

Shipmove - Shipmove Mooring Analysis

a method of determining the required number of moorings for commercial ships

the challenge

There are no simple tools that allow a Ships officer, Line Handling Supervisor, Terminal Operator, Pilot or Harbour Authority to simply, quickly, and cost effectively assess the number of moorings a ship should deploy to ensure a safe mooring outcome.

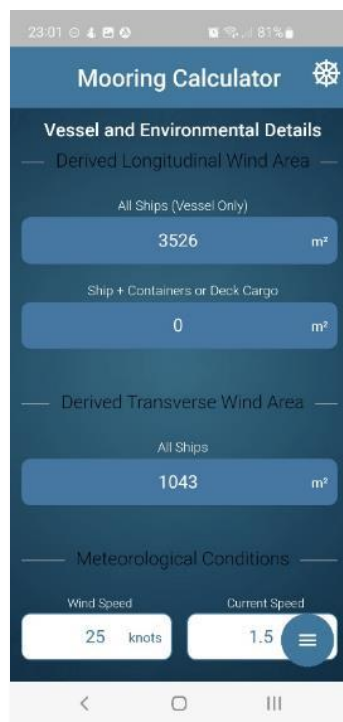
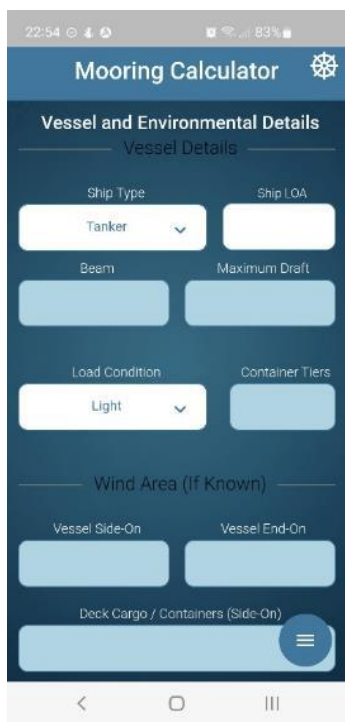
the innovation

Shipmove Mooring Analysis is a method of determining the required number of moorings for commercial ships.

Using the principal dimension of a vessel (LOA - length overall) Shipmove has established a verifiable and reliable method to determine; the transverse and longitudinal area of the vessel above the water line exposed to wind, and the transverse area below the water line exposed to current. This is on a ship type basis.

More importantly it allows the application to determine the upper limits or bounds of such areas, and their likely disposition; so that calculations can be made on the maximum forces experienced by the vessel. The application then calculates the number of mooring lines required to restrain such forces.

At each step of the calculation, an evaluation is made of the worst likely conditions. Such evaluations (which include some assumptions) include a reasonable safety margin at each step so are predominantly cumulative.



This, reinforced by favourable comparison of sample outputs from the application against industry standard mooring programs, provides significant confidence in the results of the app.

The ability to send (by email) the results of any individual analysis, is an important record-keeping tool, and can be used as part of a vessels ISM or shore Safety Management System procedures to document compliance and as evidence of the decision making process.

how it was implemented

Hundreds of ships were selected, many thousands of data fields downloaded, cross section areas measured with Autocad. This data was plotted and analysed.

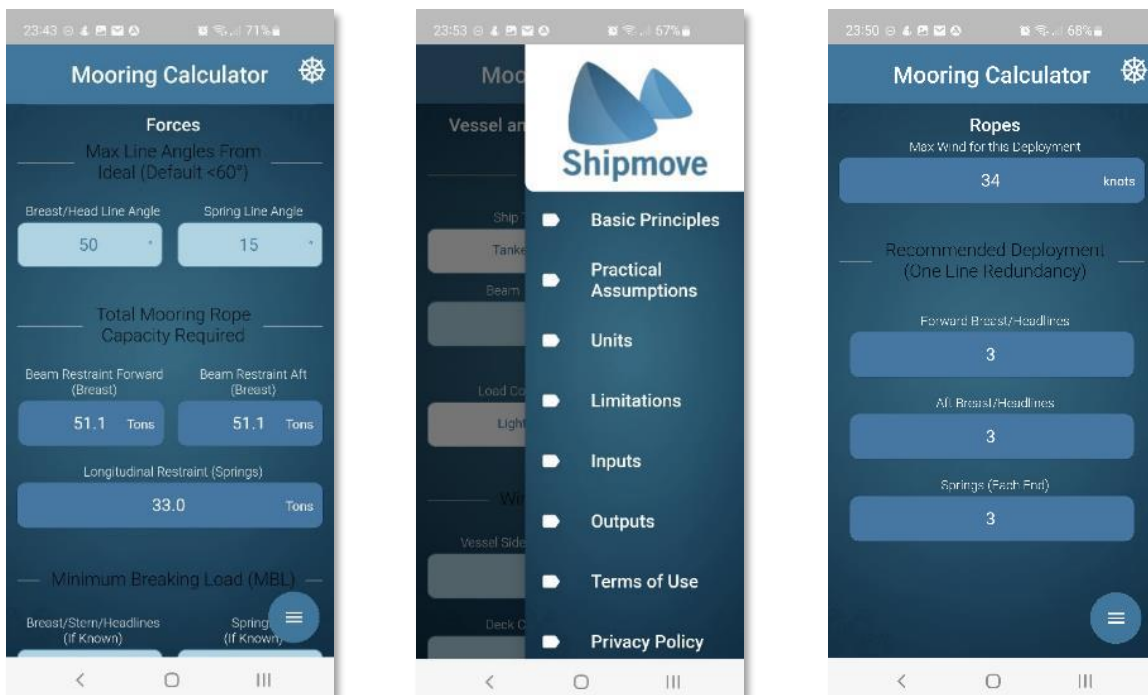
Reliable correlation, as well as accurate interpolation and extrapolation was then established using a series of complex quadratic equations. This to determine cross sectional area, wind and current forces and lines required. A further refinement is that using the already established cross sectional area allows a ships equipment number to be determined and so the likely strength of the vessels ropes.

Initially the tool was a spread sheet, however it was recognised that a tablet or smartphone application would be more useable and also more able to protect the source calculations.

The app was developed in-house and is now available on both Apple and Android devices.

result

The app can, using only the following five (readily available) pieces of data, determine a suitable number of moorings to deploy.



- LOA - Length Overall
- Vessel Type*
- Load Condition (Light, Part, Loaded)
- Wind Strength
- Current Strength

* Presently choice of 3 vessel types, covering 75% of the worlds fleet.

The entire calculation including data input takes only one minute. This evidenced by the video shot in real time and without missing any steps, available here on you tube.

https://www.youtube.com/watch?v=Oi6khW_fhQY

conclusion

The app costs £10. That's it. No further costs, it can then be used as many times on as many different ships as the user wishes.

It is self-contained, so it can, once installed on a phone, be used in areas with no internet coverage.

Further information on the app is available on shipmove's website;
https://www.shipmove.uk/Mooring_App

And on this 5 minute video

<https://www.youtube.com/watch?v=VnroKgClaYI&t=37s>