th, 2018, International Bunker Industry Association (IBIA) Convention, Copenhagen, SESSION SIX - DIGITAL TECHNOLOGY. <https://www.ibiaconvention.com/convention-programme>
- November 6th, 2018, Danske Maritime, Teknisk Komite, Herlev
- September 27th, 2018, Green Ship of the Future, 12th membership meeting, DNV-GL, Tuborg Havn, <https://greenship.org/reservationer/12th-membership-meeting/>