# Introduction of the model test: The new Finnish B+ Icebreaker

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2026-03-05
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Project: 1010
General costs
Railo Technology Inc

# Content

Ice basin

Testing technology

Today’s demo

# Railotech Model Test Basin

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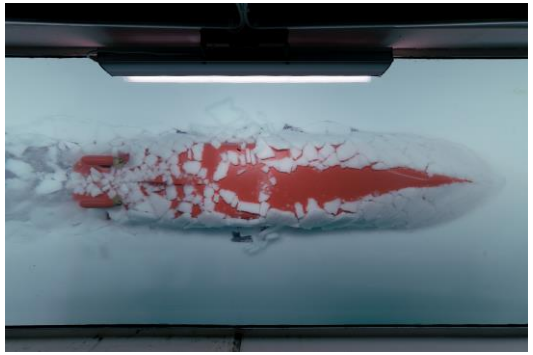
# Railotech Ice Model Basin

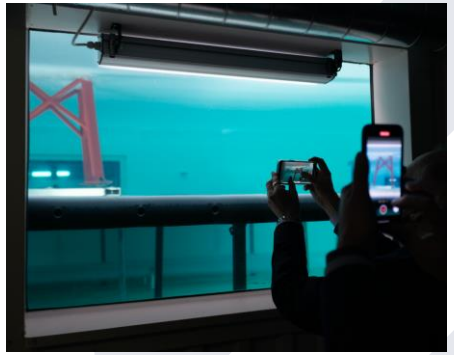
1969

1983

2005

- Third-generation ice laboratory built in 2005
- More than 700 model test series over 55 years
- Basin dimensions 75 × 8 × 2.1 m; FG(X) model ice sheet about 50 m
- Live observation and filming through glass bottom and side windows
- Self-propelled ship models, stationary moored offshore structures, etc.
- Deep water and shallow water testing
- 3D motion tracking system





# Ice Model Testing Technology

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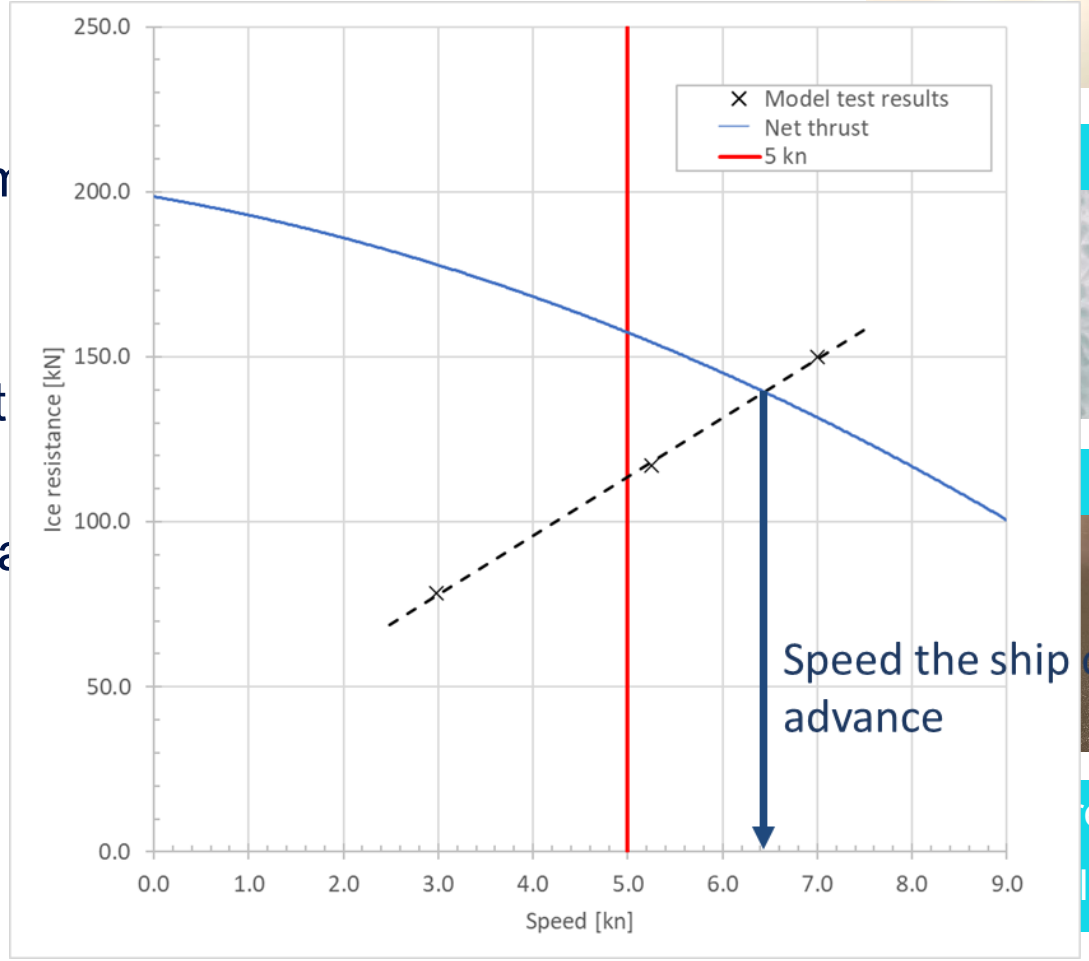
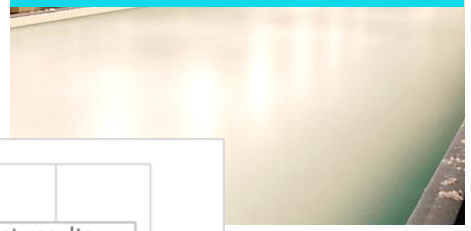
# Railotech Model Ice

