

Predicting the safest route through ice



When moving in ice areas, it is hard to predict an exact arrival time as ice is dynamic and changes from day to day. The Tactical Ice Navigation Tool (TINT) combines real-time ice charts with ice performance calculations to predict the safest and most economical route for the ship to reach its destination.

The shortest route is rarely the fastest or most economical when moving in ice-covered waters. Aker Arctic has developed a prediction tool in cooperation with the Finnish Meteorological Institute and the European Space Agency to optimise ship-specific routes through varying ice conditions.

Route predicting tools are widely available, showing the shortest route to a destination. However, in ice conditions, the shortest route is usually not the safest, as ice is dynamic and conditions vary from day to day. Additionally, every vessel has its own ice capabilities which allow it to move in areas it is designed for but limits others.

Optimised route planning

In every ship project, Aker Arctic performs ice performance calculations and can predict what kind of conditions a vessel can manage in safely. These studies can now be combined with real-time ice charts from the Finnish Meteorological Institute (FMI) to give a vessel its own optimal route, speed and arrival time on any chosen day.

“The route prediction tool we have developed is completely automated, and can be updated as frequently as required,” Project Manager Jukka Salminen explains. “Network transfers in high latitudes utilise satellite connections, so the amount of data has to be compact.”

“The benefit for the ship operator is to reduce the likelihood of their vessel becoming trapped in ice and having to wait for icebreaker assistance; instead, the crew can choose a route which is suitable for their vessel’s own capabilities. It can keep to its schedule, ensure safety for the people onboard, avoid accidents and environmental hazards, while saving on fuel and decreasing emissions,” he adds.

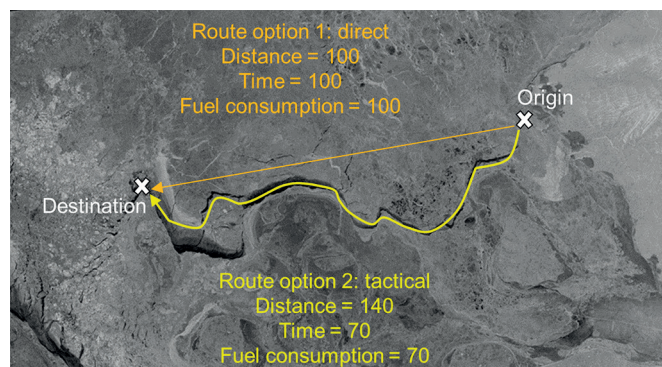
Test installation

The Tactical Ice Navigation Tool (TINT) is currently ready for test use. In order to proceed, Aker Arctic is looking for a vessel owner who would be interested in installing it onboard to test stability, user interface and data transfer. This would allow more detailed calculations on, e.g., saved time and fuel, as well as gaining valuable user feedback.

Ice performance analyses can be made for any vessel, not only Aker Arctic designed ones, so there are no limitations on what kind of vessels can use the tool.

“With traffic in Polar areas continuing to increase, we believe there is an urgent need for a real-time ice prediction tool which is tailored for each specific vessel, including special features such as iceberg-spotting guidance or ice alerts,” Salminen says.

The Tactical Ice Navigation Tool (TINT) has been jointly developed by the European Space Agency, the Finnish Meteorological Institute and Aker Arctic. ■



Aker Arctic, The Finnish Meteorological Institute and the European Space Agency have developed a service that optimises ship-specific routes through varying ice conditions thus enabling reduced fuel costs, reduced emissions and increased safety.