

Icebreaking in Finland

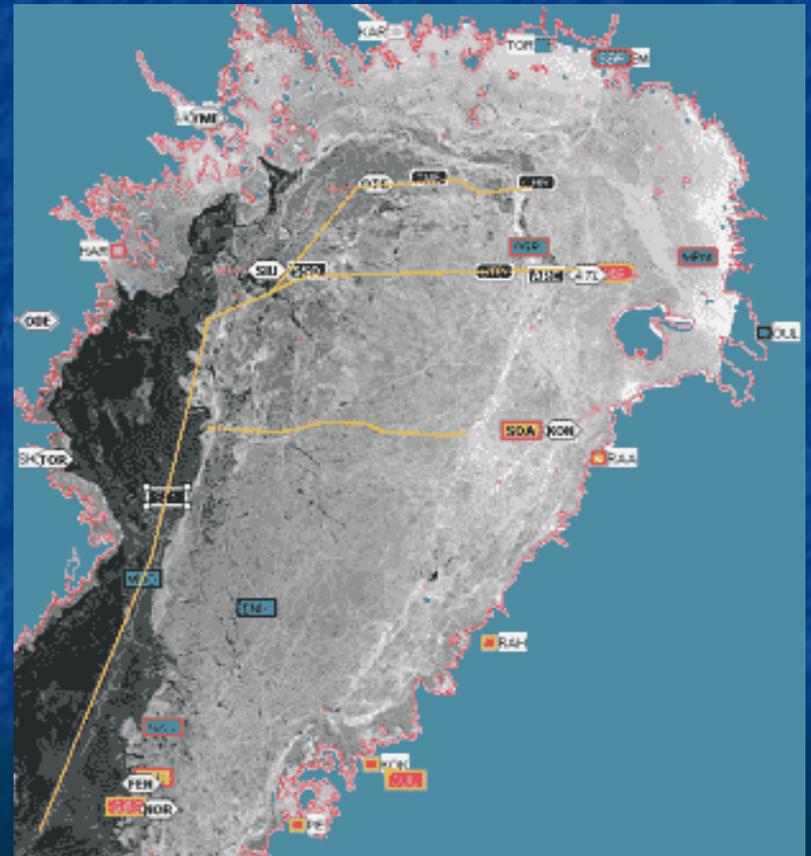


Lifeline for seaborne transport

The facts

- Finland lies almost entirely north of the 60° parallel. It is the only country in the world where all ports and fairways to ports are frozen during the winter season.
- The icebreaking season (depending from the winter) is from mid December to late April. Total of 4½ months.
- Finnish icebreaker fleet today consist of 8 ships. Three multipurpose breakers and five conventional breakers. They are to keep, 23 of total 60 ports, open around the year.
- Shipping to Finnish winter ports is performed at all times under all conditions.

The conditions



The fleet

-Multipurpose breakers

- MSV Fennica
 - specialises in laying oil and gas pipes and cables in depths of up to a kilometre or more.
- MSV Nordica
 - special fittings include a plough which can be lowered to the sea bed for digging ditches as much as two metres deep for pipes and cables.
- MSV Botnica
 - work includes maintenance on oil and gas pipelines.



Fleet

- "Otso class"

- JM Otso & Kontio
- These vessels represent the top edge technology in conventional icebreaker design and in traditional icebreaking.
- Due to their cost efficiency, they are always the first ones to go, when situation requires. Usually in December.
- Between icebreaking seasons they lay in the port of, our nations capital, Helsinki.



- Otso & Kontio in Helsinki during summertime.



Fleet

- "Urho class"

- JM Urho & Sisu
- They are the biggest and the most powerful breakers in the fleet.
- Due to their big size and high costs in fuel and manning, are they always the last ones to go, when the ice conditions get real hard. Usually in February.
- They have an interesting 4-propeller propulsion system. 2 front and 2 rear.



Fleet

- JM Voima & Apu

- The oldest breakers in the fleet.
- Strong hull, powerful engines and many times renewed navigational technology are keeping these vessels totally competitive against the younger ones.
- JM Apu was sold to Russians about a month ago.



Assisting in ice

- Icebreakers assist merchant vessels by keeping the routes clear from heavy ice.
- In heavy ice conditions, breakers can either, to lead the way and vessels follow in convoy, or if necessary, to tow single vessels through the ice.
- If a vessel is stuck on ice, the breaker comes from ahead of the vessel, turns to the starboard bow and goes around the vessel to the portside bow, keeping a distance of 20-40 metres. This way the vessel is released from the pressure of ice and is able to continue moving forward behind the breaker.



Manoeuvring in ice

- In 80cm of ice, the breakers still achieve a speed of 8-12 knots.
- In the most northernmost reaches of the sea, the shelf ice can be 120 cm thick.
- When the ice gets too thick to simply go through, the breaker lifts its bow above the ice and crushes it with its own weight.
- Ice can pack in to many layers. This can result in pack ice as much as 20 meters thick.
- In harshest pack ice, the new multipurpose breakers go backwards. They have two 360° turning aquamaster pods.

The future of icebreaking

- The finnish company Aker Yards has developed a new kind of hull and propulsion design for vessels to break the ice themselves.
- DAT – Double acting tanker.
- They go backwards in ice. The vessel has a stern, fitted for crushing ice and an azimuth propulsion system to “suck” the vessels way through the ice.
- Neste oils tanker M/T Tempera (build 2003) was one of the first vessels to act as a Double acting tanker.