- Fine-grained ice
- Ice thickness: 15 - 80 m
  (max. 150 mm)
- Flexural strength: 15 -
- Strain modulus of elast
- Ice density
- Compressive strength a




Level ice



Floe ice

Ice rubble

essive ice
lidation

# Railotech Model Ice

- Fine-grained ice
- Ice thickness: 15 - 80 mm
  (max. 150 mm)
- Flexural strength: 15 - 80 kPa
- Strain modulus of elasticity
- Ice density
- Compressive strength and crushing strength

Level ice

Brash ice channel

Brash ice

Floe ice

Ice ridge

Ice rubble

- Compressive ice
- Consolidation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# Model tests

- Conduct various arctic engineering and research projects
- *Cooperation with Aalto Ice and Wave Tank (40m×40m×2.8m)

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Aalto Ice and Wave Tank*

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## Ship tests

- Ice performance prediction
  - **Ice resistance**
  - **Manoeuvring***
  - Mooring
- Ice Class test
- Propeller-ice interaction analysis

## Offshore structure tests

- Ice loads
- Ice accumulation
  Ice encroachment

# Ice model test demo

The New Finnish B+ Icebreaker

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# The New Finnish B+ Icebreaker

$\lambda = 19$

| Property | Full scale | Model Scale |
|---|---|---|
| Length: | 90 m | 4.7 m |
| Beam: | 23 m | 1.2 m |
| Draft: | 7.2 m | 379 mm |
| Displacement: | about 7 500 t | 1.1 t |
| Propulsion power: | 10.5 MW | - |

# Ice model test demo

Demonstration arrangements

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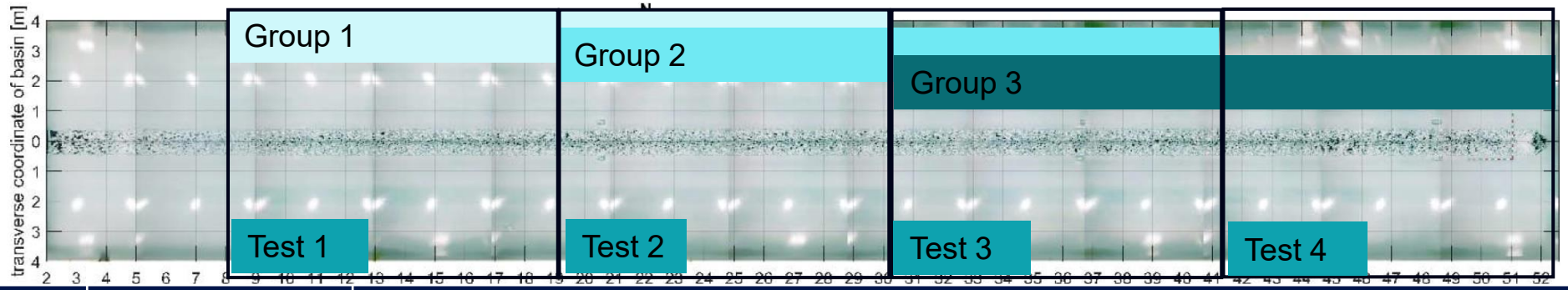
# Test program

1. Four self-propulsion tests will be conducted.
2. Ice thickness: 1 m, 500 kPa
3. Three groups will be formed. Each group can watch two tests.




| Group no. | Guide | Program | | | | |
|---|---|---|---|---|---|---|
| Group 1 | **Kari Laukia**<br>Henry Vesalainen | Test 1 | Test 2 | Lunch | | |
| Group 2 | **Topi Leiviskä**<br>Eetu Seppänen | | Test 2 | Test 3 | Lunch | |
| Group 3 | **Arto Uuskallio**<br>Jukka-Pekka Sallinen | | | Test 3 | Test 4 | Lunch |

## PHOTO IS ALLOWED

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# SAFETY INFORMATION

- Stay with the group
- Watch your step


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